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THE FUTURE
OF ENTERPRISE-CLASS APPLICATIONS IN A
NO-CODE WORLD

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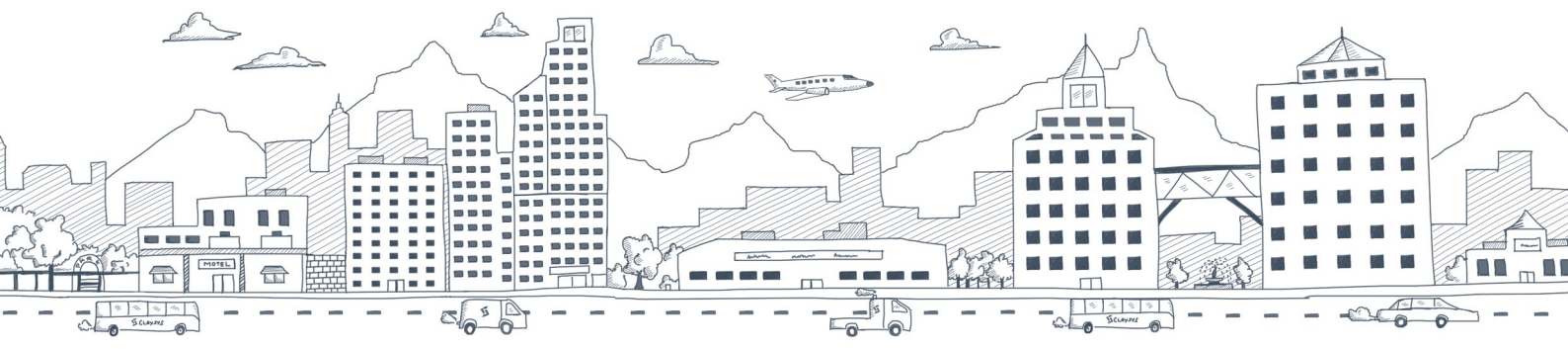

By now, cloud computing has woven its way into the fabric of our lives. It's extended beyond the technical world, reaching every consumer with a smart device. This computing transformation has not only taken hold, but is accelerating. It is causing fundamental shifts in how we do business. And at the same time, cloud computing is opening new doors that were only dreamt about just a few short years ago.

One of these doors that has opened wide has revealed a new world of applications that have, in short order, driven productivity, collaboration and competitiveness through the roof – Office 365, Salesforce, Workday, ServiceNow, GoToMeeting, Yammer, Box and on and on. Each one has placed enormous computing power into the hands of ordinary citizens and has abstracted away all the complexities that once required professionals to code and deliver.

This shift is becoming even more pronounced in the world of traditional application development. The idea that highly complex enterprise-class applications can be created without writing a single line of code is now reality. And the ripple effect across organizations that embrace this new paradigm is already being felt in the ways businesses operate and compete. It's important to understand the true significance of living in this new "No-Code World."

The Cloud is Everywhere

Wikipedia defines cloud computing as "internet-based computing in which large groups of remote servers are networked to allow sharing of data-processing tasks, centralized data storage, and online access to computer services or resources. Clouds can be classified as public, private or hybrid."

Practically speaking, cloud computing is simply the ongoing shift where organizations are migrating the management of their IT Infrastructure – and IT Applications – from their own maintained and managed datacenters and networks to the new model where the organization simply rents or leases the physical IT infrastructure owned and maintained by third party Cloud Service Providers (CSP). The movement from On-Premise computing to computing in the cloud is fully underway, with the exceptions becoming fewer and fewer as time marches on.

We can speak endlessly about the pros – and the cons – of moving to the cloud. Suffice to say, there are enormous benefits that justify this massive shift. Here are just a few of the upside effects.

Costs

The cost of managing your own On-Premise IT Infrastructure and Applications can be reduced exponentially simply through to the economies of scale Cloud Service Providers (CSP) create and then pass along through highly competitive pricing that is superior to internally managing your own IT Infrastructure and applications.

