TECHNICAL UNIVERSITY OF LIBEREC
Faculty of Economics

Quality Management

A01. Introduction to Quality

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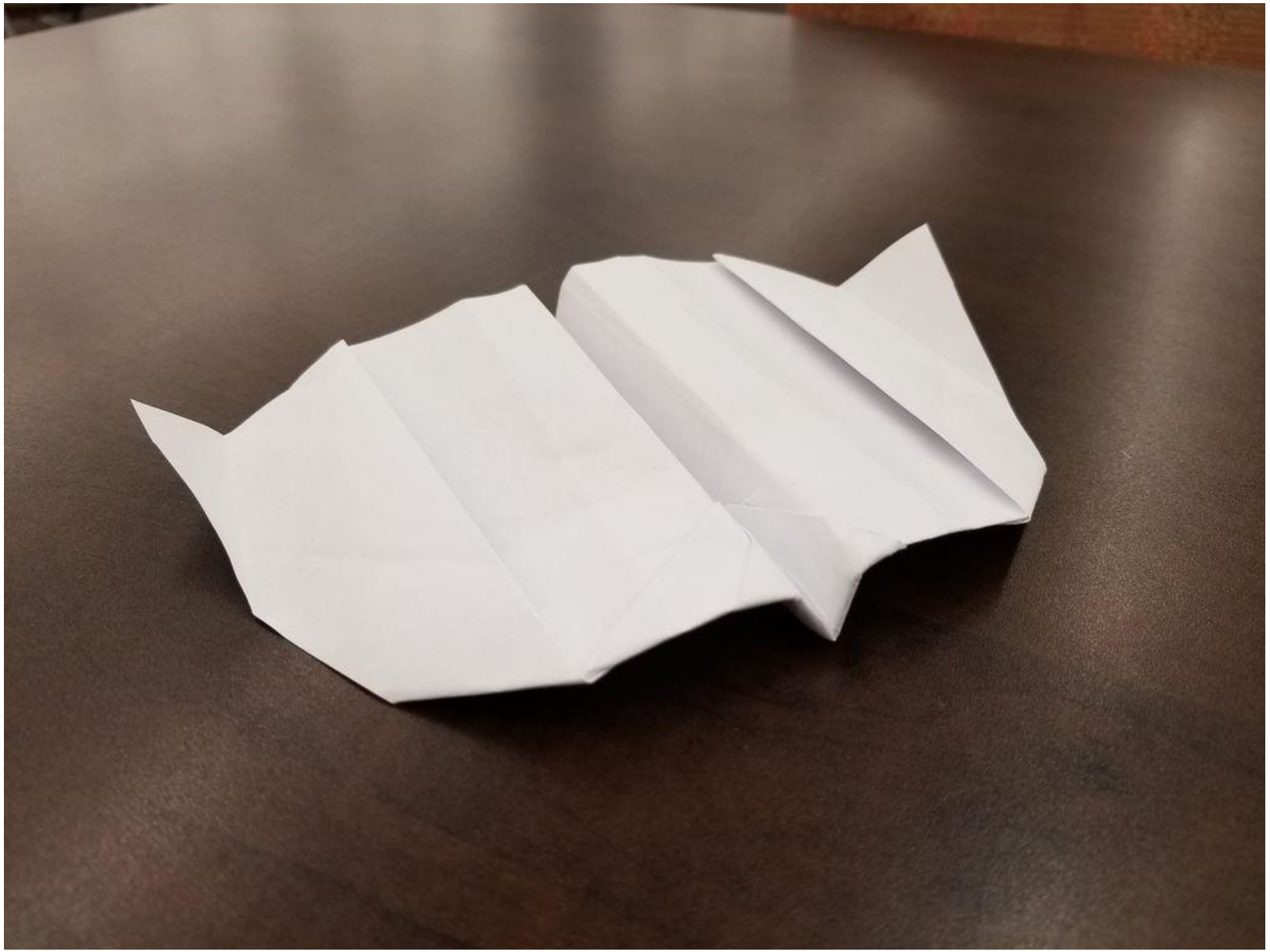
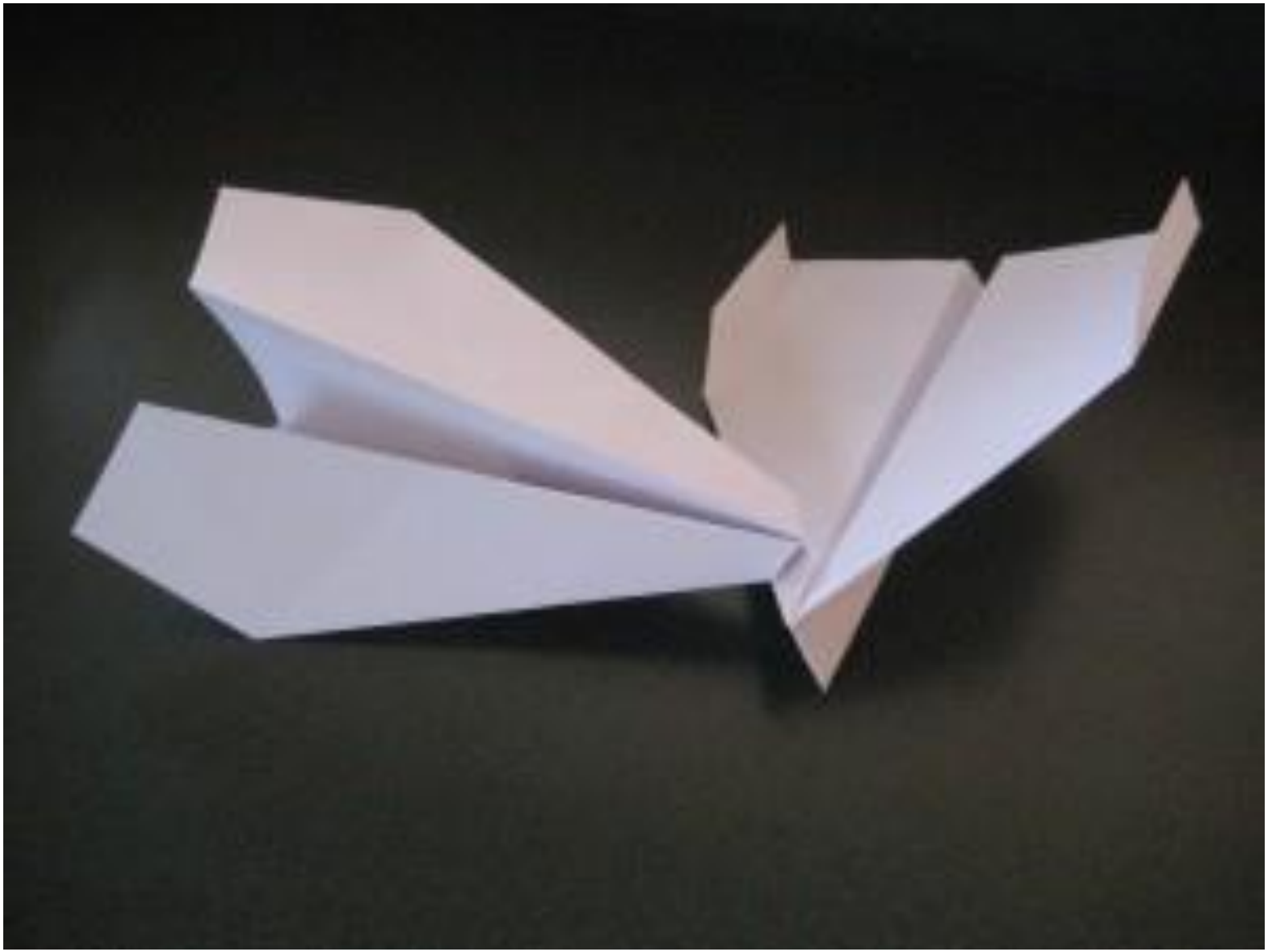




