How often have you heard platitudes about the need to embrace failure and the value of learning from your mistakes?

Without this positive attitude towards negative outcomes, we’re told, you’re unlikely to ever take risks and you will never be up there with the pantheon of innovators who are changing our world day after day.

This is all very well, but, as we know, project failure can be costly. Doing all that we can to avoid it should still be the name of the game.

The best way of doing that is not only to have a great, marketable product but also to understand the full scope of what is involved in producing it, who the key players are, the relationship between those players, and the sequence with which events must unfold to maximize the potential for success.

This is Ron Adner’s theme in his ground-breaking study of innovation that has taken 10 years to research and compile. And his key message is that when it comes to creating and developing new ideas, most of us miss a trick or two.

We have blind spots that are capable of consigning even the most brilliant ideas to the scrapheap. In particular, we fail to understand that successful innovation is not a solo process – but a game of many players, whose adoption of your ideas, whether as co-innovators or customers, must coincide by fitting together like the pieces of a jigsaw puzzle, at precisely the right time.

Adner, an award-winning professor of strategy at the Tuck School of Business at Dartmouth, is an acknowledged expert on innovation. His widely-published work is required reading on the subject in scores of MBA programs.

Focus, Ecosystems and Blind Spots

Adner reminds us that, according to the Product Development and Management Association, only one in four innovation projects reaches commercial launch and, of those, almost half fall short of financial expectations.

In many cases, that’s because organizations fail to recognize that there are so many
other factors that influence the outcome. Our focus is generally too narrow - confined to the product we’re developing and ignoring other players who need to be alongside us, keeping pace.

Consider what happened with the first attempts to launch high-definition television in the mid-1980s when Philips Electronics developed the revolutionary concept.

Their efforts faltered because although they created the HDTV, the technology to make it commercially viable - special cameras and required transmission standards - simply didn’t exist.

It happened again when Michelin developed the run-flat tire, a brilliant concept that would allow a vehicle to continue to drive for more than 100 miles at reasonable speed after a puncture. However, it needed a special type of rim from a separate wheel manufacturer and it also relied on a service network with the right skills and equipment to repair the tires.

An entire ecosystem would need to be in place for the innovation to work. And although Michelin managed to line up all the right technology, the service network was never adequate - independent tire repair shops didn’t commit to the expensive investment in repair equipment - and car owners found themselves having to replace damaged tires or even wheels. Class action suits ensued.

Michelin had failed to recognize that the value proposition it was offering to car owners required a complete reconfiguration of the tire ecosystem.

Because of this blind spot, what began as an “inevitable success” ended for Michelin with a huge corporate write-off.

“Ecosystem reconfiguration is at the heart of every new value proposition that breaks from the existing industry mold...” Adner declares. “(It) is no longer enough to manage your innovation. Now you must manage your innovation ecosystem.”

This is what he means by the “wide lens.”

Innovation Risks and Mathematics

The commercial success of new ideas relies on overcoming three risks: your ability to create the actual product or service (execution risk); the reliance on and interdependence of other innovations (co-innovation risk); and the involvement of partners who need to adopt and adapt to your idea before it can be offered to the end-user (adoption chain risk).

Co-innovation and adoption chain risks constitute the main focus of the book because they are the threats most of us overlook and are the source of our innovation blind spots.
Co-innovation

We saw it with Philips, but perhaps a more outstanding example of unrecognized interdependence on other technologies was the development of a 3G device by cell phone maker Nokia.

The technology was revolutionary in terms of its potential to take the phone well beyond its original purpose into a multi-faceted device that could stream video, connect to the Internet and offer location-based services.

Nokia’s innovation was capable of doing all of these things, but all the co-innovations needed to deliver them - video conversion software, the ability to differentiate between different subscription plan users and anti-piracy digital rights management - were not in place. Or at least they were not all available when Nokia launched its handset. Nor was there any collaborative plan to provide them.

So, by 2002, when Nokia had predicted there would be 300 million web-connected handsets, there were barely 3 million.

That’s a shattering statistic. But the reality of co-innovation risk is laid bare by a simple but alarming piece of mathematics.

