



I D C T E C H N O L O G Y S P O T L I G H T

Achieving Maturity in the Evolving IoT Market

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By 2018, the number of Internet of Things (IoT) devices will more than double, sparking the development of over 200,000 new apps and solutions that take advantage of them. As the IoT takes hold of the global economy, it is becoming a powerful driver and accelerator of business and digital transformation initiatives. In the future, enterprises lacking an IoT strategy and infrastructure will run the risk of finding themselves at a competitive disadvantage. Therefore, it is imperative for IT and line-of-business (LOB) decision makers to understand where their organizations are positioned in the burgeoning IoT space. IDC's IoT MaturityScope framework provides guidance for organizations interested in advancing their progress in this arena. This Technology Spotlight discusses the stages, critical measures, business outcomes, and actions required for organizations to effectively develop IoT competency.

Introduction

Interest in the Internet of Things is peaking — driven by the explosion of connected products and devices — as businesses look to seize the opportunity presented by a network of uniquely identifiable, autonomously communicating endpoints or "things." Enterprises are focusing on IoT as a priority as they start to understand and witness the payback that it can provide. A recent IDC survey found that a majority of organizations see the IoT as strategic to their business while nearly a quarter see the IoT as transformational.

Indeed, the IoT is now top of mind for both IT and LOB executives as it becomes a strategic imperative to drive growth and transformation, improve productivity, or maintain costs.

IDC defines the IoT as a "network of networks of uniquely identifiable endpoints that use IP connectivity to communicate without human interaction." The IoT ecosystem contains a complex mix of technologies, including modules/devices, connectivity, IoT purpose-built platforms, storage, servers, analytics software, IT services, and security. The hardware, software, services, and connectivity have the potential to redefine competitive advantage in virtually every industry.

According to IDC, the worldwide IoT market spend will grow from \$591.7 billion in 2014 to \$1.3 trillion in 2019 at a compound annual growth rate (CAGR) of 17%. The installed base of IoT endpoints will grow from 9.7 billion in 2014 to more than 25.6 billion in 2019, hitting 30 billion in 2020.

As the IoT proliferates throughout the global economy, it is emerging as one of the innovation accelerators that leverage the four pillars of IDC's 3rd Platform — big data, cloud, social, and mobile — which are the foundation for digital transformation. The IoT integrates all the 3rd Platform's attributes and will contribute to each as follows:

- **Big data:** Help real-time decision making as well as provide the engine for powering new data sources
- **Cloud:** Allow for variable workloads from connected endpoints as well as the scalability and flexibility that are crucial for the deluge of data expected from these endpoints

- **Mobile:** Enhance field processes and connect endpoints from a variety of (often remote) locations
- **Social:** Be an outlet for automated responses from the connected endpoints to interested end users or decision makers

By enabling businesses and IT to connect, transform, and innovate across all aspects of a company, IoT becomes a key driver for digital transformation (DX). DX can be simply thought of as the use of 3rd Platform technologies by enterprises to create value and competitive advantage through new offerings, new business models, and new relationships.

However, IoT transformation will be a multistaged journey that requires most organizations to adapt their organizational processes, culture, and skills to the requirements of the new digital ecosystem. To help organizations achieve this evolution, IDC's IoT MaturityScape framework identifies the stages, critical measures, outcomes, and actions required to effectively develop an IoT strategy that contributes to an overall business strategy and also opens up new and adjacent markets.

Understanding IoT Maturity

IDC's IoT MaturityScape framework consists of five stages: ad hoc, opportunistic, repeatable, managed, and optimized. A brief description of the defining characteristics and business outcomes of each stage follows.

Stage 1: Ad Hoc

IoT experimenter: Individuals create proofs of concepts for IoT solutions without the support and knowledge of business units and IT. IT lacks IoT budget or mandate.

Business outcome: Little to no monetary or business value is achieved.

Stage 2: Opportunistic

IoT explorer: LOBs create IoT projects to solve singular issues but don't see the holistic opportunity. IoT projects are on radar because they consume excessive IT and network resources.

Business outcome: LOB leaders are pressured by competitor and customer needs to accelerate IoT rollouts.

