Rising to the Challenge of Digital Business: Key Insights From the 2015 Gartner Symposium/ ITxpo Keynote

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Algorithms define the future of digital business. They turn big data into insights, automate processes, and differentiate products and services. But to capture this opportunity, CIOs will need more than just the right people and technology.

Key Findings

- Algorithms are the gears behind the people, businesses and things that underpin digital business, and are central to delivering a differentiated customer experience.

- In 2015, 42% of the technology budget resides outside IT; this will grow to 50% by 2020.

- Trusted ally CIOs — those that influence versus use control — are best-equipped for the digital world, as they engage directly with the CEO and other business unit leaders.

- CIOs who tap into the connections of people, business and things can extract business value, but that potential value goes exponential when those connections engage with one another on their own, around a common goal set by your business.

Recommendations

- Shift from management-by-control to leadership-through-influence as a means to steer digital transformation enterprisewide.

- Establish a divestment capability in IT, enabling the IT department to shed itself of technologies and processes that are holding it back, and reinvest in growing and transforming the business.

- Determine what information, technology and capabilities you can share with others, as a means to grow your market and spur innovation.

- Inventory, assign ownership and classify algorithms.

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Strategic Planning Assumptions

By 2016, 30% of businesses will have begun directly or indirectly monetizing their information assets via bartering or selling them outright.

By 2020, smart agents will facilitate 40% of mobile interactions, and the postapp era will begin to dominate.

By 2020, Microsoft's strategy will be centered on Cortana, rather than Windows.

By 2020, 50% of large enterprises will have a digital risk officer who manages IT, operational technology (OT) and Internet of Things (IoT) risk.

Analysis

Digital Is Going Strong

Digital business is growing across all industries, with digital commerce a $1 trillion industry worldwide.[1] As many businesses see their traditional revenue flattening or even declining, they are shifting to digital as a new source of growth. In fact, leading CEOs tell us their digital revenue will increase by over 86% by 2020, to account for 41% of revenue overall.[2] What's more, over half of large enterprises will have a digital business initiative within the next two years.[3]

Enabling the shift to digital, business itself is going bimodal, not only IT (for more on bimodal IT, see "Bimodal IT: How to Be Digitally Agile Without Making a Mess"). Whereas in bimodal IT, the IT organization has split into Mode 1, which is traditional, emphasizing safety and accuracy, and Mode 2, which is nonsequential, emphasizing agility and speed, the business units are doing much the same. The business units are now creating innovation units to fuel digital initiatives, while keeping their traditional operations running alongside. When done right, these two modes do not compete, but instead complement one another, resulting in a better customer experience and increased revenue (see Appendix: Williams-Sonoma).

Today, 38% of chief information officers (CIOs) are on the bimodal journey.[4] While CIOs can fall into the trap of using Mode 2 to support an existing business model or tackle an old project backlog in a convenient way, the most successful CIOs will instead use Mode 2 to fundamentally transform the business. Doing so will require them to take into account their digital point of entry.

The most successful CIOs will start with understanding customer behavior as a means to identify opportunities where the creation of business moments would delight the customer and differentiate the business. These CIOs then back these moments up with more formal business processes and models thereafter. What's more, these CIOs will do this on a new enterprise and technology platform.

Other CIOs, in contrast (those operating as if they run traditional, "analog" businesses), will attempt to first redefine the business model before moving on to the business processes and then, ultimately, serving the business moment. These CIOs will do this on the old enterprise and technology platform. It almost goes without saying that this is a much slower path to digital, as businesses will have to make monumental changes before addressing the customer (see Figure 1).

