

The Journey from Smart Devices to Intelligent Systems

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Author(s):

Josh Builtta – Research Director, AI & IoT

The pace and scale of digital transformation is increasing in all regions of the world.

Fueled by the continued evolution and convergence of technologies to include the Internet of Things (IoT), AI, Edge Computing and 5G, it is expected this movement will only accelerate in the years to come. As it continues, this transformation will bring about significant and lasting change, fundamentally altering how businesses and in some cases entire industries operate in the future.



While the drive toward digital transformation did not start with COVID-19, it is clear the pandemic has accelerated the process for most organizations.


The unique challenges brought about by the outbreak, such as labor shortages, supply chain concerns, and stay-at-home mandates forced many enterprises to turn to technology to maintain business continuity. This was reflected in Omdia's 2021 ICT Enterprise Insights survey in which nearly 72% of the over six thousand respondents (representing ICT decision makers from over 100 countries and 30 different industries) indicated that creating a digital capability within their organization had increased in importance as a result of COVID-19.

Despite the value organizations see in digital transformation it is also apparent this is a difficult process with numerous challenges. In addition to high upfront costs, many enterprises struggle with understanding the myriad of technology options, integrating those technologies into legacy systems, and then training their workforce to use new solutions. As a result of this complexity, many organizations struggle with completing their digital transformation. According to the respondents in the ICT Enterprise survey, globally just 15% of organizations had completed their digital transformation and over 55% stated this transition was 'in progress', 'in early stages' or 'not started'.

Figure 1: Digital transformation importance and progress

 **What has been the impact of COVID-19 lockdown on the relative importance of each technology area over next 18 months?**
Significantly more important; More important; Less important; No impact.



 **How would you rate your organization's progress for each of the above in support of digital transformation agenda?**
Not relevant; Not started; Early stages; In progress; Well advanced, Complete



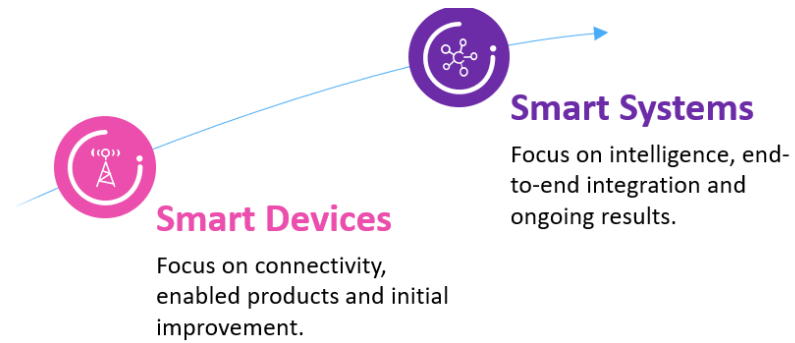
Source: Omdia

The IoT represents a critical component for most enterprises going through a digital transformation. One of the core elements of digital transformation is using data to move away from manual, time-consuming processes. This necessitates companies establishing a link to collect that digital data – this is where IoT comes into play. **IoT solutions provide a mechanism to receive information and data from a wide range of connected sensors, devices, and equipment, essentially providing the fuel that is needed to power a digital transformation.**

However, a reoccurring challenge in IoT is deployments are often done in an incremental basis. For instance, a typical initial step for many is adding connectivity to a device, commonly referred to as making that device ‘smart’. Smart watches, cars, and homes are now common terms associated with this trend. While just adding connectivity by itself can provide benefits, the result is typically limited. To be truly impactful, each of these devices must be supplemented with computing power and integrated into complete end-to-end solution. **By doing this, standalone ‘smart devices’ become part of a ‘intelligent system’ – a holistic IoT solution that is truly transformative and deliver the maximum ROI to an organization.**

Figure 2: The digital transformation roadmap

The evolution of 'Smart' in IoT...



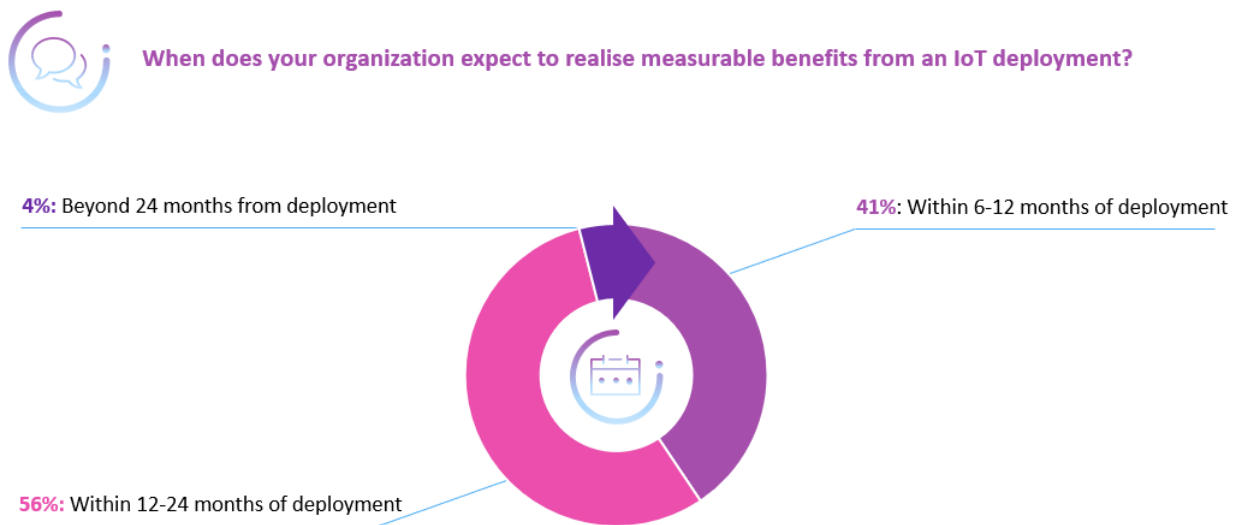
Source: Omdia

In this blog, we will examine the key challenges facing companies as they go through this process, and how experienced partners like MultiTech can help them on this journey.

