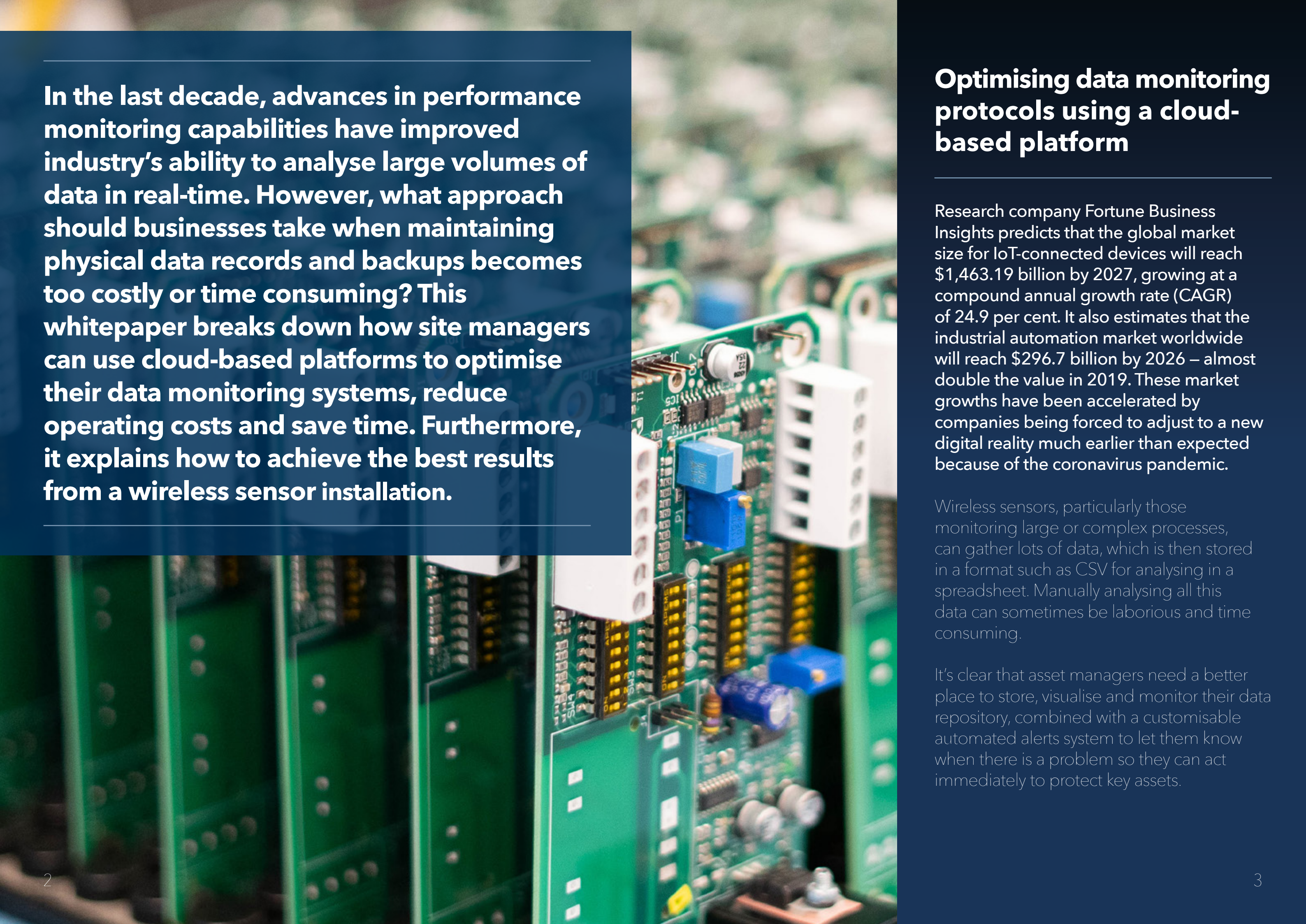# mantracourt

Remote monitoring key performance data across an industrial site

In the last decade, advances in performance monitoring capabilities have improved industry's ability to analyse large volumes of data in real-time. However, what approach should businesses take when maintaining physical data records and backups becomes too costly or time consuming? This whitepaper breaks down how site managers can use cloud-based platforms to optimise their data monitoring systems, reduce operating costs and save time. Furthermore, it explains how to achieve the best results from a wireless sensor installation.

Optimising data monitoring protocols using a cloud-based platform

Research company Fortune Business Insights predicts that the global market size for IoT-connected devices will reach $1,463.19 billion by 2027, growing at a compound annual growth rate (CAGR) of 24.9 per cent. It also estimates that the industrial automation market worldwide will reach $296.7 billion by 2026 – almost double the value in 2019. These market growths have been accelerated by companies being forced to adjust to a new digital reality much earlier than expected because of the coronavirus pandemic.

Wireless sensors, particularly those monitoring large or complex processes, can gather lots of data, which is then stored in a format such as CSV for analysing in a spreadsheet. Manually analysing all this data can sometimes be laborious and time consuming.

