

# IMPROVING *EFFICIENCIES* THROUGH THE POWER OF *AI AND IIOT*



## AI technology is growing exponentially within the manufacturing industry, here we look at how by combining it with IIoT it can bring more efficiencies

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**T**he internet of things (IoT) is now commonplace in society. By collecting masses of data, IoT devices can offer users insights to save time and money.

This technology can be extended into the industrial sector to enable better efficiencies and reliability in operations. The industrial internet of things, or IIoT, and its devices provide greater data visibility, improved performance, and opportunities for automation.

By combining IIoT and artificial intelligence (AI) manufacturers will be better equipped to manage the influxes of data collected by the smart sensors and devices to support operations.

These advantages brought to manufacturers through the combination of AI and IIoT will ultimately bring forward new insights into how operators manage data in manufacturing. Due to the benefits it brings, smart sensor IIoT technology has grown significantly in recent years and is expected to grow in the future.

To remain competitive, manufacturers and supply chains are looking for technological solutions to keep them agile and competitive.

“Before IIoT, factories were operating semi-blind and in reactive mode. Being able to apply machine learning (ML) or AI to factory data allows manufacturers to predict and plan for future outcomes,” said Jose Favilla, Director, Global Industrial Sector, Industry 4.0 Leader at IBM.

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“This includes things like identifying potential safety hazards and adjusting procedures accordingly or applying predictive maintenance to minimise the impact of unplanned downtime and extend asset lifecycle,” he continued.

AI technology and IIoT infrastructure allow manufacturers to maintain complete digital continuity across all stages of a product’s lifecycle. In doing so, it makes it possible to correct and optimise the design and quality of a product and can be particularly useful for complex production processes.

Miro Kostov, Product Manager at iBASEt, highlights the importance of increasing efficiency but adds: “The greatest benefit that the IIoT brings to manufacturers is providing greater access to important operational data, made available in near real-time. This information can then be used to make smarter decisions, faster.”

“One other benefit is higher productivity. Should an issue arise on the shop floor,

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operators can be notified quickly to take proactive steps to avoid unplanned downtime. IIoT can also take predictive maintenance to an even higher level: sensors can collect data from machines using vibrational or infrared methods, warning of potential machine failures before they even happen,” he said.



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## Jose Favilla

Jose Favilla brings 30+ years of extensive experience working with clients in over 30 countries to help them improve operational and business performance to IBM. Over his career, he has accumulated an in-depth understanding of the asset-intensive industries, including natural resources, process and discrete manufacturing.



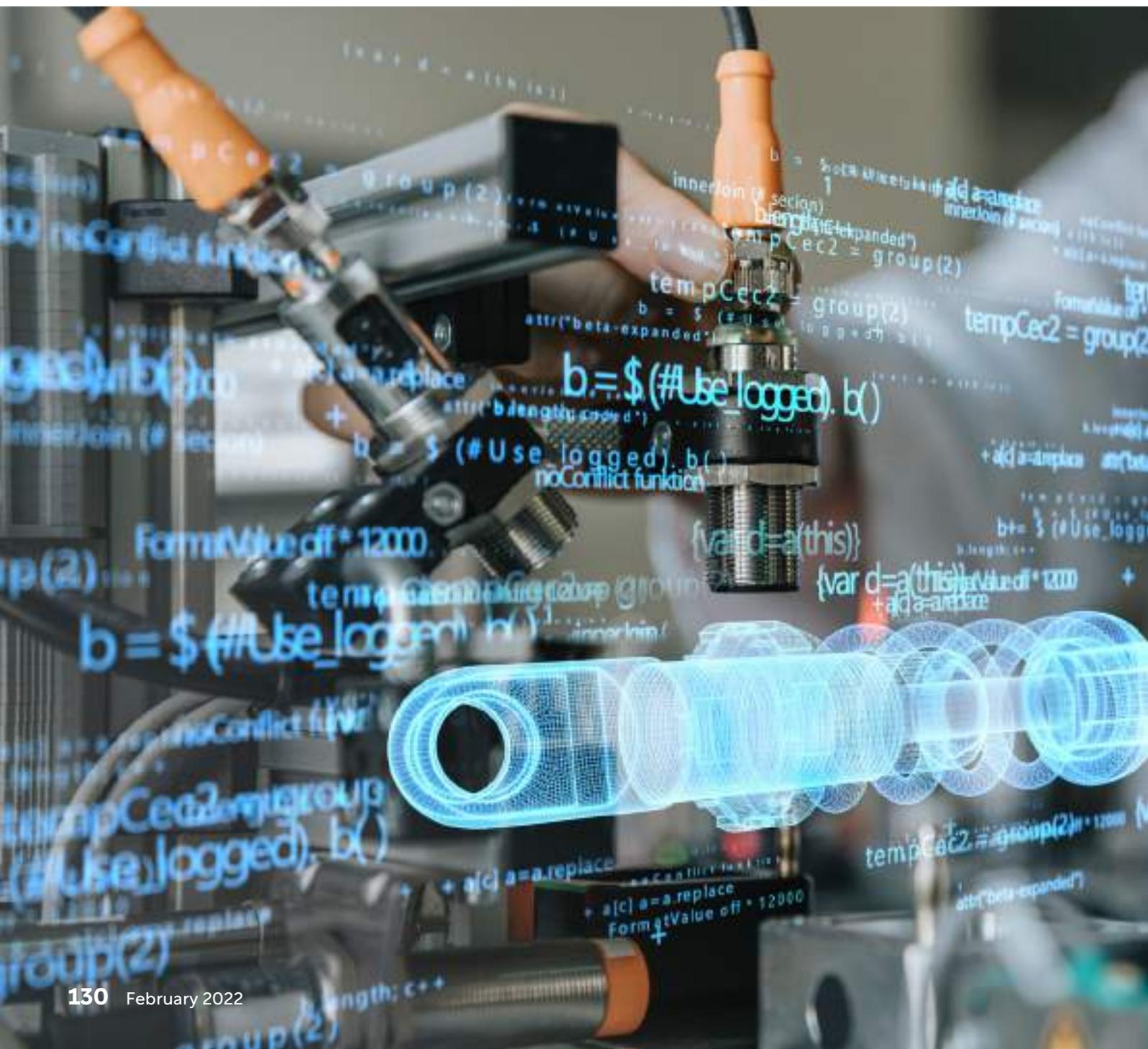
### Collecting data to improve manufacturing

