



Engaging Tomorrow's Asian Consumers – Today

27 October 2016 by Yen Feng



Asia is different. How different?

More than you might think. Asia's next-generation consumers are more sophisticated than ever – which means "business as usual" just won't be good enough. Growth strategies that may have worked in the West will have to be re-thought, revamped and repackaged.

Because in Asia, customers no longer only want the world's latest premium products and services. They also want localised, unique experiences that make a lasting impression.

If all this sounds impossibly ambitious, know that others have succeeded.

By investing big in innovation, research, and consumer-led data insights, companies such as the Watson Group, Alibaba Group, Snapdeal, and Procter & Gamble (P&G) have continued to expand their dominance in the Asian market.

And they have plenty of insights to share, as shown in their recent participation at the Singapore Summit, as speakers of a panel discussion titled: "Engaging Tomorrow's Asian Consumers".

A different kind of consumer

Savvy businesses with customers around the world have known for a while that Asia's customers liked to be treated a little differently from their Western counterparts. They want customised packaging that are more sensorial, designs that suit their tastes and whet their appetites, said Magesvaran Suranjan, President of Asia Pacific Selling & Market Operations at P&G.

"These products tend to have a richness in perfumes – more so than in the West. The packaging also has to be more vibrant. That's the consumer profile in Asia," he added.

But today their needs go beyond the cosmetic. They yearn to be delighted. They want to discover new products and services that they can share on social media. New experiences that are international, yet feel personal. Most importantly – they want it fast.

According to a new report by Boston Consulting Group, the fastest-growing consumer group in Asia are the upper middle class, who are more willing to pay for premium quality goods and services. And with the popularisation of e-commerce and mobile shopping, they can get it anywhere – whether it's being offered in Beijing, Bangalore, or Budapest.

The report, A Silver Lining in Consumption Slowdown, produced for debut exclusively at the Singapore Summit in September 2016, was unequivocal in its finding: "Companies must understand this unique and evolving group, and be strategic in how they target and serve this group."

In other words, businesses who don't want to be left behind by this new, growing, and increasingly valuable market will not just have to keep up with ever-evolving Asian needs. They need to race ahead if they want to stay in the game.

As Malina Ngai of the A.S. Watson Group recently declared at the Summit: "There are only two types of retailers in the future – the fast or the dead."

Brand new world

Ngai should know. As Chief Operating Officer of Hong Kong's largest health and beauty retail group, she has real-time experience observing how often customers in Asia switch to new products, compared to customers in Europe, where the group is aggressively expanding.

In Asia, 65 percent of customers buy new products within a period of 12 months, she said. In Europe, the corresponding figure is 40 percent. In the skincare market, "Asian customers love to explore," said Ngai. "So we need more new products, a lot more, in Asia than in other countries."

One reason for the need for new and exciting products is just how hyper-connected today's consumers are, especially in Asia.

Consider this: In early 2016, India overtook the United States to become the world's second largest Internet market, reported the United Nations' Broadband Commission for Sustainable Development in September. It has 333 million Internet users, trailing only behind China's 721 million.

In Southeast Asia, the rate of digital adoption is unmatched – with more than 250 million smartphone users in the region, reported The Wall Street Journal in April. According to a Bain & Company survey cited in the report, more than 80 percent of the region's digital consumers use social media such as Instagram to research products and connect with sellers.

In fact the whole of Asia-Pacific has become, for the first time, the largest digital retail market in the world, according to market research company eMarketer. In a 2016 report, it noted that overall APAC e-commerce sales reached US\$877.61 billion last year, up more than 35 percent from 2014. Driving this growth were India (up 129.5 percent in e-commerce sales), China (up 65.5 percent), and Indonesia (up 65.6 percent).

Which means if you haven't received the memo yet, read it here now loud and clear: You simply cannot be operating just a traditional brick-and-mortar store anymore.

For B2C companies, this is especially important: Go online, and go mobile. Otherwise, you may as well pack up, shut down, and go home.

Alibaba Group's Chief Executive Officer, Daniel Zhang, recently shared at the same Summit conference that in 2015, mobile purchases accounted for about 80 percent of all sales. This is double its 43 percent figure in 2014, reported The Wall Street Journal.

"Over 90 percent of our traffic are from mobile," said Zhang. "People are living on their smartphones."

Allbaba Group owns Taobao, Tmall, and shares in a string of other high-profile e-commerce websites, including Snapdeal and Lazada. In 2015, during its Singles Day shopping event in November, the company rang up US\$14.3 billion in sales in just 24 hours.

In India, the percentage of orders that come in via the web is 80 percent, said Snapdeal's founder and CEO Kunal Bahl. Three years ago, this was less than 5 percent.

Great expectations

Beyond the normal rules of engagement between retailer and customers, Asia customers also increasingly want best-in-class services. They want developed market services, but at emerging market prices.

Take delivery, for example. A few years ago, the big incentive offered to customers was cash vouchers, but these days it's free delivery, said Bahl.

For Alibaba's shoppers, even free isn't good enough. Customers today want free next-day, or even same-day, delivery, said Zhang, referring to its online orders for groceries.

The same is happening across other e-commerce sites. Last year, Amazon announced that it would be offering its Prime members same-day delivery and since then, it's also launched Prime Now which guarantees delivery within one to two hours on select items.

There's also greater demand for businesses to integrate its online and offline offerings. This means that a customer can order an item online, and choose to pick it up at a physical store.

"Going forward, all offline commerce will undergo a digital transformation," Zhang concluded. "In the future, people will not say whether a business is an online or offline business."

A fully integrated business seems to have worked for Alibaba. Zhang said that whether online or offline, the company has been able to achieve margins of more than 40 percent on its sales.

And, according to Ngai, Watson's customers spend more in stores when the process is complemented with a good digital experience.

In fact, she said, those who shop at its stores both online and offline spend almost three times more, compared to those who shop only offline – a key learning point to note for businesses who have yet to buy in to the concept of an omni-channel experience.

The next big thing

What's next? Sometimes, the way to succeed is through details which many large companies tend to miss out. The next big thing, you could say, is paying attention – to the small stuff.

One way to think about this is to get hyper-local. In the grocery delivery space, especially, hyperlocal start-ups are already giving traditional big-box retailers a run for their money.

Dozens of e-commerce websites in recent years have entered the multibillion-dollar grocery delivery space in Asia, including Grofers, Flipkart, Redmart, Honestbee, and Paytm – which is also backed by Alibaba. Even Uber's foray into food delivery and courier services is an example of how such start-ups are disrupting traditional service industries.

But getting hyperlocal also means getting to know your customers at the local level. Understanding how they live and what their everyday needs are.

Giving an example of what this meant for Snapdeal, Bahl said that the company discovered during a recent visit to a local village that the people there referred to cocktail gowns as "one-pieces".

So Snapdeal modified its search engine so that these gowns would show up together with bikinis if anyone was searching for "one-pieces", resulting in more sales driven by online search traffic.

"We have to build local insight right into the platform – you can't just cut and paste," said Bahl.

Because India is home to hundreds of languages, Snapdeal is also working to offer multiple translations of its website to reach other local communities around the country.

For Alibaba, getting hyperlocal means expanding the company's reach into some of China's hardest-to-reach areas: its rural countryside.

Get boots on the ground to connect with bus drivers and local delivery services, said Zhang. That's how you set up your distribution network.

And if your business is running an online marketplace, empower your local sellers.

In India, and other developing economies, such as Vietnam, Indonesia, and Thailand, that could mean investing to set up the infrastructure needed, including payment platforms and cloud computing services, to enable your merchants to do well.

It's a lot of work, no doubt. But it's doable – as shown by these speakers at the Summit, who lead some of the world's top companies who are succeeding in the region.

And if you need anymore convincing, just ask Zhang to remind you how well the company did during its Singles Day event last year. He's got 14.3 billion reasons why you should start engaging tomorrow's Asian customers – today.

This article was written based on a panel session that Future Ready Singapore attended at the Singapore Summit 2016 (16 – 17 September). The fifth edition of the annual event brought together more than 400 business leaders and experts to discuss future-oriented topics in finance, business and economics with a Global-Asia focus.

Edited by Tan Yi Xuan and Liew Hanqing

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Google's new APAC headquarters in Singapore is a blend of office building and tech campus

Uptin Saiidi | @uptin

Published 10:17 PM ET Thu, 10 Nov 2016 | Updated 7:01 AM ET Fri, 11 Nov 2016



We got inside Google's new Asia Pacific HQ

7:01 AM ET Fri, 11 Nov 2016 | 01:16

The company that redefined what a modern work space should look like is adding to its portfolio with the official opening of its new Asia-Pacific headquarters in Singapore.

When Google set up shop in Singapore in 2007, it had just 24 employees. Today, it has more than 1,000.

Its new space -- which will also house employees from a number of its portfolio products such as YouTube --- is a blend between a campus and an office building, with high ceilings, open lounges and an abundance of natural lighting.

In addition to its main cafeteria which offers free food, the office boasts various coffee and snack bars where employees are encouraged to gather and as one person said, have plenty of bump-in encounters with others from different departments.

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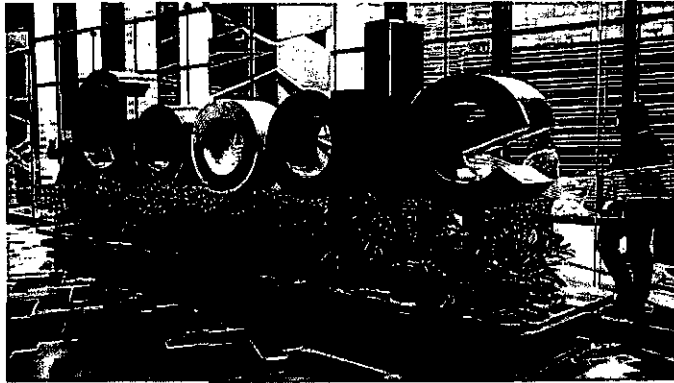
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The lobby of Google's Asia-Pacific headquarters in Singapore.

The open office environment has gained wild popularity over recent years, but come under question from critics who question productivity in such an environment. In Google's new office, many employees no longer even have a permanent desk, but instead get a locker where they can keep their belongings. Depending on their tasks and schedules of the day, with their laptop in hand, they can choose to work at a desk station, large conference table, couch, or private office.

"Googlers can choose the workspace that best suits their style or the tasks they need to focus on just for that moment," a Google spokesperson told CN. "There are spaces that are wide open for collaboration, spots to f informal meetings and also corners and nooks for quiet work."

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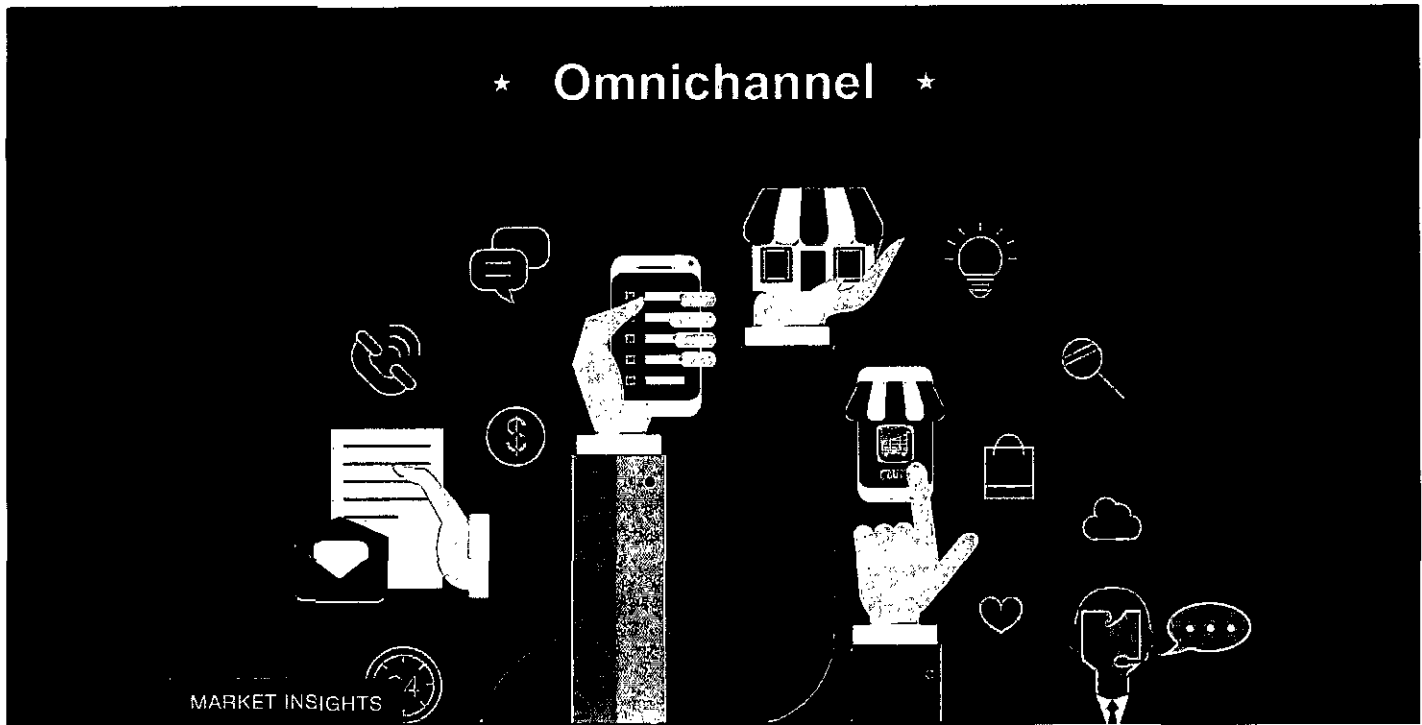
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How omni-channel retailing in asia is transforming logistics

21 November 2016 by Alys Francis

With the rise of the Internet and smartphones, Asian shoppers increasingly use both online and offline channels to order, pay for, collect and return purchases. This move is forcing manufacturers and retailers to adapt to the modern shopper's journey.

According to DHL, traditional multi-channel-based approaches have proven problematic, as the different channels are operated in silos, leading to cannibalistic competition and variation in the customer experience. Additionally, traditional approaches have failed to keep pace with the shopping habits and delivery expectations of today's consumers.

Omni-channel retailing, a more complex approach, improves on multi-channel strategies by catering to the modern shopper's journey. Omni-channel approaches offer customers the same experience in every channel and allow them to seamlessly switch from one to another. Customer preferences and interactions can be captured in every channel – including physical stores – and shared in real-time. The data collected can be leveraged to gain purchasing behaviour insights and influence shoppers' behaviour.

As Southeast Asia's largest e-commerce market with more than 100 per cent smartphone penetration rate, Singapore has big potential as a thriving market for omni-channel retailing. DHL's Omni-Channel Logistics report predicts that this will be a key requirement for companies in the future.

Consumer demand as main driver for omni-channel approaches

DHL's 2015 survey included 56 companies across Asia, and the report reveals how these businesses are adapting to the omni-channel approach. Consumer demand is the main driver behind the omni-channel trend in the region. Asian consumers expect fast delivery to the most convenient point of collection as well as the ability to select the quickest delivery option on mobile and Internet platforms.

Companies need to keep a close watch on how the omni-channel trend is playing out in Asia. Singaporean consumers, are mainly "omni-channel buyers", says Mike Ghasemi, research director, IDC Retail Insights Asia Pacific. "They use smartphones, tablets and laptops to explore and compare products 24/7, connecting with brands through every conceivable channel: websites, physical stores, call centres, you name it."

Multinationals in Singapore need to weigh the case for omni-channel retailing by also considering costs, says Tamanna Dahiya, director, DHL Asia Pacific Innovation Center.

"The high costs of retail space and labour influence the need for an omni-channel approach, and encourage more use of digital channels for businesses in Singapore," she points out. "Businesses are seeing a shift from heavy retail stores and distributor-driven sales to a more equal spread of sales across a combination of physical and online channels."

Why logistics providers should pay attention to omni-channel adoption

As the back-end of the retail supply chain, logistics providers are crucial to the success of omni-channel implementation. They must provide services that meet consumers' expectations for fast delivery, and have teams capable of working across channels.

In Singapore, one of the world's most densely populated countries with nearly 7,700 people per square-kilometre, traffic congestion poses a risk, and meeting consumers' growing expectations for fast delivery is a particular challenge. It has become imperative for companies to build capacity in last-mile logistics.

Businesses in Singapore are already pioneering omni-channel models. Take, for instance, the growing number of large grocery companies that offer services allowing customers to order online or drop off shopping lists in-store, and have items delivered to their homes. Online grocery start-up Red Mart is but one example, allowing customers to place orders anytime, anywhere using its mobile app, and select a two-hour time slot for delivery to their doors. "Innovations in last mile delivery are also evident – from lockers to convenience stores, consumers now have the flexibility to pick up and return shipments anytime," says Dahiya.

Lee Eng Keat, Director of Logistics at the Singapore Economic Development Board also observed an increasing number of companies using Singapore as a base to carry out omni-channel retail activities throughout Asia.

"This is a trend we are very supportive of as it translates into many potential opportunities for logistics providers in Singapore to serve the growing base of retail customers in Asia. It is vital that logistics providers here can innovate and enhance their offerings in order to meet the changing needs and demands of consumers," he said.

Indeed, DHL's report shows that retailers are making investments that set the stage for an "omni-channel future" in Asia. Supply chains are being enhanced for greater efficiency and speed, with investments in automation, click-and-collect models and same-day deliveries.

The survey found 58 percent of companies are investing in cloud-based logistics, which allow companies to monitor supply chains and identify inefficiencies in real-time. Predictive logistics, which provides more accurate forecasts of future demand based on past demand data, is a growth area, with 29 percent planning to invest in it.

Logistics providers must pay attention to Asia's evolving retail landscape and adoption of omni-channel. As brands switch from channel-based approaches in reaction to consumer demand for fast delivery, providers must keep pace – both to satisfy consumers' expectations, and stay ahead of the competition in the region.

Meeting omni-channel demands requires organisational overhaul

Omni-channel approaches require an organisational overhaul. Key operations like marketing, merchandising, ordering, fulfilment and returns must be managed to work seamlessly across offline and online channels.

"Logistics companies need to take a serious look at how they can offer a seamless, real-time experience to their customers by introducing digital platforms in fulfilment and end-to-end solutions," adds Dahiya.

Dahiya explains that logistics providers need to tailor fulfilment options and supply chain processes to match the modern shopper's journey: "A well-aligned supply chain would give consumers the flexibility of anytime, anywhere delivery while maintaining cost-effectiveness for the business."

One such delivery system that meets consumers' demands for speed, while maintaining cost-effectiveness is being piloted by China's largest B2C website Tmall.com. When Tmall.com receives orders for Danish retailer Jack & Jones, rather than shipping the order from a warehouse, its system analyses merchandise availability across Jack & Jones' stores and dispatches the order from the store closest to the customer, thus speeding up the delivery process.

To answer demands arising from the omni-channel trend, Ghasemi says providing fast, reliable delivery, returns, refunds and scalable physical space will be "crucial for any logistics company". "The transition to omni-channel requires a total transformation of the retail supply chain so that it becomes consumer centric," he explains.

DHL is currently helping traditional retailers in Asia redesign supply chains to serve the growing need for speed in digital channels. This involves evaluating omni-channel fulfilment options such as 'click and collect' and 'pick up from stores' for online deliveries.

Dahiya suggests that logistics companies also offer integrated, flexible solutions. "At DHL, for instance, we can provide integrated B2B and B2C fulfilment," she says. One way DHL does this is by designing fulfilment centres that can support the different requirements of both B2B and B2C shipments.

Another tip is that logistics providers need to provide solutions for Asia's diverse payment practices. In some Asian markets, cash on delivery (COD) is a key requirement, which "poses a lot of challenges in the collection and management of funds", says Dahiya. DHL is testing mobile wallets to collect COD funds.

As the largest and fastest growing B2C ecommerce market in the world, Asia Pacific is witnessing a phenomenon that sets the stage for omni-channel. "Increasing e-commerce shipments with smaller packs and more stock keeping units introduce a different level of complexity in supply chains," says Ghasemi. "This presents even greater opportunities for logistics providers to partner with and advise retailers on optimising supply chain networks in a cost-effective way."

Edited by Kritika Srinivasan and Goh Wei Ting



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How Singapore Is Using the IoT to Build a Smart-Nation Platform

Chan Cheow Hoe, Singapore's chief information officer, says Internet of Things technologies are playing a role in most of the city-state's projects regarding transportation, health care and environmental sustainability.

By Mary Catherine O'Connor

Tags: Automation, Business, Consumer, Efficiency, Health and Fitness, Innovation, Technology, Transportation

Nov 10, 2016—Singapore has a tradition of integrating technology into its infrastructure—it was one of the first counties to use RFID-based fare cards for its public transit system, for example. So it comes as no surprise that the island city-state of 5.5 million people is heavily invested in smart-city technologies. This fall, IOT Journal sat down with Singapore's chief information officer, Chan Cheow Hoe, to learn more about how he and his team are developing and evaluating IoT-based solutions to civic issues.

We limited our conversation to three key topic areas: transportation, sustainability and health care (particularly with regard to Singapore's aging population). What follows is a transcript of our conversation, edited for length.



Chan Cheow Hoe

IOT Journal: Let's start with your background. You've been CIO of Singapore since early 2014, but before that, you worked at the consultancy Ernst and Young?

Chan Cheow Hoe: Yes, I've been in the tech sector all my life, but am very new to government. It's a big switch—such a big change.

IOT Journal: What brought you to it?

Chan: A mid-life crisis [laughing]! No. At a certain point of time, [I felt that I] wanted something different. But also the people from government told me that they wanted someone from outside, someone with a fresh pair of eyes. You're able to really question the way things have been done. I'm

open to things that we could do better [in government].

For me, it's about impact. In the private sector, it's about making money. But when you're in the government, you realize that there are a lot of things that you can impact, and if you do the right things, it really does benefit the right people. I think, all of the sudden, you realize there is more to life than making money.

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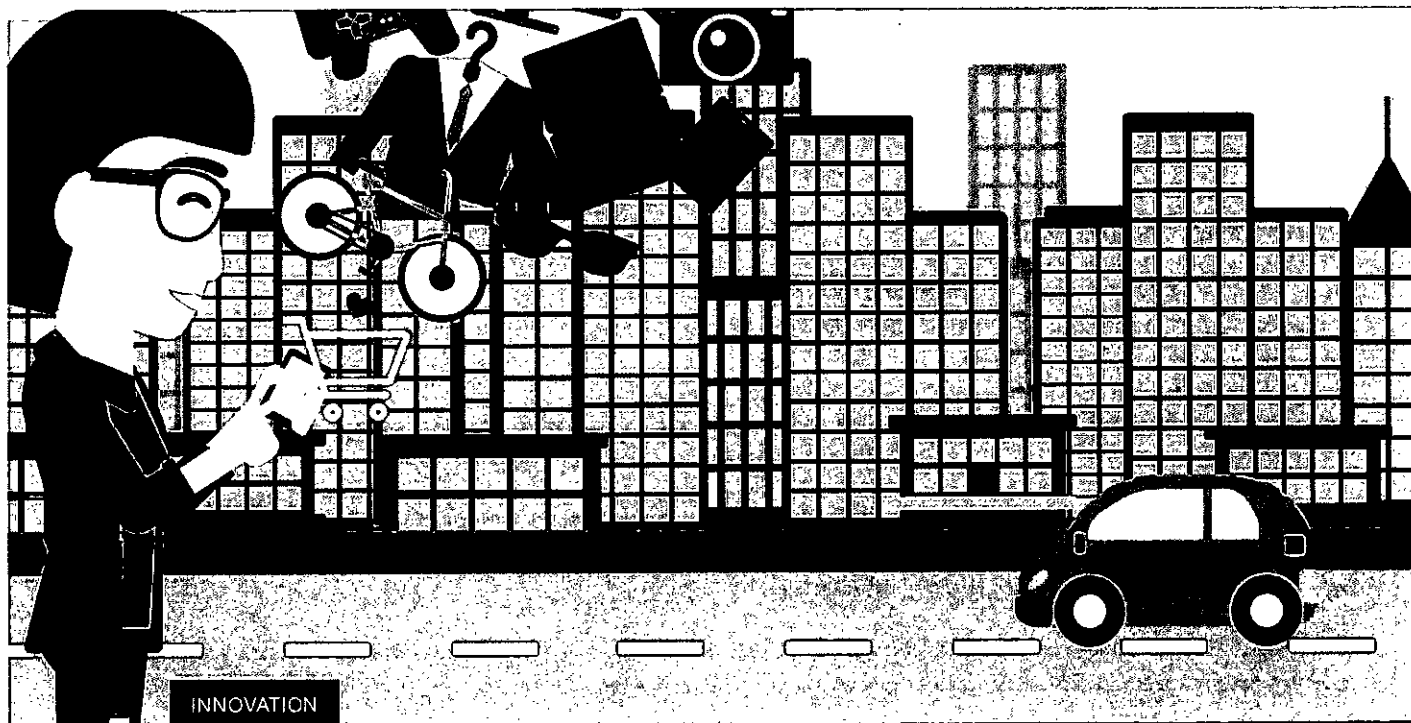
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How to Win Over Asia's Upper Middle Class

07 November 2016 by Yen Feng



The global economy is pretty dark these days but there's a bright spark on the horizon.

This spark is Asia's upper middle class – a fast-growing segment of consumers that experts say is already more influential than the luxury class. Serve them well and your business will grow and flourish – even when up against an overcast economy.

But first, a snapshot of who they are: Sophisticated consumers, more well-heeled than their middle-class counterparts. Because they travel often, they're exposed to global trends and like to shop internationally. They are happy to try new things, but won't buy into hype. They love their tech, and aren't afraid to use it. Give them a raw deal, and you can expect to hear about it on social media.

As a consumer base, the upper middle class is a huge and growing economic force that no business today can afford to ignore.

Over the next 10 years, Asia's share of global GDP is likely to grow from 29 percent to 35 percent. In China alone, more than 46 million upper middle class households will emerge in just half that time.

Now, a new report by the Boston Consulting Group (BCG) is filling out the picture for the rest of Asia: In Malaysia and Thailand, the upper middle class now form a greater proportion of overall households. For countries like India and Vietnam, though the size of this class is still small, it is expected to grow and catch up fast.

Titled A Silver Lining in Consumption Slowdown and for debut exclusively for the Singapore Summit this year, the report makes clear that to win over this group of consumers, companies must work on the following three areas:

- (1) **Make better use online tools**, such as social media, to drive brand awareness and create more customer access points;
- (2) **Target the younger generation**, who are digitally savvy; and
- (3) **Play the global-Asia nexus**, by offering a global menu of goods and services.

The report concludes: "Given the unique characteristics of the upper middle class consumers, businesses cannot simply replicate their strategies and expect a success."

Closing the digital and global gap

Business leaders at the recent Singapore Summit gave valuable insight into some of these new strategies for Asia. The main takeaway: Closing the digital divide means more than a half-hearted attempt to peddle your wares on the Internet. It has to be part of a company's comprehensive and overall growth strategy, the experts said.

At the A. S. Watson Group, 72 percent of its customers are under 35 years old – a sign that its consumers today are changing: "They are more digitally connected and much more willing to spend," said its Chief Operating Officer Malina Ngai.

Ngai said that the company, which is Hong Kong's largest health and beauty retailer, keeps track of customers' changing preferences by monitoring its 120 million-member database using data analytics. Based on this data, the company's growth plans are discussed and tweaked every quarter of every year – as opposed to once every five years.

Commenting on the need for an integrated digital strategy, Ngai said it will help companies adapt to changing consumer tastes more quickly. Speed is what you'll need to successfully acquire this new generation of customers, she added.

There's speed, but don't forget about selection. Alibaba, Asia's answer to Amazon.com, has in recent years beefed up its retail menu to include more international brands, as part of its retail strategy to woo well-travelled and socially networked consumers.

Its giant e-commerce website, Taobao.com, sells everything from language tapes to lingerie from Taiwan, Japan and South Korea, among other territories in Asia and beyond. Last year, it even auctioned off a castle in Italy built during the Renaissance period for US\$16 million.

Singapore's Asian Advantage

In other words, going digital and global is not just about creating additional sales channels. It's fundamentally about engaging your customers and giving them a consistent experience – where, when and how they want it.

The challenge: How to do this well when they are spread far and wide across Asia's geographically and culturally diverse landscape? This is where Singapore has clear advantages in two key areas.

The first is logistics and supply chain management.

As a leading supply chain hub, Singapore is served by the world's leading service providers, which have the distribution network and know-how to access Asia's diverse geographies. Its clear and efficient import and export procedures also mean permits and licences can be processed quickly – saving businesses time and money.

"While Singapore's market might be considered modest in some segments, the nation is centrally located to serve most regional markets. This provides a "good logistics base" for companies to tap into the growing Asean market," said BCG's partner and managing director Lim Yew Heng, who co-wrote the consultancy's A Silver Lining in Consumption Slowdown report.

Singapore's second advantage is innovation.

Its compact size with a dense ecosystem of top MNCs and a growing start up community make the city state an ideal environment for companies to co-create and test-bed new offerings for the region's changing needs and preferences.

Unilever is one such company tapping on this advantage. In 2014, the British-Dutch multinational consumer goods giant launched The Foundry, a global platform to ramp up its digital innovation efforts based out of its regional headquarters in Singapore.

Unilever global chief executive Paul Polman in a recent interview shared how Unilever is exploring new frontiers, such as predicting consumer behavior with data analytics, making use of virtual reality in retail and more to keep up with the changing consumers trends in the region.

Indeed, companies who adjust quickly will have first-mover advantage, and there are greater rewards for those based in locations that support innovation and are within proximity to the larger Asian market, such as Singapore.

Do that, and you'll be on your way to winning over the hearts and minds – and wallets – of Asia's upper middle class.

This article was written with reference to The Boston Consulting Group's report, 'A Silver Lining in Consumption Slowdown: Capturing Growth Opportunity with the Upper Middle Class' and insights from BCG partner and managing director Lim Yew Heng. The report, developed in Singapore and produced for debut exclusively for the Singapore Summit, feature business insights on future-oriented topics in finance, business and economics with a Global-Asia focus.

Edited by Tan Yi Xuan and Liew Hanqing



How will Artificial Intelligence reshape the workforce?

01 November 2016 by Amrita Pai

Trends in Artificial Intelligence (AI)

Mechanisation and automation transformed industry in the 18th and 19th centuries. We are now in the age of AI.

In the 21st century, with the widespread use of Big Data and algorithms, and the computerisation of cognitive tasks in fraud detection, sensor data, healthcare, and the legal and financial services, AI has proved itself capable of handling laborious computations and large data sets, easily and impartially.

It has enabled benchmarking, detection of patterns and trends and formulation of plans with high success. An eye-opening example of AI in action is Works Applications' (WAP) innovative and business-centric solution, AI WORKS.

AI WORKS enables smarter companies in Singapore

WAP is Japan's leading enterprise software provider. Since its inception in 1996, WAP has devised innovative enterprise software for Human Resource Management, Financial Management, Supply Chain Management, E-commerce, ID Management and Enterprise Collaboration. These products, collectively termed AIWORKS, demonstrate High-Usability Experience.

WAP recently launched AI WORKS in Singapore.

According to WAP's Partner and Director, Global Sales and Marketing, Ryu Suzuki, Singapore is a perfect base given the country's strategic location and its status as a business hub in Southeast Asia.

"It's well-entrenched, transparent legal system and its diversity were equally critical deciding factors," he says. "In fact, Singapore spells good news for all MNCs who are trying to enter Asia and set up operations here."

He also highlights the country's conducive environment for doing business – a fast-changing digital economy, linguistic ease and the government's encouraging stance on transforming the country into a smart nation. As Singapore ups the ante to become a Smart Nation, Suzuki believes that "AI WORKS is the perfect support as it is designed to empower organisations in Singapore from the ground up".

Transforming how people work

AI WORKS is a one-of-its-kind and the first AI powered cloud-based enterprise productivity system (EPS).

Traditional Enterprise Resource Planning (ERP) uses technology to link various organisational functions such as accounting, inventory management, and human resources, and facilitate improved information sharing, decision making, and planning. WAP has simplified the whole process by incorporating AI into ERP. AI WORKS will improve operational efficiency by reducing manual input, while offering unprecedented speed and enhanced AI capabilities.

As more organisations adopt cloud technologies to store, access and protect data as well as ease computing, AI WORKS can help them manage huge volumes of information and diverse sources of data. Suzuki says that WAP research indicates that roughly 40 per cent of one's working hours is spent on repetitive tasks such as inputting data, scheduling and report generation. By automating cumbersome data input and collation processes that are prone to human error, the solution frees up employees to focus on the more creative aspects of work such as improving customer service.

"AI WORKS is designed to empower organisations by reducing inefficiencies within organisations – at the level of individual employees," he says.

It does this by integrating productivity tools such as spreadsheet, scheduling, chat and email, and offering seamless operational connectivity so that users do not have to open multiple systems to finish one task. AI WORKS also uses machine learning to suggest the subsequent operation to each user based on the historical operational log data.

WAP has also recently unveiled a new recruiting module of AI WORKS that is expected to ease the recruitment process by automating and streamlining the process. It automatically incorporates applicant resumes into the database, generates auto-emails at the interview stage, creates interview schedules based on availability of interviewers, and establishes links with professional websites such as LinkedIn. The module also suggests positions and applicant rankings based on applicants' past positions and performance. Suzuki explains that the "solution will help organisations conduct interviews intuitively and efficiently, and enhance the quality of talent they hire".

Simply put, AI WORKS is designed to make people work smarter by eliminating the unnecessary.

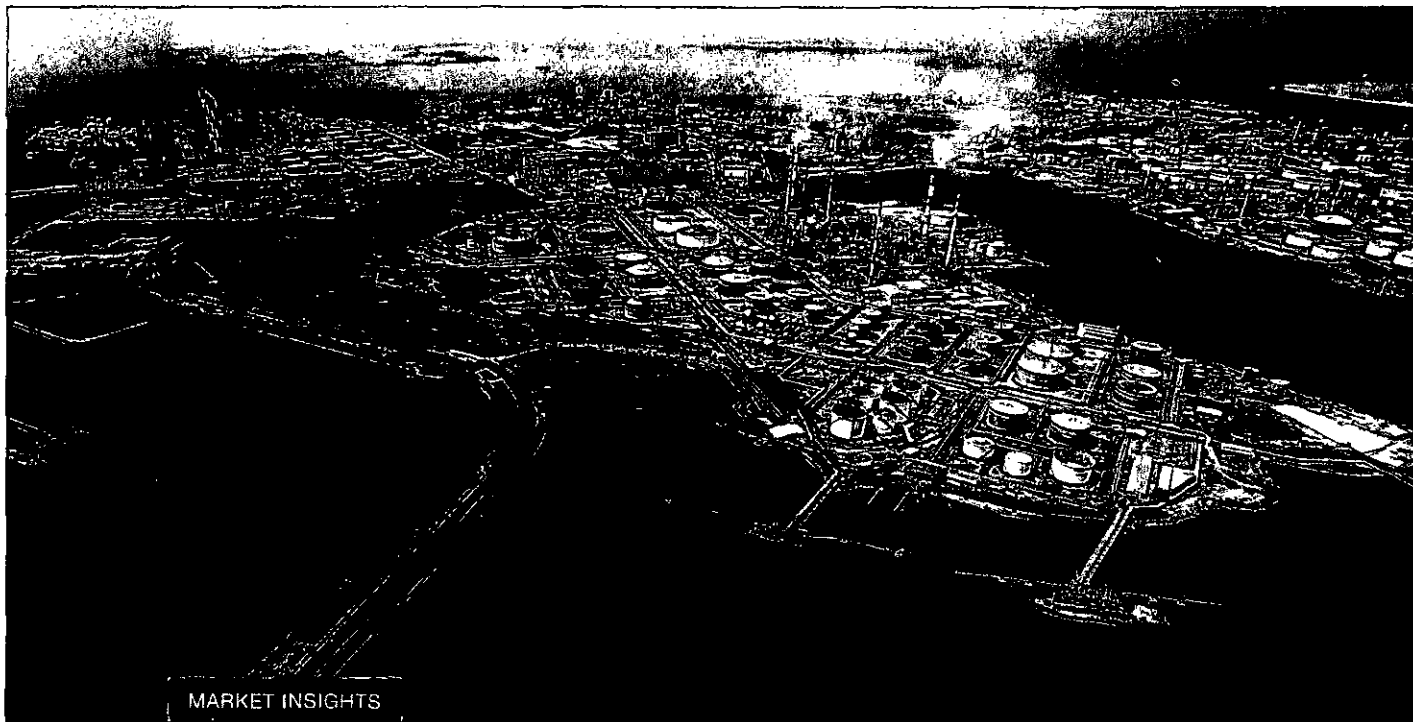
The road ahead for AI in Asia

Workforce automation is here to stay. Estimates by McKinsey Global Institute (2013) suggest that "sophisticated algorithms could substitute approximately 140 million full-time knowledge workers worldwide". Technological progress in the 21st century will challenge and transform the workforce, and at unprecedented speeds.

Seichi Yoshikawa, general manager of the IT Planning Department of Sojitz Asia Pte. Ltd. —the ASEAN regional headquarters of 22 subsidiaries across 13 countries of one of the largest global conglomerates in Japan — says that "AI WORKS has broken the norm of conventional ERP systems, which are tools to "input" information. We are thrilled about WAP's dedication to speed and convenience. Its unique view component enables information to be pulled into the screen from a database instantaneously. We are impressed with its commitment to continuously improve and its concept of no customisation, implementation, and configuration costs. This is a chance for us to revolutionise the way people work and how people perceive work using AI WORKS in the ASEAN region."

WAP recognises this bigger trend and through AI WORKS aims to prepare the current workforce in Singapore and Asia for what is imminent by eliminating repetitive tasks and freeing up their potential and time to work at more value-adding tasks.

Edited by Kritika Srinivasan and Goh Wei Ting



Looking Ahead for Singapore's Chemicals Sector

14 November 2016 by Neha Ghanshamdas of Global Business Reports

Today, a new set of dynamics is at play, keeping Singapore and its chemical industry on their toes. The Singapore Economic Development Board's (EDB) Energy & Chemicals, Executive Director, Damian Chan and Director, Cindy Koh share more about the active measures in place that'll sustain Singapore's future value proposition to chemical companies.



Notwithstanding today's uncertain economic climate, a number of players in Singapore are riding on the back of increased margins due to lower feedstock prices. In fact, many investments have been made on the island over the past three years. What continues to incentivize multinationals to come to Singapore and set up their operations here?

DC: Firstly, Singapore's infrastructure capabilities have been critical for continuing to attract new companies to our frontiers. Over the past 20 years Jurong Island has come to serve as a centerpiece for all energy, petrochemical, and specialty chemicals activities. Jurong Island's key value proposition is integration, from the perspective of being connected to both customer and supplier, often literally over the fence through pipes. This significantly reduces time to customers, lowering logistics and transportation costs. Another contributing factor to Jurong Island's plug-and-play infrastructure is the presence of service providers such as third party logistics providers (3PLs) and utilities players.

Secondly, Singapore's business environment plays an important part in the city-state's competitiveness equation. Chemicals is a capital

intensive, and in many cases technology intensive, industry. Hence, predictability with regards to government policies, rule of law and Intellectual Property (IP) protection, make Singapore a trusted and secure environment for sensitive and large investments. Especially in the energy and chemicals space where companies tend to take a long-term view, predictability and stability are critical, aligning well with Singapore's attributes. However we cannot simply rest on our laurels and rely on such attributes or value propositions to attract investments. We need to continue to improve ourselves to make sure that we remain competitive and sustainable. In today's environment—whether in the context of commodity markets, business growth, or political developments around the world—there is a great deal of uncertainty. Consequently, being able to provide some degree of resilience, or flexibility to respond to changes, becomes increasingly important. Accordingly, we have been working to improve Singapore's energy and chemical companies' resilience. The Jurong Island v2.0 initiative will be of paramount importance to this, and we are beginning to see the fruits of this labor.

In 2014 specialty chemicals comprised 9.7% of Singapore's chemical cluster's total output. How is the EDB working to promote specialty chemical research and production in Singapore? How are initiatives such as the joint industry sectorial planning (JISP) for specialty chemicals affecting the growth of this market segment?

CK: Innovation is key for companies to formulate the right products, and deliver customized solutions to Asian consumers, whose needs could be quite unique. JISP is a joint initiative between EDB and the Agency for Science, Technology and Research (A*STAR) that spans across multiple research institutes including the Institute of Chemical Engineering Sciences (ICES), the Institute of Materials Research and Engineering (IMRE) as well as the Institute of High Performance Computing (IHPC). We realize that there is increased pressure to improve R&D yield for specialty chemical companies, and hence a need to keep costs down. This is where IHPC comes in with modeling and simulation, for example. JISP is a deliberate effort on the part of EDB and A*STAR to try and identify scientific and technology areas in which companies have capability gaps, and where A*STAR and EDB could invest public funds to develop these capabilities within our research institutes.



How is Singapore working to promote the production of specialty chemicals? What will prompt more companies to come and conduct innovation here?

CK: The global specialty chemicals market will grow at a compound annual growth rate (CAGR) of about 5.4% from 2015 to 2025, with Asia Pacific growing at a CAGR of 6.35% and contributing 45% of the global market share. This presents numerous opportunities for specialty chemical companies, who have to maintain a strategic presence in Asia to capture these growth opportunities. While Singapore is a small market, the country has a dense ecosystem of specialty chemical companies' customers. And what is important to note is that these customers are looking beyond Singapore and innovating for the Asia Pacific market. The challenge for specialty chemical companies is getting the right solutions out to the market at the right time, making the ability to respond quickly crucial. Over the last five years, we have seen specialty chemical companies leverage Singapore's strengths, such as our strong research capabilities and IP protection, access to regional problem statements from their regional customers in Singapore and availability of manufacturing infrastructure, to set up their strategic hubs here. These strategic hubs include commercial, innovation and manufacturing functions. The co-location of commercial, innovation and manufacturing activities in Singapore has a strong reinforcing effect and make these companies more nimble in meeting customers' needs.

Have you identified any more opportunities or gaps in the Asian chemical supply chain that Singaporean manufacturers could potentially fill?

DC: We are actively working on developing the higher olefins chains, such as C5s. While typically one cracker does not produce enough C5s to result in a world scale C5 complex, the island has the benefit of having four crackers. Hence we could aggregate C5s that come out of the crackers to produce a world-scale C5 complex, which is something that we are keen to develop.

While Singapore does continue to boast a host of structural advantages, challenges such as space certainly remain. JTC and other players have stepped up with innovations such as the Jurong Rock Caverns. How are these being utilized and what other innovations

are in the pipeline in the context of space optimization?

DC: The construction of the first phase of the Jurong Rock Caverns has been completed.

This underground storage facility was conceived for the purpose of storing crude and condensates, and has stocked condensates for one of the aromatic complexes on Jurong Island. The next stage is to see how we can use the caverns for crude storage, which would add another degree of resilience to our refineries.

Further to this, we are constantly looking at other ways to optimize space. When it comes to chemical plants, because of safety, there is some limit to the extent they can optimize space. On Jurong Island however, there are logistics facilities and warehouses that are exploring ways to better utilize automation technologies such as robotics to help with space conservation. The EDB is also working to be more judicious with projects, and taking care to ensure a high level of land productivity.

CK: JTC is developing a new chemicals hub, which is the first of its kind in Singapore, in Tuas. The facility is catered towards specialties and small footprint type plants, serving as a multi-story facility for chemical companies to set up some of their blending and packaging activities. It is unique in that it includes shared facilities and services, which helps companies save on upfront capital requirement, operating costs and improve process efficiencies.

Labor has been a hot topic among all industrial stakeholders. While the issue is policy-driven, what are some initiatives being headed to combat labor related challenges? How successful have these and additional mechanization efforts been in combatting the shortage of workers?

DC: Initiatives such as the Process Construction and Maintenance Management Committee (PCMMC) are progressing well. We launched PCMMC two or three years ago to bring together plant owners and contractors represented by the Association of Process Industry (ASPRI) and identify ways to improve productivity and save on labor, especially reliance on foreign labor. This would also reduce maintenance and construction costs. There were some low hanging fruit we have identified and worked on, such as worker housing, which should ideally be proximate to Jurong Island. The EDB has worked with ASPRI on this front, which is currently constructing a new foreign worker dormitory close to Jurong Island, in tandem with an in-house training facility.

We have also set up a turnaround scheduling system to smooth out peaks and troughs in demand. Often times there are increased costs for maintenance or construction due to the sheer number of jobs. Other initiatives such as mechanization will take longer to implement. A productivity council has been formed as a result of PCMMC, whose members are exploring mechanization and identifying parts of the maintenance or construction process that can be better mechanized. Additionally, we are making efforts in the field of worker certification. Lastly, an important component moving forward is benchmarking. We are currently working with the Construction Industry Institute (CII) at the University of Texas Austin on benchmarking of projects. PCMMC has a three-year agreement with CII to help with benchmarking projects, which will in turn support efforts in the fields of mechanization and certification.

Data analytics is expected to play an important role moving forward in increasing the competitiveness of the petrochemical sector. Can you speak more broadly about this?

DC: Data analytics will play a role in enhancing competitiveness as well as health and safety. The Industrial Internet of Things (IIoT) is potentially transformative for many industries. Even for a sector that is rightfully conservative—due to the importance of health and safety—there are many opportunities for new technologies to help boost competitiveness and sustainability. For example, we can use data analytics to improve energy efficiency within our chemical plants. Technology company Emerson for instance, has set up a pervasive sensing center of excellence in Singapore. They have been working with chemical players on Jurong Island such as Denka to apply sensing technology and bring about cost savings as well as enhance health and safety. The other major controls and automations company Yokogawa has also just set up a co-innovation center with the aim of working with companies in the chemicals industry to deploy IoT technologies. However, it is important to note that we need to continue to improve awareness surrounding new technologies. IoT is still relatively new and given the nature of the industry, education efforts have to be made to help companies better crystalize the benefits of adoption.

What will continue to set Singapore apart in the international chemical industry for the long term?

DC: We have to go beyond the hygiene factor, and no matter how commodity prices shift, work to ensure that Singapore remains competitive. Eventually oil prices will increase again, and we have to shield ourselves against volatility. Developments such as the LNG terminal, increasing the number of LNG aggregators for greater energy security and competitiveness, along with efforts put towards feedstock diversification such as Vopak's new LPG terminal on Jurong Island, all contribute to this goal.

But aside from looking at resilience from a cost perspective, market connectivity should be taken into account. We believe that Asia will continue to be the world's long-term growth story. Consequently Singapore's status as a hub due to its location in the heart of Southeast Asia will continue to hold us in good stead. Furthermore, we will leverage key attributes that we have built over the years, such as strong financial institutions and logistics networks to complement our manufacturing capabilities. For example, Singapore is home to many customers of the specialty chemicals companies that are not just conducting sales and marketing, but engaged in manufacturing and R&D (such as P&G, a major customer to consumer chemicals companies). Having a critical mass of companies from different business areas that drive demand from an innovation perspective is key, and many of these firms have established their hubs in Singapore. By bringing their manufacturing and R&D here, companies will be very well connected to their customers, and improve their market resilience.

What is your outlook and vision for Singapore's chemicals sector over the course of the next three to five years?

DC: We hope to continue to be vibrant from a growth perspective. We observe a great deal of growth stemming from specialty chemicals, including the types of jobs the segment creates. With more technologies emerging, the nature of jobs will also evolve, and there will be a demand for more IT savvy talent, as well as analytics-trained capital. Technology enablement of the sector is a critical part of how we see it transforming. Another key part of Singapore's vision is for the energy and chemicals sector to grow in a sustainable way.

Do you have a final message about Singapore and its resilient industry?

DC: Singapore remains committed to the development and growth of its energy and chemicals sector. We are dedicated to ensuring that the country remains a long-term competitive location for energy and chemicals companies. The EDB specifically is here to serve as a long-term partner to these companies, and ensure that they are successful in Asia at least partly because of Singapore.



This interview is part of a Special Report on Singapore first published in IHS Chemical Week. You can also find the report [here](#).



INNOVATION

Modern fish farming for a secure food supply

16 November 2016 by Ray Chua

The Earth's ocean fish stock has been on constant decline due to overfishing and climate change. The Intergovernmental Panel on Climate Change recently projected that ocean fish catch potential in the Southeast Asian tropics may be reduced by 40 to 60 per cent due to fish migration, posing an imminent threat to one of the key food sources. Research shows that aquaculture production will need to more than double again between now and 2050 to meet the demands of a growing population.

Locally, Singaporeans consume some 54,000 tonnes of fish each year – 92 percent of which is imported. Over the years, the Agri-food and Veterinary Authority of Singapore (AVA) has been engaging local fish farmers on how to employ innovative fish farming methods to boost our fish supply produced in Singapore.

Photojournalist Ray Chua explores how local fisheries are embracing modern farming technologies as part of the city state's forward thinking strategy to boost food security sustainably.



One of the key strategies to increase food resilience in Singapore is through increasing local production to achieve a degree of self-sufficiency. To increase productivity gains and yields, The AVA has committed more than US\$5.8 million to help local fish farmers upgrade their farms. Farmers are also provided with infrastructure and technical assistance to raise productivity and improve their yields. As a result, the local fish production in Singapore increased by 10 per cent in 2012. One of the beneficiaries of this scheme is The Fish Farmer Pte Ltd, which operates fish farms like these off Singapore's Changi Airfield. 53-year-old Malcolm Ong got into the fishery business after hearing fishermen lament how the local fish stock in Singapore is dwindling. The Fish Farmer is Singapore's largest fish farm and produces 1,000 tonnes of fish every year, equivalent to two per cent of local consumption.

Edited by Liew Hanqing and Tan Yi Xuan

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Singapore government pivots toward "Smart Nation" strategy

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In a bid to fulfill its ambitious Smart Nation 2025 strategy, the Singapore government has undertaken a major realignment of its innovation agencies.

The Info-communications Media Development Authority (IMDA) recently launched in a merger of two government agencies covering IT and digital media. The IMDA is involved in a broad array of initiatives that include Internet of Things, drones, virtual reality and smart city technology.

See also: Singapore's CIO weighs in on IoT and smart cities

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The launch of the IMDA and its sister GovTech agency

(<https://readwrite.com/2016/10/12/singapore-cio-smart-city-iot-cl1/>) is a move by the government to transform the country into a Smart Nation by 2025, which is essentially a smart city strategy on steroids.

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Gabriel Lim, the newly installed CEO of IMDA, says the government pivot towards the connected economy is the latest example of Singapore adapting its economy to global trends.

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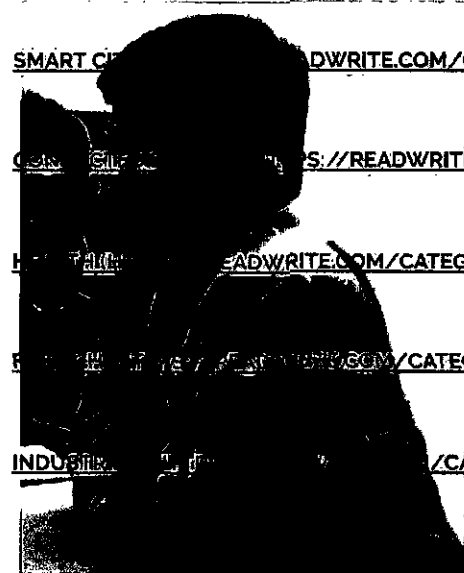
Singapore: climbing the industrial value chain?

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Gabriel Lim, CEO of Singapore's Info-communications Media Development Authority

Since its modern beginnings in 1965, he says Singapore has focused single-mindedly on climbing the industrial value chain. This has seen its economic focus evolve from manufacturing TVs and light bulbs, through circuits and control panels, to today's position as a global leader in financial services, biomedical research and now the digital connected economy.

"That is the burden of small states like Singapore, because history hasn't been kind to small states," said Lim. "If you don't move quickly and nimbly and flexibly, you become irrelevant and the world passes you by."

Singapore's population of only 5.5 million has obvious disadvantages of scale compared to more populous neighbours like Malaysia, Indonesia and of course China.

However, Singapore is consistently ranked among the top places in the world for ease of doing business, largely due to its city-state structure with essentially one level of government. Lim says this enables a direct through-line from top levels of government and industry to the ground-level delivery of regulations and investment.

Conversely, larger countries often suffer disconnects between the various levels of government, resulting in conflicts and inefficiencies between federal, regional and municipal governments.

Singapore Today, Your City Tomorrow

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Regulations can be tweaked quickly now

Indeed Singapore has been able to deftly enact regulations enabling the development of new connected technology like autonomous vehicles.

Singapore's favorable testing environment resulted in the recent launch of the world's first public, self-driving taxi pilot program by nuTonomy. As well, the National University of Singapore has enjoyed an environment conducive to advancing its autonomous vehicle research, bolstered by the support of IMDA.

Lim also credits the compact and efficient nature of Singapore's government for the interdepartmental coordination that has fast-tracked drone-friendly regulations.

Though the Ministry of Transport and the Civil Aviation Authority regulate drone activity in the country, the IMDA also sits on the committee developing rules for unmanned aerial vehicles. This allows IMDA to directly represent industry interests in policy-making sessions, which helps improve the business environment for developing the new technology.

"When that opportunity presents itself we will go and help the companies to present a case to create safe zones to deploy drones more effectively," says Lim.

He says this close working relationship between government and industry helped foster the development of drones by local startup AeroLion in partnership with the Singapore Land Authority.

Initially AeroLion worked with the IDA (IMDA's precursor agency), to identify an opportunity to develop drones that use sensors and 3D imaging on buildings. Eventually AeroLion developed drones capable of performing structural building inspections to identify cracks and

AeroLion Technologies BlackLion -168 Drone(UAS) Video

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Trials of the AeroLion drone have proven out cost benefits through the reduced need for labor intensive inspection and through automation via its auto-detection capabilities.

The IDA was also instrumental in developing the world's first mail delivery drone, creating a real-world smart city application for burgeoning unmanned aerial vehicle technology.

In a partnership with Singapore Post, the IDA helped develop a drone that would deliver mail to the small island of Pulau Ubin. The project was sparked by the imminent retirement of the island's longtime postman which would have created a vacancy difficult for SingPost to fill.

With successful trials completing in 2015, a program of drone-based mail delivery to the island is in the process of being permanently established. The project marked the world's first point-to-point recipient authenticated mail delivery by drone.

And when it comes to the potential rewards for Singapore's forward-thinking shift towards connected technology, the check is definitely in the mail. Or in the drone.

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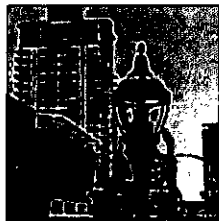


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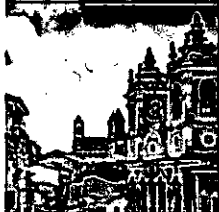
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Singapore moves to second in world ranking of Ease of Doing Business

By Eden Estopace | 2016-11-01

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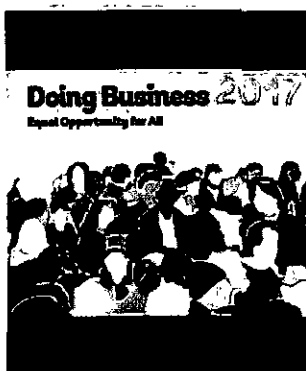
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Singapore moved one rank up, from third last year to second this year (behind New Zealand), in the World Bank Group's annual ranking of 137 economies on the ease of doing business (<http://www.doingbusiness.org>).

Two other economies in the East Asia and Pacific region rank among the top 10 economies globally - Hong Kong SAR, China (fourth) and the Republic of Korea (fifth). However, two economies from the region, Brunei Darussalam (from 97th overall last year to 72nd this year) and Indonesia (from 106th last year to 91st this year), are among this year's top 10 improvers in the world.

The report noted that Indonesia implemented seven reforms during the past year and made starting a business easier by, among other things, abolishing the minimum capital requirement for small and medium-sized enterprises and by encouraging the use of an online system to reserve company names. As a result, it now takes 22 days to start a business in Jakarta, compared with 46.5 days previously.

Brunei, on the other hand, implemented six reforms in the past year; increased the reliability of power supply by introducing an automatic energy management system for the monitoring of outages and the restoration of service. Additionally, businesses can now get electricity faster due to the utility in Brunei Darussalam streamlining the processes of reviewing

applications. As a result, a business can get connected to the grid in 35 days, compared to 56 days previously.

Other top improvers were Kazakhstan, Kenya, Belarus, Serbia, Georgia, Pakistan, the United Arab Emirates (UAE), and Bahrain.

"New reforms tackling multiple barriers to business in the East Asia and Pacific region are the stepping stones to enhance business activity. Despite marked improvements, economies in the region still have improvements to make in order to ease the business climate for local entrepreneurs," said Rita Ramalho, Manager, Doing Business Report.

Globally, a record 137 economies around the world have adopted key reforms that make it easier to start and operate small and medium-sized businesses. Developing countries also carried out more than 75 percent of the 283 reforms in the past year, with Sub-Saharan Africa accounting for over one-quarter of all reforms.

The Ease of Doing Business reports that starting a new business now takes an average of 21 days worldwide, compared with 46 days 10 years ago. Paying taxes in the Philippines, for example, involved 48 payments 10 years ago, compared to 28 now. In Rwanda, the time to register a property transfer has dropped from 370 days a decade ago to 12 days now.

The report also cites research that demonstrates that better performance in Doing Business is, on average, associated with lower levels of income inequality, thereby reducing poverty and boosting shared prosperity.

"Simple rules that are easy to follow are a sign that a government treats its citizens with respect. They yield direct economic benefits - more entrepreneurship; more market opportunities for women; more adherence to the rule of law," said Paul Romer, World Bank Chief Economist and Senior Vice President. "But we should also remember that being treated with respect is something that people value for its own sake and that a government that fails to treat its citizens this way will lose its ability to lead."

Ramalho noted that the overarching goal of Doing Business is to enable entrepreneurship, for women and men, particularly in low and middle-income countries.

"That governments around the world are taking up the challenge of improving the business climate, to enable job creation, is worth celebrating and we look forward to continuing recording the successes we have seen this past year in the years to come," she said.

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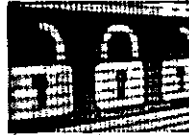
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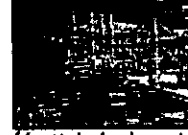


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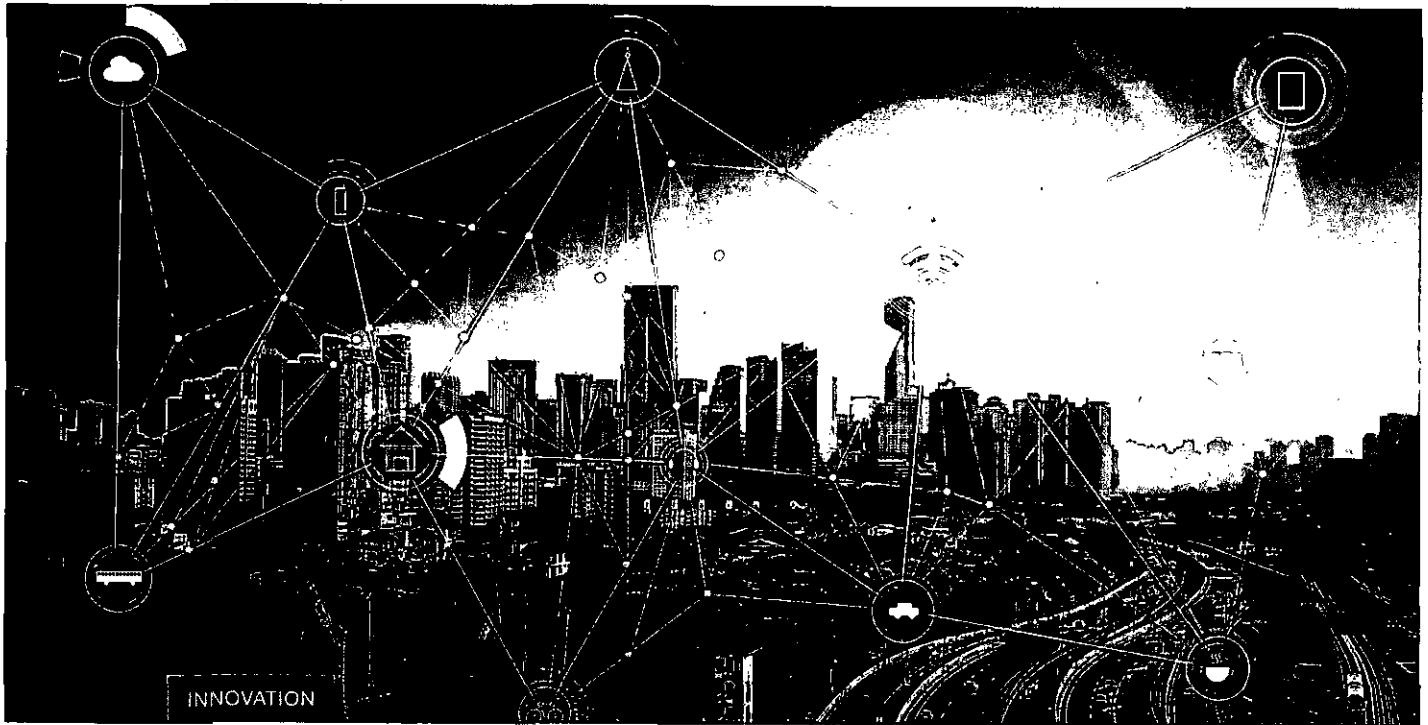
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Smart and green urban living on the horizon

23 November 2016 by Kristie Thong

Cities, where countless opportunities for growth exist, are home to more than half of the world's population today. According to the United Nations, over 50 percent currently lives in urban areas, a figure that is expected to increase to 66 percent by 2050.

