

# IoT NOW

HOW TO RUN AN IoT **ENABLED** BUSINESS



## TALKING HEADS

TELUS IoT executive focuses investment on smart cities and transportation

THE IoT NOW CEO GUIDE TO REMOTE MONITORING 2020

**PLUS:** How COVID-19 has put remote monitoring in the shop window • Remote monitoring apps are endless but device cost holds back the market • Inside Ontario's project to connect 685 snowploughs and manage them with end-to-end tracking • Why remote monitoring provides visibility in a COVID-blinded world • It's time to celebrate IoT excellence and innovation at the IoT Global Awards 2020 • How Data-Command has enabled no-risk waste water processing with new tracking project • News online at [www.iot-now.com](http://www.iot-now.com)

Three circular images are arranged on the right side of the page. The top circle shows a green tractor in a field. The middle circle shows a female doctor in a white coat looking at a tablet. The bottom circle shows high-voltage power lines against a sunset sky. The background also features circuit board patterns and overlapping circles in purple and yellow.

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# IoT NOW CEO GUIDE TO REMOTE MONITORING & ASSET TRACKING

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**MANAGING EDITOR**

George Malim  
Tel: +44 (0) 1225 319566  
g.malim@wkm-global.com

**EDITORIAL DIRECTOR & PUBLISHER**

Jeremy Cowan  
Tel: +44 (0) 1420 588638  
j.cowan@wkm-global.com

**DIGITAL SERVICES DIRECTOR**

Nathalie Millar  
Tel: +44 (0) 1732 808690  
n.millar@wkm-global.com

**SALES CONSULTANT**

Cherisse Jameson  
Tel: +44 (0) 1732 807410  
c.jameson@wkm-global.com

**DESIGN**

Jason Appleby  
Ark Design Consultancy Ltd  
Tel: +44 (0) 1787 881623

**PUBLISHED BY**

WeKnow Media Ltd, Suite 138,  
80 Churchill Square, Kings Hill,  
West Malling, Kent ME19 4YU, UK  
Tel: +44 (0) 1732 807410

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# Organisations search for remote control

Welcome to this IoT Now CEO Guide to Remote Monitoring in which Michael Cihra, the vice president for IoT and Insights at TELUS, shares his vision for IoT and reports on developments in the tracking and remote monitoring markets



Remote monitoring has always been one of the subsets of IoT likely to gain traction rapidly because the business benefit that it provides is easy to understand. There are clear transformational, organisational, safety and profitability advantages that can be used to justify investment. However, until 2020, remote monitoring had lacked a catalyst, writes George Malim.

Solutions were often too costly for many use cases and complexity surrounding connectivity, device costs and regulation still needed to be addressed. The unfortunate arrival of COVID-19 has been a cloud with a silver lining and, although it's a bad look to celebrate this, it's clear that the capabilities of remote monitoring are uniquely aligned with a world beset by lockdowns, quarantines and lack of freedom of movement.

Organisations that previously would have left looking at remote monitoring until later now recognise their workers and customers expect them to harness new technologies to improve responsiveness, service and safety so have accelerated their engagements. Healthcare is leading the field but smart cities, smart buildings and smart home technologies follow rapidly behind.

No one's cracking the champagne, but these are positive moves and are welcome.

Finally, don't miss our interview with MultiTech's Sara Brown to introduce the IoT Global Awards 2020 (on S14). Sara is looking to see something surprising among the winners and this year, with the unique challenges we've all faced, I'm sure there will, at last, be a cause for celebration.

Enjoy this Guide!

## Partners' remote monitoring of COVID patients with diabetes cuts staff exposure and PPE use

**KORE**, has created an ongoing partnership with **Dexcom**, a provider of continuous glucose monitoring (CGM). This will rapidly deliver an innovative remote patient monitoring solution to assist care providers during the COVID-19 global pandemic.

Using the Dexcom G6 CGM system, healthcare professionals can reduce both the use of personal protective equipment (PPE) and the number of in-person glucose level checks on patients who are receiving care for COVID-19 in the hospital.

In order to successfully monitor the glucose levels of patients who are being treated for COVID-19, healthcare professionals (HCPs) must equip themselves with fresh personal protective equipment (PPE) for each visit. Patients on insulin need several glucose checks per day, up to one per hour – meaning multiple PPEs are discarded each day, for each patient. With many hospitals and healthcare workers already experiencing a shortage or lack of proper PPE, the risk of exposure and infection grows significantly – as do the costs.

Dexcom's solution allows for continuous glucose monitoring by measuring glucose levels automatically every five minutes and transmitting the data to a handheld mobile device, which can be accessed from a safe distance. HCPs can then safely and accurately monitor blood glucose levels remotely – only using one set of PPE daily in order to change out the device, or at other times when immediate intervention is necessary.

“Doing all that we can to support the health and safety of the patients and healthcare workers currently battling this novel virus is a top priority for our company,” says Matt Dolan, senior vice president and general manager at Dexcom. “It's our hope to reduce their exposure, eliminate unnecessary waste of limited PPE supplies, and improve the efficiency of the hospitals who are treating these patients.”

