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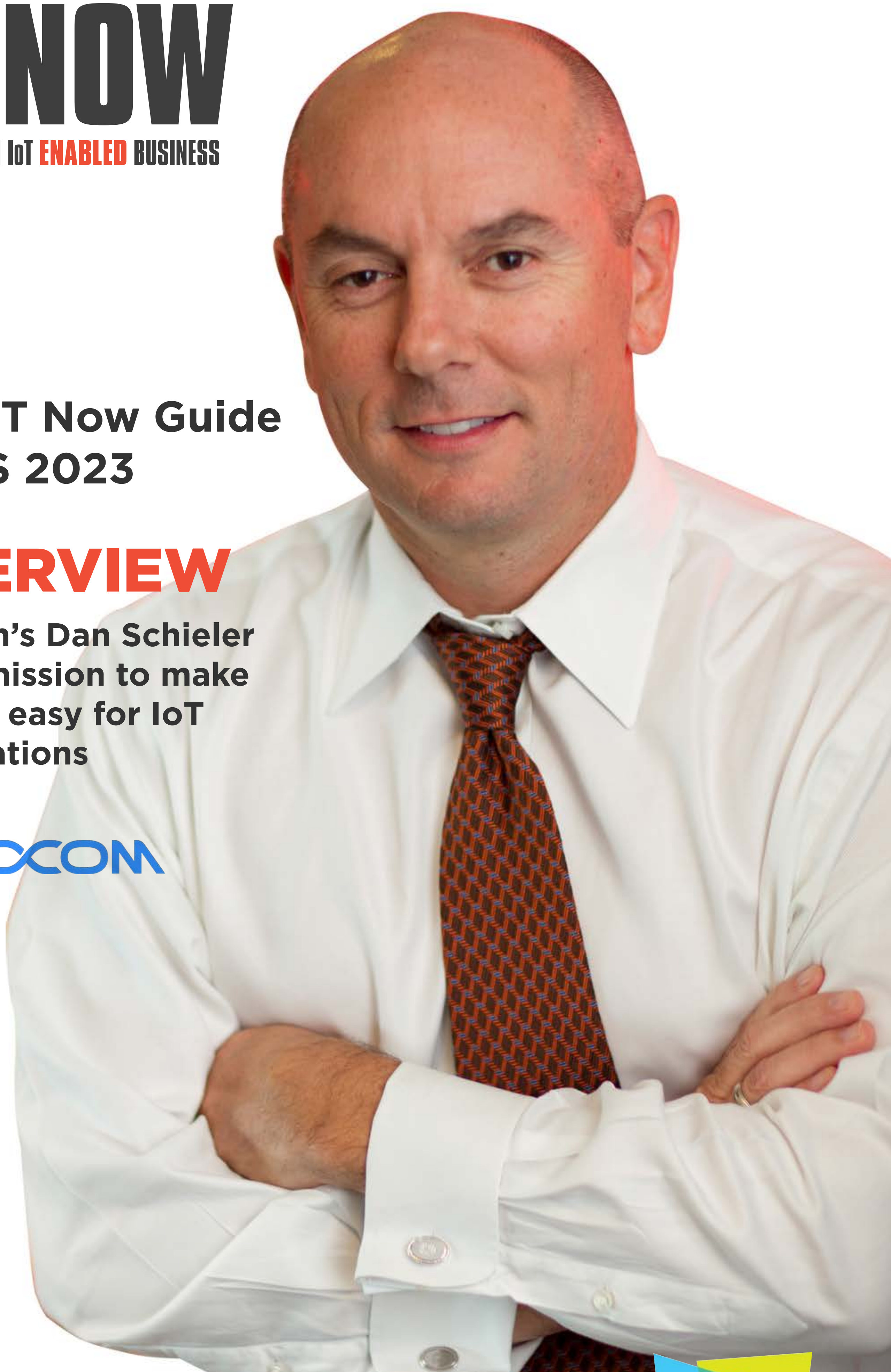
IoT NOW

HOW TO RUN AN IoT ENABLED BUSINESS



The IoT Now Guide to CES 2023

INTERVIEW

Fibocom's Dan Schieler on the mission to make wireless easy for IoT organisations

Fibocom

PLUS: EXCLUSIVE IoT Now Show Preview

How mature is the IoT sector? The IMC sees early signs of mass-market readiness

The IoT M2M Council (IMC) is about to publish new research that indicates there's a developing maturity among IoT adopters that might presage larger-scale technology deployments that have long been predicted. Keith Kreisher, IMC's executive director, spoke to IoT Now to discuss the group's findings and what they might mean for IoT moving forward. We found him on the eve of the Consumer Electronics Show, where the IMC is the exclusive partner for IoT programming and exhibitions at what might be the largest IoT event of 2023

We know of no other group that qualifies IoT adopters on this kind of scale – that was true in 2014 and it's still true today

IoT Now: Keith, the IMC has been around since before the term IoT was popular. Now, on the eve of the group's big coming out party at the large, post-covid CES show, talk to us about how the group gathers insights into the IoT sector and is that perspective unique in any way?