With growth comes compromise. While city dwellers in many parts of the booming Asia-Pacific region enjoy the perks of thriving cities, the opportunities often come with stress, noise and discomfort.

In Singapore, a joint collaboration aims to address the key housing and lifestyle challenges of urban areas, and to develop sustainable solutions for greener living in tropical cities.

Made possible by a \$2.25 million contribution to the National University of Singapore (NUS) from real estate developer City Developments Limited (CDL), two new research laboratories – NUS-CDL Smart Green Home and NUS-CDL Tropical Technologies Laboratory (T² Lab) – have been launched to study smart building technologies and sustainable solutions catered for tropical climates.

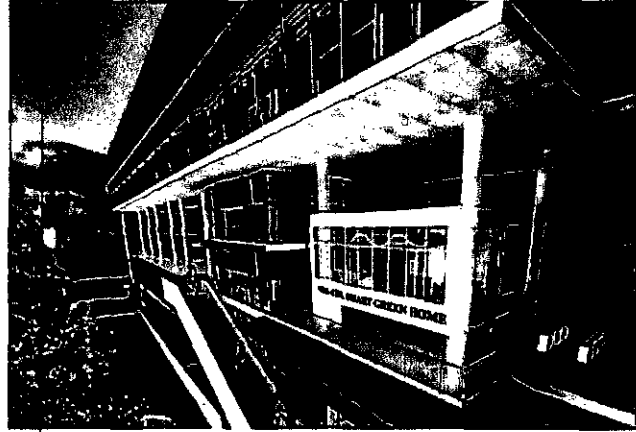
The Smart Green Home will focus on engineering innovations to enhance green living indoors, while the T² Lab will study the different ways in which architectural design and construction can cater to existing and future buildings in Singapore.

CDL CEO, Grant Kelley, says: "By investing in research and development, we aim to unlock the potential to create innovative products and solutions for our future homes, solutions around interiors, facades, and building materials integral to a sustainable, climate-resilient cityscape."

Smart Green Home: the smart home of the future

Situated within a new building at the NUS School of Design and Environment, the Smart Green Home will be built as a 100sqm full-sized home for piloting innovations in a real-life environment. With at least one facade designed for plug-and-play experimentation, the Smart Green Home will look at human-centred smart materials and technologies that can contribute to the existing and future household needs in Singapore.

The Smart Green Home, which is slated to be completed by December 2017, will become an important aspect of Singapore's research and national development, says associate professor Lee Siew Eang of the Department of Building at NUS School of Design and Environment.



Some research projects that will be undertaken include nanotechnology, which when applied to specific materials used in homes, can reduce their need for cleaning and maintenance, enable them to become non-slip thus improving safety, help them resist fungal growth and improve air quality and health, as well as provide acoustic absorption for better comfort.

Researchers will also look at envelope systems – in layman terms, the external wall of the apartment building, which comprises concrete surroundings, windows and doors – that integrate sensor-based controls and analytics based on the needs and comfort of occupants while being energy efficient.

For example, they will be experimenting with integrated systems that can regulate the use of windows automatically and activate air filters when the PSI exceeds 300 outdoors, or close all windows and doors when noise pollution is at its peak.

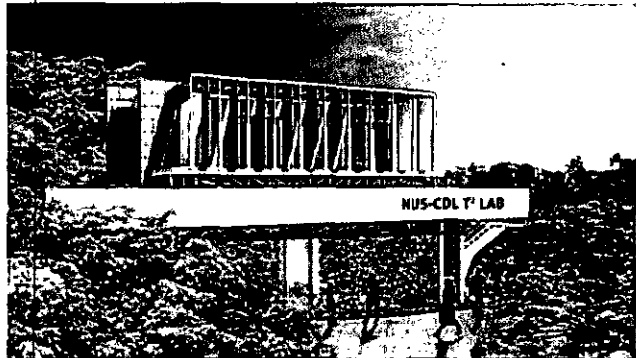
"We will be looking at integrated solutions that meet the multiple functional needs of a home. This may include lighting, thermal comfort, air quality, noise control and more," says Lee.

Research related to sustainable and smart green homes is not new in Singapore. However, having a real-life environment for testing is.

"Research that is conducted in standard laboratories takes a long time to reach the market because technologies and innovations are not showcased in the right environment. Smart Green Home is a platform that can change that, and demonstrate to the industry and public how these systems work and how they can add value to our quality of life," says Lee.

NUS-CDL T² Lab: acclimating to the tropics

Expected to be launched at the end of 2016, the NUS-CDL T² Lab will function as a customisable research space to study new ideas related to healthy green living and future lifestyles in tropical climates.



Run by the NUS Department of Architecture, the design-focused laboratory will be located on the NUS Kent Ridge campus. It will study how passive and active building systems can be used to reduce carbon emissions, with researchers exploring how passive building systems – such as daylight and natural ventilation – can be integrated with active ones, such as air-conditioning.

The lab will also test technologies to examine the adaptability of the Singapore home to population trends such as ageing, safety and security and work-life balance, and identify ways to mitigate environmental impact on the residents.

Lau Siu Kit, senior lecturer from the Department of Architecture at NUS School of Design and Environment, who is involved in the research and development of the lab, explains that the idea for the T² Lab was conceived through two driving forces: the increases in population density and energy in Singapore and the growing awareness and emphasis placed on sustainability and global efforts to combat climate change.

"There is an increase in awareness of sustainable buildings and cities among students at the school. Globally, countries have pledged to limit global temperature rise to below 2 degrees Celsius. The T² Lab comes at a good time, with many opportunities to establish NUS and Singapore as a leader in the area of sustainable living," he explains.

Projects that the T² Lab will be taking on involve experimental studies on integrating building façade design, construction and operations that gel with Singapore's tropical climate. Researchers will study the incorporating of solar panels with building facades, such as roofs and vertical wall surfaces, and assess the feasibility of using sun-shading shutters with solar membranes and panels.

"We want to know more about these technologies and use them well in the tropics, so that this knowledge can be transferred to the industry and general public. It is our hope that our research can benefit people living in Singapore, through energy savings and ecological improvements," adds Lau.

Steady progress

These research initiatives are a much-needed step towards a more sustainable future for Singapore. Apart from the emphasis on smart, greener and healthier living, the capabilities developed by the two NUS-CDL platforms "will also set new benchmarks for the building industry", says CDL's Kelley.

The NUS-CDL Smart Green Home's focus on smart technologies, together with T² Lab's experimental design studies for buildings in the tropics, is a concerted effort to use engineering and design to demonstrate what greener and healthier living in Singapore can be, and to drive industries towards sustainable models for the future.

Lee says: "What we are driving at is not a talking fridge or smart Kettle. We are looking at something basic and intrinsic to the needs of the future of Singapore. When you construct a building, you want it to last for many decades. And if you don't put thought into the construction, you'll have to live with it or tear it down, and it will cost a lot more. We have to go back to the basics."

These research platforms may only be the beginning, but they represent one of the first collaborative local efforts between the public and private sectors in the area of sustainable development. With Singapore recently identifying sustainability as a key focus for public research funding in the next five years, emphasis on sustainable urban solutions is the way to go for the future.

Edited by Kritika Srinivasan and Goh Wei Ting



Smarter lighting sows the seeds for a brighter future

09 November 2016 by Hannah Koh

Demand for Internet of Things (IoT) technology and connected systems solutions has grown strongly in recent years, driven primarily by countries looking to implement smart, sustainable technologies that can enable energy savings, operational efficiencies, and even better health and safety standards for their people.

According to market research company IDC, the market for IoT across Asia-Pacific excluding Japan will grow to a value of US\$583 billion by 2020.

The Asia IoT Business platform, which advocates IoT adoption in business within Southeast Asia, has predicted that IoT spend in the Philippines and Malaysia will reach US\$766.8 million by 2020 and US\$10.5 billion by 2025 respectively.

With such abundant opportunities, it is unsurprising that technology providers and private companies in the region are leading the charge to bring intelligent and connected systems for the home and workplace to the masses.

For one, illumination giant Philips Lighting is leading the way with the launch of their Lighting Application Center (LAC) in Singapore.

The LAC is the company's first showroom and development centre in Southeast Asia featuring Philips' most updated IoT and connected lighting technologies applications, and cost approximately S\$1.75 million to develop.

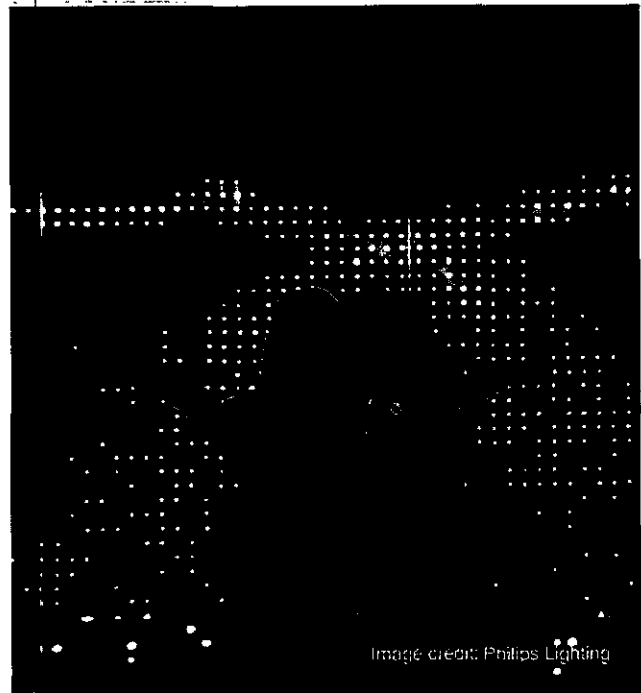


Image credit: Philips Lighting

Located at the Philips APAC regional hub in Singapore, the 492 sq m LAC is divided into various zones mimicking scenes from daily life including an office, a sports stadium, public streets, a hotel room, and a retail outlet. It is more than 80 per cent covered in LED lights that have interactive or connective capabilities, to function effectively as a demonstration and test space to show lights can help cities or companies achieve smarter ways of living and working.

While there are no specific statistics on the demand for connected lighting per se, Philips Lighting predicts a 70 per cent increase in the number of points for lighting fixtures by 2050, based on trends in population growth and urbanisation. This provides opportunities for the installation and use of connected lighting systems as countries worldwide look to adopt new technologies in a bid to become smarter and more sustainable.

Speaking to Future Ready Singapore, Patricia Yim, market leader of Philips Lighting ASEAN Pacific, said that lighting can play a role in smart cities in three main ways: connectivity between devices or systems; improving the lives of users for more efficient and sustainable economies; and the role of innovation when it comes to the lives of people.

Yim explained that Philips Lighting's products, as seen in the LAC, offered a smarter solution because connectivity builds on the basic need for light by giving light fixtures extra functionality.

"It's not connectivity for the sake of connectivity, because light is always needed," she emphasised. "It's about (having) a test bed. If I told you light can communicate, that it can be controlled, you can't imagine it. But take a tour in the LAC and you see possibilities."

Visible light communication, or VLC, is one such technology that is generating a lot of interest. VLC-enabled light fixtures emit frequencies that communicate with a customer's smartphone app to enable the customer to find his or her way around the store or to the desired product, as well as deliver marketing messages such as discounts based on location.

Another technology on display within the LAC is Power-Over-Ethernet (PoE), which lets room occupants control the temperature and light of the room through smartphone apps. It can also sense occupancy levels, lighting usage, and daylight levels within a room and therefore automatically adjust the brightness of the lights for energy savings.

Echoing Yim's sentiments, Singapore Economic Development Board's assistant managing director, Lim Kok Kiang, said at the launch of the LAC: "This investment by Philips Lighting in the LAC is aligned with Singapore's Smart Nation thrust. We look forward to the development of integrated lighting solutions, enabled by IoT that can be deployed in applications spanning from education to logistics."

"This centre is testament to Singapore's position as an ideal living lab where companies can develop, test and commercialise smart and sustainable urban solutions before scaling up for Asia and beyond."

Indeed, the aforementioned VLC and PoE technologies have found viable test sites and applications within Singapore.

Real estate firm CapitaLand and Philips Lighting are teaming up for four pilots in a mall belonging to the former.

The first pilot will test Philips' VLC technology as a means of targeted marketing and to help shoppers find their way around the outlet. The second involves the cloud-based Philips ActiveSite to remotely control the management and maintenance of facade lighting from anywhere beyond the building's control room.

PoE technology stars in the third pilot by automatically adjusting in-office lighting based on daylight availability and occupancy levels. It also gives office workers control of workspace lighting through a smartphone app.

The fourth involves the concept of a green parking system, in which lights are activated and deliver illumination through motion sensors to save energy while ensuring a necessary level of lighting.

In a separate collaboration, Philips Lighting will also be installing its Philips GreenWarehouse light system at Toll Global Logistics' new six-storey, 100,000 sq m storage facility in Tuas called Toll City. The system harnesses PoE technology to function and is expected to reduce Toll City's energy consumption by at least 50 per cent as well as require fewer instances of maintenance.

Furthermore, in the spirit of fostering the next generation of innovative minds, Philips Lighting is also partnering Admiralty Secondary School and Temasek Polytechnic to seek new ways to use innovative lighting.

According to Eric Rondolat, CEO of Philips Lighting, Singapore's openness to innovative technologies explains the company's choice to open the LAC in Singapore.

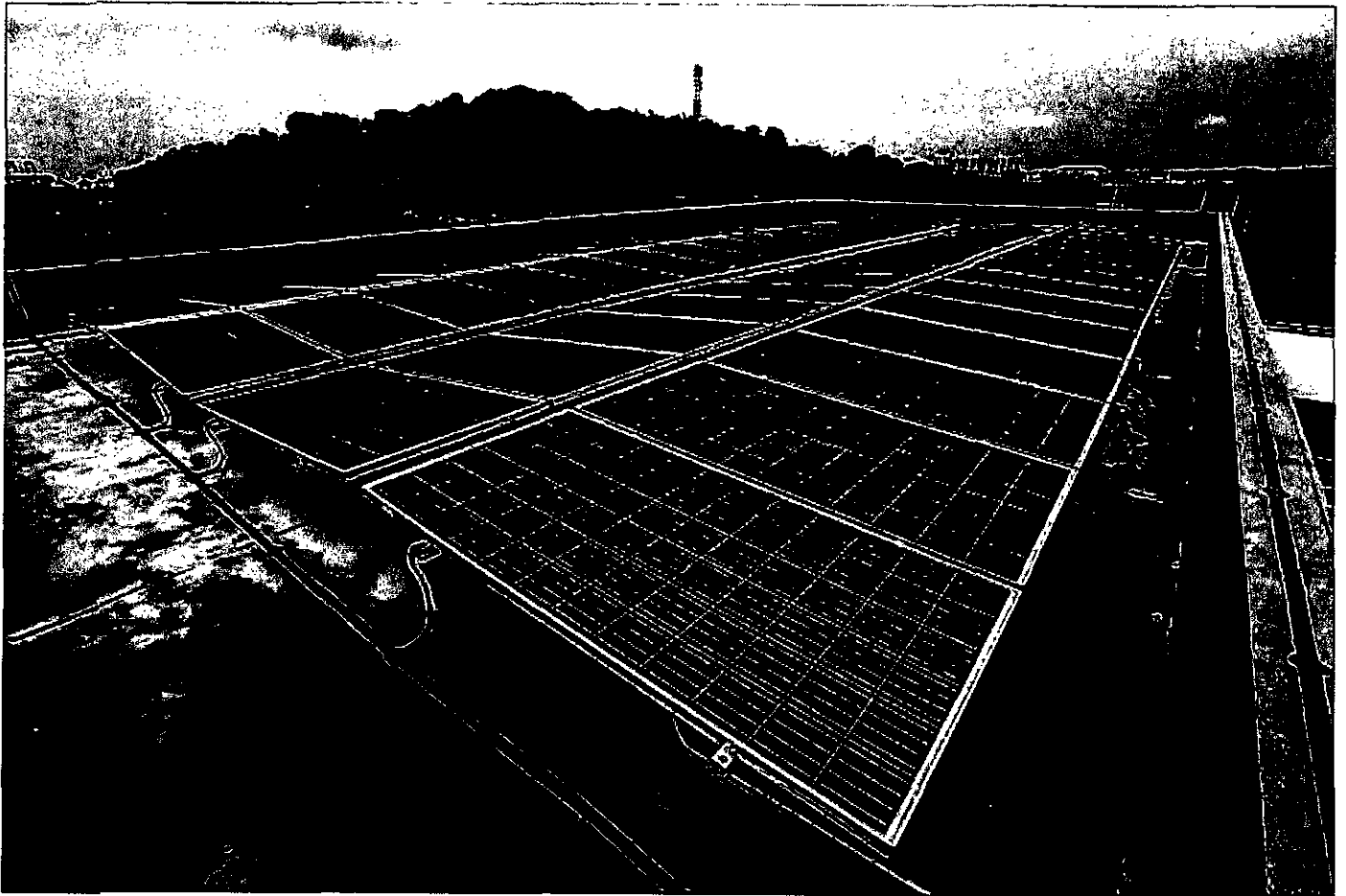
Speaking at the launch, Rondolet said: "When we talk about innovation, we need to find the hotspots of the world, where we feel at ease to display and develop our innovation, and this is why we are in Singapore today."

"Singapore is a very important place for us because it is a place where technology's important, where ambition is paramount, and this is a country that has a stated goal to become the world's No. 1 Smart Nation."

Edited by Jessica Cheam and Tan Yixuan

THE STRAITS TIMES

Spike in number of solar panel installations



Solar panels on the rooftop of the Sentosa Fire Station supplies enough electricity to meet at least six per cent of the station's total energy consumption. PHOTO: ST FILE

🕒 PUBLISHED OCT 17, 2016, 5:00 AM SGT

Experts say Singapore is on track to having solar energy meet 5% of its power needs by 2020

✉ Carolyn Khew (mailto:ccarolyn@sph.com.sg)

The sun is now meeting the electricity needs of the equivalent of 26,000 four-room HDB flats, for over a year, in Singapore.

There has been a sharp rise in the number of solar panel installations in the first half of this year, bringing the total to 1,409. This is almost double that a year ago.

In 2008, when the Government started test-bedding solar panels on HDB blocks, there were just 30 solar panel installations.

Experts say solar energy now accounts for 1.5 per cent of Singapore's total electricity needs, or about 100 megawatt peak (MWp).

It is on track to meeting the government target of 5 per cent by 2020.

The hope is that solar energy will help to reduce Singapore's reliance on natural gas, which meets 95 per cent of its electricity needs.

Other viable alternative fuel sources - namely, nuclear - remain controversial though the Government has not ruled it out. The wind speed here is not sufficient to produce energy and Singapore does not have river systems with fast-flowing water throughout the year.



Related Story

Bukit Timah penthouse gets power from the sun

Nanyang Technological University's Energy Research Institute executive director Subodh Mhaisalkar said the pace of solar panel installations this year has been "rapid".

"Even though the cost of fossil fuels has dropped significantly, the continuing cost reductions and increased efficiency of solar panels continue to strengthen the viability of solar cell installations," he said. "The target of 350MWp (by 2020) is definitely within reach."

New and larger installations, such as at Jurong Port with a successful completion of a 9.5MWp solar energy generation facility, substantially contributed to the progress this year, said the Energy Market Authority (EMA).

Currently, non-residential users contribute to the bulk of solar energy here. This includes the HDB, now the largest player in the installation of solar panels in Singapore.

By the end of this year, there will be about 900 HDB blocks installed with solar panels. This is more than double the 400 blocks installed with solar panels last year, said the HDB and the Economic Development Board in a statement yesterday.

Towns where solar panels were recently installed include Tampines, Sembawang and Marine Parade. The solar energy is used to power common amenities such as lifts and lighting in common areas.

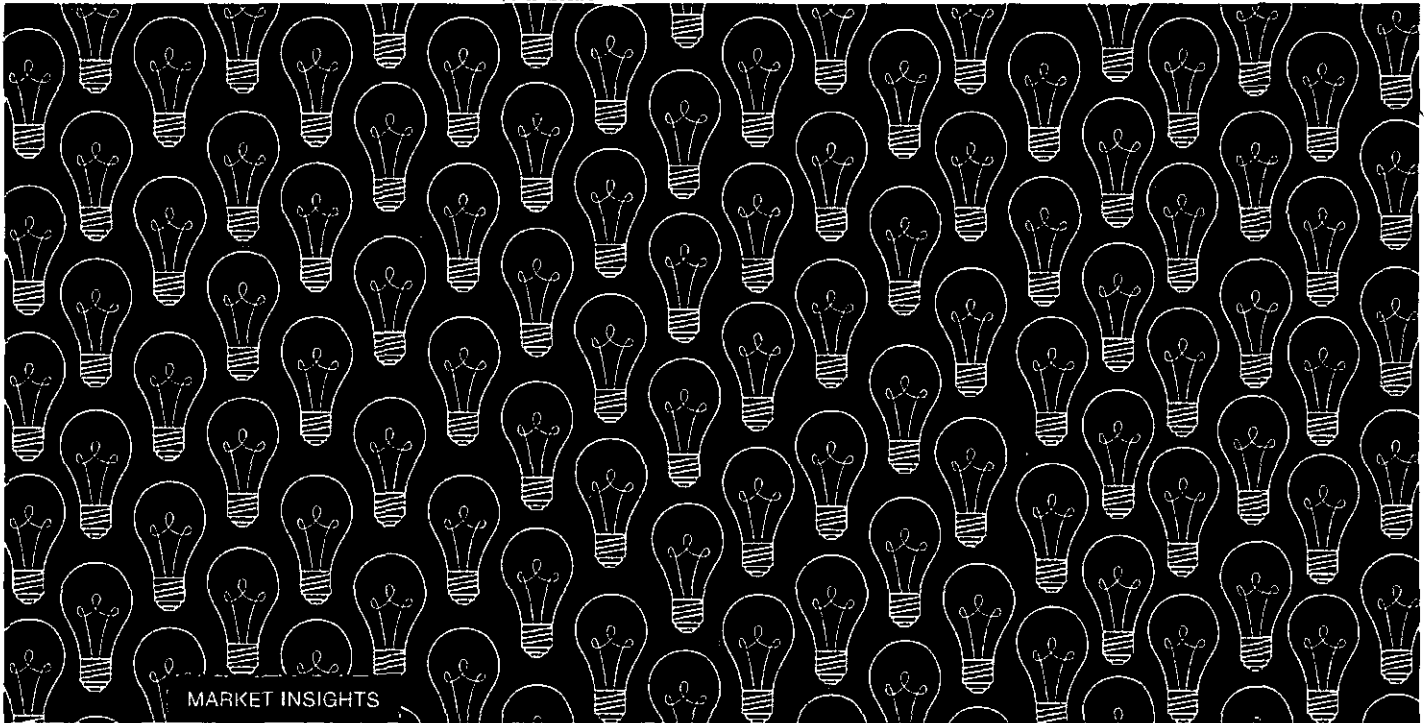
Other sites, including Bishan Fire Station and the new Prisons headquarters, are expected to be fitted with solar panels by 2019.

Over the years, the non-residential sector has experienced faster solar adoption than the residential sector comprising private homes, said the EMA.

Cost remains one of the obstacles, said Dr Stephen Tay, head of the National Solarisation Centre at the Solar Energy Research Institute of Singapore. "Due to economies of scale, large rooftop systems can be installed at lower cost and, hence, are more economical compared with smaller systems," he said.

Nonetheless, he is optimistic that residential users will start to tap solar energy as the cost of solar panels is expected to drop further.

To encourage the adoption of solar energy, the EMA is also looking at research and development to address challenges such as cloud cover.



Strong IP rights regime a boon for businesses

28 November 2016 by Liew Hanqing

As businesses look to innovation to continue growing and thriving in an increasingly competitive marketplace, a sound IP protection strategy is essential for ensuring these plans are watertight. This is especially so for companies looking to expand their footprint in Asia, a region in which IP protection still lags behind countries in the West.

The 2015 Intellectual Property Index published by the Global Intellectual Property Centre found that IP protection regimes in Asean as a whole were generally lacklustre, with a couple of exceptions: Singapore and Malaysia led the pack with 25.38 and 14.62 out of a possible 30, while countries like Indonesia and Vietnam trailed, with 8.61 and 7.84 respectively.

A far cry from its erstwhile dubious honour of being the world's "piracy capital", as a former US senator put it in the 80s, Singapore now ranks among the world's best in terms of intellectual property rights. The World Economic Forum (WEF)'s Global Competitiveness Report 2014-2015 ranked the country top in Asia, and second in the world for intellectual property protection – the fourth consecutive time the country has retained these placings.

Leaders in the IP protection arena enjoy a clear advantage: a commitment to the protection of IP rights contributes to a good business environment which supports innovation. Singapore's FDI inflows have risen not only in quantity, but in quality: a strong business environment has attracted top multinationals to Singapore across various industries, including the life sciences, digital media and manufacturing. MNCs with a presence in Singapore include pharmaceutical giants Pfizer and Novartis, media giants Electronic Arts and Lucasfilm, as well as automotive giants Continental and Rolls Royce – and the list is growing.

There are two main reasons why strong IP protection laws are essential for businesses to thrive. IP protection enables companies to retain a competitive advantage in the long run by protecting trade secrets and know-how, while copyrights enable firms to protect key creative works.

Keeping ahead of the competition

Singapore's strong IP protection regime has been a boon for businesses which frequently need to develop proprietary technologies to stay ahead of their closest competitors.

One such company is food giant Nestlé, whose R&D spokesman said Singapore's strong IP rights regime has bolstered the company's global R&D efforts. Said the spokesman: "Our Singapore Nestlé R&D Center has been developing proprietary technology on solid state fermentation of food materials since the early 80s and is protected by at least 8 patents."

The spokesman added that a robust IP rights regime is crucial in encouraging innovation, creativity and progress in both industry and commerce in Singapore. "Developing strong IP protection is therefore very important for Nestlé to develop and apply proprietary technologies, such as biotransformation, for food manufacturing in the region and globally," the spokesman said.

Others, such as food giant Mead Johnson, have invested heavily in the country in no small part due to its strong IP protection. The company set up a US\$325 million industrial manufacturing plant in Singapore – the largest capital spending in the company's 100-year history. Charles Urbain, Mead Johnson's President – Asia and Europe, said that the additional capacity and important technologies and capabilities in the region would help the company keep its competitive advantage. Urbain added that Singapore was chosen for its strong IP protection, high-quality production and well-developed infrastructure.

Procter & Gamble, a major producer of household and personal care products, also invested US\$192 million in the P&G Innovation Centre in Singapore – one of two such centres in Asia. The company also inked an agreement with Singapore's Agency for Science, Technology and Research (A*STAR), allowing the company to further leverage the country's strong research and development capabilities.

The country's innovation-friendly business environment also led P&G to choose Singapore as the site for its first perfume manufacturing facility in Asia, which features state-of-the-art features such as advanced real-time inventory and production control systems.

P&G's then-president for Asia, Deb Henretta said at the time that Singapore's pro-business environment and strong IP protection rights were key in the decision to locate the facility in Singapore.

Indeed, a sound IP strategy – coupled with a supportive environment – is essential, as Swiss shoe company Masai Group International (which was acquired by a Singapore firm in 2012) has learnt. The company, which has developed shoe technology that involves simulating walking barefoot on soft earth, has struggled significantly with protecting its technology from being ripped off.

Masai's CEO Andy Chaw told the Straits Times in an interview that protecting his IP was "a constant battle", but that the company has managed to get financing to defend its IP, invest in R&D, and promote its brand. The loan was a result of the Intellectual Property Office of Singapore's IP Financing Scheme, which allows companies with rich IP to raise funds using their patents, trademarks or copyrights as collateral.

Those to whom intellectual property is an afterthought should think again – IP protection is the top challenge for multinationals operating out of other Asian regions, particularly China. The US government estimated that IP thefts from US-headquartered organisations in 2013 resulted in a whopping US\$300 billion in lost business, while European businesses suffered a loss in potential profits of 20 percent.

Singapore firm Trek 2000, credited with inventing the ThumbDrive storage device, learnt this the hard way. The product was launched while its patent was still pending, and numerous similar devices flooded the market soon after. Herrn Tan, Trek 2000's CEO, told the Straits Times that the ThumbDrive fiasco was the company's single biggest mistake. Since then, the company has made IP protection a priority – and now owns over 600 patents.

Others looking to thrive in Asia would do well to follow suit. As businesses move forward in an age of continuous innovation, a sound intellectual property protection strategy – particularly in a business environment that supports and advocates for IP protection – is essential for businesses who need to develop innovative products for an increasingly discerning consumer base. This is possibly the only way companies can stay ahead, keeping a competitive advantage over their closest competitors.

Edited by Tan Yi Xuan



View internet security as a business challenge: RSA

03 November 2016 by Kristie Thong

Back in 2014, Sony suffered a major cybersecurity breach involving the loss of data, which included previously unreleased films, private customer information and sensitive employee documents leaked to the Internet. This breach dominated global news headlines, and while various sources revealed it was nowhere close to the magnitude of other online attacks that year, it shook the confidence of consumers worldwide and showed how vulnerable organisations were to cyber threats.

Targeted cyberattacks are not a new thing. Malicious software (or malware), phishing scams, and denial-of-service (DoS) attacks (where a machine or network is temporarily or indefinitely disrupted) have been ongoing since the rise of the internet over two decades ago. But such threats grow exponentially as individuals and enterprises become increasingly connected.

According to research firm IDC, the number of devices connected to the internet will reach 30 billion in 2020, a boost from an estimated 13 billion now. The number of new cloud-based solutions will also be expected to triple over the next four to five years. The enhanced connectivity, coupled with increased sophistication of hacking tools, leaves much room for security breaches.

A recent PwC global survey – which polled more than 10,000 C-suite executives and information security professionals worldwide – revealed 38 percent more security incidents detected in 2015 compared to the year before. Incidents of intellectual property theft also increased 56 percent the same year.

Asia's technology boom

At the same time, IT spend is only slated to grow over the next decade, and much of this investment will be seen in Asia. Enterprise IT expenditure in Southeast Asia is expected to reach US\$62 billion by 2018, with Singapore, Malaysia, Indonesia and Thailand accounting for 80 per cent of the spend.

"There is a significant adoption of technology in Asian markets," says Zulfikar Ramzan, chief technology officer of RSA, a Dell Technologies Business, which has a presence in more than 100 countries. "Asia was quicker to adopt mobile Internet and smartphones when consumers in



the US were still using flip phones and basic text messaging."

"It's an accelerating market. And when you look at any form of technological evolution, there's also a co-evolution of security and risk," he adds.

This quicker uptake in technology makes it even more critical for MNCs in Asia to look at cybersecurity measures, at a time when the region experiences widespread connectivity that is only heading north.

The business language of risk

Many major breaches across the world simply start with a seemingly innocuous phishing message that leads to greater, widespread damage, says Ramzan.

"We're not just dealing with random people hacking into websites and networks for fun. Hackers today are professionals. It's what they do for a living. They spend a lot of effort on achieving, and they understand their objectives."

Besides creating a climate of insecurity, cyberattacks have significant implications on businesses. There are threats to business continuity, especially in cases when operations and revenues generated are directly related to an organisation's connectivity. Many organisations rely on round-the-clock monitoring systems, data centres, server networks and e-commerce platforms that require specific security infrastructure. A breach or cyberattack can have serious consequences.

There are also threats involving the loss of critical intellectual property and sensitive data, all of which can affect brand reputation and image.

"Companies with sensitive information about their customers, suppliers and partners in their databases will worry about what happens if that information is stolen," says Ramzan.

Data loss can also have legal implications with severe monetary penalties if the data is misplaced. "Health information is considered very confidential. If a hospital loses health data, someone is going to be fined very heavily."

As breaches can impact enterprises in so many different ways, cybersecurity should not be viewed as a technological issue, but a business one.

"Security is a mix of technology, business and risk. Companies have to consider all of that beyond just the technical elements. So when you think about what to do from a cybersecurity perspective, you have to think of everything in the language of risk and business impact," explains Ramzan.

Invest in detection and response

According to Ramzan, the key is to look at these cyber threats more holistically, and not focus on the technical aspects alone.

"Every company or security professional has to express key objectives in terms of business goals and not technology goals. In other words, you are not trying to mitigate the risk of a DoS attack; what you're trying to mitigate is the risk of losing business continuity. You're not trying to mitigate against an information-stealing piece of malware; you're trying to mitigate against the possibility of intellectual property being stolen," he says.

Only by pinpointing an enterprise's business objectives can security professionals then work backwards to identify the type of technical infrastructure needed to meet those objectives.

While it can be daunting to have a hacker poking around in a computer or network, Ramzan recommends investing less in preventive or perimeter-based solutions, and more in detection and response.

"Think of this as an analogy to a bank. The objective of a robber is not to simply enter; it is to get the money inside and leave. Security measures inside the bank would be more effective than a secure front door. In the same way, a cyber attacker does not hack into a computer or network

just to compromise it; the objective is to get useful or important data. In many instances where a hacker might get through, companies that successfully prevent hackers from meeting their objectives would have achieved their business goals," he says.

Four ways to mitigate cyber risks

The 2016 RSA Cybersecurity Poverty Index – which helped respondents in APJ self-assess the maturity of their security programmes – revealed gaps that leave organisations vulnerable to the risk of cyber incidents. Using the NIST Cybersecurity Framework as the measuring stick, the index revealed 70 per cent of APJ-based respondents experienced cyber incidents that negatively impacted business operations in the past year. It also showed enterprises often delay investing in cybersecurity until they have been hit by a major incident.

"Some companies and industries have higher or lower thresholds for what they care about. Financial institutions will care about cybersecurity because there is a lot of money on the line. So many of them understand the value of in-house training and specialist roles, and it justifies hiring security staff. Other companies may not have the same objectives or staff numbers, and prefer to outsource it to a partner," says Ramzan.

Organisations should thus look at mitigating the risk of cyber attacks by focusing on four key areas: monitoring capabilities; strong identity solutions; cataloguing assets; and data back-ups.

He says attacks involving the risk of reputation loss are more prevalent in Asia, often through ransom ware threats where money is demanded after a malicious software has blocked access. However, ransom ware is often a symptom of a compromised system, where leverage is gained after compromising a system.

"Organisations should have strong monitoring capabilities at the network and endpoint levels, so that it's easier to proactively identify threats and compromised systems. Can we see how these services are being used? Can we make sure they aren't used incorrectly or in an unexpected way?"

Human beings are often the weakest link in cybersecurity, making user identity a linchpin in safeguarding against potential breaches.

Strong identity solutions with multi-factor authentication can prevent hackers from accessing critical resources and encrypting the underlying data. This is similar to the preventive measures taken by Google products and online banking services, where users have to provide added information such as a mobile number or passcode sent to a second source to confirm the authenticity of the log-in. SingPass, an online account management system for access to Singapore Government e-services, has also implemented a two-factor authentication (commonly known as 2FA) for all users to ensure accounts remain secure.

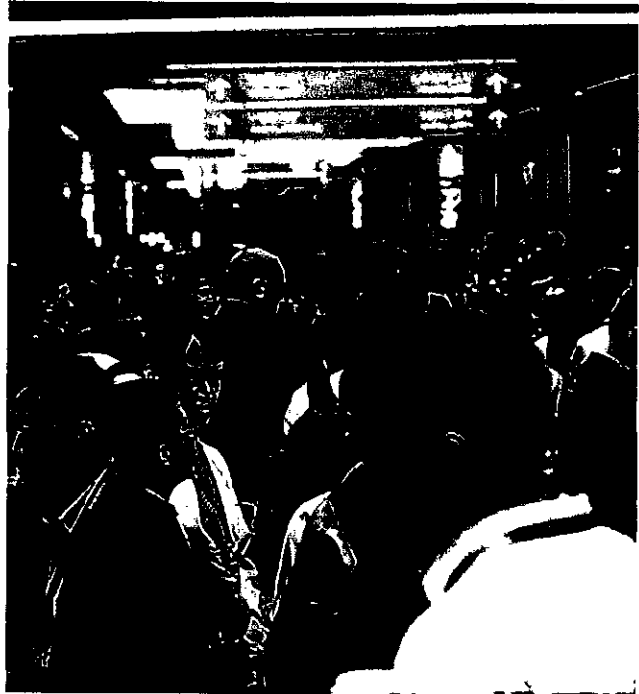
Such multi-factor authentication can be applied to data hosted on cloud services and on-premise applications that organisations rely on, so as to limit the access attackers will have:

"We also have to look at the visibility and access into cloud platforms and other systems. An employee should not have two different methods of access; there should be only one system that can identify the user and granted access level," asks Ramzan.

Organisations should catalogue their assets so that they can identify those that contain critical data. The impact of ransom ware incidents varies depending on the kind of asset compromised.

"Without knowledge of this information, it is difficult for security teams to determine the business impact of an incident," he says.

Finally, backing up data is always a good idea. "While doing so may not always work because back-ups can get corrupted or may otherwise fail to be restored, this measure can prove useful to organisations."



Threats to internet security can no longer be ignored. By identifying business objectives and investing strategically in technical infrastructure, organisations in Asia can then pursue opportunities and continuity safely in an increasingly connected business environment.

Edited by Kritika Srinivasan and Goh Wei Ting



Singapore

2,000 PMET jobs to be created with new food manufacturing sector roadmap

The food manufacturing industry plays a significant role in Singapore's economy, contributing S\$3.7 billion to Singapore's GDP and employing about 40,000 workers in 2015.



18 Nov 2016 06:00PM

SINGAPORE: A new industry transformation map to develop Singapore into the leading food and nutrition hub in Asia was launched on Friday (Nov 18), and it aims to create about 2,000 new jobs for professionals, managers, executives and technicians (PMETs) for the sector from now till 2020.

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According to a SPRING Singapore press release, the roadmap aims to hit a 4.5 per cent compound annual growth rate in productivity. The industry transformation map is one of the 23 roadmaps to change Singapore's key industries, and the fifth to be rolled out, it said.

The food manufacturing industry plays a significant role in Singapore's economy, with more than half of its output being exported to countries such as Japan and China. In 2015, the industry contributed S\$3.7 billion to Singapore's GDP and employed about 40,000 workers, the agency said.

In terms of strengthening the ecosystem for food innovation and research and development (R&D), a Food Innovation Cluster will be set up. It will encourage the development and commercialisation of new products and the establishment of shared R&D and production facilities.

One example is the High Pressure Processing (HPP) resource sharing facility that will be launched in the second half of 2017. The facility gives companies access to the advanced technology without the need for them to invest in the equipment, SPRING Singapore said.

Expansion into the region and globally continues to be a key thrust for the roadmap, with the agency saying it worked closely with the Singapore Food Manufacturers' Association (SFMA) to launch an online Singapore shop, Tasty Singapore, on China's top e-commerce platforms, Tmall and JD.com.

Since then, more than 130 of Singapore food products offered by 27 companies have been listed on Tmall since July 2015, it added.

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As for enhancing the existing talent pool, SPRING Singapore, SkillsFuture Singapore and Workforce Singapore, in close consultation with the industry and key stakeholders, will co-develop a Skills Framework to provide a common reference of current and emerging skills required for individuals, employers, and education and training providers for the Food Manufacturing industry.

The framework is expected to be completed by end of 2017, the agency said.

Source: CNA/kk

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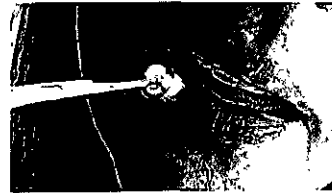
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A new collaborative vision to solve Asia's water woes

07 December 2016 by Hannah Koh

"If you want to go quickly, go alone. If you want to go far, go together", goes the oft-cited African proverb.

The complex realities of today's global issues like water security and trafficking are demanding a more multilateral approach to their solution, and are changing the nature of how entities of different sectors collaborate.

The Asia Public-Private Partnerships Hub (Asia P3 Hub) is a newly-launched incubator that is riding this wave of change to alleviate Asia's water woes and pave the path for more collaborative action to meet the region's needs.

Launched in July under the auspice of faith-based non-governmental organisation (NGO) World Vision International, the Asia P3 Hub adopts a cross-sector partnership approach to bring together companies, start-ups, non-profit organisations, and the government to develop market-driven solutions to solve the issue of water in Asia.

Based in Singapore, the incubator is headed by executive director Christy Davis, who is also World Vision's director of partnerships development for South Asia & Pacific Region.

It is the first programme of its kind for World Vision, which has identified multi-sector partnerships as part of its global strategy for the future because of the "complexity of the problems we're experiencing on the ground" and the shifting landscape of donor funding.

Davis said that World Vision has seen donors become more interested in contributing to coalitions and alliances rather than making traditional "bilateral" donations. She explained: "Partnerships and collaboration facilitates scaling of solutions. Donors and investors are increasingly interested in leveraging their investment, and contributing to a partnership or a coalition is one way this can happen."

Joint efforts also have the potential to create a multiplier effect and therefore create a "more sustainable positive impact on communities we serve and partner with".

Speaking to Future Ready Singapore, Davis said the idea for an incubation hub that would meet social and business objectives grew out of conversations with the Economic Development Board of Singapore back in November 2014 on turning cross-sector partnerships into concrete action.

The Asia P3 Hub will focus on delivering partnerships brokered between businesses, researchers, donors and development organisations engaged in the same mission to improve water access in Asia through "combinatorial innovation", which Davis defines as putting together tried and tested ideas in new ways for new solutions.

Furthermore, it will also document the stories of its processes and results. "So it's two-fold, where you have lives changed for the better - and that's the bottom line for us - and this amazing journey to travel until we get to that point, and others can learn from us," said Davis.

Water world

Water crises were named a global risk of highest concern for the next 10 years at the World Economic Forum in Davos earlier this year. Currently, some 630 million people in Asia do not have access to water.

For the duration of its three-year pilot period ending June 2019, the Asia P3 Hub will focus on the area of water, sanitation and hygiene in six core Asian countries - Bangladesh, Cambodia, India, Indonesia, Myanmar, and the Philippines.

Davis said water was an "obvious" choice given the fact that World Vision is the NGO with the largest water portfolio in the world, having worked for more than 60 years with communities, governments, and local partners in 19 Asian countries. As a global hydro hub, Singapore has "massive resources" for research and development, and almost 200 companies in the water value chain, said Davis.

The Economic Development Board (EDB) has acted as an "enabler" for the hub, and through EDB's facilitation, the Asia P3 Hub has grown its community of interested partners to 450 even before hitting six months of operations. Innovative local water firm Hyflux has been an advisor, while PUB counts as one of the hub's partners.

At the moment, the incubator is involved in a "couple of dozen" ongoing conversations for potential collaboration, said Davis. These include Procter & Gamble, Kohler, EDB, Singapore Management University, and start-up WaterROAM that produces the ROAMfilter Lite, a portable water filtration system that has been used in post-disaster relief.

As a "living lab", Singapore is also conducive to the creation and deployment of new technologies. According to WaterROAM chief executive David Pong: "Singapore is a safe sandbox for start-ups to create innovative solutions that tackle bigger global issues. Being part of Asia P3 Hub allows us to work with larger public and private organisations driven by the same goal, to create new market-driven solutions for the problems around us."

The road ahead

The Asia P3 Hub has its work cut out for it.

Until the end of the year, the incubator will be working to build up operational and participation models, hire a core team and an advisory committee, find new office space, and set up its website. "We're also working on our storytelling and how we're going to measure success," shared Davis.

In the meantime, Davis said the hub faces a few challenges in the short term including staying focused on its core competencies and six core countries. "I can already see that people come in and go 'I've got this idea, can you help us?' And sometimes it's a wonderful idea, but we're going to need to stick with our scope."





Another challenge is securing quick wins that will motivate the team and give it momentum. Davis said her answer to this is to start at a smaller scaler with familiar partners to fine tune processes before scaling up.

The third challenge is to build visibility through a website and community engagement, for which the Asia P3 Hub is "still getting mechanics in place", admitted Davis.

Ultimately, as it grows out of Singapore to tackle the region's problems, the Asia P3 Hub could be a trailblazer for NGOs and private companies that are looking to develop cross-sector partnerships for common purposes.

Said Davis: "There's little out there (about working cross-sector partnership models) so we want to create something, track it, and be very transparent as we go along, so others who follow or want to replicate this can look at what didn't work and learn from us."

Edited by Jessica Cheam and Tan Yi Xuan

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Asia Wind Energy Association launched in Singapore

Monday, December 19, 2016 - 05:50

ANDREA SOH ✉ sandrea@sph.com.sg 🐦 @AndreaSohBT
Singapore

EXECUTIVES from the wind energy sector have banded together to set up an Asian industry association in Singapore to promote the growth of wind energy in the Asia-Pacific.

The Asia Wind Energy Association (AsiaWEA) will coordinate international policy, communications, research and analysis, and will also offer networking and learning opportunities throughout the region, including North-east Asia, Australia and New Zealand.

"The market is actually growing quite rapidly in the different countries (in Asia) but there's no one platform where developers, equipment suppliers and financial institutions can come together", unlike in the US or Europe, Edgare Kerkwijk, one of the association's founders and board members, told The Business Times.

"Here in Asia all the countries have their own ideas about what will be good policy for the wind sector, and we see that a lot more coordination needs to be done. Certainly a lot of training and support can be done."

SEE ALSO: Saudi Arabia shortlists 25 bidders for major wind plant

The association - which says it has already received strong support from industry players such as turbine suppliers, developers and investors - is planning several activities such as quarterly membership gatherings and industry-specific seminars for 2017.

Also in the pipeline is the inaugural annual Asia Wind Energy Conference during the Singapore International Energy Week in October 2017, which will be the first large-scale regional event for the wind industry, said Mr Kerkwijk, who is also the managing director of Asia Green Capital Partners, a renewable energy developer.

The association will be based in Singapore despite the lack of wind energy in the country as there are many players that have their regional headquarters here. While China has the largest wind sector within the Asia-Pacific, the market there is quite "mature and saturated", and most of the market opportunities lie in countries such as Vietnam, Bangladesh, the Philippines and Taiwan, he added.

The Economic Development Board said the establishment of AsiaWEA in Singapore is aligned with the country's position as the leading clean energy hub in Asia. Its executive director for clean technology (clean-tech), Goh Chee Kiong, noted that companies ranging from developers such as Sembcorp Industries and Blue Circle to equipment firms such as Vestas and Siemens have a presence here.

"Singapore's attractiveness stems from its strong foundational R&D competencies, favourable intellectual property protection and ability to attract international talent," said Mr Goh. "One area of growth is in harnessing digital and Internet of Things technologies to provide asset management and remote monitoring of renewable energy plants in Asia."

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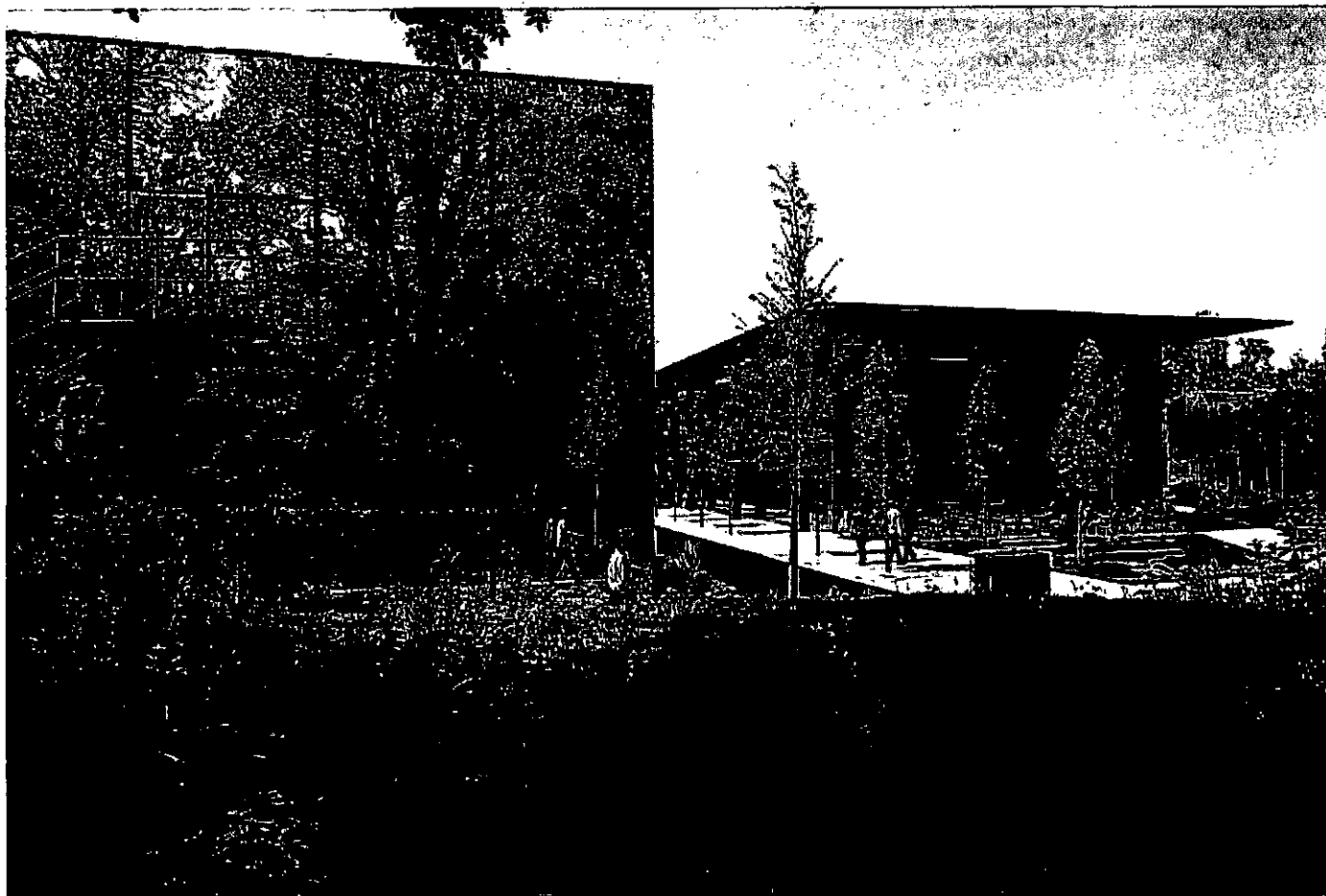
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THE STRAITS TIMES

Dyson to expand in Singapore with new tech centre



The recently expanded Dyson Campus in Malmesbury spans 23ha and has 129 state-of-the-art laboratories. Dyson has had a presence in Singapore since 2007 with facilities in Alexandra Technopark, West Park and Fusionopolis. Details of the new centre will be announced next year. PHOTO: DYSON

Ⓢ PUBLISHED DEC 7, 2016, 5:00 AM SGT | UPDATED DEC 12, 2016, 4:49 PM

Company also aims to grow engineering team here by 50% over the next few years

Chia Yan Min Economics Correspondent (mailto:chiaym@sph.com.sg)

Dyson, the company best known for its upscale vacuum cleaners and sleek fans, is opening a technology centre here next year.

The family-owned British firm also intends to grow its engineering team in Singapore by 50 per cent over the next few years.

Dyson has had a presence here since 2007 and now has about 1,300 employees - nearly half of whom are engineers. The staff are spread across three sites: Alexandra Technopark, a high-tech motors manufacturing facility in West Park and a commercial office at Fusionopolis.

More details about the new technology centre - including its location - will be announced next year, the company said.

"Singapore is much more than just the site where all our advanced Dyson digital motors are manufactured... We have plans for our engineers here to step up in developing the next frontier of Dyson technology, in close collaboration with our team in the United Kingdom," said Mr Scott Maguire, the company's global engineering director.

"As to what kinds of technology we're working on, let's just say we're not limited by our imagination. We're constantly looking for new and better solutions to solve age-old problems. People in Singapore will simply have to wait and see what we have up our sleeves."

FORMIDABLE PARTNERSHIP

Singapore and Dyson share a similar mindset - that of the underdog - which has created a formidable partnership... This forward-thinking approach has made Singapore a hotbed of many popular global technologies companies and an attractive destination for cutting-edge technology to be developed.

DYSON



The company's growth plans here come after it announced the expansion of its existing campus in Britain, which added 129 research laboratories and collaborative spaces to support its technology pipeline.

"Singapore and Dyson share a similar mindset - that of the underdog - which has created a formidable partnership," the company said in a statement. "This forward-thinking approach has made Singapore a hotbed of many popular global technologies companies and an attractive destination for cutting-edge technology to be developed."

Another key contributing factor behind Dyson's decision to ramp up its Singapore presence is the quality and availability of engineering talent, the company said.

It plans to hire more young engineers who are fresh out of university, including those with no prior experience.

"We realise many may scratch their heads as to why we believe in hiring young people," said Mr Maguire, who noted that the average age of the firm's engineers is 26. "We find that they aren't bogged down by the notion of right or wrong. It's completely okay to try, and fail, and fix, and fail again. The important thing is to learn from mistakes - something which our graduate engineers are very adept at."

The company has its roots in a village called Malmesbury, where inventor James Dyson developed the cyclone technology now used in millions of vacuum cleaners. It has come a long way since - Dyson recorded revenue of £1.7 billion (\$3 billion) last year. The Asia-Pacific was a big driver behind this, growing 50 per cent to become Dyson's leading region last year.

The company hires over 3,000 engineers and scientists globally and spends £5 million a week on research, design and development.

Correction note: This story has been updated to reflect the accurate number of employees hired by Dyson.



News

TODAY Online - Singapore students top global benchmarking survey for maths, science again

Not only are they doing well in these subjects, but compared with their global peers.

30 Nov 2016 | By TODAY Online



primary school kids 1_800500 - computers

Singapore students have once again proven their prowess in maths and science by topping the charts in an international benchmarking study released on Tuesday (Nov 29).

Not only are they doing well in these subjects, but compared with their global peers, Singapore pupils also have a more positive attitude towards and enjoy maths and science, proving that the Education Ministry's (MOE) efforts to reduce content and allow students to learn in a more active way are paying off.

In the latest Trends in International Mathematics and Science Study (Timms), Primary Four and Secondary Two students in Singapore outperformed their peers from 63 other countries in maths and science.

The Republic's students have consistently done well in the study, conducted here every four years since 1995, although the last time Singapore topped all four rankings was in 2003.

MOE said the latest results also affirmed a trend that students today are better able to apply knowledge and skills, and solve non-routine maths and science problems.

Comparing 2015's results with 1995's, the Primary Four pupils' average score of their ability to understand, apply and reason went up from 590 to 618 in maths, and from 523 to 590 in science, while Secondary Two students' score rose from 609 to 621 in maths, and from 580 to 597 in

science.

Coming in second and third at the Primary Four level are Hong Kong and South Korea in maths, with their students scoring an average of 615 and 608 respectively, and South Korea and Japan in science, with 589 and 569 respectively. All scores are adjusted to a 500-scale average.

At the Secondary Two level, in maths, South Korea and Chinese Taipei trail behind Singapore with average scores of 606 and 599. In science, Japan and Chinese Taipei take second and third place, with scores of 571 and 569.

The latest study involved about 6,500 randomly selected Primary Four students and about 6,100 randomly selected Secondary Two students across all Singapore schools. Altogether, more than 582,000 students, 250,000 parents and 51,000 teachers were roped in for the study internationally. Syllabus changes, which saw two "massive rounds" of content reduction in 1998 and 2003, could have played a part in the improvements, said Ms Low Kah Gek, deputy director-general of education (schools).

"The reason for content reduction is really to free up time, so that our teachers can teach differently, our students ... can learn in a more active way, and be given more space to actually investigate, explore as well as talk in class," she said.

While the study found very small proportions of students who are "low performers" in maths or science,

Ms Low said that number is "consistently tracked" to "see how we can enhance our learning support in order to make sure that our students really meet the baseline competencies needed for the two subjects".

The study also revealed that students here have a positive attitude towards learning the two subjects, with 85 per cent and 88 per cent of Primary Four students saying they enjoy learning maths and science respectively — both are 1 percentage point higher than the international average.

On the other hand, 92 per cent and 91 per cent of Secondary Two students say they value the learning of maths and science respectively, compared with the international average of 87 per cent and 81 per cent.

Source: TODAY Online

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Grabbing the One Belt, One Road opportunity

30 November 2016 by Radhika Dhawan Puri



China's One Belt, One Road (OBOR) initiative is a blueprint for global economic cooperation at an unprecedented scale. Unveiled in 2013 with a US\$40 billion backing by the Chinese government, OBOR aims to extend China's reach across Central Asia by recreating the legendary Silk Route.

OBOR's vision is to connect China with Eurasia through a pipeline of road and rail routes, oil and gas pipelines, along with a network of ports and coastal infrastructure projects.

When completed, the initiative promises to link 65 countries across three continents with a population of 4.4 billion, contributing to 40 per cent of global GDP.

China's involvement in the project has raised concerns about the country's expanding geo-political influence in the region, but none of these concerns will take away the investment potential of the projects, according to Mark Tucker, group executive and president of AIA Group.

"Comparisons (of OBOR) with the Marshall Plan (American aid to Western economies at the end of World War II) are valid. Particularly, at the time of uncertain economic growth, OBOR has the potential to kick-start growth and improve the quality of life in low-income countries in the region," he said.

Investment momentum is underway with existing frameworks

When China launched OBOR, the country was in the pink of health and a dynamic engine of growth. Given that China is now struggling with flagging economic growth, how feasible is it that 65 countries can be connected by economic ties, trade flows and an infrastructure perspective? Should investors looking to invest in the region be worried?

According to Bill Winters, CBE, group chief executive of Standard Chartered, the frameworks for investment exist. "There are many different channels and mechanisms for the deployment of this policy objective," he said. "These will play out and fundamentally change most, if not all, the 65 economies over a period."

Winters is referring to the funding momentum that is surely and steadily building up for OBOR-related projects, as banks, governments, pension funds and multilateral funding institutions respond to the US\$890 billion opportunity.

By one estimate, 900 OBOR-related deals are underway. Examples include the gas pipeline from the Bay of Bengal through Myanmar to South-west China, and a rail link between Beijing and Duisburg in Germany.

Frameworks to support OBOR projects are also a reality. In 2015, China's Central Bank transferred US\$82 billion to three state-owned 'policy banks' – the China Development Bank, Agricultural Development Bank of China and Export-Import Bank of China – for OBOR projects.

In addition, the Asian Infrastructure Investment Bank (AIIB), a newly set-up multilateral development bank backed by 57 countries, will scale up funding for infrastructure projects from US\$1.5 billion to US\$2 billion in 2016, and around US\$10 billion in 2018.

"The role of the international banking system will be to provide a level of technical expertise and bring together different pools of capital," said Winters. "And in many cases, assist in partnering contractors and investors with local partners, managers and local banks."

Where is the biggest investment potential?

For Chinese goods to make their way across Central Asia and to Europe, there will be a massive requirement of roads, rail routes and ports. The OBOR promise is about connectivity, making infrastructure a key investment priority.