Romil Bahl, the president and chief executive at KORE, added: “We are in an unprecedented situation and the KORE team is looking for ways to help. When the Dexcom team approached us to help in short timeframes, our healthcare team was up to the challenge.” ■

**Romil Bahl**  
president and chief executive  
**KORE**



## Monitoring helps organisations manage remotely without becoming distant

One area of IoT that has had the opportunity to demonstrate its value during COVID-19 social distancing is remote monitoring. It's obvious that being able to manage things remotely, without human contact is an advantage at this time and the application of remote monitoring has helped individuals, companies, cities and industries adapt to new ways of working

Remote monitoring is applicable across the entire spread of IoT from highly personalised applications to help serve patients better to faceless industrial applications that have immense worth in efficient operations and safety. The COVID-19 pandemic has resulted in organisations trying to minimise human interaction and the data collected by remote monitoring sensors that are connected has eliminated countless truck rolls and countless high risk, hands-on moments.

Substantial growth is therefore predicted by the analyst community. **Allied Market Research** reports that the patient monitoring devices market generated US\$25.76bn in 2019, and is estimated to reach US\$44.86bn by 2027, registering a CAGR of 4.4% from 2020 to 2027.

The surge in usage of wireless monitoring devices and the increase in population of ageing people across the globe are driving the market but the high cost associated with patient monitoring devices is anticipated to restrain growth. Nevertheless, COVID-19 associated remote monitoring is expected to accelerate adoption.

This growth is also projected in the global market for IoT-enabled remote asset management solutions, which is predicted to grow from US\$16.5 billion in 2020 to US\$32.6 billion by 2025, according to market research firm, **MarketsandMarkets**. This growth comes as organisations trust remote monitoring to provide timely, accurate and secure data to their systems and enable optimised management of remote assets.

Assets include industrial equipment such as oil and gas pipelines and remote monitoring is being utilised in mines, drilling sites and power stations across the world.

Smart cities are also adopting remote monitoring as authorities seek to monitor traffic and people as COVID-19 impacts on expected population flows and densities. Everything from transport organisations to litter collection

companies are utilising remote monitoring to understand how to work efficiently and safely under current conditions.

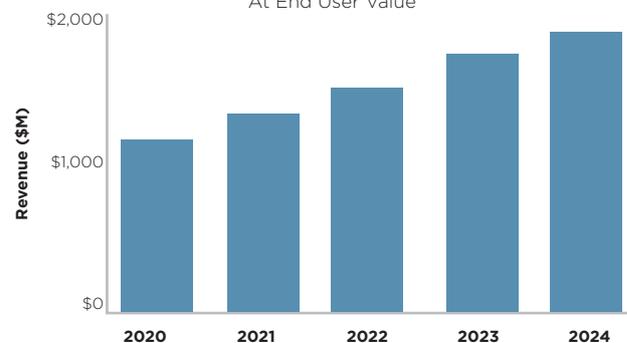
Office building owners and operators, similarly, are turning to remote monitoring to control HVAC, security and access control, plus numerous other sector-specific applications.

Finally, research firm **Parks Associates** forecasts total professional monitoring revenue for the US residential security sector will total US\$15.74bn in 2020, with smart home services accounting for US\$1.2bn.

"The number of connected devices continues to expand year-over-year, and 2019 concluded on a particularly strong note for the security industry," said Brad Russell, the research director for Connected Home at Parks Associates. "Security system adoption reached one-third of all US broadband households at the end of the year. Consumers now have an average of 11.4 connected devices in their homes, which opens multiple opportunities to extend monitoring services as well as different varieties of both professional monitoring and MIY (monitor-it-yourself)."

### Total Annual Revenue for Smart Home Services

US Households with Professional Monitoring (\$M)  
At End User Value



Source: Parks Associates





## ***TELUS finds new opportunities as its IoT investments focus on smart cities and transportation***

Even in a time of global crisis, there are opportunities for companies that focus on solving problems for enterprises, municipalities and state-run services. Michael Cihra, vice president for IoT and Insights at TELUS shows IoT Now's Jeremy Cowan, there is good reason for optimism at the Canada-based operator.

Cihra has over 17 years' experience in IoT. He joined TELUS in 2016. The Vancouver-based company provides a wide range of telecoms products and services including internet access, voice, entertainment, healthcare, video, IPTV and Internet of Things (IoT). Cihra's previous roles include senior vice president of Emerging Business at Telstra, and he led the launch and operation of Verizon Wireless' mobile business applications and partnership portfolio

**Jeremy Cowan: What made you choose an IoT-based development path for TELUS?**

**Michael Cihra:** I think TELUS has recognised the opportunity that's been developing. Whether it's low cost sensors, or high availability storage solutions, lower costs and ubiquitous networks, as well as the realisation that a low average revenue per user (ARPU) business does not have to be an uninteresting business. When you combine the capability, the cost opportunity for developers,

the fact that the commercials did work for operators, the light bulb turned on for TELUS in the mid 2010s, as it did for most carriers.

**JC: Was that the tipping point for you?**

**MC:** Yes, I think probably for many carriers. I certainly would say that there were a number of global operators that were early, you had people like Vodafone, AT&T or Deutsche Telekom. I think a lot of those guys realised that there was going to ►

### SPONSORED INTERVIEW



be an important connected car opportunity, and given their location they probably had a good song to play in that market. But for the rest of the operator community, it took a little bit longer to try and figure out the business case. That really started in early to mid-2010s.

**JC: You've talked of experiences in Australia and Silicon Valley – seeing the trend and opportunity there. Can you elaborate?**

**MC:** Sure, I spent some time working in New York and in Washington DC. What it always came down to was being relevant to the needs of the customers in the market that you were serving as an operator. In Australia, which is very similar to the Canadian market, there's a tremendous amount of business around natural resources. So I think there was a lot learned there in what people were interested in regarding connected intelligence. What was informative for me was when I worked in California for a couple years, the focus was on software and intelligence. That opportunity in machine-to-machine communications (M2M), that bi-directional search in a business to know that something's working or not working within their business and that's kind of the end of the conversation. It's all very internal. And what I came to realise talking to companies and analytics businesses and software businesses was this whole new world of sharing data, exchanging it, combining it to make it a whole lot more interesting, not just for a business that has devices but for a whole ecosystem that can benefit from intelligent information. That realisation was important and it's kept me interested in IoT.

