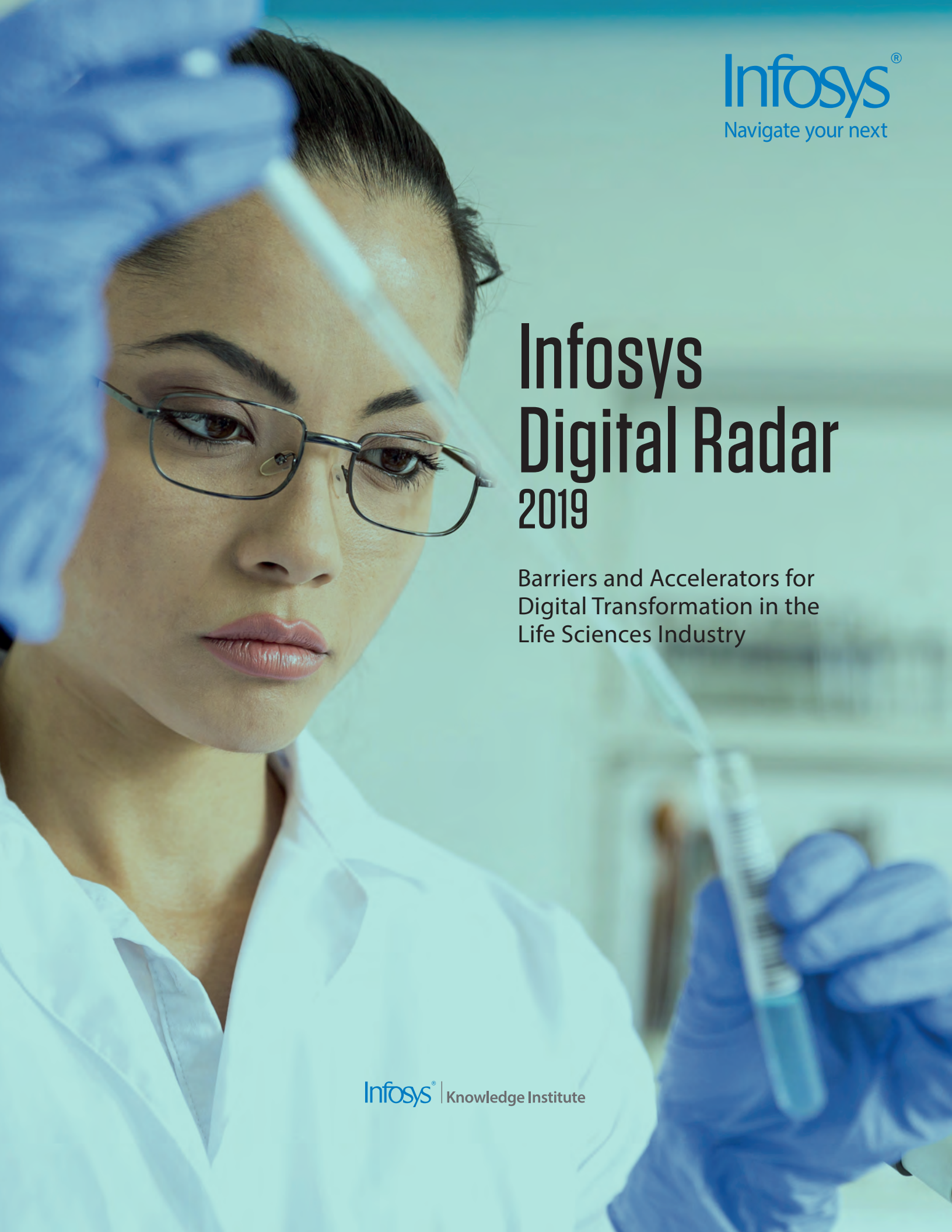

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Infosys Digital Radar 2019

Barriers and Accelerators for Digital Transformation in the Life Sciences Industry

Infosys® | Knowledge Institute

Contents

The digital transformation journey

Even in the tech-savvy life sciences industry, the pace of change is accelerating faster than many companies can transform.

Organizations can no longer rely on blockbuster drugs and improved medical devices to fuel growth or even just to maintain the status quo. Now customers expect more personalized drugs, treatments and service. An outcome-driven model is taking hold, while consumers are empowered to take a greater role in their treatment.

Life sciences companies must accelerate their digital evolution to adjust to this new reality, where "around-the-pill" service and customer interactions are becoming necessary to succeed.

In early 2018, Infosys surveyed more than 1,000 senior management-level executives working in large organizations around the world with more than 5,000 employees and over $1 billion in annual revenue. Based on that survey, we produced a report — The New Champions of Digital Disruption: Incumbent Organizations — showing that incumbent organizations (as opposed to digital natives) fall into three clusters determined by their progress along the digital transformation journey:

Watchers who still see technology primarily as an enabler of efficiency. They have begun to deploy digital initiatives but are largely focused on reducing costs and boosting productivity, rather than looking for digitally-driven ways to differentiate themselves from competitors.

Explorers who express great interest in digital initiatives but have not yet used digital means to transform their business models. Instead, these companies have focused on applying digital to "low-hanging fruit" initiatives that directly impact customer perceptions and experiences.

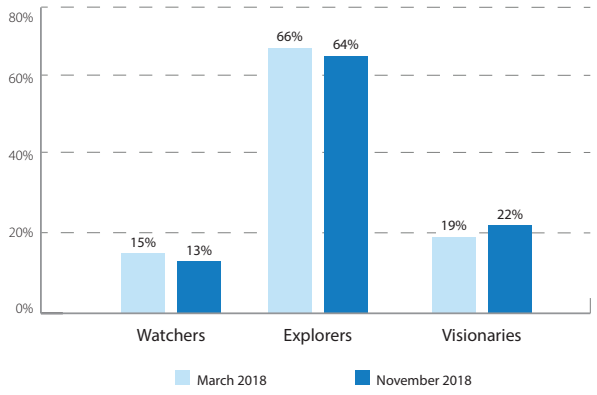
Visionaries who act decisively to seize the opportunities that digital technologies offer. Visionaries apply these digital technologies to accelerate growth by transforming both their culture and their business models. They understand that their future success depends on learning to think and act like digital natives.

Knowing that many organizations are rapidly intensifying their digital transformation efforts, Infosys conducted a new survey in November 2018 to gauge the pace of that change. This new survey – which included responses from dozens of life sciences industry executives – shows that the percentage of visionaries among those surveyed increased slightly, while the number of watchers remained nearly the same.

The life sciences results differ from the survey as a whole. Generally, companies found they can advance from the watcher to the explorer level without herculean effort, but reaching the visionary level is significantly more difficult.

But it is crucial for organizations to move more quickly toward their digital future as the industry faces pressure from skyrocketing health care costs, new regulatory pushback and changing customer expectations.