Suppose the likelihood of your ability to produce a new product is a high 85 percent and, for simplicity, the ability of three other essential co-innovators to achieve success for themselves is the same.

The probability of success is therefore 0.85 to the power of 4, or just 52 per cent. If just one of those “partners” has only, say, a 20% chance of getting it right, the equation -- 0.85 x 0.85 x 0.85 x 0.2 -- reduces the project success potential to just 12 percent.

Your success potential is less than that of your weakest link.

As Adner says: “There’s no problem with making a 12 percent bet, as long as you know it’s a 12 percent bet.”

And, if you’ve identified the risk, wherever it lies, there are actually some things you could do about overcoming it, such as adding resources or support to the weakest partner.

If it’s possible, you might even consider removing them from the project and delivering a more modest value proposition - for instance, forgoing the ability to stream video in the Nokia example.

Too often, the author suggests, innovation managers ask questions like “Can we do it?” or “How can it be done?” when the real question is “When will it be done?” or, more precisely, “When will we be able to align the ecosystem for the complete value proposition to become a reality?”
Adoption

It’s easy for companies to get caught up with the benefits their product delivers while overlooking the opportunity cost to the customer using it.

For example, a new piece of software might offer a fantastic set of features but a commercial customer might have to consider not only the price of the product but also issues like retraining staff, hardware upgrades and error rates arising from unfamiliarity.

In addition, as with co-innovation, a new product may depend on adoption by a number of intermediaries who must all buy-in before it can be delivered to the customer. For example, a food product’s success relies on many partners, like a grocery retailer for shelf-space.

The challenge is to identify all the partners in your adoption chain and then to convince them of the benefit of joining your efforts.

“In today’s interdependent world,” Adner advises, “the successful innovator must treat each partner as a customer, even if they are not in a direct business relationship.”

Mapping and Managing Your Ecosystem

Acknowledging that you’re part of an ecosystem rather than a standalone innovator, and understanding the inherent risks this implies, is the stepping-off point for a structured approach to managing or playing your part in that ecosystem to achieve the best chance of success.

The next step is to understand the dynamics of the ecosystem and the role you play.

Identifying the Pieces

Partners in a project need a shared perspective; a map or value blueprint, that identifies every activity required for the project, the way they need to be arranged to secure the desired result, the parties involved and what each party stands to gain or lose from it.

Start by identifying your end customer and your own resources and abilities. Then identify your suppliers and other intermediaries - the people and organizations that stand between you and your customer either as co-innovators or adopters.

The aim is to assess their ability, willingness and preparedness to participate, which the author distills into a traffic-signal method that labels their status as green (good to go), yellow (have a workable plan to resolve any obstacles) or red (a deal-breaker, which, if it can’t be solved means the project is a no-go).

This system is supported by a positive (surplus) or negative (negative surplus) scoring process, using plus or minus points on a 1-to-5 scale, for measuring that “what’s-in-it-for-me” value to participants.
This scoring approach seems to be an intuitive rather than scientific process, resting on evaluations of the balance between the total costs to a participant versus the value of the benefits they would gain.

Adner doesn’t specifically explain how to calculate it, but wherever there’s deemed to be a negative surplus for one of the players - where one person stands to lose more than they gain - a project is not likely to succeed unless part of someone else’s surplus can be redistributed to them.

A good illustration is the development of digital cinematography - the ability to create and distribute movies electronically in place of traditional reels of film.

The transition has taken nearly a decade to achieve because, although it would save movie studios millions of dollars in management and distribution costs (giving them a good “surplus” score), there was no such benefit for movie theater owners. Instead, they faced the exorbitant cost of retraining and re-equipping for the new technology (a “negative surplus”.)

The conundrum was eventually resolved by the studios through a combination of long-term equipment lease-to-buy arrangements for the movie theaters, coupled with the payment of what is called a “virtual print fee” for showing the digital version of a movie.

The underlying concept is the redistribution of surpluses in the adoption chain to create win-win solutions for all the participants.

Drawing a value blueprint is an exercise in discipline that forces you to create the entire picture of your project at the outset. It shows where you have a coherent strategy, where you have inconsistencies, and where you are just hoping things will eventually fall into place.