Completing the IoT journey is difficult

For most enterprise adopters IoT is a journey. At the start, most have a vision of deploying a complete end-to-end solution that will deliver a near-term ROI. These high expectations were evident in the 2021 Omdia IoT Adopter survey, in which 96% of respondents stated they expect to see an ROI from their IoT project within just two years, and only 4% expected it to take more than two years.

Figure 3: ROI expectation for IoT



Source: Omdia

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However, achieving such aggressive ROI goals can be difficult, in particular for companies without a deep technology expertise. There are many first-time IoT adopters that fit into this category – from retailers to construction companies to manufacturers. Such companies frequently struggle in evolving beyond their initial IoT deployment into a smart system that revolutionizes their operations and business.

Clearly envisioning an end-to-end solution and implementing it are two drastically different processes. Among the stumbling blocks and hurdles that organizations can face.



Costs & Time to Market

Many organizations, particularly those that rely solely on their IoT deployment without enlisting an experienced partner, underestimate the capital (both in terms of investment and personnel) and time required to build a true smart IoT system. As the projects costs continues to grow and development time lengthens the gulf between anticipated ROI and actual results becomes greater.



Technology Complexity & Market Fragmentation

As noted, a large portion of enterprises undertaking an IoT deployment are not technology companies. Even completing the initial phase of an IoT solution, adding some form of connectivity to a piece of equipment, is a confusing and complex process. According to Omdia's research there are 40+ connectivity wireless technologies used in IoT deployments, with more coming in the future. Additionally, using these technologies in a product typically requires going through a regulatory certification process, something completely unfamiliar for companies without any internal networking or wireless expertise.

Evolving a connected product into a complete intelligent system brings about even more complexity. For instance, an IoT platform that can collect, store, analyze, and act on the data coming from devices and sensors is a key element of such a solution. However, selecting an appropriate IoT platform is an overwhelming given the market fragmentation. As of mid-2022, Omdia was tracking over 300 IoT platforms offered by a range of vendors. Navigating this diverse set of options can hinder many companies looking to continue their IoT journey.



Integration & Scaling

Even once the individual components are in place, integrating the myriad of devices and distilling the right data into existing business systems is another challenge for which most enterprises are not prepared. In a 2021 Omdia survey of enterprise IoT adopters, over 50% of respondents cited integration into existing business processes / OT as a key challenge hindering their organizations adoption of IoT.

Finally, scaling a solution also poses a range of challenges. Creating a trial network is far simpler than installing the large array of servers, gateways, and routers that are needed to support a real-world deployment. The complexity further increases when that deployment transitions from a localized, campus-sized environment to something widespread, in some cases crossing international borders.

Empowering enterprises in the creation of the Intelligent Systems

Due to these and other challenges many organizations learn they are not prepared to create a true intelligent IoT system that will allow them to achieve their goals. For such companies, it becomes clear that working with an experienced partner is critical to completing their IoT journey. These partners help adopters remove roadblocks, deliver projects on time and at scale, and achieve aggressive ROI goals. This is likely why so many organizations eventually end up turning to partners in their IoT projects.

“According to an Omdia survey, over 79% of enterprises with an active, full-scale IoT deployment in place have used a consultancy or third-party system integrator to assist their organization.”

How do these partners help? This can vary, but some of the most cited benefits are:

- **Choosing the Right Technology:** No single technology is suitable for the wide range of IoT applications. In fact, in many IoT projects multiple connectivity protocols might be used. A partner with years of experience can help an enterprise choose the technology that is most suitable (based on cost, coverage reach, power consumption, etc.) for a specific project. This partner can also assist in interoperability testing when multiple protocols are being used together.
- **Device Creation & Excellence:** An experienced partner can help with design of an IoT device using the best possible combination of hardware and software and conduct thorough testing to ensure reliable performance. Such partners also often offer high-volume purchasing power and low-cost manufacturing sources that allow these products to be brought to market quickly and economically.
- **Data Integration & Visualization:** As previously noted, developing a ‘smart’ device is only part of the IoT journey. Partners can help enterprises create the required backend analytics that are essential to derive actionable insight from the large amounts of data coming from these devices. They are also able to assist in getting this data into the hands of the end users that need it, either by integration of a dashboard into an existing enterprise system or developing new applications.
- **Market Insight & Innovation:** A trusted partner whose business is dedicated to IoT can be a valuable resource of knowledge for inexperienced IoT adopters and help educate them on the latest technologies, trends, and transitions in the market. These partners can guide an enterprise in integrating complimentary technologies, such as AI and Edge Computing, into their IoT project roadmap. This in turn allows for the creation of more impactful IoT solutions capable of addressing even more complex issues.

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Conclusion

Building a complete end-to-end IoT solution is complex. A majority of enterprises simply do not have resources or internal expertise to complete this journey on their own. As a result, many IoT deployments end up taking a piecemeal approach which, not surprisingly, fails to meet envisioned goals set at the onset.

Working with a trusted partner allow enterprises to evolve from a simple, smart product to transformative smart IoT system. By doing this, enterprises can deploy IoT projects that achieve ROI even beyond their expectation and support their digital transformation journey.



Author(s)

Josh Bulta – Research Director, AI & IoT

askananalyst@omdia.com

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This piece of research was commissioned by **MultiTech**.

About MultiTech

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CONTACT US

omdia.com

customersuccess@omdia.com