Fewer watchers, more visionaries



The need to be visionaries

Almost every incumbent life sciences company is being pushed by disruptors or peers to digitally transform. Many companies will only survive if they become digital transformation visionaries.

Some incumbents unable to keep up with the pace of technological change have already succumbed to competitive pressures. Many more will likely fall by the wayside. To avoid being blindsided by competitors and stay relevant, life sciences companies must find ways to transform their products, processes and business models using digitally-enabled approaches and technologies, such as personalized treatments and creating a more collaborative relationship with customers.

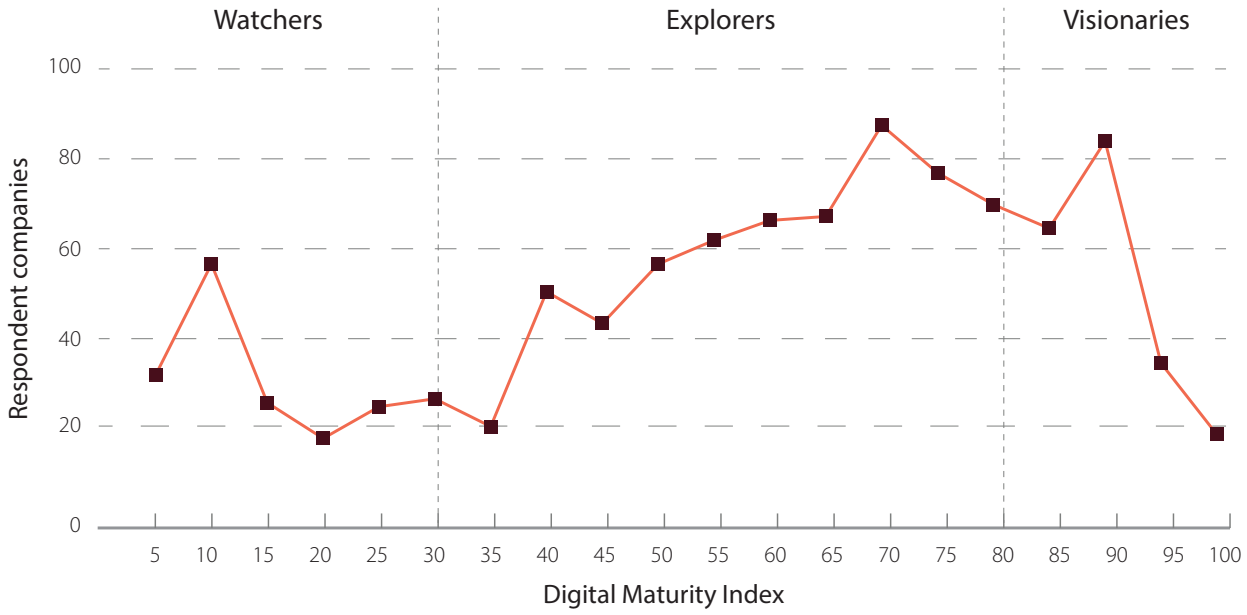
Navigating the transformation journey

Our most recent study takes a closer look at the transformation journey. We identified 22 key digital initiatives and then asked respondents where their companies stood on implementing each initiative:

1. Not started (or in planning).
2. Completed multiple proofs of concept.
3. Completed pilot projects.
4. Operating at scale.

We then developed the Digital Maturity Index and assigned each company an index score from 0 to 100 according to its progress on pursuing and implementing the 22 key initiatives.

Companies on the digital journey

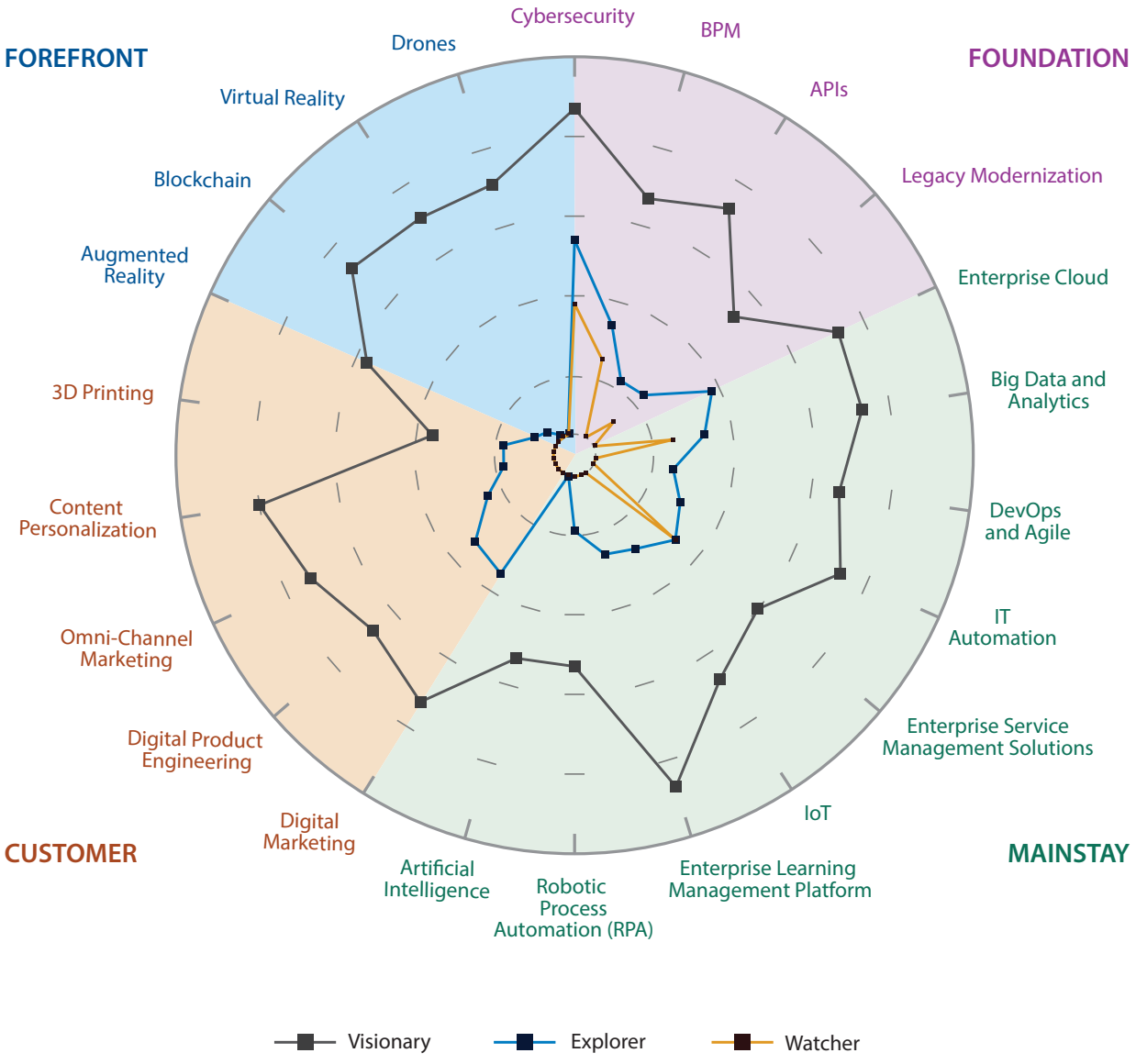


Comparing clusters on their digital transformation journeys

As companies advance through the digital transformation journey from watchers to explorers to visionaries, they operate more and more key digital initiatives at scale. The types of projects change throughout the journey and can be grouped into four categories:

