

# REAL IOT: SUCCESS FACTORS AND BEST PRACTICES

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## INTRODUCTION

As it happens with any wave of new, potentially disruptive technology, hype can overshadow the real value that is being generated. The hype with the Internet of Things (IoT) is no different; with proclamations of trillion-dollar economic value adding from billions of connections. While there are always slivers of truth in the numbers depending on your perspective, the hype causes companies to take a “wait and see” attitude and only dabble in the opportunity rather than fully investing in IoT as a strategic priority.

Interestingly, the tools, technology, and supplier base are available today to build and support a connected product or service. But as shown by survey data, a full 74% of companies polled stated that they had not started an IoT project or were in the early stages of an IoT project. Reasons cited for delay in full IoT implementation include lack of C-level funding, supplier diversity and offer complexity, and security.

But there are companies that have implemented an IoT solution today and are using it to better serve customers and improve their operations. What can be learned from these companies? In the first in a series of white papers entitled **Real IoT**, we outline the key success factors for companies that have successfully implemented IoT solutions. Use cases are presented showing the benefits that IoT implementers are reaping from their IoT services. This white paper will conclude with the top four best practices for companies to follow to implement IoT in their organization.



### **SUCCESS FACTOR #1: MADE IOT A STRATEGIC PRIORITY AND SECURED C-LEVEL SUPPORT FOR PROJECT FUNDING**

Most IoT projects start at the R&D level in large companies and at the product manager level in smaller companies. These are the appropriate places to design and test a connected product or service. However, to get to the build and launch phases, these projects need the participation of a broader group of employees and functional groups. In IoT, companywide participation is even more critical because IoT solutions, even at the technology level, can touch both engineering and IT organizations and even business administration groups of finance, accounting, and HR.

For this reason, successful IoT implementations had C-level support both as a strategic priority and for funding all phases of implementation. When IoT becomes a strategic priority, all parts of the organization get involved and can ask the tough questions. What is the value for my group in marketing, sales, operations, and field service? What are the risks? How will this connected product affect customer service and business operations? By asking these tough questions, benefits are maximized and the risks are minimized. And once an initiative is a strategic priority, funding the IoT project through launch becomes far less of an issue because the business case and ROI had full participation from all affected groups.



### **SUCCESS FACTOR #2: FOCUSED ON EXISTING BASE OF CUSTOMERS, BUT WITH AN EYE TOWARD ACQUIRING NEW CUSTOMERS**

Companies that have successfully rolled out IoT products and services have focused their connected service on better serving their existing base of customers. Since IoT is still in an early phase of maturity, targeting existing customers has less to do with competition and more to do with minimizing risk. There are two benefits from this approach. First, the ROI of the IoT service is far higher when focusing on the existing base of customers. Simple back-of-the-envelope math shows that the costs in time and resources, particularly in marketing and sales efforts, are far less. In addition, the likelihood is much higher that a supplier can increase share of wallet from their existing base of customers.

Second, existing customers will be more accommodating when dealing with the issues that may arise in any new solution rollout. In contrast, if the IoT service does not work with new customers, the impact could be many years of lost opportunity.

Once an IoT service has a track record of realized benefits and product satisfaction with existing customers, it becomes easier to expand your connected service to new customers. This is why companies that are offering IoT services now, even solutions that are small relative to the size of their operations, will be best positioned to capture market share. Interestingly, for industrial product companies, growing their base may not happen for 5 to 10 years or longer because their products have longer lifetimes. This is why IoT needs to be a strategic priority, so when the next wave of enterprise reinvestment happens, suppliers are ready.



### **SUCCESS FACTOR #3: UNDERSTOOD THEIR VALUE PROPOSITION AND COMPETITIVE CHALLENGES TO FOCUS THE IOT OPPORTUNITY**

Enterprises that have successfully rolled out IoT services have done a good job of choosing the IoT solution that not only enhances their value proposition and mitigates competitive pressures, but also reduces risk and cost. Most enterprises are clear on why customers buy from them and the challenges in gaining and maintaining their business. Customers of a fleet management company value on-time delivery, so a fleet management company will seek IoT solutions that optimize their

pick-up and delivery routes to drive the lowest costs per tonnage mile. Retailers may appreciate a consistent supply of a product to meet demand, so a factory manager will seek IoT solutions to maximize production line efficiency.

