Cloud for CEOs: Measure innovation with one metric

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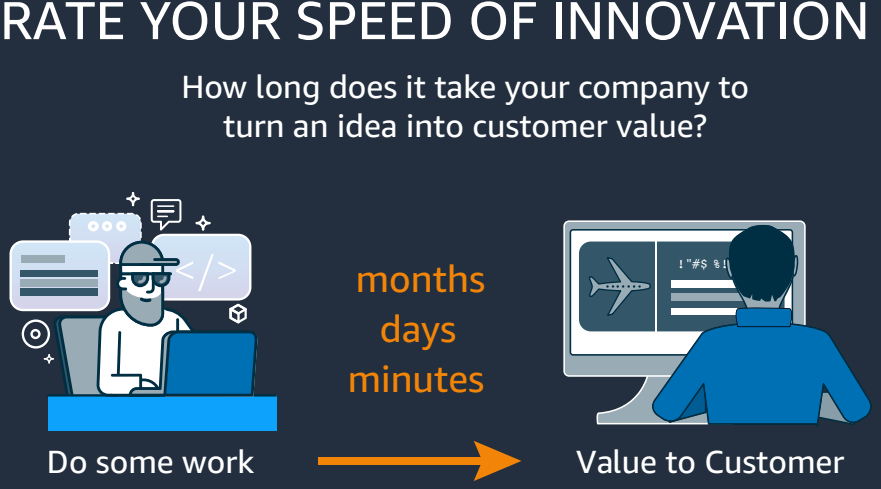
Executive Summary

How do you know if your company is truly innovative?

To digitally transform an enterprise, let alone become a disruptor such as Netflix or Amazon, businesses need to connect with their customers, understand their needs, and respond faster than ever. The most successful organizations of today are disrupting their competitors and entering new markets by innovating more quickly and efficiently. The ability of an enterprise to innovate isn't about technology adoption, it's about people. Being an innovator requires overcoming challenges in four areas: culture, skills, organization, and risk management.
Get these right, and you will be able to leverage technologies such as cloud computing and machine-learning to innovate. The path to innovation is no longer a mystery. We know how leaders are unlocking growth through competitive advantage, and we know how to measure it. The most critical metric is how long it takes for an innovative idea to reach a customer. If it takes your company months, how can you compete with an organization that delivers in days? This is why its critically important to know the time-to-value for each of your product teams. If time-to-value is short, then many key behaviors and metrics are trending in the right direction. As a leader, showing that you care about reducing time-to-value provides clear guidance to your organization.



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You can't feel disruption until it's too late

The word "disruption" conjures a jarring experience. We imagine a dropped telephone call or an internet connection that suddenly fails. But when it comes to disruption in business, the experts suggest the experience of being disrupted is much harder to detect. "We studied 3,600 companies. Famous cases of companies or industries completely going away because of disruption are actually quite rare," said Omar Abbosh, CEO of Accenture's Media and Technology business. "Much more common is what we call compressive disruption; where the profit streams of companies become squeezed over time…. And that's a giant problem because it actually feels normal."

As much as CEOs fear disruptors cropping up in their industry, concern might be better placed on the readiness of their organization to innovate. We see three levels of innovation helping companies move forward and stay competitive; incrementally better services (the table stakes), new gap-filling value creators (addressing pain in the market), and entirely new customer experiences leveraging emerging technologies (unexpected offerings). These are the kinds of innovations that grant enterprises sustainable advantages, market share, and customer loyalty. In every case, your company's time to value is the key metric that predicts business success. Were you an originator, or a replicator?

Digital transformation is about reaching new customers

The phrase "digital transformation" has become enterprise shorthand for technology updates like moving to cloud. However there is a disruption in the business model that is driving this change. Many businesses historically sell products through intermediaries. Consumer products through retail stores, airlines and hotels through travel agents, TV studios through networks of TV stations. Car manufacturers through dealers. Until recently, companies didn't have a direct connection to the consumers of their products. Even where direct contact was possible most retailers or taxi companies, for example, didn't know who was in their stores or cars. The digital connection to each customer is the new capability driving digital transformation. Netflix knows what it's viewers are watching, Amazon knows what it's customers are buying. Tesla knows how you drive your car. Think about a company that makes door locks. They send boxes of metal to a hardware store and hope they are sold. Warranty returns need to be minimized,

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In today's era of volatility, there is no other way but to re-invent. The only sustainable advantage you can have over others is agility, that's it. Because nothing else is sustainable, everything else you create, somebody else will replicate.