"Infrastructure is a core focus area due to the connectivity requirements of OBOR, but there are many areas that are important such as transportation, power generation and water. All these are very close to people's lives," said Wang Yangzhi, president of the Silk Road Fund.

As OBOR-related infrastructure unfolds and the money flows into the region, there is likely to be a much-needed spillover effect through Central Asian economies that are underdeveloped.

Moreover, some of the fund's investment priorities are linked to China's domestic goals. Investing in manufacturing in these economies will align China's domestic production capacity with overseas demand. Developing the financial sector in many of these countries is essential for furthering the economy

This is good news for firms that have extensive expertise in sectors such as infrastructure (construction and city planning), connectivity (aviation, ports and logistics) and financial services (project financing and valuation).

For instance, many companies in Singapore have adequate experience in global projects, and are equipped to snap up OBOR opportunities as they emerge. Two companies, Charisma Energy and Sunseap, were awarded a contract to build a 140-megawatt Solar Farm in India.

Governments are facilitating investment opportunities

Governments and regulatory authorities have an important role to play when helping industries assess investment opportunities and ease the path to mutual cooperation with China and economies along the OBOR route.

Government initiatives in the region are underway. For instance, both Hong Kong and Singapore have set up OBOR offices and portals where companies can evaluate bidding opportunities for various projects. Both markets are well positioned to take advantage of this opportunity as important financial hubs in the region.

The Hong Kong Monetary Authority set up an Infrastructure Financing Facilitation Office and signed a memorandum of understanding (MOU) with the International Finance Corporation and with the Global Infrastructure Hub to help raise funding for infrastructure projects, particularly those that fall under China's OBOR policy.

The wheels are in motion in Singapore as well. International Enterprise (IE) Singapore has signed an MOU with the Industrial and Commercial Bank of China to provide financing services and assist in project structuring, in order to support Singapore companies in OBOR infrastructure projects across Asia.

OBOR's success is tied to the cooperation of countries along the route. Such bilateral cooperation will send out ripples of reform – positive changes in regulatory apparatus, immense investment potential for private sectors, as well as unprecedented collaboration between government and private sectors.

The opportunity in Asia itself is immense given that the region needs US\$770 billion a year in infrastructure, according to the Asian Development Bank. It is important that markets stay ready to take advantage of the opportunities that emerge because the pot of gold is for the taking.

This article was written based on a panel session that Future Ready Singapore attended at the Singapore Summit 2016 (16 – 17 September). The fifth edition of the annual event brought together more than 400 business leaders and experts to discuss future-oriented topics in finance, business and economics with a Global-Asia focus.

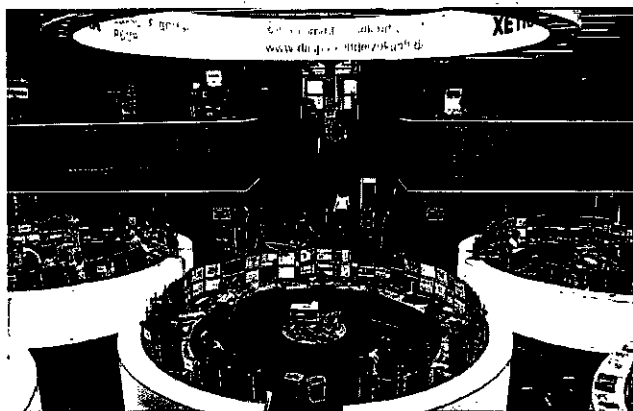
Edited by Sophie Chen and Goh Wei Ting



MARKET INSIGHTS

How useful are Green Rankings?

21 December 2016 by Vaidehi Shah



There is an unmistakable sustainability tide sweeping across the private sector, as consumers and investors alike become more aware of the environmental impact of businesses.

As companies try to distinguish themselves by showcasing their responsible business practices, they increasingly look to independent sustainability rankings to bolster their green credentials.

Some of these rankings – developed to score companies on their performance on environmental, social, and governance (ESG) factors – include the Financial Times Stock Exchange's FTSE4Good Index Series, the Dow Jones Sustainability Indices (DJSI), and Canadian media house Corporate Knights' Global 100 Index, among others.

In the United States, American magazine Newsweek's Green Rankings, which assess the performance of the 500 largest publicly-traded companies by market capitalisation in the United States and the world, has gained prominence in recent years.

Elijah Wolfson, senior editor at Newsweek, notes in a statement that "in the current global business and political climate, no company can continue to ignore its environmental footprint".

The Newsweek Green Ranking hopes to encourage more corporate leaders to start looking at their environmental impact in a more comprehensive manner, he adds.

Launched in 2009, the annual ranking evaluates firms on eight indicators.

These include the ratio of energy and water use; greenhouse gas emissions and waste generation to a company's revenue; the environmental impact of this income; and existence of a mechanism to link chief executive officer's pay to environmental performance targets, among other things.






Newsweek collaborated with Corporate Knights and US advisory firm Human Impact + Profit (HIP) Investor to create this year's ranking. While Corporate Knight's own ranking focuses on a broad range of governance factors including taxes paid and gender diversity on a company's board, Newsweek's list is focused more closely on environmental factors.

According to the publication, the methodology is "comprehensive in the sense that it captures a company's main environmental impacts, as well as reputational and legal challenges related to the environment and a company's approach to environmental management".

The latest edition, unveiled in June, saw Irish pharmaceutical firm Shire Plc top the global rankings, and American toy multinational Hasbro top the US-specific index.

World Top 10 2016 **U.S. Top 10 2016** **Full World Rankings** **Full U.S. Rankings** 

Click each column header to sort.

Rank	Newsweek Green Score	Company	Country	GICS Sector
1	87.7%	Shire PLC		Health Care
2	83.9%	Reckitt Benckiser Group PLC		Consumer Staples
3	83.2%	BT Group PLC		Telecommunication Services
4	82.9%	Swisscom AG		Telecommunication Services
5	82.0%	Essilor International S.A.		Health Care
6	81.9%	Nike, Inc.		Consumer Discretionary
7	81.8%	Unilever		Consumer Staples
8	80.7%	Sky PLC		Consumer Discretionary
9	79.6%	Siemens AG		Industrials
10	78.8%	Schneider Electric SE		Industrials

World Top 10 2016 U.S. Top 10 2016 Full World Rankings Full U.S. Rankings 

Click each column header to sort.

Rank	Newsweek Green Score	Company	GICS Sector
1	88.1%	Hasbro Inc.	Consumer Discretionary
2	81.9%	Nike, Inc.	Consumer Discretionary
3	80.7%	The Hershey Company	Consumer Staples
4	78.8%	NVIDIA Corporation	Information Technology
5	78.7%	Biogen Inc.	Health Care
6	78.4%	Ecolab Inc.	Materials
7	76.4%	Rockwell Automation Inc.	Industrials
8	76.4%	MetLife, Inc.	Financials
9	76.3%	Coca-Cola Enterprises Inc	Consumer Staples
10	75.8%	Oracle Corporation	Information Technology

A total of four Singapore companies were featured in the global ranking; these were: telecommunications giant SingTel, banks DBS Group Holdings and Overseas Chinese Banking Corporation (OCBC), and technology firm Broadcom.

SingTel out-performed its local counterparts, coming in at 141st spot.

Andrew Buay, vice president of group corporate social responsibility at SingTel, notes that the Newsweek ranking "helps us to understand where we have done well, and where else we have opportunities to improve". For instance, the firm fared better than most peers in terms of energy productivity, it ranked lower on carbon productivity, shares Buay.

Even as the company aims to improve its overall performance by exploring alternative energy sources, it is also pursuing improvements that Newsweek's ranking does not measure, adds Buay.

These include carrying out a Life Cycle Assessment of its entire operations and analysing how climate change will affect its critical infrastructure, such as energy and transport grids.

"While we are pleased to be recognised in the Newsweek Green Rankings, we believe there is much more we need to do," says Buay.

A good yardstick

While companies may see their performance on such rankings as a validation of their environmental efforts, observers note that investors and consumers also use these scores to help them make spending decisions.

Toby Heaps, chief executive officer of Corporate Knights, notes that the ranking serves two key purposes. First, the scores give investors an insight into the company's operational efficiency, and also indicate the extent to which a company is creating negative environmental externalities.

Since a lower environmental impact generally leads to fewer economic, social, and legal risks, and investors can gauge whether a company is liable for costs in the future, or has the potential for long-term value creation, says Heaps.

He adds that the ranking, which ranks the top 500 companies automatically with no opt-out option, assesses companies on public data such as information from financial researchers Bloomberg Professional Service and sustainability data outfit CDP, formerly known as the Carbon Disclosure Project.

"If a firm does not report on a metric, you get a zero for that criterion," explains Heaps. "In addition to evaluating operational efficiency, this is also a transparency ranking," he adds.

Given that the Newsweek ranking factors in the social and environmental good linked to a company's revenue, a strong performance on the index could also hint at the wider value of their product or service, says Heaps.

Jeanne Stampe, Asia Finance and Commodities Specialist at the World Wide Fund for Nature (WWF), adds that while a high score on Newsweek's ranking and similar initiatives sends a strong affirmative message for investors, a poor performance is also a powerful motivator for firms and financiers alike.

"These rankings help to focus the minds of the finance sector and also the senior management of the companies on the bottom performers," says Stampe. "They send a warning signal that the business models of the companies in the bottom half require greater scrutiny."

A poor performance on the rankings means that the company is failing to manage its ESG-related risks, and could warrant an adjustment of its credit profile or growth potential by investors, she adds.

However, investors which are just starting to integrate ESG into their decision-making are likely to pay more heed to the rankings than more advanced players who have developed their own ESG assessment strategies that go beyond simple rankings, notes Stampe.

But proceed with caution

Despite the utility of such rankings, they do not necessarily capture the complete picture of a company's environmental stewardship, say corporate sustainability experts.

As Heaps puts it: "I would be really cautious about saying that if a company is in the top 50 of this ranking, then it is automatically green."

At best, the list is a "decent starting point" for investors and consumers to identify a shorter list of sustainable companies and then apply their own values to assess them, he adds, pointing out that some firms in the ranking may still be linked to deforestation, unsustainable seafood use or biodiversity losses.

Tamar Lawrence-Samuel, associate research director for US-based non-profit Corporate Accountability International, adds that anyone wanting to understand the sustainability of a company on the ranking should look at additional factors beyond what the Green Rankings measure.

"One of the major missing pieces is an assessment of the corporation's political activities," she notes. This includes its political spending, lobbying activities, and even the funding given to universities in a bid to influence their research.

For example, food and beverage giant Coca-Cola is ninth on the US-specific ranking and 183rd on the global list, but has been accused by activist groups of depleting water supplies around the world, and lobbying against policies to increase tap water and reduce plastic waste, among others.

Controversial agribusiness giant Monsanto — ranked 22nd on Newsweek's global ranking and 12th on its US-specific one — has also been criticised worldwide for pushing genetically modified crops, manufacturing potentially carcinogenic pesticides.

Ultimately, observers should know that rankings like Newsweek's offer investors and consumers a partial view only, and they need to do look beyond them to get the full picture of a company's environmental and social impact, says Lawrence-Samuels.

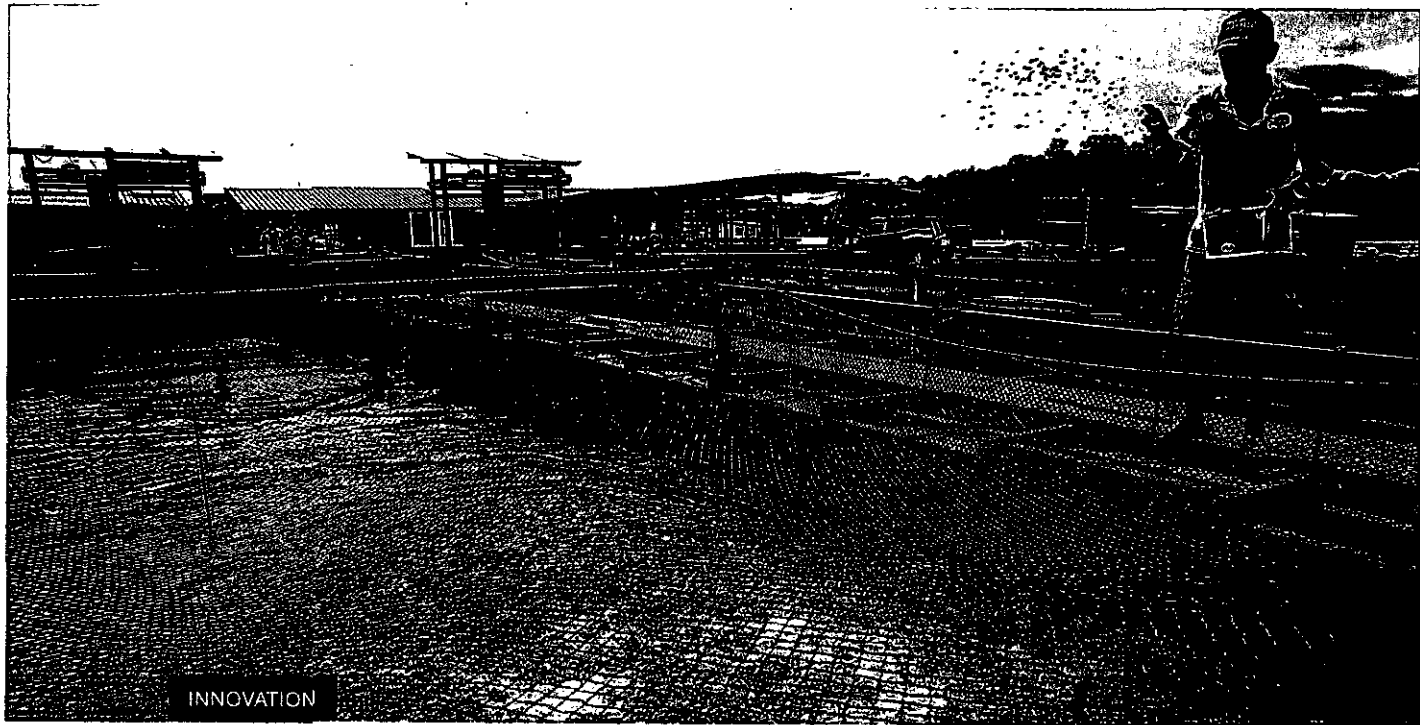
WWF's Stampe adds that any sustainability ranking can boost its credibility by including features such as science-based criteria, meaningful and equitable stakeholder participation, and focusing on the company's efforts to minimise negative environmental and social impacts, as well as creating benefits.

Ideally, rankings should also strive to do more than provide a relative assessment, adds Stampe. When companies are only assessed against one another, this only offers a relative measure of their performance, not an absolute one, she explains.

So unless there is a minimum score needed to clinch the top spots on such indices, even the highest performers are not guaranteed to be leading on the environment.

"A ranking or index should have some minimum performance requirement in order to qualify," Stampe says. "Then, the question is whether this bar is set high enough."

Edited by Jessica Cheam and Tan Yi Xuan



Modern fish farming for a secure food supply

16 November 2016 by Ray Chua

The Earth's ocean fish stock has been on constant decline due to overfishing and climate change. The Intergovernmental Panel on Climate Change recently projected that ocean fish catch potential in the Southeast Asian tropics may be reduced by 40 to 60 per cent due to fish migration, posing an imminent threat to one of the key food sources. Research shows that aquaculture production will need to more than double again between now and 2050 to meet the demands of a growing population.

Locally, Singaporeans consume some 54,000 tonnes of fish each year – 92 percent of which is imported. Over the years, the Agri-food and Veterinary Authority of Singapore (AVA) has been engaging local fish farmers on how to employ innovative fish farming methods to boost our fish supply produced in Singapore.

Photojournalist Ray Chua explores how local fisheries are embracing modern farming technologies as part of the city state's forward thinking strategy to boost food security sustainably.



One of the key strategies to increase food resilience in Singapore is through increasing local production to achieve a degree of self-sufficiency. To increase productivity gains and yields, The AVA has committed more than US\$5.8 million to help local fish farmers upgrade their farm infrastructure. Farmers are also provided with infrastructure and technical assistance to raise productivity and improve their yields. As a result, the local fish production has increased significantly in 2012. One of the beneficiaries of this scheme is The Fish Farmer Pte Ltd, which operates fish farms like these off Singapore's Changi airfield. 53-year-old Malcolm Ong got into the fishery business after hearing fishermen lament how the local fish stock in Singapore is dwindling. The Fish Farmer Pte Ltd is Singapore's largest fish farm and produces 1,000 tonnes of fish every year, equivalent to two per cent of local consumption.

Edited by Liew Hanqing and Tan Yi Xuan

Singapore - Genesis of a Smart Nation

Nov 21, 2016



Have you ever waited for what feels like hours for a taxi? Or spent a lot of time worrying about elderly relatives who live alone? Or budgeted for your household utilities with little more than an educated guess?

These may seem like unrelated issues, but they are some of the common problems that people face daily. In Singapore, specifically, there is a drive to find solutions to these pressing issues, and many more, by harnessing data, technology and networks.

For example, with intelligent transport systems that manage traffic conditions and traffic flow, long taxi queues and rush-hour congestion could become a thing of the past. What's more, smart home technologies can keep residents updated on usage of household utilities, or reassure senior citizens that relatives and healthcare workers will be alerted if they are ever in distress.

Introducing the Smart Nation

According to Singapore Prime Minister Lee Hsien Loong, "I'll give you three reasons [why Singapore is well suited for becoming a Smart Nation]. Firstly, because our ethos in our society is rational, technological and forward-looking. Secondly, because we have a population which is IT-savvy and understands technology. Thirdly, this is a highly connected and wired-up island."

Smart Nation, a country-wide initiative (<http://www.smartnation.sg/>), was introduced by the Prime Minister in 2014. The project aims to build a modern city, where technological advances can complement and enhance the everyday lives of its inhabitants. Innovations in the areas of transport and congestion-easing, business, smart housing and academic research are already ongoing, with other ideas in the pipeline.

Propelling the Smart Nation plan from a vision to reality within the next ten years is ambitious, but those spearheading the initiative are confident. A move to develop smart cities is gaining pace throughout the world, as similar initiatives are being rolled out in developed metropolitan cities, such as: London, Seoul, Ontario and Taipei. Developing countries like China and India are looking to invest in tech-gearred cities, as well, as they move towards a smarter future. These countries face differing challenges. Singapore, however, claims an advantage as it has inherited and nurtured some unique characteristics.

Staying ahead of the curve

"Singapore will be the ideal test bed for proof of concept and prototype solutions for the existential future challenges [...] The key is not technology but to create opportunities for people to interact, build communities and have a higher quality of life," said Foreign Affairs Minister Vivian Balakrishnan, Minister-in-charge of the Smart Nation Initiative.

Singapore became an independent nation just over 50 years ago and has developed an influential position in the Asia-Pacific region. The small size of the city-state – where the 447 square mile (719 square kilometer) country exists in a compact, but heavily urbanized area – makes changes to its infrastructure easier to implement. Instead of seeing transformation confined to a specific region or municipality, as would be the case in other nations, Singaporean Smart Nation initiatives can be rolled out across the entire country.

Singaporean society has become more tech-savvy and proficient. Since 2014, 88% of households have internet access, and mobile penetration rate currently stands at 150%.

Speaking at Singapore's World Cities Summit in July 2016, Foreign Affairs Minister Vivian Balakrishnan – who is also Minister-in-Charge of the Smart Nation Initiative – said the government would need to change the way it operates and interacts with the nation's people and highlighted five fundamental points for smart-future development: openness to experimentation, open standards, open source, open data and open society.

"We are taking full advantage that we are a city-state with a single layer government," he said.

Open data sources, such as data.gov.sg and LTA DataMall, have been developed as a means to encourage co-creation and the exchange of ideas between the government and the public.

Incubating a Smart Nation

The government has begun setting aside resources for the Smart Nation drive in academia, research and development. With that in mind, early estimates show that there will be a crucial need for manpower to fill the various roles generated by the plan. Singapore is nurturing interest in technology amongst its young, to ensure its students have employable skills and to help its workforce build up particular expertise needed in a highly competitive job market.

The National University of Singapore (NUS), ranked within the world's top 50 universities in 2015, has announced that its researchers are looking into three specific Smart Nation areas: "big data from different sectors, optimizing results obtained from this analysis and safeguarding cybersecurity."

Numerous other programs that allow higher education students and staff to take the time to brainstorm, research and create prototypes for Smart Nation projects, are underway. At the same time, the initiative is influencing early-stage education, with programs such as PlayMaker. This helps pre-schoolers develop creativity, problem-solving and sequencing skills through the use of age and development-appropriate toys and resources that do not require screen time.

Inevitably, business plays a large part in future development plans. The Singapore government says it is making efforts to nurture a technologically-advanced and entrepreneurial climate, and startups are increasingly basing themselves there.

Infrastructure and housing

For all nations, success comes with caveats. For instance, a growing population can lead to a strain on public transport. Singapore is no exception and is developing new technologies to ease the burden on its transport system and infrastructure.

With the latest sensor and data processing advances, it aims to improve its traffic management system and deliver real-time information to people who travel around. Smartphone applications, such as SG Nextbus, use open data to help commuters keep tabs on bus arrival times so they don't have to wait. Self-driving vehicles are a focus for the future, and the government has opened more than 3.7 miles (6 kilometers) of public roads for test-driving prototypes.

Another initiative is bringing smart technology into Singaporeans' everyday life and into their homes. The Housing & Development Board (HDB, and Singapore's public housing authority) provides homes to more than 80 % of the country's population.

As a master planner and the largest developer in Singapore, HDB seeks out innovative ideas to ensure public housing keeps up with evolving needs. In recent years, HDB has begun to bring smart technologies into public housing estates to create a more liveable, efficient, sustainable and safe living environment for residents.

In 2015, it launched its first smart-enabled new homes for sale. HDB has also brought smart initiatives to older public housing estates, test-running them at Yuhua, which is located in the western region. Under the trial, various smart devices that aim to make daily living easier have been made available to residents.

For example, with the utilities management system, residents can track their electricity and water usage through mobile applications. The elderly monitoring system allows family members and caregivers to monitor the well-being of the elderly when they are alone at home.

Protecting the environment

As the world starts to feel the heat from global warming, Singapore has taken steps to manage energy usage more intelligently. Policies put in place in Seoul, South Korea, have shown that governments can use technology to cut the amount of energy consumed and lower the amount of emissions of a built-up modern city. Singapore, too, has adopted new technologies in the planning and design of its city, in a bid to become more environmentally-friendly. For instance, smart lighting is being explored in parks - from lights that automatically turn on when motion is detected, to brightness levels that change, depending on the time of day.

This is just the beginning of a Smart Nation, and countless possibilities still lie ahead.

Article published by Anna Hill

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LEADERSHIP & TALENT

Tackling workplace stress in Asia

28 December 2016 by Alywin Chew

In the recent 2015/2016 Staying@Work Survey by Willis Towers Watson, employers from Asia Pacific cited stress as the leading workforce risk in the office. This was followed by lack of physical activity, being overweight or obese, tobacco use and lack of sleep.

Companies in Asia have recognised that workplace stress is a significant issue that they have to address. According to the survey, a third of companies in the Asia Pacific have a health and productivity (H&P) strategy, while a vast majority - 83 percent - of the companies surveyed plan to implement such a strategy by 2018.

Experts have said that it is imperative that organisations do more to help their employees cope with workplace stress. After all, studies have shown that stress will inadvertently affect an employee's mental well-being and physical health, which subsequently affects productivity.

The survey also found that employees had indicated on-the-job stress was a main contributor to absenteeism in the office, with highly stressed employees averaging 4.6 sick days in a year, as compared to 2.6 days for those with low stress levels.

The results of this study is further backed by another research done by the UK government in 2014 which states that having a work-life balance helps in increasing productivity, reducing absenteeism and improving staff retention rates in the workplace.

In need of a holistic approach to stress management

Dr Rajeshree Parekh, director of health and corporate wellness for Asia and Australasia at Willis Towers Watson, told HRD Singapore in an interview that "reactive" measures, such as counselling sessions, are presently the most common form of measures in Asia, and that companies need to adopt a more holistic approach to stress management.

While wellness initiatives differ across organizations, the key is to enable an environment in which employees feel supported and are influenced in a positive way.

A number of organisations in Singapore have embarked on a more holistic approach by incorporating "proactive" measures beyond support recovery, involving the active participation and promotion of wellness initiatives supported by management. From shorter workdays to in-house mindfulness programmes, employers in Asia are embracing a wide variety of initiatives to support their staff psychological wellbeing.

For instance, employees of public relations company Word Of Mouth Communications get to leave the office at 1pm on the last Friday of each month, while over at local banks such as OCBC and DBS, staff get to leave the workplace between 60 to 90 minutes earlier every Friday.

Proactive initiatives can be also seen in companies such as Infineon Technologies Singapore, which has been rewarding staff who take part in fitness activities with points that they can use to exchange for sports-related merchandise and fitness classes.

Another example can be found at Google's Singapore office where employees are given access to "mindfulness programmes" which help individuals to relax and focus better. There is even a meditation room in the company's Marina View office.

In other parts of Asia, Park Chun-woong, the president of human resource agency Staffs in Seoul, sends flowers to the parents of his workers and ensures employees take part in a laughing ritual in the office every morning to lift spirits.

In Thailand, employees of Lion, a Japanese beauty and healthcare brand, are also encouraged to participate in meditation sessions at the workplace. They are also provided with services such as health, marriage and financial counselling.

Such measures looked to have boosted happiness in the workplace, with a Lion company official telling the Nikkei Asian Review that these initiatives have resulted in the internal employee happiness index rising from 6.92 in 2011 to 7.62 in 2014.

Parekh added that human resource departments can also play a part by being more transparent about issues such as compensation, job scopes and ensure that employees are exposed to a positive work culture and enjoy strong team support.

"To increase a strategy's chance of success, it is important to view it holistically and offer interconnected programmes, rather than offering individual programmes that don't have the same overall goal," said Dr. Parekh.

"Implementing health and productivity programmes without having an overarching strategy will have limited success in changing employee behaviour in the long run."

Benefits of addressing workplace stress

While it is still difficult to determine the exact benefits of such programmes – Towers Watson discovered that less than 10 percent of companies in the Asia Pacific measure the impact of their initiatives – research has shown that employers generally stand to gain long-term savings.

The Staying@Work Survey highlights that there exists a strong connection between companies that rank high in the Overall H&P Effectiveness (OHPE) index and good financial results. When comparing companies that have effective wellness programmes with those that don't, the former were 50 percent more likely to report lower turnover rates and 50 percent higher revenue per employee.

In addition, a study conducted by the University of Warwick in 2014 found that the productivity levels in employees who are happy tend to be 12 percent higher than others.

Employers looking for hard facts and figures to justify the spending of resources on wellness programmes for their workers could also refer to an analysis by a non-profit research institute Rand Corp, which showed that companies earn an overall Return On Investment of US\$1.50 for every dollar that is invested in such programmes.

From cost savings to a boost in productivity to higher talent retention rates, it is clear that companies can only benefit from catering to employees' physical and mental well-being.

The way forward now would be for more organizations to acknowledge this fact and be willing to actively develop a health & productivity strategy with their staff in mind. After all, a stress-stricken employee who is unable to perform is as good as not having one at all.

Edited by Liew Hanqing & Tan Yi Xuan

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Views From The Top: Eu Yan Sang CEO Richard Eu

⌚ Thursday, December 15, 2016 - 10:52



746 VIEWS

Richard Eu, CEO of Traditional Chinese Medicine retailer Eu Yan Sang, talks about how a 'traditional' company can keep pace in a digital age. He also shared his views on what 2017 might bring for companies big and small.

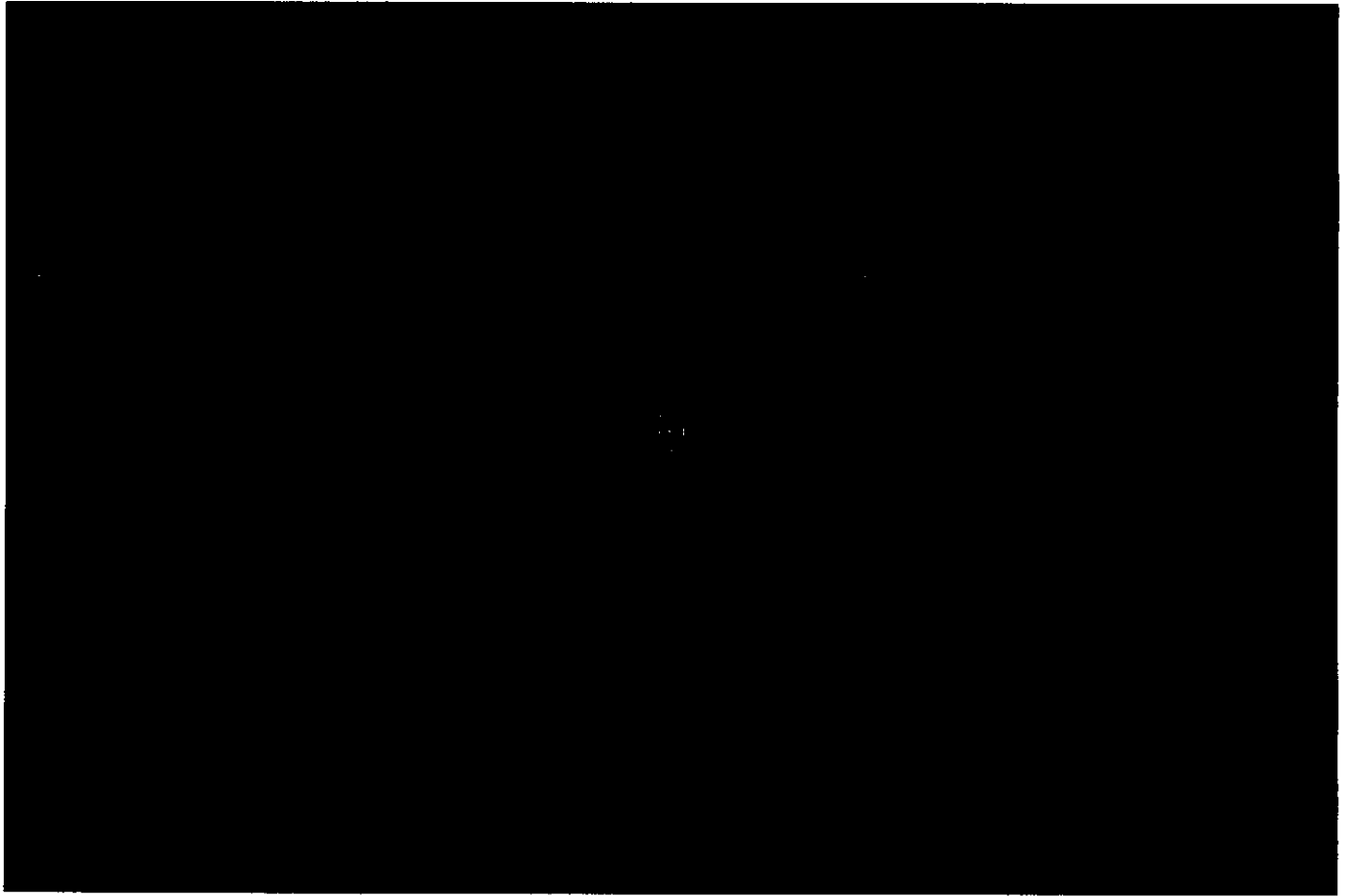
This is the first of a four-part series, where C-suite executives address the uncertainty and opportunities that 2017 could bring. Next week: Capitaland Limited president & group CEO Lim Ming Yan

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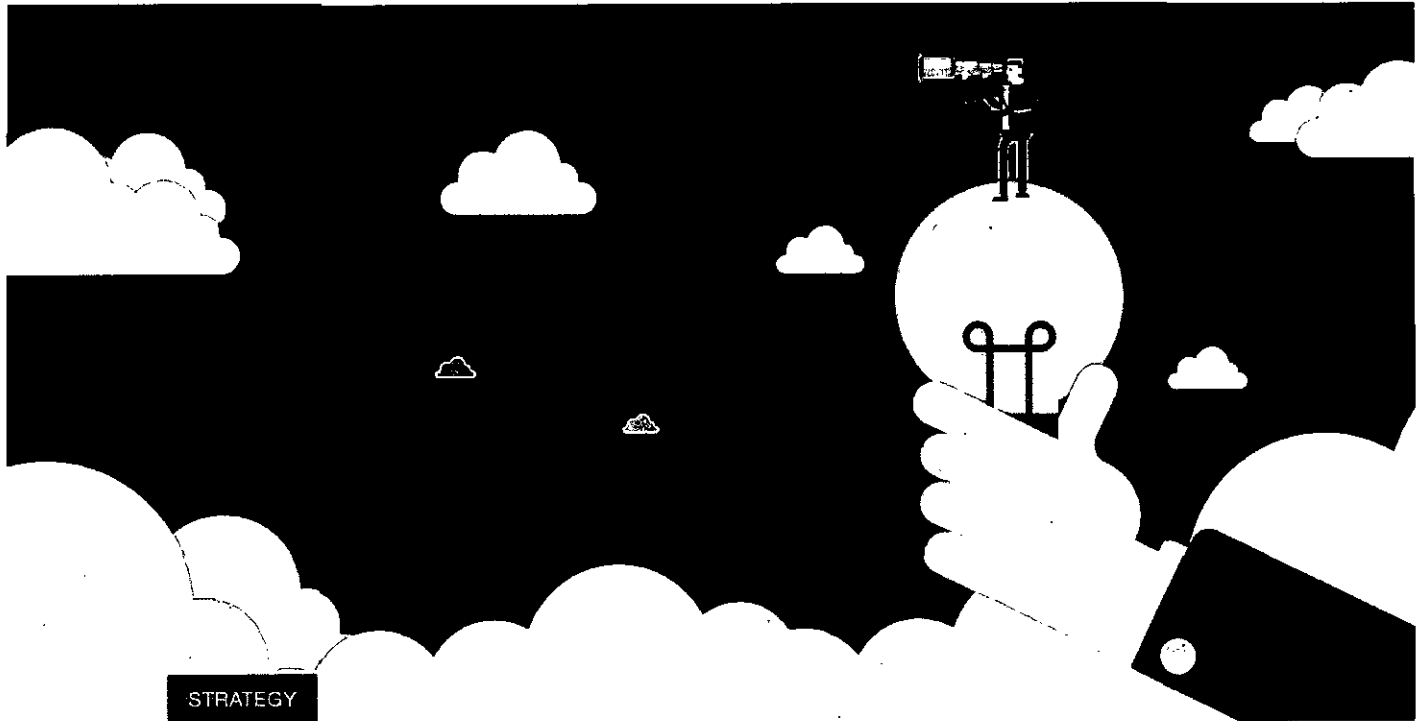
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Singapore nightspots cashing in on digital payments



The Business Times black on black



STRATEGY

The road from Paris leads to science-based targets

12 December 2016 by Brian Werner

On April 22, 2016, 175 nations signed a landmark deal on climate change, ratifying the Paris COP21 agreement to limit global warming to 2°C with the ambition of achieving 1.5°C limit.

The agreement requires net zero emissions of man-made greenhouse gases from 2050. Backing up the agreement are carbon reduction plans submitted by almost 190 countries including the US, China, India and European Union countries to cut emissions.

What does this mean for business?

The Paris agreement is a clear signal of international will to tackle climate change and governments around the world are under pressure to ramp up efforts to cut carbon emissions. Trucost analysis shows that achieving the 2°C target means that the retail sector would have to reduce its carbon emissions by an average of 76 per cent by 2050, while the telecommunications sector would have to achieve an 89 per cent cut by the same year.

To manage their exposure, companies need to set science-based targets that reflect the specific carbon reduction plans for countries in which they operate. This will involve reviewing existing carbon targets - especially targets based on existing available technology - to see if they are still fit for purpose.



The Science Based Targets Initiative also requires that most companies quantify their Scope 3 value chain emissions, and where appropriate consider those in the target setting. While this may sound daunting, there are time saving modelling tools and techniques that are sufficiently robust for external disclosure and target setting.

Companies that have yet to set targets – or develop low-carbon products – need to consider how their business will remain profitable in a world in which they risk failing to align with government commitments. Suppliers should consider how the goods and services they provide will help clients achieve emissions reductions in line with science-based targets.

Investors increasingly demand climate change disclosure by companies. For example, this year, 42 per cent of investors of US-based utility AES Corporation voted for a resolution seeking to stress-test how the company would fair in a 2°C target world.

Energy producers and other utilities, including Exxon Mobil, Occidental Petroleum, Noble Energy, Anadarko, and Southern Company are also facing similar resolutions at their annual meetings. Sectors that are responsible for the greatest carbon emissions (energy, utilities, transportation, and agriculture) should expect increasing scrutiny about the scale and speed at which emissions reductions take place.

The benefits of science-based targets

Developing science-based targets achieves the following benefits for companies, suppliers, and investors:

- Demonstrate robust environmental risk management to all stakeholders
- Reduce energy and fuel costs
- Understand the extent to which your business growth may be limited by carbon taxes and emission limits
- Make the business case for investment in emission reduction or energy conservation projects

Getting started

As with any environmental accounting effort, it's important to get the metrics and boundaries right. You'll need to make sure emissions inventories are aligned with financial records. Another important consideration will be to address whether targets will be absolute or intensity based, so having a good understanding of business growth projections by region and business unit will help inform the analysis.

Since most companies will also need to quantify the emissions from their Scope 3 value chain, it is important to begin gathering information about your company's activities with suppliers, employee commuting and travel, distribution, and how your products are eventually used and disposed – or minimize the data gathering hurdle by first modelling these impacts.

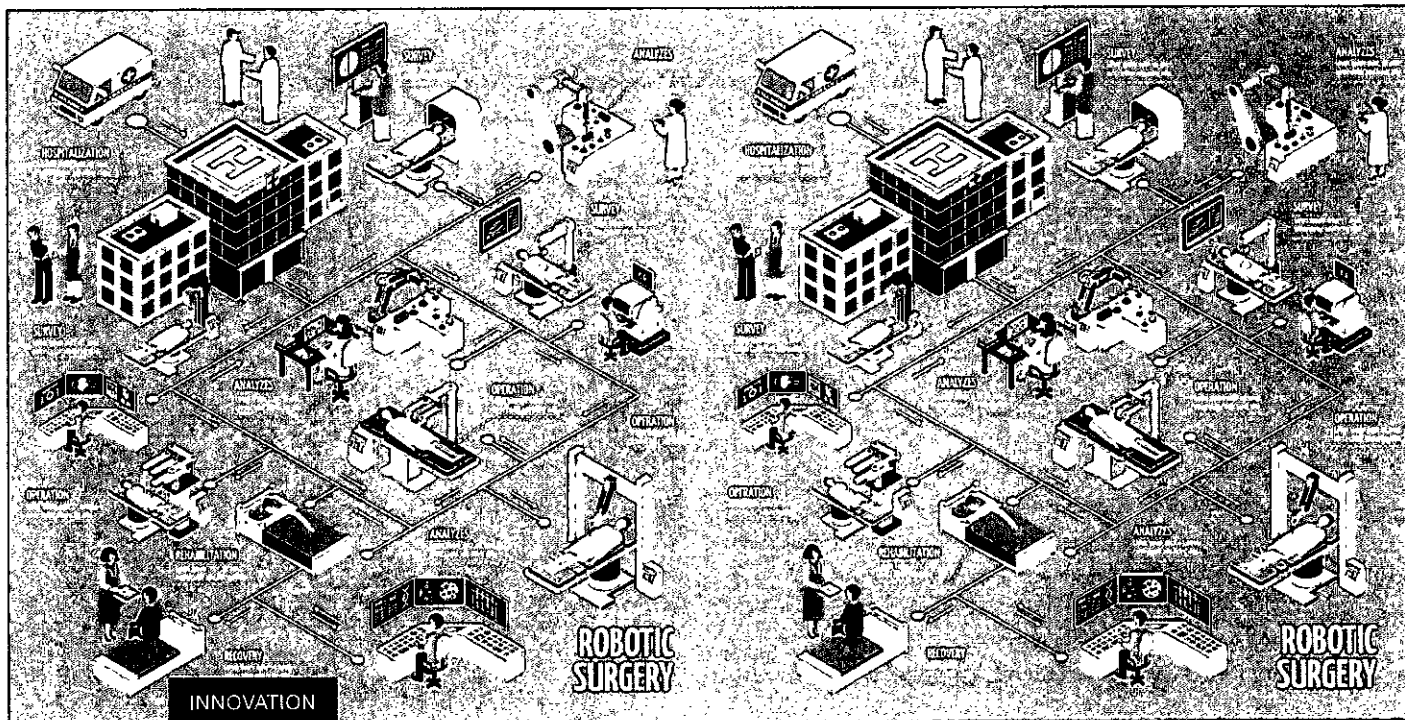
Trucost regularly provides a fast calculation of supply chain and product in-use carbon emissions to determine where they exceed the 40 per cent guideline for relevance to target setting.

Join the leaders

Are you considering science-based targeting? You won't be alone. As of April 2016, over 150 companies have signed on to the Science Based Targets initiative. Now is the time for companies to understand what they need to do to align business models with long-awaited government action on climate change.

Brian Weimer is account manager, Trucost.

This story was originally published in [Eco-Business](#).



Transforming the healthcare industry with soft robotics

19 December 2016 by Shane Conroy

According to a recent market report, the global medical robotics industry is forecast to be worth US\$11.4 billion by 2020 – increasing at a compound annual growth rate of 22 per cent from 2015.

At least one institution is riding the wave. The National University of Singapore (NUS) is proving to be a leading force in the evolution of healthcare robotics. The institution is studying the mechanisms of nature to develop new medical technology that will fulfil a range of unmet clinical needs in the healthcare industry.

“Singapore currently stands high among the countries with leading research institutions for bio-inspired research,” says Dr Raye Yeow, head of the NUS Evolution Innovation Laboratory and assistant professor at the NUS Department of Biomedical Engineering.

“The vision of the Evolution Innovation Laboratory is to develop innovative technologies inspired by nature.” Dr Yeow and his team are using such insights to develop a range of new innovations in soft surgical robotics, soft rehabilitation robotics and wearable sensors.

These three rapidly developing fields are set to improve healthcare outcomes in Singapore and around the world, while also offering exciting opportunities for private businesses to assist in the commercialisation process.

Soft surgical robotics

Tissue damage during surgery is a common cause of surgical negligence lawsuits and can result in damage to veins, nerves and other underlying structures in affected patients. This creates additional need for rehabilitation services and puts further pressure on Singapore's healthcare system even as the government increases health spending from \$4.7 billion in 2012 to \$11 billion in 2016. Innovations in soft surgical robotics aim to remove such risks of soft tissue damage during surgery.

Dr Yeow and his team have used soft surgical robotic technology to develop a soft chamber-gripper device that can be used to grip nerves without inflicting damage like traditional forceps can.

"This device is highly customisable to suit different surgical requirements and prevents tissue trauma during surgical manipulation," points out Dr Yeow. "It has an integrated air chamber that, when compressed, transfers pressurised air into the gripper component to trigger a soft gripping action."

Dr Yeow and his team are currently putting the soft nerve grippers through clinical trials to prove the utility of the innovation before it can enter the market.

"Once we have the pre-clinical and clinical trial data in place to de-risk this technology, we hope to attract medical technology companies to license this technology and help commercialise the use of the device for various surgical procedures," he says.

Soft rehabilitation robotics

Singapore is also facing the challenge of supporting an aging population. In 2015, the old-age support ratio fell from 6.0 to 5.7 residents aged 20 to 64 for each resident aged 65 years and above. With fewer younger residents to support Singapore's senior citizens, soft rehabilitation robotics could offer one way to address the challenge of senior citizen care.

Soft rehabilitation robotics aims to provide safe and comfortable wearable robotic systems that can help stroke patients, 75 per cent of whom are above 65 years of age, with their rehabilitation process and assist them with common daily tasks.

During the innovation process, Dr Yeow and his team studied the movement biomechanics of coral tentacles and developed soft actuators that can contract, extend and bend like coral tentacles. Such actuators are used in medical devices such as wearable robotic glove ExoGlove to help define movement with the use of pressurised air.

"Two of our flagship innovations are the robotic glove and the robotic sock," says Dr Yeow. "The robotic glove helps stroke patients in performing hand therapy exercises and assists them with common manipulation actions such as grasping and pinching."

"The robotic sock helps prolonged bedridden patients with robot-assisted ankle-foot exercises to improve venous flow and ankle mobility, thereby preventing the development of ankle contracture and deep vein thrombosis."

Both projects are funded by the Ministry of Education, Singapore Millennium Foundation and Agency for Science, Technology and Research (A*STAR), and are currently undergoing clinical trials.

"We have spun off an NUS startup company, RocoSo Technologies, which will commercialise and bring these products to the market," reveals Dr Yeow. "We will likely work with local and overseas distributors to help us access the different customer clusters around the world."

Wearable sensors

Wearable sensors allow healthcare professionals to remotely capture key information about a patient's condition, such as their mental state, movement quality and strength. Collected data is then wirelessly transmitted to the cloud for the clinical team to assess the patient anytime, anywhere.

In developing the sensors, Dr Yeow and his team took inspiration from recent electroencephalographic (EEG) data that has been shown to be useful in detecting anxiety levels in patients suffering from social anxiety.

"We've developed brainwave sensors that can detect the user's anxiety state," he explains. "This will be useful for patients with clinical anxiety conditions, where clinicians can continuously monitor the patient's condition in real time and provide interventions when necessary."

This innovation carries significant weight in the fight against Singapore's rising suicide rate. An average of about 400 Singaporeans commit suicide every year, with around 1,000 cases of attempted suicide reported annually. Early intervention through the use of wearable sensors could



be key to reducing this concerning trend.

The sensors are low-cost yet reliable, and may have other potential applications beyond the medical field. For example, Dr Yeow and his team are using these brainwave sensors to monitor the anxiety state of local air rifle shooters, in collaboration with the Singapore Sports Institute.

They have also developed soft bend sensors that can be embedded into any orthotic devices (such as an ankle brace or elbow sleeve) to capture the desired joint angle when the user performs a therapy exercise at home.

Soft sensors hold vast potential to transform the healthcare industry and improve a wide range of patient outcomes in Singapore and around the world.

Solving real-life problems with robotics

As the latest innovations begin to emerge from clinical trials, researchers such as Dr Yeow will increasingly look to private business and multinational healthcare companies to help assist the commercialisation process. Licensing partnerships and relationships with local and overseas distributors and retailers will then be explored to bring the next generation of medical technology to market.

And that's good news for patients in Singapore and around the world as evolving technology promises to solve real-life problems such as reducing soft tissue damage during surgery, improving the rehabilitation of stroke patients, and providing early intervention for patients with clinical anxiety conditions.

Edited by Kritika Srinivasan and Goh Wei Ting



MARKET INSIGHTS

Where do U.S. investments go in Asia?

05 December 2016 by Samyukta Raman

Today, the U.S. invests more in ASEAN than anywhere else in Asia

ASEAN is a regional organization comprising Singapore, Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand and Vietnam.

Largest destination in Asia for U.S. investments, 3rd largest Asian trading partner for the U.S.

U.S. investment in ASEAN in 2015*

1.5x more than the next largest investment in APAC region (U.S., India, China)

Reasons why U.S. companies are investing in ASEAN:

- Integrated economic region, with free movement of goods, services and investment
- 4th largest market after EU, the U.S. and China by 2020*
- Higher labor costs compared to China*
- Highly skilled workforce (75-85%)*
- Explosion of the middle class - 4x from 2000 (2014) to > 5 billion people*

U.S. Investment SURGES IN ASIA

U.S. holding on to the dominant share of Asia's growth being driven by only the late-comers of China and India? Statistics show investment and expansion opportunities are abound in Asia for U.S. companies, especially in ASEAN.

Where are the opportunities in Asia?

U.S. Direct Investment into Asia (2014 vs. 2012) US\$ billion

Region	2014	2012
ASEAN	31%	9%
China	10%	10%
India	7%	6%
Japan	6%	4%
Other Asia	4%	0%

ASEAN growth class productivity by Singapore

Region	2014	2012
ASEAN	40%	26%

Singapore: ASEAN's investment hotbed

With ASEAN, most of the investments from the world's top four economies converge in Singapore. China, India, Japan and the U.S. channel more than 80% of their ASEAN investments to the city-state.

In spite of global slow down, U.S. investments in Singapore more than doubled in the last five years**

143% increase (2011-2015)

Rest of the world 21% INCREASE

Received the largest U.S. investment in the APAC region (2015)*

Accounted for 2/3 of the additional US\$28 billion invested by U.S. corporations into APAC (2015)

2015: Significant investments pouring into**

Industry	Investment (US\$ billion)
Manufacturing	130
Services	128
Trade	28

For U.S. companies looking to invest in ASEAN growth, the destination is clear.

[Download the infographic \(PDF\)](#)

Edited by Sophie Chen and Tan Yi Xuan



WWL: Sustainable shipping for the long haul

26 December 2016 by Hannah Koh

Despite being in an industry that is predisposed towards environmental degradation, Swedish-Norwegian shipping company Wallenius Wilhelmsen Logistics (WWL) has not let the circumstances define it.

The company has been proactively putting in place measures to reduce sea and airborne pollutant emissions and set up an international coalition to champion the enforcement of sulphur emission regulations – critical to minimising the impact of the shipping industry.

Its initiatives impressed the judges of the Singapore Environmental Achievement Awards – which aims to increase the level of awareness and adoption of good environmental approaches within organisations, held by the non-profit Singapore Environment Council – that WWL won the SEC-CDL Outstanding Singapore Environmental Achievement Award and the SEC-MPA Singapore Environmental Achievement Award (Maritime).

Speaking to Future Ready Singapore in a phone interview, WWL's head of sustainability, Anna Larsson shares that the company's award-winning approach to sustainability is guided by a combination of its long-term vision as well as immediate-term targets.

Having and acting on a sustainable vision for the future has reaped rewards for WWL, from saving costs to staff retention, and prepares WWL for the future of the shipping industry today, which challenges companies to balance their bottom lines against their environmental impacts.

The shipping industry ferries a whopping 90 per cent of world trade by volume today and cargo ships account for three to four per cent of carbon dioxide emissions in the world, being mostly powered by heavy fuel oil, the most polluting form of fuel.

Shipping generates greenhouse gases such as nitrogen oxide and sulphur dioxide that can cause acid rain and create a fine dust that poses a risk to human health.

Clearing up the industry, says Larsson, is a "technical" challenge. There are no real alternatives to the carbon-based fuels used now and a scalable renewable energy solution for cargo ships is still a long way off.



Ship operators today are under pressure to clean up their act, especially after the United Nations shipping agency ruled in October 2016 to implement a global sulphur cap of 0.5 per cent by 2020.

With the International Maritime Organization's Marine Environmental Protection Committee (IMO MEPC) sulphur cap in place, shipping vessels must use fuel with sulphur content of 0.5 per cent or lower at sea. At the moment, the global sulphur limit is 3.5 per cent, and only Emission Control Areas (ECAs) in North America and Europe have a lower sulphur limit at 0.1 per cent.

Experts have estimated that this will cost the industry some US\$35 to \$40 billion alone for the container shipping industry, at a time when the shipping industry is suffering its worst downturns ever.

Doing something about sulphur

Against the backdrop of increasing pressure for the industry to reduce emissions and the lack of viable, cleaner fuel sources, WWL has chosen to start proactively regulating its emissions and mitigating the impact its operations has had on the environment.

By going above and beyond what it was legally required to do, WWL is ahead of the curve and competition in fulfilling its social responsibilities and prepared to meet future challenges. A cornerstone to this is the company's new set of five-year objectives that was released in March 2016, after its previous 10-year plan for sustainability ended in 2015. They set out targets for cutting sulphur, nitrogen oxide and carbon dioxide emissions, and reducing the transfer of invasive species from one locale to another.

Larsson says that the company has been operating on its own voluntary low-sulphur policy for the past 11 to 12 years and using fuels with sulphur content of 1.5 per cent or lower, while industry norms ran at 2.7 per cent.

Meanwhile under its new five-year objectives, WWL launched its new global 0.1 per cent-sulphur at berth policy in Beijing and Tokyo earlier this year to reduce emissions in coastal areas and port communities.

Larsson shares that 70 per cent of WWL's port calls are outside the ECA zones, saying, "If we can run at 0.1 sulphur in Europe and North America, there's no reason for us not to operate in the same way in all ports. Human health is worth the same everywhere."

With a global sulphur cap on the way, WWL has also been researching different fuel mixes and new fuel types to address the industry need for viable alternatives to heavy fuel oil. The sulphur cap, once implemented, will spike demand for low-sulphur alternatives and destabilise fuel prices as the entire industry moves away from more polluting fuels, she says.

Low-sulphur fuel can cost up to 50 per cent more and will represent a sea change in operations for shipping companies once the sulphur cap kicks in.

In preparation for the upcoming disruption to the industry and to find cost-effective solutions for WWL and its customers, Larsson shares, "We're investigating how we can best operate on different fuels and energy sources, and how we can fulfil (International) regulations by using scrubbers, for example."

Scrubbers are cleaning systems installed on ships that remove pollutants from vessel emissions, and can be retrofitted on to older vessels. Expensive to purchase and install, scrubbers are the only other option to purchasing expensive, low-sulphur fuel.

Thinking ahead, WWL intends to further leverage its experience working with low-sulphur fuels and is partnering oil and gas giant Exxon to jointly develop and test low-sulphur hybrid fuels, Larsson adds.

The logistics firm has also been tackling sulphur emissions through a different angle - by calling on authorities to enforce sulphur-limiting regulations through the Trident Alliance, an industry body that it is an active member of.

Additionally, WWL works with its partners to ensure vessels are as full as possible for shipping to maximise efficiency and has reduced its carbon dioxide per unit transported by about 20 per cent since 2005.

Commenting on the benefits of WWL's approach, Larsson says, "We work proactively to find and adopt new technologies and start preparing for legislation early. This reduces our business risk and facilitates compliance with legislation, reducing implementation costs and risks."

Keeping up with the KPIs

Going beyond the focus on sulphur emissions, WWL also streamlines its day-to-day operations to reduce environmental impact and gives sustainability-related KPIs as much weight and importance as other operational KPIs.

Guiding this are Castor Green and Orcelle, WWL's zero-emission visions for the future. Castor Green is the ideal land-based terminal that releases no emissions while the Orcelle is a car-carrying vessel powered by renewable energy. Larsson explains the Castor Green, "In itself, it's a vision, but we have what we call the Castor Green programme, which is a set of ways of working and standards."

It guides operations and ranks a specific WWL facility according to a scale of green-ness based on indicators including energy efficiency, energy sources, water use, and land use. Employees identify their operations' location on the ranking and "set objectives for what they're going to do more of this year, and how they are going to go to the next level", adds Larsson.

On the other hand, the Orcelle is the model for WWL's environmental impact performance at sea, but also includes a range of projects WWL works on to "explore how we can, in the future, design a zero-emission vessel", including LNG and battery solution trials.

These give WWL staff concrete goals to work towards. The company expects these environmental key performance indicators (KPIs) to be followed up with all other KPIs. Says Larsson, "This is not something you pick up and look at once a year, this is something that you're measuring and following up together with your financial and operational KPI's, safety, etc. You're reporting in the same place and you're giving feedback also to the locations and the organisation continuously."

Emphasising the importance of having both a vision and day-to-day practices to ground long-term goals, Larsson says, "You need to have a complete set of things to work by. You need to have the vision, you need to have the five-year objective, and you need to have the day-to-day processes, then you make progress in the important areas."

WWL's multi-faceted focus on sustainability has impacted its business and operations both directly and indirectly. The company has made significant cost savings by minimising resource use and waste production – as these have a "strong bottom line connection" – as well as proactively looking for new technologies and preparing to comply with legislation early. This lessens the risks and costs involved in making changes to operations.

More indirectly, Larsson says WWL attracts and keeps the good partners and employees through its sustainability strategy. "It also builds credibility and confidence with authorities and business partners, which is important when we are competing for land or contracts to expand our business," she adds.

"On the commercial side, it differentiates us from our competitors and today, a solid environmental and sustainability programme is a requirement for suppliers to the industry we serve."

Edited by Jessica Cheam and Tan Yi Xuan

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Duckju Kang (<https://e27.co/duckju-kang>) , 20 Dec, 2016

Automation and machine learning: How robo-advisors are taking the lead as Singapore's new wealth managers

A growing number of fintech startups can make these investing more accessible, allowing Singaporeans to choose services that best meets their individual needs more easily



Until recently, wealth management services were the prerogative of the seriously rich. Each client received personalised advice on financial and investment matters, retirement and estate planning, and even accounting and tax services. Of course, all these benefits

didn't come cheaply.
(https://www.barrons.com/automation-

machine-machine-machine-
Clients were expected to pay at least 1 per cent of the value of their assets under
learning-learning-learning fees every year. Many traditional wealth managers charged a lot more.

robo- robo- robo-
But in recent times, a number of new financial technology companies have digitalised
wealth management services and made them available to investors at a fraction of the rate
advisors-advisors-advisors-
which the incumbents charge.

taking-taking-taking-
Another advantage that these new fintechs or robo-advisors provide is that an investor
lead- lead- lead-
needs to put up only a few thousand dollars to open an account. Traditional wealth
singapore-singapore-singapore-
managers usually require a minimum portfolio of several hundred thousand dollars.

new- new- new-
Also Read: 7 ways Singapore's central bank (MAS) is turning the country into a fintech
wealth-wealth-wealth-
powerhouse (https://e27.co/6-ways-singapores-central-bank-mas-is-turning-the-
manager-manager-manager-
country-into-a-fintech-powerhouse-20161117/)

20161220/61220/61220/)
Robo-advisors are rapidly gaining popularity across the world. Betterment
(https://www.betterment.com/), which is located in the US, is one of the most successful
and well known fintech companies providing these services. It already has US\$6.2 billion
under management.

Singapore's automated wealth management platforms

Several companies are competing to provide Singaporeans with specially designed
portfolio planning and asset management tools. These are entering the market with
financial products that allow young and tech-savvy investors an enhanced level of control
over their portfolio.

Singapore's robo advisors also have the advantage of offering their services at lower rates
than traditional services like brokers or mutual funds. Investors looking for an alternative
to the rock-bottom returns on banks' deposits now have an option that allows them to
allocate their funds in a manner that suits their risk appetite and costs little in fees. While
not all of these offerings are yet friendly to an average person, we believe robo-advisors
will gradually put forth more consumer friendly products with low fees as they scale their
platforms (as it happened in the US).

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Here are some notable examples:
(<https://www.smartly.sg/>)

machine-
Smartly

learning-
Using this Singapore fintech's automated platform, individuals can invest in a globally diversified portfolio of exchange-traded funds (ETFs)

robo-
(<https://www.valuepenguin.sg/introduction-funds-singapore-what-are-unit-trusts-and-etfs>).
advisors-
ETFs are selected by Smartly on the basis of each investor's risk profile.

taking-
Investors are required to provide some basic information about themselves. Smartly's

lead-
proprietary algorithms will then recommend a personalised investment portfolio based on the individual's profile. If an investor does not agree with the recommendations, it is possible to change the allocation of funds.

wealth-
Smartly (<https://www.smartly.sg/>) caters to all segments of investors. It is possible to open an account with an investment of just S\$50 (US\$34.50) per month. The fees are very affordable:
20161220/51220/51220/

- 1 per cent per year, if you invest less than S\$10,000 (US\$6,900)
- 0.7 per cent per year for sums over S\$10,000
- 0.5 per cent per year for S\$100,000 (US\$ 69,000) and above

What are the benefits that an investor gets by paying these charges? The amounts cover risk assessment, recommendations based on an investor's profile, unlimited deposits and withdrawals, and real-time monitoring of the portfolio.