Keith Kreisher: That's true – when we first started in 2014, the phrase machine-to-machine communication (M2M) was the term of choice. A lot has changed since then, but not the IMC's perspective perhaps. We've been pushing the concept of IoT as the communications layer in the stack at CES for six years now. As a trade association, we have 25,000 rank-and-file members that are individual enterprise users, product makers and designers, and apps developers that qualify for membership as buyers of IoT technology. We know of no other group that qualifies IoT adopters on this kind of scale – that was true in 2014 and it's still true today. We think that gives us unique perspective on the market and a platform to gather real statistically relevant data on what IoT buyers are planning.

IoT Now: What methods are you using to gather data from your rank-and-file, and what broad topical areas does the data cover?

KK: We have basically three methods to gather quantitative survey results – the newest is an updated version of our IoT Readiness Calculator (IoTRC), which is a survey tool that doubles as a lead generator for our Sustaining Member companies. The tool violates almost every rule of online surveying – it's too long, too technical and it asks open-ended questions – but people who finish it are very serious about deploying IoT technology. It is, by far, the deepest data we've ever seen regarding a large number of different IoT projects. We ask about everything from, "Are you doing predictive maintenance?" to "What are your latency requirements?" to "Have you considered the need for data portability?"

We also survey our rank-and-file adopter members on a twice-yearly basis about IoT buying patterns, and I have to say, the data has been remarkably stable, particularly in regard to scale of ▶

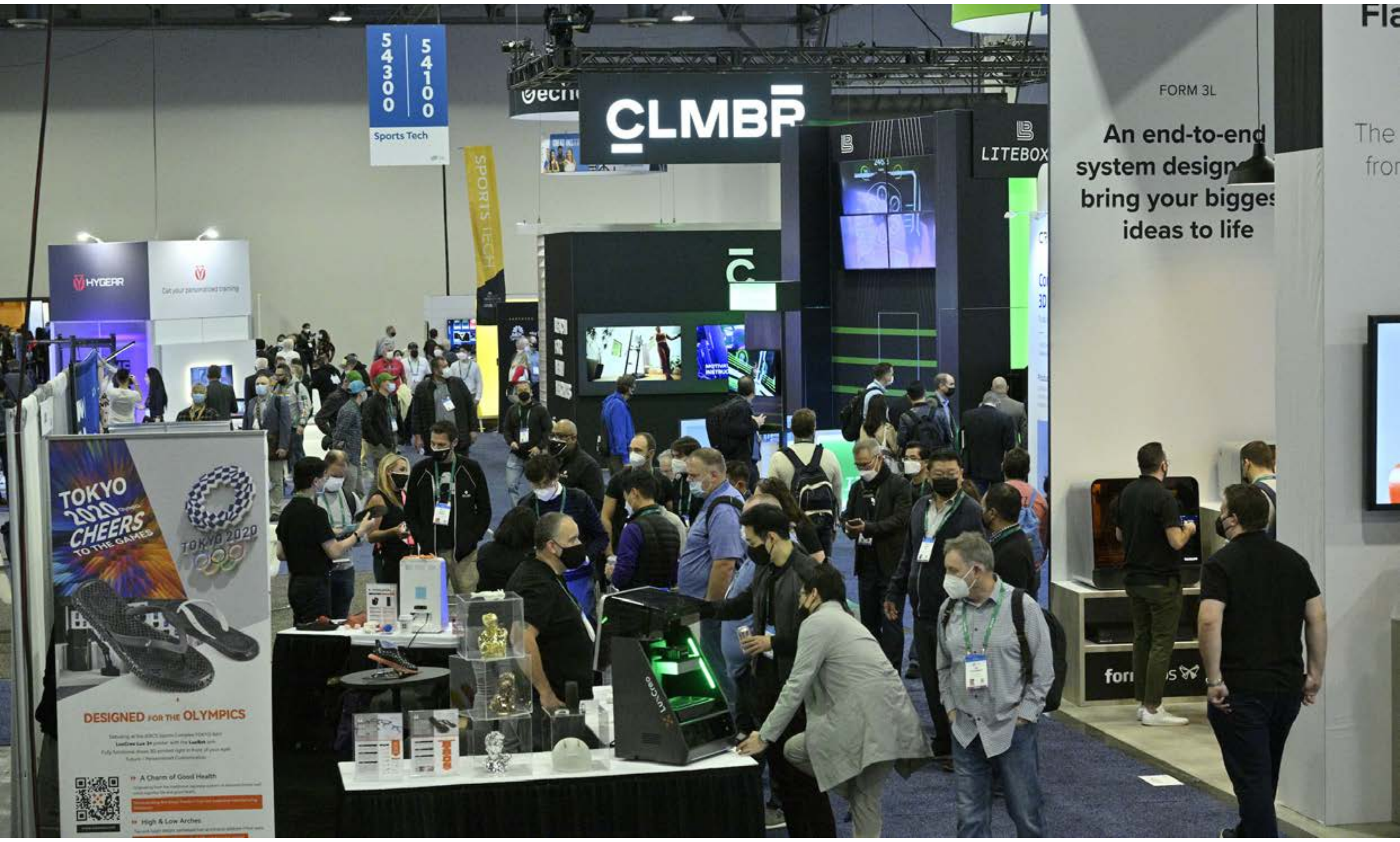
deployments. Like the IoTRC, we ask about scale of projects, vendors used, biggest hurdles to success, but without the same depth. The IoT sector looks very small in that data, just as it did five years ago. Finally, we do ad hoc polling on subjects that we think are particularly timely, and that can yield some eye-opening results.