Figure 1. The Digital Point of Entry Matters
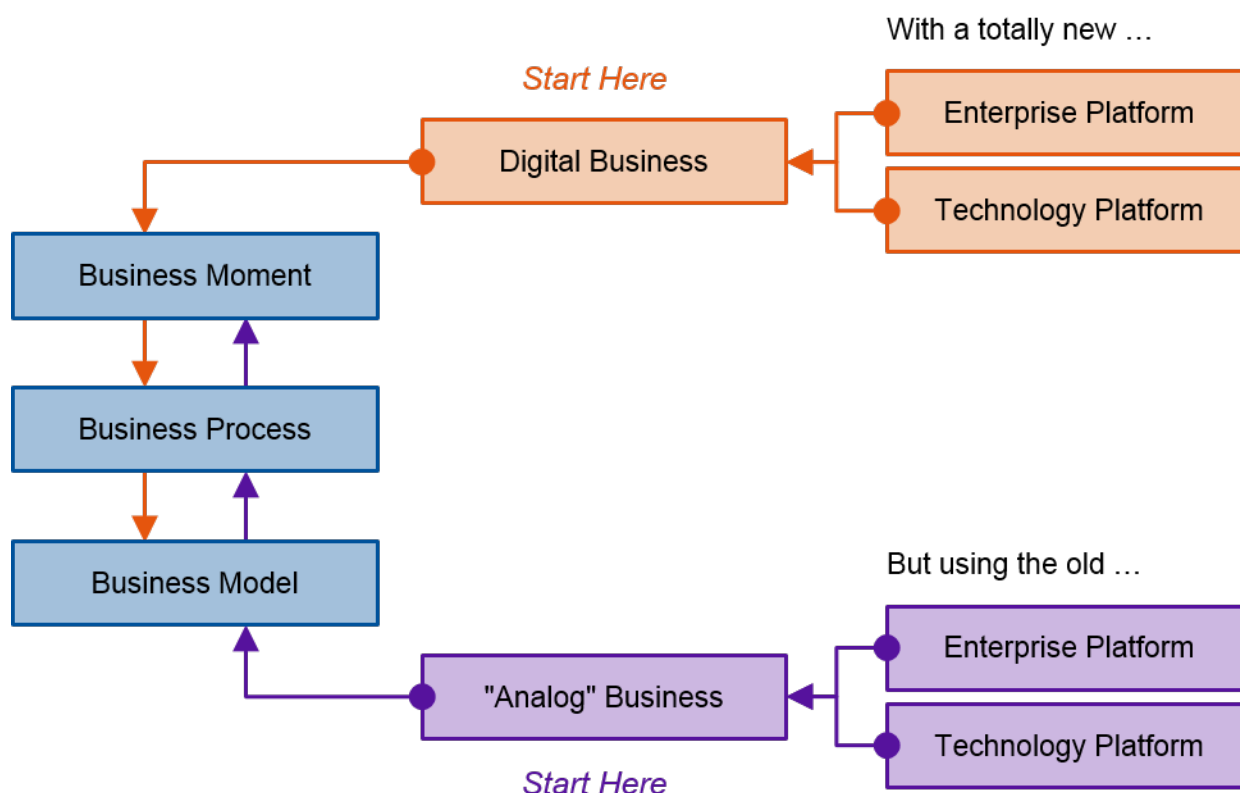
Source: Gartner (November 2015)

Now Is the Time to Move From Control to Influence

Meanwhile, centers of control are shifting. Today, 42% of IT spending is now outside IT[5] — a number which Gartner estimates to grow to 50% by 2017.[6] Importantly, this isn't the CIO losing budget to the business; this is the business units openly embracing technology more than ever.

For CIOs, this means their ability to directly control IT is diminishing. This reality is only exacerbated by growing cloud adoption, the pervasiveness of consumer technology, independent technology talent and the burgeoning IoT, which is driving technology into the physical world.

All this should not come as bad news, however. The technology assets outside IT — the cloud, the crowd and even the business units — are vast and growing. CIOs have an unprecedented opportunity to use these resources to steer innovation. But they will need to change themselves first. CIOs will need to shift from managing through control to leading through influence, as influence scales and control does not.

Rather than seek to control and limit technology use, CIOs will *influence* the business units, guiding them on best practices to make sure that security is not compromised, risks are managed, and ongoing support is not burdensome to the business or IT department. Operating in this manner,

CIOs will need to fight the urge to regain control over what is seen as "shadow IT." Instead, they must collaborate with the business units and flip their thinking, viewing shadow IT instead as "citizen development." In building positive, mutually beneficial relationships with the business units, IT will benefit from the business units working with them by choice, rather than by mandate.

Algorithmic Business Is Here

Big data remains top of mind for CEOs.[7] But big data itself is inherently dumb; it doesn't do anything on its own. Data cannot inherently protect itself from loss, destruction or modification. And while basic data analysis has obvious value, it won't transform the business in a way that competitors couldn't also replicate. True change will happen when businesses apply unique algorithms to their information, rather than simply collect more data.

And today, the value of algorithms goes far beyond achieving insight. Algorithms are also the gears behind the people, businesses and things that underpin digital business, and are central to delivering a differentiated customer experience.