Also Read: Infographic: Why China is the world's best fintech market
(<https://e27.co/infographic-china-worlds-best-fintech-market-20161206/>)

Infinity Partners

This startup is targeted at Americans working in Singapore. Subsequently, the firm will offer its services to Singaporeans as well. According to a press report (<http://www.straitstimes.com/business/invest/robo-adviser-helps-clients-make-investment-decisions>), the company's initial customers will be accredited investors (<https://www.bloomberg.com/news/articles/2016-09-02/singapore-investor-protection>)

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amendments headed for parliament), meaning high net worth individuals and hedge funds. Infinity Partners (<http://www.infinitypartners.info/>) has a capital market licence and its expatriate customers will be able to buy exchange-traded funds in the US.

learning- learning-

The firm will offer its services at a fee that will be about 1 per cent of the assets under management. This is competitive against the 3 to 5 per cent charged by traditional wealth

advisors for similar services. Singapore's accredited investors can start buying into ETFs

using Infinity Partners' robo-advisory services from 2017 onwards. Subsequently, the

company will expand into Hong Kong and Japan, as well.

lead- lead- lead-

Bambu Singapore-

This firm has chosen to adopt the B2B route to market its robo-advisory products. It is

currently marketing a robo advisory platform that can be offered by financial service

companies to their customers. Why is Bambu (<http://www.bambu.life/>) deviating from the

usual B2C model that most robo-advisory startups have embraced? In an interview,

founder and CEO Ned Phillips explained ([http://asia.blog.terrapinn.com/symbol-](http://asia.blog.terrapinn.com/symbol-fintech/2016/09/14/118/)

2016/09/14/118/)

that he estimates that it would cost his company US\$1 million to acquire 3,000 customers. With the low fees that robo-advisors charge, it would not be possible to sustain the business.

Crossbridge Capital

Established as a wealth management firm eight years ago, Crossbridge Capital (<http://www.crossbridgecapital.com/>) has recently launched a robo-advisory platform for Singapore's accredited investors. The service has been introduced in association with Bambu. Accredited investors are defined under Singapore government regulations. They need to have net personal assets of at least S\$2 million (US\$1.38 million) or a yearly income of S\$300,000 (US\$207,100).

Crossbridge Capital has US\$3 billion under management and caters primarily to HNIs and families based in emerging market economies.

The future of robo-advisory services



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Although robo-advisory services have been popularised by financial technology startups, even financial institutions providing traditional wealth management services have much to gain from automated investment allocation methods. Singapore's banks have already learned this opportunity.

Also Read: Pro Bono: Practical fintech startup legal advice from lawyer WanHsi Yeong and startupbootcamp fintech director Sam Hall (<https://e27.co/pro-bono-practical-fintech-startup-legal-advice-lawyer-wanhsi-yeong-startupbootcamp-fintech-director-sam-hall-20161129/>)

OCBC recently launched OneWealth (<https://www.ocbc.com/personal-banking/onewealth/>), an automated system that provides investors with advice and monitors their portfolios. DBS Bank has partnered with IBM to launch Wealth Adviser (<https://www.bloomberg.com/gadfly/articles/2016-06-19/robot-your-trusted-investment-adviser>), a service that matches research reports with a client's risk appetite and investment objectives.

In Singapore, robo-managers are not yet prevalent or scaled enough to offer a truly low-cost offering to most retail investors. While most of these platforms currently only cater to high net worth clients (i.e. accredited investors) and institutions, they likely will gradually expand their product offerings and lower fees as they grow. If the US market is any indication, a growing number of robo-advisors can make these platforms cheaper, allowing Singaporeans to choose the robo-advisory service that best meets their individual needs more easily.

This article originally appeared on ValuePenguin (<https://www.valuepenguin.sg/robo-advisors-singapore-new-wealth-managers>).

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DJ is the Head of Asia at ValuePenguin, a personal finance company based in New York. He is responsible for building ValuePenguin's presence in Asia, from researching personal finance topics in

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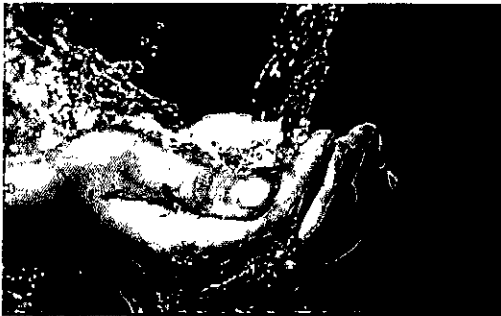


News

Channel NewsAsia - Keppel to build Singapore's 4th desalination plant in Marina East

The company was chosen as the preferred bidder after an open tender.

22 Dec 2016 | By Channel NewsAsia



news8by5

Keppel Infrastructure Holdings will design, build, own and operate Singapore's fourth desalination plant, national water agency PUB announced on Thursday (Dec 22).

The company was chosen as the preferred bidder after an open tender that attracted 16 bids from seven local and international bidders, PUB said in a statement.

The plant is expected to commence operations in 2020 and will add another 30 million gallons of water (about 137,000 cubic metres) per day to the nation's water supply.

Under the arrangement with PUB, Keppel will supply water to PUB for a 25-year concession period at a first-year price of S\$1.07867 per cubic metre.

"AN ICONIC PROJECT"

Located in Marina East, the plant will be the first in Singapore with the ability to treat sea water, and fresh water from the Marina Reservoir, by using reverse osmosis and other advanced membrane technology, Keppel Infrastructure said in a separate statement.

Keppel Seghers, the environmental technology arm of Keppel Corporation, will undertake the turnkey construction and commissioning of the project, it added.

Keppel Infrastructure Chief Executive Officer Ong Tiong Guan called the planned desalination plant an "iconic project" due to its ambitions of treating both reservoir and sea water.

"This project affirms Keppel Infrastructure's capabilities to create value and offer innovative and competitive solutions for environmental infrastructure essential for sustainable urbanisation."

PUB said the plant will help to strengthen Singapore's drought resilience as well as enhance the reliability of water supply for the city and eastern Singapore areas by providing an alternative supply to these areas.

According to PUB's Deputy Chief Executive of Policy and Development Chua Soon Guan, desalinated water is an important part of Singapore's water supply portfolio.

"As a source independent of weather fluctuations, it is resilient against the vagaries of climate change and bolsters the reliability of our water supply against prolonged periods of dry spells and droughts," he explained.

Mr Chua added that the agency has plans to expand Singapore's desalination capacity to meet up to 30 per cent of the country's future water needs. Currently, 25 per cent of Singapore's water demand is met by desalination, with the rest of the supply coming from local catchments, imported water from Johor and NEWater.

The transaction, which Keppel Infrastructure and PUB are expected to enter into by January next year, is not expected to have a material impact on the net tangible assets or earnings per share of Keppel Corporation for the current financial year, according to Keppel Infrastructure.

Source: Channel NewsAsia

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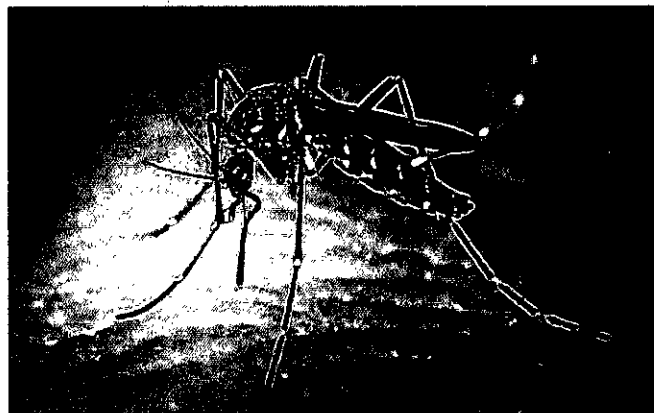
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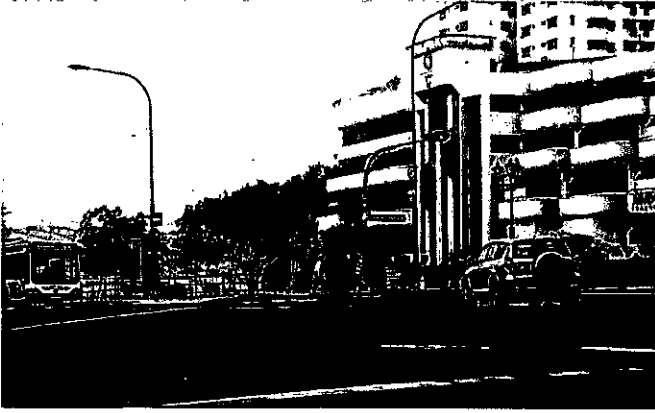
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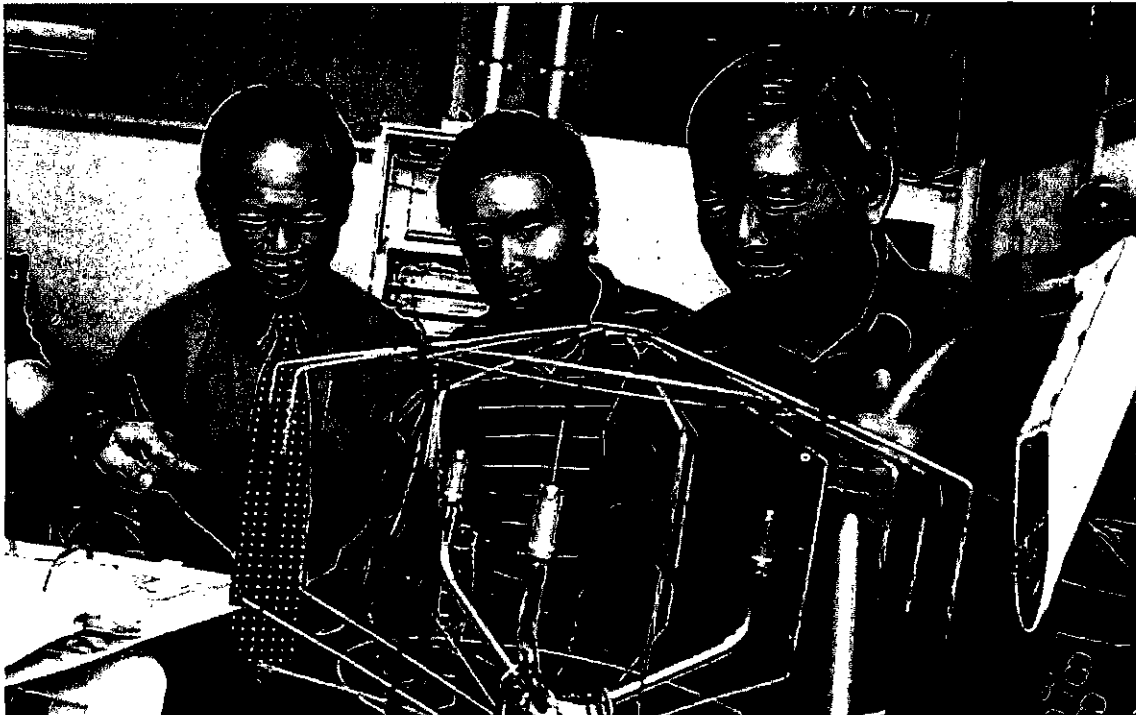


News

TODAY Online - S'poreans use SkillsFuture Credit mostly for ICT courses

Over 126,000 Singaporeans have used their SkillsFuture Credit to upskill or reskill

09 Jan 2017



SkillsFuture800x500

More than 126,000 Singaporeans — about one in 20 eligible citizens — used their SkillsFuture Credit to upskill or reskill last year, with information and communications technology (ICT) courses in greatest demand across all age groups.

In an update released yesterday, government agency SkillsFuture Singapore said Singaporeans in the 25-to- 29 age group used the highest amount of their SkillsFuture Credit, averaging nearly S\$400 per person.

Each Singaporean aged 25 and above was given S\$500 in credit they could use from the beginning of last year, in the Government's bid to promote lifelong learning.

SkillsFuture utilisation was fairly even across age groups, with the 60-and-above age group making up 23 per cent of those who tapped their accounts, followed by the 50-to-59 and 30-to-39 age groups making up 21 per cent each. The 25-to-29 age group made up 16 per cent of those who tapped their accounts.

SkillsFuture Singapore said younger Singaporeans enrolled for ICT courses in emerging areas such as data analytics, while older Singaporeans acquired more fundamental ICT skills such as basic computer functions. Other popular areas of training were in language skills, productivity and innovation, and security and investigation.

Dr Timothy Chan, director of SIM Global Education's academic division, said ICT courses were probably in demand because the currency of knowledge and cycle of competency in the sector is "very short".

Emerging areas in the sector include cyber security, big data and fintech, and both supply of and demand for ICT training are present, he said.

Asked about earlier concerns voiced by some people that there may be inertia in SkillsFuture Credit usage, Dr Chan said: "It's always difficult and challenging when a new initiative comes up — how the procedure goes, how to make claims ... the supply and demand side may not be mature."

Said OCBC economist Selena Ling: "As familiarity with the scheme grows, and (given) the fact that there are more courses made available, I think it's a good sign the take-up is improving. Of course, the ideal is if they can reach 100 per cent of the eligible population — that would be fantastic." She added that the popularity of ICT courses was in line with the Government's Smart Nation push.

Massive Open Online Courses, or MOOCs, proved popular among those under age 40, said SkillsFuture Singapore. They formed the majority of the 6 per cent of those who used their SkillsFuture Credit on MOOCs.

The three most popular MOOCs covered the Master of Business Administration, the Python programming language and Web development.

The number of training courses eligible for SkillsFuture Credit also increased from more than 10,000 in January last year, to over 18,000 by December.

There are over 700 training providers, including Udemy, Coursera, SIM University, the National University of Singapore and the Institute of Technical Education.

Source: TODAY Online

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STRATEGY

How will Alibaba shake up the Southeast Asian e-commerce landscape?

25 January 2017 by Radhika Dhawan Puri

Southeast Asia's quick-to-text-and-post consumers are attracting the attention of e-commerce companies who are eager to cash in on the growing appetite for online shopping.

With a smartphone penetration that is estimated to grow from 175 million units in 2015 to 230 million by 2017, and 688 million mobile subscriptions, eMarketer estimates that e-commerce revenues in Southeast Asia will reach US\$14.04 billion in 2016, up from US\$10.5 billion in 2015.

Alibaba on the prowl

It is against such a backdrop that Chinese e-commerce conglomerate Alibaba made its biggest play yet for regional dominance. In April, Alibaba announced it was buying a US\$1 billion controlling stake in Singapore-based e-commerce company Lazada, which has been described as an "Amazon clone for Asia".

Alibaba's move is not surprising given that the acquisition would give it access to newer markets outside of China, such as Lazada's operations in six Southeast Asian countries and 10 warehouses in the region.

One of Alibaba's biggest overseas transactions to date comes on the back of a decision in 2015 to strengthen its relationship with Singapore Post (SingPost).

Alibaba signed agreements to increase the equity stake in the postal company to around 14.5 per cent from 10.2 per cent, and take up a 34 per cent stake valued at S\$92 million in Quantum Solutions International, a SingPost subsidiary that offers end-to-end e-commerce logistics and fulfillment services across Asia-Pacific.

The result is an Alibaba that is muscling up not just on e-commerce, but also on the logistics front.

Alibaba is not alone. E-commerce giants such as Amazon and eBay have been investing in logistics networks to improve customer experiences and manage delivery costs.

A spokesperson from SingPost says: "The lines between e-commerce and logistics are blurred. Often they are mentioned in the same breath because they are becoming inextricable from each other."

Ali Pötia, partner, McKinsey & Company, adds: "Efficiently run e-commerce logistics operations might have a simpler path to profitability than both asset light and asset heavy e-commerce models. Marketplace models have found it particularly challenging to be sustainably profitable in Southeast Asia."

What's next for Alibaba?

Alibaba's expansion in the region is going full throttle.

Recently, it has also moved into the online grocery delivery business by snapping up a stake in Singapore-based RedMart through Lazada. The acquisition gives Lazada access to a ready fleet of trucks for delivery in Singapore, while RedMart has gained access to Lazada's technological expertise and third-party seller base.

Potential partnerships are also on the horizon if Alibaba brings Cainiao into Asia. Alibaba spearheaded the establishment of Cainiao Network, a logistics data platform company comprising China's top logistics firms such as S.F. Express and Shentong Express in 2013. As of now, Cainiao owns a network of more than 3,000 logistics partners in China and overseas.

According to Lai Chang Wen, CEO of Singapore-based logistics company Ninja Van, Cainiao doesn't directly handle logistical operations. "Hence, Cainiao's value-add will very much be dependent on the capabilities of local players," he said.

Alibaba's entry could open doors of opportunity for Singapore-based logistics companies that are already serving the complex needs of this region's consumers.

The e-commerce landscape in Asia is facing unique challenges, such as lack of connectivity and infrastructure. Also customer tastes and preferences vary across countries and cultures in this region, making customer satisfaction an onerous task.

"Addresses are not codified and many cities face severe traffic congestion issues. Also, many e-commerce companies do not typically plan for cash management complexity, and this becomes important as cash-on-delivery is a preferred payment option in many Southeast Asian markets," Pötia observes.

For Alibaba, partnerships with local logistics players with strong proprietary technology will be crucial in traversing the tricky Asian e-commerce and logistics landscape.

Lai feels that Ninja Van is in a good position to partner with global companies looking for strong local expertise. "There is always a possibility of partnerships with existing players, which will provide easy manoeuvrability for a new player's entrance. The key will be matching up to their required service levels. This can only be done with innovation, communication and flexibility," he says.

Ninja Van lays claim to a number of technology innovations: Its proprietary technology automates tedious manual processes, and it is also the first to offer improved traceability in real time. Customers can choose various delivery options such as Ninja Collect as well as better visibility of their orders through real-time notifications via email, SMS and website.

The rise of niche e-commerce

While Alibaba's entry will make Southeast Asia's e-commerce landscape even more competitive, it may also further silo the industry landscape. Herein, many opportunities exist for players who are quick to innovate and flexible enough to adapt their business models, or even product.

For smaller players, for instance, the way around the winner-take-all game could be to become more niche, offering either a unique experience or product.

Take the example of HipVan, a furniture and home decor e-commerce website, which has reduced its focus on a marketplace model and switched to sourcing its own furniture. Wenda Lewis, head of marketing at HipVan, points out that the profit margins of products designed in-house are often twice that of products sold through the marketplace model.

"There are other e-commerce players such as Lazada that are getting into home decor products. We feel that sourcing our products and designing in-house allows us to differentiate ourselves from other players," says Lewis.

Poña of McKinsey shares: "There is an opportunity for own brand, bespoke or niche e-commerce models – smaller, more focused offerings tailored to buyers who are looking for a specific product or category."

Singapore is no stranger to new e-commerce players and this will signal a new wave of online retailers. Lazada might find itself up against many niche players.

While local e-commerce and logistics players are waiting to see what Alibaba's growing footprint in the region will entail, it's clear that there is no lack of opportunities in this region. Companies can reap benefits by delivering the emerging shopping and delivery experiences that consumers in Southeast Asia are already seeking.

Edited by Gracia Chiang, Sophie Chen, Kritika Srinivasan and Goh Wei Ting



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Scientists Turn Memory Chips into Processors to Speed Up Computing Tasks

January 3, 2017 | NTU

Reading time 3 min (848 words)

A team of international scientists have found a way to make memory chips perform computing tasks, which is traditionally done by computer processors like those made by Intel and Qualcomm.

This means data could now be processed in the same spot where it is stored, leading to much faster and thinner mobile devices and computers.

This new computing circuit was developed by Nanyang Technological University, Singapore (NTU Singapore) in collaboration with Germany's RWTH Aachen University and Forschungszentrum Juelich, one of the largest interdisciplinary research centres in Europe.

It is built using state-of-the-art memory chips known as Redox-based resistive switching random access memory (ReRAM). Developed by global chipmakers such as SanDisk and Panasonic, this type of chip is one of the fastest memory modules that will soon be available commercially.

However, instead of storing information, NTU Assistant Professor Anupam Chattopadhyay in collaboration with Professor Rainer Waser from RWTH Aachen University and Dr Vikas Rana from Forschungszentrum Juelich showed how ReRAM can also be used to process data.

This discovery was published recently in Scientific Reports, a peer-reviewed journal under the prestigious Nature Publishing Group.

Current devices and computers have to transfer data from the memory storage to the processor unit for computation, while the new NTU circuit saves time and energy by eliminating these data transfers.

It can also boost the speed of current processors found in laptops and mobile devices by at least two times or more.

By making the memory chip perform computing tasks, space can be saved by eliminating the processor, leading to thinner, smaller and lighter electronics. The discovery could also lead to new design possibilities for consumer electronics and wearable technology.

How the new circuit works

Currently, all computer processors in the market are using the binary system, which is composed of two states – either 0 or 1. For example, the letter A will be processed and stored as 01000001, an 8-bit character.

However, the prototype ReRAM circuit built by Asst Prof Chattopadhyay and his collaborators processes data in four states instead of two. For example, it can store and process data as 0, 1, 2, or 3, known as Ternary number system.

Because ReRAM uses different electrical resistance to store information, it could be possible to store the data in an even higher number of states, hence speeding up computing tasks beyond current limitations.

Asst Prof Chattopadhyay who is from NTU's School of Computer Science and Engineering, said in current computer systems, all information has to be translated into a string of zeros and ones before it can be processed.

“This is like having a long conversation with someone through a tiny translator, which is a time-consuming and effort-intensive process,” he explained. “We are now able to increase the capacity of the translator, so it can process data more efficiently.”

The quest for faster processing is one of the most pressing needs for industries worldwide, as computer software is getting increasingly complex while data centres have to deal with more information than ever.

The researchers said that using ReRAM for computing will be more cost-effective than other computing technologies on the horizon, since ReRAMs will be available in the market soon.

Prof Waser said, “ReRAM is a versatile non-volatile memory concept. These devices are energy-efficient, fast, and they can be scaled to very small dimensions. Using them not only for data storage but also for computation could open a completely new route towards an effective use of energy in the information technology.”

The excellent properties of ReRAM like its long-term storage capacity, low energy usage and ability to be produced at the nanoscale level have drawn many semiconductor companies to invest in researching this promising technology.

The research team is now looking to engage industry partners to leverage this important advance of ReRAM-based ternary computing.

Moving forward, the researchers will also work on developing the ReRAM to process more than its current four states, which will lead to great improvements of computing speeds as well as to test its performance in actual computing scenarios.

About Nanyang Technological University

A research-intensive public university, Nanyang Technological University, Singapore (NTU Singapore) has 33,500 undergraduate and postgraduate students in the colleges of Engineering, Business, Science, Humanities, Arts, & Social Sciences, and its Interdisciplinary Graduate School. It also has a medical school, the Lee Kong Chian School of Medicine, set up jointly with Imperial College London.

NTU is also home to world-class autonomous institutes – the National Institute of Education, S Rajaratnam School of International Studies, Earth Observatory of Singapore, and Singapore Centre for Environmental Life Sciences Engineering – and various leading research centres such as the Nanyang Environment & Water Research Institute (NEWRI), Energy Research Institute @ NTU (ERI@N) and the Institute on Asian Consumer Insight (ACI).

Ranked 13th in the world, NTU has also been ranked the world’s top young university for the last three years running. The University’s main campus has been named one of the Top 15 Most Beautiful in the World. NTU also has a campus in Novena, Singapore’s medical district.

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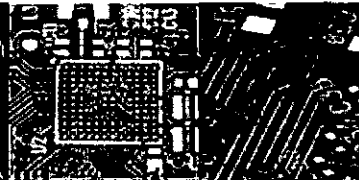
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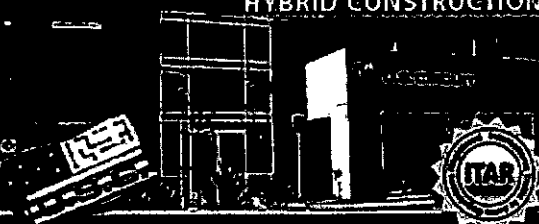

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MARKET INSIGHTS

Singapore: a hotbed for cold chain logistics

04 January 2017 by Samyukta Ramani

Asia's pharmaceutical industry is expected to generate revenues of US\$ 386 billion this year, and Singapore – viewed as a healthcare hub – is expected to be a frontrunner in this growth.

Owing to its superior infrastructure, transparent regulations and excellent connectivity, Singapore has established itself as Asia's healthcare destination. The city-state has an international presence in the R&D sector of the biotechnology and pharmaceutical industry. With Singapore emerging as a hub for central laboratories in the region, more than 30 of the world's leading biomedical science companies are using the country as their base.

The extensive movement and transport of biomedical products has opened up a cold chain market for third-party logistic players (3PLs) in Singapore.

Logistic complexities in the cold chain

Cold chain logistics refers to maintaining specific temperature bands under which drugs and drug accessories are stored and transported. It is perhaps one of the most intricate and demanding logistic segments, due to its rigorous temperature requirements and energy dependence. The handling of highly sensitive drugs that will ultimately impact a human being has enforced the need for a robust cold chain logistics system in the pharmaceutical industry.

"Temperature logistics is getting more and more important here, thanks to substantial growth in the biopharmaceutical and the bioservices sectors," said a senior official at an MNC logistics company in Singapore, who wished to remain anonymous.

However, in a recent survey conducted by Gartner on cold chain distribution strategies, Lisa Callinan, a research director at Gartner pointed out that less than 10 percent of the global life science companies they interviewed had a well-defined strategy in place or had developed the necessary in-house expertise to optimise processes and minimise cost. Companies face substantial hurdles in the implementation and management of cold chain logistics.

The foremost challenge for the cold chain lies in the need to maintain exact temperature ranges while transporting pharmaceutical products. As these products are highly sensitive to temperature, even the slightest of fluctuations can have an adverse impact on their efficacy, resulting in substantial write-offs for the drug manufacturer.

The other mammoth challenge that pharmaceutical companies face is adhering to both local and global regulations. Local regulations around the pharmaceutical industry differ from country to country. This means that having intimate knowledge of all the regulations across the cold chain is mandatory not to run afoul of the law.

"Manufacturers are likely to see continued increases in costs associated with temperature sensitive transportation due to additional qualification and validation protocols," said Callinan.

Pharmaceutical companies are thus looking at 3PLs to provide them with the most optimal cold chain solution. This will allow them to focus on their own core expertise, while capitalising on the 3PLs' scale of operations, logistics expertise and technology innovations.

Logistics solutions on offer

A robust cold chain is one that encompasses appropriate packaging for the product, best practices in transportation and temperature visibility throughout transit. These are the tangible factors that pharmaceutical companies audit and review when they verify the efficacy of cold chain solutions of logistic companies.

The right packaging

In Asia, custom clearance is mandatory while transporting products from country to country. Since delays in customs are likely, it is crucial for pharmaceutical companies to have packaging that can endure for a longer period of time.

Logistics players provide different types of thermal packaging to keep the products within permissible temperature limits. Shipper boxes that only use XPS or EPS material (rigid, closed cell and thermoplastic foam materials) with water gel are one of the most commonly offered thermal packages. However, the challenge with such packaging is that it is not sturdy enough to withstand extreme temperature fluctuations.

"When we transport a vaccine from Singapore to Korea in winter, we are moving it from 25 degrees Celsius to -10 degrees Celsius. In such conditions, if we use XPS or EPS material with water gel, the product will have a thermal shock and lose its potency," explained the MNC senior official.

This translates into the need for logistics companies to constantly innovate on packaging. The latest packaging solution that is being offered to address this issue, for instance, is the vacuum insulated panels (VIP), where double-walled boxes contain a vacuum between the two layers. The vacuum will insulate the product since temperature fluctuations will not travel through it.

Logistics companies have also introduced phase change materials (PCM) into the packaging. Frozen water-based gel pack will last for only two days before it loses its strength and turns into a liquid. PCM, on the other hand, can maintain the temperature of the packaging even in liquid form and extend product life by another two days.

Temperature visibility

Drugs and vaccines lose potency if their temperature band is breached during storage and distribution. Hence round-the-clock temperature visibility is of vital importance to companies so they can proactively take remedial actions if needed.

To offer pharmaceutical companies temperature visibility, temperature loggers can be installed for real-time monitoring right through the transit. One such end-to-end solution is Kuehne + Nagel's KN PharmaChain, which offers door-to-door temperature control, a 24-hour alert system and a corrective action mechanism. Throughout the shipment's entire journey, the KN Login online tracking and tracing tool captures temperature data from wireless sensors and transmits the data to the customer for complete visibility of the temperature of the shipment.

Logistics companies are required to submit proof of their best practices in packaging, transportation and temperature visibility, and their expertise in managing regulatory requirements to their clients. Additionally, clients increasingly expect 3PLs to invest in training their employees, so the latter can upgrade their skills on an ongoing basis and mitigate human error that might rise during the transportation and storage of sensitive material.

The evolving cold chain market in Singapore

Twenty of the world's top 25 3PLs have a major presence in Singapore, and the value they can offer the pharmaceutical industry here is only expected to grow. Besides cold chain management and customs facilitation, they are already offering sophisticated mechanisms for the management and timely delivery of research and clinical trial samples.

3PLs looking to grow in Singapore can leverage their position as potential channel partners to pharmaceutical companies expanding in Asia, growing in tandem with these as they respond to the latter's demands in increasingly sophisticated ways. Their role is expected to grow to include inventory management and the handling of warehouse facilities as well.

Edited by Kritika Srinivasan and Goh Wei Ting

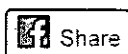
Singapore: Unlikely Power



An excerpt from John Curtis Perry's new book.

John Curtis Perry

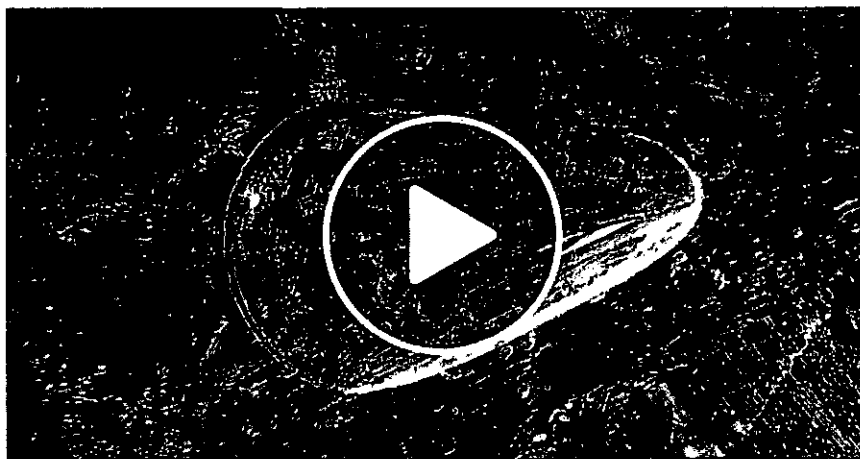
January 22, 2017



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Today's traveler arriving in Singapore by air sees first a great aggregation of ships laid out in the harbor below, vividly illustrating the city's primary position among world seaports. In the soft freshness of tropical dawn, driving downtown along a parkway lined with flowering greenery, the many towers of the city gleam in their newness, reminding one how stunningly recent has been the global economic shift from Atlantic primacy to the Pacific as world center of explosive economic growth. In its wildly implausible story of survival, growth, and prosperity, Singapore exemplifies this great transformation and illustrates the power of the maritime world in making it happen.



"White Oil" Discovery Could Make OPEC Obsolete

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Singapore is a survival tale of overcoming periodic, even life-threatening crises. Highly competent and ambitious leadership, fired by nervous anxiety and committed to success, has provided the program and pulse for what Singapore is today: an economic dynamo, a miracle of well-crafted institutional design achieved with remarkable speed. But its success was never a given.

Although most Americans scarcely know where it is, we have substantial interests in Singapore, both monetary and military. We have twice as much money invested in that

tiny place than in all of China. With these heavy corporate stakes, Americans not only have a big economic interest but also, having long ago replaced Britain as guardian of the global seas, we have a strong strategic interest in ensuring open passage through the Straits.

Although no utopia, the achievements of contemporary Singapore are inspiring. We can admire the courage with which it has faced and overcome adversity. Many criticize its authoritarianism yet accept the substantive accomplishments of its leaders in advancing human welfare, opening society to new opportunities and ideas while sheltering it from those perceived as threatening social harmony. But, as in that ancient city-state Athens, the government believes that the good of the community must supersede the interests of the individual. And many outsiders would now agree.

In its earliest years, seven centuries ago, Singapore faced threats to its survival from hostile neighbors and lost its importance as a significant seaport. When the British arrived in 1819, they first faced an environmental challenge, to hack out a tentative settlement at the lip of a stubborn and aggressive jungle, in a tropical environment that many of its settlers found both alien and hostile. Immediately the threat of stillbirth loomed.

London, for European geopolitical reasons, threatened to repudiate the founders, only belatedly giving approval to its new rapidly growing outpost of empire. A generation later when the British defeated China in the Opium War (1839–42) part of the booty was the barren island of Hong Kong, which rapidly became a major British port. Singapore, hitherto touted as the “gateway to China,” lost that role and feared it would then forfeit the China trade, the principal justification for its founding and its first great hope for prosperity.

At the turn of the nineteenth century, fluctuations of global commodity exchanges, notably the elastic demand for rubber, a principal re-export, illustrated Singapore’s heavy dependence upon a world market beyond its control. And the trauma of destruction and brutal Japanese occupation in World War II again painfully showed Singapore its continuing vulnerability to forces from the outside world.

When independence abruptly and unexpectedly came, after a tumultuous and brief (1963–65) union with Malaysia, many thought the new nation could not survive. Unemployment soared. Disorder reigned. Strikes disrupted production. Rioters thronged the streets.

Communism appealed to many, and Singapore faced a big aggressive neighbor in Indonesia.

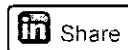
With many to feed and few resources to do so, a fragile new political entity was challenged to create a stable economy and a sense of nationhood for a city diverse in race, religion, and language. Founding prime minister Lee Kuan Yew even called the idea of a modern maritime city-state a joke and national identity continues to challenge Singapore.

But ambitious for himself and for his country, Lee skillfully used the psychological impetus of freedom to animate the populace while gradually establishing political control, in part by using the mechanisms of authoritarian British colonial rule. Yet while economic growth began to generate jobs and diminish social tensions, by withdrawing its military presence in 1971, Britain struck a huge blow to Singapore's national security and the economy. Its bases had generated nearly one-fifth of GNP and employed one of ten Singaporean workers.

Today Singapore is the world's most trade-dependent nation, indicating its vulnerability to global economic forces beyond its control. A survivalist mentality, artfully orchestrated by the government, continues to drive educational achievement, military preparedness, attachment to thrift, search for a competitive economic niche, and the desire for a greater place in the global community.

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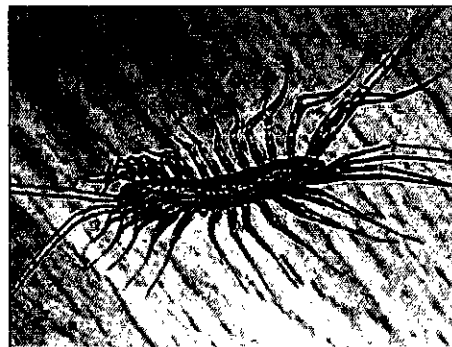


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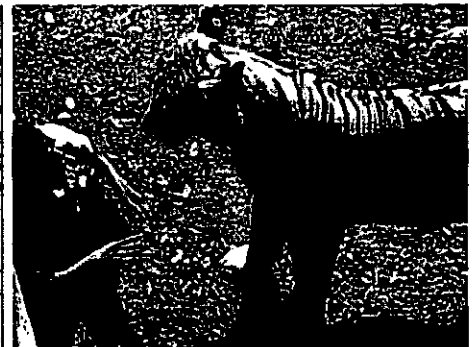
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This Video Is Why We're Lucky To Have Trump As President



Here's Why You Should Never Squash A Centipede



Final Photos Taken Seconds Before Tragedy Struck



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When He Rescued It From the Sidewalk, He Had No Clue What It Would Become



If You Suffer From Callused Feet, Try This Amazing Trick!



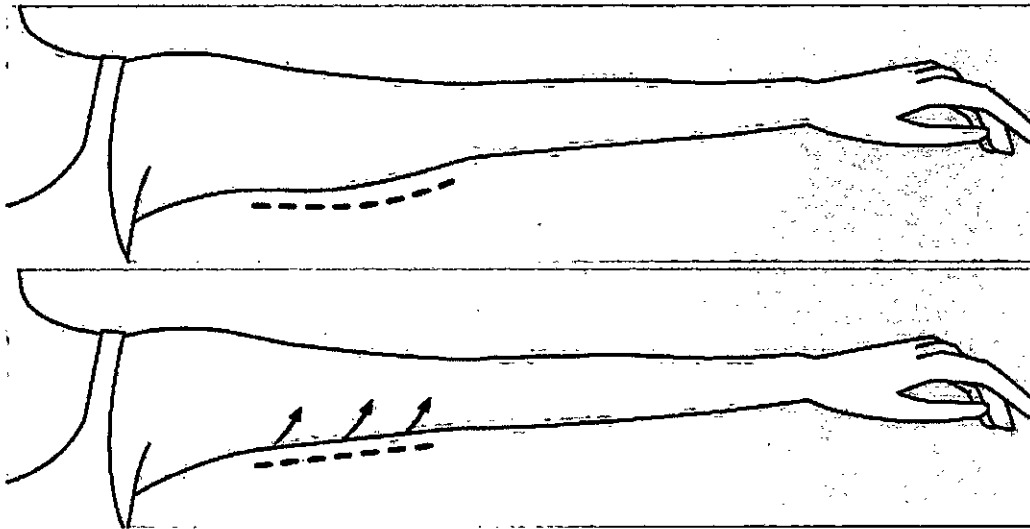
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Who Won the Cold War?

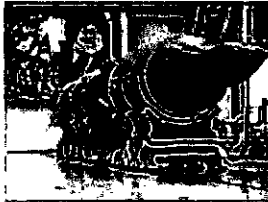
A straight line can be drawn from the idea that Ronald Reagan's military buildup and assertive rhetoric ended the Cold War to the fantasy that the United States could rebuild the Middle East.

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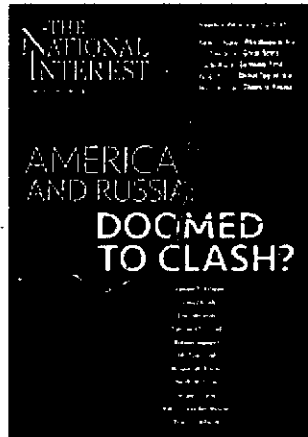


How to Prevent a Nuclear Arms Race in the Middle East: Invest in Stability Instead of Conflict

There are opportunities for peace in the region—America must not squander them.

Jack Keane, Dennis Ross, Keith B. Alexander, Robert McFarlane

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September-October 2017

Washington and Moscow Must Embrace Détente—Despite Trump

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How Singapore's startup ecosystem has grown up in the last 5 years (INFOGRAPHIC)

30 Comments



Michael Tegos (<https://www.techinasia.com/profile/michael-tegos>)

3:43 AM at Jun 1, 2016 | 4 min read

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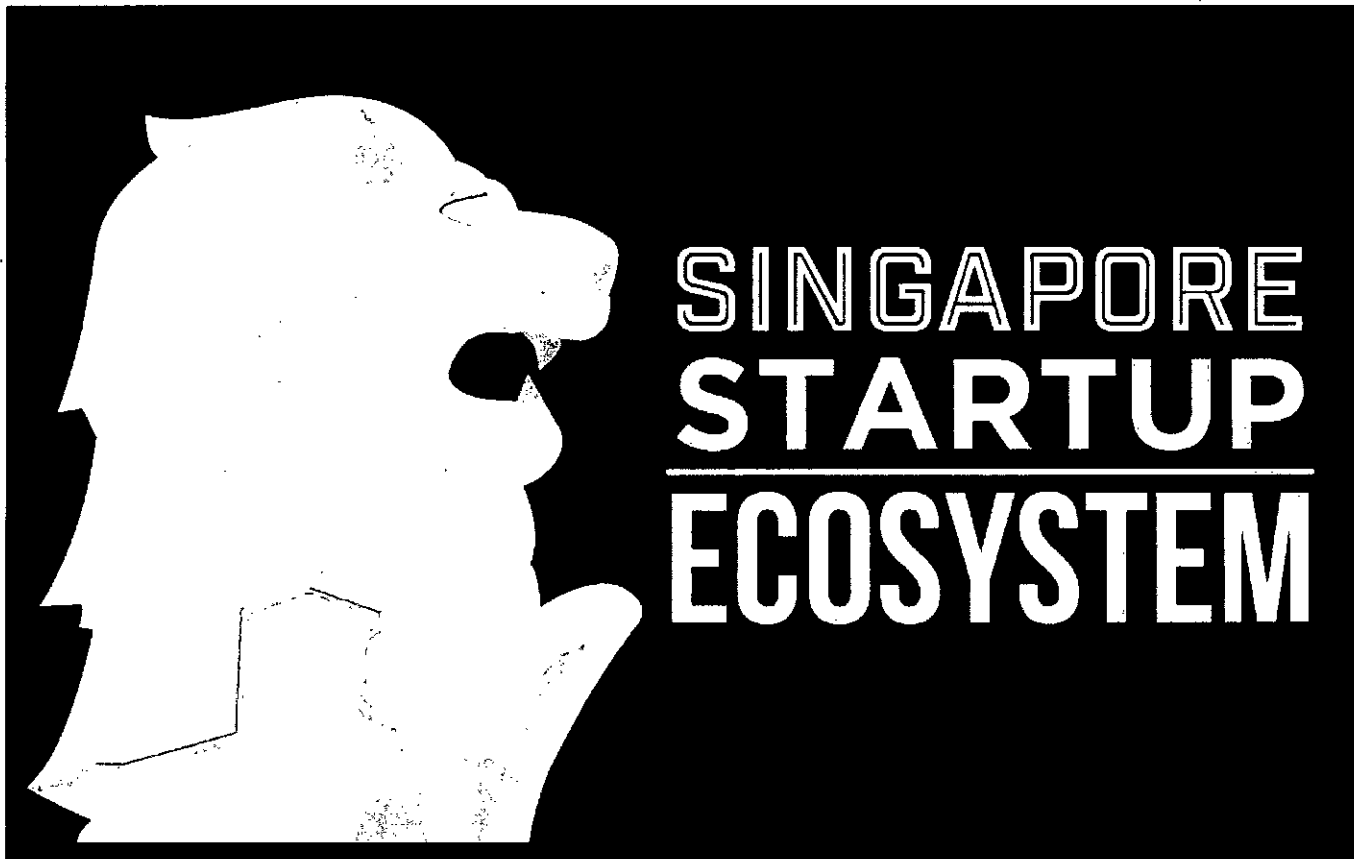
When we talk about Singapore's tech startup ecosystem today, we kind of take it for granted. *Of course* we do – it's ranked among the top 10 startup ecosystems in the world (<https://www.techinasia.com/compass-startup-ecosystem-ranking-report-2015-singapore>) after all. There's funding, eager entrepreneurs, an international outlook.

It wasn't always thus.

The growth of Singapore's startup scene is a relatively recent phenomenon. The market was chugging along but didn't have much to show for it compared to other startup bastions in the world. But after 2012, a series of seeds planted by the city-state's government started bringing forth crops. There was a veritable explosion, both in the number of startups founded and in investment flowing into them.

Let's take a look at what the numbers look like between then and now, in nifty infographic form.

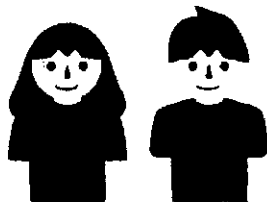




THE FACTS

— COUNTRY RECORD —

CITIZEN
POPULATION



5,399,000

GDP
PER CAPITA



US\$72,711

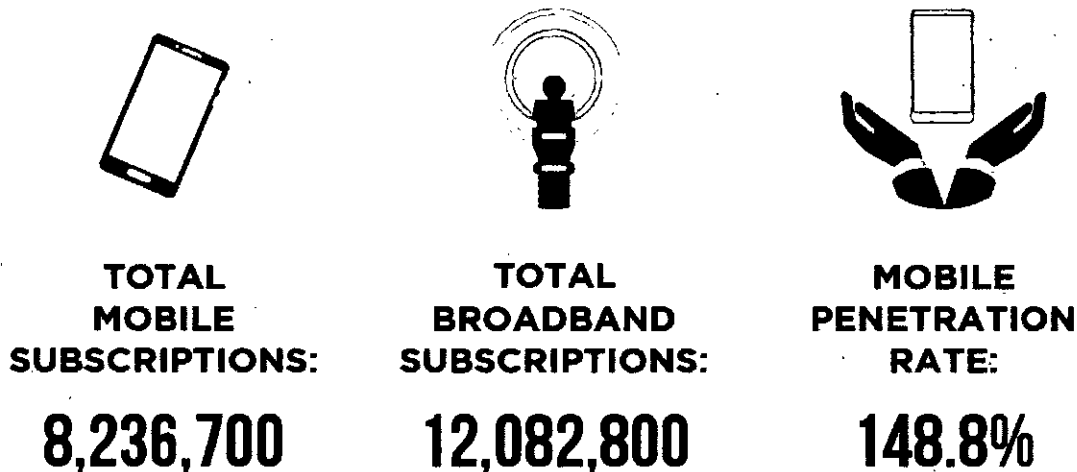


— ACTIVE INTERNET USERS —

**WIRELESS BROADBAND
SUBSCRIPTIONS**



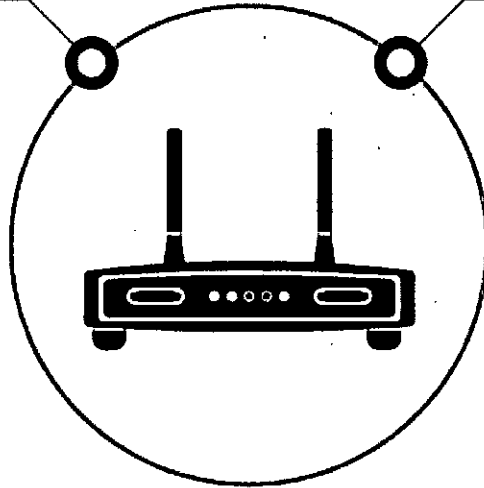
— INTERNET AND MOBILE
USAGE



INTERNET SPEED

2015 DATA:

AVERAGE
CONNECTION
SPEED:
12 MBPS



PEAK
CONNECTION
SPEED:
135 MBPS
(63% increase YoY)

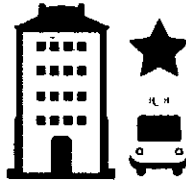


STRENGTHS AND WEAKNESSES

STRENGTHS



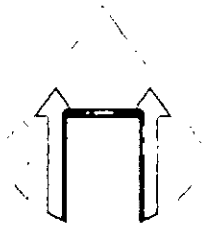
Ease of setting up a business



Multicultural, cosmopolitan society



Stable political climate and rule of law



Huge mobile and online penetration



Robust financial and technical infrastructure



Access to foreign investment

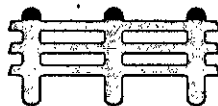
WEAKNESSES



Shortage
of technical
talent



High
cost of
living



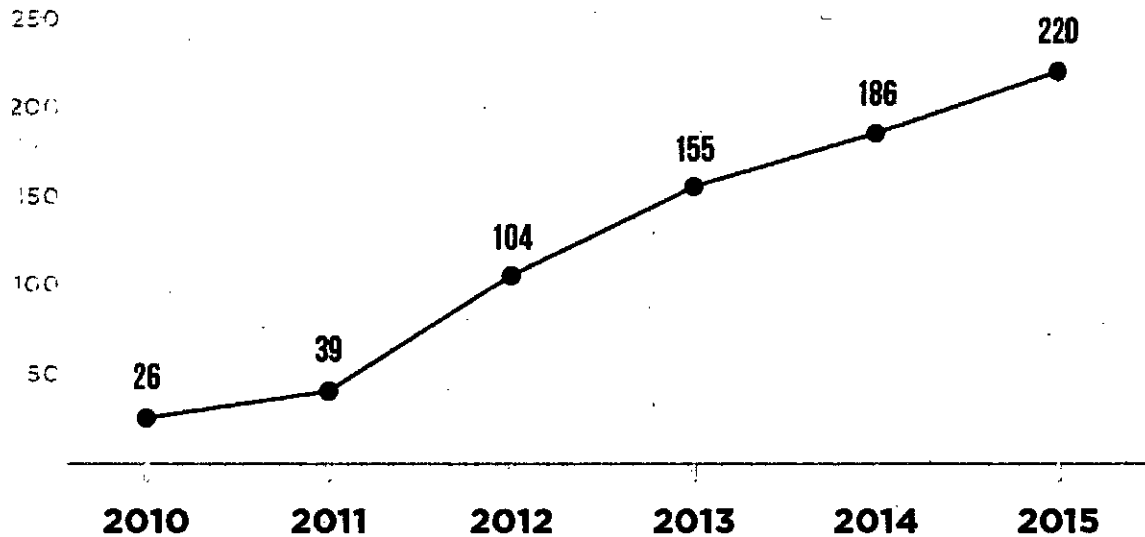
Shortage of
investment
past series B
stage



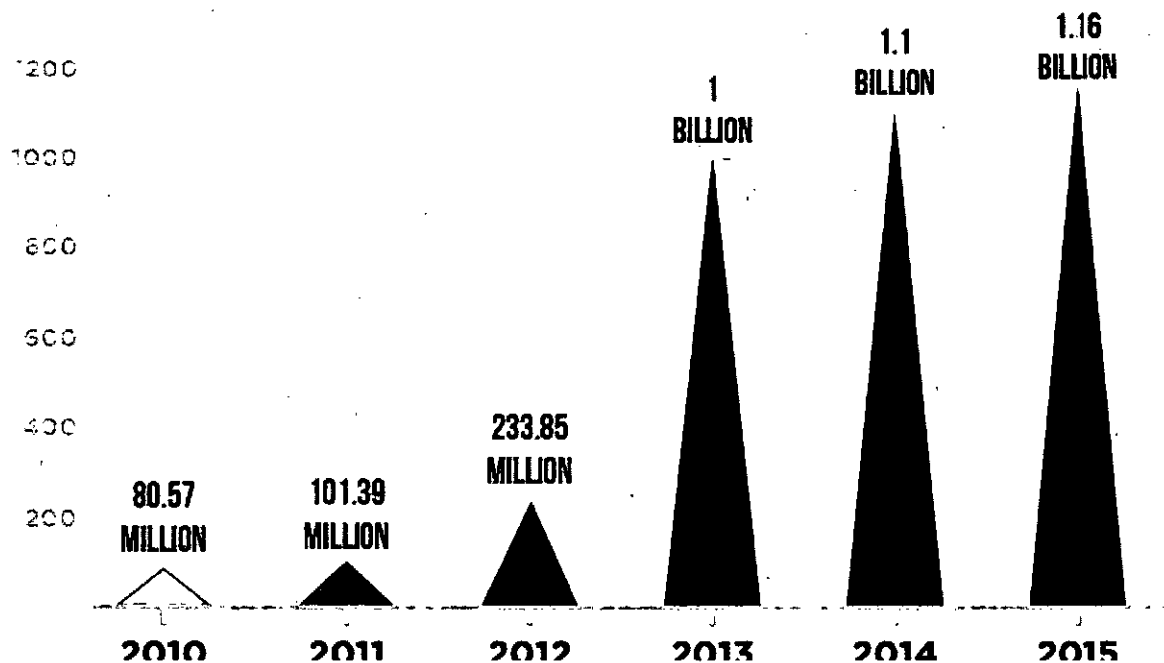
Small
local
market

FUNDING RECORDS

NUMBER OF FUNDING DEALS IN SINGAPORE



TOTAL FUNDING AMOUNT IN SINGAPORE (IN US\$)



— 3 BIGGEST SINGLE FUNDING —
ROUNDS



US\$350 MILLION
SERIES E

LAZADA

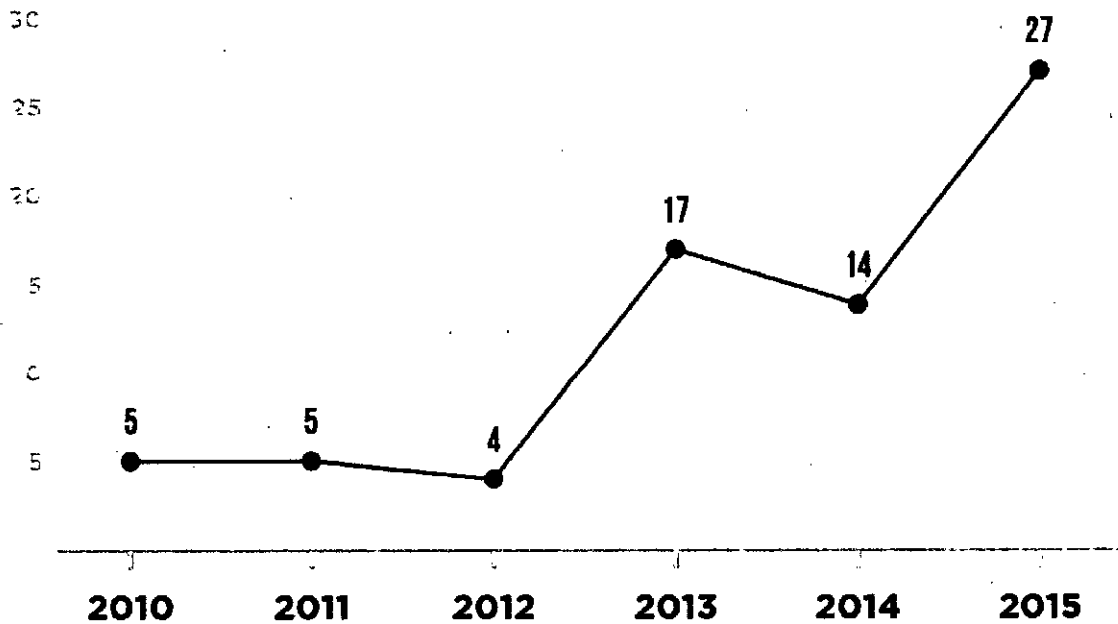
US\$250 MILLION
SERIES E

LAZADA

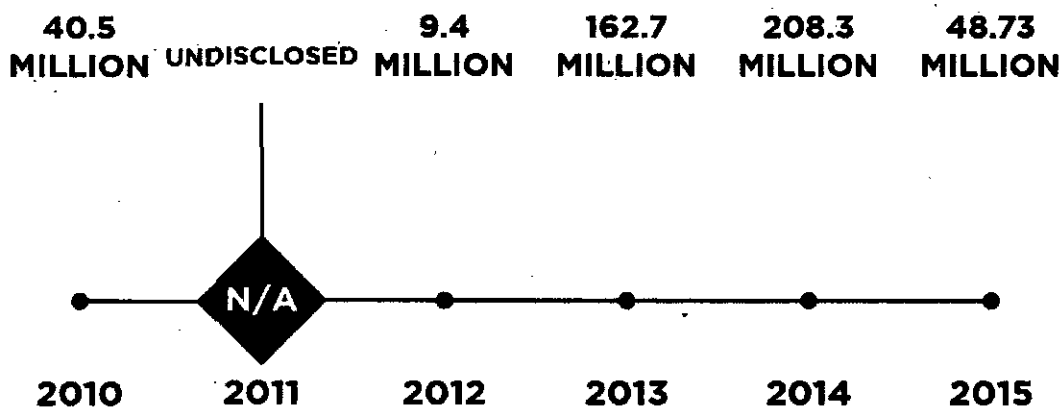
US\$250 MILLION
SERIES F

EXIT RECORDS

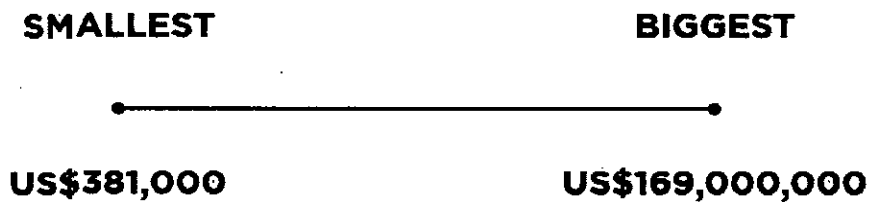
NUMBER OF EXITED
TECH STARTUPS



— TOTAL EXIT VALUATION —
(IN US\$)



— EXIT VALUE RANGE OF PAST STARTUPS —
PAST STARTUPS



? (https://

— 2 BIGGEST EXIT ROUNDS —

R viki

VIKI

**US\$200 MILLION (REPORTED)
2013 / ACQUISITION**





afc

ASIAN FOOD CHANNEL

**US\$66 MILLION
2013 / ACQUISITION**



HOTTEST VERTICALS IN SINGAPORE

<p>1</p>  <p>ECOMMERCE</p> <hr/> <p>US\$1.22 BILLION 42 DEALS</p>	<p>2</p>  <p>LOGISTICS & TRANSPORTATION</p> <hr/> <p>US\$766.41 MILLION 17 DEALS</p>
<p>3</p>  <p>MARKETPLACES & PLATFORMS</p> <hr/> <p>US\$274.2 MILLION 26 DEALS</p>	<p>4</p>  <p>REAL ESTATE</p> <hr/> <p>US\$184.5 MILLION 6 DEALS</p>



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December 29, 2016 12:00 pm JST

Singapore's tech strategy chief talks about the future of research

Investment in education, ties with Japan help city-state's science scene flourish

TAKASHI KUROKAWA, Nikkei staff writer

TOKYO As Japan and Singapore mark their 50th anniversary of diplomatic ties, scientific cooperation between the two countries has never been closer.

The Nikkei sat down with Lim Chuan Poh, chairman of Singapore's Agency for Science, Technology and Research -- or A*STAR, for short -- to talk about recent bilateral collaboration and the city-state's strategy for science and tech development.

How will A*STAR utilize the supercomputer that Singapore has introduced from Fujitsu? The National Supercomputing Centre has four founding stakeholders: the Agency for Science, Technology and Research, Nanyang Technological University, the National University of Singapore and the Singapore University of Technology and Design. All four organizations have directly plugged their existing infrastructure into this supercomputing facility.

NSCC
is



Lim Chuan Poh, head of Singapore's Agency for Science, Technology and Research

intended as a shared facility for the public sector, the institutions of research and higher learning, and also for the private sector. With its high-speed network connectivity locally and globally, NSCC promotes the use of supercomputing resources to solve complex problems, test designs and advance technologies.

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Singapore and Japan have agreed to collaborate on research into aging. What do you expect from this partnership? As Singapore and Japan face similar challenges, like aging populations and low birth rates, there are natural synergies for both nations to work together to find solutions to these issues. According to the World Health Statistics 2016, published by the World Health Organization, the life expectancy of Singapore was 83.1 years in 2015 and is ranked third, while Japan ranks first, at 83.7 years.

Singapore's Ministry of Health hopes to learn from Japan's rich experiences in developing its aged care sector and in health promotion, as well as policies pertaining to the financing of long-term care. Local universities have aging and long-term care projects underway with Japan.

Recently, A*STAR co-organised a workshop in the area of aging and signed a memorandum of commitment with Japan's Agency for Medical Research and Development in March 2016 to advance biomedical science R&D collaborations. AMED set up its first overseas office in Singapore in June 2016, and we will be launching an inaugural joint grant call within the year.

Apart from collaborating in research on aging, Singapore and A*STAR have close partnerships with several Japanese institutions, such as the Japan Science and Technology Agency and Riken, as well as with Japanese enterprises across different disciplines and industries.

In the last few decades, Singapore has gathered many top international scientists and engineers. How has this affected the growth of Singapore? Science is international, and a diversity of backgrounds and experiences of the scientists and engineers enriches the vibrancy of any science and innovation hub. At the same time, excellent science and impactful innovation from any hub is determined by how attractive the place is to talent and enterprise. An open talent strategy is therefore critically important to any science and innovation hub. This is even more so for a small country like Singapore, where the talent strategy is to nurture a strong local core to be complemented by a rich diversity of internationals. This has enabled Singapore to jump-start our science and innovation efforts and to accomplish more than what the domestic population can reasonably support.

Have Japanese scientists and engineers contributed to Singapore's growth? Japan is a key partner for Singapore and A*STAR. Japanese scientists and engineers have contributed to the growth of Singapore in three ways. The first is through being a part of the public research efforts in A*STAR or the universities. The second is through being part of Japanese corporate laboratories that have significantly grown their presence in Singapore over the last decade or so. The third is the many bilateral research collaborations that have been established between the two research communities.

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How do you educate and cultivate Singapore's own scientists and engineers? Singapore has invested heavily in education over the years to develop our people, who are our only natural resource. STEM (science, technology, engineering and mathematics) education is a particular strength, both in the formal curriculum and also in the variety of experiential activities to enthuse the young in STEM subjects. ... For those students with the capacity and interest, they also get to do research attachments in A*STAR research institutes, universities and other public research entities.

