PaaS and Agile Development

The Application Platform for Enterprise Transformation

Time-to-market and time-to-value in businesses, organizations, and teams have taken center stage as we all strive to improve and automate our processes, and rely heavily on software to do much of our heavy information lifting. After all, what is software, except a series of smart, automated information management processes?

Agile development methodologies are a response to the changing nature of bringing software ideas to real-world fruition. In short, agile at its heart is about taking business processes and translating them to discrete applications that solve information management issues really fast. These factors make Platform-as-a-Service (PaaS) and Agile development a match made in heaven.

This whitepaper covers everything a CIO, software product manager, scrum master, or architect needs to know about leveraging PaaS as part of an Agile strategy.
An Old Way of Thinking about Something New

Developing web applications for business with Platform-as-a-Service (PaaS) solutions is like fitting users with a tailored suit for a special occasion.

As a developer you are the tailor, with access to configuration-ready suits and the ability to make edits to a suit as needed. You work with your customer, understand their needs, and guide them to the right configuration for their purpose. You help them try on the closest suit possible to what they need, and then you do your finishing work after you’ve met. When your customer comes back, together you try on the fitted suit and hopefully it is exactly what they need at that time. As that customer grows (or shrinks), you can help modify the suit so they get the most life out of it as possible.

What don’t you do? You don’t weave and dye your own fabric. You don’t re-invent cuts or create your own button holes. You don’t make your own buttons. In short, you don’t start from scratch. The result is that suits are made faster and relatively less expensively, and your customer gets what they want.

Developing for the Enterprise Using PaaS

As more businesses and organizations begin to adopt agile methodologies to improve customer responsiveness and rapidly develop applications, it would seem that software tools have to be agile-ready. So far, most of the focus on those agile tools happens to be on the project management and delivery lifecycle phases, but what about the actual development of applications? Developers must examine how application creation tools can best support agile software development as a business strategy.

One example that comes to mind is the development of internal business applications. In the past, it was virtually impossible to build custom, enterprise-grade applications for every department. Now, because the current generation of users is so web savvy, having to deal with hard-coded legacy database applications and spreadsheets is not only ill-conceived and impossible to manage, it can ultimately lead to increases in operating costs and be rife with error.

The response from IT has been to decouple the information from the application. Such is the nature of SOA/XML. That’s fine for the IT developer, but completely unusable from a departmental end-user standpoint – the people who have to use the data and face the information management challenges on a daily basis. They still have to rely on an in-house development resource or highly paid consultant to get to that data in a meaningful way that integrates with their work processes.

Platform-as-a-Service (PaaS) can be the ideal solution to solve that problem by making it extremely easy to design, develop, adapt and service web-based applications, while leveraging a comprehensive enterprise-class service environment. It is so easy to build apps that a

“To make communications as effective as possible, it is essential to improve the likelihood that the receiver can jump the communication gaps that are always present. The sender needs to touch into the highest level of shared experience with the receiver. The two people should provide constant feedback to each other in this process so that they can detect the extent to which they miss their intention.” – Alistair Cockburn, Agile Software Development, 2001
significant amount of development and changes can be realized in a single meeting or overnight. This gives the user access to new functionality almost immediately. And very savvy users can even make the modifications themselves – simply by changing configuration options – offloading minor development tasks from the coders.

Note that we’re not advocating business users developing applications, but rather that our skilled developers be used for development efforts that matter.

The Agile Manifesto in the Eyes of PaaS

So how does PaaS relate to Agile methodologies? Let’s start with a point-by-point assessment as to how LongJump sees PaaS technologies directly and indirectly address the principles of the Agile Manifesto, drafted in February of 2001.

“Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.”

PaaS can satisfy this principle through a rich design and development environment that is geared towards rapid application delivery. Specifically, the ease in which you can model relational data, rules and workflow processes before writing a single line of code means that you can sit with your customer and their data and map out processes as they articulate their workflow and essentially finish a usable model by the time the meeting is over.

Because customers can use these applications immediately, they can get a handle on their data and processes, while also providing input to developers about additional use cases or modifications that will improve how they use the application.

“Welcome changing requirements, even late in development. Agile processes harness change for the customer’s competitive advantage.”

PaaS applications encourage continuous improvement. With the core platform set, most changes require virtually superficial modifications or focus on integration issues, rather than the basic operations, user interfaces, and data processing functions. This allows customers and product developers to make any necessary course corrections or try and institute new concepts quickly.

“Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.”

Bringing applications into production is greatly simplified by PaaS. That’s because the majority of “tuning” can happen live as soon as developers execute the change. With PaaS offerings that support application and module publishing, more major updates can be deployed to all or to a portion of customers, or can be stored in a catalog for customers to perform their own updates. And because applications are all run on the core platform, they cannot break any major functionality.

“Business people and developers must work together daily throughout the project.”

The beauty of PaaS is that because developers and business people can both use it to build applications, the time spent together can be more applied to execution and process improvement rather than starting from a blank slate. This provides greater appreciation of time spent and delivering more results. It also offloads minor changes for end users to make themselves.

“Build projects around motivated individuals.”

