

Building Your Digital Transformation Journey

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Introduction: The Push for DX

Capturing a piece of the digital transformation (DX) opportunity is at the center of business strategies today. Across all industries, this amounts to an opportunity for an increased annual economic value of \$18.5 trillion, or nearly 25% of global GDP. The opportunity for industrial organizations is higher than many other segments, representing more than \$4.5 trillion in annual value. This analysis is based off IDC DX research focused on the impact of digital technology and looks across the value chain – including upstream (supply chain), production (factory), and downstream (customer experience and product development).

No matter the organization or process, the economic opportunity for DX is immense and as a result, **organizations have made investments in this area a top priority.** In fact, over the past year global organizations have spent more than \$1 trillion on digital transformation, with industrial organizations contributing more than a third of this spending. There are companies that are well underway in their transformation efforts, the longer you wait to start your DX journey the further behind you will fall.

Today, **survival of the fittest is not linked to size or strength but to the ability to change** — to move quickly, adapt, seize opportunities, and be agile. Transformation is driving manufacturers to rethink their technology strategy and that includes the incorporation of innovation accelerators such as the Internet of Things (IoT).



The Benefits of Transformation

The impact of incorporating digital initiatives cannot be overstated, there are companies that are already reaping the benefits. IDC recently conducted an analysis of industrial organizations and separated them into two groups:



Digital:

Companies which are digitally transformed or in the process of digital transformation, based upon IDC's DX maturity framework

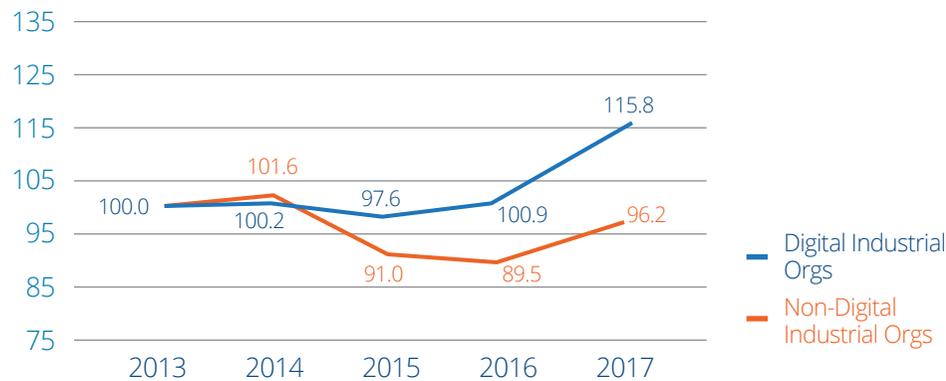


Non-Digital:

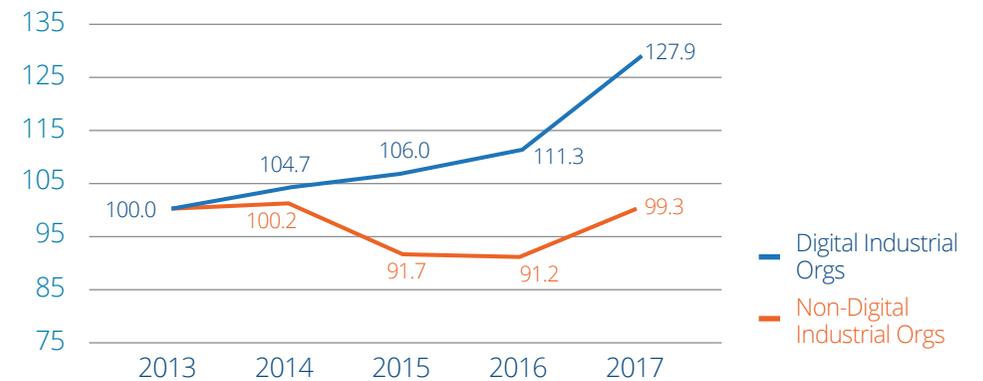
Companies that have not undertaken any digital initiatives, based upon IDC's DX maturity framework

The analysis looked at revenue and profit performance over a five-year period, and the changes that occur within each group. IDC normalized the performance through a Revenue Performance Index (RPI) and Profit Performance Index (PPI), with every organization starting at 100 in 2013. The change in performance was tracked, with increases in the index meaning improved revenue and profit performance and decreases meaning poorer performance.