“And because it gives you a clear view of all the elements, the value blueprint allows you to manage your red and yellow lights from the get-go,” he adds.

It forces a dialog between all the partners, flushing out assumptions and risks, exposing the project to the scrutiny of the wide lens.

Who Follows Whom?

Being in the picture is not the same as being in charge of the picture. In any innovation ecosystem, there will be those that lead and those that follow. The leader will likely be the partner that makes the major up-front investments, takes the key up-front risks and stands to gain the most.

The author proposes what he calls a **leadership prism** - a technique for reviewing the expected surpluses for each player in the chain to identify who has sufficient surpluses to justify the investment needed to offset others’ deficits.

The aforementioned initiative of the movie studios is a case in point.

An extreme example is the introduction of electronic health records, which, despite the
availability of technology and the promise of a high-surplus benefit to patients, has taken many years to implement.

This is because one of the key adopters - physicians - were in negative surplus. They had little motivation to change a system that worked for them and would be costly to implement.

In this case, only government intervention in the form of a financial carrot-and-stick approach, has been sufficient to convert physicians’ value deficit to a surplus. There was no one else in the ecosystem that could do this.

The Right Timing

There are basically two types of innovators - **early movers** and **late entrants**.

There’s no doubt that being a pioneer offers a distinct competitive advantage, but only if all the lights are green. South Korea’s SaeHan Information Systems discovered this when it launched the world’s first MP3 player before digital music and the broadband technology to download it was readily available.

As history tells us, late entrant Apple picked up the prize by waiting until nearly all the pieces were in place before introducing their clever player and smart software to the market. In doing so, they made the iPod an instant success.

Adner has devised a **first-mover matrix** to identify the best timing for innovating. Using this, a would-be innovator assesses and compares how easy or difficult the innovation would be to produce (the “Innovator Execution Challenge) and the involvement and ability of others in the ecosystem to deliver their part (the “Complementor Co-Innovation Challenge).

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<tr>
<th>INNOVATOR EXECUTION CHALLENGE</th>
<th>COMPLEMENTOR CO-INNOVATION CHALLENGE</th>
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<td>LOWER</td>
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<td>Quadrant 1: First in Gets the Win - Baseline level of early-mover advantage</td>
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<td>Quadrant 2: Winner Takes More - Increased level of early-mover advantage</td>
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<td>Quadrant 3: Hurry Up and Wait - Reduced level of early-mover advantage</td>
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<td>Quadrant 4: It Depends - Level of early-mover advantage depends on which challenge is resolved first</td>
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So, for example, if the innovation would be relatively easy to introduce for you or potential competitors (“Lower” execution challenge), and equally straightforward to your co-innovators (“Lower” co-innovation challenge), then the first mover probably wins – as shown in the upper left quadrant.
On the other hand, if the execution challenge is low for you and competitors (anyone with the right technology can do it), but high for co-innovators who need more time, the early mover advantage is diminished, as Nokia learned. This is shown in the upper-right quadrant.

But suppose the scale of the challenge is low for your co-innovators but high for you. In other words, you'll be able to count on your co-innovators to deliver (since their task is accomplished relatively easily) but your competitors will, like you, find the execution challenge tough. Now you are in the bottom left quadrant: If you can be the first to innovate and have all your co-innovators lined up, you'll gain a significant early mover advantage.

Finally, in the lower right quadrant, we have a situation where the challenge of innovating is high for both you and your partners. It’s going to be tough and risky. There could be a lot of yellow lights. In that case, whether or not there is an early mover advantage will depend on your co-innovators succeeding with their challenge first, so that everything is in place when you introduce your innovation. If things happen the other way around – you’re ready but the others are not because the challenge is too demanding – there’s no early mover advantage. You’re back in the Nokia scenario.

“Wise innovators will locate the nature of their endeavor on the first-mover matrix and adjust their speed accordingly,” states Adner.

It takes willpower to resist the temptation to be first. But the prize doesn't go to whoever puts down the first piece in the puzzle because nothing happens until the entire puzzle is finished, when someone places the final piece in position.

