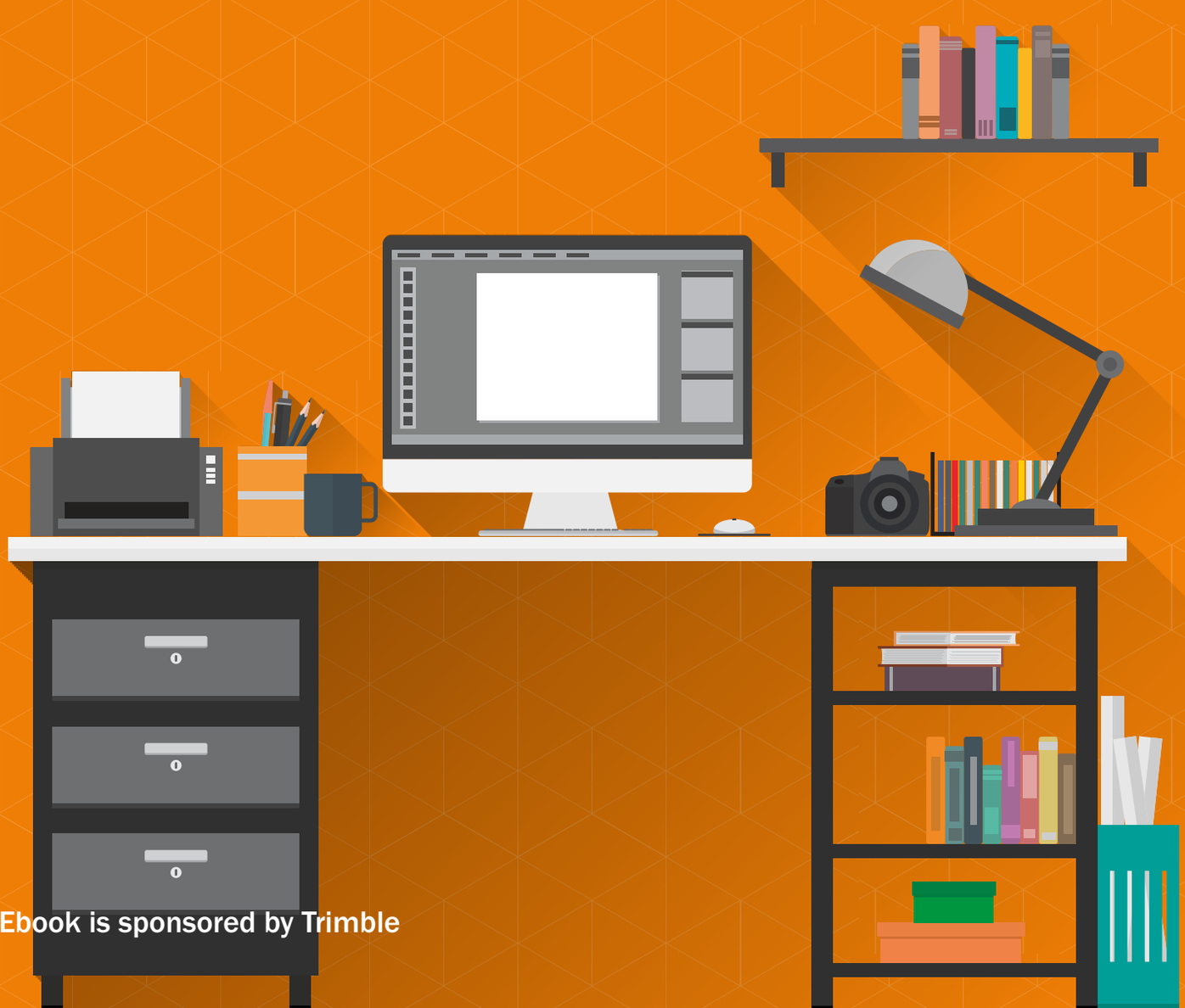
FACILITIES Show
INSPIRING EXCELLENCE IN FM

Trimble

TECHNOLOGY & INNOVATION IN THE FACILITIES MANAGEMENT INDUSTRY

Opinions of FM experts



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A word from Trimble
Real Estate & Workplace Solutions

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Trimble is delighted to sponsor this eBook titled 'Technology & Innovation in the Facilities Management Industry'. As a world leader in technology solutions we help transform the way real estate and facility professionals manage buildings and the workplace.

