

THE NEW CIO IMPERATIVE

TRANSFORM THE ORGANIZATION – NOT JUST THE TECHNOLOGY

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TRANSFORM THE ORGANIZATION – NOT JUST THE TECHNOLOGY

The IT business environment has been disrupted in the last five years – by smartphones, cloud computing, social media, sensors, and the Internet of Things. And the pace of change is accelerating, as digitization and the impact of new competitors drives the day. If organizations struggling to keep up with yesterday’s disruption want to do more than tread water, which means falling woefully behind digital natives and rapidly digitizing incumbents, they need to plan for tomorrow’s disruption.

No one knows what the digital world will look like in 2020, but we know that today’s legacy Oracle/Microsoft/SAP systems are fast turning into yesterday’s mainframes. And we know that new technologies will continue to radically disrupt traditional industries and spawn whole new categories. It’s clear that if the IT function does not change to keep pace with widespread digitization, it will fail.

Where does this leave CIOs? Because legacy systems are not going anywhere, anytime soon, CIOs must continue to maintain these stable and robust (albeit aging) systems. At the same time, CIOs must help build a new digital, agile IT infrastructure that is fit for the future. Thus, the CIO has to maintain, build, and run a two-speed IT infrastructure.

Complicating the task, the CIO used to be the sole IT stakeholder, but IT capabilities are now so broadly distributed throughout many organizations, and digital technology is so ingrained in both development and delivery of products and services, that every company is a *de facto* software company. In addition, firms might have a Chief Digital Officer, Chief Innovation Officer, Chief Science Officer, or Chief Data Officer alongside the CIO.

All this puts the CIO’s position and power base at risk. One risk is that the CIO will become marginalized as the “pipe provider” – treated as Chief Technology Officer instead of Chief Information Officer – and perceived as stalling progress, as the bastion of “old guard” legacy technology. Another risk is that the CEO may opt for a second “fast IT” CIO to focus on digital technology to keep pace with the leaders. To maintain their role, CIOs should seek to take ownership of the transformation of their business’s agility.

TRANSFORMATION FOR AGILITY

Digital players compete on speed and agility, as consumers now expect a personalized experience that is coherent across all channels and platforms. Rather than operating from a long term, grand design, digital natives try to improve every day, and react nimbly to competitors and market opportunities with frequent releases and updates to their technology.

Legacy architectures prevent incumbents from successfully delivering on these heightened consumer expectations. Long release cycles, batch processing, incompatible databases, and minor “patches” without major overhauls from vendors prevent companies from reducing time-to-market of new functionality and offerings. They also cost a lot.

Further, many companies are hesitant to embark on a full IT transformation. That’s understandable, because fully transforming legacy systems is a slow process that can take years. In addition, the process is likely to cost tens of millions of dollars and possibly more – when companies likely have already spent that much to build the system.

The hesitation to rebuild is also smart, because most of these “waterfall” transformations result in systems that are already outdated when finally deployed. The better play is to decouple front-end and back-end systems through mid-tier APIs. As the middle layer is established across the entire back end, build common platforms and harmonize the technology to provide efficient administration and communication between front- and back-office/front- and back-end services. Build infrastructure and tools around cloud-based environments for speed and operating cost reasons. Over the long term (10+ years), replace the legacy back-end with a state-of-the-art technology stack. Delivering agility at scale will require several interim steps to transform slow IT into fast IT.

There are two facets to this new IT imperative:

1) Building or acquiring the new technological and human capabilities; and **2)** Revamping the organization and its processes to mix, match, and deploy these capabilities at scale. Below, we examine eight areas that key to IT, workforce, and organizational transformation.

TECHNOLOGY:
BUILD REQUIRED
NEW CAPABILITIES

DATA ANALYTICS

In the digital era, data is king. Transform the company to live and breathe data analytics. Knowing customer needs and preferences, and driving development and distribution efficiencies, requires building the algorithms, AI systems, and automated decision-making capabilities that will provide a sustained competitive advantage.