Jeff Bezos, Amazon founder

but could be used to find problems in the product, and their IT department primarily supported employees doing design and manufacturing. But if the lock company makes a connected door lock, they can tell how long it sits on the shelf in the store before being installed, they can see how often it's used, how long the battery lasts, and when the lock is replaced. To remain competitive, the lock company needs to create an electronic device with software update capability, build a secure IoT web service, create a mobile application, and setup a data lake so they can understand how to optimize the product. Their developers and IT department need to learn many new technologies, and run them globally at scale. That's transformation and its driven by the need to connect directly with customers.

To go through a digital transformation, you need to support a lot of innovation, and much of it is software-driven innovation. The pace of development for physical products is relatively slow, so existing development processes tend to be slow. If you run your software innovation in the same traditional model as a physical product innovation cycle, you will be left behind. The digital transformation winners have innovated quickly to personalize customer experiences, harness customer analytics, manage new direct channels to their customers, and embrace fast changes. They've used cloud computing to support a huge increase in the scale and global reach of their operations. We see this first-hand because AWS is a key supplier and partner for the biggest and most successful digital transformations.

Four blockers of innovation: Culture, skill, organization, and risk

If the vast majority of business leaders agree that their business must digitally transform to survive, why aren't they revving their innovation engines to arrive at the future sooner than their competitors? In reality, businesses and IT departments are in a balancing act; straddling old and new worlds. In the old world, employees worked on computers at their desks, sales channels were mostly indirect, factories and supply chains used a lot of paper forms and offline tools, and marketing consisted of television, radio, and print advertising. In the new world, IT creates mobile productivity applications for employees, and automation is pervasive and integrated. Factories and supply chains are connected and instrumented in detail to optimize quality and minimize work in progress, sales and delivery are connected directly to the end user, products are communicating constantly with their supplier, and every customer's voice can be heard instantly around the world on

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social media. IT is no longer just a cost center supporting employees. Technology has become the business. As we work on digital transformations for the world's largest enterprises, four common innovation blocking patterns emerge: culture, skills, organization, and risk.

Culture is the set of common understandings and operating principles in an organization. It is hard to maintain a consistent culture across an organization. It takes time to build or change a culture, and culture is too easy to destroy. Many organizations lack focused principles or have grown through acquisition, and have a "warring tribes" culture that renders parts of the business dysfunctional. Culture starts with the CEO, and will be reflected in who they hire and promote, as well as how they manage incentives, goals and decision making across the organization. Slow and centralized decision making, low trust, and ineffective feedback loops sink many enterprise transformations. Jeff Bezos created a culture around leadership principles and customer feedback practices at Amazon. This culture has scaled into a large, fast growing and diverse global enterprise. Reed Hastings optimized Netflix for extreme agility by focusing on a single product, centralizing the team, and using a high-trust culture of freedom and responsibility to create a hard-to-copy sustained advantage.

Skills shortages are often cited as blocking new technology adoption. As the pace of technology increases, it's not practical to think of skills as a fixed thing that is hired as part of building a team to run a project based on a specific technology. Technology skills are continuously developed by teams of developers exploring new technologies as they emerge and mature. Leaders should foster a "learning organization" culture, where new ideas are explored and shared as a matter of course. To make the learning culture work leaders offer incentives that encourage staff to learn new skills and stick around when they become experienced. There is always a market for the latest and most valuable skills, so staff tend to move on to better paid opportunities. As an extreme example, Netflix has an annual "mark-to-market" compensation process that pays staff what they would make if they were being hired today, with what they know today. Given that Netflix deliberately runs at the leading edge of technology, this helps them build and retain one of the most experienced and skilled development organizations - which is also one of the most highly paid development organizations. For more insight on the Netflix approach to talent management, read the book Powerful by Patty McCord. But beware: this book will make conventional HR heads explode! A more

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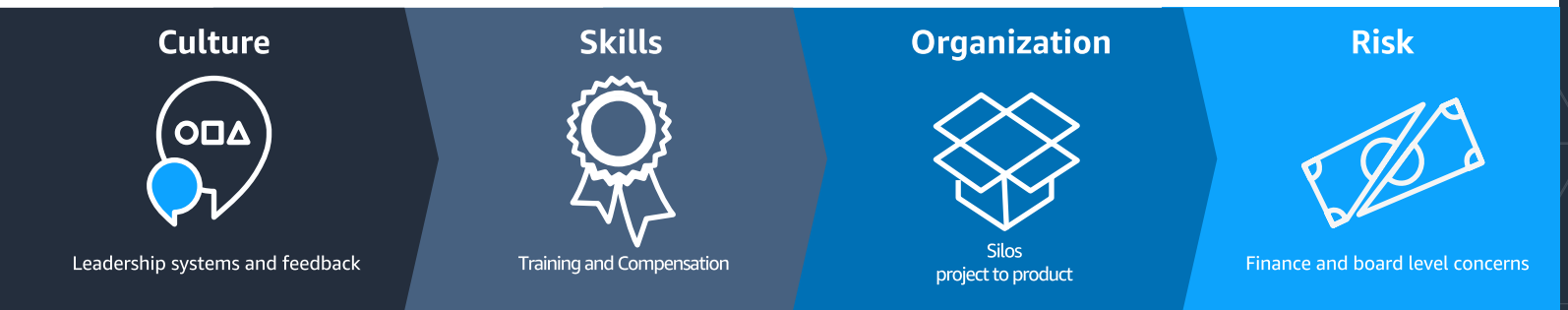
> The speed at which data is available dictates the speed at which decisions can be made.