Over time, consumers will rely on algorithms in the cloud in the form of smart agents, such as smart advisors and virtual personal assistants. Customer interactions with cloud-based agents, such as Apple's Siri, Microsoft's Cortana, Google Now and the software built into Amazon's Echo, will increase rapidly, to the point where they will displace interactions with device-specific apps. This will usher in the "postapp era," enabling cross-device and platform-agnostic experiences.

It will not be long before an algorithmic economy emerges. Businesses will increasingly trade, buy, sell and even give away certain algorithms. In fact, a number of marketplaces have already emerged (see "Algorithm Marketplaces Are Bringing the App Economy to Analytics").

As a first step to algorithmic business, CIOs need to inventory, assign ownership and classify algorithms.

It is important to note that algorithmic business is the next big thing *within* digital business. It is not a separate trend from digital, but describes how best-practice organizations will approach digital by encoding intelligence in their software and enabling business moments to scale.

Figure 2. Algorithmic Business Is the Next Stage of Digital Business
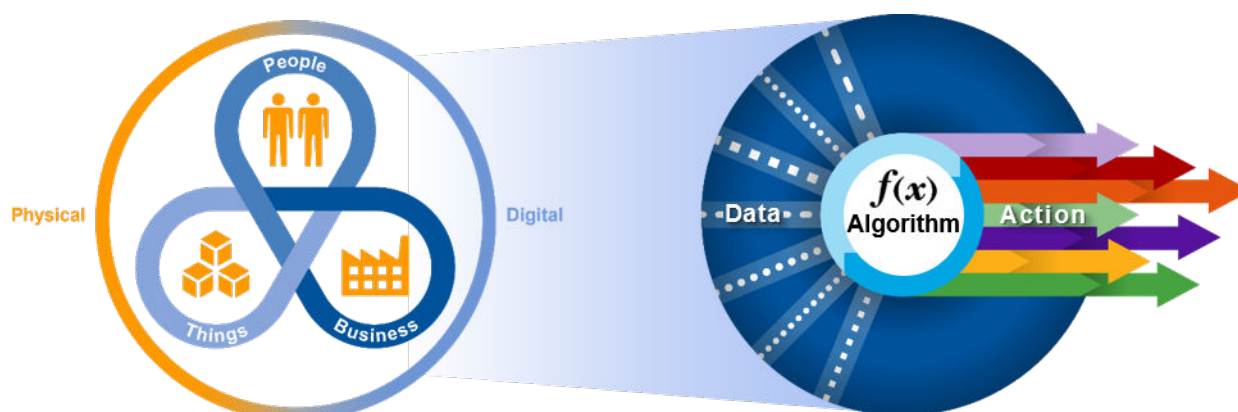
Source: Gartner (November 2015)

Security Is Increasingly Critical

As algorithms become more deeply tied to all aspects of life, safety will increasingly matter. Algorithms will make life-and-death decisions and face government regulation (just think of the autonomous car).

The risk and security officer of today will need to take on the added role of safety officer. Quality will matter as well. When systems at the New York Stock Exchange, The Wall Street Journal and United Airlines all went down on the same day, people assumed — *by default* — that these outages were the result of a coordinated attack, but they weren't. These outages were all caused by system failures.[8]

While CIOs are concerned with cyberattacks bringing their businesses to a halt, the reality is they need to get their houses in order first. According to a Gartner's risk management survey from 2015, 82% of companies have had at least one incident that required the use of a recovery plan over a two-year period.[9]

Algorithms will also increasingly define product and service quality. The software embedded in medical devices, smart buildings, automobiles, consumer goods and industrial equipment will define how well these products work.

These are new dimensions that extend well beyond traditional IT security and organizational risk management. Therefore, Gartner believes the risk and security officer of today will be the risk, security, safety and quality officer in the near future.

Lastly, CIOs must stop trying to achieve the impossible task of perfect protection. Instead, they should invest in detection and response (see "Market Guide for Endpoint Detection and Response Solutions"). In doing so, CIOs should shift their security investments from 90% prevention and 10% detection, to 60% prevention and 40% detection.

People-centric security (PCS) can also help. Many hacks start with phishing or social engineering, and PCS can significantly decrease the chance of these risks (see "Consider a People-Centric Security Strategy").

