



Quality management in digital era, industry 4.0

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Agenda

- Definition of the basic terms
- Development of industry
- Development of quality
- Quality management systems
- Quality 4.0 principles, values, methods
- Quality 4.0 applications
- Kahoot <3

Introduction



Industry 4.0:

integration of digital technologies - IoT, AI, big data, automation - into manufacturing and production processes to create interconnected systems

Quality management in digital era:

requires proactive, data-driven and customer-centric approach

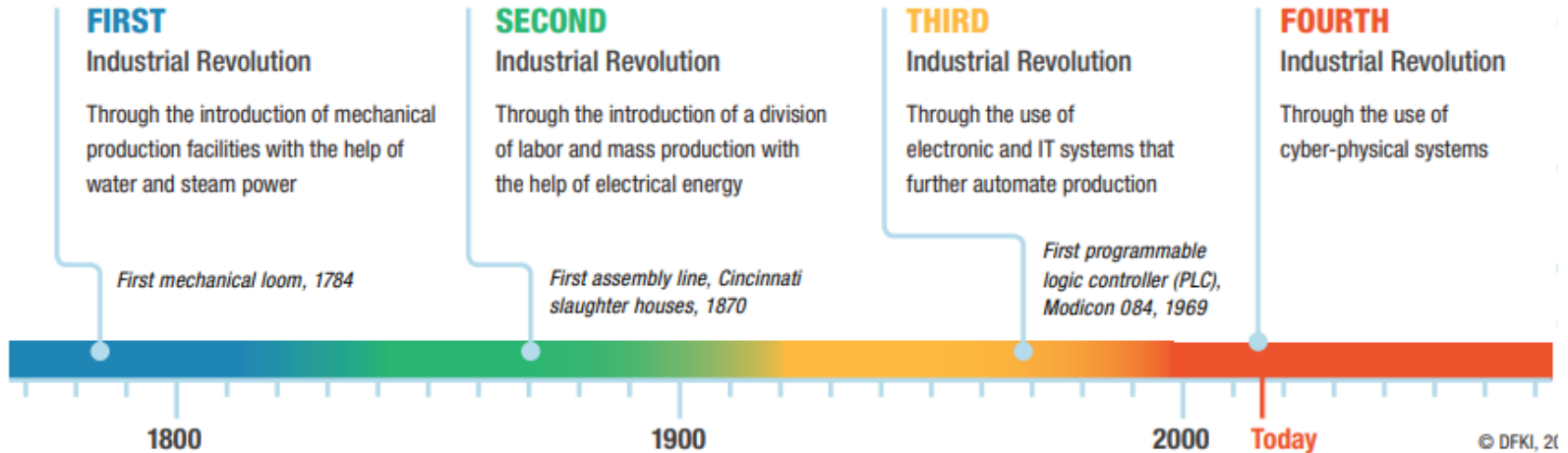
uses digital tools and technologies

-> aims at meeting the high standards of quality in rapidly evolving technological environments

Quality 4.0:

integration of data and technology into quality management system without replacing the traditional methods

