Enabling Apps Across the Continuum

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Introduction

Marc Andreessen, famed entrepreneur and venture capitalist, famously quipped: "Software is eating the world." Beyond the hyperbole, what Andreessen was getting at was the increasing tendency toward organizations using software to fundamentally change the way they deliver products and services, the manner in which they collaborate with their various stakeholders, and the form and nature of their operations.

But software being one of the most important tools to drive business success introduces something of a challenge. The process of software development is a complex one, which has historically relied upon highly skilled software engineers and operations teams. In this hypercompetitive world, these resources are increasingly in demand, and these resource shortages create challenges for organizations looking to create software products.

This skills shortage, and the ensuing desire to enable more employees within the business to create software, has led to the rise of more democratic development models: the ability of business unit staff to create software.

This continuum of the development process – from traditional software engineers on one end, to line-of-business staff on the other — raises many challenges for organizations intent on choosing a development platform.

In this paper, we seek to explain why software is increasingly important, describe the different models that organizations wishing to create software need to think about, and outline the best way to ensure effective development across the continuum.

To understand why the current market is so ripe for disruption, it is important to understand the internal and external factors that are impacting businesses regardless of industry.

As the number of devices connected to the internet skyrockets, more and more people are using mobile devices as their primary interface. We believe that mobile will become the default way that people interact with each other, be it consumer to consumer, business to consumer, or business to business. Beyond the mobile paradigm of interfacing with data, wearable devices, voice-controlled systems, and new interfaces will become the norm.

This paper, then, seeks to articulate the changes impacting organizations today, why software in general and mobile software in particular are so important to both respond to and take advantage of these changes, and to suggest ways in which organizations can best take advantage of the opportunities that digital approaches toward data access and stakeholder engagement offer.

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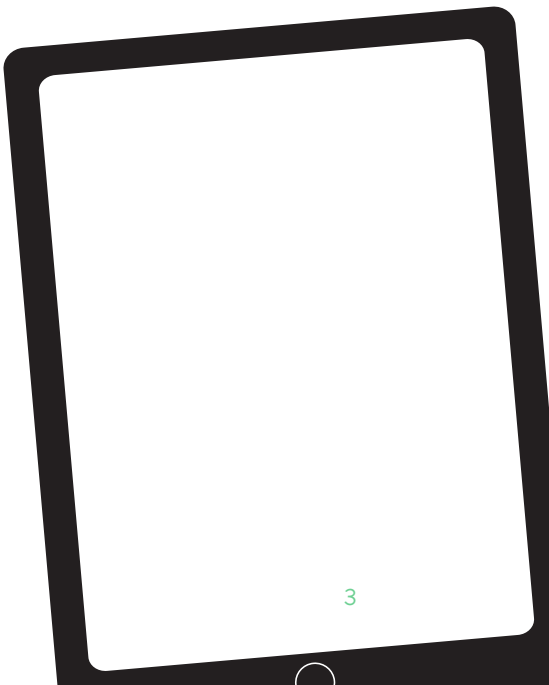


Change: The New Normal

Macro changes in society, economies, and technology are resulting in a completely new environment within which organizations operate. In order to understand the opportunities that exist, it is necessary to understand the underlying changes at work here.

If new technologies, such as big data or cloud computing, were the only change for organizations, organizations could respond with a subtler shift in how they do business, but we are facing a "perfect storm" of changing models – both internal and external:

- The rise of the Millennials and their demand for more flexible approaches to work
- An increasing requirement for business agility
- Economic drivers that demand the ability to do more for less
- New approaches toward sourcing and manufacturing products
- Connected devices and data making access easier
- Cheap, ubiquitous bandwidth

All of these macro changes put demands upon organizations to move faster than ever before.

Some of these changes can be positive for the organization, but fundamentally change the way in which employees, contractors, customers, and other stakeholders will interact with it. Software is one of the keys to unlocking new potential, overcoming new challenges, and succeeding against the new competitors.

Let us look at some examples of software, and mobile software in particular, disrupting an industry.

Digital disruption in action: the disruptors' global impact

Uber, Netflix, and Airbnb are excellent examples to look at when talking about digital disruption. Many people in the technology industry who have watched these businesses for several years now roll their eyes when well-meaning pundits frame them as examples for leveraging software to change the operating dynamics of a business.

While these three organizations are examples of companies born into the digital world, there are many lessons from their stories that can, and must, be applied to traditional businesses looking to make a digital transformation. Many "old-world" organizations are taking these lessons and applying them to innovate within their own contexts – GE, John Deere, and Farmers Insurance are three leading examples. Understanding the way these companies leverage software is instructive.