There has been a convergence of both software applications and hardware devices that is called the nexus of forces. These technological advances include mobile devices, cloud computing, big data/analytics, social media, the Internet of Things, mixed reality, artificial intelligence and advanced robotics.

> *We are harnessing these technologies by creating a digital workplace which is aligned to the work of an individual and the places they choose to accomplish this work in this new era of flexibility and creativity.*

For those individuals who find themselves working in the built environment we have called these technologies the Building Digital Workplace.

The Building Digital Workplace (BDW) defines the right technologies for all of the stakeholders in this industry. Whether you are a facility manager, an interior designer, architect, contractor, investor, owner, real estate professional, engineer or play any other role in this area of business, technology tools must be chosen that make you the most effective, efficient and at the same time, allow you to be engaged in the work that you need to perform. There is a new blur between the digital and physical worlds we are working in today.

Think of a maintenance worker and the tasks she needs to perform in her daily work. Her BDW includes a mixed reality headset, a phablet, a 3D printer and a smart car. She is sent to a building site to fix a broken HVAC system and as she walks into the building she dons her headset to be able to find the equipment, pull up the history of its repairs, and view the vendor's documentation and the current work order. As she enters the basement, she switches to her phablet to be able to put the device to the side to use her hands to unscrew the problem part. She then takes it to her smart car where her 3D printer sits in the trunk and then manufactures a new replacement piece of equipment. She returns to fix the system and go on to the next assignment. She now has the autonomy to do the right work without supervision as her performance can be measured easily, the mastery to perform the task due to having available all of the relevant information to make the right decision. She has the drive to do the work as she is a gamer and loves the devices she gets to work with, not unlike what she does in her leisure time. This is just one example of an entirely new flexibility defined by the Building Digital Workplace.

To learn more about Trimble's real estate & workplace management solutions and exciting innovations please visit us at realestate.trimble.com

Technology & Innovation in the Facilities Management Industry

Technology and product innovations are essential to the evolution of the facilities management industry, whether it is the latest integrated technology taking smart buildings by storm or energy-saving solutions to slash waste. The team at Facilities Show have spoken to a few experts within the field to bring you an overview of technology in the industry.

Richard Sims, Senior Consultant at The Technology partnership, discusses how to leverage IoT for FM and he also highlights its potential negative impact. **Adrian Burden,** Technical Director at KEY IQ Ltd tells us about the technology used at their state-of-the-art innovation centre. And **Chris Hoar**, Director at AI in FM, explains what exactly Artificial Intelligence is how it will impact the FM landscape.

Senior Consultant
The Technology Partnership

Technical Director
The Technology Partnership

Director
AI in FM

Richard Sims

Tell us a bit about yourself

My specific expertise is in connected devices, or the IoT (internet of things) as the technology is now known. TTP is a 350 strong product and technology consultancy based in Cambridge, and we have skills in multiple sectors, from healthcare to consumer products.

How is technology changing FM?

FM, like many other sectors, is being asked to increase efficiency and reduce costs and carbon footprint, while not impacting on service levels.

One of the obvious routes for this is to introduce more sensing, more technology and more connectivity into existing 'dumb' products.

The costs for these sensors are dropping rapidly, which when combined with pervasive low power connectivity is beginning to enable some very interesting business models.

What FM jobs can be made more effective with IoT?

The most obvious 'low-hanging' fruit where we are seeing a large amount of activity revolves around lighting (both interior and exterior). This is both from a retrofit perspective (e.g. the move to LEDs and the associated energy saving), and also from a controls perspective (i.e. smarter dimming based on light levels/presence detection etc.). The compelling argument for refitting lights with lower power LED variants and smarter controls is that the energy savings can easily be calculated – this makes it straightforward to calculate the business case. Lighting is a very important part of the workplace: care does need to be taken to choose the most appropriate lighting for that particular location.