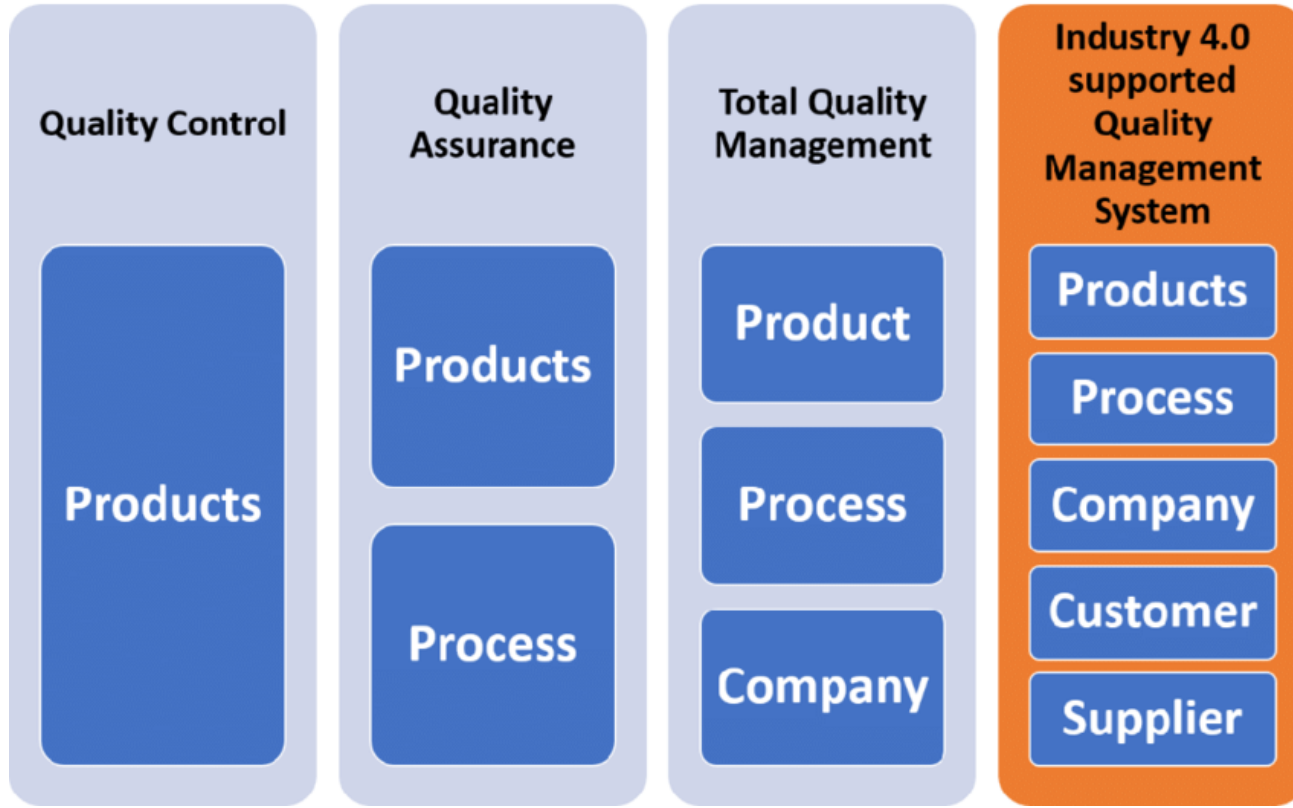
Industry 4.0



Quality 4.0



Quality management system

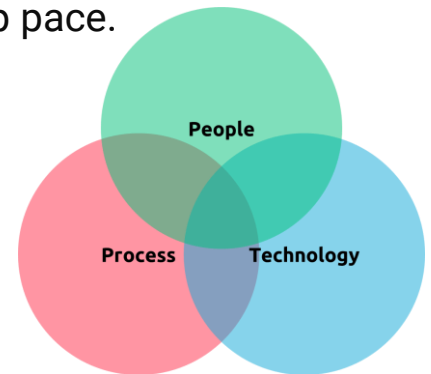


Quality 4.0 Principles

People: Company needs quality professionals to manage quality with the digital tools available today and understanding how to apply them and achieve excellence through quality

Process: Existing processes will be broken and the need to educate the next generation of workers to implement new processes and strategies is important for company => Continual improvement

Technology: Technology is growing 10 times faster than it used to, and organizations' platforms, such as processes, systems, data, operations, and governance, must keep pace.





Quality 4.0 values

- **Leadership** - Management place the highest value on products and process quality
- **Culture** - Every employee is accountable for customer success and practise quality principles daily
- **Ease of Data** - A centralised simplified platform, 360 real time and predictive analytics
- **Standard work** - LEAN principles fully integrated into production flow and key processes
- **Continuous improvement** - Strong sense of urgency toward proactive continuous improvement tasks

Methods of Quality 4.0



Data Analytics: Leveraging big data analytics and predictive analytics to gain insights into quality-related issues, identify trends, and predict potential defects or failures.

Internet of Things (IoT): Using IoT devices to monitor and collect data from manufacturing processes and equipment in real-time. This data can be analyzed to ensure that quality standards are being met and to identify areas for improvement.

Artificial Intelligence (AI): Employing AI algorithms for tasks such as predictive maintenance, quality inspection, and defect detection. AI can also help optimize production processes to minimize defects and waste.