PaaS is not for every developer. If a developer wants 100% control over their applications, they likely won’t accept a PaaS environment. If however, the developer
PaaS and Agile Development

is interesting in “getting things done” in a cost-effective means, and not focused on perfecting every pixel, a PaaS can be a major toolset in which can enable developers to quickly turn around solutions, rather than inventing commonplace features.

“Give them the environment and support they need, and trust them to get the job done.”

This is a key point when selecting a PaaS for your agile environment because not all PaaS solutions are created equal. Developers need to be able to manage their development in a familiar environment for testing and team development scenarios. It’s also important to identify PaaS technologies that support check-in/check-out of application elements, the ability to run independent instances for developer sandboxes and pre-production testing, and also for developers to manage their own application deployment to customers in the form of targeted or sweeping updates.

“The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.”

With PaaS, as mentioned earlier, face-to-face meetings can be a means for face-to-face development where the customer and developer can sit together and create applications live. This goes beyond just conversation, but leads to software that is built more like how consumers select a new car or a new suit. And that is also the effect: a tailored application to meet the needs of the user for however long they need it.

“Working software is the primary measure of progress.”

From day one, PaaS applications can be of value to users struggling with data and process management. Solving just basic issues like collaborative data, transaction

PaaS in the Cloud Lexicon

As cloud computing terms begin to finally shake loose their initial buzz factor, more and more concrete terms are emerging.

IaaS, or infrastructure as a service, is very clear in meaning. These are servers and storage services provided over the internet, often at utility-based pricing. The idea is that as a developer, you do not need to manage a server or storage or worry about backups and scalability to deliver high availability computing.

PaaS, or platform as a service, currently owns a wider range in definition. PaaS can include basic application development elements that essentially equate to “hosted runtime libraries” where developers can code and run applications in the cloud. PaaS offerings can also be as comprehensive as needed to include complete architectures and frameworks that feature support for pre-built UIs, reporting, data processing, extensibility, user management, and even creating a distribution-centered marketplace to offer applications for sale. Because the platform itself is managed through the web interface, there is a large potential for end users to make “self-service” configurations that can best adapt to their work.

Some PaaS solutions, like LongJump, will even allow for private cloud PaaS, where you can take the entire platform and install it behind the firewall or in a private hosted instance and essentially own the whole architecture. This is an important aspect as some industries require greater control beyond the openness of the cloud.

Some PaaS solutions, like LongJump, will even allow for private cloud PaaS, where you can take the entire platform and install it behind the firewall or in a private hosted instance and essentially own the whole architecture. This is an important aspect as some industries require greater control beyond the openness of the cloud.
managing, or reporting saves hours of time the moment these apps are introduced. As processes become more mature and the need to tack on additional features arises, PaaS enables on-going, realizable progress.

"Agile processes promote sustainable development."

While agile processes can promote sustainable development, it actually makes more sense when the development processes have reached a certain maturity level. This means focusing less on the primary core technologies and more on adaptation and refinement of that core. For example, you should only need to build a policy engine once, but be able to use it throughout your application suite for the entire organization. That’s the PaaS approach: to provide developers (agile or not) with a core set of pre-built tools that they can rely on.

Also, once objects are built in a PaaS, they can be reused over and over again, including the data, so developers do not need to build integrations to another system and all the past rules defined for that object apply.

"The sponsors, developers, and users should be able to maintain a constant pace indefinitely."

Software is no longer about final product. Instead, it must mirror the consistent changes and improvements organizations make within their processes. PaaS allows for that type of constant development and constant user feedback, but it does so by reducing the need to modify or rebuild or rerelease core aspects of the platform.

A primary benefit with PaaS is that because of the portability of objects and their data, there is no such thing as a “legacy application.” In fact, the idea of an “application” changes from a full deployed monolithic application to a collection of PaaS elements that can be reconstituted, or even concurrently used in multiple applications.

---

**LongJump’s Benefits to Agile Development Teams**

- Flexible development environment including ability to build and check-in code from developer instances using SVN
- Robust packaging facility for moving objects, code, rules, workflows, administration configurations between tenants and platform instances
- Rapid prototyping and end-user configuration of applications with complete, live browser-based IDE, including database modeling, process and workflow definitions, user interface configuration, and built-in reporting
- Highly extensible language based on Java, including Java APIs, Ajax UI calls, and a complete RESTful API for alternate control of platform
- Ability to run on a public cloud (LongJump.com) or behind the firewall with self-hosted instances
- Facilities for integrating backend business applications with front-end customer portal applications using Dynamic Sites functionality

"Today, let’s write a program simply. But let’s also realize that tomorrow, we’re going to make it more complex, because tomorrow it’s going to do more." - Ward Cunningham, “The Simplest Thing that Could Possibly Work,” 2004 (http://www.artima.com/intv/simplest.html)
“Continuous attention to technical excellence and good design enhances agility.”

Good design rewards us not with the immediate solution, but for the future solutions to come. With a solid architecture in place, and a logical path for extending that framework, you can achieve greater agility.

Likewise, a comprehensive PaaS will meet current needs, but it must adapt to changes and customer requirements as well. That said, almost any PaaS that has been proven in real industry situations is a major step up in maturity for most development organizations.