HVAC control, maintenance and optimisation is another interesting application. Predicting failures and optimising heating and cooling systems for reduced energy consumption are all fascinating areas where TTP is investigating technology options.

One of the other sectors where we see possibilities is where the FM team need to carry out periodic inspections. For example: there is a requirement to regularly check the condition and position of fire extinguishers in a building – it would make much more sense for the extinguishers to know whether they are filled and installed in the correct location, automatically reporting this back to the FM team via a wireless connection. The same argument applies to many other applications, from hand-soap dispenser fill levels to noise and pollution monitoring to available car parking spaces.

Finally, the growth of country-wide LPWAN (low-power wide area network) wireless technologies (such as SigFox and LoRaWAN) are a very interesting recent development. This could (assuming the deployment of the networks continue) provide a very straightforward way to deploy low cost battery powered sensors without having to install a custom radio network for each particular location, lowering the infrastructure cost.

What can FMs learn from other industries that are further advanced in leveraging IoT?

The IoT offers much promise; however while there any many interesting ideas, not all of them articulate a valid business case.

> *People don't buy the IoT, they buy a solution to a problem. I think the main thing that FM can learn from other industries is that the best solutions are where there is a compelling reason (whether financial, social or 'green') to install the technology.*

One of TTP's most recently successful IoT projects is a significant roll-out of smart (wireless) street lighting in the UK for Mayflower (a subsidiary of SSE). The fundamental success of this project is due to a well-founded business case.

Do you need to be very tech-savvy to get to grips with these technological advances?

The real challenge for FMs is to be able to evaluate the various 'connected' solutions that are out there. The IoT, Big-Data, etc. are at the peak of the 'hype-cycle' at the moment, and while technology can assist FMs in their jobs by saving energy and reducing costs, it would also be (very) possible to invest significant amounts of money into solutions that do not realise the promised savings. FMs certainly need to be business-savvy, and push suppliers to prove their solutions

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Do you foresee any negative consequences of this increase of IoT technology?

One challenge is handling all the data that is collected. There is not much point installing the technology and sensors unless something useful is auctioned – analysing the data and presenting useful data to the FM team that they will continue to use long-term is key.

It’s also important not to just install and rely on technology without carefully analysing the business case behind each potential application. Sometimes a visual inspection by a person can still be the most cost effective and reliable method.

Finally, my biggest concern is the tendency for solutions to operate in silos. One of the real benefits of the IoT (and ‘big-data’) is when all the systems can talk to each other – for example the smart lighting system which detects whether people are in the building needs to talk to the HVAC system to reduce the temperature when the building is empty. There are moves to standardise on data interchange between systems, but it’s a very tricky subject to which there is no easy answer.

Adrian Burden

What is Wyche Innovation Centre?

The Wyche Innovation Centre is a business centre designed to facilitate and promote entrepreneurship and the successful growth of SMEs. It is unusually situated in a rural setting in an Area of Outstanding Natural Beauty on the western slopes of the Malvern Hills. The town of Great Malvern has a heritage of business and technology innovation, but there was a real shortage of start-up space for small but growing businesses. We wanted a place to base our own growing technology consulting business, and so we thought it would be good to be part of a buzzing community which we set out to create.

When we first acquired the property, numerous people told us we were unwise because we were in a deep recession and the commercial rental market was poor. But our limited research indicated there was an appetite for affordable desk space for micro companies.

Today the Wyche Innovation Centre is home to over 50 organisations; some in furnished offices, some at hot desks and others using the Centre for meetings and as a business address. Although we have generally had some capacity in our hot-desk zone, our office units have always been occupied.

In your experience, how has forward-thinking FM helped businesses on the site thrive?

We needed to manage the facility as efficiently as possible, because to make the concept work sustainably, we had to continue growing our own business whilst ensuring the Centre operated well for all its users. As such, we developed processes to make things as streamlined as possible, made contracts simple for entrepreneurs to sign up to, and invested in technology to solve problems.

