QUALITY 4.0

a working definition

Co-creation of value

Customers and society are constantly redefining the value they require, and how and where they want to consume it. Customer value co-creation is increasingly through digital servitisation.

Uber applies this principle – firstly by transforming the traditional taxi service into one which offers on-demand transport and effortless payment from a smartphone; and secondly in the way it collects real-time feedback on driver performance and engages with customers to solve problems and introduce new services and features. Many customers are no longer excited by just owning a product or using a service. Instead their interest lies in how it can serve their needs and outcomes. Uber

Cybernetics

Data is captured from multiple sources across vertical, horizontal and end-to-end supply chains. Interconnected and smart networks in ecosystems are increasingly used to dynamically regulate and improve total system performance, including behaviours, inputs and outputs.

The Smart Home is an example of first and second order cybernetics in action. For example, by using systems such as Amazon Alexa, Hive or Nest, a person with a goal can act to set that goal for a self-regulating device, such as a thermostat in their home. alexa

Mutual trust

Mutual trust is vital to drive out fear of surveillance and fraud, and digital tools enable transparency in partnering and contract executions. Inter-system compliance is authenticated and immutable to give assurance and confidence leading to greater resilience.

Effective data systems should engender trust in:
- the infrastructure for collecting and storing data;
- the people, systems and machines using data;
- how organisations use data.

Rapid adaptive learning

Continuous and rapid adaptive learning from data characterises innovation and improvement in value creation. Changing customer expectations are met based on new predictive capabilities rather than being reactive. Quality of design, conformance and performance is increasingly managed and communicated virtually, together with agile development and integration of systems leading to greater connectedness.

Airbnb has more than 100 machine learning models running on its website. It uses the data it collects to help improve and personalise every aspect of a customer's experience. When applied correctly, this principle sees organisations elegantly using data

OUR OBJECTIVE

To develop a working definition of Quality 4.0

Transparency and collaboration

The value chain is increasingly an integrated 'smart' network of interrelated and interconnected cyber-physical systems. The ecosystems transcend traditional legacy boundaries and increasingly create whole-life circular economies. The customer, an active part of this network, requires both effective risk management and greater transparency and collaboration across multiple disciplines as technology networks expand.

Fitness trackers are an example of transparency and collaboration in action. They can guide you on your run, tell you how far you've run, where you ran and how fast. However, this highly connected network can also present a potential risk. In 2018, an interactive map of tracked fitness activities of people who use the Strava app inadvertently revealed the location of military bases overseas. This caused the US military to review its employees' use of personal fitness tracking devices.

Cyber physical systems

The balance and integration of human effort and machine effort, in the broadest sense, continually changes over time, automating some previously human roles and creating new ones around the co-design of cyber-physical quality systems.

The Auto Pilot is a trusted and proven example of the cyber physical system used by avionics today. The move towards self-driving cars is another example of such a system. Take Tesla cars which all now feature, as standard, advanced hardware capable of providing autopilot, and full self-driving capabilities.

OUR WORKING DEFINITION

Quality 4.0 is the leveraging of technology with people to improve the quality of an organisation, its products, its services and the outcomes it creates.

THE EIGHT SUPPORTING PRINCIPLES

These principles underpin our working definition of Quality 4.0. They enhance the established quality principles, which provide a focus on customer needs, expectations and satisfaction.

to better identify and recommend the most appropriate content or products, inspiring customers to buy.

Data value

Data is increasingly a contextually dependent strategic asset, requiring quality professionals to be knowledgeable in data governance, data architecture, data engineering and data analytics.

For the data to have value, it must satisfy some basic premises. It must be identifiable and definable, promise probable future economic benefits and be under the organisation's control. (*Putting a value on data*, PwC, 2019.)

Technology and combined intelligence

The vast array of enabling technology, machine learning and artificial intelligence augment human intelligence. The symbiotic human and machine relationship, in which virtual and real worlds co-exist, enables them to react, learn, make decisions and optimise quality processes.

The BMW Group's use of AI to evaluate component images from its production line is an example of this principle in action. This use of technology is allowing it to spot, in real time, deviations from quality standards.

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