- **Foundation** initiatives must be implemented to modernize legacy systems.
- **Mainstay** initiatives represent the core elements of digital transformation, including automation and artificial intelligence (AI).
- **Customer** initiatives primarily impact the customer experience. They include omnichannel marketing and content personalization.
- **Forefront** initiatives harness cutting edge technologies, such as augmented reality (AR), drones and blockchain.

Visionaries stand out – cluster progress across 22 digital initiatives



As shown in the previous figure, life sciences visionaries are significantly more advanced than explorers in their implementation of all initiatives, and watchers are far behind.

Watchers

- These companies typically operate at scale on only one or two digital initiatives, with perhaps a couple of others in the pilot testing phase.
- None operate at scale on the "internet of things," AI, robotic process automation (RPA), content personalization or any of the forefront initiatives.
- Half have advanced beyond the planning stage on two forefront initiatives, virtual reality (VR) and AR. None have made as much progress on the other two (blockchain and drones).
- Among the foundation initiatives, cybersecurity shows the most progress. Compliance and liability pressures are driving all companies in all clusters to invest here.
- Organizations are not taking steps to invest in Agile and DevOps. Our research indicates difficulty in converting these small wins to larger initiative success.
- Digital marketing is the customer initiative where watchers have made the most progress. This is seen as a leading indicator of customer-centric initiatives to follow.
- Watchers performed just as well as explorers on enterprise service management solutions. But that over performance could be explained by the small number of life sciences watchers, where the relatively few respondents can tilt the results.

Explorers

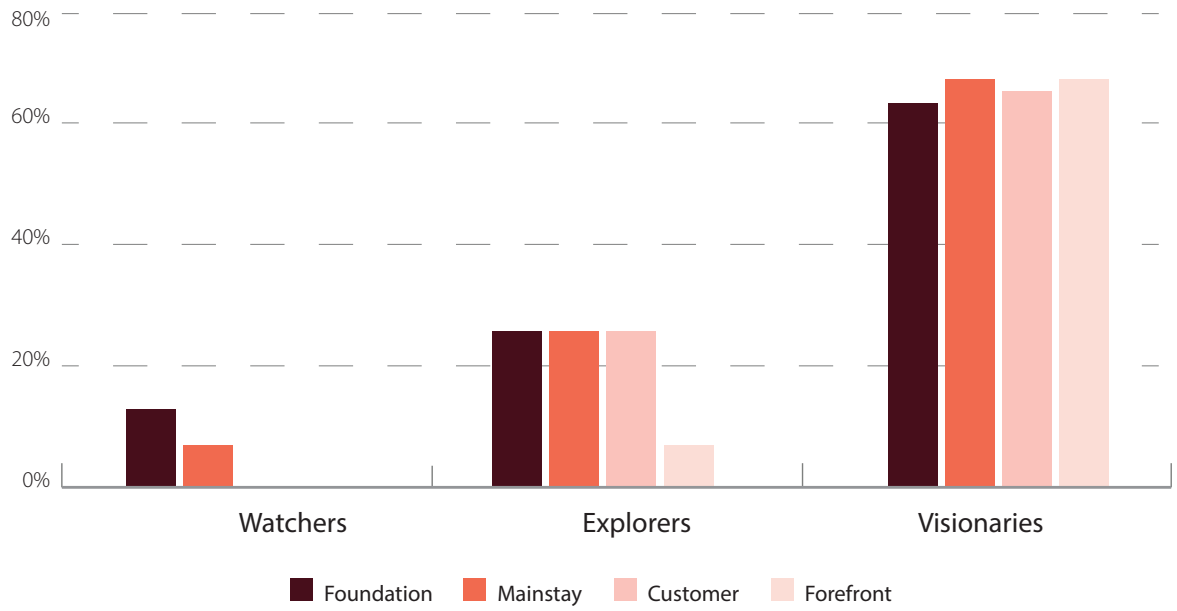
- Organizations are much further along than watchers, explorers have completed pilot projects for an average of six key digital initiatives.
- They have progressed past the planning stage on nearly four-fifths of the initiatives. Yet, they are operating at scale on only about six initiatives.
- Cybersecurity also shows progress for explorers, as the leading area in foundation initiatives. Organizations must worry about protecting highly-personal patient data as well as valuable research or drug pricing information. For several years, hackers have demonstrated how medical devices, from insulin pumps to pacemakers, can be attacked.
- Earlier investments in business intelligence have also provided a foundation for big data and analytics. Explorers have made more progress here than in almost any other mainstay initiative.
- Companies have also made more progress on digital marketing than the other customer initiatives. This rules-based, revenue-oriented initiative tends to provide a clear business case and also highlights the importance of growing sales in an environment of price pressure.

Visionaries

- Far ahead of their peers, on average they are at scale for 10 initiatives and have completed pilots on seven further initiatives.
- They have either completed pilots or achieved scale on nearly all key initiatives, with the lone exception being drones (14% pursuing).
- The overall consistency of progress across initiatives is remarkable, and shows that a comprehensive approach is required to attain leadership. It also implies possible synergy across initiatives, where success in one area like big data may provide core capabilities for another initiative like internet of things devices. Wearable technology is gaining a greater foothold in the life science industry, from sensors embedded in pills to expanding health features in the Apple Watch.
- Even in the forefront category, where progress is understandably less advanced than the others, there is still consistency across initiatives. From our discussions with industry executives and experts, this highlights a "lean forward" mindset that embraces the understanding that today's advanced technologies will become a vital part of tomorrow's operating system.

Changing focus, making progress

Visionaries have many more initiatives operating at scale



As life sciences companies advance along their digital transformation journey, they tend to focus on different sorts of projects. Watchers are just trying to build a foundation for their digital transformation, so they are unlikely to have the bandwidth to launch mainstay, customer or forefront initiatives.

As companies reach the explorer stage, they turn their attention to a broader range of initiatives including such mainstay ones as big data and analytics, RPA, and enterprise cloud. These technologies are critical to analyze, manage and utilize the data generated by wearable medical devices and other technology.