A New Approach to Technology Investment Is Needed

Even more than their customers, service providers have a hard time changing. They are comfortable supporting Mode 1, but face troubles elsewhere. Nevertheless, CIOs need service providers that can support Mode 2. This requires vendors not only to support the technologies underpinning digital, such as the IoT, but also to provide an appropriate engagement, contracting and support model. For instance, a vendor that continues to offer only standard, three-year service contracts will fail to meet Mode 2 customer requirements, as that customer's project may be short-lived. In contrast, a vendor that supports fast-fail projects, such as through a pay-as-you-go pricing model, will be much more attractive.

To support Mode 2, leading CIOs will be more willing to work with smaller, unknown vendors. Working with these vendors can open up CIOs to disruptive technologies and improve agility (see "Increase Sourcing Agility by Using Small Providers of Digital and Innovation Services Effectively").

Leading CIOs will also not wait for vendors to build their digital capabilities. Instead, they will act like venture investors, investing in and even acquiring digital startups, in what we call a "techquisition."[10] (For more on techquisitions, see "Techquisitions: An Uncommon Approach Some CEOs Use for Digital Business Acceleration.")

Give, Take and Multiply to Exploit the Economics of Connections

Today's CIO must drive digital while making algorithmic business a reality. This is making innovation a top priority. But where do CIOs start?

First, CIOs must recognize that, when it comes to digital, value creation is happening in the connections between people, business and things. They must recognize that there is an actual economics of connections (see "Digital Business Gives Rise to the New Economics of Connections").

Gartner defines the economics of connections as *the creation of value through increased density of interactions between business, people and things*. The idea is that as a business increases the density of its connections (people, business and things), it increases the potential value it can realize from those connections.

The task, then, is to increase that density and reap its rewards. To increase the density of connections, CIOs can undertake a three-step process: give, take and multiply.

Give and Take

Benefiting from the economics of connections starts with "giving" — contributing to the wider ecosystem. Every enterprise has some capabilities or information that are worth more when shared

than when kept for itself. To this end, enterprises will invest in open data or create a Web API to some of their systems.

In giving, enterprises can influence and grow a new market. They can broaden the appeal of their services and deepen value chain integration (see Appendix: Goldman Sachs and Appendix: Tesla).

But it is not only about giving. Once enterprises start sharing, new opportunities arise, enabling enterprises to tap into a wide range of information and technology networks. It's "give and take." For example, an enterprise that opens up an API can then follow up with a hackathon (an instance of "taking"), in which citizen developers build innovative apps on the exposed data (see Appendix: Amsterdam Airport Schiphol). In taking, specifically, enterprises can also leverage crowdsourcing and tap into a wide range of information and computing networks.

Arguably, the largest taking opportunity lies in the IoT. Today, there are nearly 3 billion people with smartphones[11] and by 2020, there will be almost 30 billion "things" overall.[12] What's more, by mid-2021, 1 million IoT devices will be purchased each hour.[12] Leveraging these things poses a great potential for innovation. Today, a wide variety of things are available, such as:

- **Smart patient monitoring systems** that measure vital signs.[13]

- **Ships that measure the sea water surface temperature** as part of climate change research.[14]

- **Smart chopsticks** that check the sanitary levels of food.[15]

Multiply

As valuable as "give and take" is, the value creation is restricted — it all still revolves around *you*. Value is multiplied when people, business and things connect with one another to the benefit of your business, but without you. And as more and more connections join this network, value only accelerates.

This multiplicative effect is made possible when CIOs establish platforms where people, business and things willfully join and engage with one another. This requires CIOs to set a common goal for the platform and incentivize usage. When multiplication is done successfully, CIOs will benefit from low overhead, as the platform is largely self-sustaining (see Appendix: Discovery Vitality).

Curb Value Inhibitors Through Influence, Divestment and Trust

Value creation may seem straightforward enough. However, three inhibitors prevent CIOs from swaying the economics of connections in their favor. These are a control mindset, inertia and lack of trust (see Figure 3).