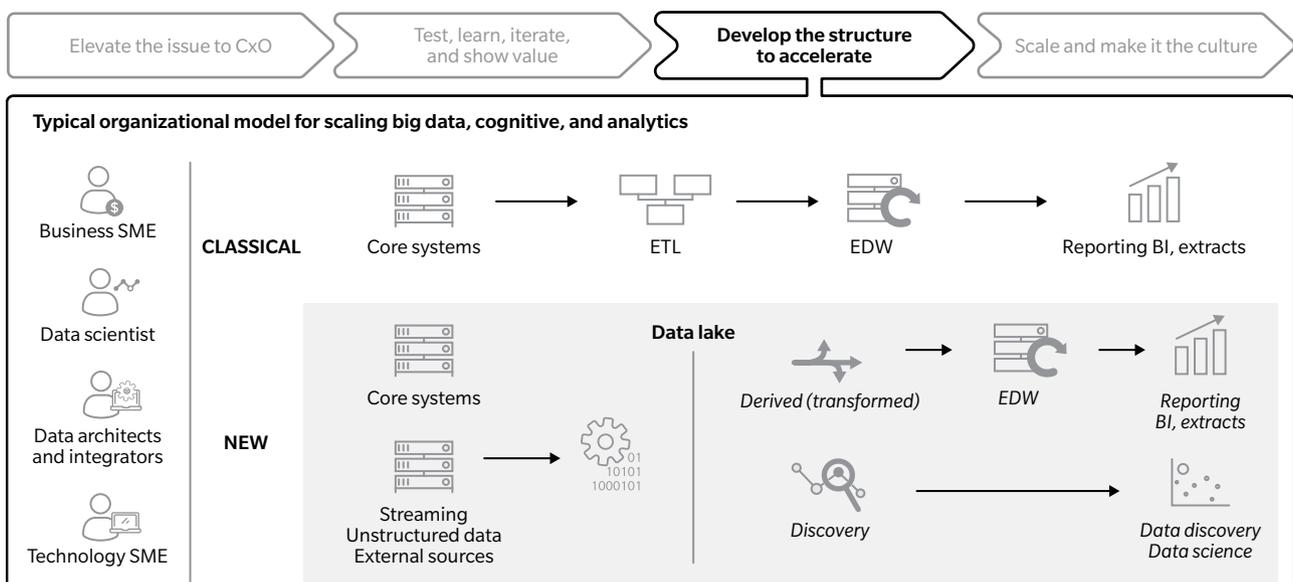
Despite the importance of big data as a driver and shaper of business, few incumbents are building company-wide data capabilities at scale. Many attempts, which started by setting up massive data warehouses or data lakes, have failed or are in trouble. Without a clear link to real business problems, these efforts often end up as a solution looking for a problem.

Instead of starting with data and then looking for places to use it, start with areas where there is a strong indication that data can have business impact. Define use cases, identify the decision areas and business processes which need to change, and then look for the data to support them.

Get the governance right to manage data properly and break silos. This is cultural as much as organizational, and easier if people understand the business rationale. Recognizing the need for new talent and skills is also paramount, particularly to compete with much faster, more agile, firms.

Going further, AI extends the reach of what is possible by enabling the automation of judgment-oriented tasks that previously required human intervention. AI combines data and smart algorithms to allow decision-making based on machine learning and the synthesis of large datasets.

Exhibit 1: The action program – what to do
Typical roadmap for successful transformation into a data-driven company



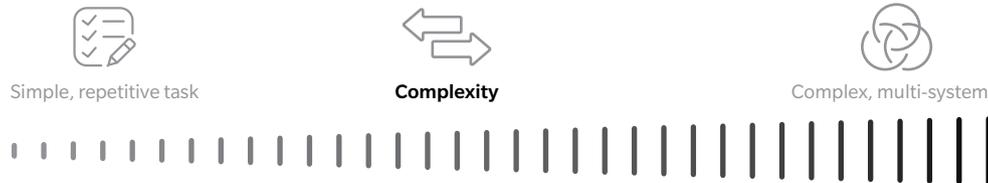
ROBOTICS AND AUTOMATION

Both IT and business units play important roles in implementing RPA (Robotic Process Automation) programs, which can dramatically reduce tedious manual work at very low cost. Business owners must be accountable for managing their robots (just as they would their workforce), ensuring they are configured to operate in their environment and “trained” to accommodate change. IT needs to set up a robotics infrastructure, and notify business owners of changes to user interface and systems that are likely to impact their roles as robot operators.