They can also spend time working on customer initiatives such as content personalization, digital product engineering and digital marketing. However, explorers must still invest time focusing on the basics, such as scaling the implementation of core foundational initiatives such as legacy modernization, application programming interfaces (APIs) and business process management (BPM).

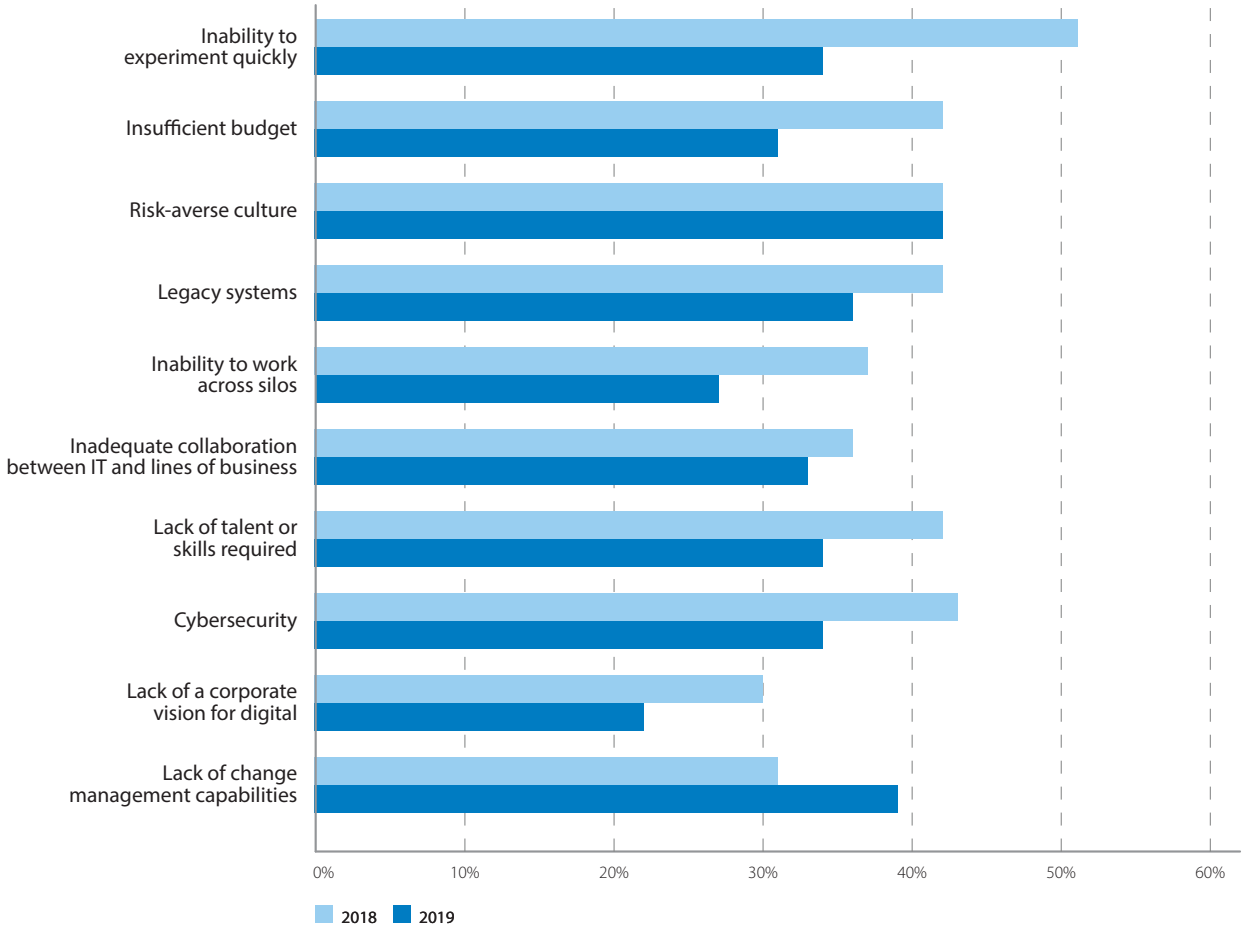
Life sciences visionaries bring many initiatives to scale along foundation, mainstay and customer categories. They are also the only cluster making substantial progress on scaling forefront initiatives such as 3D printing and blockchain technologies, which could be helpful to ensure data security in drug trials or to monitor the supply chain.

Shifting barriers on the digital transformation journey

Our survey revealed that an inability to experiment quickly is the greatest barrier to digital transformation that life sciences companies faced in 2018. More than half of respondents (51%) worry that their companies lack the capacity for rapid experimentation that is essential for testing different technologies and figuring out which ones hold the most promise.

Most companies believe that they can quickly develop this capability. Only 34% of respondents felt that lack of rapid experimentation skills would still frustrate their digital transformation in 2019.

Barriers to digital transformation



We believe that life sciences companies underestimate the challenge of mastering the art of rapid experimentation. Organizations need to implement major cultural changes to become adept at rapid experimentation, according to Alok Uniyal, vice president and head of Agile and DevOps at Infosys. Significant cultural shifts rarely happen quickly.

While respondents feel that most barriers to digital transformation will diminish over time, they have persistent concerns over legacy systems.

Legacy systems currently rank as the third most commonly cited barrier (named by 42% of respondents) by life sciences companies. Participants expect that it will remain the third most serious barrier in 2019.

Updating legacy systems from condition- to predictive-based action is a critical step for life sciences companies. With data supplied by internet of things devices, firms can work more efficiently with partners outside the business and with teams inside the organization.

This connectivity, which is possible with updated systems, often cloud based, allows life sciences organizations to make smarter and more profitable decisions.

Indeed, digital natives cite their lack of legacy systems as a major competitive advantage.

Experience with digital transformation is a double-edged sword. On the one hand, the visionaries who have progressed the furthest along the digital transformation journey recognize the most barriers, identifying four from the list of 10 that we provided.

At the same time, life sciences visionaries are also more optimistic than their counterparts in the watcher and explorer groups about overcoming these barriers. This demonstrates that companies become more confident as they gain experience with implementing successful pilots and bringing ideas to scale on their digital transformation journey.

Survey respondents are also confident that budgetary constraints will become less of a barrier in 2019. While 42% of participants cite "insufficient budget" as a barrier to digital transformation in 2018, only 31% feel that it will still be a serious stumbling block this year. If organizations devote more investment to key digital initiatives, that would show that senior leaders are strengthening their commitment to digital transformation.

On the flip side, participants expect that change management will only grow harder as time goes on. While 31% of respondents named "lack of change management capabilities" as a barrier in 2018, 39% said it would be a problem in 2019. Watchers and explorers are especially worried about managing change.

Digital maturity by industry

Our survey revealed significant differences in digital maturity by industry. We found that technology, manufacturing, telco and financial services companies had progressed furthest on their digital transformation journeys. Digital Maturity Index scores were distinctly lower in other industries such as consumer goods, logistics and health care. Life sciences was in the top half but still closer to the middle than to the leading sectors.