However, there may be multiple ways to use IoT technologies to enhance the value proposition. For example, with factory managers, maximizing production efficiency can be achieved by reducing packaging operation downtime, improving HVAC efficiency, or extending the lifetimes of actuator components on the production line. While addressing one of these issues with an IoT solution may offer the biggest benefit, the question is which ones to target now that can offer immediate benefits so resources can be redirected to address other issues.



### ABB CASE STUDY

ABB is a multinational corporation that offers automation and robotics technologies and services to the utilities, transportation, manufacturing, and process industries. With digital technology integration into all facets of its business as a strategic initiative, ABB applied IoT technologies and services to its robotics business.

ABB has more than 250,000 robots deployed globally. Competitive advantage in this industry is achieved through best-in-class uptime and responsive support services. For factory operators these metrics are critical because downtime can cost as much as US\$20,000 per minute. ABB used IoT technologies to create a remote monitoring solution to detect robotic equipment operating sub-optimally. But it also used the solution to deliver software-defined upgrades and improve its field service operations.

ABB's remote monitoring solution for its robotics equipment demonstrates several of the success factors outlined thus far. It was targeted towards its robotics business to both better serve customers and mitigate competitive pressures. The IoT solution was also focused on real-time monitoring to improve its support services either remotely or through more responsive field technician support.



### **SUCCESS FACTOR #4: DID NOT LET TECHNOLOGY EVOLUTION SLOW THEIR TRIALING OF CONNECTED SOLUTIONS**

Understanding the primary factors driving value helps with choosing an IoT solution. But technology is ever-changing, which for some companies can be a bit scary and drives them to wait until an established base of suppliers is available or a few winning technologies rise to the top.

A wait-and-see approach is not a good strategy with IoT, particularly when trialing the various connected solution options, for several reasons. First, creating a connected solution becomes easier and easier all the time. Test-bed hardware with various connectivity components is inexpensive and there are very few hardware OEMs, from chipset vendors to gateway vendors that do not offer test boards for connecting a product. Building the application is also getting easier because there are a plethora of platforms and application development toolsets that can be used for a small fee or even free.

Second, what is learned from building and trialing IoT solutions helps to understand not only the value, but also the risk of various technology choices. For instance, there are now several new options for low-power wide-area connectivity using both standardized

and proprietary technologies. The proprietary technologies are cheaper and available now, while the standardized solutions may not offer all the benefits but provide a broad supplier base. Today, many companies are trialing both technologies, and some oil and gas companies have already launched asset management services using proprietary technologies. The reason they did so is because they not only gain tremendous benefits today from such IoT solutions, but they are also prepared to switch to another technology if needed because they continue to test other technologies.



#### **SUCCESS FACTOR #5: TRANSLATED CUSTOMER VALUE INTO BOTH KEY TECHNOLOGY COMPONENTS AND SELECTION OF APPROPRIATE VENDORS**

Translating customer value into an IoT service requires identifying the key technology components that are critical for enablement and for producing relevant insights. IoT solutions typically consist of a device, connectivity management, application enablement services, user and management applications, data and analytics infrastructure and services, and system integration. While all are important, one or a few may overshadow others as the core enablement feature. For instance, OEMs that are building connected cars (products) that are deployed around the world will need to use GSM-based cellular connectivity technologies. Another example, edge translators and powerful gateways, are critical technology enablers if operations engineers are seeking better toolsets for monitoring production operations using analytics on streaming machine data.

Vendor selection is also important depending on the capabilities and infrastructure of the customer. In the connected car example above, extending connectivity and its management globally may mean working with a single operator, or better yet, working with an aggregator that has relationships with multiple operators. Another example is if a company uses a particular enterprise software supplier for its cloud computing architecture, choosing system integrators and IoT platform vendors with experience in this vendor's systems can speed application development and integration.

In general, successful IoT implementations identified the key technology enablers and the appropriate solution partners. It is a critical task that creates an IoT service that addresses strategic customer needs both today and into the future.

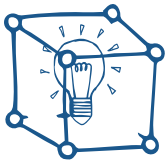


#### **TELULAR CASE STUDY**

Telguard, a division of Telular and a leader in wireless alarm communications and home automation services, saw an opportunity to better serve its dealer distributors using IoT technologies. Telular dealers needed a better way to fulfill and manage cellular-enabled home security panels.