Uber, Airbnb, and Netflix are three examples of companies that took an incumbent business model – the taxi industry, hotel accommodation, and the movie rentals – and turned it on its head. The vast majority of Netflix's business has no relation to physical goods. Movies are watched in digital format, across a plethora of devices and operating systems. Airbnb, while not owning a single hotel room, uses a huge social network and leverages technology to deliver the biggest accommodation service in the world. Uber brings together location-awareness, resource planning, communications systems, and bill payment into a single application, or app, to make taking a trip frictionless. Mobile access, the consumerization of business process, and the focus on customers' key requirements are traits these three companies share.

All organizations are under immense pressure to iterate their business models and all need to use technology to do this.

> *Rather than thinking of their systems as static, these organizations are in a constant state of iteration to deliver innovation to their customers.*

Applying digital to existing businesses

Uber, Netflix, and Airbnb are perfect examples of digital disruption. They took an industries that were static, deeply rooted in dated regulation, and defined by poor service, and flipped them on their head. The customer experience offered by these vendors is greatly preferred by consumers, enabling entirely new business models and delivering a better experience for all concerned.

But digital isn't just for new businesses. Digital transformation is also the way in which existing businesses can innovate, find new business models, and maintain competitiveness.

Traditional businesses generally don't have the kind of greenfield opportunity that companies like Uber do. Rather, these businesses have existing systems and processes that they need to work within. From a technology perspective, many of the processes that an existing business needs to perform might sit in Excel or in a monolithic, inflexible, and frustrating legacy enterprise system.

And therein lies the second issue around digital innovation for existing businesses: Even before the issue of skills shortages arises, these organizations want to find ways to give their people an opportunity to do creative work with the data trapped within these legacy systems. But how can that opportunity be enabled within the context of existing systems?

The two archetypes of developers

Digital innovation within organizations relies on the efforts of individuals with different skill sets. There exists a continuum, at the two ends of which lie the two main archetypes of what a developer within an organization looks like. One of these archetypes conforms to the traditional concept of the developer, while the other does not. So who are these two archetypes and what are the obstacles to their success?

THE TRADITIONAL DEVELOPERS

A traditional developer tends to be someone who lives deep in the mire of code. These individuals are happy to spend all day wrangling code but have two main constraints:

1. It is difficult to integrate the code they create into core systems in use within the organization.
2. They would like to be able to focus on code without having to worry about managing infrastructure, configuration, and "plumbing."

Aside from the technical challenges inherent to how these individuals work, there is a deeper and more pressing organizational priority at play here: While these developers are still required for bespoke and complex development, the organization wants to increasingly focus them on business value and automation, rather than infrastructure management and manual processes.

Rather than picking one way of working, however, we believe that the highest level of success will be gained through finding solutions that cater to both archetypes and the myriad of individuals who fall on the continuum between them.

THE LINE OF BUSINESS DEVELOPER

A relatively recent development sees business analysts suddenly able to create apps. This is an exceptionally positive development and means that the term "developer" now describes a far greater breadth of individuals and doesn't simply apply to computer science and engineering graduates. Modern platforms mean that those with skills traditionally viewed as "softer" can

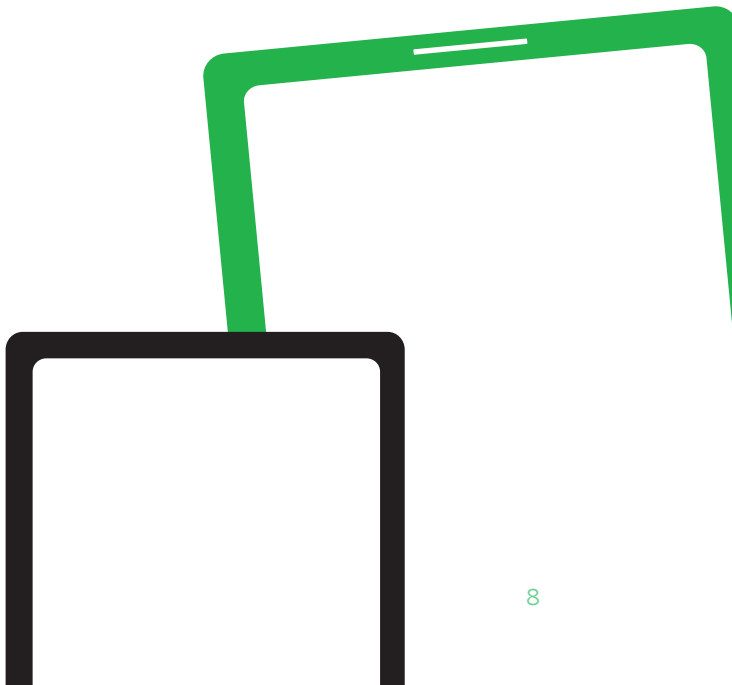
also become developers. These individuals tend to have a desire to move on from simply modelling scenarios in Excel to actually being able to build apps. Their constraints are different than those of traditional developers, however:

1. In order to create software, they need to rely on a low-code or even no-code development approach.
2. Like their traditional counterparts, wrangling infrastructure is seen as non-core and a barrier to their agility.