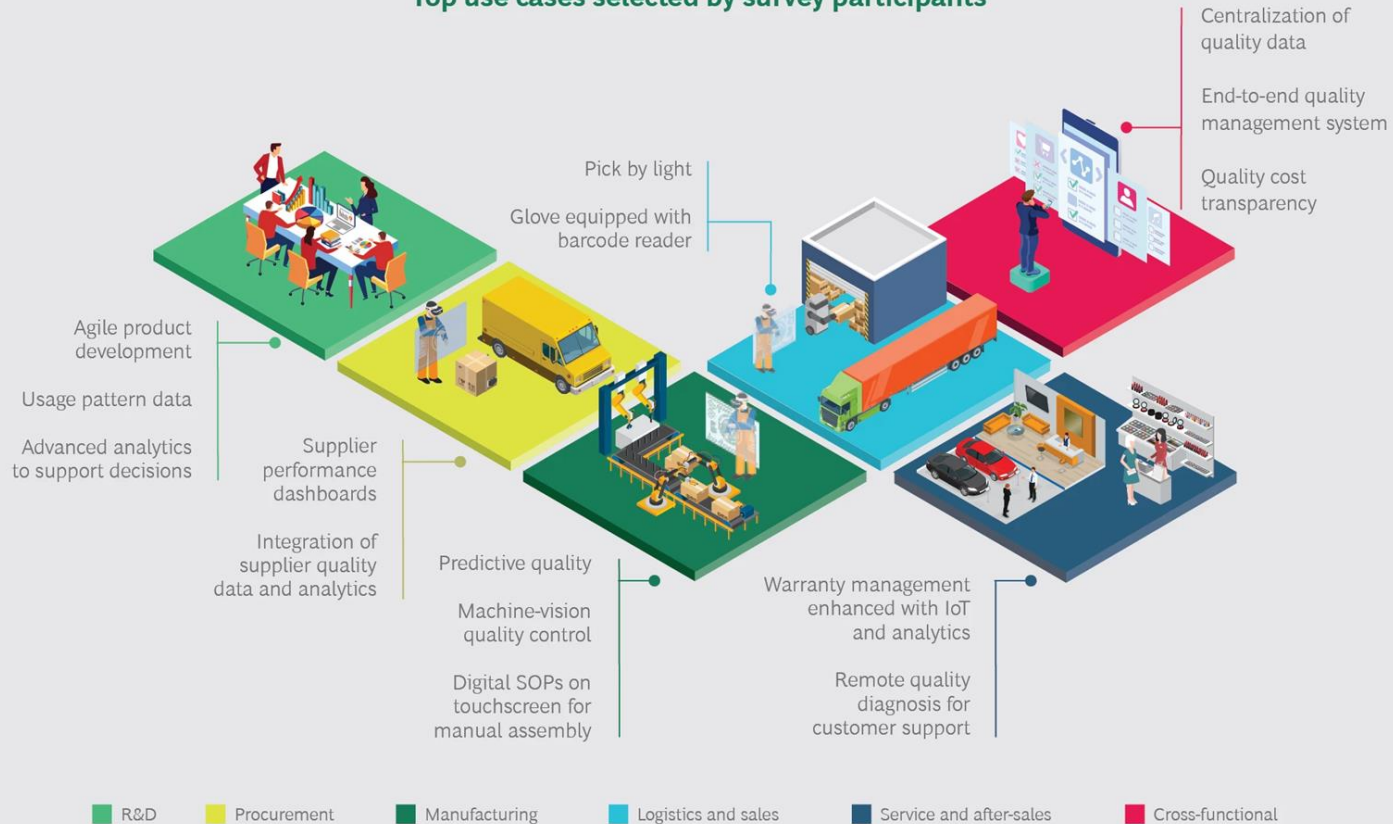
Digital Twins: Creating digital replicas (digital twins) of physical products or processes to simulate and analyze their behavior. This allows for virtual testing and optimization before physical production, leading to higher quality outcomes.

Blockchain: Implementing blockchain technology for supply chain transparency and traceability. This can help ensure the quality and authenticity of raw materials and components used in manufacturing.

Augmented Reality (AR) and Virtual Reality (VR): Using AR and VR technologies for training, maintenance, and quality inspection purposes. These technologies can provide immersive experiences and facilitate remote assistance for quality-related tasks.

EXHIBIT 2 | Quality 4.0 Has Many Applications at Each Stage of the Value Chain

Top use cases selected by survey participants



Short video:

Source: Quality 4.0 survey by BCG, ASQ, and DGQ.

Note: IoT = Internet of Things; SOPs = standard operating procedures.

<https://www.youtube.com/watch?v=0PPbMQXqbs>



The end



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