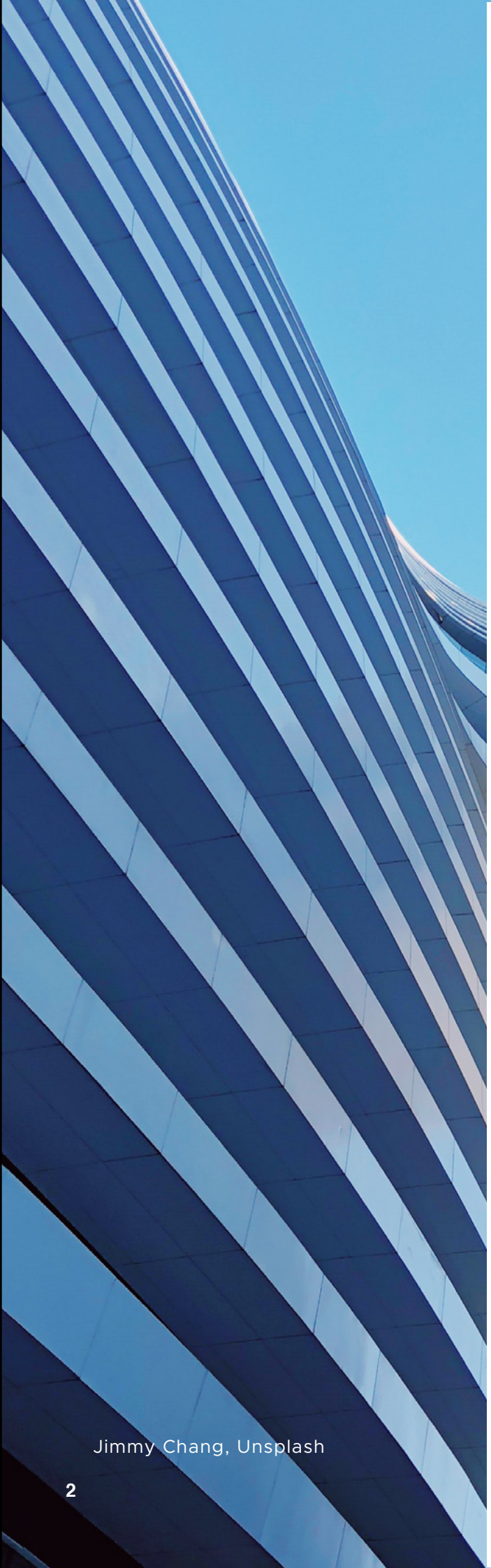
Remote & Automated:

What's next for Facility Management?

INFRASPEAK



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INFRASPEAK

What will the factory of the future look like? Will factories have people in them? Perhaps production lines will run fully automated, on well-defined schedules, self-diagnosing problems, and disposing of their own waste. A second machine will be in charge of quality control, and then everything is set for packing and shipping on self-driving electric trucks.

And what about offices and large buildings? Maybe they'll be controlled by almighty networks of sensors. Technological octopuses that decide when to turn on the lights and the AC, empty rubbish bins, or mop the floor based on sensor data. Stores in shopping centres will have an automated check-out, and if you're lucky you can send your own personal robot shopper to do the groceries and pick up some toilet paper.

For now, it still sounds dystopian. But the automated factory is exactly what Industry 4.0 is moving towards, and sensor technology is already widely applied in Facility Management. We're just in the middle of the first IoT wave, experiencing the boom of cloud-based analytics and unprecedented connectivity. But we're only starting to grasp the potential of Big Data and Advanced Technology.

A second wave will rise in the 2020s. The age of augmented reality will settle in, with technology seamlessly integrated into all parts of our daily life. And then we'll take further steps towards automation, paving the way for a third wave: the autonomous, intelligent machines of the 2030s.

So how does Facility Management fit into all of this? What challenges will it face? Will it ever be fully remote? Or worse, will it be automated, driving you out of your job?

The deserted office: what will FM do with all those empty buildings?

Liam Andrew, Unsplash

The COVID-19 pandemic made millions of people step away from their usual workstation. Office buildings, hotels, restaurants, shopping centres, and even schools were left empty. Remote work is taking center stage during the crisis, and in fact, **the pandemic accelerated the adoption of remote work by 25 times**. What will happen afterward is uncertain, but there's a chance some will never return to their brick and mortar workplace.