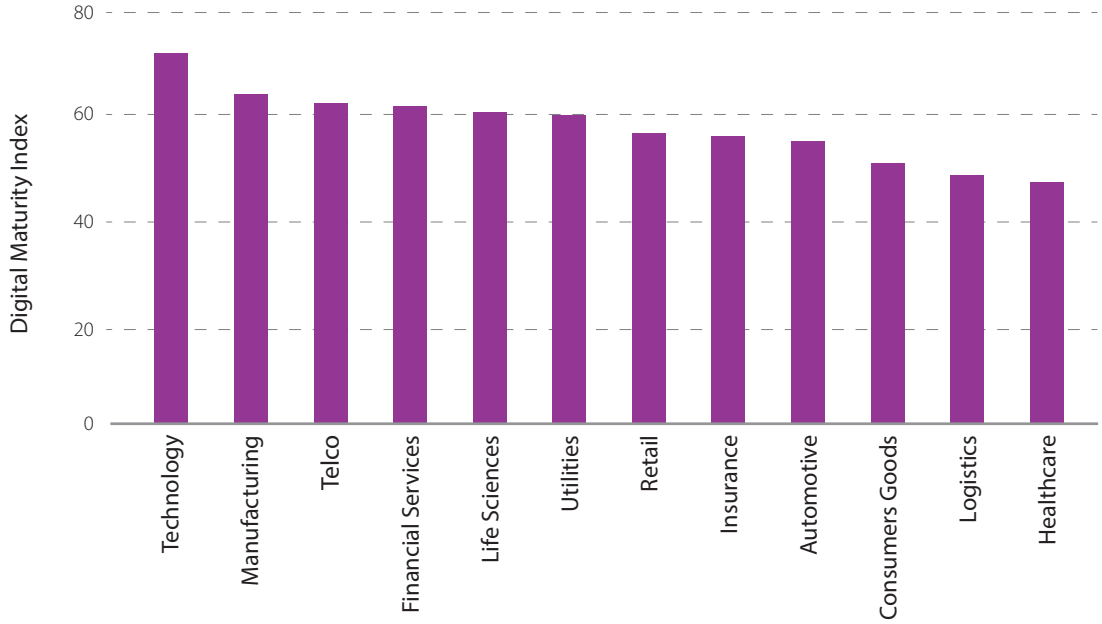
In other research, the life sciences industry tends to rank lower in digital progress. These new findings could be the result of a different population of companies sampled.

Legacy incumbents are trying to make progress toward digital transformation, but their efforts are often hampered by regulations, security concerns and complex internal processes.

In a 2018 Infosys survey of life sciences professionals, respondents cited a number of challenges, including lack of business cases, talent shortage and regulatory restrictions.

But when selecting digital technologies, respondents said they were most interested in long-term effectiveness over a quick return on investment.

Industry ranking on the Digital Maturity Index

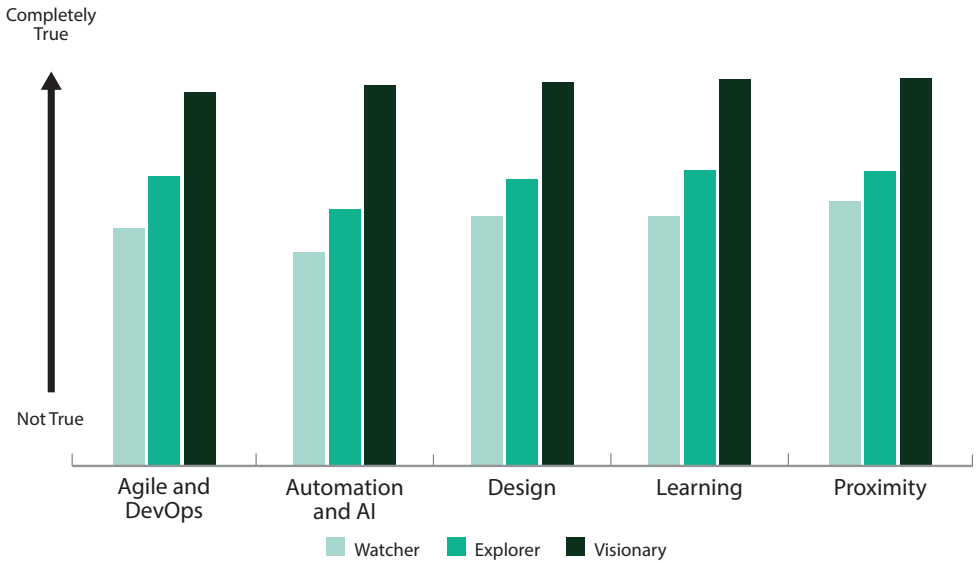


Accelerating the digital transformation journey: 5 key capabilities

In August 2018, Infosys conducted a research study that identified five capabilities that help companies accelerate their digital transformation journeys: Agile and DevOps, automation and AI, design, learning, and proximity.

In our November 2018 executive survey, we looked deeper to understand company competencies in these areas. We found that companies with the highest Digital Maturity Index scores (i.e., the visionaries) do indeed have the strongest abilities in all accelerator categories.

Visionary companies have superior accelerator capabilities



Cluster average

The five digital capability accelerators above are each powerful in their own right, and we examine each of them on the pages that follow. Before looking at the accelerators individually, it is worth reviewing them holistically at a summary level. When we reviewed client and industry digital transformation programs, we found multiple successes in the past two years where one of the accelerators was dominant. However, in discussions with executives about the next 12 months and beyond, the consistent message was that multiple accelerators will increasingly be needed for future success. Agile and DevOps programs will be required for the uncertainty that accompanies the frenetic ongoing pace of change. The amplification and intelligence from automation and AI will be required to make sense of an increasingly complex world.

Design will become a non-negotiable expectation that goes beyond functionality to experience, and will permeate more and more business functions.

The rate of change faced by enterprises, and the necessity for widespread adoption, virtually guarantee that learning will be a core part of any lasting transformation. Finally, the location or proximity to work will be a major factor in capability and program planning, both for strategic intent and cost management.

Let's examine each of these digital capability accelerators.

Digital transformation accelerator No. 1: Agile and DevOps

"There's an overarching need for companies to be nimble and responsive, to understand company needs, and quickly develop solutions," said Uniyal, the Infosys Agile leader.

"Agile and DevOps enable companies to beat competitors by quickly experimenting, validating ideas and scaling leading-edge solutions. They enable greater flexibility and higher productivity. DevOps helps by automating the Agile software development lifecycle, enabling companies to deploy new features on a nearly continuous basis."

The visionary companies that are furthest along the digital transformation journey have the strongest ability to deliver Agile programs at scale. They have fully adopted both an Agile mindset and Agile practices. Their IT developers and operations teams cooperate closely to achieve business objectives.