**JC: How has TELUS changed as you've built an IoT business within a telco?**

**MC:** When I joined in 2016, TELUS was already in the IoT business. It was largely focused on reselling transportation applications and track and trace solutions for commercial fleet vehicles. TELUS was quite advanced with a substantial business here in the Canadian market. A number of solution partners were in place. What was still quite niche at the time was the business of selling connectivity to lots of different types of customers. That was still a small business and considered more of a wholesale business rather than a tier one opportunity for growth for a carrier. That's one of the areas that's changed considerably for us over the last few years, really embracing IoT as, not just a niche activity but a core part of our business as an operator.

The market has started to mature and customer expectations have started to evolve. So, what started as a niche project for some tracking assets within one particular branch of a business, has become more important as businesses have started to realise how valuable this information is. And that value has created dependency within their business to have this become more a core part of their

business. So as their reliance has increased they have that expectation to be better from a reliability standpoint, having more availability, always-on, anywhere experience. All of those are table stakes now for carriers that want substantial customers.

We were initially focused on a horizontal, one-size-fits-all for the market. Now we're getting more specific on how do we take care of customers by looking at the things that are important to them within their sector. The needs of a car company are completely different from the needs of a natural resources company. You have to start making commitments around specific verticals in order to be relevant and to have credibility within that market. That's been a focus for us over the last few years.

**JC: You've said that you need a 'right to play' and contribute to many areas in the IoT stack. That's why you've invested in and acquired companies. What are your positions in the stack and what have you done to acquire companies?**

**MC:** Sure, if you take transportation, having a one-size-fits-all solution for all different types of customers to connect their vehicles is no longer enough. Different types of companies have a different set of vehicles and problems to solve. So, looking specifically at how we can identify companies that have software and hardware that meets the demands of specific market, that's where we started to make investments. We've done a couple of acquisitions around companies focused on transportation in very specific sectors of the market. There's one company that we've acquired that's been very focused on municipal services. In Canada that's things like snow removal, capturing and removing snow, which is a big challenge for us here, as well as having capabilities in solutions that address waste management, garbage collection and disposal.

Those are important businesses for municipalities. They have a very specific set of requirements and visibility over the vehicles and the assets for waste management or snow removal is key. And there are companies that have developed software and hardware that specifically address those markets; with sensors that are making sure that the snow blades are just the right height, making sure that there's enough room in the back of the vehicle so that you don't run out of space for snow. These requirements are specific to customers, and those are types of businesses we've started to go after that can really be deep and committed in some of these verticals. Transportation has been the big one.

Looking at the software stacks, looking at connectivity software, hardware, and even some of the intelligence that's being fed back into the application around predicting faults, for example, that's an important part of how we've been good for some of our customers in these verticals. ►

***What it always came down to was being relevant to the needs of the customers in the market that you were serving as an operator***



***We were initially focused on a horizontal, one-size-fits-all for the market. Now we're getting more specific on how we take care of customers by looking at the things that are important to them within their sector***



**Michael Cihra**  
vice president for IoT and Insights  
TELUS

**JC: I'm intrigued to see you've also identified healthcare and smart cities.**

**MC:** Healthcare is an important part of our business here at TELUS. We made a conscious decision to develop a business of consequence in the health space, and that was initiated back in 2008. We started to make a number of acquisitions around electronic medical records. We have continued to make investments and to really build out a substantial health practice here in the Canadian market. We're now one of the largest IT health service providers in Canada. One of the things I really love about TELUS is the sense of commitment. When we identify a market we want to go after, we really do it. A lot of carriers talk about what they're thinking about doing. At TELUS, we'll make some decisions and really go do it. It's wonderful to be a part of.

Health is now an area in which we really want to start using some of the capabilities, the people and the customers that we've developed in a health context. So we're starting to develop a specific business that we're going to be standing up this Fall. More to come on that later this year. It's going to be around the things that we think will be helpful in these times of COVID, bringing more in the way of safety, compliance and visibility to environments like hospitals, home hospice care and age care facilities.

**JC: How well are the investments in network, and capabilities, paying off?**

**MC:** In terms of our overall mobile network, TELUS has made investments which have certainly been paying off for our customers. Just this month, for example, I know that OpenSignal in your country has shown us beating all competition with its global network leadership. We took home the gold medal in a number of categories for network experience. In the Canadian sector of that award, we took home six of seven awards. I know that the recognition is not just from a regional perspective in Canada, but on a global stage as well.

As it relates to IoT specifically, several years ago we launched a separate, dedicated IoT virtual core network. That was an important thing to do and something that many operators have not done. This network is important because it's 100% dedicated to supporting IoT devices. There's no smartphone traffic on the network whatsoever. It's 100% there and dedicated and completely scalable to support our growth as it relates to IoT. We think that's an important differentiator for us in the market. And it's also got full ▶



redundancy built into it so that gives additional power and fault tolerance to the network. If there's a certain node, for example, that goes down, we've got redundancy to flip over and allow it to continue uninterrupted for our customers. That is so important now. You're supporting banks, hospitals and ambulances and all of these critical services that just have to be on 24/7. Having that level of commitment to availability, we see that as being absolutely table stakes now in the IoT market.