At the same time, over the last 15 years, with steady and sustained investments by the government, there are now world-class research institutes and facilities in both A*STAR and the autonomous universities in Singapore providing a very conducive environment for aspiring young scientists to build their careers.

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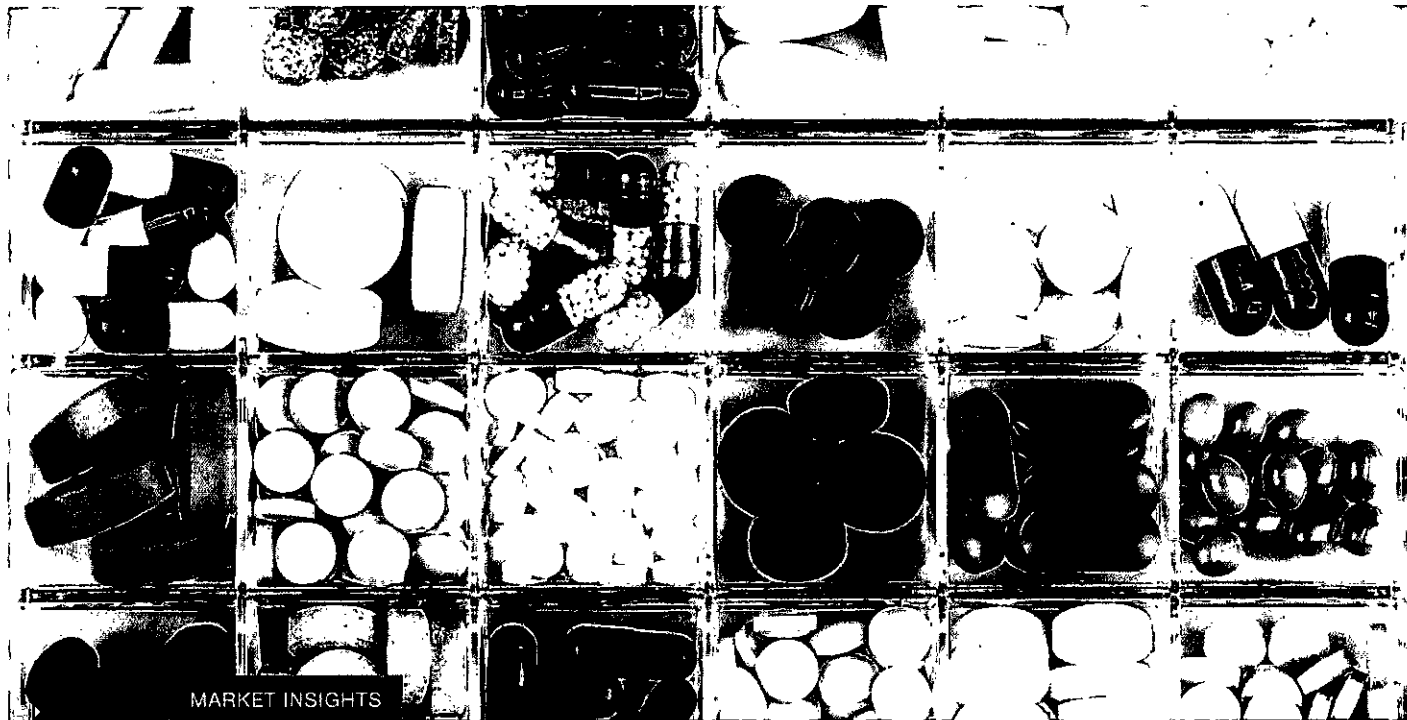
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The brave new world of biosimilars

23 January 2017 by Feng Zengkun

Patients in Asia with diseases ranging from diabetes to rheumatoid arthritis and cancer could soon get help from a class of drugs called biosimilars, with both Western and Asian firms racing against one another to be the first to supply the medicines to them.

Biosimilars are essentially less expensive, highly similar versions of drugs called biologics, which are derived from natural sources such as plant, animal and human cells and bacteria. Unlike conventional drugs, which are made of chemical substances, biologics often cause fewer side effects.

In the next few years, patents for more than 10 top-selling biologics will expire in the United States and Europe, opening up the field to cheaper, biosimilar versions of them. Consultancy firm Allied Market Research has estimated that the global biosimilars market could soar from US\$2.6 billion (\$\$3.5 billion) in 2014 to US\$26.5 billion by 2020.

Ramping up biosimilar capabilities in Asia

With Asia set to be a key growth market – the Asia Pacific region was estimated to be the second largest market for biosimilars in 2015, after Europe – both new and established pharmaceutical companies are setting up or expanding their presence in the region.

Swiss healthcare giant Novartis, for instance, will open a US\$500 million manufacturing plant in Singapore in 2017 that can produce both biologics and biosimilars. It also sited the Asia Pacific headquarters of its Sandoz division, which concentrates on biosimilars and generic pharmaceuticals, in Singapore.

"Singapore has easy access to transportation routes serving Asia and the world," said Novartis spokesman Eric Althoff. "It also has a business-friendly environment where companies can get highly qualified labour and support from public institutions such as the Economic Development Board."

In 2014, Amgen, based in America and one of the world's leading biotechnology companies, also opened a \$200 million biologics manufacturing plant in Singapore, its first in Asia. The firm currently has eight biosimilars in development, in addition to a biosimilar for inflammatory diseases that has been approved by the United States Food and Drug Administration (US FDA).

While the Singapore plant currently does not produce biosimilars, Amgen spokesperson Karen White noted that Singapore is well-positioned to support the company's global growth.

"Singapore is Asia's fastest-growing bio-cluster, and its stable government, good corporate governance practices, highly skilled workforce, global logistics connectivity and strong intellectual property regime and environment also make it attractive to companies like Amgen," said Ms. White.

To bolster their position in Asia's biosimilars market, Amgen and other Western companies are also inking collaborations with Asian firms. In July 2016, for instance, Amgen announced an agreement with Japanese pharmaceutical company Daiichi Sankyo to commercialise nine biosimilars in Japan. These include biosimilars of rheumatoid arthritis and cancer drugs.

Leading Asian companies themselves are ramping up their efforts in biosimilars research and development. In 2012, the South Korean electronics and healthcare giant Samsung Group joined forces with American biotechnology company Biogen to form a joint venture focused on biopharmaceuticals, called Samsung Bioepis.

To accelerate its development of a biosimilar version of Enbrel, a prominent rheumatoid arthritis drug created by Amgen, Bioepis set aside 100 bioreactors and assigned 300 researchers to oversee 1,500 experiments. The intensive effort paid off. In 2016, and after just four years of development, it was the first to introduce its etanercept biosimilar in Europe where Wyeth markets Enbrel. Most biosimilars take eight to 10 years.

In 2008, Celltrion, another South Korean company, took the plunge to develop its own biosimilars after years of manufacturing biologics for other firms. The contract work had enabled it to build up its own expertise and resources in the field, said a spokesman.

In April 2016, the US FDA approved Celltrion's biosimilar version of American company Johnson & Johnson's best-selling rheumatoid arthritis drug Remicade, paving the way for its entrance into one of the world's biggest markets.

Opportunities beyond the obvious

While the giants in the pharmaceutical industry are staking their claims to the Asian biosimilars market, smaller and newer players are finding creative ways to carve out niches in the field as well. Primetrics, a contract research organisation based in Singapore, offers biosimilar testing services to other pharmaceutical companies.

SGS, a Swiss company, also provides such services in Singapore. It leverages on its extensive network of more than 1,800 laboratories and offices across Europe and the United States to help Western pharmaceutical companies expand into Asia and vice versa, using Singapore as a bridge. SGS's work includes determining the exact genetic sequence of the biologic to be copied, comparability tests and clinical trials.

Mr Althoff, the Novartis spokesman, noted that Singapore has established itself as a hub for biotechnology, which includes biopharmaceuticals such as biologics and biosimilars. Many leading companies in the sector have set up operations or even regional headquarters in the country, including Swiss company Roche and American firm AbbVie, paving the way for research and development and other collaborations, as well as further expansions into Asia.

With biologics still greatly underused in Asia due to their high costs, the demand for their biosimilars is set to skyrocket in the near future. The opportunity for Asian and Western healthcare firms – and their investors – is one that is not to be missed.

Edited by Liew Hanqing and Tan Yi Xuan



The secret weapon in ASEAN's war for Talent

11 January 2017 by Lucy Sutton



The recent ratification of the AEC spells good news for the region's workforce. The International Labour Organization estimates that ASEAN integration could grow the region's economies by 7.1 per cent by 2025 and create 14 million more jobs.

As of March 2015, eight skilled professions were already covered under Mutual Recognition Arrangements, allowing people with these skills easier movement across ASEAN borders.

"These Mutual Recognition Arrangements allow professionals to pass only one exam for their education and working experiences to be recognised across all 10 member countries," says Jonathan Bernstein, general manager and executive director of Interbrand Singapore. "These initiatives lower the barrier to human capital flow within ASEAN."

Skilled workers will now have greater choice for where they want to build their careers. They can cross borders between member countries at will in search of new and more lucrative opportunities, better work-life balance or even a better climate.

This increased worker mobility introduces new challenges. Companies need to be able to differentiate themselves from the competition to

attract and retain the best talent in the region.

The secret weapon

Fortunately, companies have a sure-fire method to ensure they are able to compete for the best employees in a growing field.

"Company brand is a powerful weapon in the war for talent," Bernstein says. "We know that people want to work for companies with strong brands: the learning, training and growth opportunities are often better, and having a strong brand on the CV enhances the overall marketability of the candidate in the longer term. As a result, there are direct savings to the business in terms of recruitment and retention costs."

In addition, a strong brand differentiates a company from the competition, giving the company a personality that customers and employees alike can identify with. When a company's brand matches up with a potential employee's personality, he or she feels proud to work for that company.

Bernstein lays out three key strategies companies can adopt as they work to build a strong employer brand.

1. Start with purpose

Firstly, Bernstein urges, align your brand strategy around a clearly defined purpose. When you do so, current and potential employees feel like they're part of something special.

"Corporations that espouse core beliefs such as 'Don't be Evil' (Google), believe in a 'Shared Planet' (Starbucks) or follow a 'Buy One, Give One' business model (TOMS Shoes) not only stand out from their competitors, but also tend to attract talented people," Bernstein says.

"Employees want to work for companies that embrace an ethos they can get behind and have created a culture in which they can comfortably take part. It's an effective tactic used by leading Thai companies such as Siam Commercial Bank and Bank of Ayudhya (Krungsri), who have made social benefit, centered on youth and community development, a core part of who they are and what they stand for. As these banks have begun to expand into the adjacent markets of Cambodia, Laos, and Vietnam, having a purpose-driven proposition becomes a powerful recruitment and retention tool."

2. Link purpose to action

Secondly, Bernstein stresses the importance of living up to the brand promise in everything the company does.

"Employees and customers very quickly appreciate whether a business is delivering on its purpose," Bernstein says. "In order for employees to be motivated to act as external ambassadors for your brand, your purpose must be credible. Everyone inside the organisation must understand what their individual role and responsibility is in delivering the brand. Further, the organisation's efforts to deliver on its promise must lead to positive results, both inside and outside of the company."

When employees feel like they're part of a worthy purpose, Bernstein emphasises, their engagement and motivation levels rise. "Internal cultures begin changing for the better, and consequently customer satisfaction soars." And motivated and engaged employees are the best brand ambassadors, further inspiring others to join and demonstrating in a real way the benefits of working for a particular company.

3. Align your internal teams

Thirdly, Bernstein says, it's important to foster collaboration between the different functions in an organisation and the HR team.

"Our experience is that the different functions (like marketing) and the HR function are typically siloed, particularly in traditional organisations," he says. "Given how important employees are to delivering a strong and positive brand experience to customers and potential employees collaboration between marketing and HR is essential."

Similarly, "HR should be actively involved in the overarching and strategic company brand journey right from the start, so they can understand how the company's brand is a powerful asset to attract and retain talent."

Bernstein further points to the importance of gathering insights and expectations from different functions in the process of developing the employer brand strategy so the company can demonstrate a common and shared vision and values to potential employees.

Embracing social media channels

Part of attracting and retaining talent is ensuring the youngest generation – millennials – is able to engage with your company.

Anything a company can do to make it easy for digital natives to apply for relevant positions is time well spent in the war for talent. More than a third of Southeast Asia's population is active on social media. Those social media networks can be valuable outlets for a company to showcase

its culture.

"Companies cannot afford to ignore the importance of maximising LinkedIn as a talent networking platform," says Bernstein.

"Externally, companies can use various touch points to showcase the company's culture," Bernstein says. "LinkedIn is great for showing thought leadership. The Coca-Cola Company and Tesla Motors are two companies that have a large following on LinkedIn and regularly publish articles that reflect their brand and thought leadership."

"Instagram is great to show behind-the-scenes insights into the inner workings of the company," he continues. "The use of hashtags such as #LifeAt is useful in providing a glimpse into the working culture of the company. Starbucks and Marriott International even have dedicated career channels that clearly showcase their respective company cultures."

Certis CISCO is one Singapore company that Bernstein calls out as being particularly adept at employee branding on social media. Its pages on Facebook, Twitter and Instagram are dedicated to sharing its brand stories and attracting the best talent in the region.

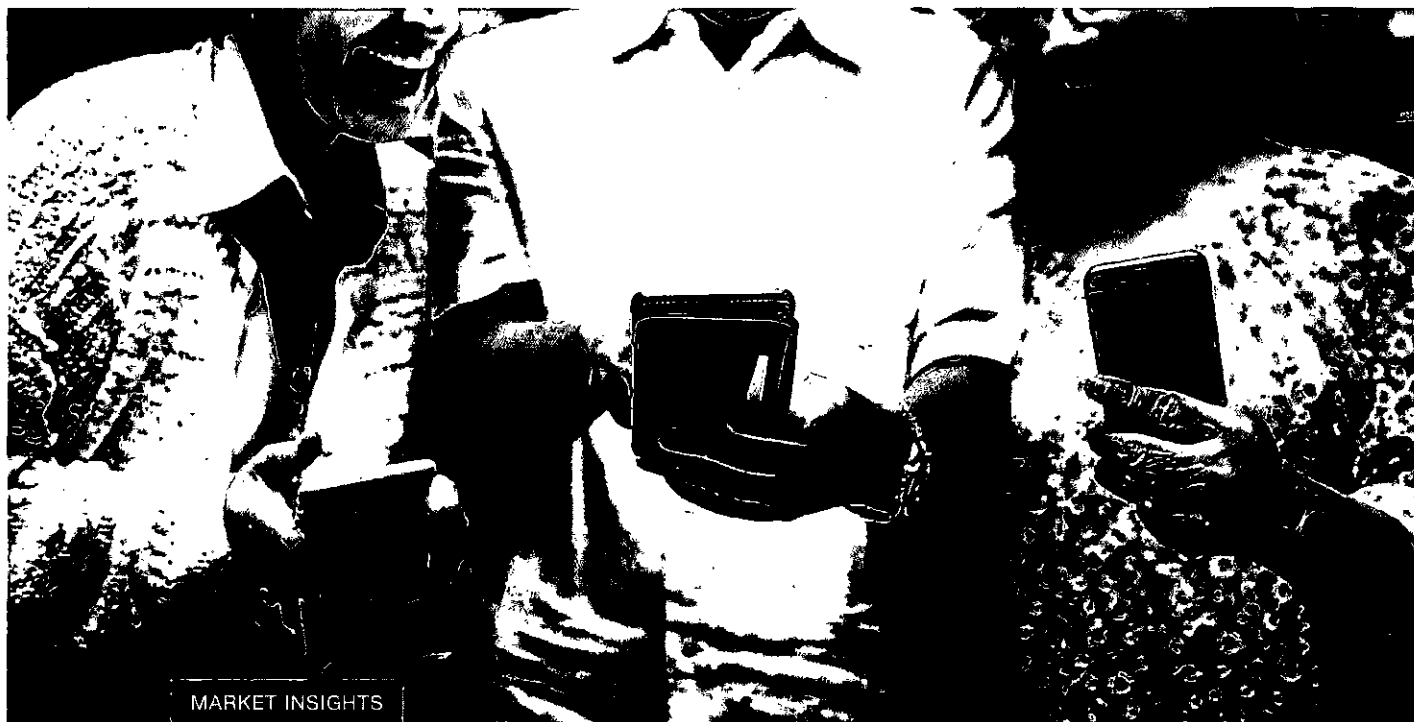
"Existing employees across different departments are featured as brand ambassadors, sharing personal stories on various aspects of Certis CISCO," Bernstein says.

"The company also has a separate Certis CISCO Sports & Recreation Club Facebook page. Meant for existing employees, this Facebook page is purposefully kept public – effectively serving as both an internal engagement and external branding platform at the same time."

Winning big in the 'war for talent'

From an employer brand perspective, economic integration affords companies across South East Asia a unique opportunity to better compete in the 'war for talent'. It's critical to integrate a sense of purpose into the brand promise, which is of particular relevance for the millennial generation. Additionally, it requires a commitment to aligning internal behaviour around this promise to ensure that the brand delivers a consistent experience to all its stakeholders. This will ultimately result in better business outcomes through a more satisfied customer base.

Edited by Kritika Srinivasan and Goh Wei Ting



MARKET INSIGHTS

Time to court Asia's gleaming silver dollar

18 January 2017 by Chan Ih-Ming

In the heart of Asia, the alarm is sounding for silver businesses, with the market for seniors expected to boom from 2020.

Written by Chan Ih-Ming, Director of Consumer Businesses, Singapore Economic Development Board.

At supermarket and convenience store tills, young shoppers fumble with cash - until a white-haired saviour appears. "So simple!", Uncle Sim exclaims, showing them how to live the cashless, contactless life with Visa payWave.

The fictional star of a video ad series, Uncle Sim is nevertheless very real. With his technoliterate ways and strong purchasing power, he is the face of a new wave of Asia's elderly.

According to a recent study by the Asia Pacific Risk Center, Asia is ageing faster than any other region in the world, with another 200 million people passing the age of 65 in the next decade or so. By 2030, there will be some 511 million elderly people in this region.

This demographic wave brings exciting opportunities. With Asia's middle class having burgeoned over the decades, its ageing cohorts represent a massive market of affluent, savvy consumers with more leisure time and disposable income than ever before.

The 2015 Asia Pacific Silver Economy Business Opportunities Report projected that the Asia-Pacific's greying market will reach US\$3.3 trillion



in 2020. Paying more attention to this growing yet relatively neglected market segment could reap rich rewards for consumer businesses.

To attract the silver dollar, companies must know what these consumers want. Such insights could lead to the discovery of new products with vast potential. For example, the Asian market for "functional foods" - supposed to improve nutrition and prevent diseases, such as calcium-enriched products for stronger bones - is estimated at US\$40 billion to US\$70 billion, and set to grow 7 per cent annually.

However, innovative products and services are not enough. Companies must also actively seek to understand the whole user experience: how elderly customers learn about a product, how they access it, as well as the post-purchase customer service they seek. In other words, companies must develop the whole end-to-end experience taking the elderly consumer as the starting point, rather than being driven simply by technological possibilities.

On-the-ground research is useful to learn about the consumer psyche. For example, a 2016 Nielsen poll of Singaporeans aged above 55 revealed that 65 per cent wanted supermarket aisles dedicated to products that meet ageing needs, while 63 per cent hoped for wheelchair-friendly facilities.

Part of the consumer experience is ease of access. Here, the elderly should not be underestimated when it comes to digital literacy: A whopping 72 per cent wished for online retail options and free delivery. This shows that digital and social media should not be neglected when courting the silver dollar, as the baby-boomer generation can be as technology-savvy as millennials.

Consumer companies can also partner research institutions to gain insights into their elderly customers. For example, companies in Singapore can work with Singapore's Institute on Asian Consumer Insight (ACI). The ACI, a research institute focusing on pan-Asian issues, enables brands to tailor their growth strategies for diverse Asian markets.

Catching the Silver Wave

For companies that want to capture opportunities from Asia's ageing middle class, Singapore is the place to be.

With its mature consumer market, vibrant research and development (R&D) environment and government support for age-related initiatives, the city state provides an ideal foothold for firms offering products and services for the greying generation.

The nation of five million has the perfect conditions for test-bedding silver products. By 2030, one in four Singaporeans will be 65 years or older - making the republic of seniors an ideal market for launching silver products. Indeed, Singapore emerged tops in the 2015 Ageing Asia Silver Economy Index of 15 regional economies, reflecting the high market potential of its ageing population.

Singapore's smartphone-using seniors, for instance, are an ideal pool of early adopters for silver-friendly apps. One transforming app could facilitate queuing at food and beverage outlets - an activity that could be particularly strenuous for older customers.

Even new styles of stores can be tested here. Supermarket chain NTUC FairPrice's Enabled Store is customised to the needs of the elderly as well as people with disabilities, with features such as call buttons located along aisles so customers can ring for assistance, and magnifying glasses for easier reading of product labels.

Unlike some advanced economies where silver products are crafted to suit just the local market, elder-friendly products and services developed here have travelled worldwide. Siemens Medical Instruments launched the Ace hearing aid in its manufacturing and R&D facility here.

International food and beverage players also see Singapore as an important base from which to reach the region, with the city-state playing host to one of three Asia R&D centres of US-based healthcare firm Abbott Nutrition.

Singapore's diverse yet dense ecosystem of capabilities and talents makes it easy for innovation to bloom too. Companies coming here will find a wealth of think tanks, consultancies, start-ups and consumer research companies with whom they could partner to develop new business models, products and services. Procter & Gamble and the University of Cincinnati, for instance, worked with Singapore Polytechnic to establish the Live Well Collaborative Singapore, an innovation research centre developing products for consumers aged 50 and above.

Another example is innovation centre LumenLab, set up by insurance giant MetLife to seek new models in financial services such as wealth and retirement planning. It brings together specialists from start-ups and sectors beyond insurance, encouraging these disruptors to work together to spur innovation.

The city state also hosts the annual Ageing Asia Innovation Forum which provides a valuable platform for business, government and community leaders to collaborate on ideas for the silver market, from healthcare and wellness to technology and senior care.

Smaller elder-focused entrepreneurs can thrive in Singapore's start-up-friendly environment. The annual Modern Aging programme, co-organised by ACCESS Health International and NUS Enterprise, brings together students, researchers, health professionals and entrepreneurs to develop business plans, with a top prize of S\$50,000 in seed funding.

One product nurtured by Modern Aging is the Pillpresso, a pill dispenser for seniors which signals medication time with an alarm and dispenses pills at the touch of a button.

Indeed, the alarm is sounding for silver businesses, with the market for seniors expected to boom from 2020. For forward-thinking consumer companies, there is no better time than now, and no better place than Singapore, to court the gleaming silver dollar.

This article was written by the director of consumer businesses at the Singapore Economic Development Board (EDB). The views expressed are his own. This article was originally featured in The Business Times. You can also find the article [here](#).

THE STRAITS TIMES

To bring back jobs, Trump should look to Singapore, says former Michigan governor



Former Michigan governor Jennifer Granholm pointed to Singapore as an example of how to draw manufacturing jobs. PHOTO: SCREENGAB FROM YOUTUBE

🕒 PUBLISHED JAN 16, 2017, 5:37 PM SGT

✉ Lydia Lam (mailto:lydialam@sph.com.sg)

Look to Singapore - said former Michigan governor Jennifer Granholm in response to a question about how President-elect Donald Trump's administration can bring back manufacturing jobs to the United States.

She was responding to a question put to her by a Yale student at a recent live townhall show by CNN. Clips of the show have recently been making the rounds online in Singapore.

Mr Kyle Tierney, who supports Mr Trump, asked the former Clinton surrogate: "Trump has promised to bring back manufacturing jobs. How do you see the Trump administration distancing itself from continuing crony capitalism and making sure that the government isn't picking winners and losers in a tweet or press conference?"

In her reply, Ms Granholm said it "is not just about taxes" and asked the audience to consider which country "does it best".

She shared that she posed the same question to a business roundtable of chief executives, asking which country makes it "irresistible for you to decide to go there and what are they doing".

The answer, she said, was Singapore.

"And I said well what is it about Singapore? What are they doing that we're not doing? And they said - it's not just about taxes," Ms Granholm said. "It's the fact that they are assembling land for us to locate our factories there - it's that they're training people for specifically the jobs that are coming out of that factory. It's because they're providing us access to capital, they have the whole wrap-around strategy for how they become irresistible."

She said that the US has to be "irresistible to advanced manufacturers (around) the globe or we are going to lose out", adding that she would like to see "a comprehensive plan from the Trump administration".

Mr Trump will be inaugurated as the 45th US President on Friday (Jan 20).

To compete with Silicon Valley for engineers, aerospace firms start recruitment in pre-kindergarten

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Aerospace employers are reaching out earlier to potential hires — as early as elementary school or pre-kindergarten — to get them interested in science and math



By **Samantha Masunaga**

JANUARY 5, 2017, 4:00 AM

U SC mechanical engineering junior Stephanie Balais developed a passion for aerospace after joining the university's AeroDesign team and helping to construct an airplane fuselage hours before transporting the plane to a competition in Kansas.

As internships beckoned, she sent in a number of applications to top defense and aerospace firms. But Microsoft Corp. snagged her first. This summer, Balais, 20, will spend 13 weeks in Redmond, Wash., working in the tech giant's manufacturing and supply chain department.

Silicon Valley and other tech centers have always been popular landing places for young engineers, with their lure of cutting-edge technology and top-notch pay. But aerospace companies are facing an even stiffer challenge as Web and computer companies, and other sectors like the auto industry, move into areas like drones and autonomous systems.

Aerospace employers are realizing they have to dig deeper — and adjust their messaging — to capture top tech talent.

They are starting to reach out earlier to potential employees — as early as elementary school or even pre-kindergarten — to get them interested in science and math. And they're recognizing the challenge they have building awareness with a generation that never had a real space race, but grew up with Google, Snapchat and Apple as part of their daily lives.

"This is something that's very critical to our member companies," said Dan Stohr, spokesman for the Aerospace Industries Assn. trade group. "They're putting serious money into this, to the tune of millions of dollars a year."

Lockheed Martin Corp. has launched a program called Generation Beyond aimed at encouraging middle school students' interest in deep space exploration. The initiative includes a class curriculum, a downloadable Mars weather app and a traveling school bus modified so that children riding it can see the Martian landscape through the windows.

"One of the things we've been seeing is that this generation of students doesn't necessarily know or have grown up with Lockheed Martin, as their parents did," said Steve Hatch, the company's director for central talent acquisition, of current college students. "As we look at the competition, how do we go attract that talent sooner ... but at the same time, get them interested in STEM."

In early 2015, Northrop Grumman Corp. opened an innovation center called NG Next based in Redondo Beach, where it is doubling down on basic research to figure out solutions to problems that may be years in the future. The organization takes a more aggressive approach to experimentation, which can be attractive to potential employees looking for a creative work environment.

According to the Bureau of Labor Statistics, about 26,000 aerospace engineers were employed as of May 2015 in product and parts manufacturing, a category that covers about 70% of the aerospace and defense industry, but excludes many suppliers in sectors like shipbuilding. Joining them were about 5,900 electrical engineers, about 14,000 mechanical engineers and 12,000 software developers of systems software.

In computer and electronic product manufacturing, there were about 5,700 aerospace engineers, 30,300 electrical engineers, 18,400 mechanical engineers and 48,600 software developers of systems software.

Defense firms have long maintained a presence on college campuses, whether at career fairs, sponsoring student engineering competitions, serving on deans' or department advisory boards or providing scholarships.

"Students encounter Google and Amazon frequently on the Web," said Jayathi Murthy, dean of UCLA's Engineering School. "So in order for [defense companies] to be heard above that, they really need to engage with us on campus, and they do."

A meeting with a Northrop Grumman executive during a USC recruiting event piqued Justin Jameson's interest in working at the company. It ended up being the only place he applied to after graduating from USC in 2009. Jameson, 29, has now worked at Northrop Grumman for more than seven years.

"I looked at a lot of the big consulting companies as well, but at Northrop Grumman, they offered me the chance to come in and work on real problems," he said. "At a consulting company, I would be solving someone else's problems."

Defense firms emphasize a mission of national security with recruits, said Robin Thurman, director of workforce policy at the Aerospace Industries Assn. And the unique, real-world nature of the work gives it a "cool" factor for some students.

"In the Internet world, they're going to work on advertising algorithms ... big data analysis, which can be fun and exciting and interesting," said Chris Hernandez, vice president of NG Next. "But I'd like to compare my airplanes and spacecraft to that any day of the week."

That aspect attracted Addison Salzman, 21, who will graduate from USC in May with a degree in aerospace engineering. Salzman, who is interested in higher-level aircraft design, has already landed a full-time job at Boeing Co. and will start in July.

"One of the big reasons that I chose it is because they have their hands in not just defense, but they have a very large commercial airplanes business," he said. "It gives me a cool opportunity to explore the different applications of aerospace technologies."

Timothy John, an aerospace engineering student at UCLA, has been interested in space exploration since elementary school and has sent out a number of job applications to defense companies.

John, 25, said he's looking for longevity and growth in potential employers, but also hopes to work on an airplane or spacecraft.

"I'm pretty indiscriminate," he said. "Any projects that include planes, like anything with a jet turbine, like a F-16 or F-22 or stealth bombers. Or even missiles."

Though Northrop Grumman's NG Next was not established specifically for recruiting, it has become a useful tool in hiring, Hernandez said. New employees can be part of an environment of rapid development and experimentation not generally associated with large defense contractors.

"For us to achieve the great things that we need to achieve to solve the nation's toughest problems, we have to push hard," Hernandez said.

The organization's four main components — basic research, applied technology, advanced design and rapid prototyping — employ about 800 full- or part-time people, though faculty from research universities can also collaborate with NG Next scientists.

The organization was also designed to have a larger tolerance for risk than what might be assumed for a big government contractor.

"We want to move fast and hard, cautiously and consciously, but it's OK if we fail every now and then," Hernandez said, voicing a credo that aerospace engineers say held for the space program long before it became popular in Silicon Valley. "If we don't, we're probably not pushing hard enough."

To read the article in Spanish, click here

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THE STRAITS TIMES

Water: Societal changes boost systems innovation

Cecilia Tortajada For The Straits Times

🕒 PUBLISHED JAN 7, 2017, 5:00 AM SGT

In the search first for sustainability, and later looking to build resilience, Singapore started encouraging out-of-the-box, creative thinking in all fields of water resources management decades ago.

Innovations have included policy, planning, management, development, and institutional, technological and financial aspects. Next up: societal changes.

After independence in 1965, water supply planning criteria had to change radically. At that time, development of all available internal resources as fast as possible became of utmost priority.

Innovation started incubating, and planning was considering the situations at the specific moment in time but also looking towards the future. This became the first innovation: plan ahead of time and on long-term horizons.

Singapore outlined plans for a diversified water resources portfolio back in 1972, more than 40 years ago. These included not only local water resources and imported water but also, more importantly, development of unconventional sources of water such as recycled used water and desalinated water to cover future water and development needs. It was several decades later that the rest of the world realised the value of used water as a resource.

Another example of innovative and long-term planning has been the fast development of additional water resources. In the 1970s and 1980s, there was the realisation that rapid growth of residential needs and industries would place increasing pressure on resource use.

The need to build up local water sources - by expanding water catchments and creating new reservoirs to store the rainwater that falls on these catchment areas - was recognised.

Singapore was among the first, if not the first, to turn tidal rivers into estuarial reservoirs and also collect storm water from urbanised catchments for potable use. The difference between Singapore and other cities in infrastructure planning and construction was the fast speed at which these water resources schemes have been implemented.

Institutionally, PUB, the national water agency, is one of the few agencies in the developed and developing world that manages all aspects of water resources. Normally, services are divided among two or more organisations. The disadvantage is that institutional fragmentation leads, in many cases, to lack of coordination. This is more unlikely to happen when only one agency is in charge.

Management innovations include the very efficient water management at the catchment level that has been developed gradually for both protected and unprotected catchments. This has been so successful that approximately 60 per cent of the city-state's land has become a catchment area, meaning that water is collected from 60 per cent of the land area. Already an enormous achievement globally, the rate is expected to rise to 90 per cent.

Waterways restoration, known as the Active, Beautiful, Clean Waters (ABC Waters) programme, is another innovation. It aims at integrating as much as possible of the 8,000km of drains and of the 17 reservoirs with the surrounding environment. Bishan Park is one example of a successful ABC project where the natural and human environments have been improved significantly.

Singapore has earned its place in the world of frontier research and technological development of water. The objectives are to increase availability of clean water resources, reduce cost of production and improve water quality and security.

Catchments, waterways, waterworks and reclamation plants are used for research purposes and also for testing. Projects in catchment areas include, for example, solar-based water desalination.

The Marina Barrage is also used for testing new technologies, particularly those related to intelligent watershed management. The barrage, built across the mouth of the Marina Channel to form Marina Reservoir, is crucial for managing floods in the low-lying city areas. The barrage is controlled using a predictive control system that anticipates storms, surface run-off and downstream tidal levels in an integrated manner, assisted by models that take into account atmospheric processes, rainfall, run-off, reservoir dynamics and coastal hydrodynamics.

Other priorities in Singapore's total water management solution include detection and removal of pollutants and reduction of energy requirements for desalination and Newater production.

Also of concern are restoration of wetland ecosystems, recovering water from desalination brine, smart water metre systems to analyse residential water flow data; early warning systems to detect chemical or biological contaminants in water supply and identification of the contaminant sources; and intelligent technologies to detect and reduce water leakage in pipes.

In spite of the progress, much remains to be done. A frontier development still in its infancy is innovation to engage society towards more responsible behaviour and a common goal of efficiency. Given that water will continue to be a scarce resource for tiny Singapore, citizens themselves must be drivers of the water conservation message.

For this goal, however, the work of formal institutions will not be enough. Long-term engagement and collaboration with society will be of utmost importance to move forward.

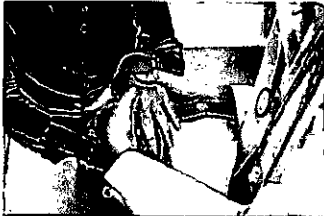
While systems innovations are essential to boost efficiency, only societal innovations make for permanent solutions. And permanency should be the goal to look for.

Despite its complexity, a good water management solution requires societal changes as they are the only ones that will ensure permanent progress.

- Cecilia Tortajada is a senior research fellow at the Institute of Water Policy at the Lee Kuan Yew School of Public Policy, National University of Singapore, and editor-in-chief of the International Journal Of Water Resources Development.

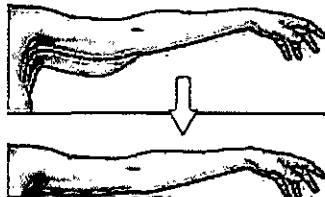
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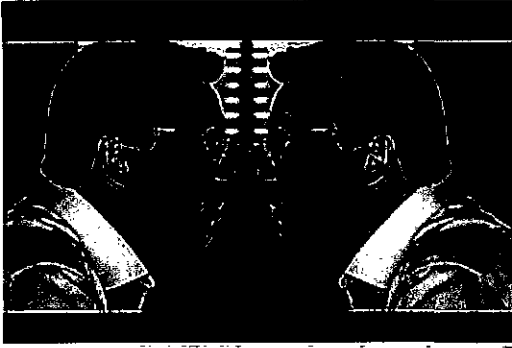


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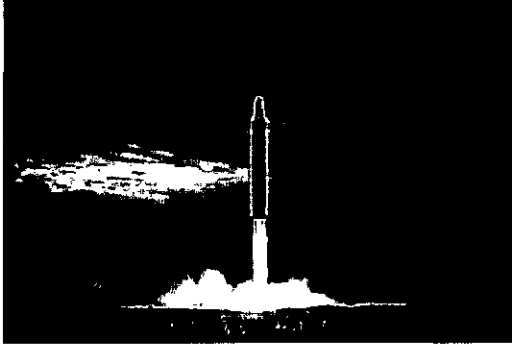
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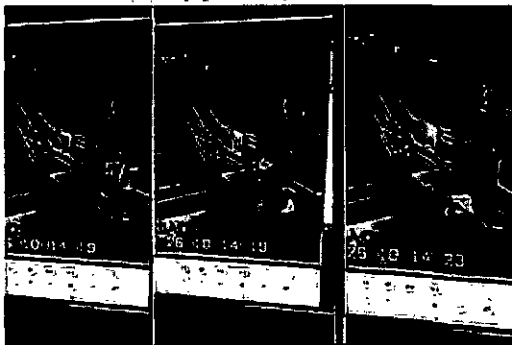
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Why commercialisation is at the heart of 3M Singapore's strategy

16 January 2017 by Radhika Dhawan Puri

Develop here, manufacture here, consume here and then export from here. This principle lies at the core of 3M's strategy in Singapore. Which is why it wasn't surprising when the American conglomerate announced a few months ago that it is investing S\$135 million (US\$97 million) to expand its Tuas manufacturing plant with the aim of strengthening its capabilities in both research and development (R&D) and manufacturing.

In fact, co-locating both R&D and manufacturing is a signature move of 3M, allowing the Minnesota-headquartered company's R&D teams to create disruptive and breakthrough manufacturing technologies.

Arthur Fong, who was managing director of 3M Singapore at the time of the writing of this article, said: "If we develop in Singapore, manufacture here and use the product here, it helps our research staff keep a line of sight to the consumers."

To that end, commercialisation of research – the ability to take the concept from the lab into the market in Singapore and the Asia-Pacific region is front and centre for 3M. A typical example is the 3M water filter, brought to the market in Singapore and then exported to other parts of Asia.

Pounding on global megatrends to find solutions

For now, 3M is focused on tapping lucrative market opportunities by linking global megatrends with definite research possibilities and eventually product development for the local market.

In a rapidly urbanising Asia, energy efficiency clean water and air are examples of megatrends that offer myriad market opportunities.

Said Fong: "How do people live and organise themselves as well as operate in highly urbanised environments? We look at these megatrends and then decide on the products and solutions that can support those trends."

For instance, an example of a product suited to densely urban areas are window films. Buildings and cars need adequate sunlight, but it has to be controlled because too much light will affect indoor temperature and increase cooling costs. Recognising this, 3M has developed redirecting films that allow an optimal amount of light to flood spaces.

Another example is lighting in public walkways. Instead of having multiple bulbs, 3M offers a solution that uses just one light source to illuminate a 20-metre walkway.

To further develop solutions in this space, 3M recently signed a Memorandum of Understanding (MOU) for a research collaboration with Singapore's Housing & Development Board. The MOU will explore noise-reduction solutions in highly urbanised areas.

Using Singapore as a testbed for new products

Is Singapore's relatively small market size a disadvantage for product introduction, however?

"For 3M, commercialisation is not about how big the consumer base is. It's about bringing a brand new idea, solution and product to a cluster of users. This is an ideal place to be a first adopter of new solutions and products," explained Fong.

He also believes that Singapore is best leveraged as a learning lab for new product development. "It's a controlled environment, and you don't have to pay too big a price should you fail," said Fong.

For instance, a company can pick a building, stretch of roads or small group of people to be the first adopter of any product or solution. If commercially successful, the product can be cascaded into a larger market opportunity within the country or the Asia-Pacific region.

Last year, the company announced that it would commit S\$10 million (US\$7 million) over three years to set up a new Smart Urban Solutions Lab in Singapore. The lab will have a regional responsibility for developing and commercialising solutions across Southeast Asia.

3M emphasises the ubiquitous nature of its product and how it is applicable to the world around us through a relatively new global brand platform, 3M Science. Applied to Life.™ This is the company's first global brand campaign in decades.

According to Fong, this branding campaign has played a role in attracting people to the company, particularly millennials. 3M overtook Google as the most preferred place to work for millennials according to the 2016 Millennial Career Survey.

"Millennials love the fact that we create technology that can be applied to everyday life and is evident around us. We hope to leverage this to attract people," Fong said.

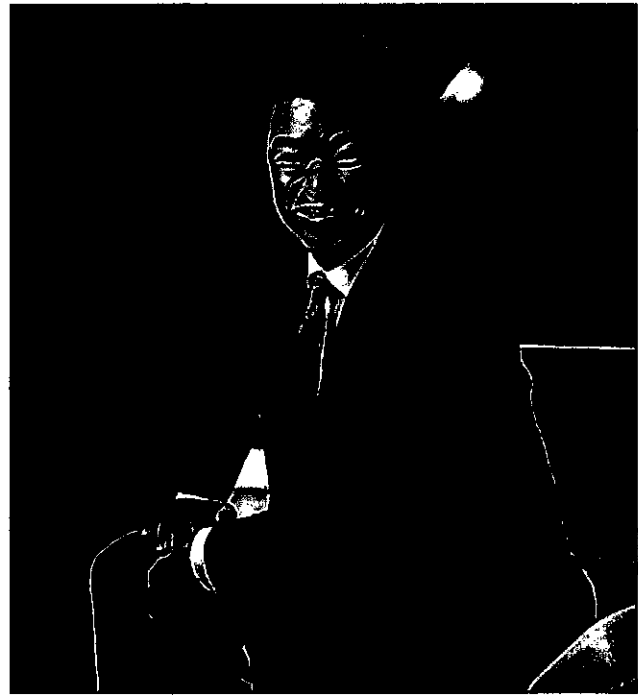
He added, "We are working very actively on developing a talent pool in Singapore that the rest of 3M can get access to."

Harnessing Singapore's unique strengths to grow

The company's goal is to increase investment and further introduce high-tech premium products in the market, aided by Singapore's strong framework for intellectual property protection.

Fong also lauded the government's role in linking companies such as 3M to potential users and market opportunities. "We save time on going around looking for the right partner and right customer," he said.

Specifically, there is an adequate opportunity in public housing and 3M has an important relationship in place with the HDB to take advantage of this opportunity. Fong explained that the Singapore government is cognisant of going beyond just initial collaboration efforts to early adoption of solutions.



"With everything that requires commercialisation, there are a lot of R&D costs involved in using and producing that solution," he said. "But the Singapore government agencies tend to move beyond processes associated with commercialisation (such as procurement issues) to adopting new solutions quicker and faster."

Such support allows the company to bring many promising opportunities to fruition. Who knows if Singapore will be the place where the next Post-it® note or Scotch-Brite® sponge will be invented?

Edited by Gracia Chiang and Goh Wei Ting



Business

2017 investments likely to remain similar to last year's: EDB

EDB says it will seek to consolidate Singapore's position as a high value manufacturing base by capturing opportunities in advanced manufacturing.



By Calvin Hui (author/7537962)

02 Feb 2017 12:00PM

SINGAPORE: Investment commitment levels in Singapore are expected to be similar to those seen in 2016 amid uncertainties in the global economic environment, the Economic Development Board (EDB) said on Thursday (Feb 2).

At its 2016 Year-in-Review press conference, EDB said it will seek to consolidate Singapore's position as a high value manufacturing base by capturing opportunities in advanced manufacturing. It will do this by anchoring lead adopters of advanced manufacturing in Singapore, while building up an ecosystem of suppliers and enablers to develop technologies and solutions, the agency added.

EDB will also work with other Government agencies, companies and institutes of higher learning to ensure a pipeline of talent entering the manufacturing workforce.

Technology also remains a key focus, with areas like cybersecurity, software development and data science highlighted by EDB's managing director, Yeoh Keat Chuan.

Looking ahead, EDB expects Fixed Asset Investments for the year to come in between S\$8 billion and S\$10 billion. Meanwhile, Total Business Expenditure Per Annum is forecast to be between S\$5 billion and S\$7 billion.

Total Business Expenditure Per Annum refers to commitments by firms setting up regional headquarters, research and development labs and other facilities in Singapore. In return for tax breaks, the firms must agree to spend a certain amount of money on salaries, rent and local procurement, among other things, each year. Fixed asset investment refers to a firm's additional investment in facilities, equipment and machinery.

Meanwhile, Expected Value-Added Per Annum - how much investments will add to the GDP when fully realised - is expected to come in between S\$12 billion and S\$14 billion, the same as last year's forecast.

Advertisement

Highlighting uncertainties stemming from events such as elections in Europe as well as proposed policies from US

President Donald Trump that could shape the operating environment, EDB's chairman, Beh Swan Gin, said there was a need to be "watchful".

However, he said that the good news for Singapore was that its fundamentals remain strong.

"I think we have to approach 2017 with some caution, but we certainly do not have to be depressed about 2017."

EXPECTATIONS MET

Key targets were also met or exceeded last year, said Mr Yeoh. For instance, Fixed Asset Investments came in at S\$9.4 billion, which was within the earlier forecast of S\$8 billion to S\$10 billion.

Additionally, the S\$8.3 billion of Total Business Expenditure Per Annum exceeded expectations of S\$5.5 billion to S\$6.5 billion, partly due to large-scale shipyard projects committed.

When fully implemented, these projects are expected to create around 20,100 jobs, EDB said.

Mr Yeoh said that Singapore companies must also do their part to speed up their growth. "The technology such as automation, robotics, digitisation, additive manufacturing - they require certain willingness to try on new things. And I feel that for a number of maybe smaller companies the challenge is setting aside the resources to do so," he said.

For 2017, EDB is forecasting the creation of between 19,000 and 21,000 jobs over the next five years.

Source: CNA/kk

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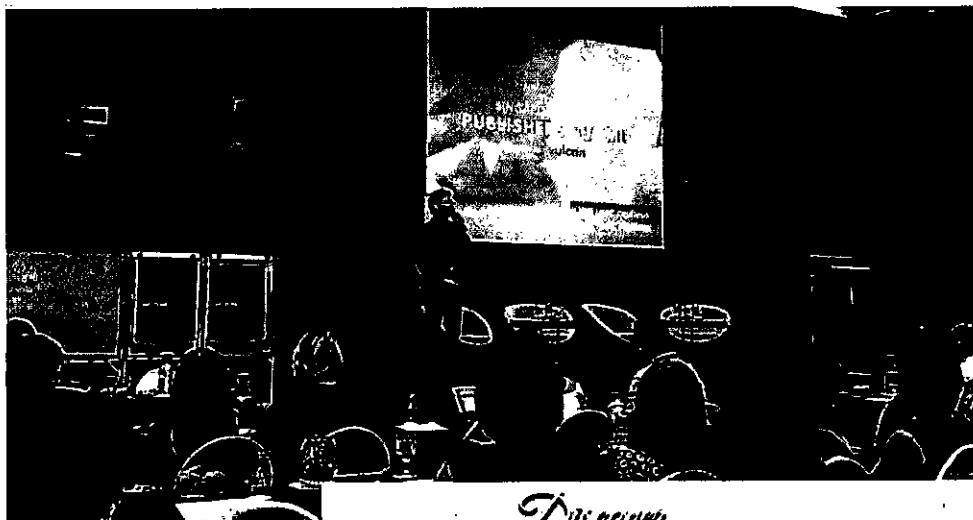


ENTREPRENEUR

Singapore Startup Events Are Everywhere, But Here's 7 Which You Will Want To Attend In 2017

M. Shazni
2017-02-03 11:39:54

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Discover



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The startup journey can be a tough and lonely one. Even in a concentrated country like Singapore, the daily hustle could sometimes mean that you cut yourself from social activities you previously enjoyed.

That doesn't mean that you can't meet new people, and at the same time, get some feedback and perspective for the good of your startup.

Singapore has lots of startup events happening throughout the year. From full out exhibitions to intimate meetups in co-working spaces, here's some you should leave a space for on your calendar.

Tech In Asia Conference



The mother of startup events, of course, belongs to the **Tech In Asia Conference**. Tech In Asia's annual event takes place across four Asian cities this year, with the first one held right here in Singapore.

From May 17 to 18 at the Suntec City Convention Center, Tech In Asia Singapore 2017 promises to be a great event for entrepreneurs, startups, or for those looking for partnerships and investments.

In the meantime, you can checkout their **Tech in Asia Founder's Meetup** series held monthly during which they will cover various aspects of running a startup.

DrinkEntrepreneurs



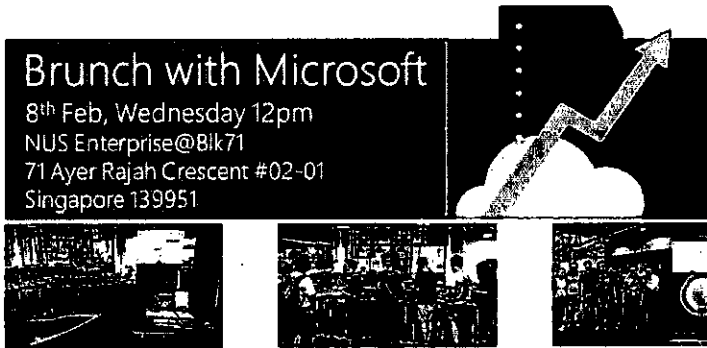
Image Credit: DrinkEntrepreneurs

Fancy a drink with other entrepreneurs on a Friday night after a long week of hustling? That's precisely what DrinkEntrepreneurs is for.

It's a global entrepreneurship movement with groups in San Francisco and Paris who often organise startup networking events in bars and pubs.

DrinkEntrepreneurs Singapore first started in 2013, and have seen them partnered with co-working spaces such as the The Working Capitol and The Hub. Their sessions are a monthly affair, and the next one happens tonight!

Like their **Facebook page** to keep tabs on when their next event will take place.



Supporting Partner

Image Credit: Spiffy

Brunch With Microsoft is typically held at BASH located at 79 Ayer Rajah Crescent.

During this event, entrepreneurs and startups would be able to talk to team members from Microsoft about business and technology over some light refreshments.

The bi-weekly event will sometimes alternate its event location to just across the street at Blk 71.

Microsoft also holds plenty of other startup-orientated talks and events. Bookmark Spiffy's [Facebook event page](#) for any future Microsoft events.

PayPal FinTech Learning Series



Image Credit: Paypal

This one's for all the Fintech startups. Payment platform extraordinaire Paypal regularly schedules their FinTech Learning Series where they share their best practices and knowledge.

Since launching their incubator program in their Singapore office in July 2016, their first outside the United States, Paypal is slowly reaching out to the fintech startup community here.



about Information Security & Public Relations on February 2017.

Startupbootcamp

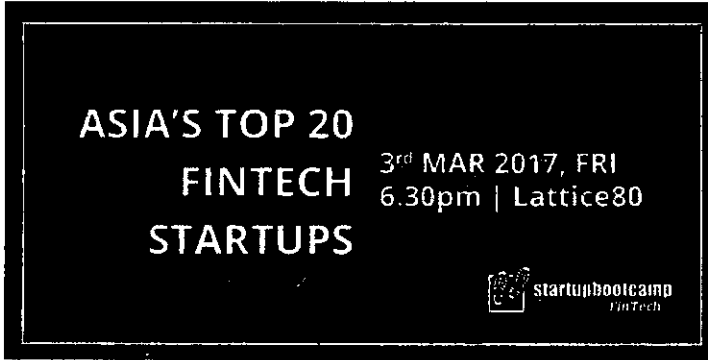


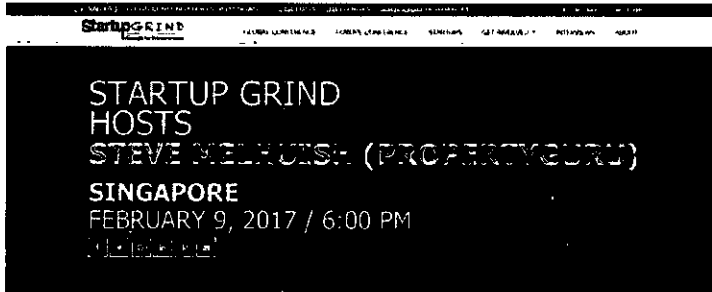
Image Credit: Startupbootcamp

Still with fintech startups, another name to take note of is definitely Startupbootcamp. As the world's largest fintech startup accelerator, they regularly hold events worldwide, and fortunately, Singapore is a mainstay in their calendar.

Their events range from just simple talks, workshops and social networking sessions, to even hackathons (they call it Fintechathons).

Fintech startups will want to attend **their next event**. On 3 March 2017 at Lattice80, Startupbootcamp will unveil Singapore's top 20 FinTech startups, and you can watch them in action as they give a preview of their pitches.

Startup Grind



TICKET INFORMATION

TICKET TYPE	DATE	PRICE	FEE	QUANTITY



Image Credit: Startup Grind

Startup Grind is a Singapore startup community backed by Google for Entrepreneurs. For their events, they regularly feature prominent founders and CEOs of well-known startups and companies in Singapore.



at Monk's Hill Ventures, and Roger Egan, CEO of Redmart appearing in their lineup.

Their next event slated for next Thursday 9 February will see Steve Malhuish, co-founder of PropertyGuru.com.sg, take the stage.

Vulcan Poker Night

The poster is black with white text and graphics. At the top left, the word 'vulcan' is written in a lowercase, sans-serif font. Below it, 'POKER NIGHT' is written in a bold, uppercase, sans-serif font. The central graphic is a stylized, high-contrast illustration of a king's head and shoulders, rendered in white lines on a black background. The king is wearing a crown and holding a scepter. To the right of the illustration, there is text: 'FIRST EVER PRIVATE POKER NIGHT HOSTED BY VULCAN POST.' followed by 'Startup Founders, Technopreneurs, VCs and anyone who wants to just have a smashing good time invited. See you there! #vulcanpokernight #VPN'. Below this, it says 'HOUSE POUR from \$5'. The date '10 FEBRUARY' and time '8:00 PM TILL LATE' are prominently displayed. At the bottom right, the address '60 ANSON ROAD #07-01 SINGAPORE 079941' is listed. At the bottom left, there are small contact details: 'ENQUIRE: team@vulcanpost.com' and 'tel: 9621 8081'. At the bottom center, the website 'www.vulcanpost.com' is mentioned.

Image Credit: Vulcan Post

Last but not least, here's a preview of our first event of 2017!

As part of our Lunar New Year celebrations, we've decided to hold a little networking session to bring together venture capitalists, startup founders, and entrepreneurs.

Through drinks, snacks, a Texas Hold'em Poker tournament, and a heavy dosage of CNY cheer, **Vulcan Poker Night** will be happening next Friday on 10 February 2017.

Here's also your chance to take a peek at our office as well since the event will be held right in the heart of *Vulcan Post HQ*.

Hit the link below for the full details, and we hope to see you there!

<https://www.eventbrite.sg/e/vulcan-poker-night-tickets-31503595101>



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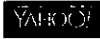
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AI's transformative potential and what's next ...

Artificial intelligence holds the key to a new era of innovation, one where computers begin to work intelligently on our behalf rather than under our command. It's an era where technology will become more intuitive, more conversational, more intelligent, will enable businesses to better know and serve their customers in ways previously unimaginable, and ultimately help solve some of the planet's biggest challenges.

Microsoft is helping to lead a growing global conversation around AI's transformative potential. Last week, Harry Shum, executive vice president, Microsoft Artificial Intelligence and Research Group, spoke at Future Forum in Beijing, China. This week, Microsoft CEO Satya Nadella shared how

Microsoft is democratizing AI for everyone at DLD in Munich, Germany, and at the World Economic Forum in Davos, Switzerland.

This new era of AI is driven by the combination of almost limitless computing power in the cloud, the digitization of our world, and breakthroughs in how computers can use this information to learn and reason much like people do. What some are calling the Fourth Industrial Revolution is being accelerated by these advancements in AI, and this means that all companies are becoming digital companies — or will soon be.

While there has been an AI renaissance recently, if you think of it in terms of other eras of great advancement, we are in the mainframe stage, which is to say, early days of what will someday be pervasive and powerful technology. We need to evolve from mainframe, to PC, to mobile, and make AI accessible to all, to both use and build on this technology because its potential is enormous.

AI's potential goes far beyond computers that can play and win games. This technology will transform industries, from automotive to manufacturing, healthcare to education, agriculture, research and the public sector.

Cities are getting smarter; cars can recognize and make decisions about the objects around them; an online support agent can hold a conversation with a human and successfully resolve issues; a manufacturing system can reason over vast quantities of historical data and accurately predict the future; a medical imaging system can assist a clinician to spot tumors more accurately. All because of the power of AI.

And while there are real and important concerns about the role of this technology, Microsoft's approach to AI is one that doesn't replace, but rather augments, human capabilities and ultimately delivers more of the most precious commodity in life — time.

Microsoft's focus is on Democratizing AI. That means we're putting AI tools in the hands of businesses, public sector organizations and developers to build their own intelligence capability. Ultimately, we believe that everyone can and should benefit from the promise of artificial intelligence.

AI for every person and every organization

We are committed to democratizing AI for customers — both by infusing AI into our products at scale such as Office 365 and Dynamics 365 as well as building a platform of intelligent services in the cloud, and using agents or bots to harness the power of AI to help people get things done.

Land O' Lakes, for example, is using MyAnalytics — a capability in Office 365 that provides insights on how employees spend time at work and who they spend it with. Details about time spent in meetings, email, focus hours and after hours let employees know exactly where their minutes are going. Think of it as a fitness tracker for your workday.

Customers such as Volvo, Nissan, BMW and Harman Kardon are already doing amazing things with this technology, building on our Cortana platform to create solutions in the car, in home automation, productivity and device control.

AI is also enabling magical things with massive global impact like the ability to translate between spoken and written languages instantaneously.

Microsoft Translator is a free, cross-platform tool for simultaneously translating between groups speaking multiple languages in-person, in real-time, connecting people and overcoming barriers. It

connects up to 100 people, speaking across up to nine languages and working in over 50 typed languages. In London, The Children's Society uses Microsoft Translator to help refugees and those seeking asylum overcome language barriers.

As we build intelligence into everything, whether it's your keyboard, your camera or business applications, we are essentially teaching computers to see, to hear, to predict, learn and take action.

In Skype, for example, that means new calling capabilities with talking bots, opening a whole new field for customer interaction.

Ultimately, agents like Cortana will take on an emotional aspect and not only have IQ but also EQ, and that's the idea behind Microsoft's work with chatbots. The next chapter in this evolution is Zo.

Built upon the technology stack that powers XiaoIce and Rinna — successful Microsoft AI chatbots in China and Japan — Zo learns from human interactions to respond emotionally and intelligently. You can engage with her on Kik today. In the future, Zo will be available on other social and conversational channels such as Skype and Facebook Messenger.

As we pursue our ambition to democratize AI, we aim to take these capabilities and make them available to every developer as a set of APIs, and in doing so build a platform for others to build intelligence into their products and services.

Collectively, we call these services Cortana Intelligence Suite — a set of services that provide on-demand access to AI capabilities. These tools are being used in a variety of industries — including healthcare, personalized medicine and agriculture — and with customers like UBER.

Explore stories of how Microsoft is helping to transform industries with artificial intelligence.

Some, like elevator company ThyssenKrupp, are using predictive intelligence to fundamentally change the way they do business. Rolls-Royce is using Cortana Intelligence Suite to uncover data insights that allow the manufacturer to increase aircraft availability while reducing engine maintenance costs.

Meanwhile, more than 77,000 developers have registered bots using Microsoft's Bot Framework, and a broad range of customers and organizations such as Bank of Kochi, Rockwell Automation and the Australian Department of Human Services are leveraging this technology to transform their businesses across channels such as Slack, Facebook Messenger, Office 365, text/sms, Skype and Kik.

Finally, to build the foundation necessary to power this transformative technology, Microsoft is driving infrastructure innovation from the silicon up to the cloud down as we build the world's first AI supercomputer, atop Microsoft Azure.

A strong and growing commitment

Microsoft has a rich history in the AI space and has been helping contribute to — and lead — the advancement of AI for 25 years, beginning in the early 1990s with the creation of Microsoft Research and investment in the belief that speech would be the next frontier in the effort to create more natural computing.

Over nearly three decades, we've developed technology that can recognize words and pictures more accurately than people can. This technology is driving advancements in real-time translation, and ultimately the ability for machines on a factory floor to distinguish between a fabricated part and a human arm, or an autonomous vehicle to recognize the difference between a bouncing ball and a waddling toddler.

We continue to grow our expertise. Last fall, Microsoft announced the formation of the Microsoft Artificial Intelligence and Research Group — bringing together more than 5,000 employees around the globe, spanning research and engineering. We've also recently formed a new partnership with OpenAI, created a Microsoft Ventures fund focused on AI, and announced that one of the world's foremost experts in deep learning, Yoshua Bengio, will join Microsoft as a part of the acquisition of Maluuba, a Montréal, Canada-based company with one of the most expansive research labs for natural language understanding. Microsoft this week also announced its intention to grow Maluuba as well as invest in an additional \$7 million in AI research in Canada.