Remote work provides more flexibility and freedom of movement to employees. At the same time, consumer behaviour is also changing so fast that, for many brands, physical offices or stores are merely a complement to their strong digital presence.

The City of London stayed eerily empty during the great lockdown of 2020. *Source*

OF COURSE, THIS POSES A CHALLENGE TO FACILITY MANAGERS:

WHAT WILL THEY DO WITH ALL THOSE DESERTED BUILDINGS?

The first thing to keep in mind is that even closed buildings need their upkeep. Otherwise, they're vulnerable in terms of security and safety. What happens during closures, however, is that providing comfort – one of the main trends in FM for the last few years – drops down the priority line. If no one is around, your main concern is holding the fort until someone is.

This brings us to the second thing facility managers and groundskeepers should hold onto. While buildings remain empty for now, and **while offices will never have the same workstation density, people will not isolate in their home offices forever.** The rise of co-working places in the UK in the last few years – and a projected growth rate of 21.3% from 2021 onwards – clearly shows that not everyone likes, or has space, to work from home. Teams will still want to reunite.

What will they require of FM then? If lately the focus had been set on comfort, it might now **shift to safety and well-being – more distancing, less occupancy, better management of light, temperature and humidity levels, synchronisation with circadian rhythms, and improved contingency plans.** Besides, let's not forget sustainability. European facility managers have the heavyweight of **energy efficiency** on their shoulders until 2030. And, quite likely, becoming zero waste in the meantime. These are changing times indeed, but managers still have their hands full.

An old Soviet control room. (1986)

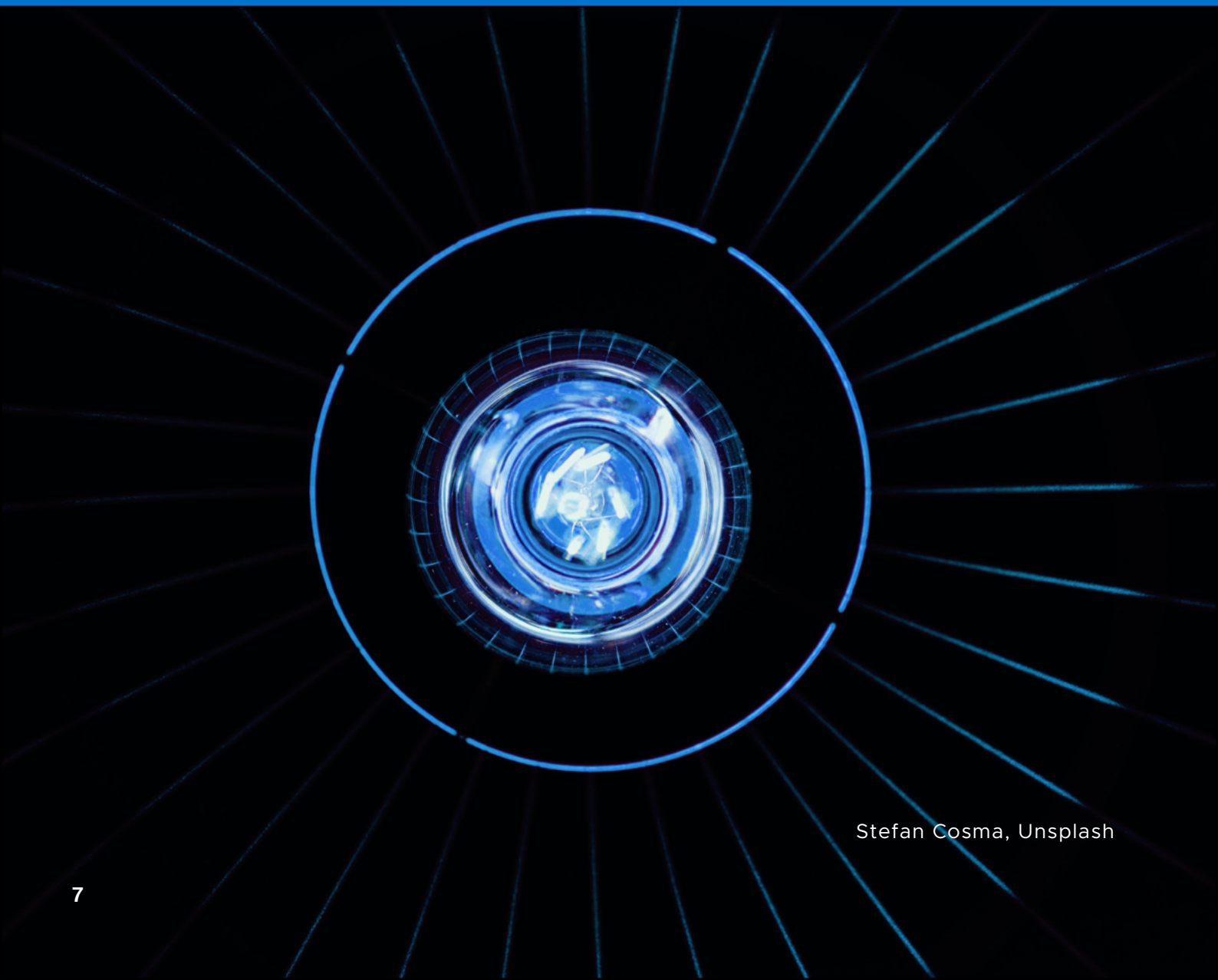
The augmented reality age: new ways of working settle in