CSPs provide an on-demand resource that enables an organization to scale up and scale down what it rents form the CSP to meet its constantly changing business requirements. This, in turn, transforms IT Expenses to an Operational Expense instead of a heavy Capital Expense.

Security

While 'Security' is always a contentious issue, it can be argued that a CSP has in place a more robust and efficient security model. To remain competitive, they are required to invest in the evolving best practices against an ever-changing threat landscape, applying these best practices and the most up-to-date defenses across multiple client infrastructures – and do this in a substantially more efficient way than any one in-house IT organization possibly could. It's fair to note that the major security breaches and data losses across large US companies in recent memory support the position that CSPs are, in fact, much better positioned to manage security than any one individual IT department.

Efficiency and Speed

The cloud enables a whole new set of efficiencies than ever before. And in the process, it's aiding us in how quickly we can institute new changes. For instance, by leveraging CSPs, it would take just minutes to spin up new server capacity or adopt new business applications. The 'Try Before You Buy' approach for cloud-based business and enterprise-class applications allows for testing the viability before adopting innovative new business applications at practically negligible cost. When compared to the current model of investing into expensive business applications – custom or otherwise – that can easily require waiting for months or years before getting a chance to review the performance of any one application, this becomes a bit of a no-brainer.

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What is No-Code Anyway?

No-Code Application Development is an approach to building software applications where there is zero need for writing a single line of code such as .Net or Java. No-Code takes application development to a new level by making it infinitely easier for individuals with a clear understanding of a business challenge and placing in their hands all that is needed to build a software solution.

These people go by different names – Business Analysts, Power Users, Citizen Developers or simple Business Users. What sets them apart is their deep understanding of the business challenge and are generally technical in nature. A practical example would be someone who can go beyond building simple spreadsheets in Microsoft Excel, for instance, and make Excel do wondrous things. And, they do this without depending on highly specialized software programmers to translate their business requirements into an application. Today, these people reside in every company and represent an army of individuals positioned to embrace a No-Code world and build applications at perhaps a pace that can change how business is done forever.

As it's mentioned above, a good example of a No-Code Application is Microsoft Excel. But, it goes far beyond this to include Microsoft PowerPoint and the entire suite of MS Office applications. Microsoft SharePoint and Force.com from SalesForce are clearly other examples of No-Code driven application development. Business people do not depend on IT support to build whatever they want in Excel or PowerPoint, and can do it on their own. At the same time, adopting SharePoint or SalesForce, the IT organization only helps to facilitate provisioning access to these 'platforms' to their users. In the end, it all becomes 'self service'.

The success of No-Code models can be proven by simply contemplating switching off access to Excel or other software within an organization and forcing users to rely solely on major enterprise applications like SAP or Oracle. Clearly, users can't function by enterprise applications alone. Without spreadsheets and other user-created applications, operations in any organization could literally come to a standstill.

The No-Code Revolution

Imagine being able to build virtually anything? And do it without writing a single line of code? It's not a stretch to say that some of the most complex enterprise-class applications like Salesforce or SAP can be written without the need for any coding. In fact, at Claysys, we've done just that. As an exercise to see how far No-Code can take us, we set a team to rewrite Salesforce and were able to accomplish this feat in just three-man weeks.

This is possible because of Claysys' "metadata approach." One of the most powerful aspects of No-Code Application Development is that it leverages a metadata-driven architecture, which, as mentioned above, hides the complexity of all underlying code. Metadata is simply data that describes data. HTML is a perfect example. HTML is simply text described by using certain text tags, which in turn describe the formatting of a web page. All the complexities are hidden and unnecessary to see or to deal with. A Web Browser is served as an HTML file from a Web Server, after which the textual HTML data is rendered into the visual, fully functional Web Page - all without the need to write volumes of code to create a page for a web user's interaction.

Here are some of the awesome possibilities a metadata architecture enables in a No-Code world –

Anyone Can Build Powerful Applications

When the creation of an application is possible through a 'Drag and Drop' and 'Point and Click' interface, always without needing to write low level cryptic software code, the number of people who can participate in the creation of real business-changing applications increases exponentially. Anyone who understands a specific business challenge and who can create more than a simple spreadsheet is now empowered to drive impact in ways previously reserved for traditional developers and programmers.