Figure 3. Three Inhibitors Weigh on Value Creation
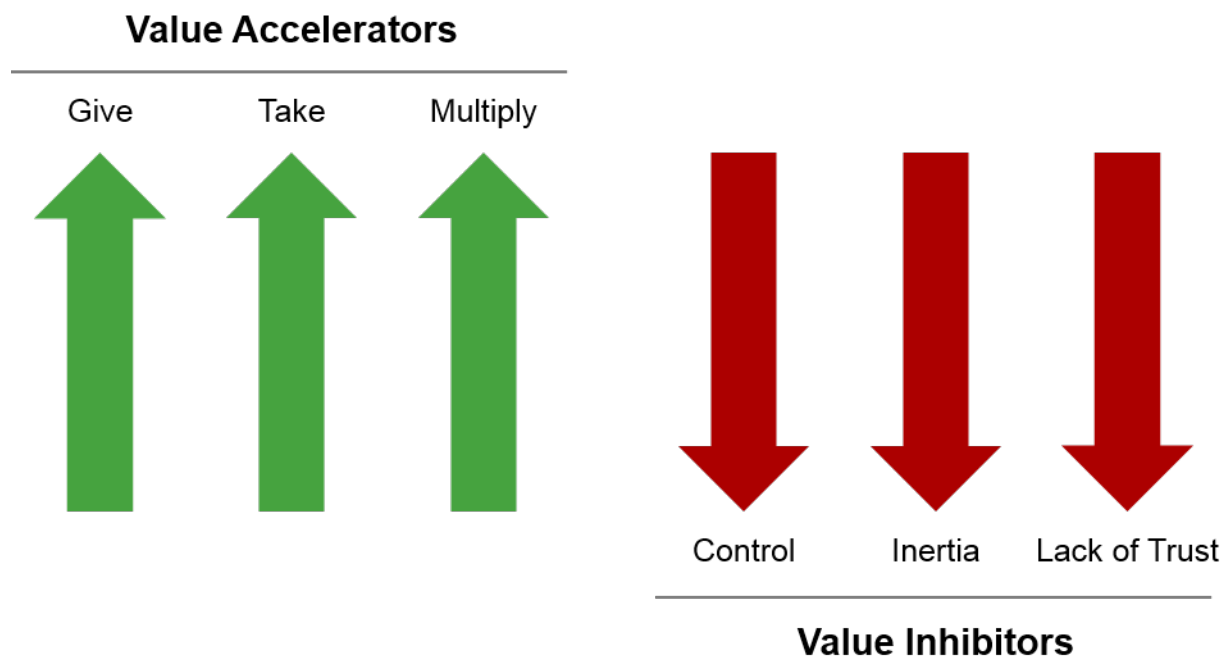
Source: Gartner (November 2015)

Give Up Control for Influence

CIOs with a control-oriented mindset will stifle innovation. They will seek to control technology that resides outside IT, where innovation is happening right now. They will also be averse to many of the new options that are enabling Mode 2, such as the cloud and the crowd.

CEOs are simply not seeing this management style as pairing with digital leadership. Gartner's 2015 CEO Survey indicated that when it came to digital business, most CEOs see their CIOs as having the most digital leadership responsibility, but sharing this responsibility more broadly across the C-level. In short, digital is not a "department," but is a team effort.

Unfortunately, most CIOs are not viewed as peers in the C-suite. They may be viewed as controlling or inhibiting change. In the 2016 CIO Agenda Survey, CIOs reported their relationships to the CEO as either "at risk," "transactional," "partnering" or "trusted ally." Results showed that 50% (the majority grouping) felt they had a partnering relationship, which meant they were essentially heads of the IT department, servicing the business. They are not considered full executive peers.

Only 23% of CIOs, in contrast, identified themselves as trusted allies in the same survey. Compared to other CIOs, trusted allies report driving significantly more innovation and change. They are also significantly more involved in business strategy and are more likely to take advantage of techniques that propel digital business. These include adaptive sourcing, crowdsourcing and working with startups.

Surely, something is working for trusted allies. And that something is that trusted-ally CIOs have influence over the entire business, not only the IT department. This is because trusted-ally CIOs are executive peers. They invest in training, both in their own C-level leadership and in net-new areas that can benefit the business (see "Building the Digital Platform: The 2016 CIO Agenda").

Fight Inertia Through a Practice of Aggressive Divestment

CIOs cannot lead through influence if they are bogged down in keeping everything running. And IT departments cannot innovate for the very same reason. The digital dream is nice, CIOs understand, but who has the time to do it?