For years, managers and engineers relied on Excel sheets. (Brief reality check: in 2016, about 45% of facility managers still relied on spreadsheets.) And that was already an improvement from pen and paper! Infraspeak was the world's first NFC powered, cloud-based FM & Maintenance platform, and that was only in 2015. We've come a long way since then! Among other things, cloud-based software made control rooms outdated and gave managers a glimpse of remote work for the first time.

What's next is an even bigger revolution in the way we approach teamwork and the workplace itself. With increased digitisation, more activities will be performed remotely. **The remote asset management industry, which was valued at $16.5 billion in 2020, will be worth $32.6 by 2025. This will improve accuracy, flexibility, compliance, and real-time data collection.**

The biggest changes can be attributed to Automation and Artificial Intelligence (AI), which can be divided into four categories:

	Requires human interaction	Doesn't require human interference
Static AI	**Assisted Intelligence:** provides insight to perform tasks faster and better. This relies on hard-wired systems, sensor data, analytics, robots, and IIoT.	**Automated Intelligence:** includes the automation of manual and routine tasks. This already exists but will be perfected and expanded to more and more tasks.
Adaptive AI	**Augmented Intelligence:** sophisticated AI systems that learn and improve from their interactions with humans. Augmented Intelligence is the beginning of adaptive systems, which we haven't achieved as of yet.	**Autonomous Intelligence:** consists of AI systems that can adapt to different situations and act autonomously, which is the goal of Industry 4.0.



Stefan Cosma, Unsplash

A new day is just starting. You might go to the office or be elsewhere in the world – you choose. Turn on your computer, sit down, and check what's happening right then at every facility. Double-check which equipment is working smoothly or if the AC has been overheating. Assign a robot to do an inspection and connect to your remote GoPro to watch it live. Have a meeting with your team. Order an extra 3D printer so that they can print new material or tools faster. And go home. Or just turn off the computer. How much did we get wrong? Let us know in a few years.

Fortune telling: what will the day to day be like?

For the most part, facility management will go remote in the next decades. Technicians will still need to be on-site for a few tasks, and someone will need to put equipment in place, but days will go by without any need to "check-in" in person.

This is how it's going to happen:

AUTOMATED DATA COLLECTION

Discrete sensors will track data automatically, instead of requiring technicians to insert manually. **Data collection will improve simulation software, providing reliable and relevant insights for problem-solving and decision-making.** No more trial and error for things like storage management or facility layouts, for example.

This technology already exists today, but we can't always make sense of all the collected data, and not all data sources are properly integrated. The big challenge in the short term is **stepping up IT infrastructures and centralise operations in integrated platforms.** Networks need to be high-speed, able to handle hundreds of devices connected at the same time, and prevent unauthorised access.

AUTOMATED DATA MACHINES

Not a single sector is immune to automation. From room service to production lines, mechanical tasks are set to disappear completely. And since machines don't get tired, facility managers will need to adjust to a workplace that runs full steam 24/7. Companies expect FM to help them extract the most productivity and profitability from their investments.

The good news is that predictive maintenance will be a given by then. **Reliability engineers will monitor data remotely to predict failures, thus avoiding service disruptions.** Some pieces of equipment will track their own data and disconnect or self-diagnose when a problem occurs, triggering alerts.