In terms of technology, we have adapted a hotel RFID locking system to enable entrepreneurs to work early or late and grow their team without the need to cut new keys. We also offer VOIP telephony which is scalable and transferable, enabling businesses to add easily new extensions as their headcount rises, and to move their phone number(s) when they move on to new premises.

What technology is required for hot-desking?

Our hot-desk facility provides flexible desk space for business users to work from on an occasional or permanent basis. It also provides a valuable pipeline for our office units. We use the RFID locking system to provide access to the facility, enabling us to issue key cards easily for new or temporary users. A key requirement is high speed Internet access which we offer via Wifi or through Internet cables at each desk. The bandwidth is likely to be better than most users can obtain from home, so they can work easily with large files and email attachments. We also offer shared multi-function printer and selected a model that supports user accounts so that we can charge back for printing.

Tell us about your high-tech visitor information centre – what makes it innovative?

The Malvern Hills GeoCentre is co-located at the Wyche Innovation Centre and forms part of the onsite Cafe H2O. Our location is well suited to tourists walking or cycling on the Malvern Hills, and so we wanted to capitalise on this to help make the cafe more sustainable by attracting passing visitors in addition to the business users. Because space was limited, and because of our technical background, we decided to leverage technology to create a visitor information centre that is easy to maintain and update. As such, we have a video wall running from a Raspberry Pi computer showing photographs from the local region. We have iPads with extensive local information about the geology, history and natural history of the area. We also use QR codes and NFC on the display boards to provide more information online. The GeoCentre also incorporates an innovate swing wall that enables the room to be split into a seminar room whilst still enabling the cafe to operate for the business users. This multi-functional room layout means we can maximise its use, offering space for hire for business events when the GeoCentre is not open to the public.

> *"Technology has made FM much more manageable because it means things can be done remotely or off site. This includes monitoring CCTV, resetting intruder alarms, tracing problems on the IT network and making changes to our VOIP phone switchboard."*

Is there any other interesting FM technology being used in the Wyche Innovation Centre?

Malvern is recognised as a leading UK cluster in cyber security, and indeed some of the business at our centre operate in this sector. Our IT network uses technology to provide secure local VLANs (virtual networks) for each office and the hot desk area, segregating data and devices from for example the guests using Wi-Fi in the visitor centre. Our system also offers segregated Wi-Fi access points for different businesses, and the ability for business users to have offsite virtual private network (VPN) access to their office network. This level of cyber security sophistication is not usually available to very small businesses, and we offer it by default.

How do you think technology is changing or will change FM?

Technology has made FM much more manageable because it means things can be done remotely or off site. I routinely manage our Centre from home, whilst away on my own business trips or even on holiday. This has included monitoring CCTV, resetting intruder alarms, tracing problems on the IT network and making changes to our VOIP phone switchboard. The result is that FM can occur efficiently for a small scale Centre like ours and not be a full-time job; enabling us to concentrate on other aspects of our business. I think this will drive the availability of more small-scale niche business centres in small towns rather than relying on larger facilities in busy city centres.

Chris Hoar

What are the biggest challenges the FM industry faces?

One of the biggest challenges is attracting talent. Technology will help.

How is technology changing FM?

One of the ways is access to large amounts of data and inter connectivity.

What is Artificial Intelligence?

The theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.

Where is it being used at the moment?

AI is being used in a variety of industries including Leisure and Medical.

“One of the biggest challenges is attracting talent. Technology will help.”

Have you seen it used in FM?

AI is being used in FM on the maintenance, cleaning and security side

How long before AI makes a big impact in FM?

Within the next 5 years.

How would FMs benefit from AI?

Efficiencies and higher margins.

Do you foresee any negative consequences of AI in FM?

Job losses.

> *"The whole FM landscape is going to change."*

What advice do you have for Facilities Managers looking to incorporate AI into their buildings or jobs?

Form partnerships with AI suppliers and clients.

How does AI link to Internet of Things and other technology advances in FM?

AI will be able to integrate with all existing software.

With the increase of AI, IoT and rapid technology development in FM, what does the future of the industry look like?

The whole FM landscape is going to change.

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