C&W SERVICES

The Here and Now of IoT in your Workplace

The Internet of Things refers to a vast array of computing devices that, when embedded in everyday objects and connected to the internet, allow those objects to communicate autonomously with each other and with us. Examples include smart phones, fitness trackers, smart appliances, and equipment sensors.

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There should be no doubt that the IoT is an increasingly pervasive part of both life and work. Such explosive growth has IoT firmly on the corporate agenda with IDC indicating that 55% of companies see IoT as a strategic imperative. Of those companies surveyed, 34% are already working with the technology and 43% plan to have an IoT program in place this year.

Cisco predicted the number of enabled devices would reach close to 23 billion last year – a 160% increase on the previous four years – and will grow to over 50 billion devices by 2020.

The possible applications of IoT are broad and varied and real estate is leading the charge.

"Envision a scenario in which data from work calendars, security systems, and room sensors is made available for analysis, and that machine learning has determined I work from 8:30 a.m. to 5:00 p.m.," said Neil Ross, business architect and strategist business strategist, Microsoft Digital. "Once the system has determined patterns associated with how I use the space, operators can start thinking about adapting the space accordingly, with lighting activated and temperature set to my preference when I enter the space. During other periods, both systems lie dormant."

B2B research firm MarketsandMarkets concurs. The firm estimates a 34% CAGR growth for smart buildings, with the market growing from $5.73 billion to $24.73 billion from 2016 to 2021.

Looking to further narrow the perspective to the intersection of IoT and corporate real estate, Cushman & Wakefield took the pulse of attendees at CoreNet's annual signature event in Hong Kong late last year. We presented IoT to a "shark tank" of experts and audience members alongside other emerging technologies to gauge the desire to invest. Participants voted via a mobile poll, considering technologies including virtual reality, drones, and building information modeling (BIM). IoT took out the popular vote with more than 90% of participants voting to invest.

Some of the potential uses of IoT shared during the session included:

Predictive maintenance – Performance tracking of facility assets like HVAC, lighting units, and elevators allows maintenance work orders to be triggered automatically. With 30% of planned maintenance activities being carried out too frequently and 40% of assets having a limited impact on facility uptime, there are real opportunities to drive out cost savings through a more targeted approach.

Smarter capital asset planning – Combining the same performance data with asset condition/criticality ratings and degradation models can also help ensure capital investment is directed to the equipment with the greatest impact on facility uptime and/or the greatest risk of failure. This approach maximizes capital budgets and reduces the risk of unexpected budget variance.

Sensing environment – Sensors are already widely used to switch off devices that don't need to be in use, such as lights and air conditioning in vacant rooms. Increasingly, they are also allowing people to set light and temperature settings according to their personal preferences via their smart phones, with clear positive impacts on cost, sustainability, and user experience.

Real-Time utilization – Sensors allow us to monitor how space is being used so we can provide more of the spaces people want and less of those that they don't, thereby reducing costs and enhancing user experience.

Digital doors – We see IoT being used to control access to buildings or offices by individuals using smart phones, biometric devices, or retina scans rather than security badges. Such devices can not only enhance security, but also provide a more seamless user experience.

Smart wayfinding – Sensors can help people to find what they need within a space, a meeting room, amenity, or another type of facility. This is increasingly important as companies adopt more free-desking options in the design of work space.

Real-time well-being – As companies look to the power of technology to provide a more productive and engaging workplace experience and to retain key staff, IoT can be leveraged to track people's activity and heart rates as a means to reduce stress and provide for increased health and well-being.

Set the strategy for your business

While these new technologies could be a boon for workplace efficiency and experience, how do you decide what is right for your business and when to invest?