It's clear that asset managers need a better place to store, visualise and monitor their data repository, combined with a customisable automated alerts system to let them know when there is a problem so they can act immediately to protect key assets.

Taking data to the cloud

In the era of Industry 4.0 and the widespread adoption of Industrial Internet of Things (IIoT) technologies, the benefits of installing cloud-based remote monitoring systems across a facility are more compelling than ever.

By remotely monitoring and managing assets over long periods of time, industry reaps the rewards in the form of lower operating costs, faster response times and better service levels.

Cloud-based remote monitoring systems, like Mantracourt's SensorSpace® platform, are becoming increasingly popular across a variety of industrial sectors including agriculture, food and beverage and construction. SensorSpace® is a bespoke cloud-based platform that allows customers to login from anywhere in the world using a desktop or mobile device and remotely monitor system status and

asset performance information relayed by Mantracourt's T24 wireless telemetry system. The system's dashboard can be as simple or as complicated as users need it to be, from a simple numerical display of operational parameters to in-depth overlays, charts and graphs showing live and historical data.

Site managers are also recognising the benefits of being able to store and analyse all their data in one easy-to-use umbrella platform, rather than having to consolidate several complex spreadsheets. Having the ability to customise your data dashboards, from simple numerical displays of operational parameters to in-depth graphical summaries, will inevitably save a lot of time.

"It is becoming increasingly clear that remote monitoring is the most convenient and cost-effective way of managing system performance across an industrial facility."

SensorSpace® is already making an impact across key industrial sectors. For example, it allows site managers in an agriculture setting to monitor for humidity or pressure changes in a grain silo. Any undetected change to the conditions in a silo may threaten the integrity of the product, as well as the safety of the container. In the event of a problem, the appropriate personnel can be notified immediately via SMS, email or app-based alerts so appropriate action can be taken quickly.
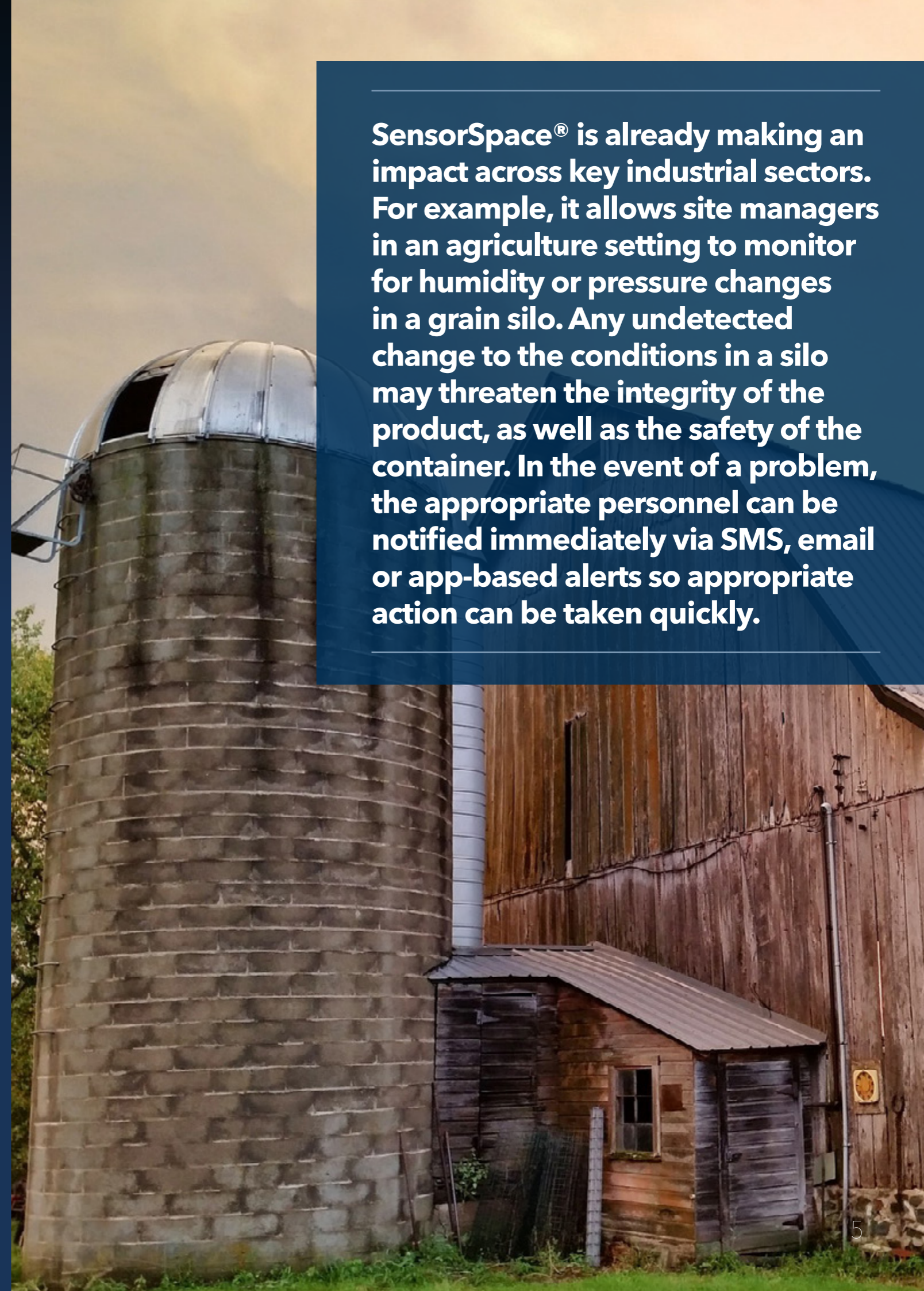
Furthermore, there are financial benefits associated compared to data monitoring methods. For example, a company who provides heavy industrial jacking applications for the construction industry must precisely pre-set an array of hydraulic jacks to a specific stroke length at a specific pressure. The static data from these installs can be fed directly to SensorSpace for round the clock remote monitoring. Financially, the installation can be quicker because a wireless system removes the need for running cables and the company removes the need for sending personnel to site for data monitoring and extraction. There may also be cases where the number of jacks were able to be reduced on site.