Revenue Performance Index (RPI)



Profit Performance Index (PPI)



The High Cost of Inaction

While industrial organizations will always focus on limiting costs and digital initiatives can require significant investment, the payback is well worth it. There is a clear advantage that occurs over time for companies that embrace digital technology. For both revenue and profit, digital organizations come out ahead.



A common challenge that non-digital organizations face is that they still rely upon manual or paper-based processes across the enterprise. Digitizing these processes results in many immediate business benefits, but more importantly, they serve as the building blocks for DX. While, digital technologies like cloud, mobility, big data & analytics, and IoT will be key enablers for the most advanced DX use cases. Ensuring that the foundation is in place is a crucial step that can't be skipped; digitization provides that foundation.



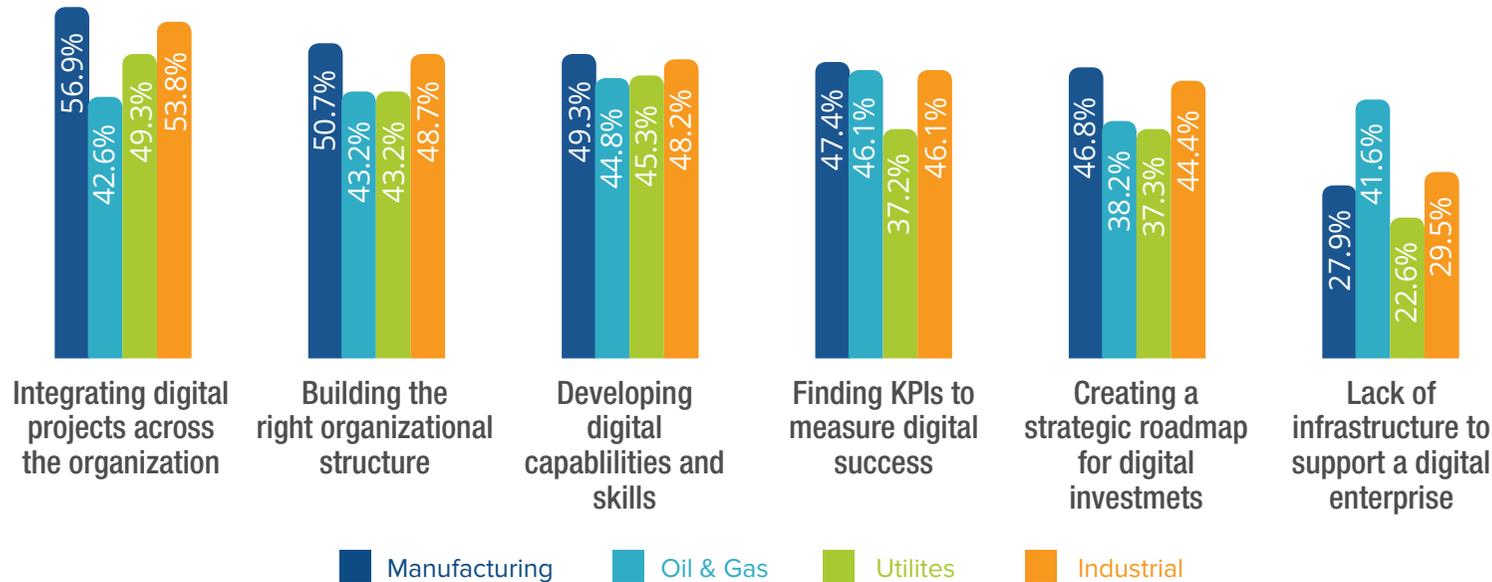
However, the biggest point to take away from the performance of digital vs. non-digital companies is how the gap increases over time. There are many companies that have already acted, digitizing as many processes as possible, and they are reaping the benefits. The question to ask the non-digital organizations is how much longer can you wait?

The more time that passes without taking any actions, the more of an advantage rivals experience. In today's highly competitive industrial environment, companies cannot risk inaction.

Top Challenges Companies Face

While the opportunity and investment for DX is high, most industrial companies still struggle with implementation. Currently, less than 15% of all industrial organizations have DX initiatives in production enterprise-wide, which is the only way to truly transform. DX is an organization-wide exercise in change management, and industrial organizations will inevitably hit some bumps on the road as they work through this process. According to IDC's DX Executive Sentiment Survey 2018, the top challenges industrial companies typically encounter within their DX initiatives include:

DX Challenges



What Outcomes Do Industrial Organizations Seek to Achieve?