**JC: Can you give an example of how TELUS is focusing on problem solving? You've talked about healthcare and natural resources, smart cities and banking. Are there problem solving tasks that have been set by your customers that you can reference?**

**MC:** I think smart cities is a good example. I think that many communities are still struggling with 'What does that mean in terms of how you bring IoT or how you digitise the city to be relevant for the needs of the community?' In many cases operators and others have tried to drop in a grand, over-the-top platform, that would connect all services within that city. I think that's an interesting proposition, but I think there's still work to be done as to how one is able to execute in that regard. So, what I would submit is instead of a 'build it and they will come' within cities, we've tried to focus on a specific pain point which we believe is the number one in the city, which is traffic congestion.

We've made those investments that I alluded to earlier, in terms of software-based investments in a company called FOCUS. SkyHawk is another company which is focused on state and provincial-based fleet solutions as well as utilities. These solution providers which we've invested in have a lot of strength and capabilities around software and technology to address problems of waste management. These are extremely important as it relates to traffic flow, improving the cost to repair in a road; the cost and dollars that need to go into providing a good experience. And an effective cost experience for a business or for a city in waste management.

I would refer to all of these as bottom-up opportunities where you're looking at specific material solutions within a town or a city, and helping those customers solve the problems in terms of cost, and better customer experiences. If you look at FOCUS, for example, we're in over 80 different cities now that we've provided solutions to help them in municipal services from a digital perspective.

We are focusing more on bottom-up as opposed to top-down when we're looking at this. We've made a substantial investment in a company called Miovision. They have software and hardware intelligence that they deploy at intersections. Then they connect up these intersections within a city so you start to optimise traffic flow, and looking to see where lights need

to be changing on a real-time basis to optimise the flow of traffic. That's an important investment and we think we'll have a lot of success and relevance in connected cities going forward.

**JC: Do you own Miovision? Is it a controlling interest or is it as a minority?**

**MC:** It's a minority investment.

**JC: And you mentioned SkyHawk. Is that one of your investments as well?**

**MC:** Yes, it is. That was a 2019 acquisition as was FOCUS. Their principal areas of strength are utilities. They're quite strong in both provincial and state-based fleets in the US market. We are certainly in the Canadian market and also in the US market in terms of opportunities that we can see from a utility perspective and also from a municipal services perspective, for things like snow removal and waste management.

We are making committed investments in software. And in many cases software does not need to be constrained by geography, so where we see opportunity, we're going to go after that opportunity.

**JC: What is the future of IoT within TELUS' broader plans?**

**MC:** I've been doing IoT for ten years and I don't think it's ever been more interesting than it is right now. And the reason I say that is because I think we're starting to get to, you used the words 'tipping point' earlier which I liked. I think we're getting to that level of maturity in the market, where people are making the investments. They're seeing the outcomes, they're seeing the rewards. And so you've got that snowball effect now, the investments are really starting to accelerate. Businesses are starting to make this much more of a core proposition and a core element in how they're digitising, trying to bring their businesses to a better place for the shareholders and for their customers.

This whole business of acceleration, I just see it happening, and we'll be participating in that with more activities, more involvement with more customers in different verticals. More and more companies are emerging in software, they're looking to solve problems for these companies. This whole acceleration is really exciting, and it's a good place to be.

**JC: You sound bullish about the prospects, despite the setback that is COVID.**

**MC:** Yes, absolutely. A lot of us have been displaced because of COVID. And as you know, one of the fundamentals of IoT is bringing visibility and understanding and information to the market. So IoT is really well placed to be helping a lot of different types of industries, as they're trying to remotely maintain and support their businesses. So, there's lots of opportunities. ■

***We are focusing more on bottom-up as opposed to top-down when we're looking at this. We've made a substantial investment in a company called Miovision***

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**The data captured by FOCUS can be used to optimise routes and manage fuel consumption, making each vehicle more efficient and productive**



## Transformative IoT Beyond Connectivity: **TELUS' vehicle tracking improves urban life**

**End-to-end Internet of Things (IoT) solution is helping Canadian cities deliver services faster and more efficiently. In a city in Ontario, 685 snowploughs and other municipal vehicles are being managed by an end-to-end tracking solution supplied by mobile operator TELUS. The solution is developed by FOCUS, which was acquired by TELUS in 2019**

This software solution delivers a new approach to delivering telematics capabilities that uses TELUS' LTE and LTE-M1 networks to provide end-to-end visibility within an organisation by capturing GPS-based telemetric data, such as location, direction of travel and speed, along with other vehicle information, such as engine diagnostic codes while enabling finance, maintenance and other functional teams with at-your-fingers data on the status of operations and assets.

Prior to adopting FOCUS in 2018, the city in Ontario had been using multiple systems to manage its municipal fleet and deliver maintenance reports to city officials. As a result, the municipality was having difficulties integrating the fleet data into a single overview of its operations. By contrast, FOCUS has enabled the city to consolidate all the tracking information into one system, simplifying data capture and information flow.

### **All a matter of FOCUS**

The data captured by FOCUS can be used to optimise routes and manage fuel consumption, making each vehicle more efficient and productive. More than 70 municipalities across Canada (including the city in Ontario) are now using the FOCUS solution to provide better services to their citizens.

