



**The digital transformation of manufacturing:
The imperative to scale
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Event Summary Report

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Executive Summary

“The digital transformation of manufacturing: The imperative to scale” was organised by The Economist Events and sponsored by IBM. The discussion was moderated by Tamzin Booth, business and technology editor, *The Economist*, and the panel included David Meek, executive partner, Intelligent Operations and Industry 4.0 Global Business Services, IBM.

The discussion addressed how companies can unleash maximum value by focusing on immediate needs and quick paybacks while building a road map to achieve larger transformation objectives; how leaders are successfully applying AI to improve quality, efficiency and responsiveness; what new benefits can be realised by leveraging new sources of data through Edge, IoT and 5G technology; how companies are applying new ways of work such as design thinking to progress systematically from ideas to prototypes to scaled implementation; and how they are tackling the growing cyber-security threats to “connected” operational equipment and assets.

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Data—still the new gold:

The huge quantities of data generated in manufacturing need the application of deep learning and machine learning to create value. Raw data are too often sent up to the cloud but this can be expensive and may not meet time-latency requirements. Data may need to be processed on site so that their outputs can be leveraged at the point of operation — and by no means do all of data need to be collected. A fully tuned machine-learning model that is inferencing at the edge typically leverages less than 1% of generated data. Thus, once models are properly trained there is no longer a need to store and manipulate these peripheral data points.

“Lighthouses” as a North Star:

Successful digital transformation requires building around examples that deliver tangible results. A “lighthouse” use case will only be successful if it clearly adds value to the organisation. There is a popular misconception that when innovation isn't being scaled effectively, it's because of the technology itself—but in reality it's often due to a lack of the organisational buy-in needed to move beyond proof of concept.

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The Fourth Industrial Revolution toolbox:

Today factories can use computer vision to read incoming raw-material reports, robot process automation to do data entry, and AI to look for anomalies in equipment predictive maintenance. These are just a few examples, and we're still trying to understand the right pace of standardisation across plants and companies to maximise these trends. The magic of virtual commissioning is that there is no need to be on-site to take a product from idea to manufacturing stage. Matching the simulated product and the simulated production equipment significantly speeds up the time to market. We must not forget the importance of putting technology into the hands of small and medium-sized companies that can't rely on big IT departments.

Embracing intelligent workflows:

The end-to-end view demonstrates how far digital transformation extends beyond factory-floor automation. It means the application of AI at every stage of production, and this multiplies the value of what is captured along the way. The ultimate impact on the bottom line is clear to the C-suite. Successfully creating these new workflows will mean leveraging the expertise of engineers and IT teams, which have historically worked in their own domains.

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Company culture:

Since the start of the pandemic we have seen an increase in companies' desire for a more centralised view of information, performance and management across multiple plants. A holistic approach is needed to achieve enterprise goals, and it must include bottom-up initiatives that support innovation and ease adoption. It is crucial that employees understand that technology can augment their skill sets—rather like the police working with sniffer dogs—and that it has the potential to free them from dull, dirty or dangerous tasks. In order to make teams in the company more collaborative, we must give them joint targets (the go-to example is OT and IT).

It is now indisputable that agile and efficient digital infrastructure is the enabler of transformation, and the only way to future-proof. This is top of mind as companies assess the post-pandemic threatscape and look for new drivers of competitiveness in a digital-by-default paradigm. Operations are no longer perceived as a cost centre, and this is hugely consequential. Covid-19 highlighted weak spots in manufacturer supply chains and their onsite operations at the plant. The adoption of digital solutions to ease these pain points has exemplified the importance of achieving scale in order to realise the full promise of business transformation.

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20 Cabot Square, London, E14 4QW, United Kingdom
events.economist.com