RPA is not only for business processes; IT operations are also great candidates for RPA. As it is, IT management is plagued by manual controls and processes that drive up costs and create instability. AI-powered robots can continually “learn” how the complex data and systems environments operate, and identify and execute the fastest route to a solution.

Exhibit 2: The action program – the robotics “wheel” will keep churning

There are a variety of robots available to suit different process types



	Task bots	Meta bots	IQ bots
Description	<ul style="list-style-type: none"> • Replicate complex process actions • Perform actions taken by humans at presentation layer of any desktop-based application • Capable of executing multi-step processes 	<ul style="list-style-type: none"> • Leverage API-level integrations to create system-to-system automations • Share automations with Task bots • When combined with Task bots, Meta bots are ideal for multi-skill processes 	<ul style="list-style-type: none"> • Learn and adapt over time • Become independent but with fewer errors • Leverage unstructured data • Capable of making decisions based on accumulated learning and experience
Best for	<ul style="list-style-type: none"> • Repetitive, rules-based tasks relying on structured data 	<ul style="list-style-type: none"> • Complex, scalable processes 	<ul style="list-style-type: none"> • Managing through fuzzy rules and processing unstructured data
Examples	<ul style="list-style-type: none"> • Change of address • New employee onboarding 	<ul style="list-style-type: none"> • Bereavements • Customer onboarding • Stress testing 	<ul style="list-style-type: none"> • Customer charge-backs • Payments screening • Trade reconciliations

The type of robots you deploy depends on the complexity of the task. “Task bots” can replicate repetitive multi-step processes that rely on structured data. “Meta bots” can leverage API-level integrations to create system-to-system automation, and can combine with “task bots” for complex, multi-skill, scalable processes. “IQ bots” learn and adapt to new information, can absorb unstructured information, and are capable of making decisions. They are equipped to handle fuzzy rules, such as crediting consumers over a sales dispute.

Increasingly, it’s possible to replace human intervention with AI/machine-learning tools to automatically execute complex tasks – when processes are repetitive and rules-based, and relatively stable. RPA is relatively cheap to implement, although it requires on-going management of fairly complex processes. Robots are fickle – minor changes in the systems environment can easily confuse them.

CLOUD COMPUTING

The public cloud offers unparalleled flexibility and scalability in infrastructure – you can spin up or spin down capacity on demand – which dramatically shortens the time to introduce new applications. But, even as spending on the cloud surges, there is still significant unused storage space on privately owned servers. Thus, while the public cloud offers potential cost savings, the gains are not necessarily being realized by most organizations.

To begin the transition from physical to virtual space, make the case in waves. Pilot specific use cases for the cloud, choosing cases that require spikes of capacity over a short time period, like risk simulations and digital marketing campaigns. Then develop the business case – cost savings, time to market, risk mitigation. To define migration plans, detail the current landscape (number and type of servers) – with capacity utilization, OS version, and applications supported. Calculate the financial benefits of control and flexibility, comparing cloud vs. servers. Identify regulatory barriers to cloud computing, as well as service and security requirements needed to maintain data integrity.

Ultimately, the transition to the cloud will help you scale your digital platforms as usage increases, without handling the complexity that comes with physical infrastructure, but with the ability to treat hardware like code, accessing it very quickly and at low cost. In the digital era, moving to the cloud will be inevitable and needs to start now.

CYBER SECURITY

It's hard to keep up with the increasing sophistication of cyberattacks. Typical cyber risk strategies are incomplete, with no real prioritization of information assets to be protected. Analysis of cyber threats inevitably focuses on today's processes and information assets – while future threats are a “blind spot.” And risk insurance is not typically part of cyber risk strategy; because companies can't quantify cyber risk, insurers can't price it.

Another issue is that cyber risk is often considered an IT problem, and employees' behavioral patterns are only partially addressed. In fact, insider hacking is the most prevalent source of cyber fraud and crime. Cybercrime is more a “people problem” than a “technology problem.”