While most of the world was under strict restrictions because of the coronavirus pandemic, site visits and manual system inspections could not proceed as normal. In many cases, businesses that relied on these to capture operational data across their facility were unable to regularly collect system data over that time.

"SensorSpace® provides asset managers with the ability to monitor and analyse system performance 24/7, even if they're working from home."

Top tips for a successful wireless sensor installation

In many cases, remote monitoring technology goes hand-in-hand with wireless sensor technology. Modern wireless sensors provide precise test and measurement capabilities in a portable and flexible package, making them an appealing choice for asset managers looking to easily gather data from manufacturing equipment. However, to reap the full benefits of wireless technology, there are a few important steps to follow during set up.

Undertake a site survey

A sensor's signal strength and data capture capabilities should be assessed on-site. To do this, after ensuring that the sensor is in place and transmitting, the site can be explored with a receiver, such as one of Mantracourt's T24 handheld receivers.

This allows users to identify any dead spots and plan their layout accordingly. It's important to remember that the ground can absorb a large portion of the signal, so both the transmitter and the receiver should be located above ground.

Other obstacles, such as concrete or brick walls, metal cladding, ironwork,

metal meshes up to 100 mm thick, and, surprisingly, trees in leaf that contain a lot of water, can impact the signal strength. If additional coverage is required, a repeater can help extend the sensor's range and bypass obstacles. It's also important to consider the presence of future obstacles that might not be present during the installation – for example, you wouldn't want to position a wireless sensor behind a spot where lorries often park, or along a train track.

Radio interference is usually not a concern, because licensed low power devices that use transmission formats such as 2.4 GHz are surprisingly tolerant to common interference sources.

However, having multiple sensors can block or slow transmission data, particularly if they are on the same channel. For these reasons, Mantracourt's T24 products have an error checking function to ensure that data is transmitted correctly. As well as using a clear channel, users can easily configure the rate at which data is sent to reduce the competition for bandwidth between transmitting sensors.

> **"Following these steps, manufacturers can easily measure variables such as linear movement, wind speed, temperature, loads or torque."**

Extend your sensor's lifespan

Wireless sensors can spend most of their life in low power mode and activate to record measurements and transmit data when needed, meaning that their internal battery can last for several years. However, in some instances when faster transmission rates are necessary and no permanent supply is available, manufacturers can use a solar panel or energy harvesting system such as Mantracourt's Power Pack 1 and Solar Panel 1.

For sensors that operate in particularly harsh environments, an enclosure can prevent damage from water or aggressive chemicals. This is why each of Mantracourt's wireless transmitter modules can be ordered in one of three IP rated enclosures. When choosing or designing an enclosure, it's important to remember that the radio signal will need an aperture to escape, such as a small fiberglass window. Users should also remember to tighten up any cable glands and use a drip loop when connecting cables to sensors, transmitter and repeaters to prevent moisture from entering.

Think about your data

Storing raw data locally is simple but limits live analytical capabilities. However, thanks to cloud-based remote monitoring platforms like SensorSpace® data can be analysed in real-time, allowing you to quickly identify trends and take action when needed.

The flexibility and ease of installation of wireless sensors means that data can be collected efficiently and cost-effectively, saving money and improving processes in the long run. Also, it allows for more flexibility in ongoing projects where you might only begin with a small number of sensors and increase this down the line. In these situations, you can easily add more wireless sensors, connected to the cloud-based monitoring system, without the need for costly and disruptive cable installations.

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To find out more about Mantracourt's T24 <u>wireless telemetry system or SensorSpace cloud platform</u>, visit the <u>Mantracourt website</u>.