As well as location co-ordinates, FOCUS can retrieve data from on-board sensors monitoring road and air temperatures, together with information about the plough position, the hydraulics and the rate at which the vehicle is spreading salt and sand to clear ice and snow. All this data is collated in a single in-vehicle unit and transmitted to the FOCUS cloud service via TELUS' LTE or LTE-M connectivity in real-time. The system can also send alerts and notifications to managers and supervisors when pre-configured thresholds are breached. ▶



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During winter, the information collected by the on-board sensors can help municipalities identify which urban areas require snow clearance and what type and priority of service is required (applying salt doesn't work below a certain temperature and, depending on the amount of snowfall, different ploughs / vehicles might be used).

The FOCUS solution also tracks the vehicles providing the service. Through better route planning, municipalities have been able to reduce fuel usage and overtime, while achieving 97% precision in the application of salt (the FOCUS app measures this metric). As a result, snow and ice are cleared faster, improving citizens' lives in the winter months. At the same time, less fuel is wasted and there are fewer carbon emissions, helping the city to meet its sustainability goals.

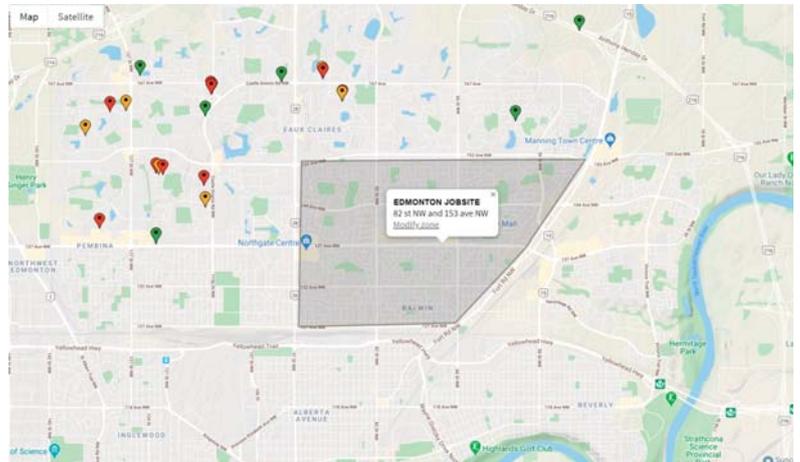
In the event of a storm, the municipality also uses the data captured by FOCUS to keep citizens informed about which areas are being serviced and the on-going priority actions. A web portal enables the city's 700,000 citizens to see if their street has been ploughed, using the familiar Google Maps interface.

### Not just for winter use

Although snow clearance is only necessary in the winter, FOCUS can be used to help cities with the complex task of managing multiple contractors and sub-contractors engaged in other municipal operations, such as waste management, the enforcement of bylaws and the management of mobile and fixed fuel tanks, all year round. For example, the system can help cities optimise bin collection and commercial waste removal, the management of recycling depots, street cleaning, water treatment, road maintenance and public works projects. Moreover, the information collected by the system can be used by the municipality to identify the nearest relevant employee or police officer (if appropriate) to the source of a complaint.

At the same time, FOCUS can help the city administration and its contractors monitor how much individual vehicles are being used, enabling proactive maintenance and improvements to reliability. On-board sensors and cameras can also capture data and images relating to the state of critical urban infrastructure, such as bridges and other key structures: The connected vehicles effectively become mobile IoT sensors collecting information on the urban environment in real-time.

TELUS acquired FOCUS in 2019 to further expand its portfolio for the transport industry: TELUS offers a range of fleet management solutions to meet the needs of everything from a small business to a major enterprise. As an end-to-end solution, TELUS says FOCUS addresses a number of challenges associated with alternative fleet management solutions, such as the complexity of installing diverse equipment and services, painful on-boarding processes, technological obsolescence and unfriendly and unresponsive user interfaces.



### Emphasis on reliability

TELUS also regards FOCUS' reliability as a key differentiator. TELUS says the mobile connectivity, the cloud software, the data storage and the hardware used for the solution are all highly reliable. FOCUS is able to employ both TELUS' LTE and LTE-M networks, with the latter providing low power wide-area coverage, purpose-built for low-cost Internet of Things connectivity.

There are three major vertical areas that the FOCUS capabilities are specialised in, which are public administration, construction and specialty transport. These encompass a wide range of applications from school buses to livestock transfers and concrete ready-mix deliveries.

The FOCUS solution is delivered by a dedicated team within the broader TELUS family, which provides the custom solution configuration, installation, and ongoing management after deployment. FOCUS is also backed by TELUS' dedicated IoT Centre of Excellence, which can help customers with everything from solution consulting to on-boarding and ongoing technical assistance.

### IoT Centre of Excellence

The Centre of Excellence is staffed by experts that know all of TELUS' IoT tools, can provide free training to customers and help troubleshoot any issues. TELUS says the FOCUS team works closely with new customers to ensure they can use all the system's functionality from the start and there are no issues during installation which is driven by its customer success team.

"The FOCUS solution is managed end-to-end and removes any concerns for the customer on technology obsolescence and provides fast, user-friendly modules that meet industry requirements in a robust environment," explains Julio Villalta, director of IoT products at TELUS. "We are providing more value to our customers by moving up the IoT stack and becoming a meaningful part of their business," he adds. "Being in constant contact with the customer informs the ongoing capabilities to the solution, often at no charge to the customer." ■

TELUS' geozone jobsite view.