For industrial organizations, DX objectives revolve around operating efficiencies, improved customer experiences, and ultimately, revenue growth. Real-time data on the status of assets, processes, and people will be a key enabler to these DX goals.



Industrial organizations (manufacturing, oil & gas, utilities) recognize that **IoT will be among the technologies with the greatest impact** on their businesses **in the next five years**, with roughly half of such companies in the United States already using IoT, either as a pilot or in production.

How IoT and DX Strategic Priorities Align

This connection between IoT and DX strategic priorities can be broken down further between manufacturing and energy organizations:



Manufacturing DX Strategic Priorities & IoT Alignment:

-  **Supply chain optimization:** Using IoT and sensors to improve supply chain orchestration
-  **Smart manufacturing:** Using IoT and sensors to improve factory performance in the plant
-  **Product innovation:** Using IoT and sensors to improve new product development and introduction (NPDI)
-  **Customer experience/Field service:** Using IoT and sensors to enhance service offerings and delivery



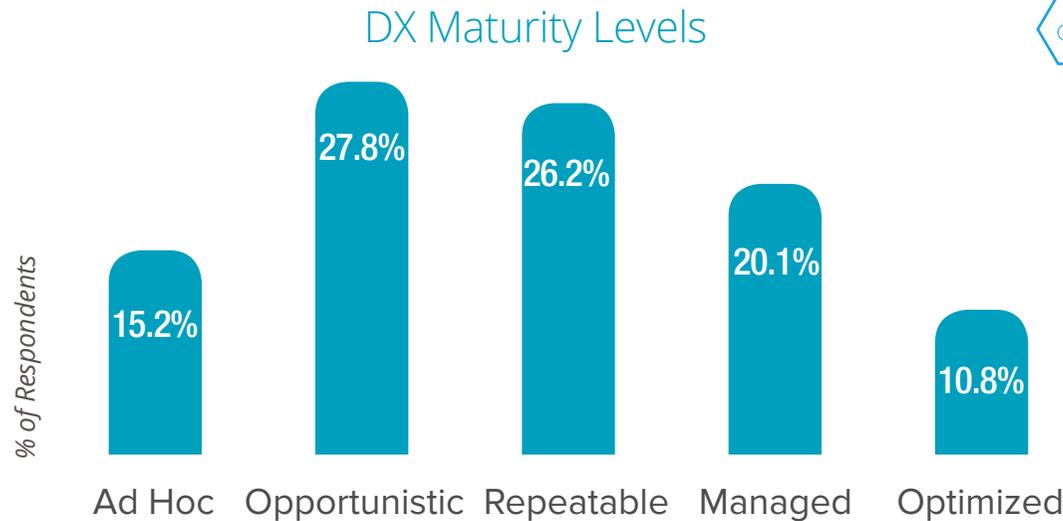
Energy DX Strategic Priorities & IoT Alignment:

-  **Connected assets:** Using IoT and sensors to improve asset performance
-  **Next-gen safety:** Using IoT and sensors to enhance personal health and safety of the workforce
-  **Digital refining/grid:** Using IoT and sensors to improve operational performance
-  **Digital upstream:** Using IoT and sensors to improve upstream exploration and extraction
-  **Connected customers:** Using IoT and sensors to enhance customer experience

Each industry is different and even the segments that make up an industry will have different priorities. It is important to identify what transformation means to your company and build a roadmap to achieve that goal.

DX Maturity: Identifying Which Stage You Are At

The maturity of a company plays an important role in its DX performance. IDC regularly benchmarks the market to determine the maturity level of the industry. Overall, there are five stages of maturity: ad hoc, opportunistic, repeatable, managed, and optimized. Each maturity level builds on the capabilities of the one before it, with the most mature leveraging digital technologies for a clear competitive advantage. The maturity framework and five stages are described in greater detail in [IDC MaturityScope: The Future Enterprise 1.0 \(IDC #43646819, April 2019\)](#).