A future with AI

We recognize the concern AI raises in replacing jobs. As in times past, we're at risk of leaving people behind in the explosive growth driven by technology. Collectively, we need a plan to resume productivity growth that is equally intense — with a focus on education, innovation and encouraging use of technology to create new jobs.

The question we collectively need to ask is what are the design principles we need to follow to augment human capability and drive growth? We believe that ethics and design go hand in hand, and published our thoughts on a set of core AI design principles to ensure that the technology is built with intelligence that is transparent and secure, and sets the highest bar for protecting privacy, while also being inclusive and respectful to all.

At our core, we're technology optimists. We also fundamentally believe in the power of people. For it is human ingenuity and human passion that will harness this new technology and innovate to transform our world in ways previously unimaginable.

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Artificial intelligence eclipses cloud and mobile projects to win the day at Microsoft 2017 Hackathon

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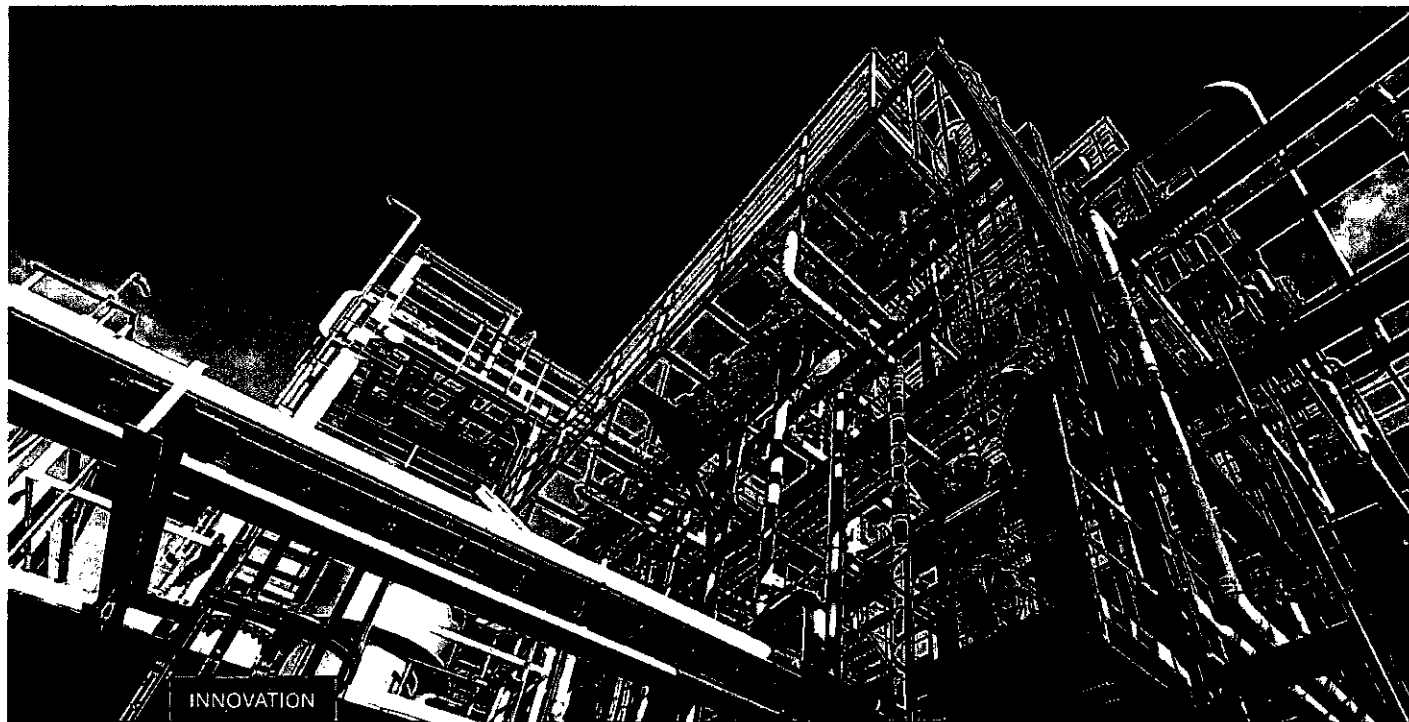
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Digitizing the Chemical Ecosystem

15 February 2017 by Neha Ghanshamdas of Global Business Reports

Singapore's commitment to increasing productivity through innovation and mechanization has propelled the city-state forward on an Internet of Things (IoT) crusade. Through targeted investments in various technology centers of excellence, the local government is helping drive industrial innovation forward. But industrial application of IoT scratches only the surface of the state's total technology agenda. The resource-scarce nation is seeking to leverage its formative strength, talent, to transform itself and add value to the global marketplace by building the world's first Smart Nation. Smart Nation aims to leverage IoT technology to improve the quality of life of its citizens, infrastructure and industrial sector, in a bid for Singapore to remain one of the most economically competitive and livable cities in the world.

The industrial sector factors heavily into Singapore's Smart Nation equation, with the manufacturing sector representing close to 20 per cent of the country's GDP. When applied in an industrial context, IoT has the potential to increase productivity, safety and competitiveness of both the enterprise and the economy. By helping solution providers overcome the most difficult "first-adopter" stage for new IIoT technologies, Singapore's economy stands to gain a first-mover advantage and establish itself as the IIoT technology and business hub of Asia.

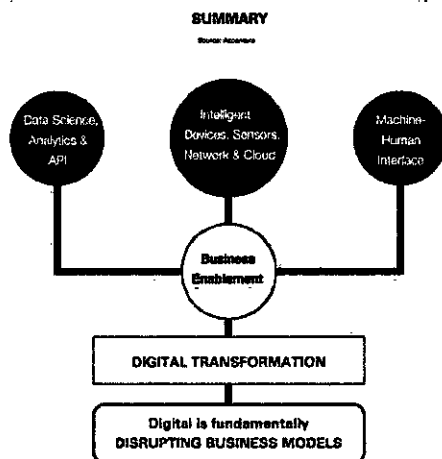
Internet of Things (IoT) Explained

This latest technology buzz phrase is taking not just Singapore, but the world, by storm. But what exactly does IoT mean, and how pertinent is the concept to the world of chemicals? For starters, IoT can be loosely defined as a network of physical objects that are linked to one another through the Internet. More concretely, it refers to physical objects, equipment or machinery that are fitted with various types of data collecting sensors.

To complete the IoT puzzle, cloud-based applications analyze the data that is collected by sensors, eventually enabling machines to communicate with other machines, applications or users. The application of IoT is not limited to any particular industry, device or user, but rather can be employed in virtually every sphere of life.

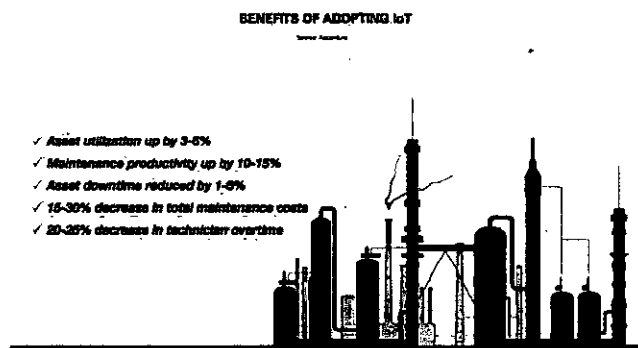
As an example, new smart metering systems in homes digitally provide energy suppliers and end users with consumption data. Smart meters automatically send meter readings to suppliers, and show users how much energy they are consuming in near real time. Provision of this data

results in more accurate energy bills, and increased energy awareness among consumers, ultimately leading to cost savings and more sustainable living practices. Now just begin to imagine what IoT can achieve at scale, and within a large chemical facility.



Turnaround Your Plant and Balance Sheet

While IoT debuted decades ago, the concept has begun making strides in the industrial space only recently. You might ask, why is this the case? The answer is simple—data. The amount of data generated within a process plant or mine site has been discovered to be astounding. According to Accenture, 144 terabytes of data are generated in a mine site in the span of just one hour, which up until recently, was not being leveraged. To make music out of the copious amounts of data, Emerson for example, helps “industrial plants gain huge benefits from data analytics, by integrating and analyzing large amount of data using smart field devices on plant equipment, to improve reliability and energy efficiency for the plants,” explained vice president of solutions and lifecycle services, Vidya Ramnath.



These benefits trickle down to the bottom line. A company with EBITDA of \$2 billion for example, can save \$100 million by implementing digital plant initiatives. By going digital, end users are quickly discovering that industrial IoT (IIoT), or IoT applied within the context of industry, boosts operations on two fundamental fronts: reliability and energy efficiency. And in today's marketplace, increasing and ensuring both factors are imperative for any firm to remain competitive. By engaging IIoT and installing sensors on 148 of chemical manufacturer Denka's steam traps for example, the firm was able to save 7% on the cost of steam. The steam traps were remotely monitored and analyzed by Emerson to detect and stop energy losses in real time (Figure 2). “In a highly complex and volatile business environment, companies are finding ways to perform, optimize processes and operate more efficiently to sustain growth,” said head of Yokogawa's new co-innovation center and general manager of the firm's Singapore Development Center, Joseph Lee Ching Hua.

Another large chemical manufacturer Afton recently unveiled a new plant on Jurong Island that stands as a testament to the benefits of digitization. “Afton's plant on Jurong Island is a state of the art chemical additive manufacturing facility. The plant has a very high level of automation and utilizes advanced distributed control systems to manage plant process and utilities systems, ensuring ongoing safety, productivity and sustainability. Notably, it is our first facility in the world to have an installed remote machine-human interface, which reduces manual communication and human error, thereby improving productivity,” said vice president and managing director of Afton Asia Pacific, Sean Spencer.

So how exactly can a chemical plant leverage IIoT to achieve these savings? According to Accenture, four fundamental pieces of the IIoT puzzle need to fit together in order to effect change: sensors, data science, a human-machine interface and action. Traditionally, a contractor comes on

site to inspect the health of plant equipment, including the likes of pumps, heat exchangers, blowers, cooling tower cells and non-process compressors. Manual inspection and data collection is typically conducted a few times over the course of the year to ensure smooth plant operation. However, there are a number of caveats associated with this conventional process: The first is related to labor, as large teams are deployed to perform inspections, collect data and identify necessary improvements. Contractors often have to measure the health of dangerous equipment, adding a layer of risk to an already costly and time-intensive process. Further to this, many issues are often not detected on time or at all, leading to damage that interrupts plant operation and production, and loss of capital.

The first and key ingredient in the IoT recipe, a sensor, automates measurements and performs them much more frequently. Affixed to assets, sensors can measure variables such as pressure, temperature, corrosion and humidity, and transmit relevant data over a secure network to analytics software. This is where the second ingredient, data science, comes in to play, generating reports that reveal the condition of a given asset. Thirdly, an interface between machine and human provides the operator with the information needed to act, and make an informed, cost saving decision. Analytics can often specify the amount of financial loss associated with the deteriorated state of an asset, yielding a clear impetus for the fourth ingredient to kick in: action. Hence, leveraging IIoT can result in less time spent on collecting data manually, and more time acting on results, leading to improved productivity, increased efficiency and cost savings.

Rent, Lease, or Buy?

Reading this you might quickly be wooed by the wonders of IIoT: But how can such technology be implemented in a facility without overhauling the entire plant? Do the purported savings justify the cost? There are various approaches to plant modernization and the realization of a total digital ecosystem in which sensors, networking and software fit together. In fact, an IIoT infrastructure can be installed and parceled within a plant in virtually countless number of ways. Traditionally, plant owners have invested in purchasing sensors, networks and software, and conducting reporting autonomously. However, IIoT allows for remote monitoring, and new business models that encourage greater partnership and enable less capital-intensive commitments. For example, digital automation provider Emerson installs sensors, networks and software in exchange for zero upfront investment. Instead, the firm offers what can be described as an IIoT subscription, charging a monthly fee for resulting data analytics.

"Pumps, steam traps, and other equipment monitored on-premise, centrally from corporate engineering center, and remotely from Emerson's center of excellence have enabled our customers to yield huge benefits at the operational level. These real-world implementations are helping industrial facilities to frame their priorities for IIoT investments," said Ramnath.

With capex considerations also in mind, systems integrator Accenture is offering clients the opportunity to rent or lease equipment, and begin pilots to test the waters before considering building an entire network. "There is also a trend towards permanently leasing and renting, and adopting the use of shared services," said managing director, digital business lead and director of Accenture's IoT Center of Excellence, Serinith Ramani. The technology giant is committed to building "custom IoT journeys" for their industrial clients in the region through their newly established IoT Center of Excellence in Singapore.

Electrical engineering and software firm Yokogawa is working alongside its customers in its new Co-Innovation Center, to ensure efficient utilization of data and diagnostics generated by their smart sensors. But regardless of the chosen provider, by leveraging data science, digital transformation has the potential to maximize utilization of existing assets, often with little to no capital expenditure.

Employing a New Generation

IIoT is inextricably tied to the workforce of the future. By 2025, millennials, or digital natives, will comprise 75% of the global workforce. This implies that in order to attract and retain talent to traditional manufacturing industries such as chemicals or mining, business models will have to evolve and incorporate new technologies. Incoming workers are quick learners and gear towards efficiency, and are not inclined to read hundreds of pages of instruction manuals to assimilate operational knowledge. "Wisdom needs to be digitized, without which smartness cannot meet wisdom, and younger operators run the risk of working in a plant without sufficient knowledge. Going digital can help solve this issue and accelerate the pace of adoption for the incoming generation," said Accenture's Ramani. As more and more wisdom is digitized, the results are multifold. Fewer workers are needed inside a plant, which increases productivity as well as enhances safety. As more processes are progressively automated, workers can engage in higher value added tasks that are both more technical and safe.

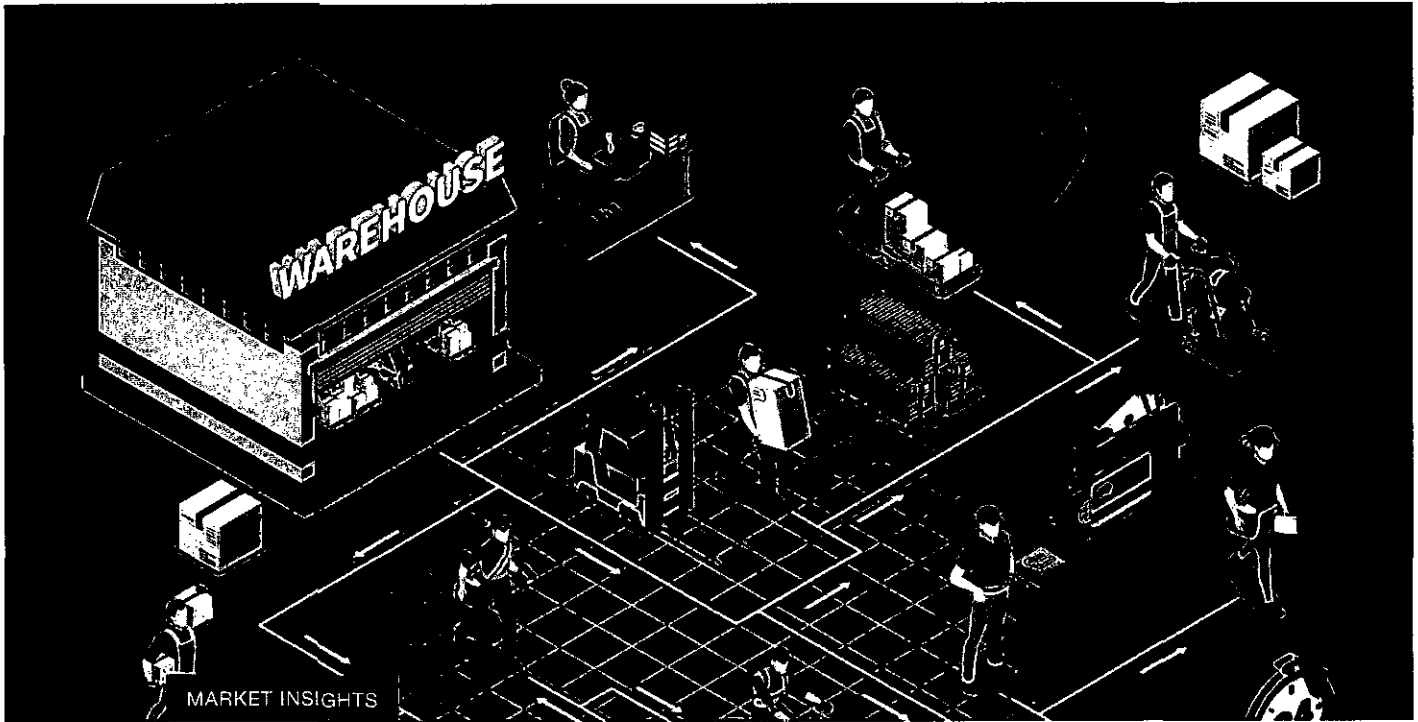
Leading the Digital Revolution

Singapore is evolving into an IIoT global center of excellence, with technology players such as Emerson, Accenture and Yokogawa pioneering new developments in the sector. With the support of Singapore's government, these players have established a Pervasive Sensing Center of Excellence, An IoT Center of Excellence and Co-Innovation Center, respectively. Government agencies are also incentivizing the uptake of plant

modernization, digitization, and automation, and supporting the development of an innovative industrial ecosystem. These policies are not only in line with goals to improve productivity, but factor in to a greater vision of total transformation.

"Singapore was, and continues to be, a net exporter of chemicals. But more importantly, I believe the city-state is on its way to transforming itself and becoming a net exporter of innovation in the chemical industry, with IoT leading the agenda," said Ramani.

This article is part of a Special Report on Singapore first published in IHS Chemical Week. You can also find the report [here](#).



Disruptive technologies transforming the Asian logistics landscape

01 February 2017 by Andrew Stone

Frans Kok, General Manager of AEB Asia Pacific, shares his insights into the fast-moving trends in Asia's supply chain and logistics sectors.

Q. It has been pointed out by AEB that the technologies that logistics companies must watch out for in 2016 include the cloud, predictive analysis, 3D printing, automation and crowdsourcing for last-mile delivery. Which of these technologies do you see making the most impact on the industry?

I think that partly depends on where you are in the region. Singapore, for example, has slightly different dynamics. Its high cost of labour and limited land availability mean that last-mile fulfilment drones are more applicable here than in Vietnam or Thailand.

Across Asia, we are seeing a lot of innovation in logistics, especially in last-mile delivery. Even within last-mile innovation, there is a clear divide between the urbanised market – where there is lots of traffic congestion but it's easier to scale – and non-urban, which can be very remote and where solutions are tougher to apply. Many companies, like Singapore Post for instance, are building hub stations near high-density urban areas such as malls and residential estates, where parcels are delivered and picked up.



There has been a lot of research on last mile, and it is becoming clear that someone's mobile data is now far more interesting and useful to the logistics business than their physical address. Companies are increasingly leveraging the capability to use your location at a particular point in time to make a delivery or collection.

The cloud has single-handedly transformed last-mile delivery, facilitating a retail-to-customer model rather than the old factory-to-distribution model. Most e-commerce companies don't keep inventory. There are fewer bulk shipments and lots of smaller, individual parcels. That's where density in a network makes a difference, and companies start using a van or someone's car for delivery instead of a truck. So you now see crowdsourcing, too, affecting logistics.

There's also a lot of talk around the use of big data in logistics, but few players make full use of big data and predictive analysis to, for example, streamline reservations for truck or air cargo space. Despite the fact that there's much more data available, the question is who is really using it?

Q. Asia is moving towards becoming the world's largest e-commerce market. Are logistics players in Asia doing enough in terms of leveraging these technologies and innovations to thrive in an increasingly complex landscape?

Traditional logistics service providers have not adapted quickly enough, leaving the field open for new, smaller logistics service providers to join the game. This group of newcomers is also developing innovative services and solutions in emerging areas. For instance, as a result of booming e-commerce, return logistics (for defective items or those that don't fit) is an area that is growing – logistics companies are innovating to make it more efficient.

Another case in point: One of the key challenges in mass e-commerce is the need to cater to smaller, individual shipments within short lead times. Ninja Van is an example of a startup that is arguably out-innovating multinational corporations (MNCs) in this aspect, leveraging cloud technologies to quickly identify and make use of available capacity within vehicle fleets. Ninja Van's customers include some of the largest e-commerce businesses in Singapore.

On the other hand, many MNCs are harnessing new technologies or partnering with companies that deploy innovative technologies to resolve pain points. For example, AEB has responded to evolving requirements by developing its Visibility & Collaboration Platform, which provides supply chain visibility for employees, partners (such as logistics service providers) and customers.

The platform integrates all supply chain partners and acts as the nerve centre for supply chain management. It provides a clear, real-time view of all inventory, goods movements, and status of process steps, as well as performance analyses and reports.

Q. Since logistics startups have been much quicker to cash in on the e-commerce boom, what do traditional players need to do to quicken the pace of adoption?

Traditional players have to keep investing in technology if they don't want to be left behind. They also need to develop new partnerships with innovative partners. A good example of an innovative Singapore-based company is HOPE Technik, which invests in warehouse automation and robots. They must embrace the new technologies within their network – whether national or international.

In the quest for agility, customers themselves are moving away from large applications for managing the whole supply chain and now focusing on individual business processes. They are looking for specific solutions for shipping or receiving, or tracking shipments through supply chain instead of a full-blown transport management system. They increasingly look for discrete, smarter apps that are cloud based and can run on a tablet or mobile phone.

Traditional logistics players need to ask themselves: how many assets do I really want? What is the core business? Do I want warehouses, trucks, planes? To what extent do I want to make the organisation lean and take out all the things that are not directly relevant and instead use non-core physical assets on a per-use basis as the startups do? If you look at it, not many startup invests in assets. Most invest in IT.

Q. Are there innovations coming out of Singapore that other markets and regions can seek to emulate?

When it comes to last mile innovations, Singapore is one of the leading nations. The country is experimenting with picking up parcels in an increasingly automated manner – through drones or even an underground system like a tube system.

I think Singapore also has a lot to teach the region when it comes to automation and software such as fully automated warehouses, automatic pallet storage inside of warehouses and factories, etc.

Singapore has been able to apply lessons the city has already learned from managing traffic congestion to logistics. It is using this expertise to streamline logistics and cut congestion. AEB has been participating in a series of urban logistics trials as a member of a research consortium led by The Logistics Institute. These trials aim to help logistics operators co-ordinate and streamline the way they operate. The programme includes setting up consolidation centres outside Singapore's city centre and then having milk runs that go into the city using a bidding mechanism to manage time slots. If someone wants to deliver from 9am-10am for example, they pay more than a night delivery.

Another innovation in Singapore is an In-Mall Distribution system which is piloting at two shopping centres. The initiative will involve smarter dock delivery scheduling to avoid congestion, for example when two trucks try to deliver goods at the same time. If successful, the scheme could reduce waiting and queuing time for deliveries by 65 percent, delivering benefits to around 300 retailers and resulting in better fleet utilisation.

Singapore's Smart Nation 2020 goal is leading it to invest in the urban environment – its people, traffic, supply chain – and this will make it a leader in the region in these areas. Other countries in the region seeking to ramp up their supply chain infrastructure need look no further than Singapore for examples of innovative supply chain and logistics initiatives.

Q. What does the roadmap look like for players in Singapore? How best can they incorporate technology and innovation into their business models to serve the region well in 2016?

The only way to grow your business is by investing in technology. India and China are a serious threat in terms of innovation. Logistics players in Singapore will have to keep asking themselves what the key technologies will be over the next five years and invest in these now. They will have to play to Singapore's strengths – the level of knowledge and education, the active supply chain ecosystem and availability of human capital.

This is not enough though. In terms of skills, Asia still has to catch up with the US and Europe, although Singapore is starting to do so. Unfortunately, studying logistics is still not seen as a worthwhile educational field, owing to the low career status that many perceive the logistics business to have, compared to accountancy or law for instance.

But universities in Asia are pushing the area of study as one worth pursuing. Rather than considering logistics as working in a warehouse, the youth should be made aware that they would be studying robotics in the supply chain or business process optimisation. Once that transformation in education happens, logistics companies in the region will also have world-class skills to fall back on.

Edited by Kritika Srinivasan and Goh Wei Ting



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October 6, 2016 9:50 pm JST

Hong Kong loses out to Singapore as rents soar

JENNIFER LO, Nikkei staff writer

HONG KONG -- Almost half of the business professionals believe the territory is losing out to Singapore, as sky taking a toll on its competitiveness, a survey showed on Thursday.

Some 46% of them perceived Singapore, rather than mainland China, as their top rival in the coming year, up from 38% this year, according to the latest poll by international accounting body CPA Australia.

Those who saw China as a major risk to Hong Kong's position was 44%, compared with 49% this year. Still, more than half expected the territory's competitiveness to slip in 2017.

The relatively gloomy picture was painted by some 230 finance, accounting and business professionals in Hong Kong who were surveyed between August and September.

CPA Australia attributed the anxiety to Singapore's more affordable office space and proactive attempts to attract multinational corporations to set up regional headquarters in the city-state with tax benefits.

"Hong Kong's Grade-A office rent is much more expensive than that in Singapore and is hurting its own competitiveness," said Peter Lee, a wealth management professional and CPA Australia's divisional president for greater China in 2013.

Hong Kong is the world's costliest city to rent offices in its skyscrapers, with annual rent reaching \$278.5 per square foot, far ahead of runner-up New York at \$158, according to property consultancy Knight Frank in a September report.

Singapore only ranked eighth with an average rent of \$72 per square foot, thanks to ample new office supply and a bigger central business district -- about 1.5 times the size of Hong Kong's.

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Market data

Nikkei 225	19,506.54	+143.99	+0.74%
Shanghai Comp.	3,363.62	-1.59	-0.05%
Hang Seng	28,094.61	+329.60	+1.19%
Singapore STI	3,265.26	+15.92	+0.49%
Sensex	31,646.46	+258.07	+0.82%
Dow Jones Ind.	21,864.77	-0.60	±0.00%
USD/JPY	110.19	+1.69	+1.56%
USD/CNY	6.59	±0.00	±0.00%

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Print Edition



Asia schools itself in the art of business

High office rents in Hong Kong's core districts including greater Central and Tsim Sha Tsui have already triggered a wave of decentralization by some multinational corporations to cut costs.

In the third quarter, luxury retailer Burberry Asia relocated from the commercial hub of Causeway Bay to the east of Hong Kong Island. Pacific Basin Shipping abandoned its office in Central and moved to Island South. Insurers like Manulife and AIA Group have sought back-office space across the harbor in Kowloon East.

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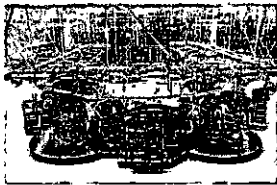


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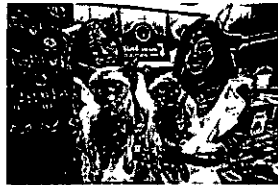


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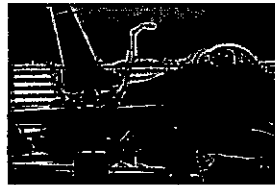




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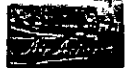


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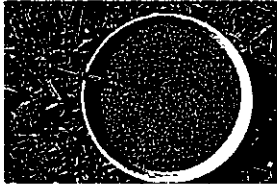


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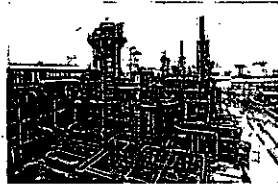
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New Singapore alliance to push for sustainable palm oil

06 February 2017 by Padmakshi Rana and Jessica Cheam

International non-profit World Wildlife Fund (WWF) has launched a new alliance in Singapore that aims to boost demand for sustainable palm oil and help tackle the haze pollution plaguing the region for many decades.

This alliance "sends a clear signal to consumers about which companies are committed to sustainability", said WWF Singapore chief executive officer Elaine Tan at the launch of the alliance at Marina Bay Sands on June 27.

The five founding members of the alliance are consumer goods giant Unilever, Singapore manufacturer Ayam Brand, food and beverage specialist Danone, home furnishing retailer IKEA, and Wildlife Reserves Singapore.

The network aims to emulate similar alliances in Europe that support sustainable palm oil, and seeks to connect players in the palm oil industry, retailers and manufacturers to tackle deforestation and haze.

The practice of burning peat or forest land, commonly used among Indonesia's farmers as the cheapest way to clear land, has over the decades caused habitat loss, severe environmental impact and air pollution.

Tan said the formation of this alliance was prompted by the public outcry over last year's prolonged haze pollution, which hit record highs as it shut down most outdoor activities, and even schools, throughout affected areas in Indonesia, Singapore and Malaysia.



The alliance, which is open for any company based in Singapore to join, will complement the work of the Roundtable on Sustainable Palm Oil (RSPO), an industry association headquartered in Kuala Lumpur which certifies sustainable palm oil, said WWF.

Business motivations

Panelists who spoke at the launch of the alliance unanimously agreed on its potential to transform the palm oil and wider consumer industry.

Jeanne Stampe, WWF's Asia Finance and Commodities Specialist, noted that the network is a "pre-competitive move by the industry to come together to send strong signals to producers and traders that there is a declining market for unsustainable palm oil".

By creating a "soft buy-in commitment", producers will see that there is sufficient demand for sustainable palm oil and this will give them confidence to invest in the physical supply chain, she said.

"As (we) move towards such national alliances, Asia stops becoming a dumping ground for such unsustainable commodities or a second tier region for fast moving consumer goods (FMCG) products that use less sustainable materials," she added.

Herve Simon, group marketing director, Ayam Brand, shared that the motivation for joining the alliance is simply that "we want to offer a good brand to consumers".

Although Ayam Brand is an SME that uses only 200 metric tonnes of palm oil per year, it can play a constructive role in bringing transparency to the market, said Simon.

The company sources for only sustainable palm oil, and the ingredient is clearly stated on all of Ayam Brand product labels, he said. "SMEs can play a role in fighting the haze, and that it is not only big companies that can make a difference."

Simon observed that in the food industry currently, having ISO certification on food standards is a pre-requisite to do business. Similarly, in the future, "I hope it will be the same for palm oil, meaning if you are not certified, then no one will buy from you", he said.

IKEA Singapore's head of sustainability Lee Hui Mein Lee echoed this view, saying that the furniture giant has committed to 100 per cent sustainable palm oil, because "we believe this is the right thing to do".

She noted that the issue was important and relevant as it "affects everyone - from small holders who produce palm oil in the neighbouring countries to all our co-workers and consumers who live and work in Singapore".

Underscoring the business case, WWF's Stampe stressed that eventually, businesses that do not behave responsibly will suffer "lower pricing power and potential loss of sales on the volume side",

"These have a direct impact on the bottom line, shareholder returns and credit profile," she said.

Opportunities for business

While raising sustainability standards might pose an initial challenge for companies, the opportunities for improving brand impact, increasing transparency and changing consumer behaviour are huge, said the panelists.

"Most of the value of the company is from the brand, so if you are building a brand with good principles, sustainable supply chain, anti-corruption and respect for minority and gender, for example, you make your brand stronger and business model more durable in the future," said Ayam Brand's Simon.

Cherie Tan, head of sustainable sourcing at consumer giant Unilever, shared that in recent years, sustainability has become "very ingrained" in the company.

"It's the way we do our business... we take responsibility for all the raw material we source and that they are produced sustainably," she said.

Unilever is one of the largest consumers of palm oil in the world - consuming 3 per cent of all palm oil produced - and it has a "no deforestation, no exploitation of people" policy, she added.

"Our commitments on traceability and transparency... are two areas where we think we'll make a large impact in the environment," she said.

Acknowledging that change will not happen overnight, she underscored the importance of companies working together through initiatives such as the new alliance.

"We believe the formation of this alliance is needed for the business community to join forces together, for the good of consumers and for the environment. We look forward to working with the founding members," she said.

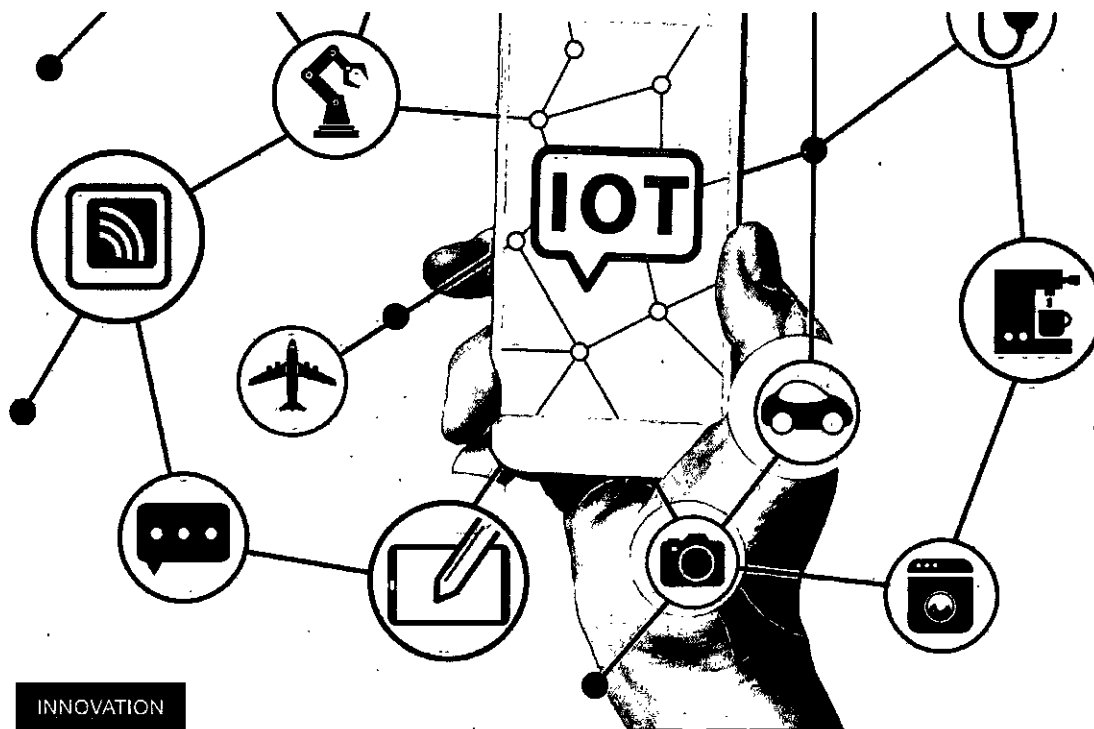
Sonja Luz, the director of conservation and research at the Wildlife Reserves Singapore (WRS), who also spoke at the panel, highlighted that the consequences of business inaction would be irreversible damage to wildlife, biodiversity as well as human health.

She stressed the importance of the alliance for building stronger messages, demanding proper product labelling and providing member companies with a platform to make the commitment towards sustainable palm oil.

This would provide consumers with the information on products and companies committed to the use of sustainable palm oil, and they can in turn vote with their dollar to support responsible companies.

WWF's Tan echoed the views of the panel when she said: "The global demand for sustainable palm oil at the moment is driven by European and American markets, but there is no reason why Asian markets cannot be strongly demanding for it too."

Edited by Jessica Cheam and Stanley Tang



INNOVATION

Security in a connected world

20 February 2017 by Fiona Liaw

The IoT is taking the world by storm and by the end of 2016, it is predicted there will be 6.4 billion things connected worldwide creating a US\$19 trillion global opportunity.

The far-reaching benefits of IoT are clear to all but the risks of this connectivity are high say security experts who spoke at Tech Innovation a yearly technology-industry brokerage event held in Singapore.

In an exclusive interview Future Ready Singapore learns more about online security trends that will shape the way future businesses operate from industry experts:



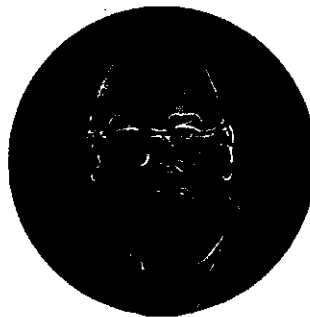
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Co-Founder & Chief Technology Officer
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What are some of the foreseeable security challenges associated with the IoT?

Erel Rosenberg: Unlike conventional computer centres, IoT lack physical security. IoT devices are located in public spaces with minimal security and therefore can be easily accessed by a combination of cyber and physical attackers.

This type of attack is still quite uncommon, simply due to the fact that most of IoT devices have a limited functionality and taking control over those devices offers very limited benefits for attackers. However, with the prevalence of nationwide concepts such as Smart Cities or Smart Nation, IoT devices will become more numerous and valuable. They will take a prominent place in critical infrastructures and hence become more attractive to cyber criminals.

Andreas Hauser: Early consideration of cyber security aspects in the development process will be necessary. The lack of relevant standards makes it difficult for companies to show that their claims are valid. This impacts the roll-out and scale-up of IoT-based solutions, even though the technology is ready.

Developing best practices and standards, which implies a consensus between the relevant international stakeholders, and incorporating them into regulations, would considerably facilitate the transfer of innovative IoT solutions into the market. However, the development process of standards and its incorporation into a regulatory framework needs also to be shortened to meet the short development cycles in the IT sector.

Cort Isenhagen: Security is almost always an afterthought. With IoT products, it is especially so because there is such a tremendous rush to market that device vendors are just trying to stay ahead of the competition, and their goal is just to make something that works, and sells, and then worry about security once they have got a successful product out ahead of the competition.

From a technology perspective, IoT devices present challenges for modern security approaches because many of them run on home-grown, custom operating systems that cannot support modern security software. Other components simply cannot handle the additional memory,

compute, or power requirements. It will be a challenge to deploy software onto FPGA and ASIC devices, which are typically incorporated into missiles, motors, CT scanners, and industrial control systems. Modern security platforms are built for PCs and smart phones, not all the devices people are suddenly connecting to information systems and the internet.

How can businesses protect their IoT solutions and smart devices in an increasingly connected world?

Mark Baugher: Good companies should have compliance, not necessarily certification, with a set of policies and practices from a standard like ISO 27001, or the NIST CyberSecurity framework in the US, or a Secure Product Development Lifecycle.

A good business will document the risks at the corporate level and the interdependencies among IT, build and operations security at the product level. A business should look at their supplier's culture for inculcating good engineering and security practices. Our Singapore office, for example, has a cross-functional security team and a training program that includes courses such as computer security, network security, secure software programming and ethical hacking. The team uses social networking tools and reaches beyond the Greenwave team to include Singapore-wide meetups of security professionals and talks on current trends in digital security.

Cort Isenbagen: There are a variety of emerging trends that are helping secure IoT devices. Most of these approaches involve taking security approaches developed for traditional IT environments, and scaling these approaches down to work on devices with less compute, memory, and power consumption. There are however some truly novel approaches that are very exciting – a great example is power profiling, which is a method that measures the electrical power signals across a processor and uses deviations from typical power behavior to detect anomalies. There are two companies that have developed promising technologies for power profiling – these are PFP Cybersecurity and Virta Labs. This method could be an important factor in protecting IoT devices.

Andreas Hauser: Businesses should actively develop cyber security guidelines that demonstrate the requirements a product or solution should have. Developing these standards and best practices provides the company and their products with a certain level of cyber security protection. With regards to the design and development of products and solutions, companies should incorporate cyber security elements at an early stage, which is most effective in terms of protection as well as cost reduction in the long term.

They will also need to ensure that both security and safety requirements are properly tested before any implementation. With the increasing connectivity, it will also be crucial to ensure constant review of the state of the IoT devices and solutions to detect and respond to any form of attacks.

One example is the development process of Siemens automation products in terms of security, which has been certified by TUV SUD based on IEC 62443 industrial cyber security standards.

Is there a role for the government in accelerating the secure adoption of IoT in the region?

Erel Rosenberg: In many ways, cyber security should be taken into consideration concerning common infrastructure protection such as water, transportation or electricity. Although each individual company can try to solve the cyber security threats by itself, it is clearly not the most efficient way to handle this threat. We need to find a way to offer cyber security as a service, in the same way that electricity is. However, as we are talking about new technologies and new types of services, it is still unclear how to propose this type of service, as we still lack the experience, the standards and the technology to provide a simple solution to this problem.

Governments have two main roles: first to provide guidelines and information to businesses and manufacturers in order to help them to keep their IoT as secure as possible. The second role of government is enforcement. Policing needs to be extended to new threats, including new capabilities that are required to detect attacks over IoT infrastructure.

Subho Halder: IoT uses a whole lot of personal sensitive data and Personal Identifiable Information (PII), to process. In case of Smart Nation initiatives, IoT devices are used in handling sensitive data of residents of the city and the behavioural patterns determined by these devices, are the result of a Smarter Nation. One of the first steps to protect these data is to look at the Privacy Concern of these data, and for the Government to implement proper Personal Data Protection Act (PDPA) and Privacy Law.

The challenge here is to make sure governments are able to speak to the right kind of people to establish policies that protect the interest and privacy of users and at the same time should not be a major hindrance to businesses, else we will end up killing innovation.

Mark Baugher: The European Union is far ahead of the United States in legislation that protects citizen data from exploitation or abuse. The EU Data Protection Directive may not be a perfect law, or even a good one, depending on your point of view, but it does regulate digital data and

thereby allows citizens to at least know how private their data are if not control it. Even weak legislation can be improved over time. There is a tendency for services from trans-national operators to comply with the most restrictive, most private jurisdiction; it's cheaper and simpler to operate the service in a single way in all jurisdictions rather than changing policies at geo-political borders.

Of the variety of IoT technologies available now and in the foreseeable future, what excites you the most?

Erel Rosenberg: I think that V2V (Vehicle to Vehicle) and V2I (Vehicle to Infrastructure) technologies has the potential to change the way that we are driving providing efficiency and safety for drivers. While this technology is still in very early stage, the potential of this technology may be very high.

Subho Halder: IoT is a beginning of a bigger tech revolution in the near Future. What excites me the most about IoT is how we can use it in Medical Science to improve our quality of living. By leveraging the power of connected devices and communications along with Big Data Analytics the future looks promising and exciting.

Andreas Hauser: IIOT or AV since it will impact the normal day to day life of the citizens massively. Another area is wearables integrated with augmented reality used for medical purposes, which will disrupt healthcare as we currently know it.

Edited by Liew Hanqing and Tan Yi Xuan



MENU



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Singapore central bank sets up data analytics unit

Monetary Authority of Singapore establishes a new data analytics group, led by a newly appointed chief data officer, to better "position" itself and the local financial sector for the digital economy.



By Eileen Yu for By The Way | February 14, 2017 -- 08:36 GMT (00:36 PST) | Topic: Big Data Analytics

The Monetary Authority of Singapore (MAS) has unveiled plans to establish a data analytics group that it says will guide the organisation as well as the local financial sector towards the digital economy.

Operational from March 15, the new unit would drive the central bank's efforts to tap data analytics for deeper insights and enhance work efficiencies within the organisation. It also would facilitate the supervision of financial institutions and improve the efficiencies of regulatory compliance among these organisations.

"The move is part of MAS's broader efforts to help position itself and the financial sector for the digital economy of the future," said the industry regulator (<http://www.mas.gov.sg/News-and-Publications/Media-Releases/2017/MAS-Sets-up-Data-Analytics-Group.aspx>).

Leading the group would be newly appointed chief data officer, David Roi Hardoon (<http://www.davidroihardoon.com/>), who was formerly co-founder and chief of analytics at Azendian Solutions. Hardoon holds a doctorate in machine learning and has experience in developing and deploying analytical models.

The data analytics group would encompass three main units focusing on data governance and architecture; specialist analytics and visualisation; and supervisory

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Samsung Galaxy Note 8's new record: Tests show its display outshines iPhone 7's

(<http://www.zdnet.com/article/samsung-galaxy-note8s-new-record-tests-show-its-display-outshines-iphone-7s/>)

technology. Together, they would establish data management policies, manage data collection and quality, conduct data analyses, and improve data capabilities within MAS. The new branch also would work with the fintech (<http://www.zdnet.com/article/singapore-opens-lab-for-fintech-experiments/>) and innovation group to drive data analytics capabilities across Singapore's financial industry and help make regulatory compliance more efficient, said MAS.

Singapore to develop common QR code to drive e-payments
(<http://www.zdnet.com/article/singapore-to-develop-common-qr-code-to-drive-e-payments/>)

DJI launches bug bounty program to stop homegrown hacking
(<http://www.zdnet.com/article/dji-launches-bug-bounty-program-to-stop-homegrown-hacking/>)



MAS Chief Data Officer David Roi Hardoon

Its managing director

Ravi Menon said: "The digitisation of information and the harnessing of data from multiple platforms have created the opportunity to use data analytics to understand the economy and the financial system with a depth that was not possible before."

He added that the regulator was "committed" to beefing up Singapore's capabilities in data analytics to tap growing opportunities in the sector.

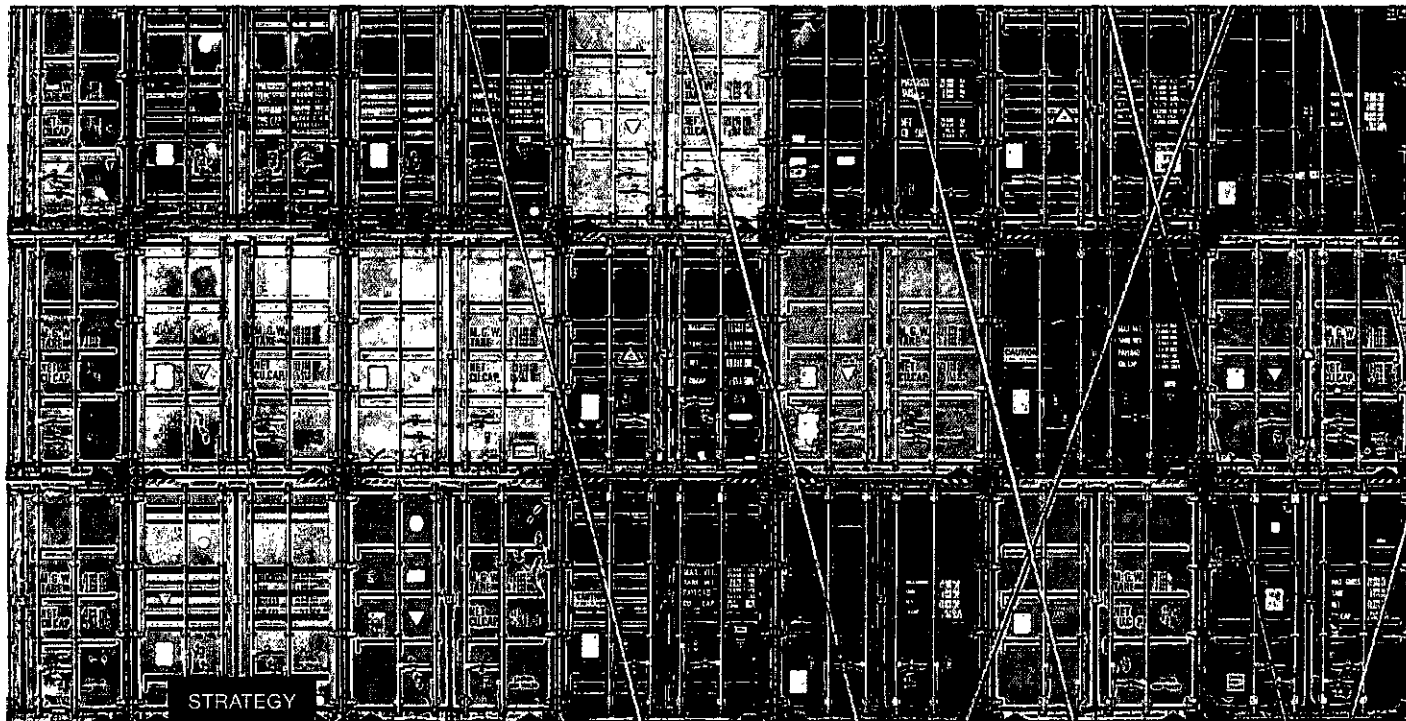
MAS in the past year had announced a slew of initiatives aimed at driving the local industry, including a new fintech lab (<http://www.zdnet.com/article/singapore-opens-lab-for-fintech-experiments/>) and sandboxes to allow fintech (<http://www.zdnet.com/article/sandbox-initiative-allows-singapore-to-figure-out-fintech-regulations/>) companies to test their products under less stringent laws as well as enable the regulator to better understand the fintech industry. Last November, it also outlined a framework (<http://www.zdnet.com/article/singapore-outlines-fintech-strategy-releases-sandbox-guidelines/>) that focused on providing a "conducive" regulatory environment and ecosystem to support new technologies.

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Singapore to transform logistics sector with new roadmap

30 January 2017 by Shilpa Pai Mizar

The logistics ITM was recently launched to develop Singapore into a global leading logistics hub. By driving innovation, productivity and talent, the ITM will help enterprises better capture growth opportunities in this sector.

Innovation

On this crucial front, companies will receive support in tapping suitable processes and technologies. The Government will help organisations adopt impactful, productive technologies that are new to Singapore or the industry.

The island-state will invest in next-generation facilities with high-specification units that encourage the co-location of companies and drive the use of advanced technologies.

Productivity

Enterprises can expect to see centres of excellence and innovation set up in Singapore, which will aid them in building differentiating capabilities to boost productivity.

The Government will also work with reputed local research institutions and universities to develop world-class capabilities in the logistics and supply chain management space

At the same time, Singapore will continue to architect itself as a choice location for leading manufacturers and brand owners to base their supply chain activities and decision making.

Talent development

Talent is a key differentiator for global players in today's disrupted business environment. The Logistics ITM will help the current workforce in Singapore step into the gap by acquiring niche and emerging skills through the Industry Catalyst Programme.

Under the Government's Adapt and Grow initiative, Workforce Singapore's Logistics Professional Conversion Programme will help mid-career workers make a smooth transition to the industry.

Here's what companies can expect from Singapore's ITM 2020 vision for the logistics industry in a snapshot.

Singapore's Logistics Industry



Global Logistics Performance Index
Singapore ranked 1st in Asia!



Strong base of leading global and local logistics players



Logistics industry plays a key role in shaping a competitive business environment for Singapore and supporting domestic needs

VISION FOR LOGISTICS INDUSTRY TRANSFORMATION MAP (ITM)

Singapore as a globally leading logistics hub underpinned by operations excellence, innovation, and strong Singaporean enterprises and talent pool.

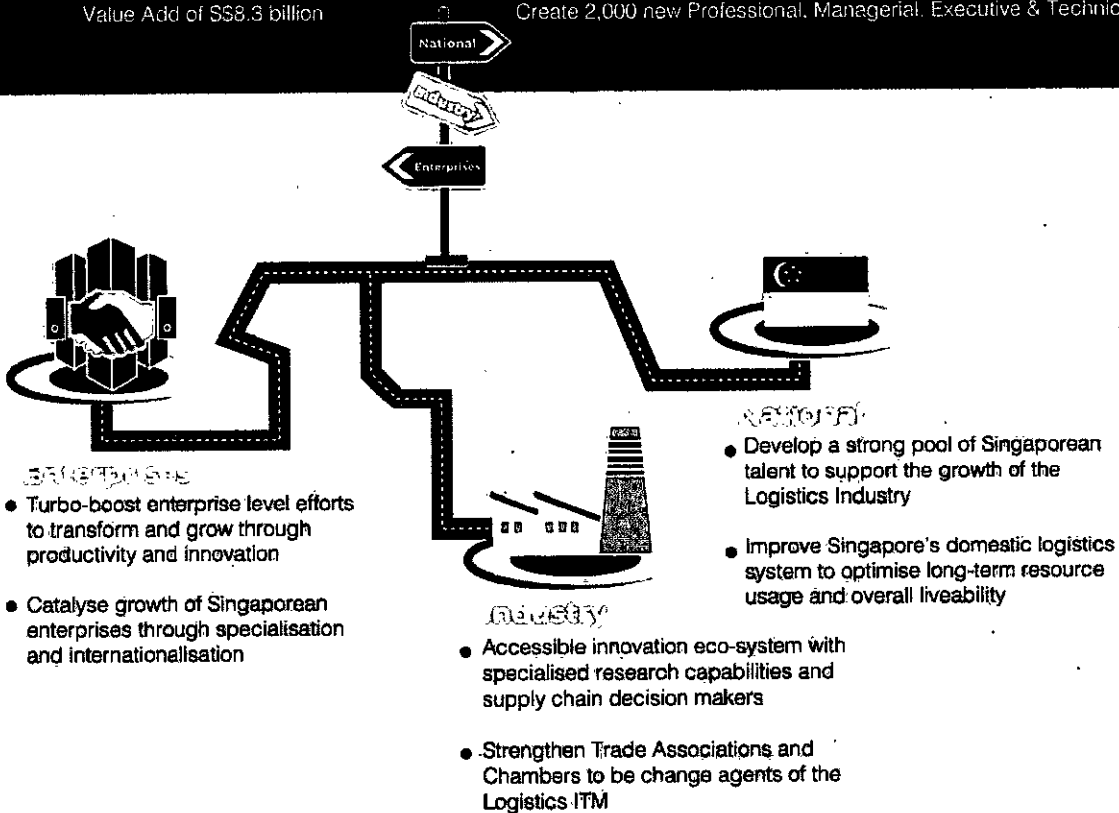
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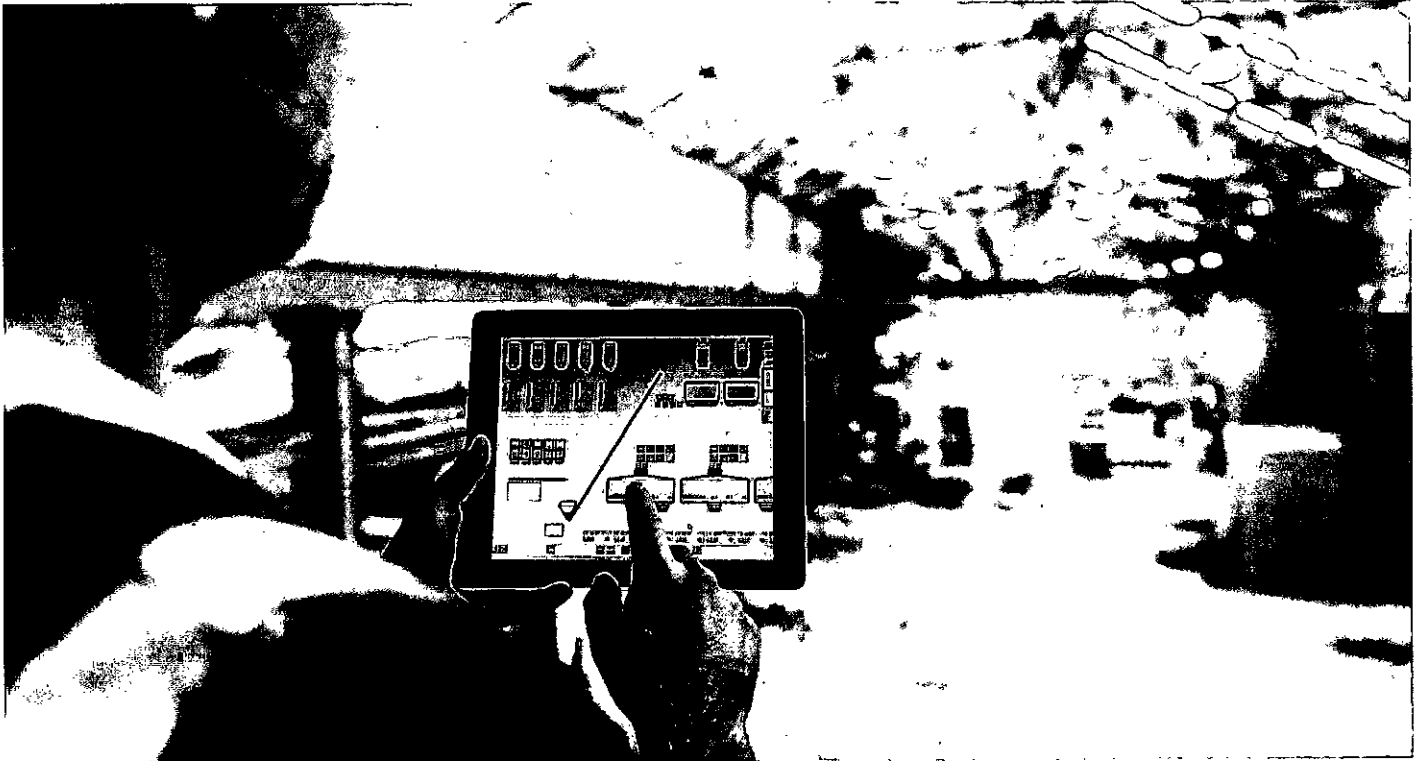
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Digitizing the factory floor

The next industrial revolution: Hype or reality?

Published on February 9, 2017



Yi-Hsen Gian Follow

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In 2016 I had the pleasure of meeting with many business leaders across the United States to discuss the future of industrial manufacturing. Across these conversations, a common question that came up during informal chats was pretty much always similar – “Are we really experiencing the next ‘industrial revolution’ or as some dubbed, ‘Industry 4.0’? Will advanced technologies such as robotics, artificial intelligence (AI), additive manufacturing and the Industrial Internet of Things (IIoT) disrupt and bring tremendous benefits to the world of manufacturing?”

In my personal opinion, the future of this topic is brighter than the reality today. Currently, my observation is that a lot of these groundbreaking new technologies are at the smaller-scale *trial* stage rather than the large-scale *implementation* stage. Beyond the technological challenges of some of these breakthrough technologies, there is a lack of digital infrastructure in most factories. This is where greater opportunities are in the short term.

in

the more immediate benefits from the digitization of the manufacturing process itself. Many more are keen but not everyone can realistically implement this change *yet*, especially in the process industry. However, in using 'yet' to describe this journey, I have found positivity. Over the last six to nine months we have started to see some companies talk about putting in place a digital infrastructure for the whole manufacturing process.

A good example is the partnership between Emerson and Chevron Oronite. They have moved forward to install Wi-Fi coverage across the whole manufacturing process to connect all their sensors and equipment. Such a simple move has led to immense productivity increases and I'm confident this is just their first step to finding even more digital initiatives for improving their manufacturing process.

Digitizing the manufacturing process will enable companies to harness so many benefits. The visualization of production data and predictive maintenance are what I've seen as a 'low-hanging fruit' that many companies can consider.

Challenges in going digital

Now, implementing new technologies definitely requires careful planning and execution. Numerous external parties such as consultants and IT vendors are usually involved, in addition to internal stakeholders.

Sumitomo Chemical's partnership with Accenture to develop their IIoT competency is a good example. They used Singapore as the test location for this project because the relevant technology providers – such as process control experts and traditional IT system integrators – are also based here. From here, they will scale up to the rest of their locations if the trial is successful. Taking baby steps like they did assures the entire chain of stakeholders that change can be implemented successfully.

Challenges still exist today of course, for example:

- Many companies still may not have basic infrastructure requirements such as Wi-Fi coverage across their factory
- Legacy IT systems are incompatible with new software
- Going digital and centralizing data exposes the company to cybersecurity risks

Cybersecurity is particularly worth noting as a lot of older equipment is still using older software such as Windows 95. These legacy systems are much more vulnerable to cybersecurity risks.

This of course begs the question – are companies saving more resources by sticking to these legacy systems or will they be more secure in the long run through digitalizing?



company systems.

Positives for the future

Amid this discussion, I must say there are some new areas that deserve greater attention. The use of augmented reality (AR) for industrial purposes is not often mentioned when we discuss advanced technologies for manufacturing. Yet, statistically, more than a third of U.S. manufacturers surveyed by PwC indicated that they are already using AR/VR technologies, or planned to do so in the next three years.

Industrial-use cases for AR include product design and development, safety and skills training, maintenance, repair or equipment operations and remote collaboration. Manufacturers such as Lockheed Martin, Bosch, Caterpillar and ThyssenKrupp are already using or experimenting with AR.

In Singapore, ST Logistics has also embarked on an AR trial using Epson's Moverio Pro BT-2000 Smart Headset in one of its warehouses. While the system is still in the proof of concept phase, ST Logistics has already seen a productivity increase of about 10 percent.

I can only imagine the positive productivity possibilities once specific issues such as field of vision, safety requirements and cost improve.

Singapore as a leader of change

As a small country Singapore has the rare advantage of housing the entire ecosystem together. Tech vendors, R&D labs, start-ups, IT service providers and global manufacturers are located in close proximity to each other. This makes doing trials and full implementations much easier. Problems are solved on the spot, and quickly.