VIRTUAL WALKTHROUGHS

Drones, gopros operated remotely and robots will be used for remote assistance. Reliability engineers will use these to follow day to day operations and make virtual facility walkthroughs.

The same **technology can be used for more experienced personnel or even manufacturers to participate in delicate operations and provide step-by-step instructions.** For those who manage several facilities, it will be possible to be in several places at once – without ever leaving their desk. Unnecessary motion and transport, two of the eight wastes of lean, will come down to a minimum. Plus, since there aren't many skilled professionals in advanced machines and robotics yet, this is a good solution to make the most of their time.

ADDITIVE MANUFACTURING

To decrease electronic waste, the EU recently required manufacturers to develop electronics with a greater degree of "repairability", which will also affect the British market. **Once additive manufacturing (3D printing) takes off, brands might provide templates to print spare parts and perform faster repairs.**

There are several advantages for facility managers, including a lower MTTR, easier stock management, less downtime, and potentially a smaller ecological footprint. It will also disrupt the supply chain and make businesses more self-reliable.

PAY-PER-USE PROGRAMES

Small businesses may opt for leasing or pay-per-use programmes to remain competitive without going over budget. **Suppliers can control the usage and output of smart equipment through connectivity, turning machinery and maintenance into a service.**

If performance doesn't match expectations, companies can ditch them without a financial downfall. For managers who find themselves constantly making hard decisions, this is a breather.

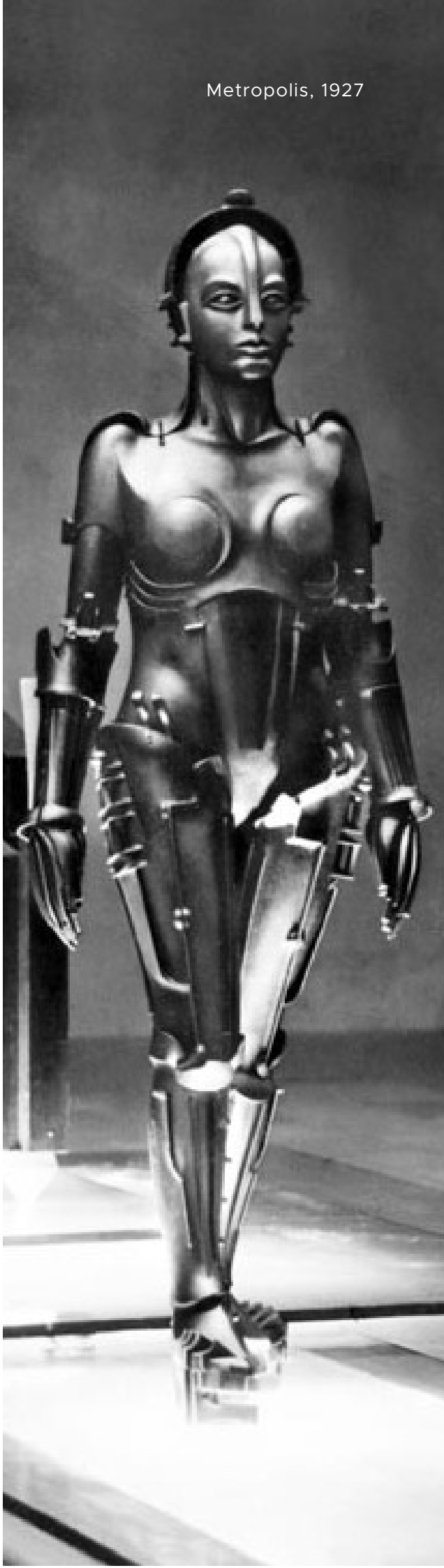
The rise of the robots: are they out to get you?

Throughout history, the portrayal of robots and advanced technology has swung between extremes. The classic German silent film Metropolis (1927) envisioned a future of divided social classes: while managers command the city from their skyscrapers, underground workers and technicians operate and upkeep the machines that power the city.

In the Soviet Union, robots were seen as friendly, a sign of technological prowess, and inspired children's toys. In fact, even in the UK, **we expected technology and robots to translate into a better work-life balance and more leisure time.** But, in recent years, we've been afraid of falling prey to our own creations. Will robots eventually overpower and outsmart us? Will they fight against us?