While technology is a critical aspect towards transformation, there are other aspects to consider. IDC benchmarks maturity across **five key dimensions for DX**:

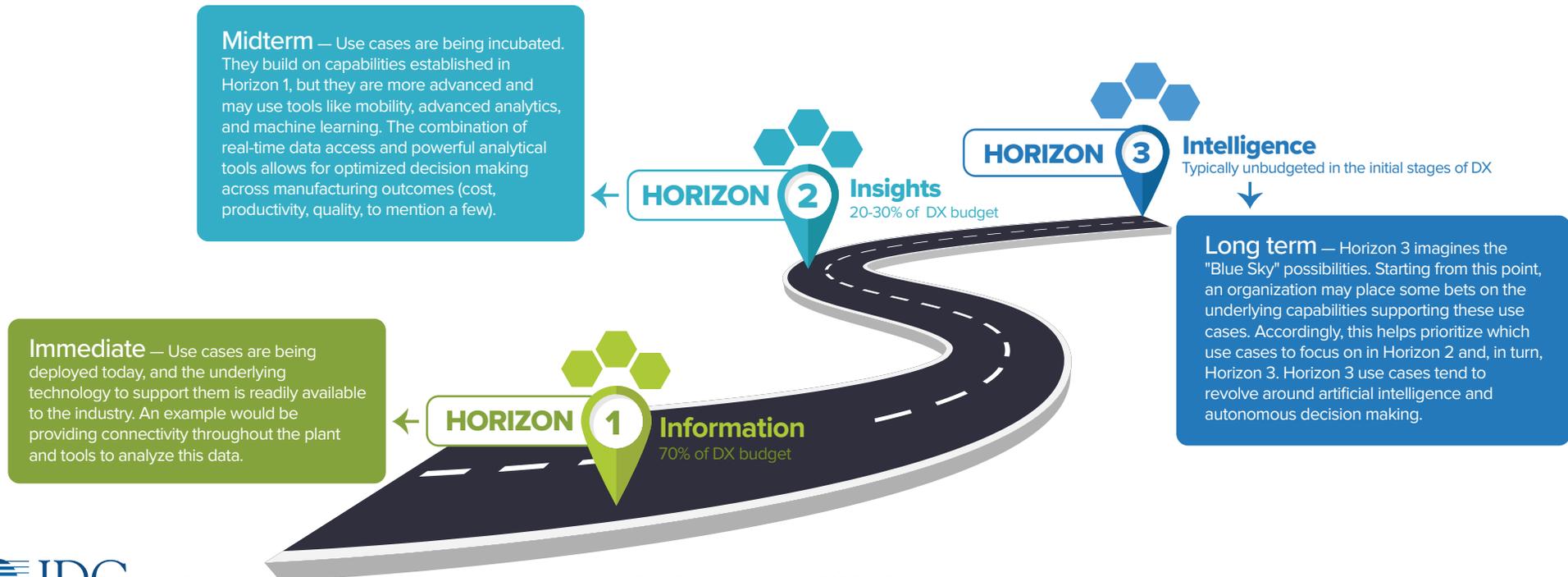
1. **Leadership DX** – Overall vision and roadmap
2. **Omni-Experience DX** – Product/service customer experience
3. **WorkSource DX** – Managing internal & external talent
4. **Operating Model DX** – Agile and effective business operations
5. **Information DX** – Extracting and utilizing data

When looking at the most mature industrial organizations (those that are repeatable, managed, or optimized) an advantage is present across all five dimensions. However, the biggest gaps between mature industrial companies and their less mature counterparts are in Leadership DX (32.2%), WorkSource DX (25.8%), and Information DX (25.2%). Digital transformation is a journey, so industrial organizations starting out should conduct an honest assessment of their current digital maturity and build out a road map that will progress them down the path of transformation over time – from Ad Hoc to Optimized.

Where Do You Start?