AI and IIoT, used with connected machinery, can collect a vast amount of data as well as detect defects along the production line. On the condition the data is of high quality, ML can be applied for a number of use cases, including:

- Predicting whether a component requires maintenance
- Identifying root causes of quality issues
- Calculating where efficiencies in the production line can be gained.

Outlining use cases of this technology, Favilla said: “Taking maintenance as an example, sensors can feed data into a predictive analytics model that can determine if a machine is likely to break down in the next few weeks. The AI model can then assess the possible root causes and severity of the breakdown and automatically arrange for it to be solved.”

Through intelligent maintenance optimisation, manufacturers can prioritise all repair requests along with the availability of



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technicians with the required skills and the availability of spare parts needed to perform the repair.

Undoubtedly, this technology is invaluable for the industrial sector with its ability to reduce the operational cost of waste management, improve sustainability credentials, and enhance safety measures – but manufacturers need to understand the technology to fully reap the benefits.

#### AI and IIoT: Business strategy and vision

“The impact of AI’s exploding digital power is being felt throughout the manufacturing world. More than just another technology, AI is fundamentally changing the way manufacturers can automate tasks with greater insights and sophistication by providing data analytics and manufacturing intelligence that can reveal trends, identify correlations, predict outcomes, and guide decisions,” explained Kostov.

With the rapid uptake of this technology, particularly as it works with IIoT, throughout many sections of the manufacturing industry, manufacturers need to develop a comprehensive strategy and understanding of how it works to implement it effectively.

Noting what considerations manufacturers need to consider when adopting this technology, Favilla said: “Manufacturing companies first need to be clear on their business vision and what they need to do to achieve it – whether that’s improving competitiveness, gaining market share, or creating new offerings. Then, they need to define which key enabling technologies they need to help them realise that vision.”

He continued: “As they move ahead on that digitisation journey, it’s also important for businesses to understand where they are starting from. For example, do they have the foundational technology infrastructure



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MIRO KOSTOV  
PRODUCT MANAGER AT IBASET

## **iBASEt**

iBASEt provides manufacturing software solutions that are digitally transforming how complex products are built and maintained. The company brings together the necessary real-time data for a 360-degree view of production, quality, and sustainment operations.

in place to build their digital manufacturing operation? Developing a data platform, or 'fabric', that connects the organisation's systems on a hybrid cloud architecture is a key part of the data backbone that needs to be in place to enable a digital factory."

As with any AI-enabled technology, there are vast amounts of data that organisations need to process, analyse and store. To accommodate this effectively, manufacturers need to either build or find infrastructure that ensures they process the data required for their AI and ML applications. This ensures that costs are controlled and unused data is continually assessed in case it has value for future use cases that may drive efficiencies.

Kostov offers a solution that many manufacturers have discovered to improve the production line with IIoT and AI devices: "An ideal approach is to combine the data collection capabilities of the IIoT with modern Manufacturing Execution Systems (MES) to provide a powerful, robust framework to best manage complex operations."

Adding to this, he explained: "This type of strategy provides the performance promised by 'Industry 4.0' strategies as an ideal foundation to start building a data-sharing strategy that is current and accurate, with a single source of truth. An MES creates a common foundation to run and review production and quality processes that are augmented with the necessary data, delivered by the IIoT."

Commenting on the future of the industry as this technology takes hold, Favilla concluded: "Looking ahead, the next evolution in digital manufacturing will be the 'Industry 5.0' era. This will be characterised by a greater focus on sustainability and expanding value beyond shareholders to ordinary workers and all of society, significantly contributing to the planet's sustainability goals." ●