***"The connected vehicles effectively become mobile IoT sensors"***



## ***Remote monitoring provides visibility in a COVID-blinded world***

**Doing things remotely is inescapably the most attractive way of running operations in the COVID-19 era and enterprises have been fortunate that much of the technology and infrastructure was in place before the pandemic. However, the costs of remote monitoring are still too great to support the business case for many applications, writes George Malim**

Remote monitoring has become an acceptable and expected means of operating efficiently and managing many different types of devices from sensors in pipelines to wind farms or agricultural irrigation devices, to name just a few of the vast landscape of applications. However, remote monitoring is still too costly for many applications as Takashi Sonoda, the founder and CEO of IoT products and services specialist **Uhuru**, points out.

"Whilst IoT costs are continuing to fall, they are still prohibitive in most cases," he says. "Many businesses cannot immediately see a positive cost/benefit analysis. This is a hurdle for IoT becoming truly ubiquitous across the economy."

Sonoda says that connectivity remains a major challenge in IoT adoption, particularly in remote areas but the emerging availability of 5G in urban areas has now unlocked new potential applications. "Within the IoT sector we are witnessing increased interest of office building management and industrial unit solutions," he adds. "With COVID, proprietors want to ensure the safety of their workers. Across the developed world, there is concern about the three Cs – closed spaces, crowded places, and close-contact settings."

Sonoda thinks IoT solutions are well-suited for monitoring the three Cs through the adoption of sensors to monitor the key variables. "Monitoring the number of people in a certain ►



space, monitoring air quality or tracking how frequently air is being circulated will play a vital role in reopening the economy and maintaining the safety of employees," he says.

In addition to cost issues, Pilgrim Beart, the co-founder and chief executive at **DevicePilot**, also has concerns about connectivity. "As connected technology has matured and started to iron out some of the problems that gave it a poor reputation initially – such as communications standards, battery life and reliability – companies are beginning to see the real benefits of monitoring devices, but there is still a long way to go as these issues remain," he says. "Many offices these days have connected devices monitoring occupancy, and adjusting the heating and lighting accordingly, but there are a plethora of other processes that could also benefit from remote monitoring that are yet to really take off. As they become more commonplace, naturally the cost of the service is falling, which is making connected devices more and more affordable by the day."

Tej Redkar, the chief product officer at **LogicMonitor**, sees remote monitoring rushing to mature in the COVID-19 world. "As organisations move to remote working scenarios, there will be cost savings in terms of overhead like office leases, utilities and travel expenses," he says. "However, more money will be spent on remote IT services. Indeed, almost everything will be either running in or connected to the cloud, so it's critical that organisations are able to monitor the applications that mean the most to their remote workforce."

"Remote monitoring technology has had to mature quickly in recent months, not least because IT has now become a critical business partner," he adds. "It is important the remote monitoring provides deeper visibility into the performance of business-critical IoT devices, apps and infrastructure, enabling companies to make intelligent decisions around business operations."

Others think the relationship to monitoring is changing as we lose visibility into traditional offices. "As we continue to remote work en masse, our relationship to IT and monitoring technology is changing," says Martin Hodgson, the country manager for UK & Ireland at **Paessler AG**. "We're moving from an ethos of monitoring being a nice to have, to being something that is an absolute requirement and remote 24 hour capabilities are a given."

Monitoring is moving to the mainstream with IT and OT convergence but also increased familiarity with monitoring across conferencing tools such as **Zoom** or **Teams**. This is breeding familiarity with remote monitoring and increasing willingness to adopt remote monitoring.

"Yes, there has been an increase in interest – it is a no-brainer," confirms Vijay Anand, the associate vice president of technology at **Altran**, a design and engineering company that is now part of

**Capgemini**. "Enterprises are particularly interested in products with proximity tracking. It will help to accelerate remote monitoring for personnel such as operators working in the field and for monitoring their body temperature, location and to ensure they are adhering to social distancing guidelines."

COVID-19 is proving to be stimulating adoption. "We have seen several companies accelerate their planned deployments of remote monitoring projects because of COVID-19," adds Beart. "Partly this is a rational response to lockdown and the need to socially-distance, but it also seems to be part of a general acceleration of technology deployment triggered by COVID-19, as companies accelerate plans to become more efficient."

However, while the theory is clear, the execution remains a challenge. "The main blocker to remote monitoring uptake remains the quality of service that these devices deliver," says Beart. "Unfortunately, many providers are deploying thousands of devices, but then have no real idea of how they are performing – what is their uptime and usage? Is there a fault with a device, and is this an isolated incident or part of a wider problem? Ultimately, are the devices delivering a good service? More often than not the answer is "I don't know", which invariably means "no" and leaves customers unhappy as the service is suffering."

For Sonoda at Uhuru, security of the device and data are still significant hurdles to be overcome. "Two of the key challenges or barriers to remote monitoring via IoT are ensuring security of the monitor or other IoT device and the security of the data being transmitted," he explains. "Falsified data flowing between devices could potentially have devastatingly negative effects in a future where societies are built around complex IoT systems. Another key issue that we see is general uncertainty about how workplaces will look in a post-pandemic world. Businesses are extremely keen to implement smarter remote monitoring solutions. However, they cannot commit to any firm course of action whilst much of the immediate future is unknown. On top of this, many businesses have taken a hard-financial hit over the past few months, which limits their ability in the short term to make large up-front investments in new remote monitoring solutions."

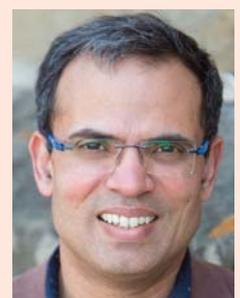
Hodgson acknowledges the security challenges but also sees the need for systems to be flexible enough to allow for easy upgrades as new capabilities emerge. "One final challenge is also, ironically, the great rate of progress in the monitoring space," he says. "Monitoring is always a moving target and with rates of innovation in all markets unlikely to slow, any solution has to constantly evolve to take advantage of new techniques and products to provide low cost, insightful monitoring."