AND THE BIG QUESTION,

WILL ROBOTS STEAL OUR JOBS?

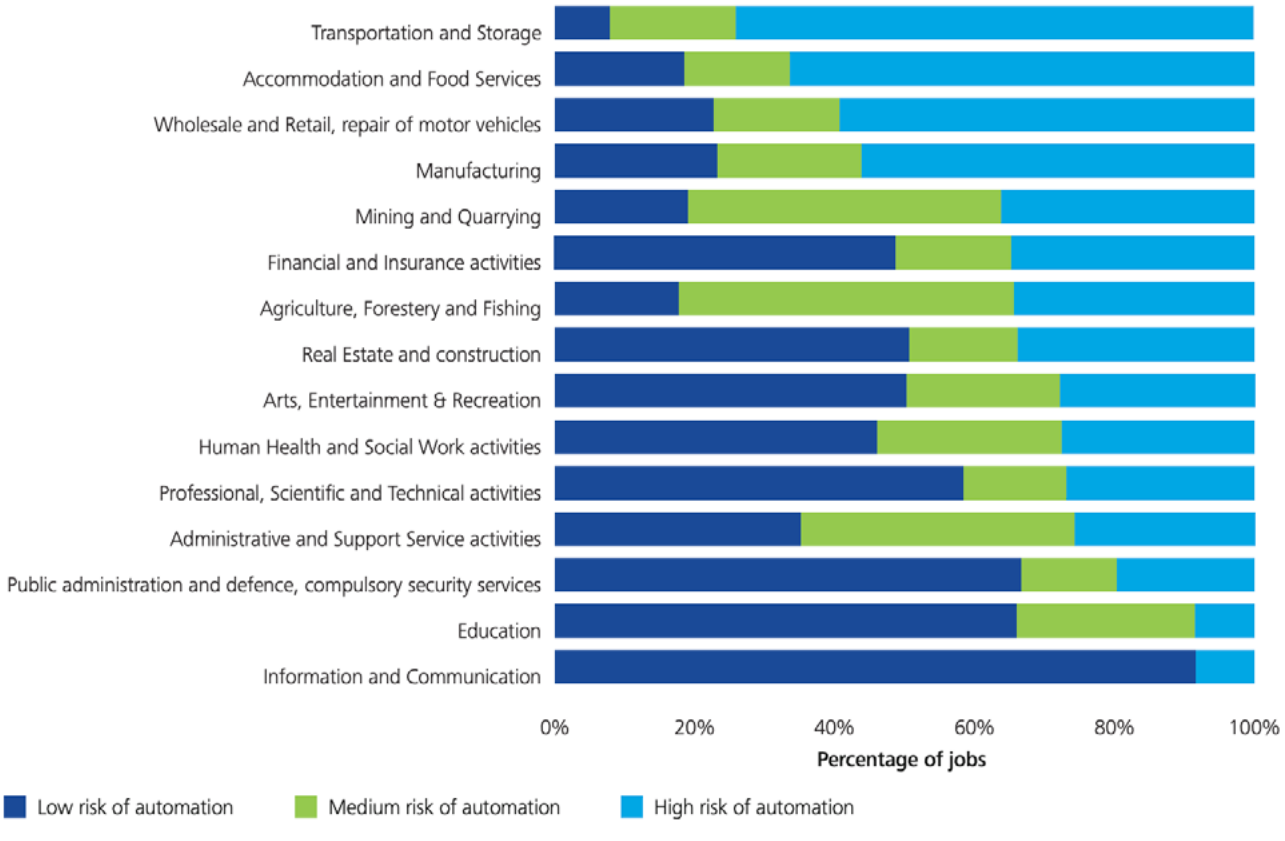


Metropolis, 1927

State-of-the-art robots: can FM & Maintenance ever be automated?

Given all the buzz regarding Industry 4.0, it's almost impossible to dissociate automation from manufacturing. As a matter of fact, manufacturing ranks 4th in the areas with a greater risk of automation. The auto industry is one of the sectors with the strongest levels of automation, followed by electric/ electronics, metal and machinery. Other areas that are experiencing a rapid increase in automation include transportation, storage, accommodation and food services (hospitality), wholesale, retail, and vehicle repairs. It turns out that even Ferrero Rocher, Britain's favourite festive sweet, is already produced by machinery!