Cyber security cannot be “purchased” as a package or assured by a one-off action. Cyber security is as much a function of culture, organization, and process as it is of technology. CIOs need to define the target state they want to achieve – the level of security, budget, timeframe, and change-management programs (important since many cyber threats come from the inside). To guard against cyber risk, assess and model threats, using simulations for training. Use cyber analytics to detect threats and manage vulnerabilities. Treat cyber risk as you would any other risk. Take a holistic business-driven approach according to individual risk appetite.

MODULAR INDUSTRY MODELS AND APIs

The “API economy” is real and growing exponentially. Innovative firms such as eBay, Salesforce, and Expedia are using APIs (Application Programming Interfaces) to deliver a substantial portion of their revenues: Expedia: ~90%¹; eBay: 60%; Salesforce: 50%.

APIs are strategically important, both as a way to simplify legacy architecture, and as the basis for ecosystems. Internally, APIs are key to de-coupling the legacy back-end from a more nimble front-end. Externally, APIs allow businesses to provide a smooth customer interface that allows easy transfer of valuable data.

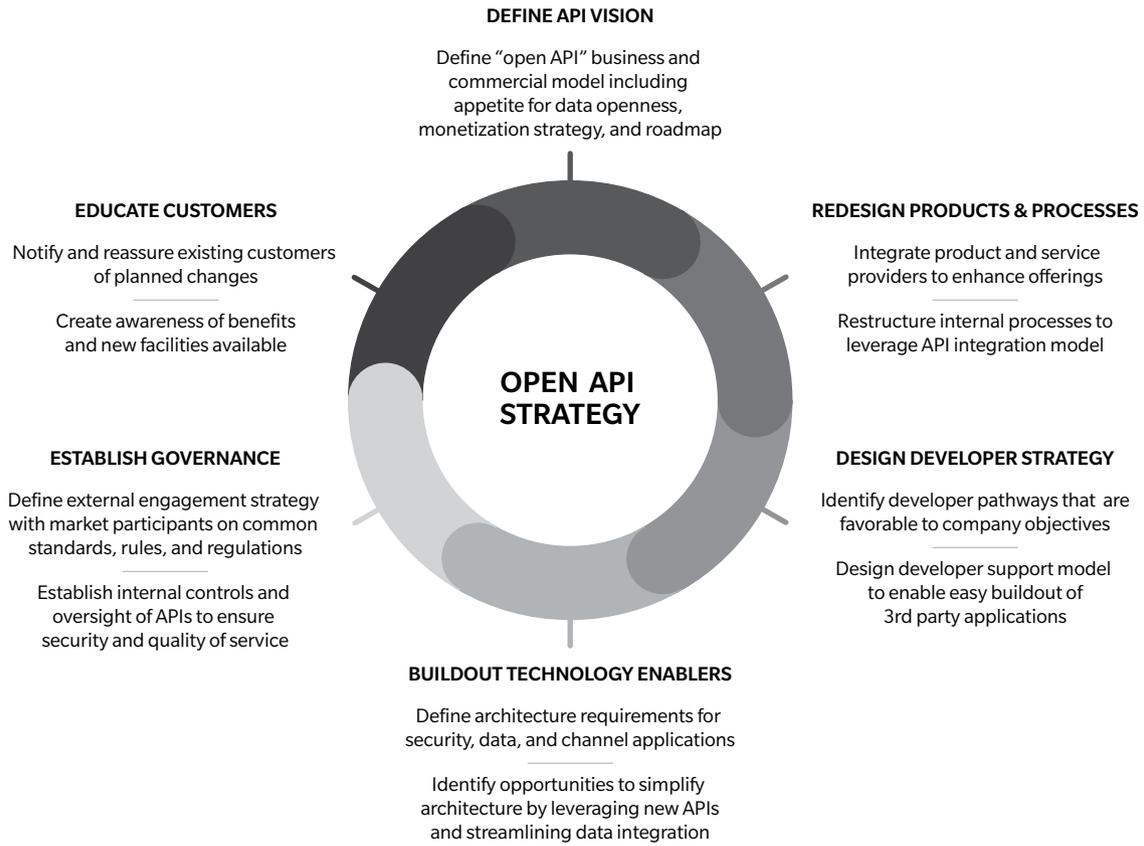
To develop a broad API platform, define an “open API” business and commercial model, including appetite for data openness, monetization strategy, and roadmap. Notify and reassure existing customers of planned changes, and define an external engagement strategy with market participants on common standards, rules, and regulations.