Those low cost insights will be fundamental to enable businesses to harness the power of IoT to avoid operating blind in these challenging times. ■

**Many offices these days have connected devices monitoring occupancy, and adjusting the heating and lighting accordingly, but there are a plethora of other processes that could also benefit from remote monitoring that are yet to really take off**



**Pilgrim Beart**  
DevicePilot



**Tej Redkar**  
LogicMonitor



## Celebrating IoT excellence and innovation

We are delighted to welcome MultiTech as a Platinum Sponsor of the IoT Global Awards 2020. MultiTech designs, develops and manufactures communications equipment for the industrial Internet of Things (IIoT), connecting physical assets to business processes to deliver enhanced value. This year is also the US-based company's 50th Anniversary. All of which makes them ideal partners with whom to celebrate innovation and excellence in IoT. Here, Sara Brown, MultiTech's vice president of Marketing talks about the role of the Internet of Things as industries react to and recover from COVID-19, in many cases by accelerating digital transformation

**Jeremy Cowan, IoT Now: This is an important year for MultiTech with the 50th anniversary of the company's founding. How would you describe your organisation's evolution to 2020?**

**Sara Brown, MultiTech:** From the earliest analogue systems, to the cellular heart of today's industrial Internet of Things (IIoT) to the latest low-power wireless technology and beyond, MultiTech has consistently connected businesses in ways previously unimaginable – and has been doing so for 50 years. We're continuing our legacy of firsts with innovative devices supporting edge intelligence, LPWA, Private LTE and 5G. We have no intention of slowing down.

There has certainly been a lot of change since 1970 from our facilities, to our accounting systems (we just uncovered handwritten ledgers from the early years) to our leadership. One thing that hasn't changed is our relentless focus on customer outcomes. It is how we built our longstanding reputation for service excellence and we remain as committed to it today as ever. ►



**Sara Brown**  
vice president of Marketing  
MultiTech



**Jeremy Cowan:** Even before the coronavirus this was shaping up to be a big year for the Internet of Things. What areas should the industry prioritise to make IoT part of the solution for delivering new connected services? I'm thinking of factors like IoT security, scalability, regulation and interoperability.

**Sara Brown:** A couple of overarching focus areas for us are security and edge intelligence.

When it comes to security, it really needs to be considered from the get go. When companies are deploying IoT solutions, they need to source secure hardware and software from the beginning - because if it is left as an afterthought, it can be very costly indeed to address. Of course, security is always a moving target, so adopters need to make sure they are deploying the latest security protocols and enabling easy updates for the future. We continue to build state-of-the-art security practices into our devices and services and to iterate for the future.

We're also seeing a strong trend toward edge intelligence to enable better resilience for networked devices. For years we were seeing customers relying on cloud services to handle their IoT data. The cloud still has an important role, but now we're getting smarter about how much data we need to transmit and how to manage the costs associated with cloud processing and storage of that data.

To improve the cost profile, it just makes sense to process some information at the edge of the network and save on transmission, processing and storage costs, while continuing to rely on the cloud to make sense of large data sets over time. Doing so also enables faster response time for certain mission-critical events - even if the network connection goes down for some reason. We have a suite of smart devices that enable that kind of savings and resilience at multiple steps from our mPower™ based smart, programmable gateways and routers to the absolute edge with Arm Mbed-enabled end points.

**Jeremy Cowan:** We are seeing important developments in many areas of machine-to-machine communications (M2M) and IoT. Among the most topical are Telehealth and the Distributed Enterprise. Have you seen any key technology developments in 2020 in these areas? ▶



**IoT GLOBAL AWARDS**





Stefan Lindvall, CEO MultiTech, with Sara Brown



***“We make technology accessible so innovators can surprise us with solutions we could never imagine on our own.”***  
**- Sara Brown**

**Sara Brown:** We continue to see great advances in low power, wide area networking technologies enabling a whole new set of solutions across industries, but particularly in the Smart Building space.

An even more recent development coming from a combination of the 5G deployment efforts and spectrum liberalisation in the US and elsewhere, has been the growing interest in Private LTE.

Private LTE networks are becoming the alternative to public LTE and Wi-Fi networks. Enterprises are deploying Private 4G LTE networks to guarantee wireless coverage where public networks do not exist and in locations where wireless coverage is critical for organisation efficiency. Other use cases can increase the available capacity for applications that generate large amounts of data and have specific uplink or downlink requirements. Still other organisations are interested in exercising greater control over how resources are used and prioritised. These dedicated private networks, neutral host networks, and fixed wireless networks are being considered in a wide variety of industrial applications including factories, warehouses, and power plants as well as public applications like airports, stadiums and hospitals.

The US is leading the world in spectrum liberalisation, with the Federal Communications Commission (FCC) making a swathe of the mid-band available for sharing. Known as Citizens Broadband Radio Spectrum (CBRS), this open mid-band spectrum between 3.55-3.7 GHz has

been set aside to support exploding demand for robust asset connectivity within industrial and enterprise applications. Other spectrum regulators around the world are taking note and are expected to follow suit in the near future.

We’ve seen a very rapid growth in this area and are expecting more as we launch a programme designed to support distance learning throughout the pandemic and beyond by helping schools close the digital divide by deploying these private networks which allow them to reach underserved student communities while maintaining control and security over student connections.

