4Manufacturing®

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This glossary of terms describes a range of terms used to describe different elements of the 4th Industrial Revolution, digital manufacturing and 4Manufacturing®.

	Theme	Describes
	**Factory Floor and Production Systems**	Factory Floor and Production Systems is the theme used to describe Integrated digital production management systems within a business for control and optimisation of all manufacturing, product lifecycle and resource management processes.
	**Additive Manufacturing**	Additive Manufacturing is the theme used to describe the technologies that build 3D objects by depositing layer-upon-layer of material. This theme addresses this technology and how this translates to manufacturing.
	**Industrial Internet of Things**	Industrial Internet of Things (IIoT) is the theme used to describe the idea of inter-connectivity and integration between industrial control systems, business processes and data analytics for improved performance.
	**Sensors**	Sensor is the theme used to describe a device that can monitor and or collect data from a physical process and/or an event.

Big Data and Artificial Intelligence in Manufacturing

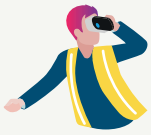
Big data is the theme used to describe high-volume and high-variety of process data. Big Data and Artificial Intelligence in Manufacturing addresses how this translates to manufacturing for enhanced understanding and decision making. Using technologies including artificial intelligence and machine learning whereby computer systems enhance decision making.

Digitally Assisted Assembly

Digitally Assisted Assembly is the theme used to describe the use of digital technologies to facilitate the assembly processes using fixed, mobile and wearable platforms.

Robotics and Automation

Robotics and Automation is the theme used to describe the act of a system, such as industrial robots, completing a manufacturing process independently, with minimal or reduced human intervention, to achieve higher quality, speed, or reduced cost within a process.



Digital Twin & Simulation

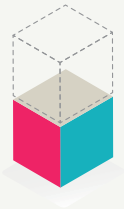
Digital Twin & Simulation is the theme used to describe a digital model of a physical machine, system or process, to enable virtual verification and validation.

Cybersecurity

Cybersecurity is the theme used to describe the technologies, processes, and practices designed to protect networks, devices, programs, and data from attack, damage, or unauthorized access. This theme addresses how these technologies can be applied to manufacturing.

Flexible Manufacturing Cells

Flexible Manufacturing Cells is the theme used to describe flexible manufacturing system (FMS) which is a process that can easily adapt to changes in the product being manufactured and it's production levels.



Augmented & Virtual Reality (AR & VR)

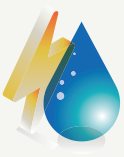
Augmented & Virtual Reality (AR & VR) is the theme used to describe immersive technologies, including virtual reality, where a user is immersed into a simulated environment, and augmented reality, where virtual information is incorporated into a physical environment.

Paper to Digital Processes

Paper to Digital Processes is the theme used to describe the process of performing paper-based tasks (documentation, sign- off, etc.) through the use of digital equipment (PC, tablets).

Predictive Maintenance

Predictive maintenance is the theme used to describe techniques designed to monitor the condition of in-service equipment in order to predict when maintenance should be performed, rather than carrying out periodic Maintenance.



Industrial Energy Efficiency

Industrial energy efficiency is the theme used to describe when energy-efficient technologies and management practices are implemented in the manufacturing sector to reduce energy consumption.

Circular Economy

Circular Economy and remanufacturing is the theme used to describe in which we keep resources in use for as long as possible, extract the maximum value from them whilst in use, then recover and regenerate products and materials at the end of each service life. Remanufacturing is a process that returns a used product to a new condition, with a warranty, that matches the quality of the original product. It is a key part of a well-functioning circular economy.

Supply Chain Integration

Supply Chain Integration is the theme used to describe digital connection and coordination of all companies within a supply chain, from raw material supplier to end user, utilising shared information for operational efficiency.

Digital Manufacturing Readiness

Digital Manufacturing Readiness is the theme used to describe manufacturing readiness levels to determine a company's stage of development towards a new manufacturing process or innovation.

Design for Manufacture

Design for Manufacture (DFM) is theme used to describe the integration of product design and process planning into one common activity, often using digital tools such as CAD and CAM, in order to to design a product that is easily and economically manufactured.

Continuous improvement

Continuous improvement is the theme used to describe the ongoing effort to improve products, services or processes, seeking incremental improvements over time.

Servitisation

Servitisation is the theme used describe the transformation a manufacturing company undergoes to create new ways of doing business that combine products and services as parts of integrated offerings to the market.

Web to order

Web to order is the theme used to describe enabling digital customer ordering and tracking across different stages of manufacturing.

Mass Customisation

Mass customisation is the theme used to describe a technique that combines the flexibility and personalization of custom-made products with the low unit costs associated with mass production.

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Find out more about 4Manufacturing® at www.4manufacturing.co.uk
If you need help with innovation in your manufacturing business or manufacturing process, please contact our Manufacturing Team at www.ktn-uk.co.uk/interests/manufacturing