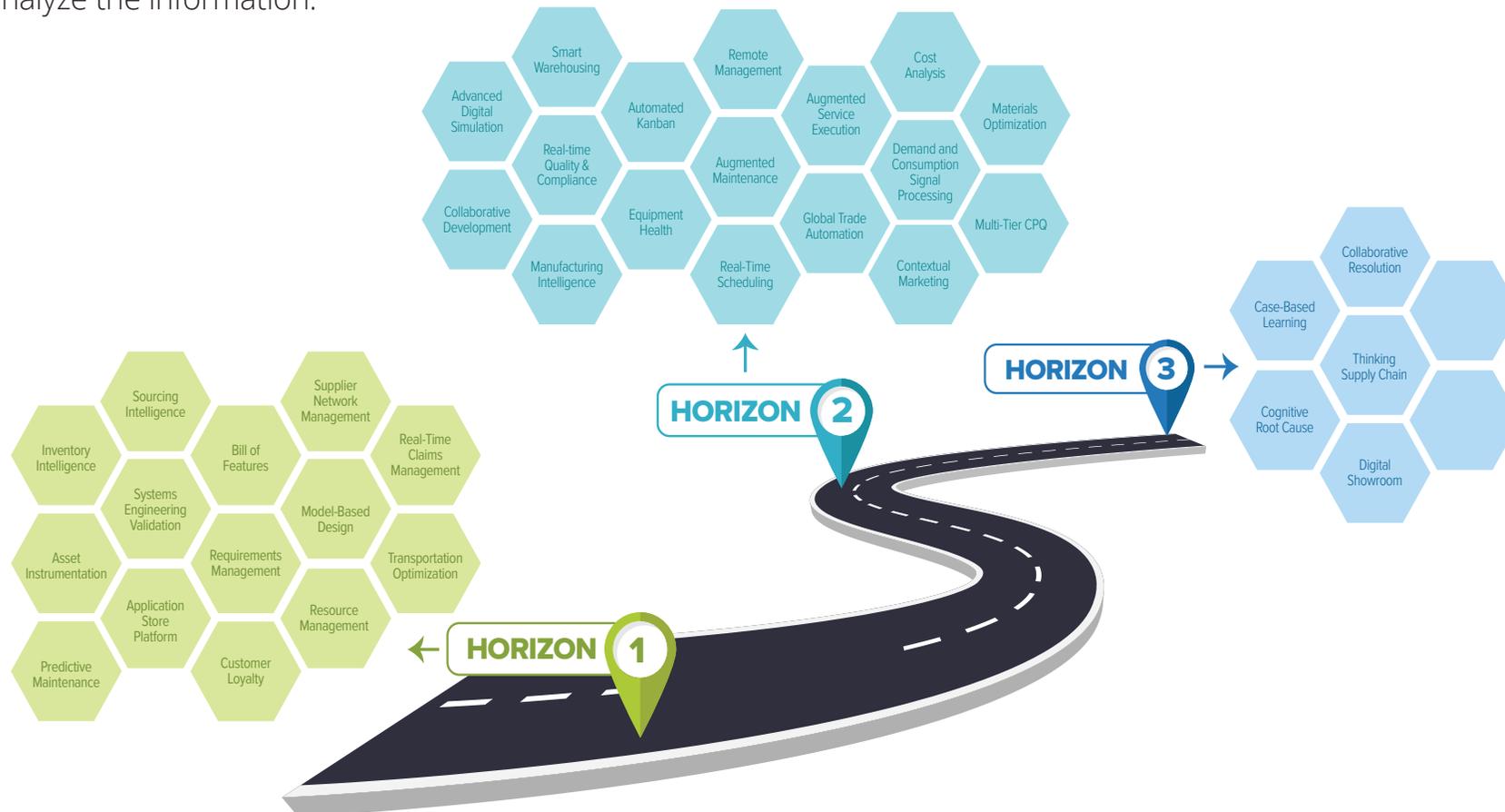
Using a roadmap framework is essential to help industrial organizations across all value chains articulate their vision for digital transformation, prioritize use cases that meet pressing business goals first, and identify the necessary IT, financial and talent resources. Without prioritization, industrial companies run the risk of squandering time and resources attempting to implement DX through unorganized, uncoordinated one-off projects.

IDC has built out DX use case taxonomies for each industry that can serve as the starting template for companies looking to begin their transformation journey. IDC's road map for industrial DX use cases can be divided into three time horizons: immediate, mid-term, and long-term. These are summarized below:



Roadmap for Engineering-Oriented Manufacturing Transformation

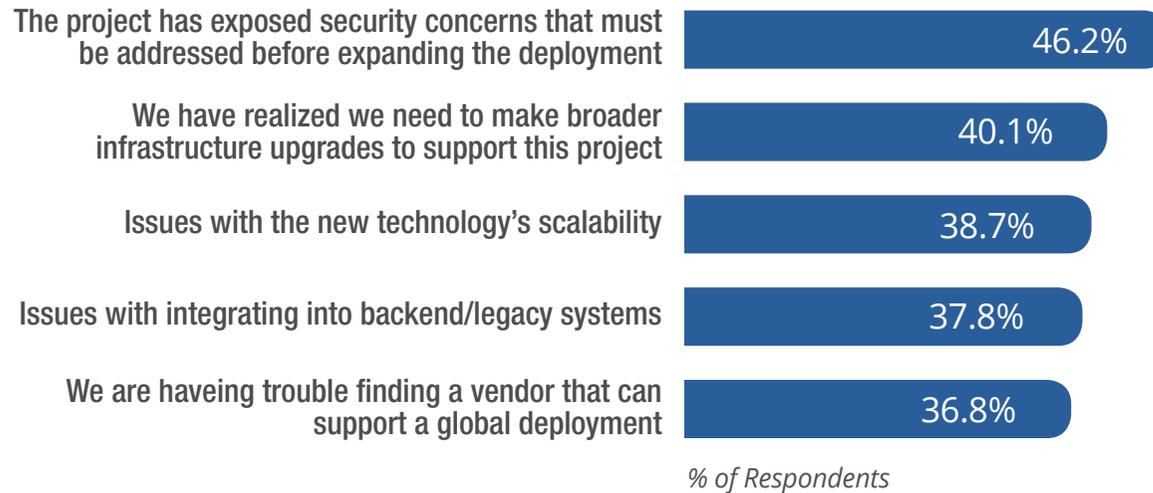
Start with Horizon 1 use cases, these are foundational elements for transformation, providing connectivity throughout the enterprise and tools to analyze the information.



How to Scale Effectively: POC to Production

Even though the investment for DX is high (and the opportunity high), most manufacturers still approach it in a siloed manner, sticking to pilots or proof of concepts (POCs). Currently, less than 15% of all manufacturers have DX initiatives in production enterprise wide, which is the only way to truly transform. While most organizations are attempting DX, only a small percentage are getting it right. Early attempts are met by subsequent challenges of change management, budget, organizational silos, scale, and sustainability.

Top reasons IoT Pilot/POCs failed to move to full production



IT Impact:

-  *DX will require substantial investment with respect to IT infrastructure, manpower, and support services for operational sustenance.*
-  *IT will need to shift away from siloed enterprise systems; DX is driven by platforms and ecosystems.*
-  *As OT converges with IT, security becomes more of a concern, ensure that security is thought about every step of the way.*



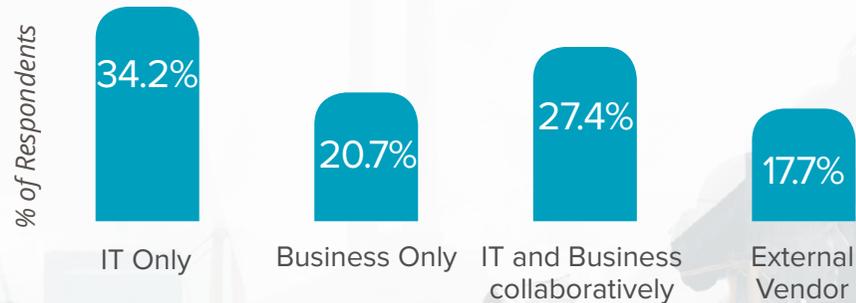
Guidance:

-  *Build a road map for your company's DX journey — what does transformation mean to your business and what do you need to do to get there.*
-  *Approach DX in a holistic manner — get all stakeholders involved from the start so that pilots and POCs don't fail*
-  *Invest in a digital platform to serve as the foundation for your business' transformation.*

Who Should Lead the Initiative?

Currently IT is putting forth the largest amount of effort as a group within industrial organizations, but that is shifting. More and more industrial companies are relying on the LOB to maximize their transformation efforts. In fact, IDC estimates that by 2023, 45% of LoB leaders will internally develop technology applications, augmenting commercially sourced applications, shifting the development cost and investment from IT to the line of business.

Q. What percentage (%) of Digital Transformation project work effort / work load are being done through each of the following?



As companies become more mature from a DX perspective, more of the workload shifts towards IT/LOB collaboration. Industrial organizations need to ensure that IT and the LOB are collaborating effectively AND turn to technology partners to fill in any gaps.