To enable a focus on digital, CIOs should take a cue from leading businesses and divest. GE is currently divesting its financial business to refocus its efforts on its industrial business.[16] Philips is selling a majority stake of its lighting division and will invest the proceeds in its HealthTech business. [17]

Divestment isn't just a business discipline; it's also an IT discipline. And the first step is to create a divestment team, as the best divestors in the world (businesses that make a point of having such a team in place) get a return that is 1.8 times higher than average.[18]

At the same time, CIOs will need to shift their mindsets. They will need to overcome the following issues that are holding them back:

- **Legacy fatalism:** CIOs must be willing to aggressively move off of, or even eliminate, legacy systems.

- **Ownership bias:** CIOs must be willing to let others do the work for them (and outside their direct control).

- **Fear of the cloud:** Lastly, and related to ownership bias, CIOs must be willing to move to the cloud, not just for the basics, such as email, but for the advanced workloads as well, such as mission-critical applications.

CIOs will also need to simply decide what to divest. A useful method for doing this is to actually look at what *not* to divest, given that the resources outside IT can be cheaper, more secure and allow for more innovation. What not to divest includes:

- Your innovation capability

- Your digital strategy

- Your differentiating algorithms

Importantly, CIOs should note that divestment is not the same thing as outsourcing. In outsourcing, CIOs let a third party handle a function for them less expensively, but the CIO still retains control over that function. In divestment, CIOs transfer the entire process to a third party, on their own platform; that third party can do the job better, and the CIO does not maintain control over that function. Joining another ecosystem opens up new benefits that one's own business applications

will not easily provide — for instance data sharing with other users, or even benchmarking. Divestment can also bring benefits from innovation, agility and speed (see Appendix: Ardent Mills).

Trust and Earn Trust

Businesses that lack trust will fail to fully exploit the economics of connections. They will not give, for fear of what people might do with their products, technologies or data; and they won't take, for fear of the products, technologies and data available. As such, the concept of "multiply" will fail as well.

When looking to use all the resources outside IT, CIOs seemingly have two choices, each with their shortcomings:

- **Trust until you have reasons to distrust.** CIOs who are too trusting risk being exploited.

- **Distrust until you have reasons to trust.** CIOs who are not trusting enough can miss the business opportunity.

But there is an alternative. CIOs can trust and verify at the same time. Using algorithms, for example, an online retailer can principally trust its customers, while automatically looking for signs of fraud and avoiding heavy controls. Put to good use, algorithms will allow businesses to trust their connections to the exact level they deserve (see Appendix: Amazon).

People must trust your business, too. If they don't trust your business, they won't connect to it. To build trust, CIOs must:

- **Produce predictable results:** For customers, citizens and shareholders to trust a business, that business must satisfy their expectations and maintain that level of service over the long term. Producing predictable results requires ironclad execution and fits well with a CIO's strengths, as corresponds well to the Mode 1 domain.

- **Understand the human context:** Trust is earned when you show your customers that you care. This means understanding the human context in which your algorithms work. Take, for instance, Uber: Following the Sydney hostage crisis in December 2014, a sudden influx of people wanting Uber rides out of the city resulted in Uber's prices skyrocketing 400%.[19] By not understanding the human context, Uber faced public backlash and bad PR.

- **Be visible:** The trust people have toward a business is amplified by the visibility of that business. CIOs should actively advertise their values and ethics, as well as how they take responsibility for trust and security. To be a trusted ally, a CIO must become one of the most visible executives — both to the business and to the others in the C-suite.

Appendix

Examples

Williams-Sonoma

Digital Is for Everyone, Not Just the Upstarts

One company that has become a digital business is Williams-Sonoma. Although almost 60 years old, Williams-Sonoma has successfully married its physical and virtual stores by creating a multichannel strategy.[20] The company now sees more than half of its revenue coming from e-commerce, while both its net revenue and gross profit have grown.[21]

Goldman Sachs

Some Things Are Better Given Away Than Kept for Oneself

Goldman Sachs announced it would offer its clients tools, such as analytics apps, that were otherwise only available in-house. Such a move, the company hopes, will not lead to clients building their own trading systems and making trades outside Goldman Sachs, but instead, will lead the company to tighten its bonds with its clients through a better service.[22]

Tesla

Growing a Market by Giving Away Intellectual Property

Or take, for instance, Tesla. Tesla has open-sourced its patents, declaring that it "will not initiate patent lawsuits against anyone who, in good faith, wants to use [its] technology."[23]

Such a move, Tesla hopes, will not only have a positive impact on the environment, as more electric vehicles can be produced, but also will grow the business opportunity overall, spurring a larger market in which to compete, as more auto manufacturers enter the electric-vehicle space.[23]

Amsterdam Airport Schiphol

Giving and Taking Go Hand in Hand

Amsterdam Airport Schiphol is currently implementing an open API framework, which will allow partners and customers to connect.[24] The airport has also implemented sensors throughout its facility, enabling the creation of location-based services.[25] Leveraging the API, in particular, Schiphol, together with Paris Charles de Gaulle Airport, hosted "Hack & Fly," a hackathon in which competing parties drew on these APIs to create apps.[26] The airport gives its information and, in return, gets innovation, which would have otherwise taken considerable time and resources.

