Whitepaper

Turning Application Development Upside Down to Create the **Software-Driven Enterprise**

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May 2019

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You've heard the quotes, you've read the article.

"Software is eating the world."
Marc Andreessen

"Every business is, willingly or unwillingly, a competitor on a software playing field..."
The Harvard Business Review

"Every business will become a software business..."
Satya Nadella, CEO of Microsoft

While there is ample evidence that these assertions are correct — that software will now play a critical role in your organization's ability to compete — most organizations are struggling to transform both the role of software in the organization as well as how they view themselves.

It is, of course, much easier to read about the transition that must take place than to make it real.

As the Harvard Business Review article makes clear, however, it isn't that every organization will magically transform itself into a Microsoft or Google. Instead, the message is that organizations must begin to embrace some of the ethos, mindsets, and approaches of software companies so that they can compete in a world in which competitive value and differentiation are often manifested in a piece of software. The challenge for most enterprises, however, is that to do so they must overcome long-standing and heavily entrenched perceptions about the nature of applications in the enterprise.

It is a daunting task. But it is also a fundamental transformation that enterprise leaders must take-on if they are to transform themselves into software-driven enterprises.

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Why Current Approaches to Applications are Broken

Part of the problem with the every company is a software company trope is that it over-simplifies the situation. Yes, there is almost no question that your organization will compete — at least in part — based on its ability to create differentiation and enable better customer experiences via the software you deliver and expose to your customers.

But that is nowhere near the whole story.

Enterprises now use software to support and enable every business process and every element of the customer journey. Much of that software-enabled work has been the traditional domain of the enterprise IT function.

And therein lies the rub.

For most IT application people, it doesn't feel like much of anything has changed. From their perspective, the way that they have handled applications up to this point remains sufficient: Define a requirement, decide if you should buy a commercial off-the-shelf application or build an application from scratch, and then either buy and deploy or build and deploy.

The challenge, of course, is that as customer expectations continue to rise, as software has become a competitive differentiator, and as the pace of the market has quickened, this slow, methodical approach to leveraging software in the enterprise has come under intense pressure – and created a massive backlog of unmet demand.

Many organizations have responded by adopting things such as agile development methodologies, implementing so-called continuous integration/continuous deployment approaches, and embracing DevOps philosophies.

All of these approaches have helped make the application development process faster and more iterative. But it also hasn't fully closed the gap.

As customer expectations continue to rise, and created a massive backlog of unmet demand, it is the rapid development, deployment, and adaptation of applications that will deliver value in the modern enterprise — and the traditional approaches to software delivery, at least by themselves, cannot keep up.

To become a software-driven enterprise, organizations must find another way.

The demand for automation and software-powered interactions has permeated into every crevice of every business process and customer engagement. More importantly, customers, employees, and partners alike now demand that these software-powered interactions be integrated and deliver a holistic experience tailored to their specific needs at every point on their journey with the organization. And they expect those experiences to be consistent regardless of channel, location or device.

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The Low-Code Revolution and its Trade-offs

To a certain extent, this isn't a new problem. Enterprise business users have long-clamored for more software and automation than IT could deliver. This pent-up demand led to early generations of solutions designed to help organizations close this gap — things like Lotus Notes and Microsoft Access, among a sea of other options.

These initial solutions enabled non-technical users to create simple applications on their own and, to a degree, they helped solve the problem. But they also came at a cost to enterprise IT organizations in the form of application sprawl, redundant efforts, and security and privacy risks.

These solutions eventually gave way to a new approach that promised to enable non-technical users to create applications and to speed development: so-called **low-code** development platforms.

While these new platforms overcame many of the issues earlier efforts faced and represent a huge leap forward in helping organizations respond to their current challenges, they, too, often come with a series of trade-offs.

These new platforms typically have a wide range of supported functionality and integration, but also generally reach a point in which

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Code-generation based low-code platforms require that any changes to the application result in the need to regenerate and redeploy the application.

The declarative, model-driven low-code development platforms has the benefit of enabling real-time adaptation and skips the code-generation challenges, but also requires that organizations leverage the platform's run-time environment, which is typically delivered as a Software-as-a-Sevice (SaaS) solution.

organizations must do further development via hand-coding. That's not necessarily a problem, but it can often cause a slow-down in developer productivity and introduces maintenance risk.