**Jeremy Cowan: You have launched several key products this year, including mPower Edge Intelligence. What capabilities does this Industrial Internet of Things (IIoT) solution offer your customers?**

**Sara Brown:** mPower Edge Intelligence is a new embedded software offering, building on its popular application enablement platform, to deliver programmability, network flexibility, enhanced security and manageability for scalable Industrial Internet of Things (IIoT) solutions.

mPower represents the unification and evolution of well-established MultiTech smart router and gateway firmware platforms. In addition to ongoing support of the current feature-sets, gateway customers can enjoy the additional security features currently available on the MultiConnect rCell 100 Series cellular routers. ▶



mPower Edge Intelligence simplifies integration with a variety of popular upstream IoT platforms to streamline edge-to-cloud data management and analytics, while also providing the programmability and processing capability to execute critical tasks at the edge of the network to reduce latency; control network and cloud services costs, and ensure core functionality – even in instances when network connectivity may not be available.

In response to evolving customer security requirements, mPower Edge Intelligence incorporates a host of new security features including signed firmware validation, enhanced firewall and VPN settings, secure authentication and more.

**Jeremy Cowan: The IoT Global Awards are proud to have MultiTech as a Platinum Sponsor for the third annual awards in 2020. What characteristics do you hope to see in the winning entries?**

**Sara Brown:** More than anything, I hope to be surprised. That's one of the best things about working in this industry – we make technology accessible so innovators can surprise us with solutions we could never imagine on our own. ■



*Sara Brown of MultiTech was talking to IoT Now's co-founder Jeremy Cowan. As VP of Marketing, Sara Brown is responsible for internal and external marketing and communications. She brings more than 20 years of technology marketing experience, with more than 10 years focused on machine-to-machine communications (M2M) and IoT. In addition to her experience as a senior creative at some of the world's premier advertising agencies, Sara has worked for IBM, Wavecom/Sierra Wireless and Telit Wireless Solutions, and consulted to global technology companies. She is currently Chair of the IoT M2M Council.*





# Tracking wastewater in an age of heightened concern

Looking at the underlying system for monitoring the flow of wastewater is not typically a topic of common conversation. However, new worries on hygiene and health have elevated the topic as a concern, with new priority given to ensure effective, no-risk wastewater processing. Receiving accurate wastewater data has never been more critical for municipalities that are faced with the challenge of controlling these systems and accessing operational information to improve workflow and ensure compliance

## What exactly is wastewater?

It is defined as any "used water from any combination of domestic, industrial, commercial or agricultural activities, surface run-off or stormwater, and any sewer inflow or sewer infiltration". It is no surprise that wastewater plants are essential for protecting public health and the environment. Ensuring the wastewater facilities utilise the latest technologies is the first step toward a seamless solution.

With over 15 years' experience in serving more than 100 municipalities, including remote areas with spotty internet service, cloud-based solution provider **Data-Command** was ideally suited to take on the challenge of adding new municipalities to its roster while improving data communication and access in both rural and urban locations.

"In 2005 our first client went online with our solutions," said Glenn King, CEO at Data-Command. "Keep in mind web browsers were just starting to hit mainstream, this was before smartphones were part of our everyday lives, before the word 'cloud' existed and the internet was like the Wild West." ►

## SPONSORED FEATURE



### Proper data communications

A major challenge within monitoring the wastewater system is obtaining proper data communications within the entire process. This becomes problematic when there is no internet service at certain sites. To address these challenges, Data-Command required a singular cellular device that had an ethernet port, built in PPP stack, was stand alone, reliable and cost-effective. Gaining continuous remote access using Device Manager was a top priority for its routers.

“In the earlier days, eight years ago, some of the other communication device providers met the requirements but they were about twice the cost,” said Glenn King. “MultiTech’s ability to meet all of these requirements, on top of their excellence in service, good technical support and options in carriers ultimately tipped the scale.”

### Accessing inaccessible locations

Specifically, Data-Command opted for the MultiTech MultiConnect rCell 100 series (<https://www.multitech.com/brands/multiconnect-rCell-100-series>)

of industrial cellular routers which offers both a serial or Ethernet interface platform optimised for M2M (machine-to-machine) or IoT (Internet of Things) applications.

“Utilising the rCell we were able to provide an alternate solution to locations that were not accessible by more conventional means,” continued King. “Those locations that were not equipped with wired internet access were provided with an easy and immediate fix.”

Data-Command no longer needs to visit sites as frequently and now issues can be resolved remotely. “The heightened response and correction time improves customer satisfaction and confidence.”

### About Data-Command

Founded in 2002, Data-Command has been providing cloud-based monitoring solutions of remote equipment and processes for industrial, utilities, and commercial applications since 2005. With experience in wastewater treatment and collection systems, water treatment and distribution systems, storage tank monitoring, district

energy and others, Data-Command has a proven track record of increasing the efficiency, reliability, and security of these systems.

### About MultiTech

MultiTech designs, develops and manufactures communications equipment for the industrial Internet of Things - connecting physical assets to business processes to deliver enhanced value.

From the earliest analogue systems, to the cellular heart of today’s industrial Internet of Things to the latest low-power wireless technology and beyond, MultiTech has consistently connected businesses in ways previously unimaginable - and has been doing so for 50 years.

Our commitment to quality and service excellence means you can count on MultiTech products and people to address your needs, while our history of innovation ensures you can stay ahead of the latest technology with a partner who will be there for the life of your solution. ■

**Data-Command no longer needs to visit sites as frequently and now issues can be resolved remotely**



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