“Simplicity--the art of maximizing the amount of work not done--is essential.”

As noted earlier, PaaS puts the focus of application projects on quickly meeting customer requirements rather than re-inventing technologies. This enables an IT organization to either do more with less, or do more that they haven’t been able to before. With common building blocks in place, PaaS maximizes everyone’s productivity towards new challenges.

Additionally for each user, they may have multiple applications to contend with. But working off a common framework, they do not have to learn separate tools in a homogenized data management and analysis portal.

“The best architectures, requirements, and designs emerge from self-organizing teams.”

For those in the higher ups of an organization, it may seem daunting to hand over control of application development to focused teams, but this principle of agile methodology has a lot of merit. After all, as software is a translation of business processes, those closest to the process have the best opportunity to replicate it. With the guidance of developers who are not encumbered by having to do a lot of busywork, solutions that are more adaptable and better thought out are sure to emerge.

The benefit of a PaaS in this environment is that it is all centrally located and managed in a single place. PaaS solutions like LongJump let developers develop in their own environments, but ultimately, get checked into the larger production environment where users gather. This allows for greater compliance and oversight by “super architects” who can monitor the objects being created.

“At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.”

While this tenet of agile development is organizational, PaaS can transition your team into this mode easier. One likely occurrence in any agile environment is that two teams, because they are focused on their own solution, will end up needing a similar piece of application construct and may not know of another that exists -- perhaps a bit of logic or a common data object or even a validation script.

A PaaS environment can become a repository or library of useful application elements that are interconnected and live. Updating an element means that all applications using that element are updated as well in real time. So while teams can meet about tuning and adjusting behavior, code and app elements can do so seamlessly.

PaaS: More than a Framework

PaaS is unlike a developer framework such as J2EE or .NET because, when built to be comprehensive, a PaaS provides a complete end-to-end solution from design to deployment to maintenance. In fact, the entire lifecycle of the application can be address within the PaaS.

Additionally, PaaS takes the framework concept one step farther in enabling a base user interface that is fully extensible through code. That interface includes everything a user needs to access information, build real-time
dashboards, create business rules, schedule processes, manage auditable workflows, and share data.

Some PaaS offerings, such as LongJump, also offer the ability to create complete web portals for publishing and working securely and publicly over the web.

**Accelerating Agile Adoption with PaaS**

As more organizations adopt agile practices they want to rapidly extend these benefits across their enterprise. However, agile adoption is challenging and teams can often start regressing backwards after a few iterations. Using PaaS, organizations advance across maturity models to accelerate their agile adoption and avoid the costs of regression. How?

Within a PaaS there is so much ready-made architecture available that it bypasses the need to build core processing operations from scratch. And because it is a shared environment, improvements to code and application elements are fully accessible to all teams.

**Success for Agile Teams**

A sign that agile has achieved escape velocity in an organization is how it affects groups outside the developers. Marketing, sales, executive management: these user groups are not only part of the agile process to improve the creation and delivery of value, they are the chief benefactors. However, many agile teams struggle with meeting those customer needs.

PaaS puts the developers and users in the same boat – and in many situations – accomplishments and changes can happen live on the system with both sides working out application behavior.

And they can happen fast. In fact, it is completely conceivable for a user to frame the application they want directly on the PaaS and take the model to a developer to focus on solving integration or custom logic problems.

This means less time spent deciding how a label or button should be named or what color it is.

**Summary – The Living Application**

Many teams new to Agile struggle with when their software is complete. What is “done?” Instead, there may be a better approach to “doneness,” and that is accepting that applications are rarely “done” because they represent the continued evolution of human processes.

PaaS and Agile have one major aspect in common that may not seem evident. Both support “the living application” – the concept that software (because of the changing needs of its users) must adapt. It is the understanding that software applications are evolving constantly to meet new requirements. If Agile is the methodology for dealing with those changes, PaaS is the technology that simplifies how those changes are made or at the very least, provides a toolset to enable development teams to offer many options to solve business process challenges.

As PaaS becomes a part of your agile strategy, it will ultimately enable your developers and software leaders to directly address the values that agile was founded on:

- Individuals and interactions over processes and tools
- Working software over comprehensive documentation
- Customer collaboration over contract negotiation
- Responding to change over following a plan

And PaaS can help an organization mature with agile because it can operate on top of a fully managed, robust, extensible platform designed to accommodate many different types of applications.
The Cloud Applications Platform

For solution providers, VARs, MSPs, and ISVs looking to take advantage of SaaS and cloud computing to deliver new services to their clients, LongJump can significantly reduce their time to market. LongJump enables businesses to develop, deploy, and host highly-adaptable web applications in a fraction of the time.

LongJump can also white-labeled for greater entrenchment and relationship recognition for the reseller. The platform can be installed in virtually any hosting environment to provide control over security, scalability, and service levels, or resellers can become branded MSPs leveraging the LongJump multitenant architecture.

With over 30 million user hours in production supporting large and small enterprises, the LongJump cloud applications platform has proven to be flexible and reliable.