In FM and Maintenance, automation will necessarily vary from industry to industry.



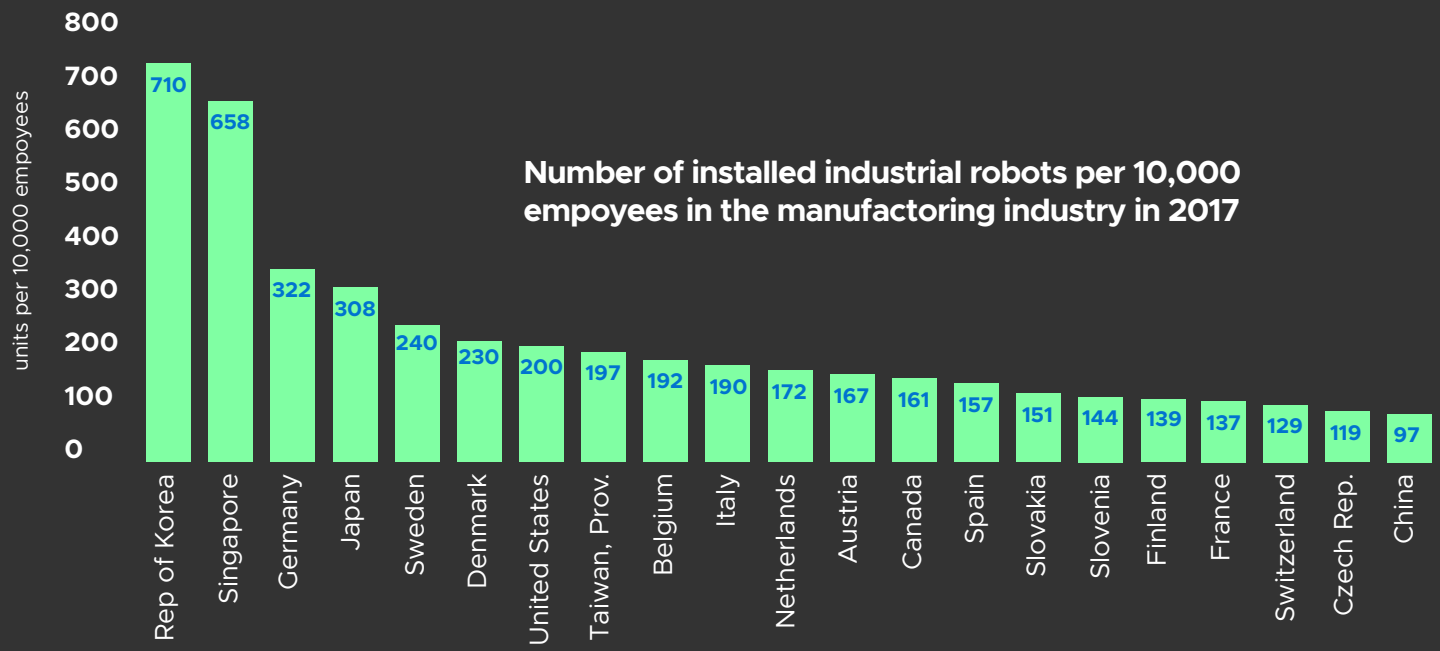
Source: Frey and Osborne, ONS, Deloitte analysis 2016

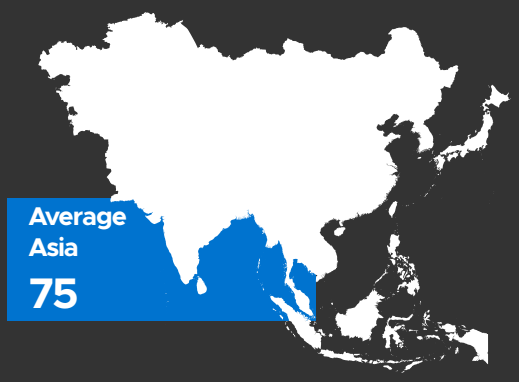
Although automation isn't strictly a synonym for robots, they feed on each other.

