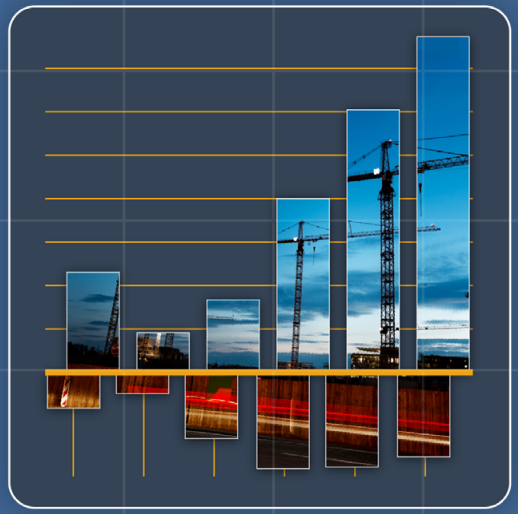
Measure IoT Success
Succeed with IoT

Where is the value of **Connected Assets**?



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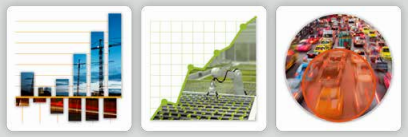
Shaping the IoT future



Achieving business objectives

A recent report on How to Measure IoT Success from Beecham Research and sponsored by MultiTech (www.measureiotsuccess.com) highlighted major business benefits now being delivered by IoT solutions, for example:

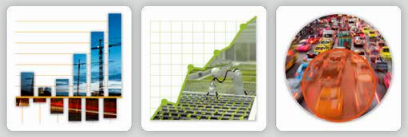
Cost Reduction
When an organisation can improve system uptime, automate processes, reduce the risk of failure and loss of revenue, gain insights that support better decision making, and reduce resource usage and the time demands on personnel, the result is efficiency improvements and cost savings.

Adding Value
Developing new revenue streams or enhancing existing ones, usually by adding connectivity to remote devices in order to access device data and control it remotely.

Automation
Reducing the need for manual intervention.

Predictive Maintenance
Automated sensing and reporting to notify when machines need attention.

Process Improvement
Doing things more accurately, precisely and repeatedly. For example, using sensors and connected systems to support more efficient irrigation systems for precision agriculture.



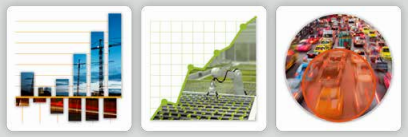
Improved Insights
IoT systems often act as the eyes and ears of remote, hard-to-reach, widely distributed equipment and processes. Such insights enable administrators to proactively respond to local conditions.

Adaptability
In a changing world, it is crucial for businesses to adapt when needed and IoT is increasingly laying a major part in this. This could be related to new business requirements, customer needs, changing conditions, or scaling the deployment.

Regulatory Compliance
In compliance-heavy industries, such as the medical device and food manufacturing sectors , getting the right data and insights is increasingly mission critical. IoT is used to ensure and often prove that regulatory compliance is being achieved.

Making ESG Goals a Strategic Aim
Businesses that are seen to comply with United Nations ESG (Environmental, social and corporate governance) goals will gain competitive advantage. IoT-derived insights can go towards demonstrating that a company is complying with these goals.

These include both tangible and less tangible outcomes, as a result affording more strategic benefits to implementors. Many of these outcomes are reflected in the business objectives that IoT is increasingly being looked on to achieve, as illustrated in survey findings also included in the Beecham Research report.