Leveraging the expertise of Cisco Jasper and Telular's fulfillment operations, Telular created a managed service offering that dealers could use to speed home security system deployments and manage the service offering. Cisco Jasper simplified creation and management of cellular services through its mobile operator relationships and deep integration within operator business and operational systems. The additional benefit for Telular of this partnership was creation of a new revenue stream in managed network services.

The managed service offering built using IoT technologies has been a success for Telular for multiple reasons. It targeted its existing customers (dealers), understood its customer challenges, focused on the right IoT solution to solve the business challenges, and used partners that sped time to market and reduced solution complexity.



## **SUCCESS FACTOR #6: SOUGHT SOLUTIONS AND PARTNERS THAT ADDRESSED SOLUTION COMPLEXITY AND OVERALL SOLUTION SECURITY**

Solution complexity is one of the biggest challenges faced by companies deploying IoT solutions. Not only are there a myriad of technology choices, but for every technology, there are multiple vendors, even hundreds of vendors that can satisfy the requirements of the IoT solution. Solution security is also a critical aspect of any IoT solution, which can be exacerbated when stitching together multiple components. As a result, successful IoT implementations have reduced overall solution complexity in the design, deployment, and support of IoT solutions. In addition, attention was also paid to reducing security concerns and related risks on existing business processes and operations.

Companies that have avoided issues with solution and partner complexity have done so in three ways. First, the solution deployed was relatively simple. For instance, an industrial electrical motor supplier added Bluetooth connectivity via an embedded module. The sole purpose of the module was for field monitoring for proactive maintenance services.

Second, companies engaged multiple IoT suppliers for assistance in understanding their options. Many times this is the local SI or VAR that is knowledgeable in the core business operations and its supporting technologies. But it can also be companies with known capabilities either in certain parts of the IoT value chain or across the entire IoT stack.

Finally, enterprises limited technology and supplier options in three key areas of the value chain most exposed to the negative consequences of complexity as a solution scales. Complexity can happen at the device level as more sensors or machines are connected, at the network level via more connections and types of connection technologies, and at the cloud level as more data is collected, accessed, and analyzed. Successful IoT implementations recognize that consolidation to a core set of technologies and suppliers can limit issues to a connected product's operation and support.



## **SUCCESS FACTOR #7: ANTICIPATED PRODUCT AND MARKET EVOLUTION AND ALIGNED IOT SOLUTION CHOICES TO FUTURE MARKET REALITIES**

Companies that have successfully deployed IoT solutions have a vision for product and market evolution and translated that vision into technology choices for both phases of the IoT solution and future iterations. Future versions of the IoT solution manifest themselves in an IoT service roadmap.

An example of this forward-thinking approach is OEMs that seek to change their field services business from one that reacts to product failures to one that proactively detects equipment issues before they occur. In this case, the first phase of the IoT service may be secure access to stored equipment operational data by a technician's smartphone or tablet via a Bluetooth connection. Future versions of the IoT service would include options for devices that can run edge analytics and proactively alert the service organization of anomalous conditions. The roadmap will also outline enhancements to connectivity to provide secure data transmissions to a data center and anticipate the volume of data collected to run advanced analytics. Roadmap items for analytics services would consider the data scientist resource needs, cloud infrastructure requirements, and analytics automation options to democratize access to a broader set of employees involved in the support and monitoring of the equipment.

Overall, enterprises that have successfully deployed IoT solutions have anticipated product and market evolution. This forward-thinking approach is built not only in the original IoT solution design, but also in an IoT service roadmap that allows cost-effective upgrades and additions as needed.



## KONICA MINOLTA

Konica Minolta is a manufacturer and services provider for the digital imaging business ranging from personal to industrial imaging and printing systems. Konica Minolta is an example of a company that has used IoT to transform both its operations and brand image.

The digital print business serving enterprise was experiencing year over year declines in use of printing machines for general purpose printing. This affected not only sales of printers but also consumables of high-margin printer ink. Seeing that the world was moving away from paper as a medium for content consumption to digital platforms such as PCs, smartphones, and tablets, Konica Minolta knew it had to completely rethink its product strategy.

