Industry 4.0 Basics

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KEARNEY

We are increasingly seeing clients across industries we serve talk about an upcoming wave of disruption in Manufacturing.

But what are they talking about?

The 4th Industrial Revolution

Smart Factory

Artificial Intelligence

Simulation

Industry 4.0

Industrial IoT

Robotic Process Automation

Sensors

Simulation

Machine Learning

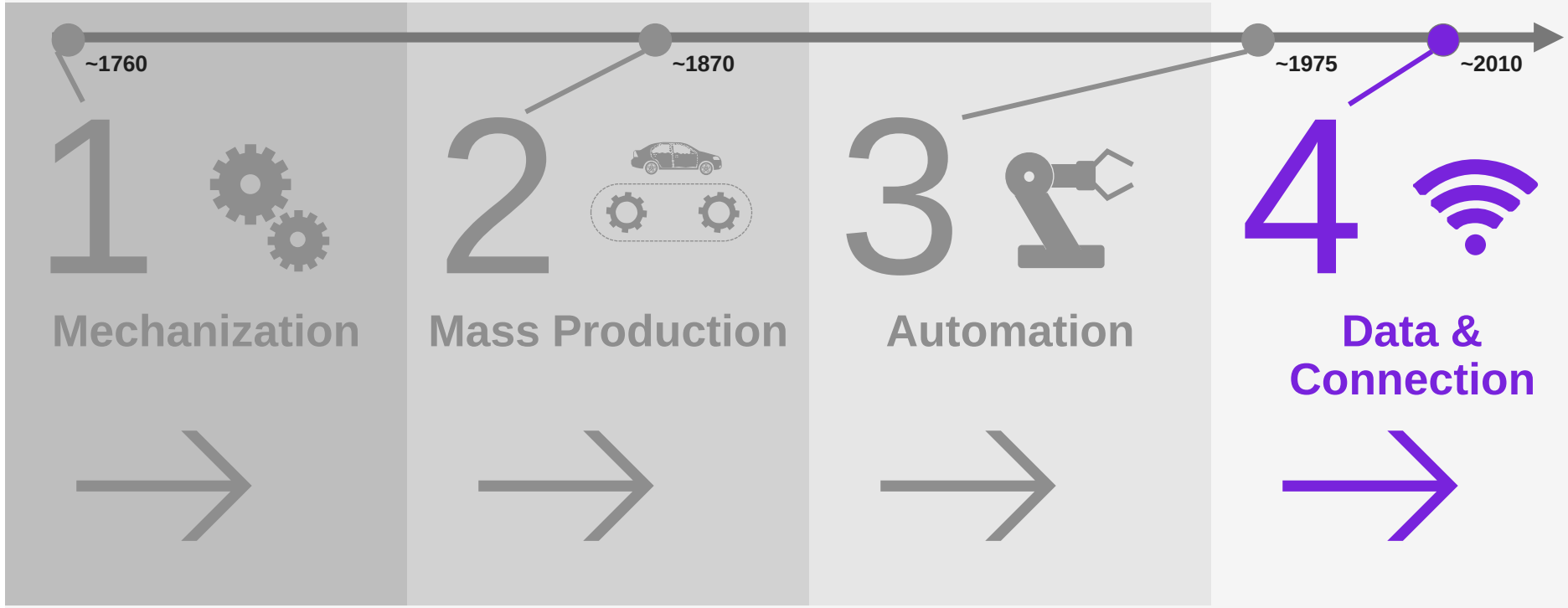
Additive Manufacturing/3D Printing

Augmented/Virtual Reality

The 4th industrial revolution, leverages connectivity to deliver break-through supply chain performance

… as it is the 4th revolution, it has been dubbed: ***Industry 4.0***

The Four Industrial Revolutions



Game-Changing Industry 4.0 Technology Applications

Digital processes & connected assets via I4.0 technologies

- Connectivity and Computing Power
- Digital to Physical Transformation
- Analytics & Intelligence
- Human-Machine Interface

Our Factory of the Future concept stablishes a clear pathway to leverage digital/ I4.0 technology to achieve efficiency and sustainability

Virtual value chain with the factory of the future

Integrated **value chain** connecting the supplier/ contract manufacturer, factory, logistics and customer

Factory of the Future

Smart/digitized manufacturing where technologies and data analytics are applied **within the plant**

Efficient Factory

Optimized with **localized loosely integrated technology**

Basic automation	Basic analytics
Sensors & Robotics	Additive manufacturing
Advanced materials	Energy and waste management

Smart automation	Network strategy
Simulation/modeling	Network digital twinning
Big data/Local cloud	Integrated cloud
Analytics/Predictive maintenance	Cyber security
Internet of Things & advanced controls	E2E analytics
Green manufacturing	Embedded sustainability

Lean Factory

Operations excellence foundation in place prior to the adoption of advanced manufacturing technologies

Source: Kearney

Factory of the Future

Kearney's "Fab-Five" technologies that define Industry 4.0

Industrial Internet of Things (IIoT)

Sensors and connected devices that continuously capture, store and analyze operational data

- Machine sensor monitoring
- Digital twins
- Advanced control systems
- Block chain

Artificial Intelligence (AI) and Advanced Analytics

Systems that use data to automatically generate better insights, and make decisions

- Machine Learning
- Big data
- Automated metric dashboards
- Advanced simulation / Modeling

Wearables, AR and VR

Devices worn, or used by operators to collect or transmit data, and enhance performance

- Wearable connected devices
- Exoskeletons
- Augmented reality tools
- Virtual reality simulation

Additive Manufacturing / 3D Printing (3DP)

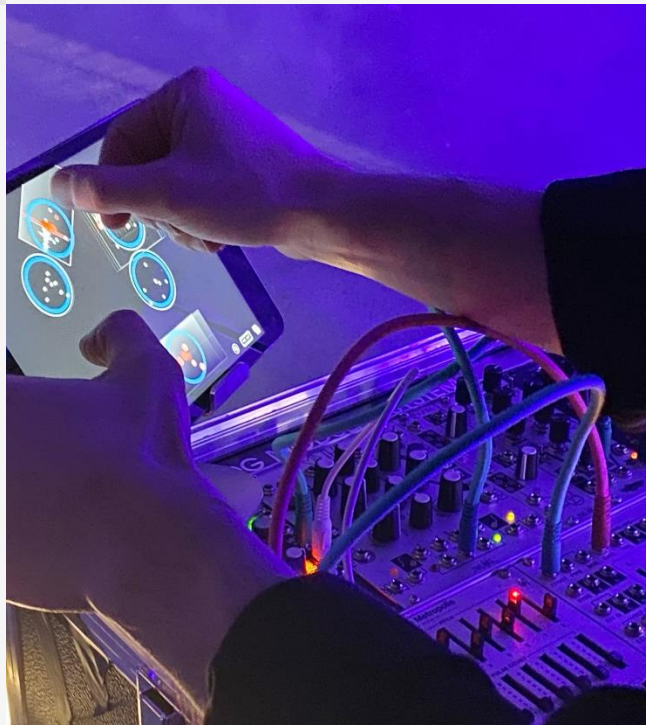
The process of using computer aided design to make 3D objects by successively layering materials

- 3D Printing
- FDM, SLS, SLA
- Production parts, prototype and trial parts, and shop aids

Automation and Advanced Robotics

Tools that perform complex tasks in place of, or in coordination with human operators

- Adaptable robots
- Collaborative robots (cobots)
- AGVs, AMRs
- Advanced conveyors



Thank you

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