These solutions also typically come in one of two forms: **code-generation** or **SaaS-based model-driven** environments.

Code-generation platforms do just what it sounds like: they have a graphical development environment that enables users to define an application and then convert that intent into some form of code on the back-end. This approach typically offers organizations flexibility in terms of where and how they deploy the code, and the comfort of knowing that an IT team can always manipulate the code manually, if necessary. But it also means that any changes to the application result in the need to regenerate and redeploy the application.

The other option is declarative, model-driven platforms in which the development environment is coupled with a run-time environment that dynamically interprets and presents the application to its consumers. This architecture has the benefit of enabling real-time adaptation and skips the code-generation challenges, but also requires that organizations leverage the platform's run-time environment, which is typically delivered as a Software-as-a-Service (SaaS) solution.

While both types of low-code development platforms have made significant progress and are beginning to change the way enterprises are approaching development, these limitations have, in many cases, also hindered enterprise adoption.

The reality is that enterprises recognize that they need to change how they approach development and see the promise that low-code platforms offer, but they want an approach that will allow them to have it all. They want a platform that will offer them the speed of a visual development platform, the ability to engage their business users in the development process, the freedom of hand-coding, the flexibility to run in any environment, and the adaptability to rapidly change applications as customer expectations or market needs shift – all with the control and governance that the enterprise demands.

The march to becoming a software-driven enterprise demands no less.

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AgilePoint and the Age of the Adaptive & Immersive Applications

It can be challenging to describe AgilePoint. On the surface, they are one of the many low-code application development platforms now on the market.

At the same time, however, they eschew many of the approaches — and, therefore, side-step many of the limitations — that most low-code platforms have adopted.

For instance, the platform leverages a declarative, model-driven approach, but because of its XML-based architecture the entire run-time environment is transportable enabling organizations to deploy it on-premises on their own infrastructure, in any public cloud, or consume it as a SaaS service.

The company's goal was to create a development and run-time environment that would enable enterprise organizations to create virtually any type of application, whether that be an internally-consumed, business-process oriented application or an external, customer-facing transactional application.

Moreover, the platform utilizes what it calls a **multi-layered, platform-driven extensibility model** that enables an extensive amount of customization options that all exist within a consistent development framework. This architecture also enables solutions to traverse multiple public clouds or bridge between on-premises and cloud-based application domains.

This approach enables non-technical users (such as the so-called **citizen developer**) to create fully functional, but localized applications, while still giving professional developers the freedom and flexibility to create integrated, complex applications, and even enables them to override the engine itself, using the platform's publisher/subscriber mechanism, to get their desired functionality. Even this level of customization, however, is done within the platform's framework, ensuring on-going compatibility even as the underlying platform evolves.

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The turning point for the company was a long-ago realization that the fundamental nature of business was shifting.

Driven by both changing customer expectations and the way organizations must, therefore, function, the company recognized that modern workflows would be much more interconnected and dynamic – and that to meet these expectations, they needed to seamlessly flow between internally and externally-facing process elements. And while these workflows transcended internal and external processes, and on-premises and cloud-based architectural components – all of that complexity must be transparent to the various consumers of the application ensuring a completely frictionless and individualized experience.

Moreover, it realized that the fundamental architecture upon which most applications were built could not accommodate these types of fluid, continually changing, and highly interwoven workflows — whether they were internally-focused or customer facing.

The company, therefore, created its model-driven, application architecture with the intent of enabling organizations to build immersive applications that were aligned to and embedded within these modern workflows — exactly when and where employees and customers needed them most.

Finally, the company recognized that as organizations seek to become software-driven enterprises, the nature of software development must also change.

To meet changing customer expectations, modern workflows would be much more interconnected and dynamic. They needed to seamlessly flow between internally and externally-facing process elements, and on-premises and cloud-based architectural components.