It turned to IoT technologies to transform its printers into a virtual, real-time, collaboration and information management platform. By adding broadband communications technologies as well as new applications, the printer changed into a central hub for office communications and logistics services. New applications included high-capacity storage, content management, and office-as-a-service. Office supply logistics automation was another new feature. Finally, connectivity allowed remote monitoring services to avoid printer breakdowns and a new way to monetize printer capabilities such as a pay-per-copy model.

Konica Minolta's new Central Hub demonstrates the transformative power of IoT. But it also demonstrates that successful use of IoT happens by anticipating market demands and aligning the IoT solution to the new ways information is being consumed, created, and disseminated.

## BEST PRACTICES

The key factors that have driven success for companies that have deployed solutions can be summed up into four best practices.



### UNDERSTAND YOUR CUSTOMER AND YOUR VALUE PROPOSITION

Understanding your customer's key issues as well as how your product or service contributes to their success is necessary for two reasons. First, it helps to identify the right business challenge that can be improved or corrected with an IoT solution. As noted, depending on the needs of the customer, there may be multiple business problems to solve using IoT. Targeting the issue that can be solved quickly and realized at lower costs using IoT technologies allows putting more resources into other areas of the business.

Second, it helps to identify the appropriate IoT solution. As noted in the Telular case study, Telular provided an IoT solution to its dealers that removed the complexities of fulfilling and provisioning cellular services, and building an application for service management and support.



## MAKE IOT A STRATEGIC PRIORITY

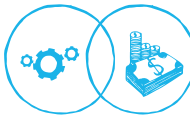
Knowing that IoT can add value to your product or service is the first step toward realizing its value. The next step is to garner the resources to drive realization. The most successful IoT implementations have C-level support. This support drives funding to start testing and experimenting with connected solutions as well as for building and deploying commercial-grade products. C-level support also drives conversations internally on the impacts that a connected solution will have on other parts of the organization. This is important early on to reduce friction with other business units where other operational and project priorities could be affected. Finally, C-level support keeps IoT at the top of the agenda for every business manager and functional unit. IoT can transform businesses and to do so takes time, so business processes are not disrupted but evolve to the new data and workflows that are created.



## UNDERSTAND THE CRITICAL TECHNOLOGY CONTROL POINTS

Of the many components in an IoT solution including hardware, software, and services, a few will be more important than others, called the critical technology control points. As noted earlier, certain cellular technologies are more important than others depending on the needs of coverage, battery power, and data throughputs. Device hardware may be the critical technology control point if advanced analytics are required on the edge. Likewise, the customer's infrastructure may require different data storage and integration technologies.

Technology selection also needs to consider how the connected product or service will change over time. This is where product roadmaps are critical to proper technology and solution selection because roadmaps need to align with the strategic objectives of the organization. Companies with a track record for successful IoT solution deployments have built a product roadmap that aligns with the strategic objectives of the organization.



## UNDERSTAND YOUR INTERNAL CAPABILITIES TO DETERMINE BUILD VERSUS BUY

Within this white paper there has been much discussion on vendor partners to help build the IoT solution. But the more important message on vendor selection is what drove seeking partners in the first place. Successful IoT solutions come about because there was an internal discussion by the enterprise on what parts of the IoT solution it should build themselves versus procure from vendors—the build-versus-buy discussion. All IoT solutions need partner components because no enterprise will have all the capabilities, such as a cellular network, or will want to spend the money on custom-built components that they can buy for much less off-the-shelf. But there may be important IP or competitive differentiation gained from building parts of the IoT solution. For instance, many OEMs tend to build their own IoT applications versus using tools from an IoT platform because they want zero limitations on its design and functionality.

The buy decision should also consider capabilities of vendors for offering components that can scale, i.e., provide the same performance regardless of number of devices deployed, messages transmitted, or data generated. Finally, vendor selection needs to consider the risks and benefits to overall solution security.

Understanding internal capabilities helps enterprises assess what they are really good at. If what they are really good at is also an important component of the IoT solution, then an enterprise probably should own this part of the solution. But if not, enterprises need to tap into the plentiful ecosystem of IoT suppliers. What is important is to choose suppliers that offer scalable components that are designed with security as an inherent feature.

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