realistic approach might be to have a skills incentive program where specific in-demand technologies are tied to ongoing bonuses for people who have or get those skills.

Organization is the most important obstacle to overcome in your journey to digital transformation. Leading organizations have switched from project teams to product teams. This is a critical change that reflects the new reality of business: products must continually evolve to stay relevant. The job of a development team is to be responsible for continuous improvement of their product. There's no technical reason why software services can't be updated many times a day, but it takes too long in organizations that hand over products from development teams to operations teams. DevOps is an organizational model where product teams develop, deploy and are on call for their services. Amazon CTO Werner Vogels published a paper in 2006 calling this "run what you wrote." There's separation between the business and the development organization in most enterprises which isn't present in Amazon or Netflix. Each team at Amazon Web Services (AWS) owns their own roadmap, develops their own service, and operates it. They are given headcount, budget, and growth goals, and they operate as a relatively self-contained unit. These are fairly small, co-located "two-pizza teams." Groups of closely related teams report to a general manager, who owns the combined product roadmap, development and operations, allocates resources and creates new teams as needed. Groups roll up like this to VPs and SVPs who report to the CEO. There is no concept of a separate business at AWS, as product managers are part of each team. Sales and marketing are separate organizations, but include their own development teams for building internal tooling, organized along the same lines. An additional benefit of product-based teams is that they naturally manage their own technical debt rather than accumulating it, and they don't create the kind of operational lock-in that occurs when a project is delivered by a team that moves on immediately to other projects.

Risk is often cited as a reason why innovation is blocked. When we dig into understanding how risk aversion impacts decision making, we see the board of directors acting as a



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the primary driver for a company's risk tolerance and compliance profile. Boards provide financial oversight of the CFO and represent the interests of shareholders on capitalization and investment. One of the primary risks a business faces is losing a competitive edge due to a lack of innovation, but the long term innovation strategy for many businesses is often blocked by short-term risk aversion. Boards are usually structured into several committees with differing concerns and risk profiles. The overall compensation policy for an enterprise is also a board-level concern. This affects how much flexibility a company has with stock options, bonuses and incentives. If a skills incentive program is proposed, it's likely to need support at board level. The risk of increasing salary costs is offset by a promise of better employee retention and business outcomes from innovation. The compensation policies of innovative companies like Amazon and Netflix have a relatively large proportion of stock based compensation, and no cash bonuses. This creates longer term incentives for employees. Boards are also responsible for executive succession, but they may not prioritize technical competence in the selection of company leadership. With technology becoming so core to the very definition of business, boards are beginning to address this gap. Innovative founder-led companies like Amazon, Netflix and even CapitalOne, tend to have a longer-term view and more board-level support for investment and innovation.

Three steps to innovation: time to value, cloud native at scale, and strategic migration

In eight short years (between 2010 and 2018) a total of 151 companies disappeared from the Fortune 500—more turnover than in the previous 50 years combined. Why? Because technology redefined the potential for customer experience, and only a small number of companies redefined their approach to customers. Understanding how to digitally disrupt business models is perhaps the easiest part of the journey. Being ready and able to disrupt is quite another matter. The patterns of readiness, however, are beginning to look familiar. They combine operational speed, distributed capacity, and smart cloud strategy.