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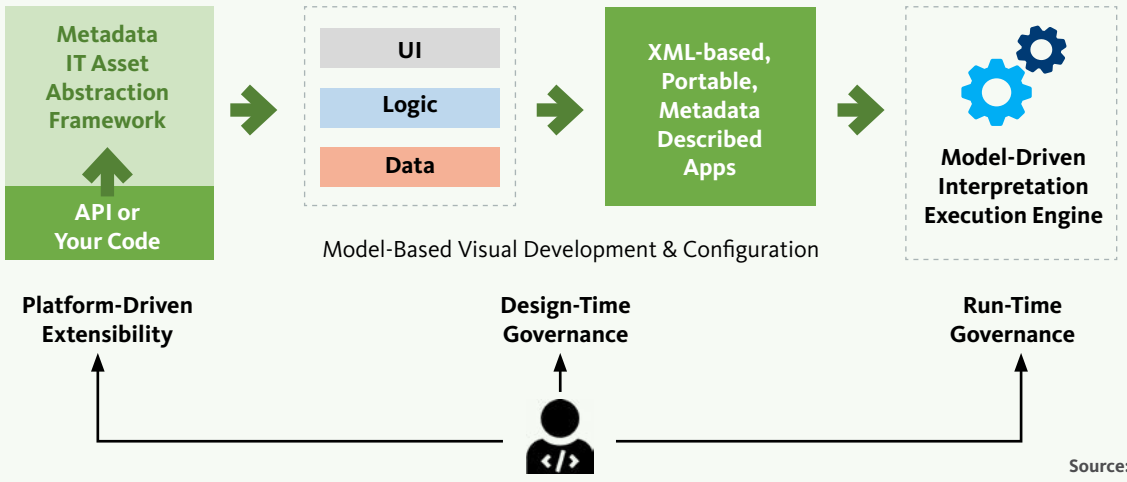
AgilePoint Adaptive Model-Driven No-Code/Low-Code Architecture



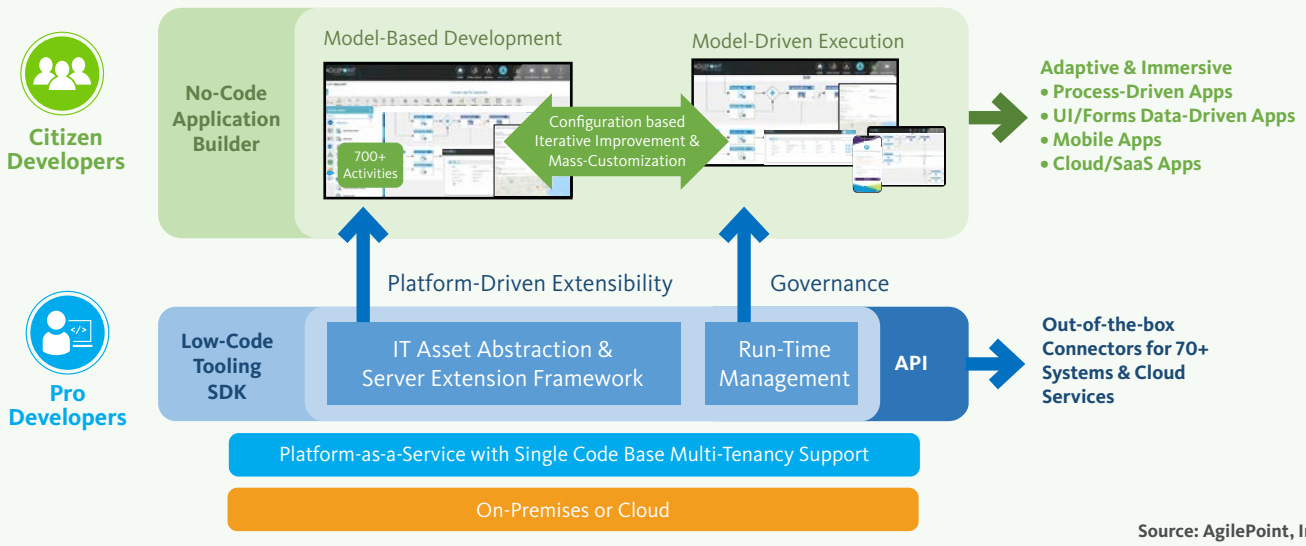
Source: AgilePoint, Inc.

The traditional lines of demarcation — "the business" defined requirements and IT created applications, customer applications were separate from internal applications, that applications should serve only the specific needs of a given business process, and so on — have not only become quaint, they have become a hindrance to any organization who now seeks to create competitive advantage from their software development activities.