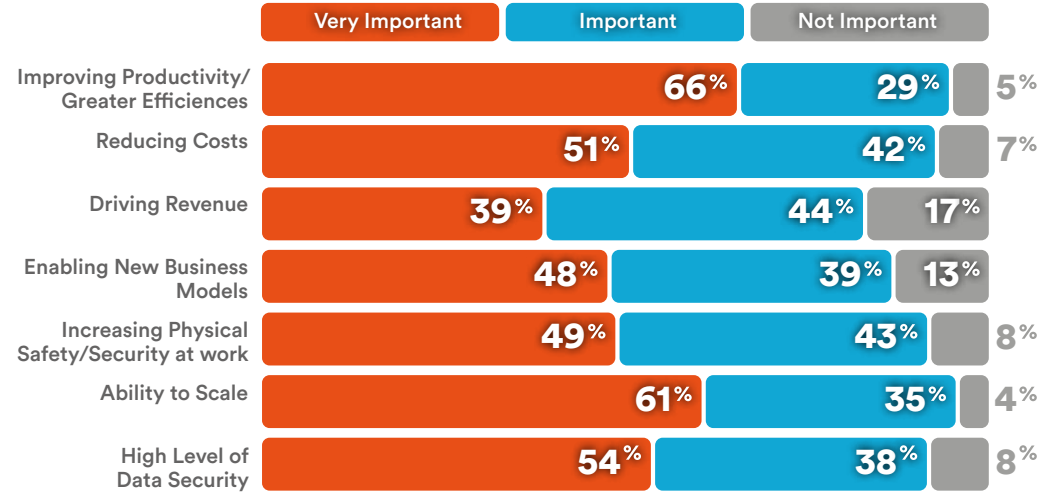


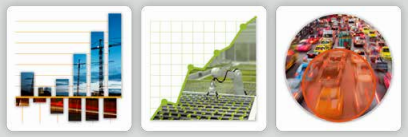
In the chart, the first four objectives are more business related and the final two – ability to scale and high level of security – are related to the IoT solution itself. Of the first four, it is notable that improving productivity/greater efficiencies received the highest score in terms of importance, whereas driving new revenue had the lowest score. Increasing safety/security relates to physical safety and is often related to regulations and compliance. Duane Wald, Chief Product Officer at MutiTech made this observation:

"It's become quite evident that in the initial promises of the IoT, by far the most difficult and failure prone programs are the ones focused on creating new revenue streams as these involve making deep changes in organizational behaviours. By contrast, cost and compliance programs typically show positive results with a much higher likelihood of moving from PoC into mainstream adoption."

Making efficiency gains and reducing cost is often easier and quicker to achieve than driving new revenue and enabling new business models – essentially digital transformations. Such transformations, most often exemplified by developing new service and revenue opportunities, are harder to achieve yet likely to yield greater long term value. Compliance has also now become increasingly important to monitor and demonstrate improvements, for example related to ESG.

How important were these objectives for your IoT project





Connectivity for IoT

In order to cater for this growing mix of requirements, a wider range of connectivity types is now evident.

Further survey findings in the report show that, while cellular and Wi-Fi have traditionally been used extensively in IoT solutions , the increasing use of LoRaWAN and Bluetooth in large quantities

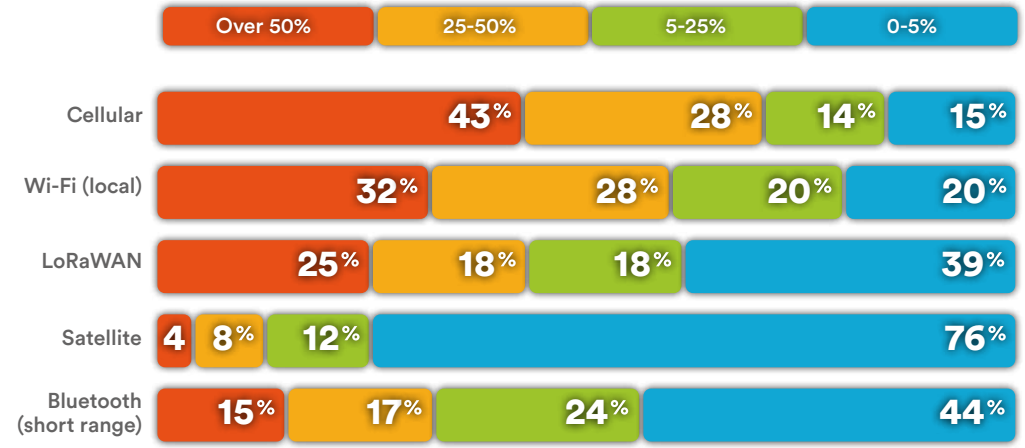
shows an increasing mix of technologies. Use of LoRaWAN has grown quickly since it was introduced to the market in 2015 and this finding prompted a further insight from MultiTech:

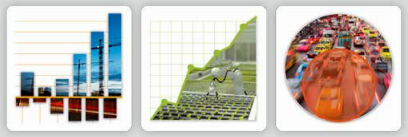
This growth in LoRaWAN, where now nearly 50% of the polled audience are using LoRaWAN in significant scale, is consistent with what we're seeing at MultiTech. We feel that LoRaWAN has crossed the proverbial chasm. We're no longer having to explain what LoRaWAN is, we're now just advising on the most suitable architectures and how to ensure that hardware and software systems are designed to scale."

The findings from this show that IoT solutions must increasingly cater for a combination of connectivity technologies in future – far more so than has been the case in the past – in order to support the rapidly-expanding range of IoT applications and their requirements. A further insight from MultiTech indicates how this is working in practice:

"One thing we're seeing with our Connected Product and Connected Service partners is a shift from what we call a "Smart Product" to a "Connected Product." The "Smart Product" simply had BLE (Bluetooth Low Energy – short range) such that a service person could enhance their productivity based on local condition data such as "Bin full" or "dispenser empty." Now many of those companies are transitioning to a fully connected product (long range) that is integrated into their field service management software. While that definition of "real time control" differs from traditional industrial automation systems, it is providing real time feedback into their business logic which directs their remote assets."

What type of IoT Connectivity are mainly used by your business? (Please provide a rough percentage attributed to each)





Adding value with IoT

Once a direct wireless connection to a remote device has been justified, that same connection can then be used for a variety of additional purposes at little incremental cost. This further enhances the the value from the IoT solution. A further survey finding illustrates this point.

This asked the question – as IoT deployment sizes grow, how important is it for your business that the following device attributes can be managed remotely Over the Air (OTA)?

This finding illustrates the growing value of wireless connectivity for the remote management of IoT

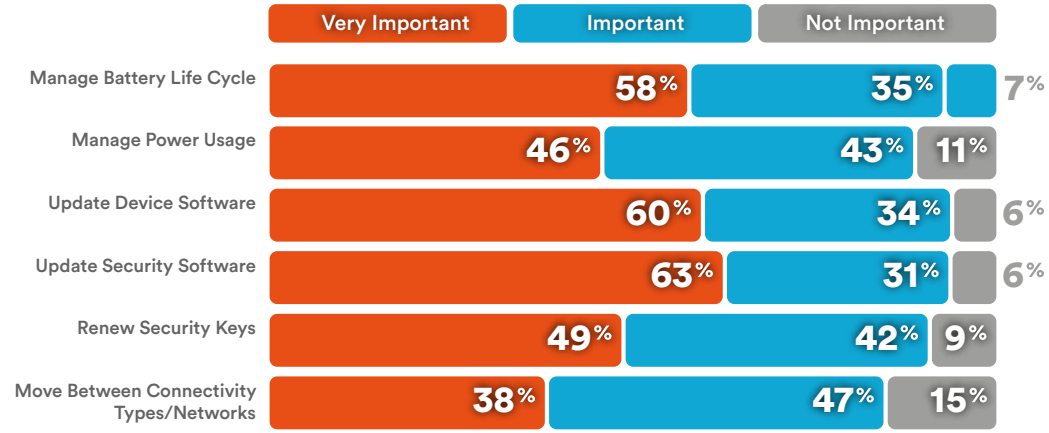
solutions in addition to the transport of data. Also, the breadth of remote management that is of interest. A further insight from MultiTech raises a cautionary note in relation to this:

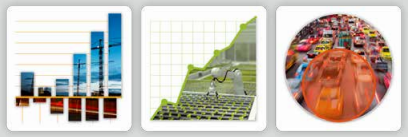
"As companies gain experience with various IoT technologies over time and scale, it has raised awareness that a successful solution must solve more problems than it creates. If a solution creates its own set of field service demands, such as frequent battery changes, or difficult to manage security profiles, it will likely never get past the PoC phase."

All of these points raise the need to gain close support from solution partners to ensure success of IoT solutions over time, including with security. A further insight from MultiTech addresses this point:

"Secure zero-touch onboarding and lifecycle management have been key friction points holding back pilot to scale deployment. As more solution vendors (who generally have software and data science skills) adopt IoT they may find it very difficult to interface with the physical world and therefore require similar software services to abstract the physical world from their digital domain." Daniel Quant, VP & GM, Gateways, Routers and Modems.

As IoT deployment sizes grow, how important is it that the following can be managed remotely (OTA)?





Case Study – Breathing Easy

The Problem

Most people living in European cities are exposed to poor air quality with an estimated number of 428,000 premature deaths attributable to its effects (Source: European Environment Agency). This silent killer also negatively impacts the economy, increases medical costs, reduces workers' productivity and damages the environment. While city dwellers seek refuge from these airborne toxins in their homes, these are not safe when it comes to avoiding the negative impacts of airborne pathogens; they too often become breeding grounds for moulds that can cause grave illnesses in children and adults.

The Solution

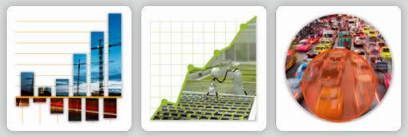
iOpt is a Scottish IoT innovator that won a £1million contract with a Scottish local government authority to create a solution for monitoring 2400 social homes. Initially sensors were installed in each unit to measure temperature, humidity and carbon dioxide levels. Ultimately information from the sensors helped identify and support vulnerable tenants who may be struggling with fuel poverty, while also providing instant access to the information that normally could only be extracted through costly on-site visits. Data transferred to the cloud generates alerts and reports to allows the owners to remotely monitor the environmental conditions. A secure platform enabled teams to look at data in greater detail and determine what action be taken to prevent conditions becoming bigger problems. iOpt's gateway of choice to relay messages between end devices and a central network server was a LoRaWAN compatible gateway from MultiTech. "We have tried many different gateways," said Dane Ralston, Managing Director of iOpt, "but ultimately we went with MultiTech because it was compatible with LoRaWAN, had the most diverse range of sensor compatibility and overall was just the most reliable for what we have done to date".

The Benefits

The iOpt service also enabled energy generation and usage in the home to be monitored, allowing the landlord to evidence that expensive energy efficiency measures were actually making a difference. "The ROI of technology goes well beyond direct cost-savings," said Ralston. "Having real time accurate visibility of asset conditions means the housing provider is in control allowing for predictive and proactive maintenance interventions. "We think LoRa® and NBIoT, a technology that will enable IoT to the masses, will work well alongside each other with LoRa as the core product. Our aim is to be world's leading IoT service for social housing and we will keep developing our service and new products to meet that need."

> ***"Ultimately we went with MultiTech because it was compatible with LoRaWAN, had the most diverse range of sensor compatibility and overall was just the most reliable"***

https://multitech.com/breathing-easier-by-tracking-air-quality-in-social-housing/



Case Study – From Saving Lives to Energy Conservation, this Hospital Does it All

The Problem

Maidstone Hospital is a leading hospital in the Southern England, providing general hospital and care services to over 600,000 patients. The hospital wanted to reduce its carbon footprint by 28%. As it set out to reduce its energy consumption, it needed to measure it. While meters were already installed, these needed to be manually read, while the few that were connected to an automated data collection system proved unreliable.