IoT Now: Let’s get into some specifics. Where do you think the IoT is on the technology growth curve? And do you have data to back that up?

KK: Analysts have been talking about billions of IoT devices in the field, with even more billions in investment getting those devices deployed, but I think it’s fair to say that the industry is still waiting for mass IoT to happen, where almost everything you can imagine is equipped with sensors and the ability to communicate. But we’re seeing data – particularly our IoTRC data – that would seem to indicate we’re dealing with a newfound maturity in the IoT sector, things that we haven’t seen before. I like to think that this indicates we’re on the precipice of much stronger growth, that perhaps the IoT sector is ready to realize the potential we’ve all been waiting for.

I can’t go into specific numbers because we’re still waiting to publish our report, and gathering new data as we speak, but for example, we’re seeing a greater number of people citing their corporate function as digital transformation than we’ve ever seen before. Likewise, a majority of the ▶

Keith Kreisher
IMC



> *To provide a more tangible metric, we've got a much larger number of respondents saying that they intend to deploy more than 100,000 devices in the field at the maturity of their IoT projects than we ever expected*

respondents we've got thus far say that they already have experience in deploying remote devices with connectivity. It's an anecdotal comment, but our IMC Board of Governors was surprised to hear these things – they expected those numbers to be lower.

IoT Now: You're not revealing actual numbers from the survey you've conducted, so what you're relating sounds very anecdotal – is there more you can share?