Their technology teams deliver results fast enough for these legacy companies to stay competitive and fend off digital native rivals. Such visionaries are also likely to have a robust, stable DevOps platform that serves their entire enterprise.

There are two primary barriers that prevent life sciences companies from making more progress on Agile and DevOps.

One major organizational challenge is changing the culture to ensure that business cooperates with IT from the start.

Our research has found that about 80% of development projects are IT-led and IT-sponsored, without early involvement of business stakeholders.

If companies can change their culture and mindset to ensure early business and IT collaboration, they will dramatically improve likelihood for Agile and DevOps success.

In addition to cultural change, the life sciences industry also needs to make sure that its employees are trained in new ways of working. This retraining must extend throughout the organization so that all stakeholders have a good understanding of these new ways of working.

This could assist organizations in adapting as the new regulatory and market focus shift to "benefit versus risk" in the U.S. and toward benefit and cost-effectiveness in the European Union.

A tech industry approach to software development could also prove useful as pharmaceutical companies interact more frequently with their customers. Drugmaker Pfizer created its Moodivator app to complement its antidepressant Pristiq.

While our survey shows that many companies are confident — perhaps overconfident — in their ability to master rapid experimentation, the reality is that Agile and DevOps techniques are hard to master. Even companies that purport to have flexible, Agile teams may still rely on the same old structured, rigid waterfall development methods inside those teams.

There are practical steps that companies can take to improve their Agile and DevOps skills. Companies can work faster and scale quicker while meeting the demands of global markets by implementing Agile on a distributed basis.

"Companies need to become more dynamic and nimbler," Uniyal said. "To react faster to changing markets and come up with improved products and services, companies need to have a culture of rapid experimentation, quick development, prototyping and validation. To accomplish this, they need to be able to visualize their end-to-end value chain. This is a major challenge in legacy organizations where the value chain may be fragmented. The best way to overcome this issue is by implementing Lean."

Digital transformation accelerator No. 2: automation and AI

AI and automation have the potential to radically transform existing business models and unlock new opportunities.

What distinguishes visionaries from their peers when it comes to AI and automation? Our survey found that visionaries are more likely to have developed and started to implement well-articulated strategies and initiatives for AI, RPA and IT automation. They also tend to approach automation and AI as ways to amplify human capabilities rather than just reduce headcount and costs. Their employees have the skills to implement automation and AI technologies in ways that advance corporate strategic goals.

Drug maker Pfizer has automated about one-third of its business operations, including all U.S. Food and Drug Administration regulatory compliance. That's led to a 15% increase in productivity and a 10% reduction in total cost of ownership related to the automation.

Life sciences companies could also benefit from the use of AI in phase 2 and 3 clinical trials.

That said, life sciences companies at all stages of their digital transformation journeys are grappling with the ethical implications and opacity of AI.

"We need a paradigm shift in how we interact with AI and automation," said John Gikopoulos, global head of AI and Automation at Infosys. "We should apply ethics and control at the personal level, rather than expecting a process, machine, or laws to govern these technologies once they are out in the world."

Better tools are frequently coming to market that give the life sciences industry new ways to create AI applications. Companies need to determine the best ways to harness these tools and develop useful solutions that meet client needs. To get the most benefit from automation and AI, most incumbent companies will need to convince their own workforce about the benefits of these technologies and reskill employees to make sure that people and machines can work seamlessly together to achieve superior results.

Digital transformation accelerator No. 3: design

Design skills enable companies to rethink every aspect of their business, from internal operations to external customer service. Companies with superior design skills use technology to find novel solutions to serve human needs.

Our survey shows that companies with design strengths are better able to seize opportunities to improve both customer and employee experiences. They are more likely to deploy technology in the form of digital product engineering, content personalization and AR.

Life sciences visionaries understand that design is more than mere user experience. Instead of segregating user design within its own silo, they make sure that more people, in more functions across the company have responsibility to design products and services that maximize user satisfaction.

In the life sciences industry, organizations have often been willing to spend generously on marketing, and research and development. But user experience and patient-centric design have often suffered.

Design-led companies have effective processes in place to continuously listen to customers. They are committed to testing ideas and iterating to make those ideas better over time. They measure design performance and results with the same rigor that they apply to tracking revenues and costs.

When it comes to pursuing design-led solutions, Infosys design executive Corey Glickman warned against excessive prototyping. He said too many companies spend millions of dollars a year on prototypes and proofs of concept, without ever moving on to implement those pilots at scale. In times of disruptive change, companies must bite the bullet and make big bets. It sometimes takes an industry leader or innovative upstart to establish a new norm. "No one would have a digital twin today if GE hadn't sunk millions of dollars into developing theirs," Glickman pointed out.

Systems engineering has emerged as a critical role in the digital age. The best systems designers are diligent scientists with master's degrees and many years of work experience. This type of talent is in short supply, exacerbating the war for talent. However, the good news is that a systems designer with experience in one area can typically apply his or her knowledge to other domains. "Systems designers understand how large, complex systems behave," Glickman said.

"As a discipline, systems design is universal enough that someone with experience in financial services can apply their skills and experience to software design or health care."

On a practical, operational level, our research has confirmed the effectiveness of breaking up large projects into small teams of highly-skilled programmers handling the hardest and most important challenges. These all-star coders are hands-on, working iteratively in physical and virtual whiteboard environments, efficiently pulling from reusable code libraries and writing their own fresh code every day. This approach can reduce development time from three months to as little as three weeks. With this arrangement, companies can deliver more effective programming, solve difficult problems faster, and reduce technical debt that may have accumulated through legacy programming and processes.

Finally, the success of design-led digital transformation depends on the involvement of senior executives. Design is helping to transform major components of enterprise operating models, and success requires buy-in and leadership from the top.

Digital transformation accelerator No. 4: learning

Companies face a significant gap between the digital skill sets they need and the talent available, according to Jonquil Hackenberg, partner at Infosys Consulting. "Recent graduates, even in desirable fields like data science and enterprise architecture, lack the experience and expertise to implement at scale," warned Hackenberg. "Meanwhile, legacy IT professionals struggle to engage with subject matter experts in a way that translates business needs to modern, scalable technology solutions."

Visionary life sciences companies are more likely than other firms to bridge this talent gap by investing in the digital tools and infrastructure necessary to support a robust, always-on, continuous learning and reskilling program for employees.

Continuous learning is fundamental to developing the workforce of the future, one that can achieve and sustain digital transformation. Employees must become nimble, responsive and proactive enough to identify and seize the best opportunities made possible by emerging technologies and new business models. Our research findings suggest that such continuous learning programs play an especially important role to help employees develop skills in Agile and DevOps, areas that are as much mindset shifts as technical skills.