To thrive in this new world, organizations need an application development platform that will enable them to:

- Distribute development responsibilities throughout the enterprise
- Rapidly adapt those applications as needs change – both manually and dynamically using automation and artificial intelligence
- Develop without limitation or constraint
- Seamlessly allow workflows to transcend the customer experience and their supporting business processes
- Remove friction by integrating the resulting applications into current-state business workflows when and where employees or customers engage with them, without having to "rip and replace" legacy applications
- Significantly reduce the creation and accumulation of so-called technical debt, by abstracting business logic and experiential design from the underlying technical components of an application

How AgilePoint Enables Turning Application Development Upside Down



Source: AgilePoint, Inc.

The Intellyx Take: Turning AppDev Upside Down

Enterprise organizations must navigate a treacherous landscape as they seek to reinvent themselves for the digital era.

I believe that the mantra that every organization is now a software company can become a dangerous distraction if it causes enterprises to lose sight of their customers and the value they seek to deliver to them.

Nevertheless, it is becoming difficult to refute the premise that software is now an essential driver of business and competitive value and that, therefore, an organization's software development capability is now a strategic asset. This shift in importance has transformed the enterprise's traditional approach to software development from mere business-as-usual to an organizational liability.

Enterprise business and IT leaders must, therefore, act swiftly and boldly, and turn their application development capability upside down. They must step back and take a fresh look at everything from customer expectations to the revitalization of their business model and ask how their software development capability must change to accommodate their present and future needs.

Most importantly, they must seek out and adopt new mindsets and tools that will enable them to build software applications that will both deliver competitive value and become seamlessly integrated into the organization's operational fabric.

It's an undeniable challenge and will be a long, transformational road for many organizations. And there's a good chance that adopting next-generation platforms like AgilePoint will be a pivotal part of that transition.

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About the Author

Charles Araujo is an industry analyst, internationally recognized authority on the Digital Enterprise and author of The Quantum Age of IT: Why Everything You Know About IT is About to Change.

Charles Araujo

He is Principal Analyst with Intellyx, the first and only industry analyst firm focused on agile digital transformation. He has authored three books and published over 100 articles. He is a regular contributor to CIO.com and has been quoted or published in magazines, blogs and websites including Time, InformationWeek, CIO Insight, NetworkWorld, CIO & Leader, IT Business Edge, TechRepublic, Computerworld, USA Today, and Forbes.

He is the founder of The Institute for Digital Transformation and a sought after keynote speaker having addressed over 10,000 business and IT leaders in 10 countries over the last several years. He is passionate about the power of technology to deliver competitive and transformational advantage to organizations and in the critical need to develop next generation "digital leaders" that can transform their organizations into Digital Enterprises. He is presently at work on a new book entitled, Thinking Digital: How to Thrive and Win in the Digital Era, which will explore this topic in detail.

Prior to joining Intellyx, Charles served as an advisor and consultant for nearly twenty years, leading numerous large scale transformation programs for Fortune 1000 organizations and government institutions involving as many as 10,000 program participants. In his early career, he spent many years working in and with IT organizations in the healthcare, financial services and aerospace industries, directly leading teams of more than 100 members.

About AgilePoint

AGILEPOINT

Headquartered in Mountain View, California, AgilePoint is a global, established, disruptive technology provider that is accelerating the emerging digital business paradigm through its flagship product, AgilePoint NX.

AgilePoint NX, a no-code/low-code application platform with a web-scale, cloud-ready architecture, is democratizing and transforming how organizations of all sizes are approaching how they build and maintain applications, the forefront of digital transformation as companies looking to transform themselves into customer-led organizations.

AgilePoint customers use AgilePoint NX to create applications spanning a wide range of use cases, complexity, including core applications. AgilePoint's innovative and unique no-code/low-code approach helps organizations avoid the legacy problem by building applications that would afford both simple implementation in the short term and the avoidance of legacy technology debt in the future.

AgilePoint is also known to offer the industry's most flexible 'pay as value grow' pricing and contract terms. AgilePoint has more than 2,000 global customers, including Fortune 100 companies and SMBs.

Visit www.agilepoint.com for more information.