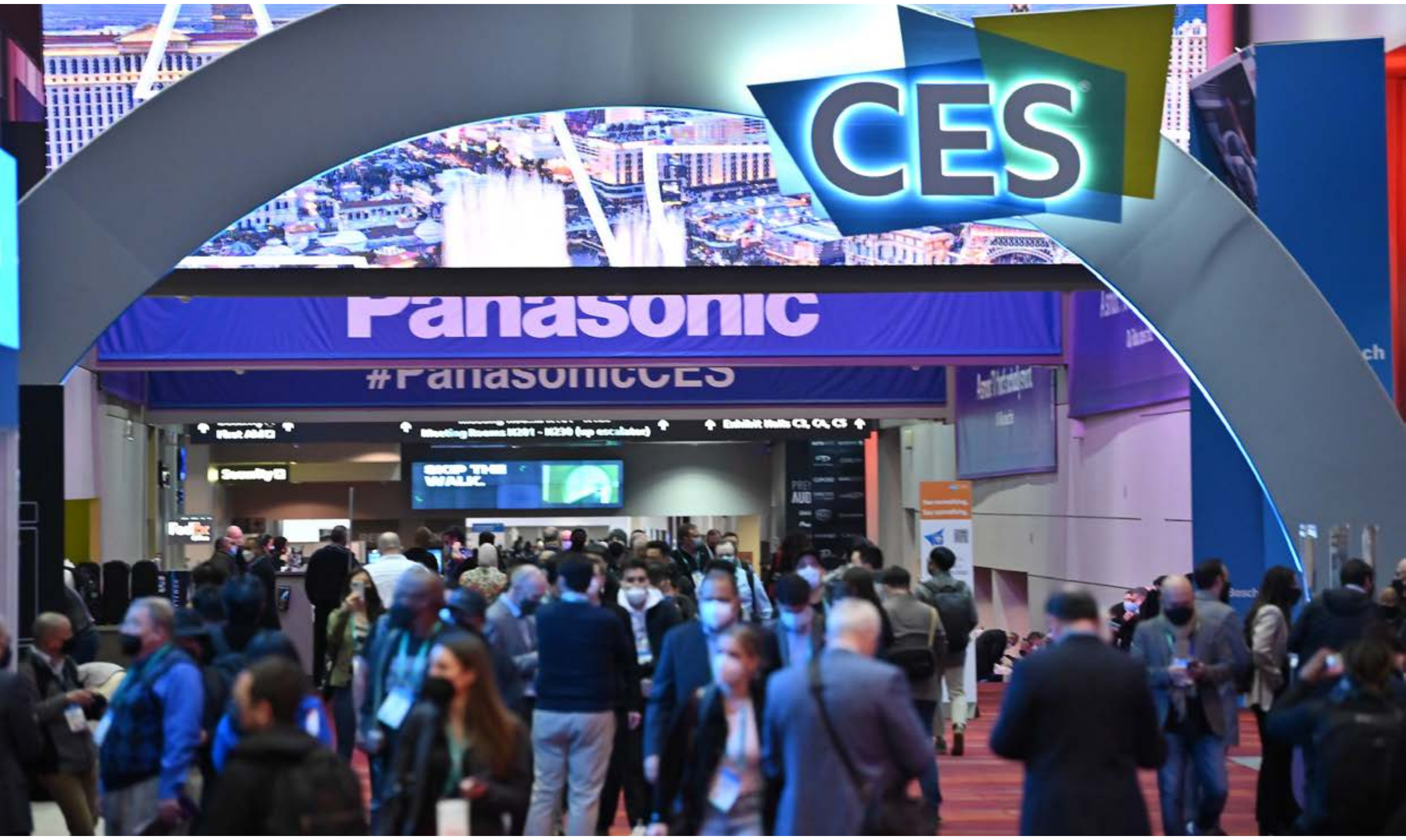
KK: Of course. To provide a more tangible metric, we've got a much larger number of respondents saying that they intend to deploy more than 100,000 devices in the field at the maturity of their IoT projects, than we ever expected. Again, I can't divulge the actual response rate, but it dwarfs the responses to a similar question on our bi-annual members survey by a factor of ten. I think it's important to acknowledge that there may be some selection bias in the figures we've produced – the number of respondents willing to fill out a 25-question survey may be self-selecting for those that are very involved in IoT technology deployment. Still, I think it bodes very well.

IoT Now: Do you anticipate that an increased maturity and scale in the IoT sector will affect the actual kinds of technology that gets deployed? In other words, does larger scale automatically bring more technological advancements?

KK: Early returns seem to indicate that they will. For example, we asked what tasks they expect their IoT deployments to perform, and the possible answers ranged from simple monitoring on one end of the continuum, to predictive maintenance on the other end. The number that answered, all of the above, up to and including predictive maintenance, was almost a majority, which we thought was astounding. Only two years ago, I asked a particular high-end IoT software vendor about the number of deployments they did that included predictive maintenance, and they offered that it was less than 10%. Clearly, things are changing quickly.

Likewise, we saw a very large majority of respondents answer that they had high or medium requirements for IoT integration with backbone software systems like enterprise resource planning (ERP) and customer relationship management (CRM). This seems to indicate that IoT data is becoming mission critical in operations that are deploying the technology.

IoT Now: In addition to more advanced technology, are you seeing different behaviour patterns among IoT buyers? This must be affecting the technology sourcing process. ▶



KK: Absolutely. It's not directly related to the research that the IoTRC is generating, which I've been talking about up to now, but we've recently done a survey about the intersections between the IoT and embedded sectors. Again, we're turning up some interesting numbers that we wouldn't have expected that would show, at least anecdotally, that things are changing. Embedded technology, to my way of thinking, is all about sensors and actuators and therefore highly related to IoT connectivity these days.

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We asked about the sourcing of embedded hardware and data plans – did respondents buy one of these things first, then the other? Or both at the same time? We found that, for a strong plurality, the answer was the latter. We take this to mean that more embedded engineers are thinking about connectivity much earlier in the process than we would have surmised. And that's just one change in the buying process that we're seeing from multiple sources.

IoT Now: Your data is pointing to a more mature IoT sector poised for growth, where fundamental changes have already occurred in technology sourcing. Is there any data among your various platforms that argues against this?