Looking for Partners in Transformation

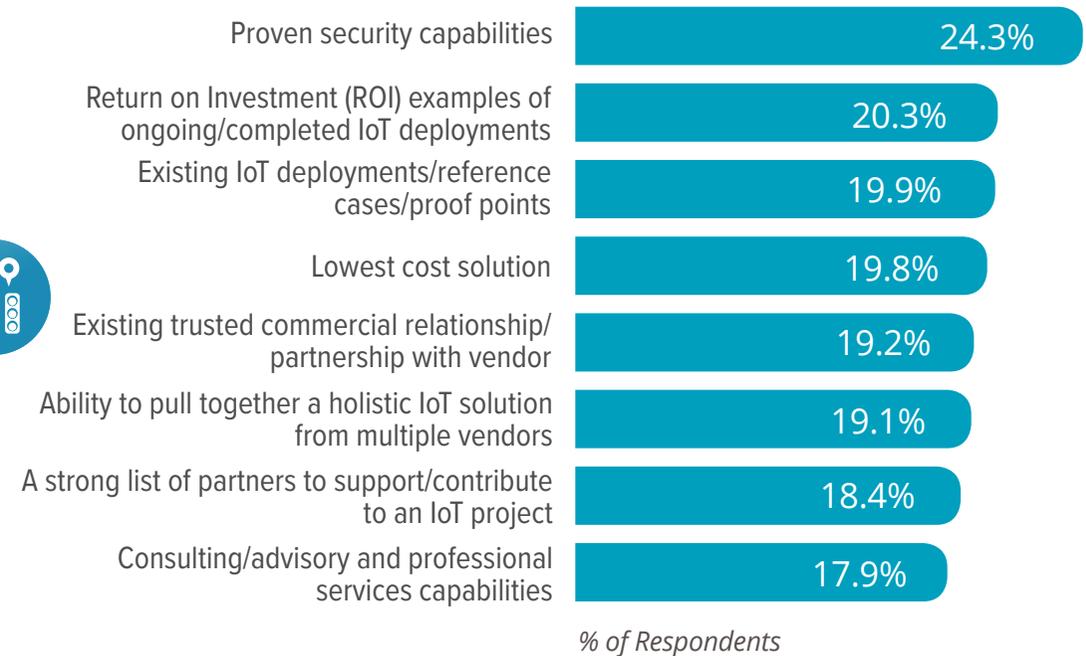
Many industrial companies have already made technology selections for their operational technology environments and traditional IT backend systems, and these systems can't just be replaced. The new component most organizations will be adding into the mix will be IoT technology, which will act as the connection point between the OT and IT systems.

Industrial organizations need **highly scalable and secure IoT systems** that can gather data from any asset, anywhere, and analyze it in near real time to enable better decision making and over time, more autonomous systems.



It is important to assess the ecosystem the company is building around its platform. IoT technology generally requires several companies to come together and work harmoniously; therefore, **strong partnerships between vendors can help speed implementation times**. Look for an ecosystem that can support your transformation efforts in the near-term, but also one that aligns with your long-term objectives.

Top IoT selection criteria



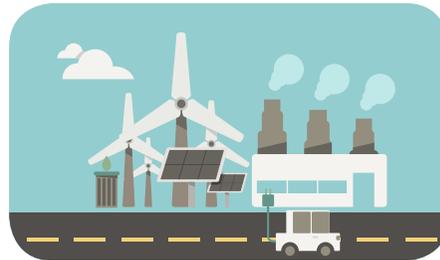
The Importance of Industry Expertise

There is a rising skills gap occurring in the industry that many organizations are dealing with, and this lack of talent internally inhibits DX success. Because of this, deep industry expertise is also very important, industrial organizations need tailored solutions and demonstrated success in similar environments. 81% of industrial organizations identified industry expertise as “Important” or “Very Important”, while only 6% stated it as “Unimportant” or “Very Unimportant” when it came to vendor selection.

Importance Ranked by Industry:



1. Manufacturing



2. Utilities



3. Oil & Gas

The right partner can guide a company to the most important use cases with their industry expertise. It’s not just about the technology, the semantic graph is a critical component of the equation. The semantic graph becomes the basis for training the model to learn over time, the knowledge needed to define models is invaluable. This knowledge is why it is important to move toward a line of business organization structure internally and puts a substantial emphasis on industry and process domain knowledge when looking at industrial partners.

Start Your Journey Now

The industrial environment is changing faster than ever before. Digital technologies like cloud, mobile, big data and analytics, and IoT are drivers for industry transformation, and companies of every size must embrace these tools. While the benefits of DX are clear, the complexity of the journey can make many organizations hesitant to embark upon it. Using IoT to provide real-time data on the status of assets, processes and people is where most industrial companies start their journey.

However, there are companies that are well under way with their transformation efforts, which our research shows is setting them up for long-term success. Industrial organizations that wait to transform are already falling behind their peers when it comes to profit and revenue. The time to start your journey is now—before it's too late.