The Solution

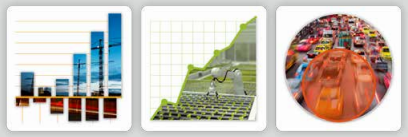
The hospital decided to incorporate a solution that leverages the latest long range, low power wireless alternative, LoRaWAN®. The hospital opted to work with Synetica Limited, providers of Long Range Wireless Monitoring Solutions for energy, assets and the environment. Synetica's solution incorporated EnLink, specifically enLink Modbus, a LoRa wireless Modbus bridge; enLink Pulse, a LoRa wireless Pulse counter and enLink Zone, a LoRa wireless environmental sensor measuring temperature, humidity, VOC's & CO2. The system provided Ultra long wireless range, Real time data and Low cost of ownership. Pivotal to the success of the enLink's solution is the MultiTech Conduit, a configurable and scalable communications gateway for industrial IoT applications. Each Conduit gateway has the ability to manage thousands of LoRaWAN compliant devices, including MultiTech mDot™ modules and other sensors and transmit their data over any cellular network to the customer's data management platform.

The Benefits

The hospital now has real-time data from over a hundred meters across the site, which allows for an instantaneous measurement of energy impact and carbon reduction. All of this data is provided in fine detail, including the installation of LED lighting and optimising the HVAC plant & controls across the site. The availability of granular real-time data allows the hospital team to gauge how its energy reduction programs are performing which will help ensure that targets are met on time. The new meters installed as part of the enLink system also provided in-depth information on the electrical performance of the site, not just energy consumption, such as currents, power quality, power factor. Ultimately money is saved, allowing more funds and resources for its most important asset – its patients. "The Synetica EnLink system was installed in a short space of time and with almost no disruption," said Barry Leaf, Estates Manager, at Maidstone Hospital. "We were concerned that our electrical energy requirements were not being recorded in a way to allow us to review our loading needs in different locations; the Synetica enLink system allows us to do this."

> ***"The Synetica EnLink system was installed in a short space of time and with almost no disruption"***

https://multitech.com/from-saving-lives-to-energy-conservation-this-hospital-does-it-all/ https://multitech.com/all-products/cellular/cellular-gateways/multitech-conduit/



About MultiTech

Multi-Tech Systems Inc was founded in 1970 in the US, celebrating its 54th year in 2024. While it began by providing communications equipment, over the years the company has come to specialise in Machine to Machine (M2M) and Internet of Things (IoT) related offerings. Today these have expanded into designing, developing and manufacturing components, devices and end-to-end solutions for the industrial and commercial IoT.

The company has operations worldwide with sales offices in U.S, UK, Spain, South Korea and Japan. In November 2020 the company was acquired by SmartWave Technologies, a Northlane Capital Partners platform investment, with the enlarged company then operating under the MultiTech brand. The company's mission is to make IoT easier to adopt and deploy by bringing the pieces together to connect, monitor and control user assets – from sensor to application. The new entity is now in a position to grow the market size of connected IoT devices and accelerate OEM and enterprise digitisation. It will drive the deployment of Industrial IoT innovations in low power, wireless access and broadband, low-latency communication technologies, machine protocols, integrated sensors and mobile applications.

In addition to delivering communication products and services, the company now offers complete turnkey solutions in IoT. It has invested into private enterprise wireless networks, cellular and LoRaWAN technologies. Over 100 million MultiTech devices are now deployed around the globe.

The company has a multiplicity of partners including the other companies within the holdings of the private equity company that acquired it. It has customers across the board including governments, enterprises and OEM's.

In 2021, MultiTech announced the acquisition of Radio Bridge, a designer and manufacturer of long-range wireless sensors for the IoT industry using the LoRaWAN® standard.

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