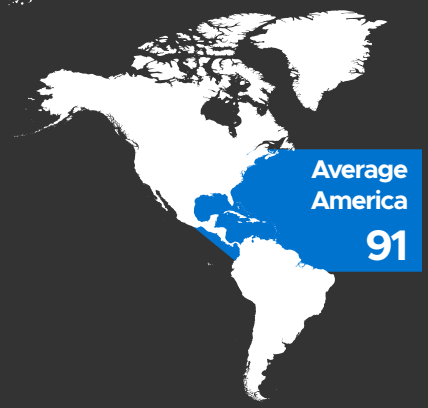
In 2017, the UK had 85 robots per 10,000 workers, below the European average of 105 but on par with the world average. South Korea led the way with 710 robots per 10,000 workers.

Low-skilled jobs are the ones with the highest risk of automation.

The UK ranks 22nd worldwide with a density of 85 units







Source: IFR World Robotics 2018

In FM, robots will soon be used to:

DETECT LEAKS

REPAIR ROADS

MONITOR ELECTRIC GRIDS

MEASURE BUILDING ENERGY PERFORMANCE

HOUSEKEEPING

PERFORM RISKIER INSPECTIONS

Using automation instead of a human workforce eliminates safety risks, saves time on preventive or failure-finding maintenance, and decreases the likelihood of error. As a result, most companies will experience an increase in uptime and productivity.

Just think about it for a second. Do you remember what we mentioned earlier about safety, when we talked about workplaces? A housekeeping robot doesn't simply "miss a spot" (quality). It will always perform its job the same way (performance), at any time of the day (availability), which also reassures clients that surfaces are clean. So there's your customer satisfaction, and there's your improved OEE.

Robots can also be used for repair work that requires a high level of precision. However, this doesn't mean repairs will be automated. They're likely to be similar to robots used for complex surgeries, which are **operated remotely by highly-skilled professionals watching from the gallery. Eventually, using virtual reality, it's possible that technicians won't even need to be in the room.**

Work assignments might also start to be assigned automatically. In the future, software will assign a task to someone automatically, like car-sharing or food delivery apps do. This will be particularly useful to assign tasks to the large robot workforce.

Finally, almost every soft service related to comfort can be automated in smart buildings (notably in offices, hotels, and hospitals). Sensor-based systems can be used to self-regulate HVAC, lights, air saturation, install self-cleaning toilets, and so on. Even cleaning, which is mostly a manual task today, can be automated with robots that activate according to room occupancy!

None of this eliminates the need for well-trained maintenance technicians and facility managers. We can't simply build more robots to keep robots under control, or we would enter an endless cycle. However, reskilling the workforce to deal with these activities, and in fact maintaining digital infrastructures themselves, stands in the way of digital transformation. In order to stay in the loop, FM professionals need to learn as fast as AI seems to do.

It's the human touch: beyond robots and metal

You might be wondering if FM and Maintenance will come down to maintaining robots, managing them, and optimising their settings. Although a lot of work will revolve around that (especially for technicians), human intelligence and input will remain indispensable.

It's a fact of life – or rather of technology – that failures will never disappear completely. Predictive and condition-based maintenance will make equipment more reliable, but human brains will need to intervene when failures happen. Also, bear in mind that while AI and augmented intelligence are a precious aid, their proposals shouldn't be binding.

Back in 1997, Deep Blue, a computer, defeated chess champion Gary Kasparov for the first time. AI can certainly be used to run different scenarios and predict outcomes based on data, but real life isn't a game of chess. The best scenario from an economic viewpoint is not necessarily the fairest, or the wisest, from a human perspective.

COMMUNICATION, EMPATHY, AND COMPASSION ARE NOT PROGRAMMABLE VARIABLES. ULTIMATELY, DECISIONS WILL BE TAKEN BY HUMANS.

ThisisEngineering RAEng, Unsplash

Automation may also boost the war for talent. Managers need highly skilled staff on their teams, which is currently in short supply. Plus they'll need to seek workers who're self-motivated, and have the discipline and work ethic that remote work requires. **Keeping decentralised teams engaged throughout the process is another challenge that can't be solved with algorithms.**

Whether it's teammates or clients, people yearn for a connection. And that isn't going to be automated. Even in areas where there's space for automation, like hospitality and catering, **it remains to be seen how many people prefer to take their order from a robot or sit at a restaurant with no human staff.**

It's fair to hypothesise that, at a certain point, service automation will depend more on societal change and consumer behaviour than on technology itself. The big takeaway? Robots might become more like us, but we won't become robots.

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About Infraspeak

Infraspeak is an Intelligent Maintenance Management Platform (IMMP) that brings outstanding connectivity, flexibility and intelligence to your operation.