Employees realize the critical importance of continuous learning to keep themselves marketable and relevant in a rapidly changing business world. Beyond internal skills development, learning programs have the added benefit of supporting retention. Employees appreciate when companies make investments in their career development.

Many leading organizations have built their own internal training, reskilling and upskilling programs. That's critical in the life sciences industry, which attracts top science talent but has a more difficult time luring data scientists.

Our research shows that watchers often overlook the substantial benefits of learning accelerators.

For companies looking to make the move from watcher to explorer, investing in learning is an important early step.

Digital transformation accelerator No. 5: proximity

Even though many life sciences companies are competing in a global marketplace and have access to a growing suite of collaboration and communication tools, distance still adds complications to any initiative or project. Proximity enhances collaboration and can remove physical barriers to success in product and IT development projects.

"Value creation occurs when companies bring teams together end-to-end in proximity," advised Deverre Lierman, leader of the Infosys Raleigh Technology Hub.

"Companies should deliberately structure their ecosystem and choose their partners with an eye to maximize innovation, speed and responsiveness. The key is to capitalize on the benefits of high-quality, low-cost locations without sacrificing the advantages that proximity brings. Visionaries balance global delivery centers with nearby innovation hubs."

These hubs may be internal or involve strategic partners.

The BioMalta Life Sciences Park was created as a hub for startups and established firms. And the location, close to the University of Malta and Mater Dei Hospital, makes collaboration easier.

Hubs can solve problems but can also create challenges.

"Expensive and competitive real estate markets are forcing life sciences companies to explore creative real estate options to drive innovation and productivity in their workforce," said Roger Humphrey, executive managing director and leader of real estate firm JLL's Life Sciences group. "In the most sought-after life sciences hubs, fierce competition for space and talent is leading to the development and renovation of new space, both where you might expect it and in surprising locations where adaptive re-use conversions result in energizing new space."

Our data shows that visionaries are more likely than watchers or explorers to have implemented finely-tuned strategies to locate employees together in geographies that balance cost with proximity to partners and customers.

Still, even visionary life sciences companies depend on the contributions and efficiency of distributed development teams. Visionaries supply these teams with effective collaboration tools and implement standards to measure the quality of work these distributed teams deliver. To the extent that visionaries rely on global development centers, they also invest in the infrastructure and systems to minimize the impact of distance.

At the same time, visionaries recognize that there is no substitute for physical proximity and are quite willing to establish well-staffed technology and innovation hubs near important partners or customers. That is why Infosys is establishing six new technology and innovation hubs in the United States and staffing them with 10,000 American employees to serve its customers there. Such proximity is especially valuable when working on initiatives involving customer experience, such as product development, content personalization and AR.

Companies looking to reap maximum benefits from proximity should locate their technology and innovation hubs near end users (i.e., clients) and in places that have intrinsic appeal for the talent that the company wishes to recruit and retain. Locations near top universities are also attractive, since those schools can provide a pipeline of candidates for recruitment and an ecosystem for incubating innovation ideas.

Companies at all stages of digital transformation should strive to create a culture that attracts talent. Our research shows that employees want to work in a collaborative and collegial environment, where they know they can focus on getting results without wasting time fighting turf wars.

Practices and mindset — what sets visionaries apart

Every incumbent life sciences company knows that it needs to make progress on its digital journey, but our recent survey indicates most are not moving fast enough.

How can they move to the visionary level? What sets visionaries apart from watchers and explorers?

According to our research, visionaries stand out in the way they have fully embraced the mindset and practices of both being agile and doing Agile.

To become more like visionaries, companies should put in place a formal digital transformation strategy, and share that plan with employees, customers and partners alike. They should also develop and implement a comprehensive strategy for using automation and AI to bolster human capabilities, rather than just focusing on cutting costs.

These are not trivial matters. Companies face real challenges around talent recruitment and reskilling, retooling legacy systems, building the five accelerator capabilities and fighting off lean, hungry digital native disruptors.

The truth is that incumbent life sciences companies need to do three things, do them all well, and do them simultaneously:

1. Establish the technical foundations for digital transformation.
2. Build technological capabilities and talent.
3. Innovate at the speed of Agile.

There are two ways that companies can give themselves a boost on the digital transformation path.

They can seek to amplify their existing capabilities by focusing on high-value projects with the greatest potential impact, and they can partner with other organizations to gain access to complementary skills and resources.

Pharmaceutical giant Novartis and semiconductor and telecom company Qualcomm started a partnership on mobile-enabled clinical trials and co-created an investment fund for "beyond-the-pill" projects.

Amplify

Life sciences companies have limited talent resources, so it makes sense to focus systems designers' efforts on the biggest problems where the solutions they create will have the greatest impact. "You can amplify the impact of designers by assigning them to small teams where they can work together to deliver scalable solutions that can be replicated throughout the organization," explained Infosys' Glickman.

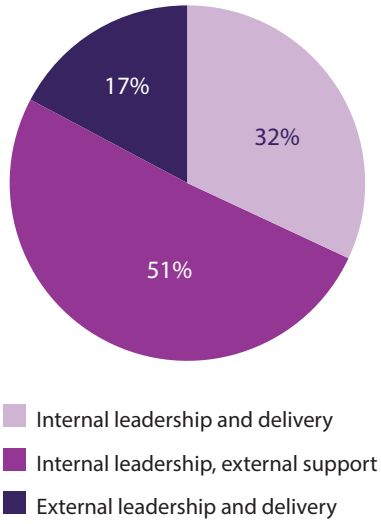
"If you have the right systems and process, a small number of talented individuals can have a big impact on a company's digital transformation journey."

Life sciences companies need to figure out which projects to prioritize and how to push the digital envelope where it will matter most. Visionaries are comfortable with different parts of the organization being at different steps in their digital transformation journeys.

Partner

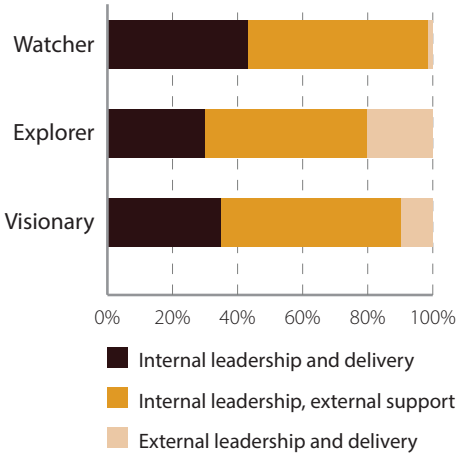
Respondents told us that only about a third of digital initiatives are led and delivered internally; about a half are led internally and delivered by partners, while nearly one-fifth are fully delegated.