Our government is constantly reviewing the landscape to introduce timely policies and schemes to maintain a friendly ecosystem and business environment for developing and implementing advanced manufacturing technologies. The aim is to help manufacturers based here remain highly competitive through innovation and productivity amid global uncertainty.

If you ask me, industry 4.0 is here and it is here to stay. As the masses come together, this mass demand will lead to competitive solutions. I, for one, am looking forward to when that happens.

* I am an employee of Singapore Economic Development Board (EDB) at the time of writing this post. The opinions and views expressed here are those of my own, and they do not necessarily state or reflect those of Singapore EDB or Singapore as a whole.



Yi-Hsen Gian
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Alain Dupuis
VP Industrial Development at UnaBiz

... 6mo

Thank you very much for this article.

From my perspective we are at the pre-dawn area of Industry 4.0. Many elements are combining between each other into an evolving ecosystem of increasing complexity and refinement. In any early step of evolution the best suited candidates are simple and highly efficient.

This fits perfectly the baby step approach that you recommend. I... [See more](#)

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Hidayat, Ph.D
McKinsey & Company

... 6mo

Hi Yi-Hsen Gian,

Thank you for your post. I enjoyed reading it. I have no doubts that factory around the world will strive for increase in productivity and certainly technology will help to make it happen. I worked in manufacturing industry and can easily imagine how these new technologies would bring the necessary improvements in productivity.

However, some of these new... [See more](#)

Like Reply | 1



Yi-Hsen Gian

6mo

There are many factors driving adoption of new technology including technology maturity, risk appetite, perceived value and cost pressures. Perhaps one of the bigger differences between semiconductors and the process industry is the difference in business cycle and thus different timing of the cost pressures. Semiconductor has had quite a bad time a couple of years ago drive ... [See more](#)

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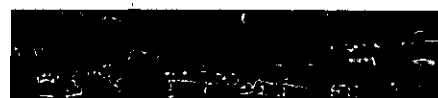
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25 Inspiring Women Entrepreneurs in Singapore

by Fintechnews Singapore / March 14, 2017

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Singapore is one of the desirable places for entrepreneurs to start their business and the government is giving a lot of effort to provide entrepreneurs with everything they need, from grants, co-working spaces and a network of international investors.

That's why Singapore stands as the hottest startup hub of Asia. In recent years, the women's involvement in the business has been increased and subsequently the count of the women entrepreneurs too.

Here is a list of 25 inspiring women entrepreneurs in Singapore, collected by habiletechnologies.com. The list includes also some Fintech entrepreneurs.

1. Krystal Choo

Designation: CEO & Founder at Wander

Description:



Krystal Choo is a tech entrepreneur with a personal mission to advance human connection in progressively virtual environments. She is the founder of Wander which brings like-minded people together by allowing them to join the best communities in a city right from their devices. She was an influential thought leader spoken twice in TEDx.

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Krystal has got honors and awards such as one of Singapore's "Most Awe-Inspiring Women" (Cosmopolitan), "the Gritty Entrepreneur Singapore Needs" (E27), awarded as one of Asia's 50 Women Leaders and named LinkedIn Power Profile 2015 and 2016, in the CEO category.

2. Soo Boon Koh

Designation: Founder & Managing Director - iGlobe Group

Description:



Soo Boon Koh is an expert in the global venture capital industry and founded iGlobe in late 1999. As a Corporate VC in the Singapore, she was associated with several successful companies such as Premisys Communications, Quick Logic, Quick Turn/Cadence, Brokat AG and SCM Microsystem AG. She is also a worked with DBS Bank and acted as a Board member of Anacle Systems, Forte Media, Sparky Animation and Verisilicon Holdings Inc.

She has been a member of International Women's Forum (Singapore Chapter), Women Corporate Directors (Singapore & Shanghai Chapters) and Advisor to Committee member of Singapore Action Community for Entrepreneurship (ACE).

3. Pocket Sun

Designation: Founding Partner - SoGal Ventures

Description:



Pocket Sun is the Founding Partner of first female-led millennial venture capital firm "SoGal Ventures" and the only woman featured on the cover of Forbes Asia magazine!

She is also the youngest LinkedIn Top Voice in VC & Entrepreneurship, and internationally sought-after keynote speaker and TEDx speaker. Pocket has been featured on BBC World News, CCTV, Harper's Bazaar, The Straits Times, Channel News Asia, The Business Times, Next Shark, DBS campaign

She had spoken about the Venture Capital, Cross-border Business, Diversity and Empowerment in various conferences around the world.

4. Ayesha Khanna

Designation: CEO and Co-Founder of ADDO

Description:



Ayesha Khanna is the CEO and Co-Founder of ADDO which is a data science and artificial intelligence consultancy firm. She is also the founder of 21C Girls, a charity that teaches coding to girls in Singapore.

As a technology and data analytics expert, she advises governments and companies on smart cities, future skills, fintech, and other emerging industries. Ayesha also served on the Singapore Ministry of Education's Steering Committee on future skills and applied learning in 2014.

She has written books on Straight Through Processing and Hybrid Reality. Ayesha has been published and quoted on technology, innovation and smart cities in The New York Times, BusinessWeek, TIME, Newsweek,

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5. Kanika Agarwal

Designation: Founder & CEO - PassionPeers

Description:



Kanika Agarwal is the Founder and CEO of Passion Peers which is the Asia's fastest growing Digital Transformation strategy, execution services company. She is more passionate towards a new wave of digital transformation. She believes that businesses transform only when the people started to think and do things differently.

She has also been a trainer of personal branding and digital marketing. As a marketing expert and thought leader, she has been featured in many publications, forums and also serves as a mentor to the next generation of marketers and entrepreneurs.

6. Pat Law

Designation: Founder - GOODSTUPH

Description:



Pat Law is the founder of social influence agency - GOODSTUPH. She is a digital strategist with more than 10 years of experience in traditional and digital advertising. She believes that,

"To be successful one need to have passion, experience, determination, network and action". She has a good market and product knowledge in Alcohol, Automotive, Aviation, Beauty, Confectionary, Fashion, Pet Care, Sports and Technology environments. She quotes that our altitude is determined by our attitude.

7. Nanz Chong-Komo

Designation: CEO - Nanz Inc Group Pte Ltd

Description:



Nanz Chong-Komo began her career as a fashion model in Singapore in 1987. She founded ONE.99 Shop, a one-price store which became the multi-dollar business within the three years. Due to the SARS epidemic, ONE.99 shop was about to setback. But she never gave up her entrepreneurial spirit and she wrote the best-selling business books based on her experience namely ONE BUSINESS 99 LESSONS, BRINGING OUT THE ENTREPRENEUR IN YOU & OVERCOME.

Nanz has become the motivational and corporate speaker and spoke in major institutions and organisations like Monetary Authority of Singapore, Unilever, etc. Her expertise and knowledge in the field of entrepreneurship and business management have mentored to emerging entrepreneurs to become more effective business leaders.

8. Michelle Sun

Designation: CEO of First Code Academy

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Description:



Michelle sun is the co-founder and CEO of First Code Academy which empowers the students with digital literacy to become creators, thinkers and innovators in the technology space. Her passion towards technology and her power of coding made her obtain opportunities to work at high growth technology startups in the Silicon Valley. Michelle has featured in Forbes 30 Under 30 in Asia and BBC 30 Under 30.

9. Gina Heng

Designation: Founder of Miss Kaya

Description :



Gina Heng is the co-founder and CEO of Marvelstone Group which is the private investment group that develops and invests in growing businesses in technology, real estate, infrastructure, energy and media. Gina is an experienced fund manager and investor with years of experience in managing money. She is also the founder of Miss Kaya which is the Singapore's first licensed robo-advisor aimed at serving the financial needs of modern women in the Asian region.

10. Prema pant

Designation: Co-Founder of Circus Social

Description :



Prerna Pant is a cofounder of circus social which is the social and digital analytics company. She is a social strategist and business leader with global experience in Marketing and Communication. Circus social started building 20/Twenty Which aims to be the Bloomberg terminal for marketers. As an expert in customer servicing and business development, she drives the growth and enables business success at Circus social.

11. Rachelle (Ria) Lao

Designation: CEO & Founder - PrecisionBit

Descriptions:



Ria Lao is the founder of Precision Bit which is a visual intelligence solution that helps the enterprises to make data-driven marketing decisions. She is also a role model for the marketing person and the persons desiring to become tech founders. She is an inspiring leader with the proven records of developing the new business and growing them into success.

12. Gillian Tee

Designation: Co-Founder & CEO - Homage

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Description:



Gillian Tee is the co-founder of Rocketrip, Code UpStart and preparing to launch her newest startup "LinkAsia", a tech talent accelerator in Singapore. She always loves to create innovative products and to build the successful business. Gillian is an MBA graduate with the passion towards coding and design. She is currently working on "Homage" which is the home care solutions that help seniors continue to live in their own homes with greater joy, comfort, and grace.

13. Roshni Mahtani

Designation: Founder of Tickled Media

Description:



Roshni Mahtani is the CEO and Founder of Tickled Media and also the publisher of parenting social network "ParentTown" and media assets "theAsianparent.com and IndusParent.com" which has a wide reach of around 8 million mums in Asia. She is also an active member of the startup community and founded the Female Founders Network which consists of 2,000 female founders.

Roshni is also a board member of TIE Singapore and mentors at JFDI & Crib. She is an executive producer for the docu-movie "Untouchable: Children of God" which narrates about the young girls in the brothels of India and how they are sold and trafficked from Nepal. She got featured in covers of various magazines and newspaper and her company had been mentioned in many media outlets including BBC.

14. Shao-Ning Leigh Huang

Designation: Partner - Entrepreneur First

Description:



Shao-Ning Leigh Huang co-founded the Jobscentral and spent almost 14 years working on it. It initially focuses on campus recruitment and then expanded their focus into scholarship and career programs. Her company was acquired by CareerBuilder which made her focus to integrate the SG platforms onto the global platform and made as SaaS player in the recruitment field.

In 2009, She started to invest in B2C organisations and turned her focus also to help the women to gain confidence and be happy. She also states that "Her current focus is to be a mentor and advisory for the startups and also to develop social programs to help the needy children and being a lovable mother to her 4 sons".

15. Lynette SEAH

Designation: CEO and Founder of Alpha7

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 CROWDFUNDING E-COMMERCE
 FINANCIAL INCLUSION FINTEC
 FINTECH STARTUPS FINTECH
 HONG KONG INNOVATION
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 MALAYSIA MAS MOBILE PA
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Description:



Lynette SEAH started her career as an Australian chartered accountant and obtained broad experience in audit, finance operations and strategy, HR, project management, business and cloud tech. Her passion towards the cloud tech made her found Alpha7 which is the business advisory company with a mission to evangelize the value of Cloud to business owners, entrepreneurs & CEOs. It helps business to be more productive and also to grow and expand in Asia-Pacific region.

16. Danielle Warner

Designation: CEO & Founder at Expat Insurance

Description:



Danielle Warner has more than 15 years of working experience in the Insurance industry which made her start Expat Insurance in 2009. Expat Insurance is an only insurance intermediary designed especially for expats, and it covers medical, travel, home, employee benefits programmes and business insurance.

She is also an active member of the entrepreneurial community and also named as Young Professional of the year in 2012. In 2016, Warner has got featured on the cover of Expat Living Magazine. She also published the book named BULLETPROOF.

17. Gina Romero

Designation: Co-Founder - Connected Women

Description:



Gina Romero is the co-founder of Connected Women and also the brand champion, social connector and community builder dedicated to helping others to succeed. She has failed in business several times but her failure acts as a catalyst for success. She helps entrepreneurs and brands to develop and grow successful businesses.

Gina collaborates with the global team to drive the businesses forward through a combination of creative logic, radical common sense and smart execution. She states that "She loves what she do, but she doesn't take herself too seriously".

18. Rina Neoh

Designation: Co-Founder - Mercatus Capital

Description:



Rina Neoh is a founding partner of Mercatus Capital which has evolved into a seed investor, angel advisory, incubator, and business accelerator. She has about a two decades of experience in the corporate and

entrepreneurial world. Rina is an expert in strategic marketing, product branding, information systems, business development, venture capital financing, investor relations and high-level business negotiations skills by which she has delivered multi-million dollar returns from small business enterprises, which she has incubated, coached, invested in or promoted.

Rina loves to spend most of her free time in advocating "greenfield" businesses, promoting social entrepreneurship, women empowerment and volunteerism work. She also says that, "My personal advocacy is to encourage more women to take leadership roles in startups and entrepreneurship because they have the added advantage of being able to balance business acumen with their intuitive feel for people issues."

19. **Cynthia Siantar**

Designation: Co-Founder at Call Levels

Description:



Cynthia Siantar is the co-founder of Call Levels which is a simple, independent and reliable tool to track your financial assets. This company was selected as a Finalist for Best Fintech App in Appster Awards 2015 (London). Prior to this, Cynthia worked as an Investment consulting analyst in Mercer and equity capital market associate in HSBC.

She is also a co-founder of BlastOut, a geolocated social network that let you interact better with real people in real places. In Call Levels, Cynthia sets the strategies for growth, operations and communications. Cynthia has been selected as one of the Forbes' "30 Under 30 Asia" in the Finance category.

20. **Nicki Granger**

Designation: Founder and CEO of CardUp

Description:



Nicki Granger is a specialist in Entrepreneurship, product development and marketing strategy and She has a deep industrial experience and knowledge in payments and travel sector. With her leadership skills, she is able to build the high performing cross-regional teams.

Nicki is the founding CEO of CardUp, a Singapore-based fintech company revolutionising the way people make and manage big payments. She also received American Express President's Club Award (2015) and American Express Ambassador's Club Award (2011).

21. **Valenzia Jihuan Yap**

Designation: Founder at PolicyPal

Description:



Valenzia Jihuan Yap is a founder of PolicyPal which uses artificial intelligence to simplify and digitise insurance for consumers. This platform helps the users to manage and optimise their policies and provides offers based on their personalised recommendations on their insurance policies.

She has a working experience in marketing, business development, product development, business operations, and strategy. Priorly, Val was an Assistant Vice President at OCBC Bank where she successfully

launched several digital business campaigns.

22. Khai Lin Chua

Designation: Co-Founder and CFO at Fundnel Limited

Description:



Khai Lin Chua is the co-founder and CFO of Fundnel, a private investment platform. She started Fundnel to help the SMEs to grow and expand through funding. She believes that the determination of the founders to drive a sustainable growth and the execution of the idea will only make the business success. She also says that Efficiency is all about focusing on what isn't working and fixing that before moving on to the next problem.

She concludes with the statement, "When you run a startup, you require utmost determination and ability to tackle problems. There is no playbook and you should learn to make the hard calls alongside members of your team. But the end, the lessons you learn as an entrepreneur are going to be invaluable"

23. Nalinee Chinnowuthichai

Designation: Co-Founder at InvoiceInterchange

Description:



Nalinee is a specialist in Project Management, Migration, Implementation, Process Re-Engineering and Requirements management. She is also the founder of InvoiceInterchange which is the leading peer to peer invoice trading marketplace that provides business to raise work capital by selling their invoices.

As a CTO/COO of InvoiceInterchange, Nalinee leads the technology strategy and development and manages the day-to-day business operations.

24. Idy Tee Wan Jun

Designation: Managing Director. - Capitalize Pte. Ltd

Description:



Idy Tee Wan Jun is a Managing Director of Capitalize which helps the business owners to seek, source and obtain capital from banks and financial institutions. With her five years of professional experience, she has assisted hundreds of SME's to get capitalised. Idy is an energetic and cheerful woman through which she maintains a long-term relationship with her clients.

As a Marketing graduate, She manages all aspects of marketing and strategic planning to grow her company and also trains her employees in sales and customer service. Recently, Idy was awarded as Entrepreneur of the Year Award 2016.

25. Caroline Bowler

Designation: Founder at Bowlah PR

Description:



Caroline Bowler is a Founder of Bowlah which is Asia's first Fintech PR agency in Singapore. She is also a founding member of Global Fintech PR Network and the Regular Contributor of IrishTechNews.ie.

In 2004, She moved to the Financial sector and worked with the variety of financial companies operating in investment banks, hedge funds, financial technology companies, and financial advisors by which she gained a lot of international networks in finance and technology sector.

She is also a speaker in Fintech events and involves herself in writing about the future of Finance Technology. Her passion is to increase the role of women in the world of Finance.

This Article first appeared on Habiletechnologies

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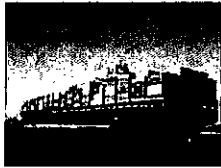
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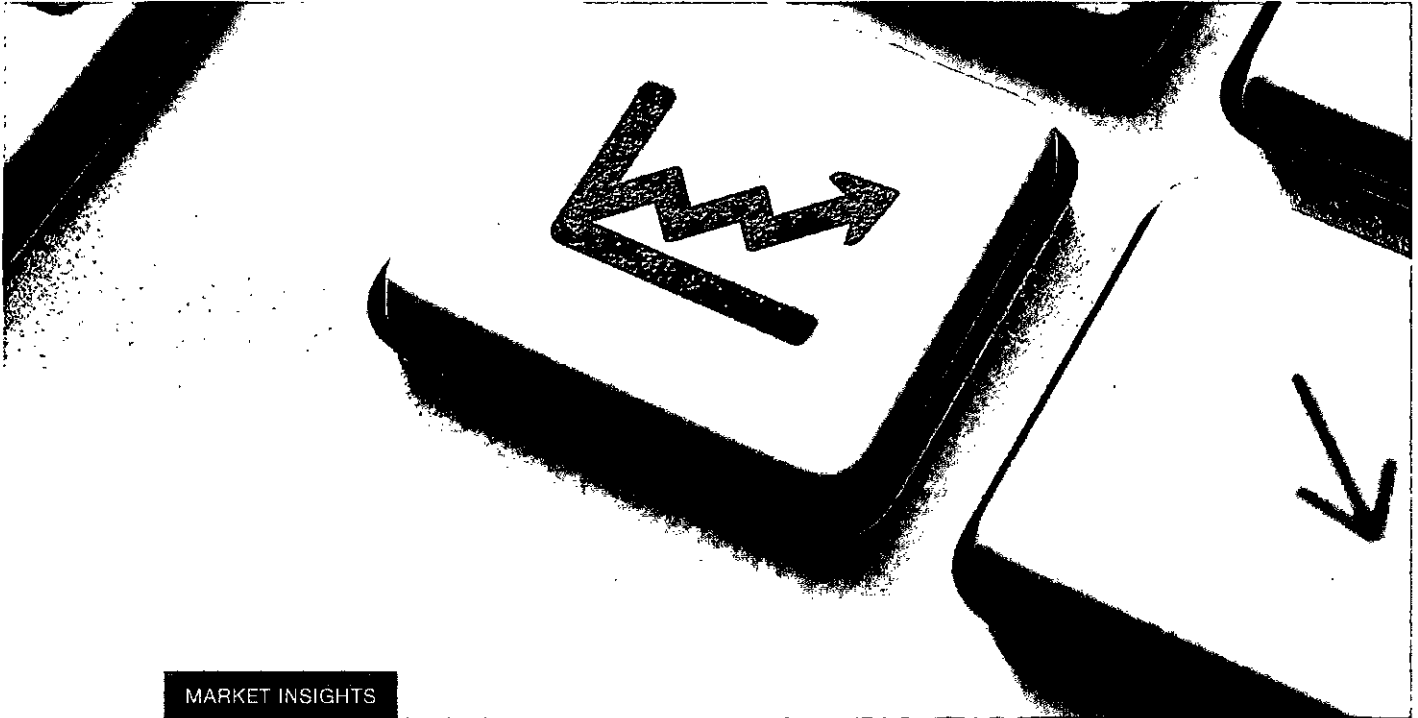
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MARKET INSIGHTS

E-commerce set to burgeon in SEA

08 March 2017 by Alywin Chew

The e-commerce market in Southeast Asia (SEA) is poised for a boom, and its internet economy is expected to burgeon to more than \$200 billion within a decade, a new report has found.

The report, commissioned jointly by US tech giant Google and Singapore investment firm Temasek, focused mainly on six major markets in SEA - Indonesia, Singapore, Malaysia, Philippines, Thailand and Vietnam - as well as smaller ones such as Cambodia and Laos.

Titled e-economy SEA: "Unlocking the \$200B Digital Opportunity", the research found that there are currently about 260 million users in the region, making SEA the 4th largest market in the world. This particular market is also the fastest growing one, expanding at a 5-year compound annual growth rate (CAGR) of 14 per cent. Singapore and Indonesia were found to be the countries where e-commerce activity is the highest.

At present, the Asia-Pacific region already leads the pack in global B2C e-commerce, according to a 2015 Research and Markets report. The study found that the region's share of total retail sales had already surpassed that of Western Europe and North America. Other studies, such as one commissioned by the Ecommerce Foundation, valued the Asia-Pacific region's B2C e-commerce market at US\$770 billion.

Deep-diving into the opportunity, the Google-Temasek report identified three distinctive factors in the SEA region that will drive explosive growth in its e-commerce market: a fast-growing young population in which 70 per cent are currently aged under 40, the lack of major retail establishments as compared to the rest of the world and a rapidly expanding middle class that will contribute to significant GDP growth.

What these factors essentially mean is that a significant part of the population in SEA comprises internet-savvy people who have considerable spending power that retailers will be eager to tap into by expanding their online offerings.

However, despite these projections of potential, there are aspects today where it remains unfulfilled. A 2016 Bain & Company market report titled "Can Southeast Asia Live Up to its E-commerce Potential?", challenges the potential with a surprising statistic: only a quarter of consumers aged 16 and above in SEA have ever bought a product online.

Challenges to e-commerce growth

From the lack of a solid regional logistics and payment infrastructure, to the obvious wide range of consumer preferences and cross border concerns, SEA faces a variety of challenges to entirely fulfil its e-commerce potential. However, these troubles of early-stage e-commerce markets are not anything atypical or daunting to experienced players who are looking to invest in the region for the long haul.

Innovative companies are finding their own solutions to overcome the slew of challenges. For examples, Singapore Post has established partnerships with local logistics and transportation providers to solve customs and tax collection problems. Also, other e-retailers are taking advantage of big data to monitor the variety of customer preferences across the region to serve them better.

How to win in SEA

To the companies who still remain wary of the promises the region holds, SEA does boast its fair share of successes whom they can learn from – amongst them Lazada, an online shopping app, and Grab, a ride-hailing app.

The commonality between the emerging winners seemingly indicating that the key to success, lies perhaps in having a keen understanding of what makes the region's consumers tick.

Lazada, for example, has set up logistics networks in each of its markets so as to boost delivery reliability – a top priority for its customers. According to a [Reuters news report](#), the company said last December that it was looking to double its number of warehouses in the region to keep up with the surge in e-commerce purchases from customers in smaller cities.

Founded in 2012, Lazada now ranks among the top e-commerce sites in SEA. Earlier this year in April, Chinese e-commerce giant Alibaba bought a controlling stake in the company for about US\$1 billion. Besides Singapore, Lazada also operates in Malaysia, Indonesia, the Philippines, Thailand and Vietnam.

Grab, too, has focused its efforts on localisation. Anthony Tan, the founder and CEO of Grab, was once [quoted saying by technology site itiviv.com](#) that "great mobile apps solve problems and are localised. Localisation means the app is customised to fit local customs and preferences in each market".

The company introduced GrabBike in 2014 – a strategic move as two-wheelers were a more convenient way to travel in Southeast Asian cities that are prone to traffic congestion.

The company has also made it a point to hire local app developers instead of foreigners as the former would have better local knowledge. Besides English, Grab is also available in five other local languages. Grab, which was established in 2011, is today valued at around US\$1.5 billion.

These two companies, along with others such as Garena and Razer, form the four "unicorns" – tech start-ups that are valued at \$1 billion and over – hailing from Singapore, an excellent base for e-commerce operations in the region boasting great connectivity within the region and a strong eco-system of e-commerce players.

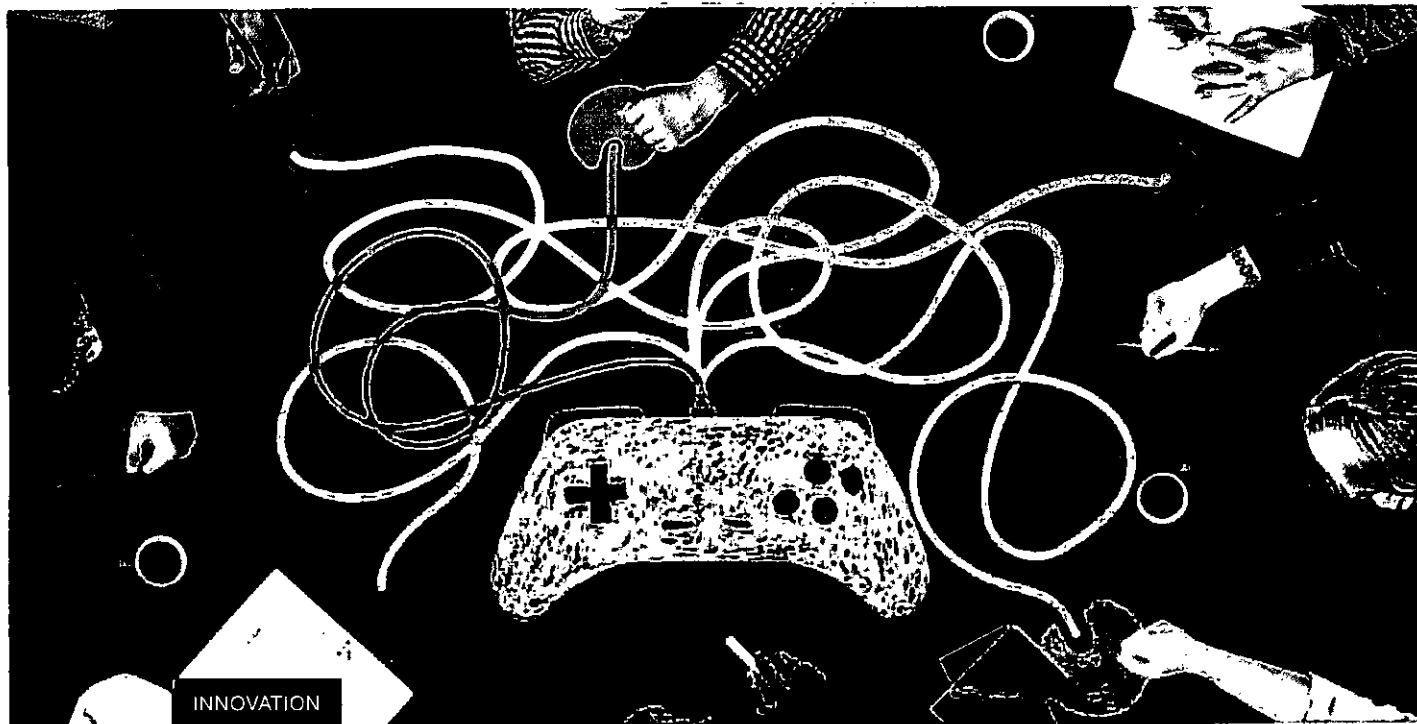
SEA's raw potential

With statistics showing that e-commerce potential in SEA is more a glass half full instead of half empty, companies eager for a stake in the region will no doubt be ready to rise to the occasion.

Amidst the complexity of the region, it is imperative that businesses must take a much more calculated approach in how to effectively tackle the challenges unique to not just the region, but also the specific countries they are operating in.

A strong localization strategy is one that has proven to work. What is next?

Edited by Liaw Hanqing and Tan Yi Xuan



Gamification: Having “serious fun” at work

22 February 2017 by Alywin Chew

The terms “work” and “play” have traditionally been mutually exclusive in workplaces - but the line between these two activities is becoming increasingly blurred, as an increasing number of employers leverage the mechanics of gaming and, in some instances, even digital games, to empower their employees.

Known as “gamification”, this approach aims to make the learning of new skills at work more fun and interactive. It has also been found to improve employee morale, boost loyalty and increase employee retention.

Last year, Badgeville, widely regarded as the global leader in gamification products for businesses, conducted a market survey in the US and discovered that 78 percent of respondents were utilising game-based elements in the workplace, with nearly everyone agreeing that gamification does help to boost engagement and productivity.

According to a research paper by Accenture Singapore titled *Why Gamification Is Serious Business*, gamification in the workplace often includes the use of leader boards and rankings - visual elements of gaming that allow employees to see where they stand among their peers. Experts say that this in turn evokes their competitive nature and motivates them to outdo their peers. This is just one of many ways gamification could be used in a workplace to improve company performance across the board.

Reviewing talent effectively

Many video games revolve around a reward-based system - where players of a fantasy game would often be able to earn a new weapon or piece of armour after killing the monsters in a dungeon. Gamification works on the same premise.

Based on an article in *The Institute*, the member newspaper of the Institute of Electrical and Electronics Engineers, in 2011 Japanese IT consultancy NTT Data had tapped on this element of gamification to evaluate the capabilities of their employees.

In a digital game that was specifically designed for this purpose, employees had to use their problem-solving and negotiation skills to get past a samurai who was guarding the passage to the objective at the top of a mountain.

Players were awarded points at the different stages of the game, and those who reached the summit were earmarked as potential leaders for the firm. NTT Data claimed that this gamification approach has helped them lower resignation rates by 30 percent, while more than 50 percent of the employees who played the game went on to assume leadership positions.

Increasing productivity across functions

Tech giant Microsoft had created a "Language Quality" game several years ago that challenged its employees around the world to ensure that translations for their products and services in respective native languages were accurate. The game also came with a leader board that displayed the scores of top employees and countries, and while there were only bragging rights to play for, 4,500 users signed up for the challenge and helped to spot nearly 7,000 errors – at no cost to the company.

The National University of Singapore is also no stranger to gamification software, having used the IBM Business Process Management (BPM) simulation application called Innov8 as part of their curriculum for business studies. Innov8 helps students better comprehend how BPM affects the business eco-system through an interactive game where players have to run a city.

New-age recruitment tool

Singapore companies too have been quick to get in on the gamification action in their recruitment efforts. Local start-up Flocations used HackerTrail, a gamification app that connects job seekers with companies, to search for a web developer.

Instead of simply submitting resumes, job seekers using the app can take part in challenges that have been designed based on a company's recruitment needs, and those who perform well in these tests naturally boost their chances of landing a job interview. The Infocomm Development Authority of Singapore was one of HackerTrail's latest clients.

"Software developers like to be challenged so we made this competition tough. Selecting candidates through a competition may not be new – Google does this – but what we have done is to tailor ours specifically to the requirements of the job, testing not just their technical skills but also their problem-solving abilities," said Mark Lim, Deputy Director of IDA's Government Digital Services, on IDA's website.

Engaging the new generation workforce

The rise of gamification comes at a time when companies are taking keener interest in the engagement levels of their employees - especially the millennials - generally defined by those who are born between the early 1980s and the mid-1990s. A 2015 report by Gallup revealed that millennials are the least engaged employees in workplaces, and a 2011 PricewaterhouseCoopers research paper, titled *Millennials at work: Reshaping the workplace*, described millennials as "a talented and dynamic generation", the best of whom are "hard to find and even more difficult to keep."

The research found that low engagement levels in millennials are related to a large disparity between what they expect from their companies and their actual working experience. The report concluded that "superficial changes that are intended to connect with younger workers, such as unconvincing social media outreach programmes, 'greenwashed' corporate values and diversity tokenism will not work."

And it seems like gamification might just be the perfect solution, given how millennials have a strong affinity with digital media. This is especially so in Southeast Asia, according to *Why Gamification Is Serious Business*, which stated that this region ranks among the most promising territories in the world for game-based innovations. Singapore and Malaysia, for instance, boast some of the highest smartphone penetration rates in the world. "Game technologies are becoming increasingly popular in the workplace since they appeal to the millennial generation, which has grown up playing video and computer games together with using mobile devices," said Professor of Management Harold G. Kaufman, at the annual Conference on Human Capital Innovation in Technology and Analytics, held in New York earlier in April.

"But this is much more than fun. Serious games can generate up to millions of data points that can then be fed into machine-learning algorithms to help employers make smart HR decisions to win the war for talent."

Similar to the video gaming industry, the gamification industry is expected to experience significant growth in the coming years. A market research report released this year by MarketsandMarkets revealed that this particular industry will reach US\$11.1 billion by 2020, indicating that, perhaps, workplaces are about to get more enjoyable.



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03.09.17 | ROBOT REVOLUTION

GE's \$30 Million Streetlamp Upgrade Illuminates The Rewards And Risks Of Smart Cities

GE insists its San Diego project—part of a global 'smart city' push, with connected sensors, cameras and microphones—will protect privacy.



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BY STEVEN MELENDEZ

7 MINUTE READ

Thousands of new “smart” streetlights to be rolled out across the city of San Diego will be connected to a city-wide network, allowing officials to adjust their brightness and detect outages from afar. But in addition to giving off light, they will also be pulling in information about what’s going on around them.

Last month, San Diego announced it would install a 3,200-node sensor platform in soon-to-be-upgraded streetlights across the city this summer, in what officials say will be the world’s largest smart-city Internet of Things (IoT) network. The \$30 million program is part of a deal with General Electric’s Current unit, as the city upgrades 14,000 streetlights to Current’s energy-saving Evolve LED systems.

The streetlamps—equipped with cameras, microphones, and other sensors—will capture data from the surrounding environment in order to track everything from traffic flow and parking spot usage to the levels of pollutants in the air. Eventually, the company says, the lights could support additional sensors and digital tools as the city’s needs evolve.

“When you want to make this an air traffic control system for drones because there’s so many of them flying over the city, you now have an extensible platform to put that in,” says John Gordon, chief digital officer for Current.

A network of this scale—larger than any other known public urban sensor network—naturally raises privacy concerns, especially if it could collect data that could be used to track individuals living in the city. “The key question is, are these sensors gathering information about identifiable people?” says Adam Schwartz, a senior staff attorney with the Electronic Frontier Foundation (EFF). “And if they are, it’s surveillance.”

Schwartz has written about smart cities and privacy in the past, though he says he hasn’t studied the San Diego proposal.

But Current executives emphasize that in ordinary cases, raw audio and video are never transmitted to central servers—current bandwidth concerns alone would make that impractical,

says Gordon.

The raw data that could include more personal details will only be stored in temporary buffers on the devices and soon deleted, says GE. City officials say they have no plans to use anything but aggregated and anonymized data, which will be generated by Intel processors within the fixtures. The city says it also intends to make the data available publicly to researchers and others.

“We don’t send back the images—we send back counts of people, speeds of cars, data about air quality,” Gordon says. “It’s the metadata we send back.”

‘The citizens have never been able to participate in building those solutions because it was so hard to put real infrastructure in the city to make that work.’

All of the data that’s sent back belongs to the city under the terms of the agreement, allowing agencies to work with startups, university researchers, and others who are equipped to make use of it. That differs from many previous smart city and urban IoT programs, in which data and processing are typically all provided by one vendor, Gordon says.

“The citizens benefit from it, but the citizens have never been able to participate in building those solutions because it was so hard to put real infrastructure in the city to make that work,” he says.

The city hopes to start making data available by the end of the year, potentially holding hackathons to encourage developers to find innovative ways to process the information, says Jen Lebron, press secretary for Mayor Kevin Faulconer. Current will also provide technical support, as well as tools like apps for locating open parking spaces, Gordon says. The company also touts Predix, a cloud-based platform focused on sensors, machinery, and other connected devices that will allow municipal developers tools to access data from the streetlamps.

The savings from the system’s more efficient lighting—estimated to be about \$2.4 million a year—are expected to cover the \$30 million cost of the project through a 13-year lease purchase agreement, according to city documents. GE’s Current—initially launched as an internal startup focusing on clean energy and digital management tools—reportedly pivoted last year to emphasize connected lighting and energy management tools like those being installed in San Diego. GE made a similar “smart city” push in 2015, touting potential deals with New York and other cities.

The Current ambition is in line with a growing global interest in "smart cities." Gartner estimates that 1.39 billion connected things will be used by smart cities in 2017, up from 380 million in 2010. According to a 2014 estimate by analyst firm Frost and Sullivan, the total global smart cities market is expected to grow to \$1.54 trillion dollars by the end of the decade.

Late last month, GE expanded its reach in the "smart city" market with a deal it signed with AT&T to make the telecom the exclusive reseller of Current's sensor nodes in the U.S. and Mexico. The arrangement, a press release said, "builds on AT&T's long-standing relationships with municipalities," as well as on AT&T's participation in the Predix platform.

WHAT SAN DIEGO'S SENSORS DO

San Diego has an ongoing pilot program with ShotSpotter, a service that deploys its own sensors to detect the sound of gunfire and alert police when shots are fired. (Though around the country, some have questioned the efficacy of the sensors and worried about privacy abuses.) The sensors from Current can also be used to trigger ShotSpotter alerts, with the advantage that they'll be distributed across the city, rather than concentrated in high crime regions, says Gordon. Still, the city doesn't have any plans to immediately deploy that feature or otherwise expand its ShotSpotter program, Lebron says.

Smart Streetlights to Provide World's Largest "Internet of Things" Platform

A promotional video by the City of San Diego for its smart street light project

The new streetlamp sensor nodes will relay data through AT&T's wireless network and will also be able to wirelessly communicate with additional sensors that may be installed later on. The city might add air quality sensors, which would likely be more useful at human nose level than on tops of streetlights, or add additional tools for future applications, Gordon says. Current can also send software updates to the nodes for processing new data or learning from existing feeds in new ways.

Actual raw data will be stored in a temporary buffer at each node, overwritten over time as new data comes in, says Gordon. And data available to developers will never contain any raw images or audio—only data that, say, an object passed by a sensor.

PRIVACY AND SECURITY QUESTIONS

Schwartz says the EFF generally advocates that cities adopt rigorous privacy policies for public data collection systems. City governments should also they make sure that officials fully understand the privacy ramifications of sensor technology and allow the public to weigh in before it's adopted, he says.

“What I can say is, in general, we are anxious that there is a movement going forward at great speed in the name of smart cities that is not slowing down enough to consider the surveillance ramifications,” he says. “We think that cities ought to adopt an ordinance or a law that says before any city agency acquires any technology that is documenting how individual people are living their lives in public places, there needs to be an open, democratic process to decide whether to acquire that technology.”

Lebron stresses that the system's data collection won't violate privacy. “The data that will be available online is completely anonymous,” she says.

In San Diego, the city reported a previous pilot program in 2014 didn't draw any privacy concerns, and the current plan passed the City Council without privacy issues being raised, according to Lebron. The American Civil Liberties Union of San Diego declined to comment about the project, saying it hadn't yet studied the program in detail, though other affiliates of the organization have expressed skepticism about some smart cities initiatives that could infringe on privacy.

Security experts have also warned that smart city networks can be a rich target for hackers. Some have warned that attacks on smart cities could siphon away potentially sensitive data or interfere with connected infrastructure like traffic and streetlights. AT&T, which is providing network connectivity for the devices, has said its deployment will be “highly secure.”

But researchers stress that addressing the threat will likely require city, state, and federal officials, as well as private contractors, to defend smart networks, especially at their weakest points.

“Preparedness varies widely,” wrote researchers in a paper presented at the 2015 Black Hat security conference. “Some cities have their act together, but others are a snarl of individual fiefdoms built upon homegrown technological houses of cards.”

Lebron emphasizes that the only data transmitted from the sensors will be the processed metadata about events and readings, which will be made available to the public and will, the city and Current hope, prove useful to developers and researchers in surprising ways.

The data may be made available through the city’s existing Open Data Portal or something similar, she says, with details to be hashed out in the coming months.

“We’re outputting data, and then it’s up to developers to do something with that data,” Lebron says.

The San Diego system is expected to be fully installed by fall 2018, and Current is working on a 1,000-light trial with Atlanta, as well as with other cities around the country—including Jacksonville, Cleveland, and Schenectady—on potential future projects. The company has also formed an intelligent lighting partnership with the city of Tianjin, China.

“We have a pretty rich pipeline of cities that all have been either testing or piloting,” says Maryrose Sylvester, president and CEO of Current. “I think San Diego moving forward really opens up the market.”

ABOUT THE AUTHOR

Steven Melendez is an independent journalist living in New Orleans. [More](#)

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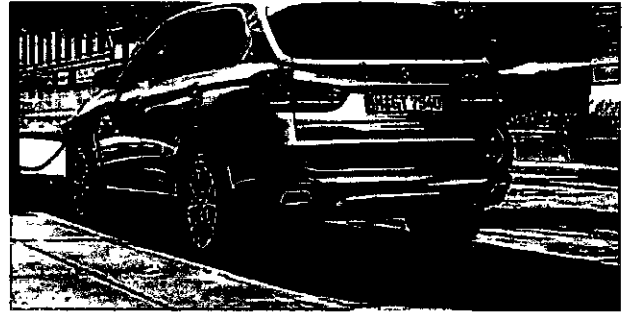
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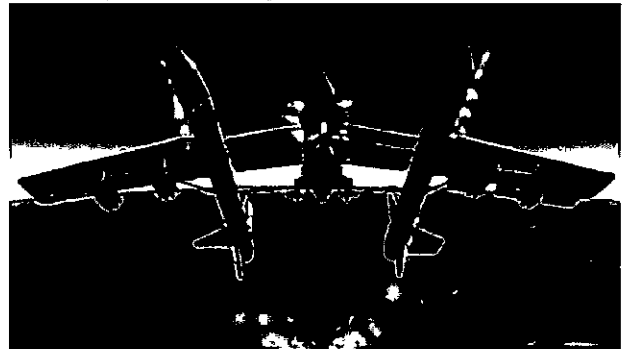
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This Is Why Being A Morning Person Will Make You Better At Your Job

Four science-backed reasons why you do your best work in the morning.



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BY STEPHANIE VOZZA

4 MINUTE READ

From having fewer bad habits to being proactive and procrastinating less often, the advantages of being a morning person have been well covered. You could chalk it up to circadian rhythm, but it could be because morning people leverage the unique characteristics of the morning that help us all be at our best, says Josh Davis, author of *Two Awesome Hours: Science-Based Strategies to Harness Your Best Time and Get Your Most Important Work Done*.

“People who get up early in the morning are hitting it out of the park, doing things we struggle with at other times of the day,” he says. “If we can be amazing at certain times of the day there

must be associated psychological conditions. Morning offers several benefits that can't be found at other times of the day."

Shifting your schedule might take some adjustment, but it's worth it. Here are four productivity-related advantages that naturally occur in the morning:

1. YOU HAVE MORE ENERGY

Doing your best work means managing your mental energy, and you automatically have more mental energy in the morning when you wake up, says Davis.

"Even if you didn't sleep great but enough, you probably have much more mental energy to willfully refocus and let things go that don't matter," he says. "You can think creatively and have more capacity to use your prefrontal cortex instead of being on autopilot."

This makes a huge difference for using your time productively as you can choose what you want to work on, and stay on track and follow through, says Davis.

2. YOU HAVE FEWER DECISIONS TO MAKE

Working during the early morning offers the bonus that it's before regular business hours. "There is an unwritten agreement that you're not responsible for being reactive until nine a.m. or even 10 a.m.," says Davis. "You don't have to do the things that drain mental energy, like making a lot of small decisions."

Small decisions use up our self-control regulator abilities. "It's not a finite resource that runs out, but it gets harder to do as you go along," says Davis. "You go from thinking fast to thinking slow. You get hungrier. Nobody knows exactly why we seem to run out of motivation, but work becomes more effortful."

When you're being reactive, you're constantly deciding. "Should I address this email now? Should I include this person? Could what I'm saying be taken as offensive?" asks Davis. "In the morning, we're free from that."

Mornings allow you the time and space to work on things that are important. "There are fewer urgent things piling up," says Davis. "It's much easier to step back and reconnect with what's important—something you can do that would make you feel like you did something that matters."

3. YOU CAN STOP FIGHTING DISTRACTIONS

Our minds are designed to pick up on what's changing around us, and sheer willpower isn't enough to stay focused, says Davis. "When your mind starts drifting, typically we approach it with, 'What's wrong with me?'" he says, adding that this is the time that we often succumb to unproductive distractions, such as Facebook, email or talking with a coworker.

But there's a better way to take care of that urge to break focus: Let yourself daydream. "Our brain is set up with two systems, one for focusing on goals and the other for social processing," says Davis. "These two are anti-correlated; we tend to be doing one or the other. One of the very few times they're integrated is when we are daydreaming."

The integration of the two is very valuable because it aids in creativity and autobiographical planning. "Your brain is trying to do something great if you let it drift in those moments," says Davis. "The great thing is that it has a built-in end point. It gets boring, and our minds then drift back. You'll be back to work quicker if you let your mind wander."

You have more freedom to let your mind wander in the morning. "During the day we're under a lot of pressure to not let our minds wander," says Davis. "There's a strong stigma against it. In the morning you have a safer space to daydream with less time and social pressures."

4. YOU CAN TAKE ADVANTAGE OF THE CALM

From clutter to noise, a typical workplace is booby-trapped with mental distractors, says Davis. "Our desks often hold the things we need to do for ourselves or for someone else," he says. "They grab your attention and are mentally taxing to think about because of their importance to us. This sabotages your ability to focus."

It can be easier to find a spot free from those distractors in the morning. "It also tends to be quieter," adds Davis. "Noise makes it harder to do the deep cognitive work most knowledge workers need to do. In the morning you're free to work from anywhere, and you can find a quiet, beautiful spot. A quiet workspace helps you be more productive because it's like working with tailwinds."

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07.25.16 | HOW TO BE A SUCCESS AT EVERYTHING

What Happened When I Got Rid Of Everything In My House That Doesn't Spark Joy

Do socks really “spark joy?” This writer went through (nearly) every item in her house with some surprising results.



[PHOTO: JAYMANTRI VIA PIXABAY]

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BY STEPHANIE VOZZA

6 MINUTE READ

I hate clutter. Growing up, my favorite book (and the only one I kept from my childhood) was *The Boxcar Children*, a story of four orphans who live in an abandoned train car with few belongings. I

didn't realize it until I became an adult, but this book resonated with me because I've always had minimalist tendencies. Less is definitely more.

Then stuff happens: Marriage, kids, pets, and, while it's hard to admit, keeping up with the Joneses. Suddenly, our closets, cabinets, and drawers were bursting with things we never knew we needed.

One of my favorite things to do when I'm bored is de-clutter—it makes me happy to see open spaces and order—so when *The Life-Changing Magic of Tidying Up* by Japanese cleaning guru Marie Kondo came out in 2014, I eagerly grabbed a copy.

THE PROCESS

Kondo's process, called the "KonMari Method," has six rules of tidying:

- 1) **Commit yourself to tidying up.** Know that it will take time and be willing to stick to it.
- 2) **Imagine your ideal lifestyle,** including the kind of house you want to live in and how you want to live in it. You can write down this description or collect photos.
- 3) **Finish discarding first.** Instead of running out to the Container Store and buying storage bins, plan where to store your items once you've decided what to keep.
- 4) **Tidy by category, not location.** Gathering all like items in the house, such as books or shoes, helps you make better decisions because you know what you have.
- 5) **Follow the right order.** Kondo has a category-sorting plan that you must follow, because it helps you gradually hone your ability to identify what sparks joy.
- 6) **Ask yourself if it sparks joy.** Hold every one of your possessions in your hands and ask, "Does this spark joy?" If it does, you keep it.

Tuning into your joy meter can take time and practice. Do socks really spark joy? They indeed do when you consider their job of protecting your feet. If an item doesn't spark joy, you thank it for its service and dispose of it. I admit this is kind of out there, especially for items like paper clips, but I went with it.

GETTING STARTED

The first category is clothing, which was easy for me because I'm not into fashion. Still, I surprised myself by the number of things I was able to remove from my wardrobe. I brought two dozen items to the consignment store and donated five full bags to Salvation Army. I was able to reconfigure my closet and create space to hang a piece of artwork that has been in my basement for years just waiting for the right spot.

The next category—books—was surprisingly easy, too. I envisioned the words being trapped in shelves inside my house. These went to my library's used book sale, and releasing them out into the world so others could enjoy them felt powerful.

Then came papers. I was stuck—for almost a year. Papers felt daunting to me because Kondo recommends getting rid of almost all of them. I had no problem sending tax returns from the '90s to the shredder and instruction manuals to the recycling bin, but other documents, like interview notes and my children's report cards, caused an internal dilemma that paralyzed my progress.

During my tidying hiatus, Kondo's second book, *Spark Joy: An Illustrated Master Class on the Art of Organizing and Tidying Up*, came out. In it she writes, "If it makes you happy, then the right choice is to keep it confidently, regardless of what anyone else says." This validated my decision to keep papers Kondo suggests are unnecessary. Instead of two filing cabinets and three overflowing boxes, I now have one filing cabinet. And when my son's ear buds stopped working, I quickly found the receipt and filed a warranty claim.

I went through everything one by one. Tedious is an understatement.

The largest category Kondo calls "komono," a Japanese term for knick-knacks, small accessories and various odds and ends. It covers a wide range of stuff, from office supplies to kitchen items to all of those electronic cords you keep for no good reason. I went through everything one by one. Tedious is an understatement, and according to Kondo's rules, you can't do the process while watching television or even listening to music. You must give it your full attention.

"Anxiety arises from not being able to see the whole picture," writes Kondo. This is where having a vision for your home helps. It's like keeping your eyes on the prize. It also helps to join KonMari Facebook groups for support; going through the process with others is encouraging.

The final, and toughest, category is sentimental items. We have numerous boxes of photos, and I went through the piles and eliminated doubles and blurry pictures. Then our dog died on the weekend that I had saved to finish this category. While it's not complete, I felt reassured when I read in *Spark Joy* that Kondo only recently finished sorting her own photos.

Related Video: The Life-Changing Magic Of Having Marie Kondo Organize Your Office

WHEN YOU'RE DONE

Kondo writes in her book that her clients reach a click point, a realization that you have just the right amount of stuff. "It's the moment when, after discarding everything but the things you love, you know that you have all you need to feel content," Kondo writes.

This is true. During the process, we rearranged our furniture and got rid of pieces that just took up space. We also donated dozens of boxes and bags filled with household items. It felt like pruning a garden so that the treasured items could shine, and it led to a deep sense of calm. When a neighbor stopped by unexpectedly to drop off something for my son, for example, I invited her in without worrying about what might be piled up on my kitchen counter.

Just like multitasking overloads your brain, clutter overloads your senses, causing you to be stressed out.

While Kondo doesn't mention this in her book, there's science behind the anxiety you feel when you're surrounded by clutter. A study from UCLA found that your cortisol level spikes when your home is overloaded with stuff. Just like multitasking overloads your brain, clutter overloads your senses, causing you to be stressed out. Another study, this one from the Princeton University Neuroscience Institute, found that "multiple stimuli present in the visual field"—aka. clutter—limits your ability to process information and increases the chances you'll become distracted.

"To put your house in order is to put your life in order," writes Kondo. A common side effect of this process is the ability to make decisions about relationships, activities, or careers. In fact, several

people on the KonMari Facebook groups say that they've ended bad relationships or quit unfulfilling jobs. For me, I stopped taking freelance work that didn't bring me joy. And the frequent anxiety attacks I'd get about having too much to do (and not enough time to do it) went away.

Michelle Sischo of Chapel Hill, N.C., a member of the Konmari Adventures Facebook group, went through the process when she moved into a smaller home. She discovered she had more time to spend with her 4-year-old son, and she's decided to fulfill a goal and write a book about her personal experience with adoption.

"To put your house in order is to put your life in order."

"KonMari helps you clear your mind and focus on what's important," she says. "Before I would always feel flustered if didn't have a neat desk. I couldn't work. And with email, texts, and phone calls, you're expected to multitask all day. KonMari allows you to figure out what's important, decide what you want to do, and have time to do those things."

The KonMari Method is a marathon, and at times you might feel like you want to quit. But, just like running the distance, wait for the second wind. The constant feeling of contentment is worth the journey.

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03.02.17 | THE SCIENCE OF WORK

Chill With The Adderall: Four Non-Chemical Brain Hacks To Help You Focus

Some people really do have ADHD. The rest of us just need to tweak our environments.

disruptive side-chats.

A generation of college students has entered the workforce having churned out term papers and crammed for exams with the aid of medications they didn't technically need.

It doesn't help things that by now a generation of college students has entered the workforce having churned out term papers and crammed for exams with the aid of medications they didn't technically need. Trying to kick a reliance on prescription stimulants—especially in a work environment like this—sounds pretty hopeless (which for many, it sadly is).

For most people, though, Adderall and its cousins—all variants of amphetamine—generally aren't great solutions to the challenges of focusing in the modern workplace. For one thing, these chemicals' very long-term impacts still aren't well understood. For another, while stimulants can improve your focus, they also increase your tendency to lock into particular solutions to problems. Many jobs call for creative problem-solving, where you need to consider a range of options, and this type of medication may actually get in your way if you don't have ADD or ADHD.

And most people, after all, don't. Instead, they'll respond just fine to non-chemical methods to improve their focus. Here are a few tweaks to make to your work environment before calling up your doctor and asking for a new prescription.

I. TREAT YOUR BRAIN LIKE PART OF YOUR BODY

First, remember that the primary function of the brain is to control the body. Your brain is not a computer inside a robot designed to serve it. Brains evolved to help bodies navigate the world successfully. If you spend the day sitting down, it's eventually going to be hard to stay focused on the task at hand.

Because our brains evolved to control our bodies, people are extremely sensitive to the objects in their immediate environments.

So use your body more during the workday. Get a standing desk if you can, or find somewhere you can pace back and forth while you're thinking or talking on the phone.

Take walks during the day or consider a lunchtime workout. Basically, just add more exercise and movement into your day in general. And consider taking up a hobby like painting or playing an instrument rather than sitting in front of the TV or fiddling on your laptop in the evening. All of this keeps that connection between brain and body functioning effectively.

Related: How And When To Exercise To Boost Your Productivity

2. CUT YOURSELF OFF

If you're a slave to your smartphone and check it several times an hour, shut it off or move it out of easy reach when you're trying to accomplish something significant. I know, easier said than done. But because of that aforementioned brain-body connection, people are extremely sensitive to the objects in their immediate environments. Changing the environment changes what your brain believes is possible. Remove the biggest sources of distraction, and you'll find it easier to pay attention to the work that needs to get done.

3. MAKE WORK MORE SOCIAL

Socializing may not sound like a great strategy for focusing on something that demands your unbroken attention—usually that means doing the reverse, and shutting people out. But the human brain is optimized to cooperate with other people (even if your current mood isn't). People still tend to get deeply engaged in conversations even when they're having trouble fixating on their computer screens for long stretches.

The human brain is optimized to cooperate with other people (even if your current mood isn't).

So if you find your attention drifting when you're working on a big project, don't just try to bite the bullet and isolate yourself even further. See if there are ways to get some other people involved, even if that just means seeking some quick feedback.

4. TURN FOCUSING INTO A TEAM EFFORT

Finally, if your work environment is hectic, coordinate with your colleagues and manager to tame the worst of it—and again, try to involve others in the solution. Create a few signals that let your colleagues know when you're available to chat and when you need to be left alone. See if you can set aside some space in the office where individuals and small groups can gather when they need to get away from the hubbub.

Ultimately, staying focused is usually a combination of biology, environment, and habit. There isn't much you can do to change the way your brain is structured, but you can manage your behaviors and the circumstances in which you perform them. We simply aren't built to sit still and sustain our attention for long periods of time. So even if you're pretty good at that, get up and move around now and then. Your brain will thank you.

ABOUT THE AUTHOR

Art Markman, PhD is a professor of Psychology and Marketing at the University of Texas at Austin and Founding Director of the Program in the Human Dimensions of Organizations. Art is the author of *Smart Thinking* and *Habits of Leadership*, *Smart Change*, and most recently, *Brain Briefs*, co-authored with his "Two Guys on Your Head" co-host Bob Duke, which focuses on how you can use the science of motivation to change your behavior at work and at home. More

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This Generic Millennial Ad Is Everything Wrong With Advertising To Young People





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What: Stock video firm Dissolve uses its stock footage to create a spoof of all the insufferable pandering brands do to get millennials to like them.

Who: Dissolve

Why we care: It's all here. The party shots. The specialness. The dancing. The 100% plastic product they made 10% smaller that one time. This is the young people version of Dissolve's amazing Generic Brand Video from 2014. You've seen them everywhere already, but seeing every cliché compiled together like this just makes it that much worse. #BoldLikeThat. —JB

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04.03.17 | THE SCIENCE OF WORK

Want To Be Happier And More Successful? Learn To Like Other People

Research suggests that the best self-help advice may have very little to do with yourself.



[Source photos: Flickr users State Library of Queensland, Costel Slinecu]

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BY DAVID MAYER

4 MINUTE READ

Self-help advice isn't exactly in short supply. There are research-backed tips out there for boosting confidence, resilience, risk taking, and adaptability. The message is pretty clear: Feel better about yourself or change your beliefs about what you're capable of, and you'll excel. Indeed, ample scientific evidence supports each of these claims.

Nevertheless, most self-improvement strategies focus too much on the person who's trying to do the improving. Much of the time, the same outcomes you're trying to achieve by changing your *own* habits, attitudes, and behaviors depend on how you view other people.

It sounds paradoxical, but according to University of Georgia researcher Jason Colquitt and his colleagues, people who tend to trust others at work score higher on a range of measure than those who don't, from job performance to commitment to the team. And since we know that it's our relationships—particularly with our bosses and colleagues—that determine how happy and successful we are as our careers progress, it may be worth asking some new questions. Instead of, "How can I improve?" the better question might be, "How can I start seeing more of the good in people, more often?"

WHY THE BENEFIT OF THE DOUBT IS SO HARD TO GIVE

It can be difficult to believe that others generally have the best intentions; that just isn't many people's default assumption. We're socialized from a young age to be critical of others' motives, if not downright suspicious. Parents tell their children for their own protection to beware of strangers. And it's not hard to find evidence in daily life that expressions like "the road to hell is paved with good intentions" has some truth to it. In an era of fake news, taking *anything* at face value seems potentially foolhardy.

But these societal impulses may actually arise from deeper cognitive ones. Negative past events loom larger in our memories than positive experiences. As psychologist Roy Baumeister famously put it, "Bad is stronger than good." This makes adaptive sense: To survive in a treacherous environment (especially social ones), early humans needed to recall the times their trust was ill-placed, when they were betrayed or misled and wound up getting hurt. By comparison, all the times when their trust led to good outcomes weren't as critical to hang onto.

In addition, people have an unyielding desire to see themselves in a positive light. This can cause us to develop less favorable views of others. Research shows that we tend to think we're better than average at almost everything, meaning that others are worse—including less trustworthy. As part of this process, Stanford behavioral scientist Chip Heath found that we tend to think our own motivations are intrinsic ("I work hard because I love my job") whereas others' are extrinsic ("They work hard only because they're getting paid to do so").

Finally, while research on optimism—including assuming the best of others—almost universally shows its benefits for success and satisfaction in both work and life, people tend to fear being seen as an unrealistic "Pollyanna." Just think of how many words there are in English to describe the experience of too-readily trusting others: *gullible, ingenuous, credulous, unwary; imbecile, dimwit, stooge, dunderhead, idiot, fool; beguiled, duped, tricked, betrayed, fleeced, deceived, defrauded, double-crossed, deluded, swindled, conned, rooked, cozened, hoodwinked, bamboozled, flimflammed . . .* you get the idea.

Research suggests when we perceive someone as innocent and nice, we tend to view them as less competent, a label we ourselves avoid at all costs. As the novelist Laurell K. Hamilton has said, "Never trust people who smile constantly, they're either selling something or not very bright."

THE SELF-HELP APPROACH THAT'S NOT ABOUT YOU

To be sure, there are risks to assuming the best in others, but the benefits may far outweigh the potential costs, especially in the workplace.

Conflict is a difficult but often inevitable part of our work lives. According to Harvard Business School professor Chris Argyris, a top cause of workplace discord is the "ladder of inference" (basically what he sees as a more precise metaphor than "jumping to conclusions"). Climbing up the ladder means that a person takes in neutral information but assumes bad intentions, which results in less favorable beliefs and bad behavior.

For example, when you receive an ambiguous email from a coworker you have a turbulent relationship with, you're more likely than not to react defensively. In fact, there's research to suggest that we interpret all emails more negatively than their writer meant them to be. So perhaps it's no surprise that PepsiCo CEO Indra Nooyi says the best piece of career advice she's ever gotten is "assume positive intent."