KK: Yes there is. For example, a plurality of respondents on the IoTRC lists cost reduction as their main objective. Another plurality says that one of their biggest hurdles to deploying IoT technology is a lack of industry business models. One would hope for and expect these numbers to be lower – they're certainly countervailing data points. Our role at the IMC is to present and interpret the data that we gather as best we can, warts and all.

IoT Now: How can IoT Now readers find out more about this new research, as well as IMC activities in general?

KK: I encourage all who are interested to visit the website or to reach out to us directly at **info@iotm2mcouncil.org**. IMC will also be organising IoT Week @ CES, of course, where we're producing conference programming, video content from the show floor, networking events, press events, and more, in addition to organising the IoT Infrastructure Pavilion – likely to be the largest IoT gathering in 2023 – please stop by the IMC booth.

Accelerate time to market and maximise ROI by making wireless easy

The complexity of wireless connectivity is one of the barriers that has held back adoption of IoT but IoT innovators don't have to become experts in all aspects of wireless in order to access the technology they need to enable optimised connections for their deployments. Here, Dan Schieler, the senior vice president of the IoT Overseas Sales Department at Fibocom, tells IoT Now about the company's mission to make wireless easy

IoT Now: Fibocom has a mission to make wireless easy. What does that mean to you and how are you executing on that goal?

Dan Schieler: Established in 1999, **Fibocom** has a history of more than 23 years in the wireless communication industry. We are thriving along with the evolution of cellular technologies from 2G to 5G. In the 5G era, we've launched a series of impactful and powerful 5G module products since 2019, with more than 20 global stock-keeping units (SKUs) to fit into the global markets.

Fibocom's latest products are designed to advance wireless solutions for the fixed wireless access (FWA) and artificial intelligence IoT (AIoT) industries, among those are the 5G Sub-6GHz and mmWave module FG170(W) series, which features the Snapdragon X65 5G Modem-RF System. Another example is the 5G smart module SC161, which supports 5G standalone/non-standalone (SA/NSA) networks and enables AIoT applications such as virtual reality and augmented reality (VR and AR), door entry systems and telemedicine. Other demos include a 5G Ethernet gateway and a 5G Wi-Fi hotspot, both embedded with our 5G module FG160 that supports OpenCPU, enabling 160MHz bandwidth, 4096 QAM as well as Wi-Fi 6E.

As a key component in making devices connected, there are a variety of communication protocols, frequency bands and certifications that a module vendor has to take into consideration at the beginning of the product design. Fibocom provides high-performance 5G, LTE-A Pro, LTE-A, LTE Cat 1, Android Smart and global navigation satellite system (GNSS) module products and solutions to IoT customers from a variety of business sectors. Our module products have different regional versions that adapt to different frequency bands, along with our localised and customised support. It's worth mentioning that with modules certified by the mainstream global carriers, we help customers to reduce the time-to-market and achieve the best return on investment (ROI).

Beyond new product launches, Fibocom is firmly focused on expanding into new regions. The focus is on how to expand globally, which includes making products that fit all those geographies. Doing so means deciphering the right carrier band combinations that are skewed locally and globally. That is the challenge that we have and is the big picture view of what we're trying to do.

IoT Now: How do you see the trends towards RedCap devices and private networks accelerating into 2023? What are the benefits and how can Fibocom help here?

DS: The release of the 3GPP R17 standard has addressed the RedCap in 5G to help devices ▶

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The high-cost and high-complexity does have some impacts on the 5G commercialisation

Dan Schieler
Fibocom

reduce complexity and capability associated with full-5G devices, allowing for a more appropriate and optimised design intended for mid-tier use cases. As far as we can see at the moment, the first RedCap chipset will be released in 2023, and we will keep paying attention to the trends from the upstream. We believe that the benefit of RedCap is to replace LTE Cat 4 and make 5G affordable to all, and Fibocom will support it.

I think that is going to open a lot more doors for 5G because it will hit a more accessible price point. It also opens up the capability of using more spectrum, which the carriers like because that will make them more efficient.

There is a good demand for private networks, and a lot of great utility that comes out of being able to be connect quickly in a small private network as opposed to sharing a public network with 40-60,000 people.

IoT Now: 5G offers greater bandwidth, higher device density per cell and lower latency but it comes with greater complexity - and cost. What is Fibocom's role in making 5G easier and more attractive for IoT organisations to deploy?

DS: The high-cost and high-complexity does have some impacts on the 5G commercialisation. By utilising hardware design, and optimised replaceable components, Fibocom is offering a cost-down 5G module solution to customers worldwide.

IoT Now: What's next for Fibocom?