Companies partner for about two-thirds of their digital initiatives



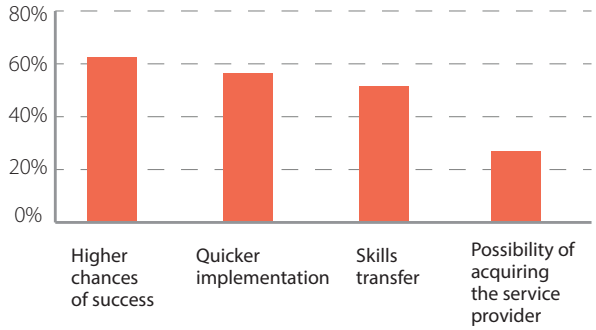
There is a significant difference in how clusters handle partnering. Watchers are the most likely to run initiatives entirely internally. Explorers are most likely to lead projects internally, while having them executed externally. Visionaries are more likely than the others to let partners run and deliver initiatives on their behalf, although in life sciences, explorers lead in that category.

Explorers are more likely to partner on digital initiatives



According to our respondents, partnering offers two primary advantages: higher chances of success and quicker implementation.

Partnerships have several advantages



According to our research, visionaries are more likely to form partnerships because they have the process and governance maturity needed to build and run them effectively. It's the same reason companies that invest in architecture and data management are more likely to support API interfaces with external services. Visionaries also have experience building partnerships and understand the multi-faceted value of a good partnership, so they are more likely to pursue and forge additional partnerships when opportunities arise.

Life sciences visionaries' digital accomplishments also give them a better appreciation for the unique capabilities that partners bring to the table. When it comes to the vast world of technology, visionaries who develop certain technical skills also tend to learn that they cannot be experts at everything. Instead, they recognize the value of focusing on their core competencies and gaining access to other expertise through mutually-beneficial partnerships.

Respondents told us the best partnerships are built on strong personal relationships among humans.

Survey participants reported that their companies were most likely to ask an external partner to both lead and deliver on sophisticated initiatives such as drones, AR and blockchain. About one-fourth of incumbent companies turn to partners for help with these sorts of initiatives that require specialized, hard-to-recruit expertise.

Companies were more apt to favor internal leadership, while partnering with external help for execution on initiatives such as cybersecurity, enterprise cloud, internet of things and VR. These areas also require specialized expertise and significant resources, but in-house staff may already have some experience in these fields and thus feel more confident directing such projects themselves.

According to our research, U.S.-based companies tend to view intellectual property (IP) even more as a proprietary advantage than their European and Asian counterparts. As a result, U.S.-based firms more often prefer to develop high-value innovation in-house. European firms partner for IP in a more transactional manner, while Asian companies have shown more openness for partners to take leading roles in IP creation.

Accelerating the journey

As mentioned in the Amplify section above, every life sciences company—including visionaries—needs to prioritize specific digital transformation projects in order to maximize the impact of scarce resources.

How can a company know which projects to prioritize?

- Analyze its level of digital maturity and develop a clear, honest evaluation of current initiatives relative to objectives.
- Assess the short-term future of its industry. What are the key threats from disruptors? Which emerging technologies hold the most promise? How are customer expectations changing? What impact will these factors have on business models?
- Ensure that the company has a solid digital foundation by modernizing legacy systems and working on APIs and BPM. Strength in these areas will enable success in other aspects of a digital transformation plan.
- Strengthen and refine the five accelerator capabilities - Agile and DevOps, automation and AI, design, learning, and proximity.
- Forge relationships with partners whose skills and services could promote faster, better progress toward digital transformation goals.

As with other change initiatives, senior life sciences executives should take an active role in driving digital transformation initiatives.

Leaders have to send a signal that such internal power struggles will not be tolerated. Digital transformation journeys can only succeed when individuals from multiple areas of the organization step outside their comfort zones and work across boundaries for the good of the entire enterprise.

The digital future is arriving at a rapid pace, and the consequences for inaction are more severe than ever. With proper planning, cooperation and commitment, business leaders and IT professionals can work together to position their companies for success, no matter which direction the digital winds may blow.

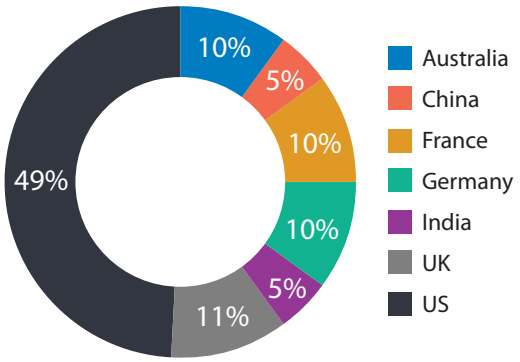
Survey methodology

In November 2018 the Infosys Knowledge Institute used a blind format to conduct an online survey that attracted responses from more than 1,000 CXOs and other senior-level respondents from companies with revenue upward of $1 billion. Respondents represented multiple industries and hailed from Australia, China, France, Germany, India, the U.K. and the U.S.

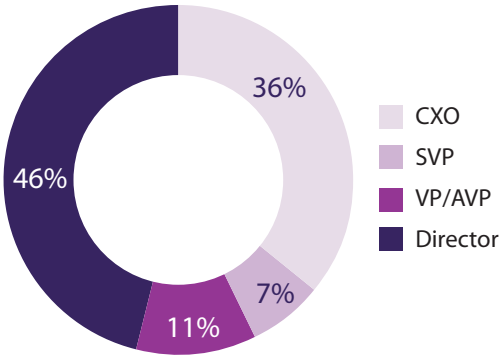
To gain additional qualitative insights, we also conducted phone interviews with more than a dozen industry practitioners and subject matter experts.

Survey coverage

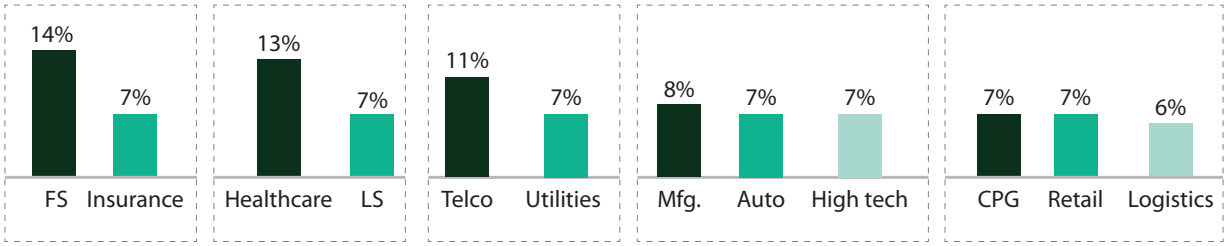
Geography



Level



Industry



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About Infosys Knowledge Institute

The Infosys Knowledge Institute helps industry leaders develop a deeper understanding of business and technology trends through compelling thought leadership. Our researchers and subject matter experts provide a fact base that aids decision making on critical business and technology issues.

To view our research, visit Infosys Knowledge Institute at infosys.com/IKI

Notes

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