Remarkable Speed and Productivity

Such No-Code metadata driven application development models enable the creation of a fully functional application exponentially faster. It has been proven to be at least 8 to 10 times more productive and faster as compared with the traditional custom coding model.

Rapidly Improving and Evolving Applications

Avoiding the layer of pushing requirements down to a developer or software programmer reduces the changes or misinterpretations of business requirements of ongoing change management significantly, thus improving the turnaround time of getting working functionality available to the business users more quickly and, more importantly, getting it right the first time.

Applications That Last Forever

Defining the structure and logic of a software business application in metadata ensures that the application is 'Futureproof'. This means that, in a metadata environment, applications created with earlier versions of the No-Code platform continue to work with each new updated version of that No-Code platform. That's because all newer versions are automatically backward compatible with the metadata of all previous versions, allowing any older application to continue working in the latest versions of that No-Code platform indefinitely.

An excellent example is the latest versions of Microsoft Excel, all of which continue to support your old versions of Excel files created way back when with Microsoft Office 95. That was almost 20 years ago. Another solid example are all those HTML pages created back in the nineties, each one continuing to work and render just fine in modern web browsers like Google Chrome, which did not even exist at the time the early HTML pages were created.

Not only does this save all the headaches involved in continually updating your applications, but the expense of doing so vanishes. This makes everyone happier – the users who need it now and the folks in finance who don't like having to pay for it.

A More Secure World

No-Code metadata driven applications also have an architecture better suited to ensuring exponentially better security and a more elegant way to ensure the most up-to-date security protocols. Since the actual definitions of every Form and Module within an enterprise application are maintained as metadata, there is a single Forms or UI Rendering Engine that renders the front end of the Forms at runtime. This architecture allows for all security hardening to be done at the Form or App Rendering engine level, ensuring that every Form rendered inherits the most recent security best practices.

As new vulnerabilities are identified, the Form Rendering engine can be updated to defend against the new vulnerabilities, after which every other existing form and new form created inherits the exact same protection. This No-Code metadata driven architecture security model is not available for the hard-coded traditional applications that exist today. In the hard-coded world, when new vulnerabilities are identified, each and every form created in .Net or Java, for instance, has to have its code modified to incorporate the new defenses necessary to protect against these newly identified web form vulnerabilities. It's obvious that this is incredibly painstaking and, in most cases, is just not practical or feasible to do.

Foreseeing the Unforeseen

Lastly, with the structure and logic of a software business application being defined using metadata, future renderings of business applications conceived and built today can one day be presented on front end platforms that haven't even been invented yet.

An easy example of this are books written at a time when electronic devices did not even exist that are now being rendered on eBook devices. An eBook device has been built to support rendering the alphabet on this electronic device, recreating the experience of reading on an electronic screen what was once in a paper book. When the Bible was written, nobody envisioned the future existence of a book, let alone an eBook. A metadata architecture is just like the parchment of that first written Bible. It's built to render your application on any future platform not yet conceived.

The Hard Code Barriers

Today's CIOs want to get out ahead of the business. Doing business the same old way in the hard-coding world presents extraordinary obstacles to building scale –

Total Cost of Ownership

Organizations and their IT Departments are struggling with the total cost of simply maintaining the existing suite of enterprise applications, as the cost of such maintenance increases every year, without significantly improving the applications or adding additional capabilities.

Change Management

As organizations react to market changes or competitive challenges, they're required to modify the behavior of their existing enterprise applications. Introducing these changes are always painful, time consuming and expensive, only to serve as a barrier to being more responsive and agile.

Since the existing paradigm of building enterprise applications upon custom coding platforms requires highly skilled programmers, it creates an ongoing challenge to maintain these applications with new programmers when the experienced programmers who built or customized these applications leave the organization. This introduces an additional layer of complexity and risk when attempting to change or modify the existing business applications.

Doing More with Less

While IT Departments struggle to simply maintain the status quo of their existing enterprise applications, they are also challenged to react and modify applications using the same resources and constrained budgets. This ongoing challenge to 'do more with less' is another justification to transition to a No-Code metadata driven model for building and maintaining enterprise applications.