Restructure internal processes to leverage an API integration model with product and service providers. Identify developer pathways and design a developer support model to enable third-party applications.

Define architectural requirements for security, data, and channel applications. Identify opportunities to simplify architecture by leveraging new APIs and streamlining data integration. And design a developer support model to enable easy build out of 3rd-party applications that add value to your business ecosystem.

1. For Expedia Affiliate Network

Exhibit 3: Defining an open API strategy



ORGANIZATION:
REVAMP TO DEPLOY
NEW CAPABILITIES

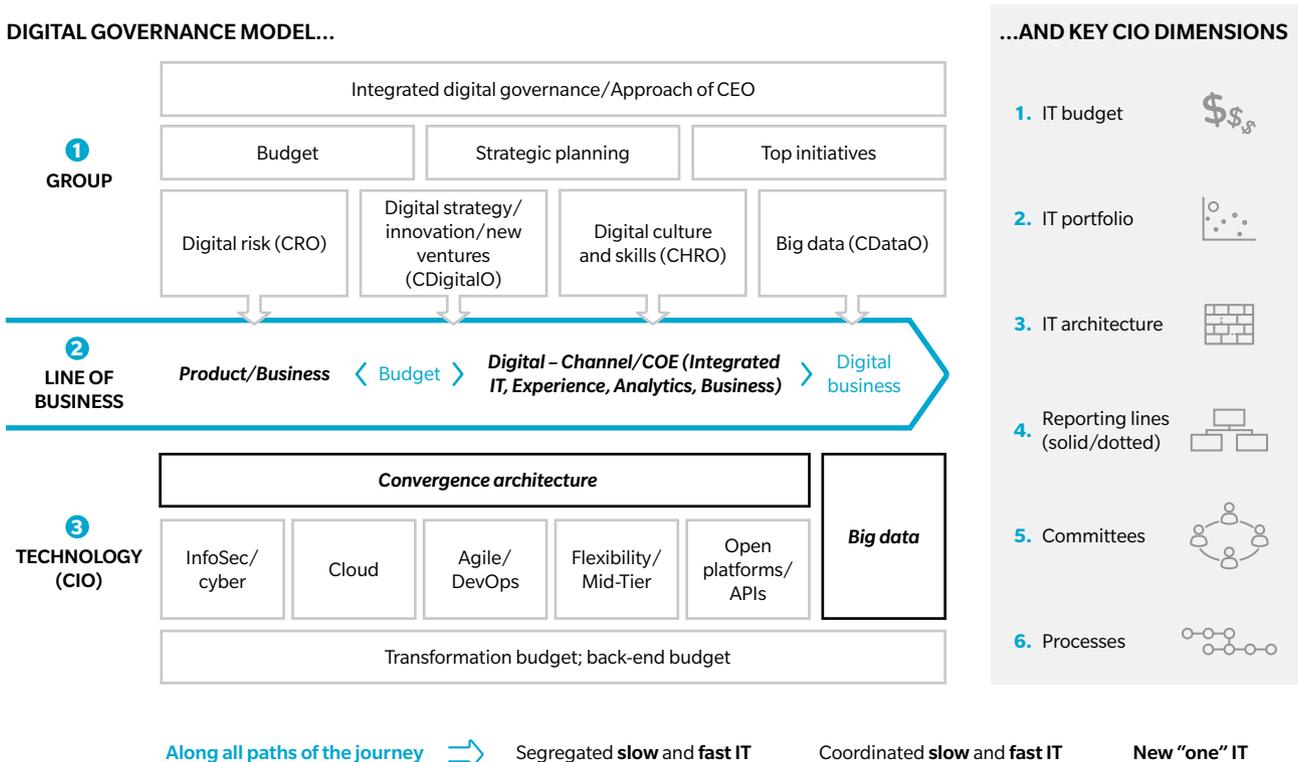
GOVERNANCE

Digital transformations often create new executive positions, each with their own agenda and budget. Organizations need to clarify the CIO's relationship to new C-level roles (Chief Digital Officer, Chief Data Officer, Chief Science Officer, Chief Innovation Officer) and the shift of responsibilities. CIOs can help themselves in this regard by proactively driving digital governance with success stories from both business and IT units.