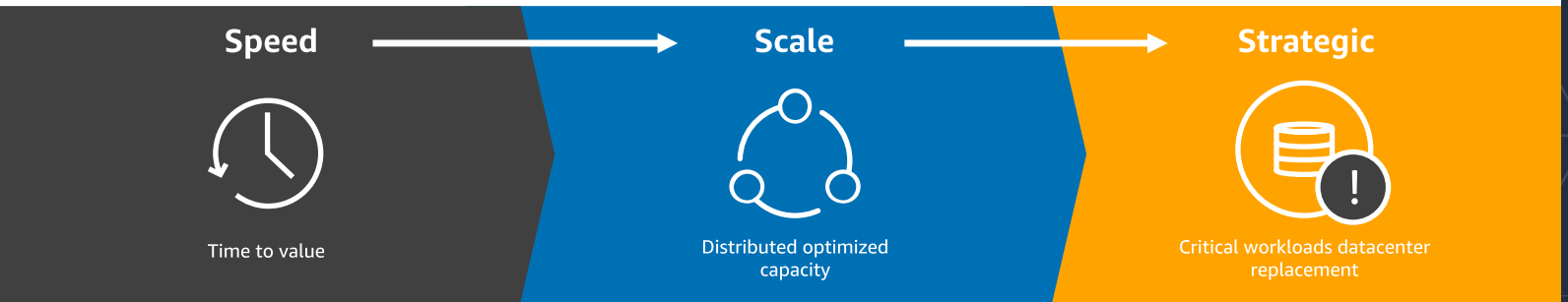
Time to value is a critical new metric for innovation. When your teams invest in work, how long does it take for that work to create customer value? For most enterprises, time to value is measured in months. For some, it's measured in days. For the disruptors—the category creators—it can be measured in minutes. These companies can become aware of an opportunity to improve their customer experience when they arrive at work, update the software, and deploy it

before lunch. Focusing on time to value forces smaller and more incremental changes that are easy to test, deploy, revert, and greatly reduce risk. There is no economy of scale in software, smaller changes are better, and the most innovative organizations use continuous delivery technology to optimize time to value.

The tendency to try and create a centrally defined common IT architecture has also become an anti-pattern. Innovative organizations optimize for their ability to evolve and explore new technologies as they appear. This gets messy, but the best practice is to create a learning organization that shares what it knows and pays down technical debt as it goes.

Scale means having a globally distributed and optimized capacity to develop and run large-scale applications in the cloud. Having cloud-native architecture for apps gives the business the ultimate flexibility for scale, cost optimization, and always-on availability. Cloud resources such as storage, compute power, and software should self-service, so there are no delays in provisioning resources to develop or run applications. Cloud resources should be highly utilized, meaning when they are not in use there is no charge, because unused resources are turned off. Lets say a datacenter resource averages 10% utilization from being installed to being retired a few years later. An elastic cloud resource allocated only when needed averages 40% utilization to support the same workload, and the net saving is that a quarter of the capacity was needed. If the workload is optimized, its cost of operation drops immediately, unlike datacenter costs that are locked in at the start. The scale benefit of cloud-native architecture is that your resources can be as big (or as small) as your business needs at any given moment, anywhere in the world.

Strategic workloads are moving to cloud. Over the last few years more and more organizations have decided that operating datacenters isn't a differentiated advantage for their business, and as datacenter buildings reach their end of life they are consolidating and moving strategic workloads to cloud. Some workloads are replaced with SaaS based products, some are moved unchanged, but the most strategic business critical workloads need to have business continuity planning



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or disaster recovery (DR) options. For regulated industries, compliance rules mean an annual visit from the auditors to show that applications can be failed over between datacenters. This is an expensive, stressful, time consuming, and largely manual process. In the event of a real datacenter failure, it rarely goes smoothly, and there are many disaster stories, despite all the mandated investment in redundancy. In the last few years industry leaders like Amazon and Netflix, and startups like Gremlin Inc. have developed "Chaos Engineering" practices that continuously test that failure mitigation strategies are effective. The automation and standardization of cloud offers an opportunity to create common standard DR patterns that can be productized and tested reliably, and the opportunity to move from scary annual DR tests to automated continuous resilience. We've also seen a similar move for security policy, from occasional audits to automated continuous compliance based on tamper-proof logs that capture everything that happens in the cloud. The high rate of change associated with innovative organizations means that annual manual audits for DR and compliance aren't useful, and automated continuous compliance and resilience are needed. The end result is that properly architected strategic workloads in the cloud are more robust and there is much less business impact from failures.

Wrapping up, there are many changes needed to navigate a digital transformation or cloud migration and to adopt new technologies in general, but the most important success factor is that rapid innovation is enabled by making change in many small increments, in a product based organization that focuses on reducing time to value.

Reading List

Learn more about speeding up innovation with these excellent books:

Leadership systems and feedback

"Ahead in the Cloud," by Stephen Orban

"A Seat at the Table," by Mark Schwartz

"War and Peace and IT: Business Leadership, Technology, and Success in the Digital Age," by Mark Schwartz

Training and compensation

"Powerful: Building a Culture of Freedom and Responsibility," by Patty McCord

Moving from projects to products

"Project to Product," by Mik Kersten

"The DevOps Handbook," by Gene Kim, et. al.

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Adrian has had a long career working at the leading edge of technology, and is fascinated by what happens next. In his role at AWS, Cockcroft is focused on the needs of cloud native and "all-in" customers, and leads the AWS open source community development team.

Have questions about your cloud strategy?
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