Stage 3: Repeatable

IoT connector: IoT is now part of the overall strategy and is funded. Investment in additional infrastructure, IoT platforms, and information management tools begins.

Business outcome: Initial outcomes are realized, but identifying concrete ROI is still a challenge.

Stage 4: Managed

IoT strategist: IT and LOBs are fully integrated in the planning, deployment, and ongoing management of IoT. IoT data helps drive decision making and actionable outcomes.

Business outcome: IoT solutions impact the organization's capex and opex metrics, bringing early transformation.

Stage 5: Optimized

IoT disruptor: IoT is firmly on the strategic road map and current deployments provide analytics-driven results that dictate changes to business process and planning.

Business outcome: IoT functions as a major influence and key driver of the organization's digital transformation.

IDC has also identified the critical capabilities and practices that are common within each stage of IoT maturity. When properly addressed, these dimensions — people, process, technology, and vision — enable an organization to understand and evaluate itself in order to move from one stage of maturity to the next.

Key Attributes of an IoT-Optimized Organization

Today, 61% of organizations in the United States are actively exploring IoT initiatives. That said, the IoT still represents a nascent opportunity for many organizations. Different companies are at different points of maturity, and it's not always easy to identify where an organization is in its evolution. Currently, IDC believes that only a handful of companies are at the repeatable stage; even fewer have achieved the managed or optimized stage. Many more are clustered in ad hoc or opportunistic, the earliest stages of IoT maturity.

IDC predicts that over the next three years, business and IT leaders will shift from "exploring IoT" to "exploiting IoT," creating disruptive new services and products and redefining competitive advantage in virtually every industry. Success will require operating at an advanced level of maturity, such as that displayed by organizations at the optimized stage. What are the key attributes of an IoT-optimized organization?

According to IDC, optimized organizations display the following characteristics:

- Automation of IoT devices and their analytics processing and outcomes is done at the request of IoT service levels.
- Systems have been built to be resilient and secure and, at the same time, organizations have invested in interoperable and data-sharing environments.
- IoT data is enriched many times to explore and create new customer and competitive offerings. Businesses now run in an agile environment.
- IoT outcomes have become engineering outcomes as results from analytics dictate changes within the business' supply chain.

In an organization that is optimized, the resulting business outcome is one in which IoT serves as a major influence and driver of digital transformation because of the degree of measurement in the company's workflow and supply chain. The company can offer mass customization and individual experience to consumers while maximizing production in the enterprise.

However, achieving these results will require close collaboration between business and technology executives on goals and actions relative to IoT and the impact these goals and actions will have on business initiatives and outcomes,

Benefits

The IoT is enabling organizations to reinvent how they engage with their customers, helping them accelerate the speed at which they deliver their products and services and effectively reinventing business processes and transforming whole industries. IoT is a key enabler of digital transformation.

The ability to connect endpoints, bidirectionally exchange information, and use that information to make business decisions gives organizations the chance to transform their business.

IoT can benefit organizations by:

- Enhancing productivity and creating efficiencies
- Automating processes that were originally done manually
- Increasing aftersales service to draw out the engagement with the customer
- Improving product design inputs from a feedback loop created by connecting products

These are just some examples of how IoT can help an organization digitally transform. By investing in the IoT and making efforts to integrate a connected strategy across the organization, an enterprise can fully optimize its IoT investment.

Considering Xively Connected Product Management Platform

Xively by LogMeIn is a division of LogMeIn Inc., a provider of essential remote, identity, and collaboration services. Xively offers its customers an enterprise Connected Product Management platform and application solution that simplifies building and running an IoT connected business. The platform helps companies better connect and manage products and find new ways to deliver value through engagement and automation.

The platform's cloud-based software provides a system of record for connected products and integrates with other business systems to enable companies to run and manage their own IoT business.

With Xively, physical products have a voice in the relationships between a company and its customers, users, and partners to develop, market, sell, and support connected products. The flexible and secure platform allows companies to tailor solutions to specific products and existing systems through its open architecture. They can also achieve scalability with support for millions of concurrent connected devices that send billions of messages. And Xively's end-to-end data protection utilizes a rigorous threat assessment model to secure devices and information.