Reshaping the Ecosystem

If you want to play the innovation game, be prepared not only to create a new product or service but also a new way of ensuring it comes to fruition - in other words, innovating the ecosystem.

The Electric Car Story

The supreme illustration of this challenge is provided by the story of the electric car which, over successive iterations, has failed to gain traction because of multiple red lights and negative surpluses for many of the players.

These include prohibitive vehicle costs, limitations of battery technology and consequent travel range, lack of infrastructure to support them, the time it takes to “refuel” and the ability of the electricity supply industry to meet peak demand.

Paradoxically, improving battery technology and reducing their costs creates a disincentive to buy now because newer batteries will be both cheaper and more efficient in the future.

Can this ecosystem be reshaped to change the lights to green and provide everyone with a positive benefit-to-cost surplus?
One company that believes so is Better Place which has developed a business model in which it owns all the batteries and replaces them in minutes at automated stations positioned every 25 miles or so along main highways. It also installs super-fast chargers in owners’ homes and workplaces.

If that sounds like a recipe for financial disaster, Better Place has produced a business plan that shows it will recoup costs from the “refueling” charges in the same way that cell phone usage and contract charges cover the subsidized price of the devices themselves.

At the same time, electric car prices will fall (because the battery accounts for around $15,000 of cost) and supply/demand for “fuel” will be managed by Better Place, using sophisticated software that can even sell electricity back to the power generators from unused batteries during peak periods of demand.

It remains to be seen if this radical re-engineering of the electric car ecosystem will turn out to be the solution that finally sees electric cars become a true mass market proposition, but $700m worth of investor backing says it will.

Five Levers

Adner identifies **five levers of ecosystem configuration** to remove red lights and create value surpluses for participants. These are encapsulated in five questions, which underpin the solutions devised by Better Place:

1. Are there elements that are tied together in the current model that can be separated to create new value, as occurred with the separation of the battery ownership from the car?

2. Are there elements that are currently separate that can be combined, in the way that the battery, the charging infrastructure and the linkages to the supply grid became?

3. Can existing ecosystem components be relocated, in the way that Better Place has taken responsibility for buying the “fuel” from power suppliers (which it then re-sells to users)?

4. Are there elements that could be added to make the ecosystem work more effectively? In the electric car example, this is provided by the complex software that manages the supply and demand for batteries and electricity.

5. Are there elements that could be subtracted? In this case, Better Place removed the pressure on the need for power generators to re-engineer their own infrastructure in order to be able to meet demand.
Apple’s Secret

An effective innovation system relies not only on the ability of each partner to execute their element but also that they do so in the right sequence. Adner recommends three key ingredients that minimize the likelihood of failure.

- First, the plan should adopt the smallest configuration of elements that can be combined and still deliver a unique proposition. He calls this the **Minimum Viable Footprint (MVF)**. For example, Better Place has small-scale experiments under way in Denmark and Israel.
- Second, the plan should follow a specific sequence in which additional elements can be added to increase a project’s value over time. This is called **Staged Expansion**.
- And finally, you should look for opportunities to leverage elements from one ecosystem into another - **Ecosystem Carryover**.

Apple is the arch-proponent of these techniques. For example, the iPod originally only worked in conjunction with its Mac computers (MVP) and then followed a process of staged expansion that brought in PCs and launched the iTunes store.

Subsequent iterations of the iPod and the combination of some of its features into new devices like the iPhone and the iPad are a perfect example of ecosystem carryover.

“It is Apple’s mastery of the principle of ecosystem carryover that has propelled it so far ahead of its rivals,” says Adner. “Its hidden point of differentiation has not been in elegant products but rather in its approach to leveraging its advantage from one ecosystem to the next.”

**Conclusion**

The new world of innovation ecosystems, Ron Adner tells us, is not so much about our ability to execute but about the others on whom its success depends.

Broadening our focus to incorporate these elements - the wide lens approach - enables us to map the entire ecosystem, identify our role within the ecosystem and its viability, the timing with which events must unfold, the obstacles to success and the path we must take to overcome them.

By knowing the risks, we multiply our odds of success.