Discovery Vitality

Value Multiplies as Customers Engage Around Incentives

Discovery has created Discovery Vitality, a service wherein Vitality members can track their health habits via a wearable device, and in turn, receive benefits, such as discounted insurance rates or even savings on air travel.[27] Discovery then benefits from an engaged, loyal customer base and lower costs, as it can encourage better health.

What's more, the technology behind Discovery Vitality is also available to a partner network of other insurers, such as Humana, which offers HumanaVitality.[28]

Ardent Mills

Divestment Frees IT for Innovation

Ardent Mills has gone "all in" with the cloud. Following the company's formation via a joint venture, Jeff Schreiner, the company's CIO, decided to base its new IT infrastructure entirely in the cloud. Six months into the project, Ardent Mills handles 60% of the business with a completely new IT team and new set of IT services. Moreover, Schreiner estimates that development is three times faster than with previous deployment models. Relying on the cloud, Schreiner is now free to focus on supporting rapid business growth ahead of changing demands, without the typical CIO distractions (more detail on this case study is provided in "Building the Digital Platform: The 2016 CIO Agenda").

Amazon

The "Trust and Verify" Principle Enables a Positive Customer Experience, While Protecting the Business

A good example of the "trust and verify" principle is Amazon. Amazon principally trusts. Customers can return merchandise and get their money back. If customers are unhappy enough, they can even get store credit. Repeat this process enough, and customers can begin to take advantage of the system, earning enough credit to purchase items for free. But Amazon also verifies. Do this enough as a customer, and Amazon will ban you.

Using algorithms, Amazon can avoid strong controls and provide a better customer experience, all while lowering fraud. Such benefits make an otherwise soft topic like trust an easy sell to the board.

Gartner Recommended Reading

Some documents may not be available as part of your current Gartner subscription.

"Building the Digital Platform: The 2016 CIO Agenda"

"Digital Business Gives Rise to the New Economics of Connections"

"Digital Business Is Here Now"

"Bimodal IT: How to Be Digitally Agile Without Making a Mess"

"Three Ways That Mode 2 of Bimodal IT Can Go Wrong for Infrastructure and Operations Leaders"

"How to Achieve Enterprise Agility With a Bimodal Capability"

"Three Steps to Help CIOs Anticipate and Respond to Digital Disruption"

"Kick-Start the Conversation on Digital Ethics"

"CIOs Build a Better Brand by Building Trust"

"Architect Your Business to Sense, Respond and Create Business Moments"

"Clouds Are Secure: Are You Using Them Securely?"

Evidence

[1] "The Gartner Supply Chain Top 25 for 2015"

[2] "Building the Digital Platform: The 2016 CIO Agenda"

[3] "Market Guide for Digital Business Consulting Services"

[4] "Building the Digital Platform: The 2016 CIO Agenda"

[5] The figure "42%" is an extrapolation of a survey that stated that "38% of IT spending is controlled by business units or devolved entities," based on a 2012 Gartner survey on enterprise IT spending. See "IT Metrics: A Critical Evaluation of Decentralized IT Spending and Digital Enterprise Readiness."

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The sample consists of large organizations with least $50 million USD equivalent in total annual revenue for fiscal year 2014 and a minimum of 100 employees.

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[21] Williams-Sonoma 2014 Annual Report

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[23] E. Musk, "All Our Patent Are Belong to You," Tesla Blog, 12 June 2014.

[24] A. Offerman, "Schiphol Airport Working on Open Innovation," Joinup (European Commission), 31 August 2015.

[25] Schiphol Group, "Amsterdam Airport Schiphol First Airport in Europe With Full Beacon Coverage," 2 July 2015.

[26] www.hackandfly.com

[27] Discovery: Discovery Vitality

[28] Humana: HumanaVitality

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