Use Cases

- A manufacturer of energy-saving, high-end wireless lighting and shade control products wanted to reach the mass market with a connected home offering easily controlled and deployed through a smartphone app. To develop the new device and app, it turned to LogMeIn for connected product expertise. To power the remote connectivity of its wireless devices, the manufacturer leveraged Xively's Connected Product Management Platform, which uses the cloud to support millions of secure connections between people, devices, and data. The new device controls the company's dimmers and remote-controlled shades and connects to the customer's home via smartphone, tablet, or Apple Watch. LogMeIn consultants developed remote connectivity in the new mobile app, enabling control of the company's devices from any iOS- or Android-based phone or tablet. Working with Xively, the company quickly developed and delivered affordable remote connectivity via mobile for the general consumer. It also collects anonymous usage data to manage and improve the product and deliver superior service.

- An agriculture technology company needed a scalable, secure IoT platform for its flagship product: a hydroponic growing facility built inside a shipping container, with environmental controls and indoor growing technology. The company used the Xively platform and worked with Xively Professional Services to create a suite of apps for connected farming that allow farmers to monitor the health of their crops and operation from anywhere. Farmers can use the apps to monitor various growing conditions, including air, water, plant growth, and CO2 levels. The company also gains insight into its farms to help diagnose and remedy issues remotely. Additionally, the company can connect its own analytics to Xively to understand how people use the farms and how to design a better experience.
- A provider of plumbing, heating, and water quality solutions envisioned an IoT connected platform for its programmable thermostats and floor heating systems that could be deployed in minutes and controlled through a Web browser or smartphone application. The company used Xively's Connected Product Management Platform to power the remote connectivity of the thermostats, obtaining near instant response times without sacrificing stability and reliability. Customers control the temperature of their floor heating systems through a fast and secure app interface from any location. The company can use data from the connected thermostats to detect issues before they are a problem, and service technicians can approach a problem knowing what has been working and not working within the product. The platform's open nature also allows the thermostats to work with any future floor heating products.

Challenges

As organizations look to invest in the IoT, they need to understand that it will be an iterative process that requires buy-in across the organization, investment in IT infrastructure, and a strategic vision as to how IoT will transform the business.

Some of the challenges that IDC foresees in building out an IoT connected strategy are:

- **Siloed views of an IoT deployment.** There is a definite need for IT and LOB decision makers to work together on the overall business case, system requirements, and expected outcomes from investing in an IoT solution.
- **Do-it-yourself approach.** It may seem like a viable option to build an IoT platform to manage the connections and capture information, but this approach can become burdensome on time, costs, and other resources. The integration with back-end systems and other enterprise applications is a necessity because it's critical to ensure that the connected solution is integrated with existing organizational data sources and decision-making tools. Other equally important aspects include identity management, device management firmware, provisioning, and organizational structures for products and users.
- **IoT application development and integration.** Many organizations underestimate the challenges of developing, launching, and running an IoT connected business. Not only is there application integration into back-end systems but there is a likely need for applications that are customer facing that provide meaningful information, insight, and engagement.

For Xively, the challenge will be to thoroughly educate customers about the value of connected product management solutions to manage the IoT environment as well as the importance of designating an internal champion to consolidate IT and LOB goals and strategy around the IoT. Through its own work guiding customers along their IoT journey, Xively has experience with seeing how companies progress through the stages of IoT maturity, from starting on their own to forming partnerships and moving beyond the opportunistic stage.

Conclusion

The IoT has the ability to be transformative, disruptive, and even distracting to many IT and LOB executives, so it is important to understand what the correct plan ought to be take advantage of the opportunities it could bring.

IDC believes that to be successful at this, business units need an executive (board-level) sponsor who can bring the goals of the CIO, CFO, and COO under one mission using IDC's IoT MaturityScape framework to:

- Assess the business' readiness, capabilities, and opportunities to create a sound IoT strategy and production-ready IT environment
- Enable a dialog between business, digital, and technology executives about goals and actions relative to IoT and the impact it has on business and DX initiatives
- Understand the key importance of critical IoT components to help create and support new business outcomes

Companies should also be prepared to invest in consultative and integration services such as connected product management solutions that can help them build, launch, integrate, and manage the IoT environment and adapt to fast-changing business needs in the future.

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