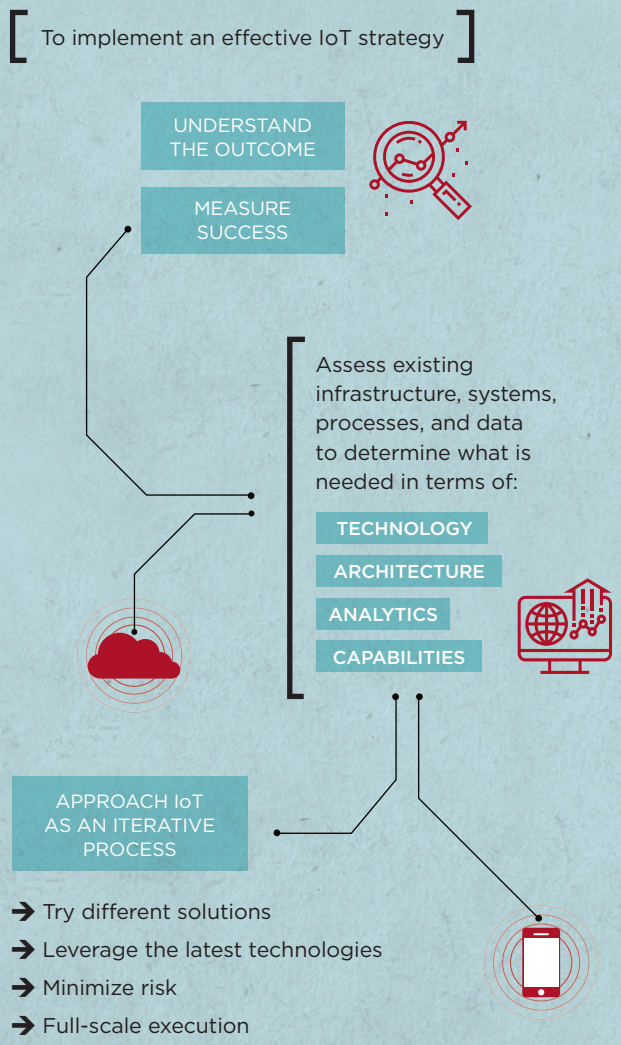
To implement an effective IoT strategy, it's important to first understand the outcome you are trying to drive and how you will measure success. Different outcomes will require different technologies, data, analytics, and end-user behaviors. Without a clear starting point, you'll waste time and money.

For example, a recent pilot in predictive maintenance for a global pharmaceutical firm sought to first prove the reliability and efficacy of sensors and the ability to manage their resulting data without overwhelming the engineering staff (you can read more in our sidebar). Conversely, when we implemented a new technology project for 14,000 hourly employees in dispersed locations, the data outputs and their uses were already well documented. The biggest challenge was considering the human factors of engaging employees with diverse technical skills, languages, and work habits to consistently use the new system.

Once the outcome and measures of success are clear, you should assess existing infrastructure, systems, processes, and data to determine what is needed in terms of technology, architecture, analytics, and capabilities. IoT is a rapidly evolving but still highly fragmented landscape and it's likely that you'll need to combine different technologies or platforms to get to the end goal. While an IoT strategy has a high element of technology deployment, the business and cultural shifts needed to consume an increasing flow of data, drive meaningful insight, and ultimately change behaviors are key ingredients for successful implementation. Involve subject matter experts early and regularly throughout implementation.

Finally, as is the same with any innovation, consider approaching IoT as an iterative process. Leveraging pilots will allow you to pivot quickly, try different solutions, leverage the latest technologies, minimize risk, and build the case for full-scale execution.

TIPS FOR INVESTING



NAVIGATING A SEA OF PREDICTIVE MAINTENANCE DATA

Pilot validates engineer-in-a-box solution

At a large research and technology site with several large pieces of rotational equipment, C&W Services is responsible for engineering and maintenance. Until recently, monitoring for bearing wear, balance issues, and other vibration related anomalies was accomplished through monthly readings from wired transducers. The waveforms were sent to a third party for analysis. The process was time consuming, and there was no guarantee that even regularly scheduled readings would coincide with the problems they were designed to uncover.

Understanding the potential of rapidly evolving capabilities in wireless monitoring and data collection, C&W Services worked with our client to design a pilot program to determine the efficacy and ROI of a more technologically enabled monitoring system. We viewed the pilot as an opportunity to develop a more complete and long-term solution beyond transducer technology.

We found a solution with the potential to investigate and test new analytical ability, such as advanced machine learning capability, predictive and condition based monitoring, and remote diagnostic ability were central to the pilot. The pilot product's machine learning uses multiple samples to assign various pattern behaviors. Additionally, machine based learning looks at multiple waveform variations of "good" and "bad" to identify when an anomaly warrants further investigation or an alarm condition.

The pilot confirmed several positive outcomes, including the efficacy of wire sensors in data collection, and the benefits of identifying potential problems within minutes of a vibration anomaly.