Digital transformation will affect all dimensions of the organization. The key is to guide the transformation along three time horizons: segregate slow and fast IT, coordinate slow and fast IT, integrate new ("one") IT. The key CIO levers are IT budget, portfolio, and architecture; and reporting lines, committees, and processes.

Many units may have already started digital initiatives, but without a clear sense of the long-term strategy that moves from one time horizon to the next, consistency and scale will be elusive. In addition, you can speed development by using multiple pathways: external incubation and partnership with startups, alongside internal pilots.

Exhibit 4: The action program – what to do



KEY IS TO FURTHER DEVELOP THE 6 DIMENSIONS ALONG THE 3 TIME HORIZONS

IT-BUSINESS COLLABORATION

Pre-2000, IT organizations were siloed, with teams aligned against particular applications (or clusters of applications). CIOs later aimed to “professionalize” IT by turning the organization 90 degrees, installing a plan that isolated the build-and-run teams from the non-IT business functions.

As agility and speed is impossible without getting closer to the businesses again, CIOs need to partially reverse that process without falling back to the problems of the pre-2000 IT organizations. Doing so requires new IT/business interfaces, and also changing IT operations from “doers” to “providers of tools” to the developers. Such DevOps capability improves agility.

While IT is responsible for product architecture, product and business owners launch and manage the digital-product portfolio. Transform the business side for digital-delivery models. In the new digital organization, business units drive tools development, and developers implement it—the biggest paradigm shift for IT and CIOs.

PEOPLE AND SKILLS

The talent needed to deliver the leading digital capabilities is increasingly hard to find, recruit, and retain. The supply of technology graduates has stagnated, even as demand for IT professionals has increased with the growth of tech and data firms, such as Google and Facebook, Uber, and AirBnb. For example, there are 82,000 FinTech jobs in the UK, 44,000 in London. There are 102,000 big-data jobs in the UK, with 54,000 in London. This puts real pressure on incumbent firms looking for top engineering talent, especially those with offices far removed from high-tech meccas.