DS: Fibocom will keep offering leading-edge wireless module and module solutions to address various IoT scenarios. We help IoT implementers to connect any number of IoT devices easily and seamlessly worldwide, further accelerating the digital transformation in industries.

www.fibocom.com

IMC's IoT buyer personas cover enterprise users, OEMs and app developers

For several years the IoT M2M Council (IMC) has collected data on a quarterly basis tracking IoT buying patterns by surveying its 25,000 rank-and-file IMC Adopter Members – all self-identified IoT buyers, writes Keith Kreisher, the organisation's executive director. To get started, there was much discussion among industry experts – mostly, the companies making up the IMC Board of Governors – about what kind of industry roles would be helpful to track ►

The product maker is as likely to define their corporate role as product design/development as operations

We settled on three key categories of the IoT industry to focus on:

1) **Enterprise users** – defined as business units that utilise connected devices for their day-to-day operations, such as tracking assets for supply-chain management.
2) **Original equipment manufacturers** (OEMs) – defined as business units that embed connected devices within products that they in turn sell, such as car makers or medical device manufacturers.
3) **Apps developers/systems integrators/ independent software vendors (ISVs)** – defined as businesses that develop new, specific applications, possibly to be sold to or used among the two groups above.

In the last two years, we've quantified that these groups do, in fact, show significantly different characteristics that validate different personas among IoT buyers.

Enterprise users

Almost one quarter of those identifying themselves as enterprise users are directly involved in logistics. The enterprise user is often a supply-chain manager within an enterprise who defines their role broadly as operations. It is interesting that a plurality of IMC rank-and-file members define themselves in this way, and that's true across 25 of the 27 vertical markets that we track. Almost three quarters of their IoT deployments are low-volume – under 1,000 devices. This makes this user the lowest-volume end user of our three identified personas.

Because they are in operations, we surmise that they have a greater need to integration of IoT technology with backbone systems like enterprise resource planning (ERP) and customer relationship management (CRM). They are more likely to begin their IoT procurement process by speaking with systems integrators rather than other IoT buyers. Enterprise users also cite a lack of business models as their biggest IoT hurdle more often than other buyers, while they are less likely to cite interoperability as a problem.

Product makers and OEMs

The product maker is as likely to define their corporate role as product design/development as operations. Almost a third of their IoT deployments involve more than 10,000 devices, making them the highest volume buying persona out there – they're 50% more likely to be sourcing large-scale deployments than others.

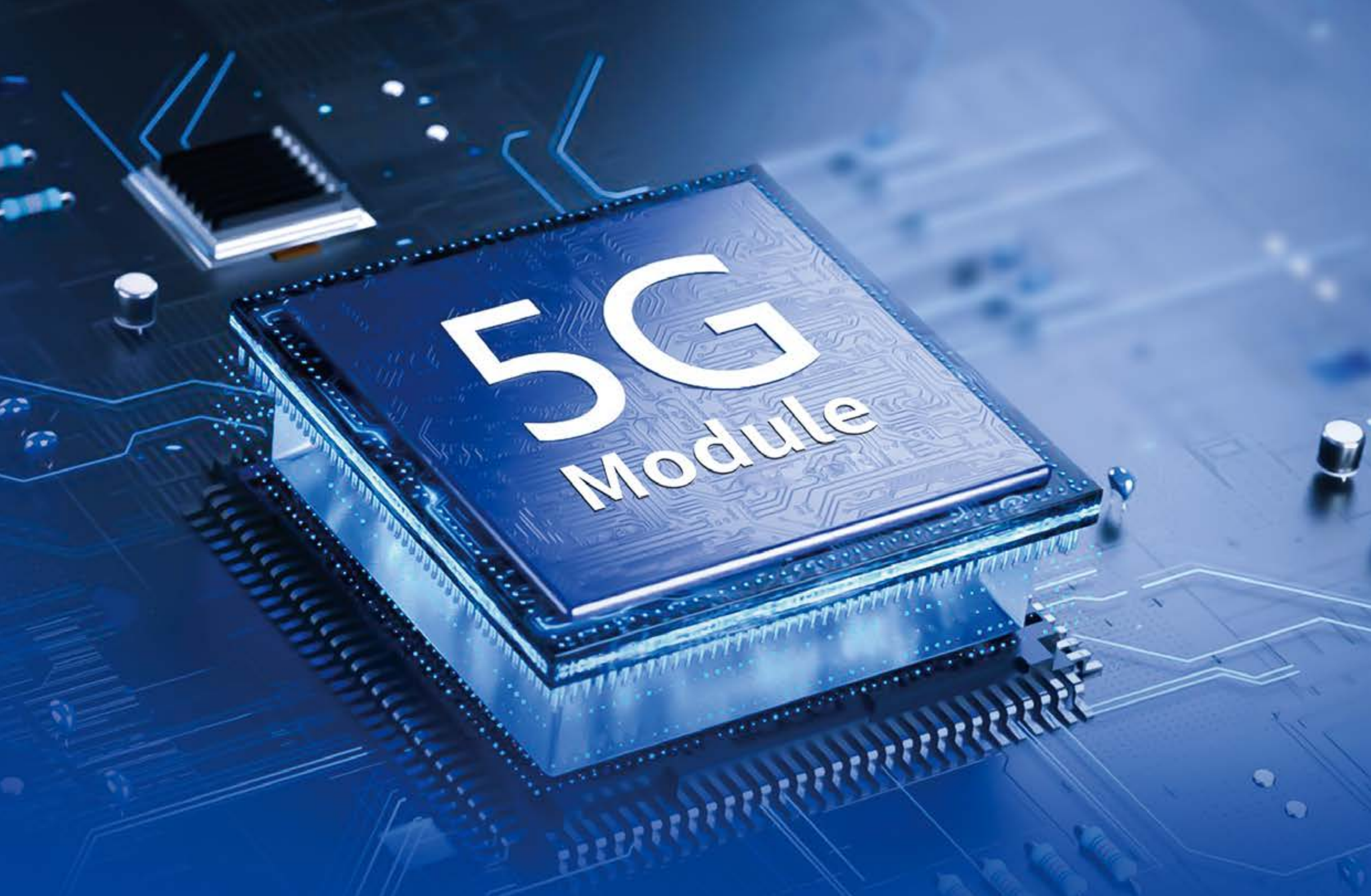
A plurality of all IoT buyers begin their journey by talking to systems integrators, but product makers are more likely to make their first stop a device maker. They cite a lack of interoperability as one of their biggest hurdles in the IoT procurement process – more so than others – and this is a trend that is increasing over time. These demographics make sense because the product maker is incorporating IoT technology into products that they provide to others.