It's a Bright No-Code Future

There is a way forward that can have a ripple affect across the entire enterprise in a No-Code world. For instance, if an organization reviews the benefits of a slow but sure transition to the cloud computing paradigm, without the need to change anything else, significant capital and operational cost benefits can be leveraged through this transition.

Adopting No-Code metadata driven models for application development will significantly increase the efficiency and productivity of the existing resources available to an organization, to deliver greater functionality and innovative new applications, without needing to invest in advance of tasting any benefits, as they are forced to do today.

Adapting to Change Efficiently

Even if an organization is willing to absorb the cost to make changes to existing enterprise applications, they still face usually unacceptable timeframes for realizing these changes with the current custom coded model. All organizations must be able to react to market trends and competitors quickly and efficiently to survive and grow in today's hyper-competitive world. Such agility can only be achieved through leveraging the 'on-demand' capacity model of the cloud, along with the No-Code metadata application development model.

When departments and power users are presented with a 'self service' type option to introduce changes to their enterprise applications, this allows the delegating of authority and ability to quickly make changes directly to the frontlines of an organization. This is infinitely more sensible, more efficient and more cost effective than the centralized model that exists today, which is painstaking, high risk, expensive and unpredictable. Very often, by the time IT introduces an application change requested by the business, the business need most likely has changed or made redundant because of the slowness in delivering the change.

Adopting the Best of the Cloud

Cloud computing presents a tremendous opportunity to IT departments to bring a more agile, efficient and cost effective way to meet the needs of the business. While there's no need to plan a 'big bang' type of migration to the cloud, the transition can be a more deliberate, stepped approach. It can easily be a logical transition. In the cloud paradigm, IT could spin up additional server capacity in minutes if an application, for example, moves from a few hundred users to several thousands of users. For that matter, if the peak load of users is only during specific periods of time, IT can again spin up additional capacity only for times when high workloads are expected. The beauty of the cloud is you simply pay for what you use.

Planning for the Future

While it may be intuitive to review the potential benefits of leveraging the cloud and the No-Code, metadata driven application development model, it's not really practical to simply rip out huge existing enterprise applications and replace them. There are large investments in in time and effort that went into building and implementing existing applications. Rebuilding re-build these could introduce potential risk and significant migration costs.

A recommended approach would be to first classify existing applications into what is termed 'Systems of Record' and 'Systems of Engagement'. Systems of Record are the entrenched enterprise applications like an SAP or an Oracle Financials or a Core Banking system. Systems of Engagement, on the other hand, are the systems developed to extend the access to these Systems of Record to new channels and new user communities. Below are three examples of Systems of Record and their complementary Systems of Engagement –

Systems of Record	Systems of Engagement
Core Banking Systems used by Bank Employees across branches	Internet Banking Exposed to Banks Customers for online transactions
Financial Systems used by a closed group of internal employees	Procurement process automation and Order management systems exposed to clients, vendors and partners
HR & Payroll Systems used by HR, Finance and Accounting Users within a company	Expense Reimbursement and Absence Request systems exposed to all employees

Once the classifications between Systems of Record and Systems of Engagement are made, the Systems of Engagement present the most immediate and viable opportunities to adopt this new cloud-based No-Code application development paradigm. In Claysys' experience, 90% of the requirements for incorporating changes to enterprise applications are most typically found in the Systems of Engagement. This means that the best return on investment and the greatest initial success for any organization wanting to start down this path would be a clear focus on Systems of Engagement.

About Claysys Technologies

ClaySys Technologies is the developer of one of the leading No-Code Metadata application development platforms in the market. Our company was founded to create the most modern technology platform to address the painstaking world of traditional software application development.

For more than two decades, we have been in the business of developing line of business applications for large enterprise clients around the world. Creating applications that continually needed to be upgraded or migrated led us to an architecture that is truly "futureproof". And by creating this No-Code platform, we significantly improved security and are enabling thousands of business people without formal software development experience to build and maintain complex business applications.

For more information, please visit www.claysys.com.