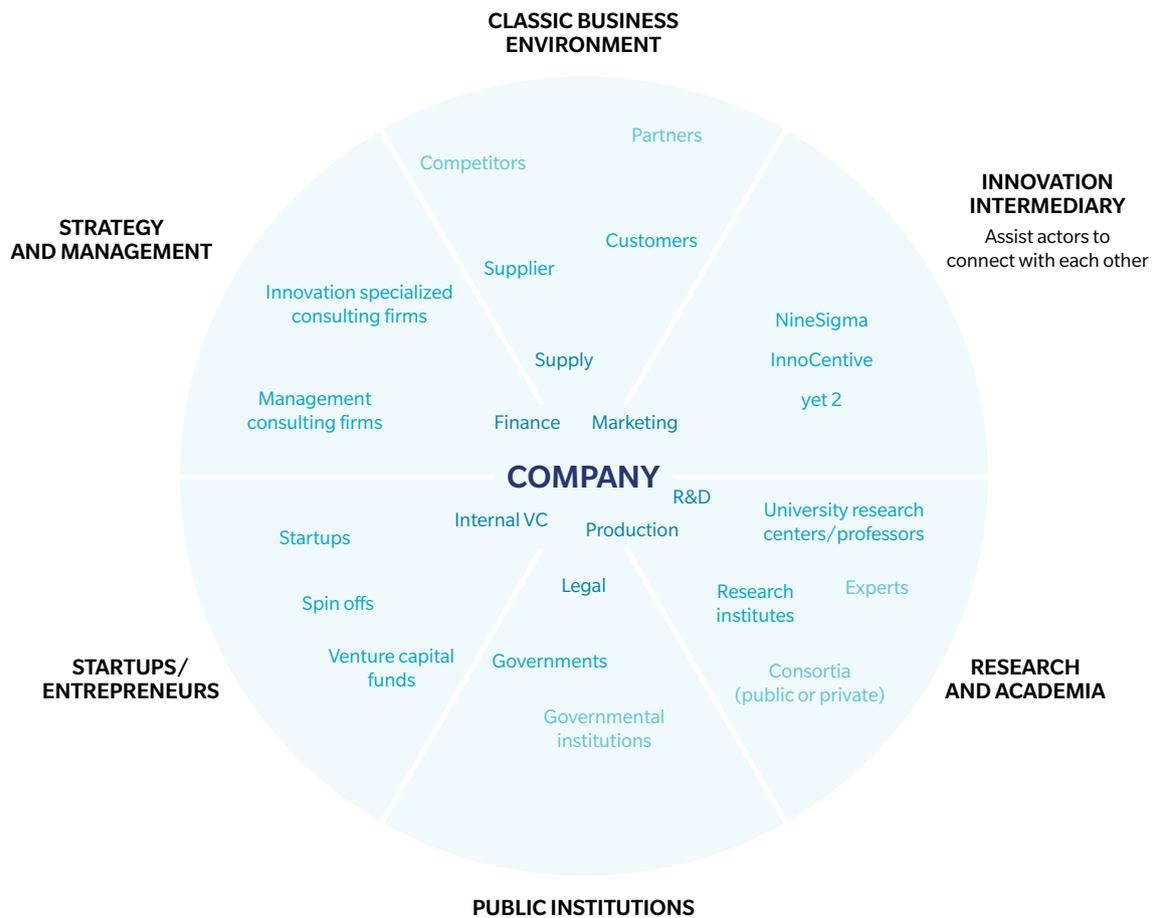
It is a delusion to think that you can hire even half the talent with the target capabilities you need. As the talent market becomes tougher, all institutions in the market are stepping up, making good engineers hard to find and expensive. CIOs need to put further emphasis on transforming existing talent, and developing the organization’s DNA towards a more digital culture.

To attract and retain graduates from top universities, develop an intern program to entice top talent. Align employee proposition and brand to digital ambition, and life and work-style ambitions. Access a broad range of skills: Data science, analytics, digital/social media, emerging technologies. Retrain (or remove) competent but unimaginative staff. Also consider scouting for talent in unrelated fields like gaming or blogging.

To develop a collaborative operating model, deploy and integrate technology and business-model engineers across functions. Balance “captive team” vs. group-wide centers of excellence.

Establish your company as part of an open ecosystem (see Exhibit 5), tapping into research/academia, startups/entrepreneurs, and public institutions, as well as your normal internal and external business partnerships. Seek support with technology and vendor partners, particularly in the x-tech sector (Fintech, Energetech, etc.)

Exhibit 5: Establish your company as part of an open innovation ecosystem



THE CIO IMPERATIVE

The CIO's role has changed dramatically in the last five years. Once in a position of centralized command and control, the CIO is now integrating his or her team more deeply into business units to develop differentiated products and services faster and more cheaply. Once the sole executive in charge of IT, the CIO now works alongside a Chief Data Officer and a Chief Innovation Officer. Roles and mandates are unclear, and constantly shifting.

The CIO was once the builder and implementer of time-tested IT systems from proven vendors; today, the CIO needs to be a champion of innovation and experimentation. Once comfortable with quarterly or annual releases, the CIO must now demand daily releases. Equally vexing to a traditional CIO, business units are driving the application of technology and algorithms. The IT silo has been cracked open. Today's IT is more democratized and distributed, more flexible and agile, often virtual, not static.

If the CIO resists these tectonic shifts, and attempts to remain master of a siloed IT function, his or her relevance in the organization will be dramatically reduced. Others, such as the Chief Digital Officer or external providers, will take over. The CIO, with backing from the CEO, must emerge from the IT silo to re-establish relevance in the business domain.

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