Apps developer

The developers' function goes by different names – apps developer, independent software vendor, application-specific systems integrator – and their role is somewhat more difficult to define. On the scale-volume, this persona falls between the enterprise user and the product maker – just over half of their deployments are under 1,000 devices. Apps developers have lately been telling us that they are planning longer lead-times for their deployments but it's hard to know whether this is simply a function of current, unstable economic conditions.

Apps developers are more likely to begin their buyer's journey by talking to an IoT software platform provider than our other personas. Like product makers, they are increasingly citing interoperability as a concern, as well.

The **IMC** has substantial data to back up these personas, and we make that data available to our Sustaining Member companies on a bi-annual basis. This includes complete breakdowns of buying timelines, size of deployment, connectivity types, vendor types, and time to implementation for the three buyer personas described above. ■



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It's a packed Vegas IoT stack at CES 2023

CES 2023 promises to deliver a cornucopia of announcements and opportunities for IoT players, reports Antony Savvas

The annual global show in early January, run by the US Consumer Technology Association (CTA), is being held across the Las Vegas Convention Center and major hotels on the strip, including the Aria and the Venetian.

There will be hundreds of keynotes and presentations made at the various venues. The CES 2023 conference programme will highlight advancements in artificial intelligence (AI) and robotics, the environment and sustainability, the metaverse and gaming, digital health, vehicle tech and advanced mobility, and home entertainment and smart homes, among other areas. New this year will be content on non-fungible tokens (NFTs) and Web3.

Economic headwinds

The show comes at a critical time for the IoT industry, as enterprises, vertical markets and national economies look to weather economic headwinds.

Galit Shemesh Cohen, product manager lead at IoT connectivity and management platform **FirstPoint**, says: "2023 will be a year of economic downturn, therefore an increasing number of businesses will be looking at how to reduce operational costs while still focusing on improving user experience. One significant way to achieve this goal is through digitisation through the Internet of Things, harnessing the power of millions of devices such as pressure and temperature sensors and electric, pneumatic actuators to collect, analyse, automate and control business data and processes. This will also improve end-customer satisfaction."

One of the most exciting examples, she says, is smart grids, that will drive improved energy efficiency through increasing production resiliency, connecting to renewable energy and incentivising reduced energy use during peak load times. Cellular connectivity adapted to the different IoT needs – especially 5G – will be critical," says Cohen. "Its promise, to support low latency, high bandwidth and a massive number of devices with unbreakable security, will undoubtedly be a game changer."