One of the biggest opportunities for growth at work comes from the way you solicit feedback and what you do with it afterward. Research demonstrates that while employees who speak up tend to improve how well teams function, many tend to be afraid to do so, worrying that their input won't

be well-received. Simply assuming the best in others can lay the foundation for managers and their team members alike to learn and improve without wounding egos.

It's also no secret that the ability to influence others is a crucial job skill. Research shows that when we think others are capable of changing their attitudes, we're more likely to advance our own views. But when we think others' beliefs are fixed, we don't try too hard to persuade them—what would be the point? This can have personal costs, though, since it limits our own potential sphere of influence.

And that, in turn, creates a self-fulfilling prophecy: Assume the worst in other people, and they'll prove it every time ("confirmation bias," anyone?), closing off one opportunity after the next to shore up those crucial relationships that your own happiness and success depend on. Sure, self-help books are a great way to better your work life. But their typical focus on *you* may have the unintended result of limiting your ability to wring more value out of the social world around you, which is teeming with people, while you're just one of them.

ABOUT THE AUTHOR

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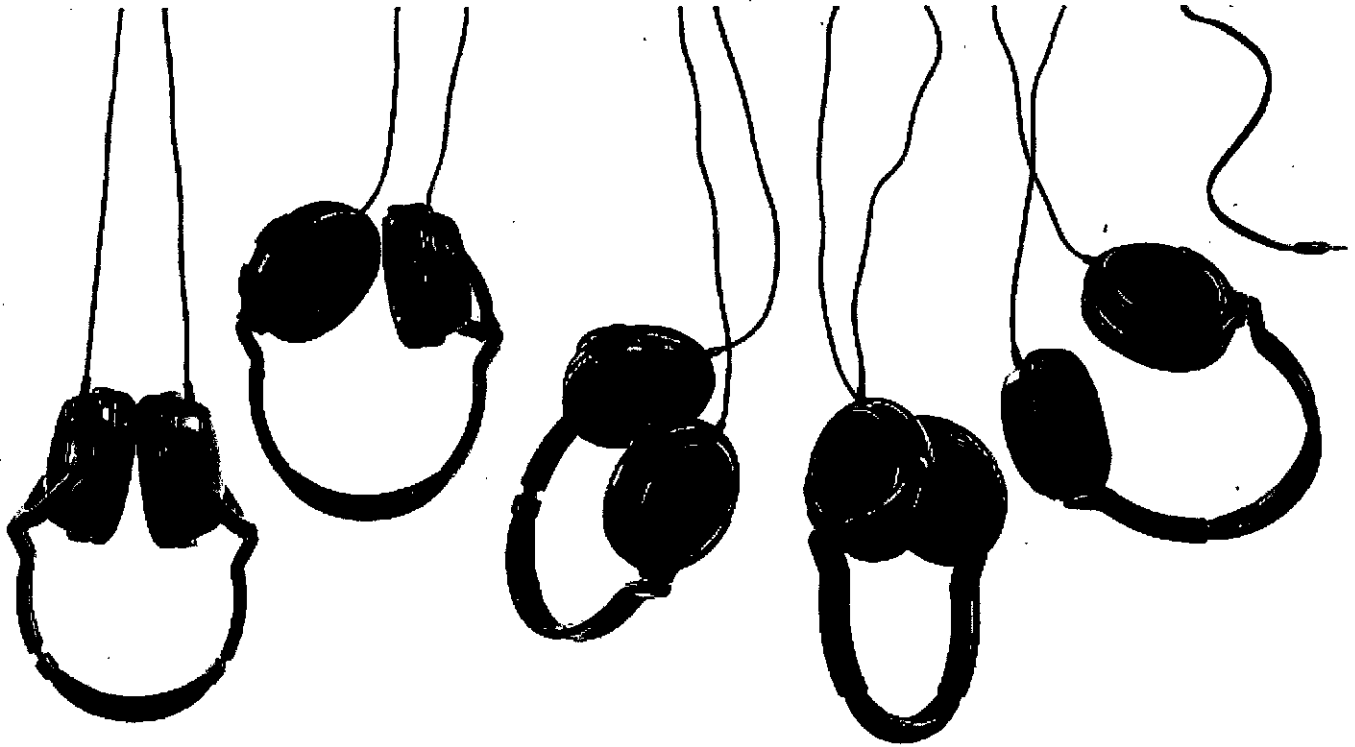
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08.24.17

I've Interviewed Over 300 Entrepreneurs—Here's Their Most Counterintuitive Advice

This podcast host shares four of the most surprising things she's learned by speaking to hundreds of startup founders.



[Photo: George Coppock/iStock]

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BY JENNA ABDOU

5 MINUTE READ

Three years ago I started a startup podcast because I thought founders were crazy. Why would a sane person willingly endure such intense risks? Part of my curiosity was personal: As a recent college grad just setting out to navigate the workforce, I wanted to understand how they coped with levels of uncertainty that felt to me, anyway, like a bag of bricks on my chest.

More than 300 interviews later, I've learned that the most successful entrepreneurs' real strengths aren't necessarily their product visions or executional abilities. Those certainly matter, but their habits and mind-sets might carry even more weight. And as I've discovered through all my conversations, those aren't always what you might expect them to be. Here are four of their best, yet counterintuitive, bits of advice.

1. SPECIALIZE IN MORE STUFF THAN YOU THINK YOU HAVE TO

When Packagd founder and Kleiner Perkins partner Eric Feng seeks inspiration, he looks to tennis legend Roger Federer. "The thing I love about Federer is that there is nothing he doesn't do well,"

Feng told me. "He plays on all surfaces. He can serve, volley, hit a strong forehand and backhand." That observation has inspired Feng to develop skills outside his cut-and-dried job description as a technical founder and the former CTO at Hulu and Flipboard.

"I don't want to have a weakness—something I have to avoid because I can't do it," he says. "My day job at Flipboard was leading the engineering team, but I think the biggest contribution I made was working as an account manager on our Samsung partnership," which he notes was a much more specialized undertaking.

Related: Five Habits Of The Most Creative Entrepreneurs

Founders are eventually advised to stop wearing so many hats, to delegate so they can spend more time making strategic decisions. But Feng has never stopped immersing himself in new fields—identifying skill sets he lacks and devising clear plans to develop them. That may seem like a misuse of energy, but he's found it has real hidden value.

"It's particularly important to be an all-court player in startups because you never know how your company will change or where the biggest opportunity will lie," Feng explains. That's not just a temporary, early-stage thing, he believes, it's a key part of the overall experience. "If you're only specialized in one domain, you might miss it."

So rather than sitting in on a design meeting, mock up a design and present it. If you're trying to make some strategic decisions about your company's customer support, respond to support emails for a month. The goal isn't to *observe* a skill. It's to practice it enough so, that if needed, you can perform it.

2. SHARE WHAT MAKES YOU TICK, THEN HAVE YOUR TEAM DO THE SAME

Since her founding days at Gilt, Fitz cofounder and former Glamsquad CEO Alexandra Wilkis Wilson has kept going back to one key exercise with her team: Everyone completes the statement, "Here's what you need to know about me to influence me: . . ." It's a trick she learned from executive coach Barry Carden for creating "an opportunity to share professional pet peeves with one another and say, 'Look, if we are going to work together this is what you need to know: This is what I respect. This is what drives me nuts. This is what I will deliver, to you and what I expect you to deliver in return.'"

A company's cultural values usually dictate what successful communication looks like. But those rarely get deep or personal enough to expose what employees actually *dislike* about their work experiences or personal interactions. And as Wilkis Wilson sees it, addressing those head-on is the greatest way to decrease friction. "When you're working in a high-stress environment you have to be honest with each other," she says. "You can't make assumptions, because everyone is coming from a different place."

Try this exercise with your team and start with your own statement. Urge everyone to be as honest and descriptive as possible. It may feel uncomfortable at first, but it might be a great way to promote trust and collaboration faster.

Related: 8 Entrepreneurs On The Magic Moment When They Knew Their Startup Had Made It

3. FORGET YOUR COMPETITION

"Competition doesn't matter," Andy Rachleff, who cofounded both the fintech company Wealthfront and the VC firm Benchmark Capital, told me. "The only way to win is to delight the customer. You can't better delight the customer by paying attention to your competition."

It's human nature to think about competitors, so as a leader it can be hard to get your team to switch their focus. But the next time your competition comes up, Rachleff advises shifting the conversation toward a concrete action you can take to improve your product.

Since Rachleff's return as CEO last November, Wealthfront has aimed to widen the gap with its competitors by launching seven new features, with an eighth forthcoming, he explains, not to mention a complete brand redesign. According to Rachleff, clients responded by depositing more money and referring friends to the service, leading Wealthfront to see about \$12 million a day in new capital.

"As a leader, it is imperative that you help your followers understand that reacting to your competition won't get you to the leadership position. You'll only lose less quickly," Rachleff says. "I love to joke that I come from the Ricky Bobby school of management: If you're not first, you're last. You can't become first by doing a better job of what your competition does."

4. STOP MAKING THINGS HAPPEN

Jennifer Rudolph Walsh is the head of the Worldwide Books Department at WME, where she represents authors like Oprah Winfrey and Sheryl Sandberg; she's also the founder of an event series called Together Live. You'd never question her ability to get stuff done.

"I was so busy hustling, making things *happen* and making them *right* in my 20s and 30s. Then, in my 40s," Rudolph Walsh says, "I discovered this magical place of making things happen and then *letting* them happen. That's the secret space for me: Trying a little easier. Listening a little more. Not rushing to get to the end of the story or control the outcome. Just living inside of it."

This state of mind can feel unrealistic managing a team and hitting deadlines. It might strike some entrepreneurs as too passive or laid-back. But as Rudolph Walsh sees it, it isn't a mandate to leave things to chance. It's a conscious decision to make room for serendipity, revealing opportunities that are right in front of you but hidden by tunnel vision.

Without this mind-set, she explains, it's a lot harder to turn small ideas into meaningful outcomes. "As a result of the work I've done around this, I'm as happy as I've ever been," Rudolph Walsh explains. "The level of peace I can have in the middle of a storm amazes me."

Jenna Abdou is the host and producer of Beyond the Headline at 33voices, a podcast where founders and investors share their stories and highlight the tactics they use to build industry-changing companies. Jenna also works closely with startups and venture capital firms to produce unique content series in addition to writing about startups, consumer trends, and women in business.

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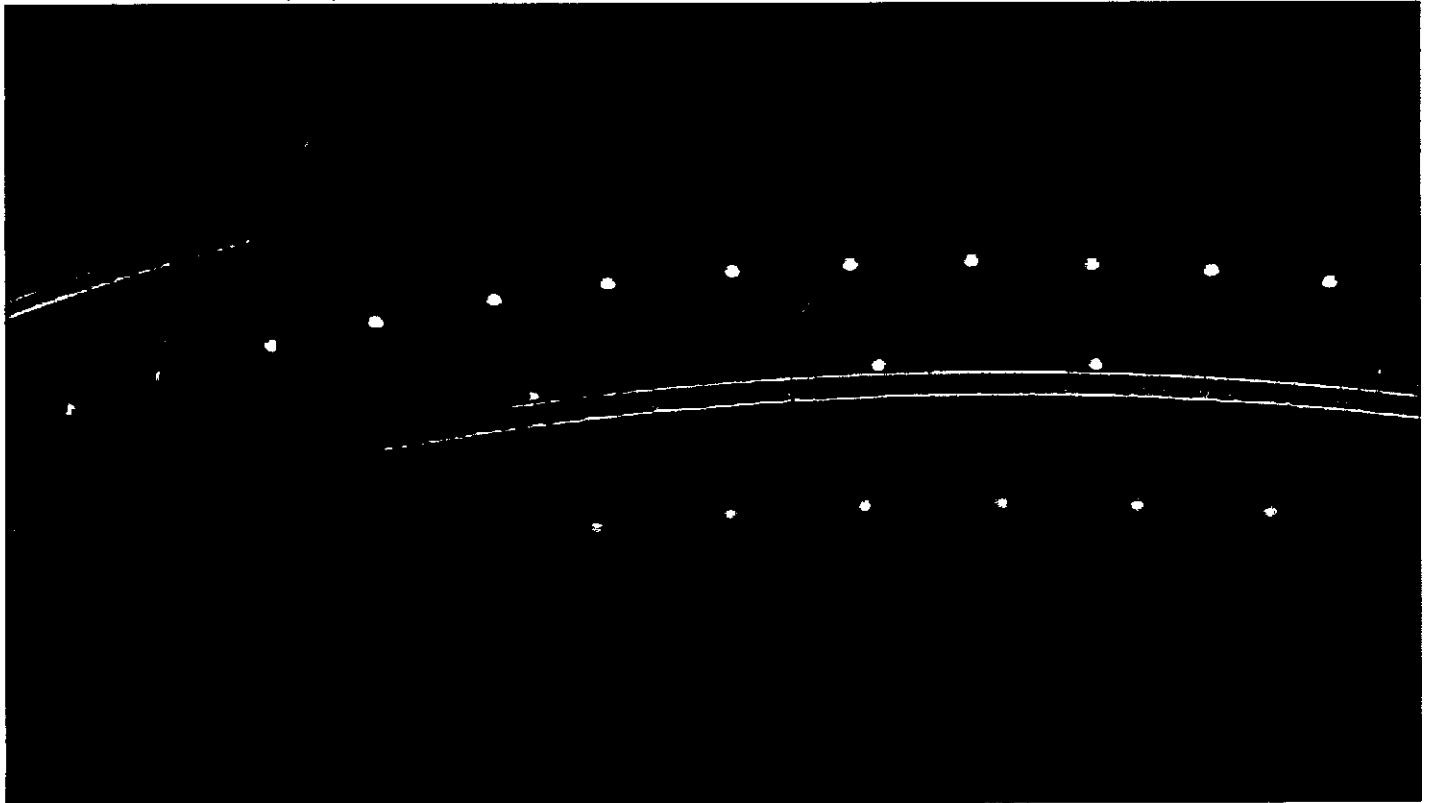
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This Startup CEO's Email To His Team Is A Masterclass In Vulnerability

Here's how it's done—with no posturing or affectation, just a simple, honest story.



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BY RICH BELLIS

2 MINUTE READ

As an editor here at *Fast Company's* Leadership section, I witness all kinds of entrepreneurial posturing every single day. Most founders—at least when they interact with the press—make a point of sounding enthused and confident, or humble and self-deprecating, or dead serious and mission-driven. Pick your PR persona and run with it.

But it's far more interesting to glimpse how leaders actually communicate with their teams behind the scenes. Christian Bonilla, the CEO of a software market-research startup called UserMuse, has been a *Fast Company* contributor for just under a year. As we were trading notes this week on new story ideas, Christian forwarded me an email he recently sent to his four-person team that he said earned a surprisingly positive response, and asked if I thought it might be a good springboard for a story.

I thought it was great as-is, and instead of spinning it into an article himself, Christian agreed to let me reproduce his email in full. Here it is, very lightly edited and with his young son's name redacted for privacy:

Gents,

Yesterday around 7PM, my evening took a weird turn. We all have kids, so I can share this. XXXX, evidently in an odd mood, decided to relieve himself in the tub the way no one wants to see their kid do.

So five minutes later, Lauren's bleaching the tub and I'm carrying a garbage bag of unmentionable filth down the stairs when I missed a step and twisted my ankle as badly as I can remember doing. I mean blinding pain, guys – I screamed, which made XXXX run down to where I was and then start crying. So there I was, crumpled in a heap at the foot of the stairs, clutching my devastated ankle and consoling a toddler as I sat next to a bag of smelly trash. I did not feel like a CEO in that moment.

Now, I told you that so I can tell you this: It doesn't always feel like we're starting something big. You guys are sweating it out in every spare moment you have. I'm working more than I ever have in my life and haven't had a paycheck since May. But we ARE starting something big, and we're getting there one small milestone at a time.

This week we had our first gross profit.

It doesn't mean we're a profitable business – this is a volatile a stage and things are going to be up and down for a while. But if we can net \$300 in a week, we can net \$400. And if we can net \$400...

-Christian

Trust me, there's no shortage of CEOs and entrepreneurs out there with thoughts to share about the value of vulnerability, emotional intelligence, empathy, and those other "soft skills" you keep hearing about. And many of them have great things to say on those subjects. But seeing those traits put into practice proves just how powerful it can be—and how simple it is to do.

Christian might've been surprised that his 264-word email made for such an effective pep talk, but I'm not. In that short space, he tells a memorable story, shares candidly how hard things feel, and points out that it's the small wins that matter most (because—look! they're already paying off). That's the kind of honesty people need from all their leaders, not just startup CEOs. In the long run, it beats out affectation and bluster every single time.

ABOUT THE AUTHOR

Rich Bellis is Associate Editor of Fast Company's Leadership section. [More](#)

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Your Brain Has A "Delete" Button—Here's How To Use It

This is the fascinating way that your brain makes space to build new and stronger connections so you can learn more.



[PHOTO: NICHOLAS P. BASSER]

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BY JUDAH POLLACK AND OLIVIA FOX CABANE

3 MINUTE READ

There's an old saying in neuroscience: neurons that fire together wire together. This means the more you run a neuro-circuit in your brain, the stronger that circuit becomes. This is why, to quote another old saw, practice makes perfect. The more you practice piano, or speaking a language, or juggling, the stronger those circuits get.

The ability to learn is about more than building and strengthening neural connections.

For years this has been the focus for learning new things. But as it turns out, the ability to learn is about more than building and strengthening neural connections. Even more important is our ability to break down the old ones. It's called "synaptic pruning." Here's how it works.

Your Brain's Delete Button And How to Use It

YOUR BRAIN IS LIKE A GARDEN

Imagine your brain is a garden, except instead of growing flowers, fruits, and vegetables, you grow synaptic connections between neurons. These are the connections that neurotransmitters like dopamine, serotonin, and others travel across.

“Glial cells” are the gardeners of your brain—they act to speed up signals between certain neurons. But other glial cells are the waste removers, pulling up weeds, killing pests, raking up dead leaves. Your brain’s pruning gardeners are called “microglial cells.” They prune your synaptic connections. The question is, how do they know which ones to prune?

Researchers are just starting to unravel this mystery, but what they do know is the synaptic connections that get used less get marked by a protein, C1q (as well as others). When the microglial cells detect that mark, they bond to the protein and destroy—or prune—the synapse.

This is how your brain makes the physical space for you to build new and stronger connections so you can learn more.

WHY SLEEP MATTERS

Have you ever felt like your brain is full? Maybe when starting a new job, or deep in a project. You’re not sleeping enough, even though you’re constantly taking in new information. Well, in a way, your brain actually is full.

When you learn lots of new things, your brain builds connections, but they’re inefficient, ad hoc connections. Your brain needs to prune a lot of those connections away and build more streamlined, efficient pathways. It does that when we sleep.

Your brain cleans itself out when you sleep—your brain cells shrinking by up to 60% to create space for your glial gardeners to come in take away the waste and prune the synapses.

Have you ever woken up from a good night’s rest and been able to think clearly and quickly? That’s because all the pruning and pathway-efficiency that took place overnight has left you with lots of room to take in and synthesize new information—in other words, to learn.

Thinking with a sleep-deprived brain is like hacking your way through a dense jungle with a machete. Its overgrown, slow going, exhausting.

This is the same reason naps are so beneficial to your cognitive abilities. A 10- or 20-minute nap gives your microglial gardeners the chance to come in, clear away some unused connections, and leave space to grow new ones.

Thinking with a sleep-deprived brain is like hacking your way through a dense jungle with a machete. It's overgrown, slow-going, exhausting. The paths overlap, and light can't get through. Thinking on a well-rested brain is like wandering happily through Central Park; the paths are clear and connect to one another at distinct spots, the trees are in place, you can see far ahead of you. It's invigorating.

BE MINDFUL OF WHAT YOU'RE MINDFUL OF

And in fact, you actually have some control over what your brain decides to delete while you sleep. It's the synaptic connections you *don't* use that get marked for recycling. The ones you *do* use are the ones that get watered and oxygenated. So be mindful of what you're thinking about.

If you spend too much time reading theories about the end of *Game of Thrones* and very little on your job, guess which synapses are going to get marked for recycling?

If you're in a fight with someone at work and devote your time to thinking about how to get even with them, and not about that big project, you're going to wind up a synaptic superstar at revenge plots but a poor innovator.

To take advantage of your brain's natural gardening system, simply think about the things that are important to you. Your gardeners will strengthen those connections and prune the ones that you care about less. It's how you help the garden of your brain flower.

Judah Pollack is the co-author of The Chaos Imperative, and Olivia Fox Cabane is the author of The Charisma Myth.

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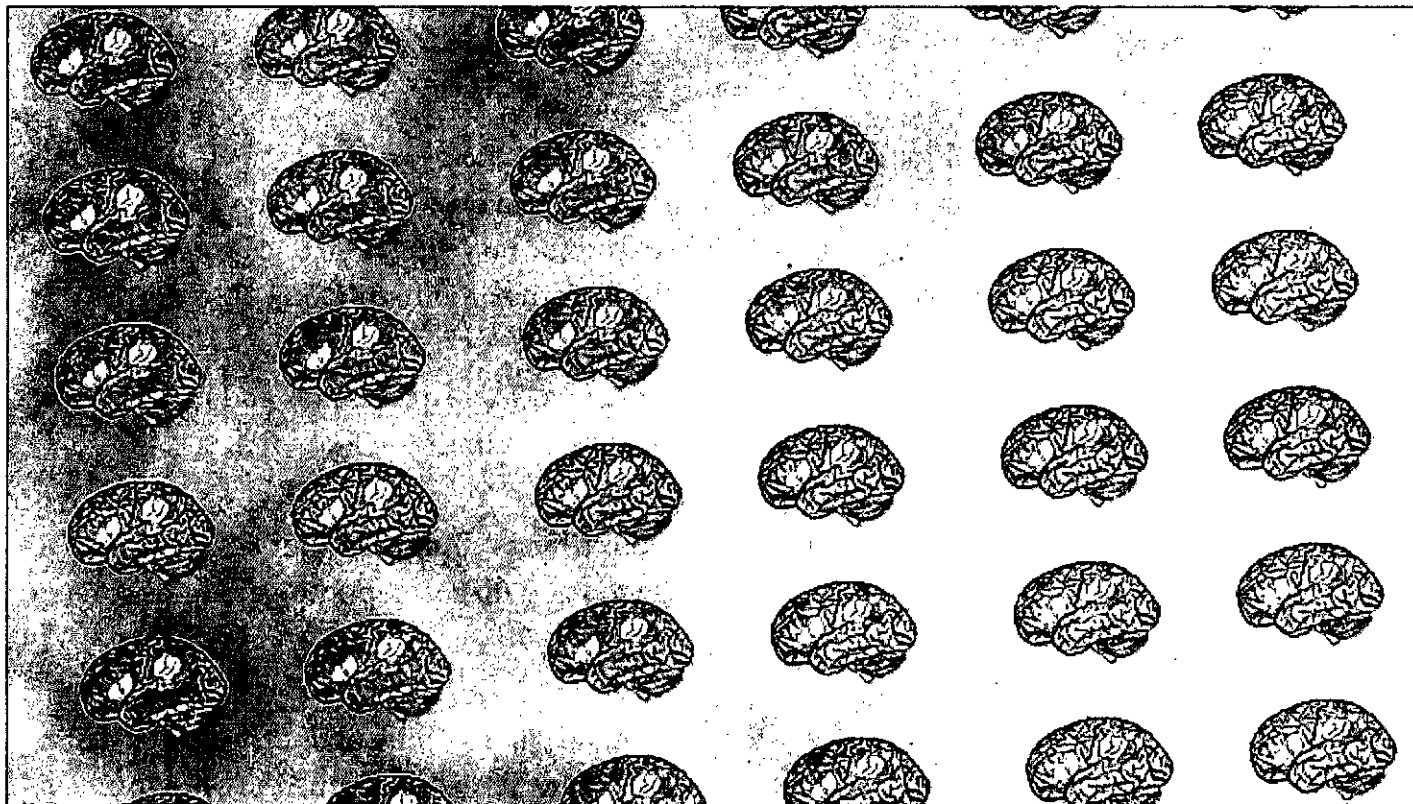
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Six Brain Hacks To Learn Anything Faster

Research proves there are ways to learn new skills and concepts with speed and ease.



[SOURCE IMAGE: BRAIN SURFACE GYRI VIA WIKIMEDIA COMMONS; APP PHOTO: UNIVERSAL PICTURES ("FIRESTARTÉR", 1984)]

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BY STEPHANIE VOZZA

5 MINUTE READ

Whether it's a new technology, a foreign language, or an advanced skill, staying competitive often means learning new things. Nearly two-thirds of U.S. workers have taken a course or sought additional training to advance their careers, according to a March 2016 study by Pew Research Center. They report that results have included an expanded professional network, new job or different career path.

Being a quick learner can give you an even greater edge. Science proves there are six ways you can learn and retain something faster.

1. TEACH SOMEONE ELSE (OR JUST PRETEND TO)

If you imagine that you'll need to teach someone else the material or task you are trying to grasp, you can speed up your learning and remember more, according to a study done at Washington University in St. Louis. The expectation changes your mind-set so that you engage in more effective approaches to learning than those who simply learn to pass a test, according to John Nestojko, a postdoctoral researcher in psychology and coauthor of the study.

Sleeping between two learning sessions greatly improves retention.

"When teachers prepare to teach, they tend to seek out key points and organize information into a coherent structure," Nestojko writes. "Our results suggest that students also turn to these types of effective learning strategies when they expect to teach."

2. LEARN IN SHORT BURSTS OF TIME

Experts at the Louisiana State University's Center for Academic Success suggest dedicating 30-50 minutes to learning new material. "Anything less than 30 is just not enough, but anything more than 50 is too much information for your brain to take in at one time," writes learning strategies graduate assistant Ellen Dunn. Once you're done, take a five to 10 minute break before you start another session.

Brief, frequent learning sessions are much better than longer, infrequent ones, agrees Neil Starr, a course mentor at Western Governors University, an online nonprofit university where the average student earns a bachelor's degree in two and a half years.

Changing the way you practice a new motor skill can help you master it faster.

He recommends preparing for micro learning sessions. "Make note cards by hand for the more difficult concepts you are trying to master," he says. "You never know when you'll have some in-between time to take advantage of."

3. TAKE NOTES BY HAND

While it's faster to take notes on a laptop, using a pen and paper will help you learn and comprehend better. Researchers at Princeton University and UCLA found that when students took notes by hand, they listened more actively and were able to identify important concepts. Taking notes on a laptop, however, leads to mindless transcription, as well as an opportunity for distraction, such as email.

"In three studies, we found that students who took notes on laptops performed worse on conceptual questions than students who took notes longhand," writes coauthor and Princeton University psychology professor Pam Mueller. "We show that whereas taking more notes can be beneficial, laptop note takers' tendency to transcribe lectures verbatim rather than processing information and reframing it in their own words is detrimental to learning."

4. USE THE POWER OF MENTAL SPACING

While it sounds counterintuitive, you can learn faster when you practice distributed learning, or "spacing." In an interview with *The New York Times*, Benedict Carey, author of *How We Learn: The Surprising Truth About When, Where, and Why It Happens*, says learning is like watering a lawn. "You can water a lawn once a week for 90 minutes or three times a week for 30 minutes," he said. "Spacing out the watering during the week will keep the lawn greener over time."

To retain material, Carey said it's best to review the information one to two days after first studying it. "One theory is that the brain actually pays less attention during short learning intervals," he said in the interview. "So repeating the information over a longer interval—say a few days or a week later, rather than in rapid succession—sends a stronger signal to the brain that it needs to retain the information."

5. TAKE A STUDY NAP

Downtime is important when it comes to retaining what you learn, and getting sleep in between study sessions can boost your recall up to six months later, according to new research published in *Psychological Science*.

In an experiment held in France, participants were taught the Swahili translation for 16 French words in two sessions. Participants in the "wake" group completed the first learning session in the morning and the second session in the evening of the same day, while participants in the "sleep" group completed the first session in the evening, slept, and then completed the second session the following morning. Participants who had slept between sessions recalled about 10 of the 16 words, on average, while those who hadn't slept recalled only about 7.5 words.

"Our results suggest that interweaving sleep between practice sessions leads to a twofold advantage, reducing the time spent relearning and ensuring a much better long-term retention

than practice alone,” writes psychological scientist Stephanie Mazza of the University of Lyon. “Previous research suggested that sleeping after learning is definitely a good strategy, but now we show that sleeping between two learning sessions greatly improves such a strategy.”

6. CHANGE IT UP

When learning a new motor skill, changing the way you practice it can help you master it faster, according to a new study at Johns Hopkins University School of Medicine. In an experiment, participants were asked to learn a computer-based task. Those who used a modified learning technique during their second session performed better than those who repeated the same method.

The findings suggest that reconsolidation—a process in which existing memories are recalled and modified with new knowledge—plays a key role in strengthening motor skills, writes Pablo A. Celnik, senior study author and professor of physical medicine and rehabilitation.

“What we found is if you practice a slightly modified version of a task you want to master,” he writes, “you actually learn more and faster than if you just keep practicing the exact same thing multiple times in a row.”

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Grab pushes digital innovation to stay ahead of the game

15 March 2017 by Radhika Dhawan Puri

With over 710,000 drivers and more than 36 million users, Grab, a technology company that offers ride-hailing and logistic services as well as payments in Southeast Asia, has claimed market leadership in the region. It also operates in 39 cities across six countries in Southeast Asia – twice as many as Uber.

UBS estimates the value of the ride-hailing market to be S\$55.61 billion (US\$40 billion), while analysts reckon there is room for two larger players and a few smaller ones.

Other companies across Asia are eyeing this market potential too, including India's Ola, China's Didi Kuaidi and Singapore's Strides Transportation, a private car hire service launched by SMRT Corporation.

As competitors snap at Grab's heels, the company's strategy is predicated on using the disruptive force of technology to stay ahead of the pack.

Using technology for a 'hyperlocal' strategy

Grab first launched in 2012 in Malaysia, one year before Uber's roll-out in Asian markets such as India and Singapore. The head start put Grab in a unique position – the ability to amass extensive data and information about the markets it serves. This was critical in a region as diverse as Southeast Asia.

Arul Kumaravel, vice president of engineering at Grab, explained that Southeast Asia is a complex region, as all the six countries have different levels of infrastructure – whether it's mobile network connectivity or the amount of geographically mapped data available between cities.

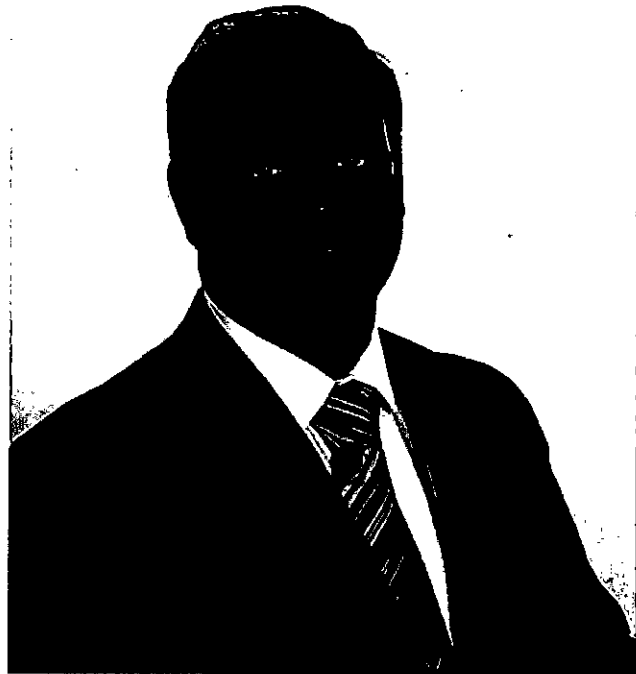
"Our technology plays an important role in identifying areas where transportation and congestion can be improved," Kumaravel said. "The data enables us to continuously offer services that effectively fulfil a specific need in each city for the right price."

Grab calls it being 'hyperlocal'. Services in Indonesia and Vietnam are examples of this hyperlocal strategy. Commuters in cities like Jakarta and Ho Chi Minh spend hours commuting, and often use motorbike taxis to beat traffic congestion. Understanding this, Grab introduced a service called GrabBike, which offers safe on-demand motorbike rides, in these markets.

Their hyperlocal strategy is bringing returns. Indonesia became the largest market for Grab in terms of "completed rides" in Southeast Asia in 2016, with a 250 per cent growth in the first half of the year from 2015.

Another example of being hyperlocal is GrabHitch, which is a social carpooling platform for commuters wanting to hitch a ride with someone driving their car or riding their motorbike in the same direction. The service has helped thousands of people safely commute daily in and out of megacities like Jakarta. It is also a step forward in moving more people with fewer vehicles to ease traffic congestion and to reduce pollution.

In the same manner, Kumaravel explained that Grab's ride-hailing services, GrabCar and GrabShare, are a strong fit for Singapore. These services complement Singapore's world-class public transport systems, allowing commuters to go anywhere across the island, in particular for first and last mile travel.



To this end, Grab's taxi-hailing service, GrabTaxi, is built on exclusive partnerships with three Singapore taxi companies – Trans-Cab, Silver Cab and Premier Taxis – which enable taxi drivers to accept bookings on the Grab platform. Such partnerships give Grab exclusive access to the fleets of these taxi companies. Competitors coming into the market will need to match the sheer number of taxis that Grab partners with, achieved solely through organic growth and driver recruitment.

Data analytics as an enabler of better customer service

For companies such as Grab that function on the bedrock of technological competitiveness, the use of data analytics can completely transform customer service. Grab analyses vast amounts of data on its customers to glean a better understanding of their needs.

Given that Grab clocks up to 1.5 million bookings every day, its data can be used to track parameters such as frequency of trips and popular pick-up and drop-off locations.

Applying machine learning to the platform allows Grab to route its drivers to areas that may have high demand at particular times during the day. For example, in Singapore, Grab will direct taxis before-hand to the Tanah Merah Ferry Terminal to address the surge in bookings when the ferries dock.

In addition, the richness of data also helps augment third-party addresses with more information. For example, Grab Indonesia has enhanced third-party maps by adding *warungs* – local food stalls – as pick-up and drop-off points. Usually, such locations would not have a postcode or an accurate address.

Kumaravel said, "These are locations that people commute to often. Even if the rider makes an error in entering the address at first, our platform recognises that it is an incorrect address and the system adjusts the map to the exact location the rider intends to go, then learns and adapts to this information."

Driving usage of cashless payment systems

Grab also recognises that the rate of credit card use and access to banking in Southeast Asia (outside of Singapore) are still low. Staying true to its 'hyperlocal' approach, Grab offers payment options that locals prefer, as oppose to operating with a singular payment platform. It also launched GrabPay Credits late last year for a cashless stored value option allowing top-ups via ATM networks, local convenience stores and e-Money accounts like Doku Wallet.

In Indonesia, for example, people use Mandiri e-cash and top up their cards at 7-Eleven stores. Kumaravel explained: "We are working with major payment providers in our different markets to offer mobile payment options that complement each customer's lifestyle. The future is cashless, and we are therefore enabling access to cashless payments for millions of unbanked individuals."

Last year, Grab added AliPay – China's largest third-party payment platform – which allows Chinese travellers in Singapore and Thailand to pay in renminbi through their AliPay accounts. Previously, Chinese travellers could only pay for taxi rides in cash or dual-currency credit cards.

"Eventually we will expand GrabPay so that it becomes a convenient mobile wallet with access to a wide range of products and services," said Kumaravel, and that means a certain alacrity for payment systems innovation is paramount for Grab.

An environment that supports innovation

Grab's objectives can only be achieved in an environment that actively nurtures innovation.

The company's hunt for a supportive innovative ecosystem led to the establishment of its US\$100 million research and development (R&D) centre in Singapore, similar to its R&D centres in Beijing and Seattle. "Singapore has a government supportive of technology companies that shift the way we live," said Kumaravel.

Singapore is the company's global hub for technology. Grab hopes to use the promise of working in a paradigm-changing business in a city ranked high on quality of living indicators, to attract engineering and IT talent from all over the world.

As Grab continues to innovate to make sure it stays ahead of the game, how quickly can rivals mirror these unique propositions and services?

"Unless a company is in Southeast Asia and well embedded in it, it is very hard," said Kumaravel. "We understand the nuances of Southeast Asia; we prioritise and deliver services much faster. I'm not saying that nobody can do it, but it is a matter of who can do it faster and who can do it better."

Grab's future direction is relentless expansion in a winner-takes-all game with competitors such as Uber. The company is aggressively pursuing partnerships to continually expand, including a tie-up with Japan's Honda Motor Co to jointly create a motorbike-hailing service, and another one with Japan's Tokyo Century Corporation, to expand leasing options for cars.

Will this be enough for Grab to retain pole? As with all technologically disruptive industries, it will all depend on Grab's ability to continue to innovate to meet the region's changing needs and make transport freedom a reality for 620 million people in Southeast Asia.

Edited by Sophie Chen and Goh Wei Ting



How 5 international giants are pursuing sustainability goals in 2017

27 February 2017 by Hannah Koh

Think of sustainability and most people think of tree-planting and recycling. But multinational companies that have incorporated resource-light, ethical practices into their operations will attest that the S-word means more than a token corporate social responsibility gesture.

For a number of international giants, sustainability is a key part of their business. Targets are set and performance monitored, as with other key financial performance indicators. Becoming more energy and water efficient trims operating expenditure while carbon-light products and services can plump up the top line. In short, sustainability pays off for business.

As 2017 gets underway, five multinationals based in Singapore – Rolls-Royce, Royal DSM, Henkel, BASF, and Panasonic – tell Future Ready Singapore how they are making sure they walk the sustainability talk in the year ahead.

Rolls-Royce

One of the world's largest engine makers, Rolls-Royce, plans to increase its output to 600 engines a year by 2020, the fastest increase in its history. But the British power systems company also aims to cut energy use by 30 per cent over the same time frame.



Rolls-Royce

This energy reduction goal is part of the company's "dashboard" of sustainability targets for the year 2020 that it continues to work towards via annual target-setting. Rolls-Royce says it will achieve this 30 per cent cut – excluding energy consumed in product testing and development – by investing in less resource-intensive new facilities and making existing ones more energy efficient.

Other goals include halving greenhouse gas emissions in operations and facilities by 2025 as well as ensuring zero waste to landfill by 2020.

The firm is also working towards meeting the 2050 goals set by the Advisory Council for Aeronautics Research in Europe, which include developing technologies and procedures to reduce aircraft carbon emissions by 75 per cent, reduce noise by 65 per cent, and reduce nitrous oxides by 90 per cent. These goals are pegged against the emissions of a typical new aircraft produced in 2000.

In Singapore, Rolls-Royce began sourcing power for its Seletar Campus using solar panels installed on the rooftops of its building and carpark last year. Tim Sullivan, the company's director of energy and property compliance, said the solar panel initiative is the first in a series of planned renewable and low-carbon energy projects the company intends to undertake around the world in the next five years.

Royal DSM

Dutch health and nutrition company Royal DSM is one of the few firms to use carbon pricing internally to guide business decisions. This internal pricing mechanism is used to guide investment decisions with the aim of reducing the emissions it generates per unit of production by 45 per cent from 2008 levels by 2025.



This is unsurprising given that CEO Feike Sijbesma was last year named co-chair of the Carbon Pricing Leadership Coalition (CPLC), which brings state and business leaders around the world together to come up with workable ways to implement carbon pricing.

Addressing the world's food security challenge remains the goal for Royal DSM in 2017, focusing on three areas of sustainability: nutrition, climate change, and the circular economy.

For nutrition, the company continues to work on making it affordable and accessible through cross-sector collaboration with partners including the UN World Food Program and 4SRice, a Singapore-based programme to supply fortified rice to construction workers.

Henkel

German chemicals heavyweight Henkel, best known for household detergent Persil, haircare brand Schwarzkopf and adhesives product brand Loctite, is engaging the might of its 50,000-strong global workforce to pursue its sustainability ambitions until 2020.



The firm wants to help its customers and consumers save 50 million tonnes in carbon emissions and educate 300 million consumers about the value of recycling as part of a sustainability push that was launched in 2016.

Its sustainability programme includes a roll-out of energy-efficient lighting to 95 per cent of production sites across Asia-Pacific in 2017.

Product-wise, Henkel is reducing the volume of packaging relative to net sales by 20 per cent. The company's packaging developers design and review smart packaging to use the least amount of material possible and incorporate materials that can be recycled through public recycling systems.

Working closely with suppliers, all paper-based packaging that the company uses come from sustainable sources. For instance, fibres that go into corrugated boxes – representing the large majority of Henkel's paper consumption in Asia-Pacific – are derived only from consumer and industry recycled paper, avoiding the use of fresh fibres.

BASF

The world's largest chemical company, BASF, will be spending much of the year of the rooster thinking about pigs.

The €70 billion German giant is exploring alternatives to the antibiotic growth promoters used in post-weaning pigs. There has been growing concern that certain bacteria have become immune to antibiotics, which are increasingly seen as a health risk. BASF has started introducing

Natuphos E in Asia Pacific, a feed enzyme that will reduce the excretion of phosphorus in pigs and poultry, since too much phosphorus can put a strain on ecosystems.

BASF is also set to increase the proportion of R&D funding dedicated to products and services that will help industries become more resource-light, including what it calls Accelerator solutions.

In January 2017, BASF kick-started the year with a new technical application laboratory, the Newtrition Lab Asia Pacific, to develop health and nutrition solutions for Asia Pacific markets. Researchers from BASF will work with Singapore Polytechnic students to collaborate on projects to encourage innovation within the food and nutrition sector, conduct research, and develop science-based solutions.

Panasonic

One of the main thrusts of the sustainability agenda for Panasonic this year is waste.

The Osaka-headquartered electronic firm aims to improve its factory waste recycling rate to 99 per cent or more, and in addition, to further cut water consumption through its water-monitoring measures, reduce CO2 emissions, and minimise the environmental impact of the chemical substances it uses in its operations.

The multinational firm also aims to achieve a reduction in carbon emissions through products and services to 55 million tonnes from the base fiscal year 2006.

These goals fall under its Green Plan 2018, an environmental action plan launched in 2010 that will guide the company towards fulfilling its sustainability goals by its 100th anniversary.

The Japanese electronics giant says it wants to deepen collaboration with partners across its supply chains to accelerate sustainability initiatives.

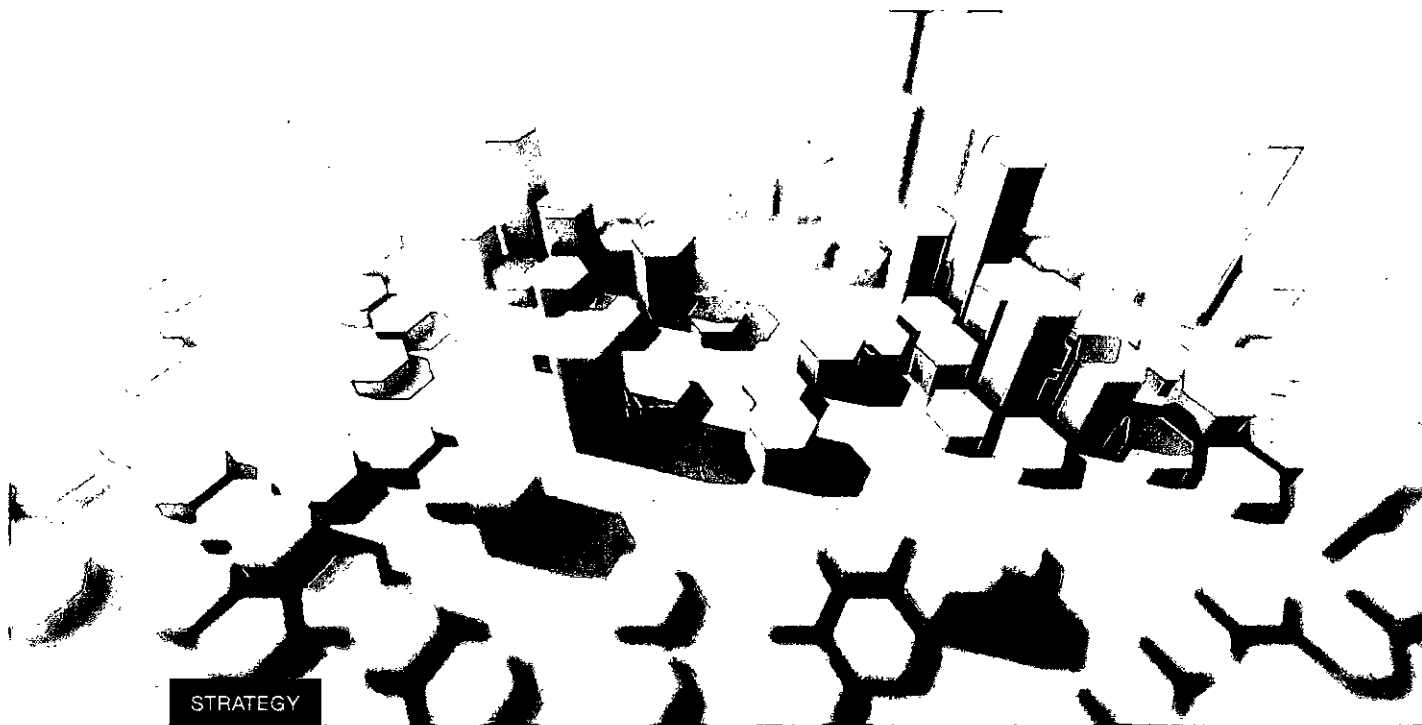
Last year Panasonic Factory Solutions Asia partnered Singapore-based energy provider Sunseap to install 3,476 solar panels on the rooftops of three of its factory buildings, which can meet up to 20 per cent of the factory's energy needs at peak performance.

In 2017, the company will continue to focus on establishing systems for sustainable procurement and address five major environmental challenges: greenhouse gas emissions reduction, resource recycling, water resource conservation, chemical substances management and biodiversity conservation. Panasonic will also promote ECO-VC, its value creation concept, to supply chain partners to minimise costs as well as environmental impact in procurement towards its Green Plan 2018.

Edited by Jessica Cheam and Tan Yi Xuan



Panasonic



How government and business can work together to build better cities

29 March 2017 by Hannah Koh

Governments and businesses make for unnatural bedfellows but in order to make cities inclusive, safe, resilient and sustainable and achieve the Sustainable Development Goals (SDGs), they will need to find ways to collaborate.

- Within the next 15 years, the world can expect to see an unprecedented surge in urbanisation. The metaphorical engines of human society and progress, cities will collectively become home to 1.5 billion more people by 2030; the sixth out of every 10th person will be an urban citizen in 2030, and Africa and Asia are where more than 90 per cent of urban growth will take place.

However, the way cities have been built is unsustainable, with the lack of planning and control leading to problems such as overcrowding and pollution. Coupled with climate change affecting everything from food and water supply to weather patterns, the time has come to reinvent the urbanisation paradigm and innovate to find new solutions to old problems.

The SDGs, targets to achieve human progress and well-being by 2030 rolled out in September 2015, have a specific goal for cities. SDG 11 sets the bar for the cities of tomorrow by urging the international community to make cities inclusive, safe, resilient and sustainable.

Lauren Sorkin, regional director, Asia Pacific of 100 Resilient Cities, a non-profit set up by The Rockefeller Foundation to help cities better withstand the physical, social and economic challenges of today, explained to Future Ready Singapore that sustainability addresses the need to bring the world into balance amidst the continued depletion of natural resources. On the other hand, resilience is about the "implementation of transformative actions that make systems endure and, more importantly, thrive in an imbalanced world".

There is therefore the need for cities to go beyond adopting coping strategies and focus on "implementing actions that truly transform our cities' ability to withstand whatever comes", she said. Furthermore, building resilient cities requires a new way of thinking about city planning, community engagement, disaster prevention and recovery and private-public collaboration.



How business can build better cities

Governments cannot go it alone. The innovation, resources and experience of the private sector is needed in order to build better cities.

"There is no resilience in a vacuum," Sorkin told Future Ready Singapore. "Cities can't implement meaningful solutions if they don't understand the needs of every stakeholder – be they corporations or communities."

These sentiments were clearly echoed at the Responsible Business Forum for Sustainable Development in Singapore last year. At a workshop focused solely on SDG 11 that Sorkin moderated, representatives from the public and private sectors exchanged ideas for how to build more inclusive, safe, resilient and sustainable cities.

Businesses themselves want to be involved when it comes to urban and long-term planning, said Huawei's general manager, strategy and business consulting, Kriv Naicker. He said that a service and technology provider like Huawei is "heavily invested in enabling smart and sustainable cities" and keen to share its expertise as cities move

towards being Internet of Things-enabled.

"Huawei is (usually) engaged at the point of the procurement rather than in an experience-sharing or advisory perspective on where we can help accelerate some timelines," commented Naicker. The company has the potential to take on a more advisory role in terms of "informing some of the decisions" for infrastructure investment and planning and digital enablement, he said.

Governments should therefore review and change their current procurement models to allow businesses to provide their expert advice without compromising the integrity of the procurement process, urged Naicker.

Besides participating more actively at the urban planning level, businesses can also help cities become more resilient by collaborating and creating opportunities for shared learning with the government.

Singapore-headquartered real estate developer and a local leader in sustainability, City Developments Limited (CDL), offered "experience and knowledge" when the Building and Construction Authority in Singapore first began putting together the Green Mark certification programme for buildings.

The Singapore government has pledged to have 80 per cent of the city-state's buildings green-certified by 2030 up from the current 30 per cent. "There's a lot of collaboration needed [between the government and the private sector] and when the government commits to something, the work will pass down to the private sector as well," said CDL's chief sustainability officer, Esther An.

She added that building authorities in Singapore now take the sustainability of a building's design into consideration when selling plots of land to developers, compared to when the tender process was purely price-based. In response, the private sector is compelled to look at sustainability as an edge over the competition while also helping the city to become more resilient. "That's how the government and private sector can work together," said An.

Such collaborations are more than just theoretical, and examples of how governments can engage the private sector to bring about more resilient cities have already begun taking place in Singapore. In the Sustainable Singapore Blueprint released last year, the city-state outlined its vision to become a car-lite nation – one with efficient public transportation networks, walking and cycling paths, and on-demand, point-to-point transport options.

Singapore has since engaged the services of BlueSG, a subsidiary of French electric car-sharing operator Bolloré Group, to build a car-sharing programme featuring 1,000 electric vehicles by 2020. The Singapore government will be co-fund the programme.

This is expected to add some 2,000 charging points in parking spaces in 500 locations, the majority of which will be located within neighbourhoods. By mid this year, Singapore will see the first batch of 125 cars plying the roads.

Singapore is also keen to ramp up solar power generation to 350 megawatt peak by 2020 under the SolarNova Programme by the Economic Development Board. It has benefitted local company Sunseap Leasing, which bagged SolarNova's first and Singapore's largest solar tender in December 2015 to build a 76 megawatt project on government sites and 831 housing blocks by end 2017.

The island nation consistently welcomes private companies to test bed their solutions in Singapore. Last year it unveiled the largest floating solar test bed in the world to investigate how different solar technologies would perform in conjunction with a host of private companies.

Inclusive, safe, resilient and sustainable cities

Businesses need government input as much as governments need the private sector's innovation and ability to scale solutions, in order to create sustainable cities.

At the Cities:Possibilities forum in Singapore last year, high-level business leaders and government leaders discussed how to bring change in cities, with panellists agreeing that there is a business case for sustainability and that it would open opportunities for collaboration with the public sector.

Speaking on the panel discussion at the forum, Lim Hwee Hua, executive director of private equity firm Tembusu Partners and former second minister for finance and transport of Singapore, said: "Whether it is regulating the pace of urbanisation, setting the national climate change agenda or formulating policies such as the appropriate use of scarce national resources - no single private sector entity can accomplish these without the heavy involvement of government."

The creation of resilient and sustainable cities is therefore a business opportunity for the private sector, who can build a marketplace for resilience tools and services, commented 100 Resilience Cities' Sorkin.

"If it is profitable for the private sector to develop and sell resilience solutions, and valuable for governments to buy and implement them, then resilience thinking and planning can take hold and become self-perpetuating," she said. "But in order for this to happen, there must be close collaboration between the public and private sector."

Edited by Jessica Cheam and Tan Yi Xuan



Advanced Transport (<https://futurism.com/advancedtransport/>)

Electric Planes are the Next Frontier in Clean Energy Transport

● Airbus

IN BRIEF

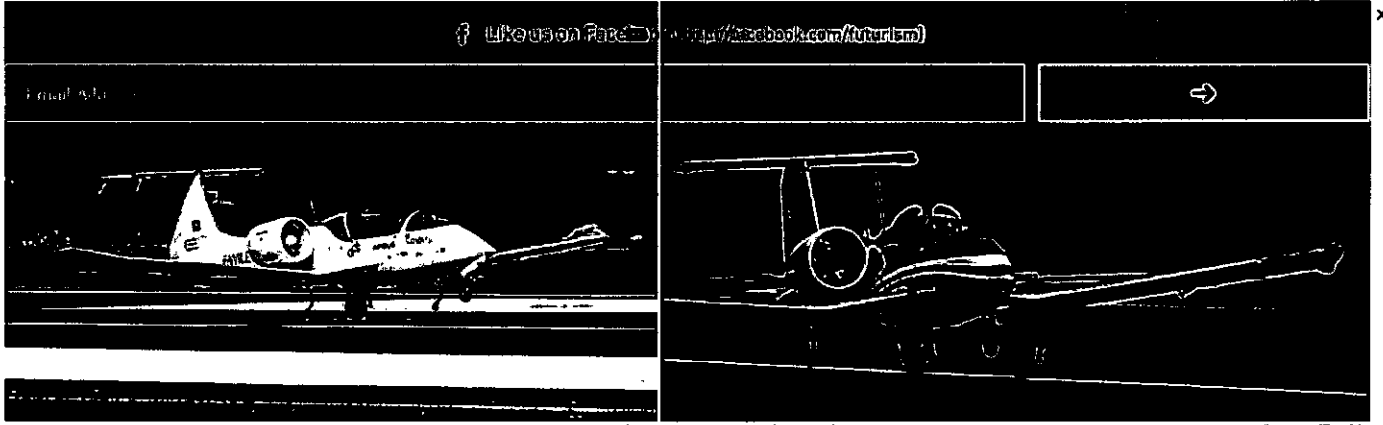
The future of flight may lie in clean energy being employed to make travel cheaper and safer for the environment. As fuel is the top expense for most airlines, cutting that cost would lead to significant value for consumers.

CLEAN AIR

A company called Wright Electric (<https://weflywright.com/blog/>) made a presentation this week at the Tech Crunch (<https://techcrunch.com/2017/03/21/wright-electric-planes/?ncid=rss>) Y Combinator Demo Day showing off a plan to design and develop a 150-seat commercial aircraft that operates completely (or at least partially) on electric power. Wright's core is comprised by a team that was formerly working with NASA to investigate electric aircraft viability. Other design team members also have strong aviation backgrounds coming from Boeing (<https://thepointsguy.com/2017/03/new-boeing-aircraft-rumors/>) and Cessna.

According to Wright Electric's blog, its first step is to retrofit a Piper Cherokee (https://en.wikipedia.org/wiki/Piper_PA-28_Cherokee) into a flying testbed aircraft. Wright hopes to secure funding to prove its concept and then plans to build a nine-seat commercial aircraft that flies without jet fuel.

Fast-forwarding several years — and through layers of red tape in the government approval process — Wright envisions its 150-seat planes replacing the stalwart Boeing 737 on short-haul routes such as NYC to Boston. The BBC (<http://www.bbc.com/news/technology-39350054>) says Wright has the interest of European low-cost carrier (<https://thepointsguy.com/2017/03/why-flying-spirit-wasnt-bad/>) EasyJet, which hopes for electric flights from London to Paris within ten years. The airline told the BBC, "EasyJet has had discussions with Wright Electric and is actively providing an airline operator's perspective on the development of this exciting technology."



Airbus

THE ROAD TO CLEAN FLIGHT

Apart from employee salary and the airplanes themselves, fuel is the top expense at most airlines. Alternative methods of powering planes aren't really anything new, and other electric or hybrid concepts have come and gone. Airbus (<https://thepointsguy.com/2017/01/airbus-flying-car-soon/>) created its E-Fan aircraft to explore the realm of possibility of electric aircraft. Although it's been successful in the form of a tiny plane with a solo pilot, Airbus has since realized a hybrid version of the plane — equipped with both electric and internal combustion engines — is more viable.

Wright has said it may end up with a hybrid system as well, depending how available battery technology progresses in the next few years. But there can be no doubt that airlines will do whatever is reasonable and ethically possible to reduce operating costs.

Over the past few years, several airlines have even implemented alternative biofuels to power their jets on select flights. In 2016, United Airlines (<https://thepointsguy.com/2016/12/united-polaris-first-review/>) launched an initiative to use biofuels on every flight from Los Angeles (LAX) (<https://thepointsguy.com/2017/03/delta-moving-lax-terminals-in-may/>) to San Francisco (SFO). Alaska Airlines (<https://thepointsguy.com/2017/03/the-end-of-virgin-america/>) has experimented with a sustainable biofuel based on leftover limbs and branches from the Pacific Northwest timber industry.

How much battery power would it take to power a plane for a 300-mile flight? The problems with batteries on aircraft have been well-publicized, from the fires on the early Boeing 787 (<https://thepointsguy.com/2016/12/xiamen-air-787-business-review/>), to bulk lithium-ion battery shipments on UPS. Is it possible? Yes. But ten years seems a bit too ambitious when they don't even have a conceptual plane flying. Their mindset toward eliminating or reducing jet fuel use is commendable, and the reduction in jet fuel use would be beneficial to the environment.

Read more articles from The Points Guy (<http://thepointsguy.com/>)

References: The Points Guy (<https://thepointsguy.com/2017/03/start-up-build-electric-airliners/>)

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THE STRAITS TIMES

Singapore overtakes Silicon Valley as No. 1 for global start-up talent



Singapore has overthrown tech mecca Silicon Valley as world's No. 1 for start-up talent according to a report by Startup Genome. ST PHOTO: DESMOND WEE

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✉ Ann Williams (mailto:ann@sph.com.sg)

SINGAPORE - Perhaps the biggest surprise coming out of a 150-page research report covering 10,000 start-ups and 300 partner companies is that tiny Singapore has overtaken tech mecca Silicon Valley as world's No. 1 for start-up talent.

The report by Startup Genome project, a US-based organisation, credits Singapore's innovative policies for its success as great start-up ecosystem. While Singapore's overall ranking in 2017 fell two notches to 12th place, this was due to two new Chinese entrants, it said, adding that Singapore's performance numbers are solid and will probably continue to rise.

Along with a geographical location that renders it an easy access point to up-and-coming tech markets in South-east Asia, Singapore's 1,600-2,400 tech start-ups enjoy significant government subsidies and the country's strategies are working to establish local tech start-ups as globally relevant companies, said the report.

When it comes to talent specifically, Singapore's access to quality talent and cost put it ahead of all rivals.

While Singapore trailed below the average top 20 at 10th place in talent quality, it more than made up for it by being the fourth and second best ecosystem for start-ups to access experienced software engineers and growth employees, respectively.

The experience levels of Singaporean talent was found to be comparatively strong, with 80 per cent of engineering and 74 per cent of growth teams boasting at least two years of prior start-up experience compared to the global averages of 72 per cent and 60 per cent, respectively.

Start-up founders based in Singapore were the youngest in the world, with a median age of 28 years.

The average software engineer salary in Singapore, at US\$35,000 (S\$49,000), was also below the global average of US\$49,000 - high salaries is one of the reasons why Silicon Valley lost its top talent ranking.

Singapore also has the third highest level of global connectedness of all top 20 ecosystems outperforming Silicon Valley again.

This is Startup Genome's third edition of its Global Startup Ecosystem Report. The 2017 survey examines how cities help to grow and sustain start-up ecosystems through eight major factors: performance, funding, market reach, global connectedness, talent, start-up experience, resource attraction, ecosystem demographics and founder demographics.

Silicon Valley is still number one overall and in most categories, but the report noted that the US is losing dominance to Asia and Europe. Los Angeles and Chicago, for example, had the biggest drop of the top 20 cities, mainly due their lowered scores in "global connectedness". However, the US still has seven cities in the top 20 ranking.

The Chinese cities of Beijing and Shanghai, which debuted at No. 4 and No. 8 respectively, were absent from previous reports due to lack of data.