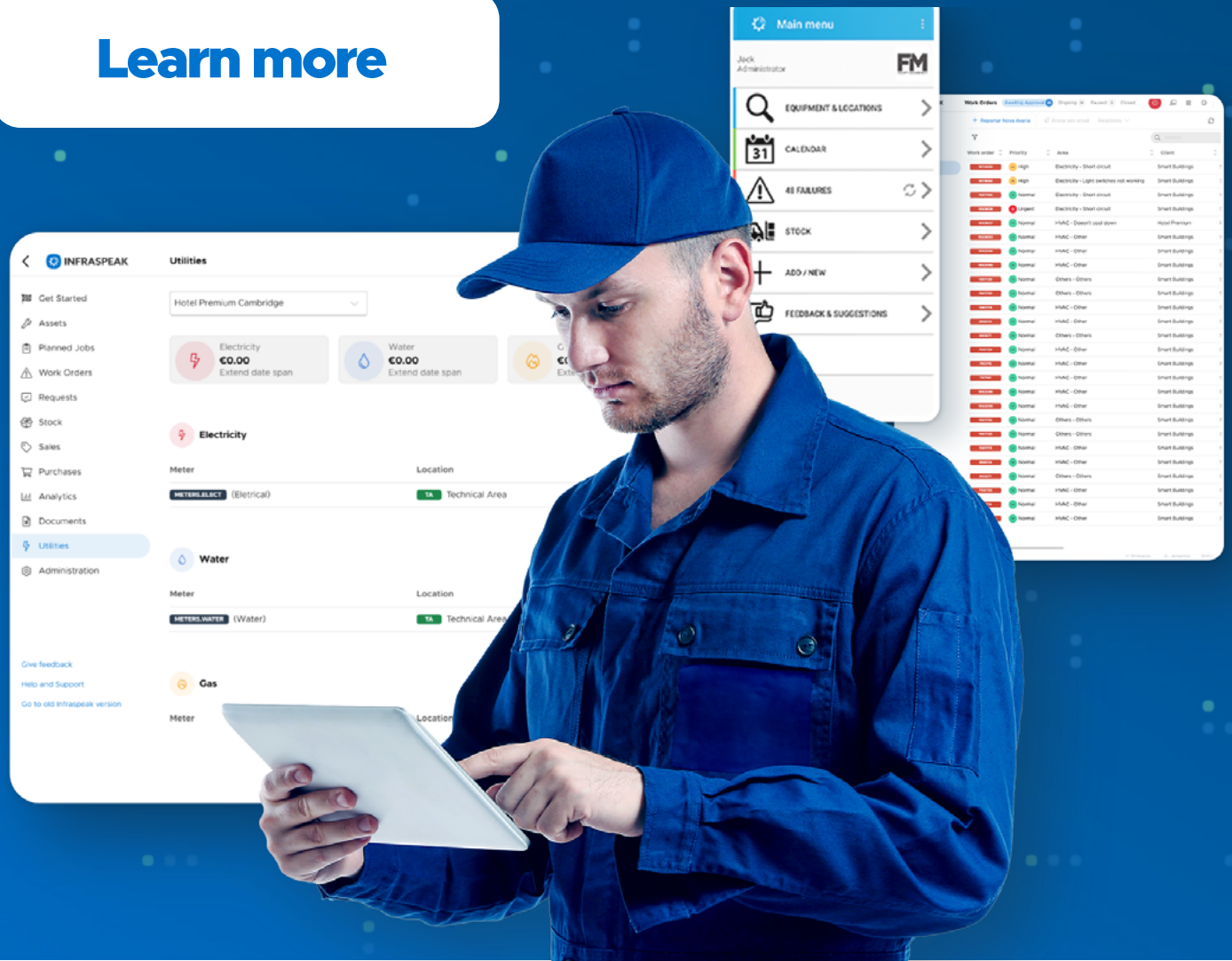
Gain full control and the flexibility to build your own, custom, maintenance management solution capable of answering your own operational challenges.

Online. Offline. Behind a desk or in the field. Infraspeak connects your team to your plans, your plans to your goals, and your goals to the intelligent maintenance you need to take your operation into the future.

Talk to our team of specialists and enter data, intelligence and automation.

Intelligent maintenance starts here.

Learn more

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