IoT modules

5G module provider **Fibocom** echoes that sentiment. It says: "As 5G technology keeps evolving from usable towards useful, recently launched cutting-edge 5G module products, based on mainstream chipset platforms, have unleashed 5G's potential in speed performance, network coverage and power consumption."

Some of its own products include the Fibocom 5G Module FG170(W), which offers a "fibre-like wireless connectivity experience" with extended network coverage and boosted throughput, further enhancing 5G performance in fixed wireless access (FWA), industrial IoT, cellular vehicle-to-everything (C-V2X), private networks, and other mass data scenarios.

Chip and module provider **Sequans** says a key driver in cellular IoT is its high level of security and flexibility, enabled by integrated eSIM technology now available and certified on leading cellular IoT chipsets.

"Our GSMA-compliant integrated eSIM in the Sequans Monarch 2 LTE-M/NB-IoT chip platform is Common Criteria EAL5+ certified, which saves on device costs and enables utilities to easily switch to any mobile network operator (MNO) at will, improving longevity and lowering operational costs," says Sequans.

IoT Infrastructure Pavilion

At CES 2023, the IoT Infrastructure Pavilion will be located at the Las Vegas Convention Center, and will showcase the latest technologies that are the backbone of all connected consumer technology.

It has been organised by the **IoT M2M Council** (IMC) which has a mission of bringing technology adopters together with solutions providers through online and in-person events. The overall aim is to accelerate the adoption of IoT technology. The IMC counts more than 25,000 IoT buyers as members from 24 vertical markets across every continent. These are enterprise users and original equipment manufacturers (OEMs) that procure software, hardware and connectivity.

The IMC is organising attendee conferences, press events and networking receptions throughout the CES week.

Big IoT presence

The companies located in the IoT Infrastructure Pavilion include **Airgain**, **BICS**, **Digi International**, **iBASIS**, **KORE**, **1NCE**, **2J Antennas**, **Arima**, **AzureWave Technologies, Bantam Clean Power**, **Blues Wireless**, **BRT Systems**, **Canonical, Cygnus Reach**, **ESH Technology**, **floLIVE**, **GetWireless**, **Nichicon**, **Pod Group**, **Quectel**, **QuEST Global**, **Samyoung S&C**, **SIMCom Wireless Solutions**, **SmartWitness**, **Taoglas**, **Telit**, **u-blox**, **Vodafone**, **Voltaic Systems** and **WTIwireless**.

The Pavilion is housed in the North Hall of the Convention Center, along with related exhibitions around vehicle tech and advanced mobility, artificial intelligence and robotics, digital health, and sustainability.

IoT solutions conference track

The IMC is also hosting two panel discussions at the LVCC focusing on different IoT technology. The first panel is, 'Satellites provide new options for consumer devices', taking place on Thursday 5 January at 2pm.

The speakers here include Lilac Muller, vice president of product management at **Kymeta**; Tushar Sachdev, executive vice president and chief technology officer at **KORE**; Jaume Sanpera, founder and chief executive officer of **Sateliot**; and Rick Somerton, president and CEO of **eSAT Global**.

The lead-in for this panel is this: the main benefit of satellite connectivity has been ubiquitous coverage outside of cellular networks, including in maritime and deep-rural environments, but costs associated with satellite communications have been prohibitive for most consumer applications, until recently.

Today, low earth orbit (LEO) satellites have cut the costs of satellite connectivity by more than half, and it's likely these costs will continue to drop. At the same time, innovations in device hardware are making it possible to seamlessly switch between satellite and terrestrial connectivity. The panel will investigate what's happening now with satellite connectivity services and how that's likely to impact consumer devices moving forward.

A threatened world

The second interesting panel is, 'How low power IoT can help save the planet', which is happening on Saturday 7 January at 2pm.

Speakers here include Natasha Barrios, director of sales at **Quectel Wireless Solutions**; Mobeen Khan, chief operating officer at **Blues Wireless**; and Ivo Rook, COO at **1NCE**.

Climate disasters, breaking infrastructure, stressed supply chains and low food productivity are major issues creating public fear. But there is hope, says the IMC. The panel will discuss how new technologies are driving down the cost of communicating devices.

Sensorisation or mass IoT - the widespread deployment of communicating sensors - can help predict and speed responses to many of the aforementioned threats, the IMC maintains.

Connectivity like narrow-band IoT (NB-IoT) and low-power wide area networks (LP-WAN), as well as messaging protocols like lightweight M2M (LWM2M), will feature in the discussion. They not only cut the costs of transmitting data, but also offer low-cost hardware options and extend the life of batteries and other components, while making it easier to mitigate a threatening world.

CES 2023 will take place in Las Vegas on 5-8 January 2023.

www.ces.tech