While some might suggest that catering to both these archetypes is an unnecessary tax on the business, both styles of working are important to modern and agile organizations. Additionally, developers of all types are in short supply and every organization is trying to hire staff to achieve app outcomes.

> *In order to deliver the highest number of outcomes, enabling collaboration and creativity across the spectrum of developer types is the most optimal approach.*

But how to realize that aim within the context of wildly differing platform requirements and a need to integrate back into core systems? And what new approaches are likely to compound these issues going forward?



The new inflection point

As if the status quo for organizations wasn't complex enough, we are rapidly reaching a new inflection point at which the levels of complexity that development teams need to contend with are soaring to ever-greater heights.

Development teams already need to think about solutions that will integrate with a huge number of end points. These end points might be output devices (smartphones, tablets, watches, etc.), or they might be input devices – the rise of the internet of things and distributed sensors has resulted in a huge proliferation of different points with which apps need to integrate.

Compounding this situation further, developers are increasingly leveraging different components to build their apps – the rise of so-called microservices and discrete app components and the increasing momentum for specialist app modules have resulted in development processes that bear a great deal of resemblance to building with LEGO bricks – meaning that they take a variety of different ingredients and compose them to achieve the desired output.

Given this increasing complexity and a desire to enable developers in an increasingly heterogeneous world, organizations need to be thinking about solutions that embrace a world of options – integrated with both higher level business solutions as well as more fundamental core platform components.

Enabling the entire app lifecycle

As the examples of Uber, Netflix, and Airbnb show, apps are no longer simply static creations that sit in place for a generation. Rather, it is increasingly the case that apps are frequently changing as market conditions, competition, technological advances, and other factors have an impact.

> *The ability to enable development to happen in a low- or no-code construct and a full-code construct, all within a single organization, is highly impactful.*

Allowing for the agile response to these inputs delivers multiple benefits: Not only does it reduce the time taken to innovate within an app, but it also allows organizations to maximize the economics of their development spend.

Summary

Development, however, doesn't happen within a vacuum, and organizations need to effect change within the context of their existing technology footprint, business processes, and employee base.

The act of software development falls across a continuum, and organizations need to think about development both within a traditional software development context and one that is more the realm of the business analyst.

The increasing heterogeneity within enterprise IT raises significant challenges, and organizations need to consider the plethora of different devices, sensors, and components that will likely have a part to play in the apps they create.

While it may be possible for an organization to leverage two completely separate platforms to provide for the needs of these two constituent groups, the highest levels of efficiency and effectiveness are delivered when organizations meet as many of their needs as possible from a consistent platform and within a consistent construct.

Further, relying on completely stand-alone development platforms, without deep and native integrations back into the systems of record, will create problems when it comes to actually integrating the apps into the businesses' systems and processes.

It is for this reason that we strongly advise organizations to think about the development platforms they use, not as stand-alone functional tools, but rather as offerings that are tightly integrated into their systems of record.

About Diversity Limited

Diversity is a broad spectrum consultancy specializing in SaaS, cloud computing, and business strategy. Principal and Founder Ben Kepes provides various services, including:

- **Commentary** – Ben is a noted commentator on cloud computing and enterprise software. He has written for a broad selection of media outlets, and is often quoted as a subject-matter expert and influencer.

- **Consulting** – Ben is in demand with large organizations who turn to him for advice on technology starting. He spends time with both customers and vendors advising on all aspects of their strategy.

- **Advisory** – Ben sits on a number of boards, both formal and informal. He enjoys helping startups get to market and grow to scale.

- **Investment** – Ben is an investor in a number of different companies. These investments revolve around Ben's focus on delivering technology that can make a difference in how organizations work.

About the Author

Ben Kepes is a technology evangelist, an entrepreneur, a commentator, and a business adviser. Ben covers the convergence of technology, mobile, ubiquity, and agility, all enabled by the cloud. His areas of interest extend to enterprise software, software integration, financial/accounting software, platforms, and infrastructure, as well as articulating technology simply for everyday users.

He is a globally recognized subject-matter expert with an extensive following across multiple channels.

Ben currently writes for IDG and his own blog. His commentary has been published on *Forbes*, TechCrunch, ReadWriteWeb, GigaOm, *The Guardian*, and a wide variety of publications – both print and online. Often included in lists of the most influential technology thinkers globally, Ben is also an active member of the Clouderati, a global group of cloud thought leaders, and is in demand as a speaker at conferences and events all around the world.

As organizations react to the demands for more flexible working environments, the impacts of the economic downturn, and the existence of multiple form-factor devices and ubiquitous connectivity, cloud computing stands alone as the technology paradigm that enables the convergence of those trends. Ben's insight into these factors has helped organizations large and small, buy-side and sell-side, to navigate a challenging path from the old paradigm to the new one.

Ben is passionate about technology as an enabler and enjoys exploring that theme in various settings.