(yes, it is a paper plane)

The idea of Quality

The Egyptians already understood the idea of quality: trough **beauty**

Beauty draws humanity, and adds value to our lives (11,000 years ago)

Also through **functionality**

Functional quality of great engineering, **measurable**

The 5,000-year-old Great Pyramids are still standing, aren't they?

Aboriginal art, 5,000 B.C., Australian native tribes

The Stonehenge, 3,000 BC, Wiltshire, UK

Kaṇḍāriyā Mahādeva, 1,017 DC , Khajuraho, India

Buddhist Stupa Boudhanath, 1979, Katmandu, Nepal

What is **Quality**?

The Oxford Dictionary

quality *noun*
/ˈkwɑləʈi/
(pl. qualities)
(1) [uncountable, countable] **the standard of something** when it is **compared** to other things like it; **how good or bad** something is

- *to **be of good/poor/top quality***
- *materials of a **high quality***
- *high-quality materials*
- *a decline in water quality*
- *When costs are cut, product quality suffers.*
- *Their **quality of life** improved dramatically when they moved to North Carolina.*

(2) [uncountable] **a high standard**
synonym excellence

- *contemporary writers **of quality***
- *We aim to provide quality at reasonable prices.*
- *Get it right, even if it takes time; it's quality, not quantity, that matters.*

The Oxford Dictionary

quality *noun*
/ˈkwɑləʈi/
(pl. qualities)
(3) [countable] a thing that is **part of a person's character**, especially **something good**

- ***personal qualities*** *such as honesty and generosity*
- *to have* ***leadership qualities***
- *She has all the qualities of a good teacher.*
- *It's hard to find people with the right qualities for the job.*

(4) [countable, uncountable] a **feature of something**, especially one that makes it different from something else

- *the* ***special quality*** *of light and shade in her paintings*
- *His voice has a* ***rich, melodic quality****.*

Formal Definition: ISO 9001:2015

ISO 9001:2015 specifies requirements for a **quality management system** when an organization:

a) needs to demonstrate its **ability to consistently provide products and services** that **meet customer** and applicable statutory and regulatory **requirements**, and

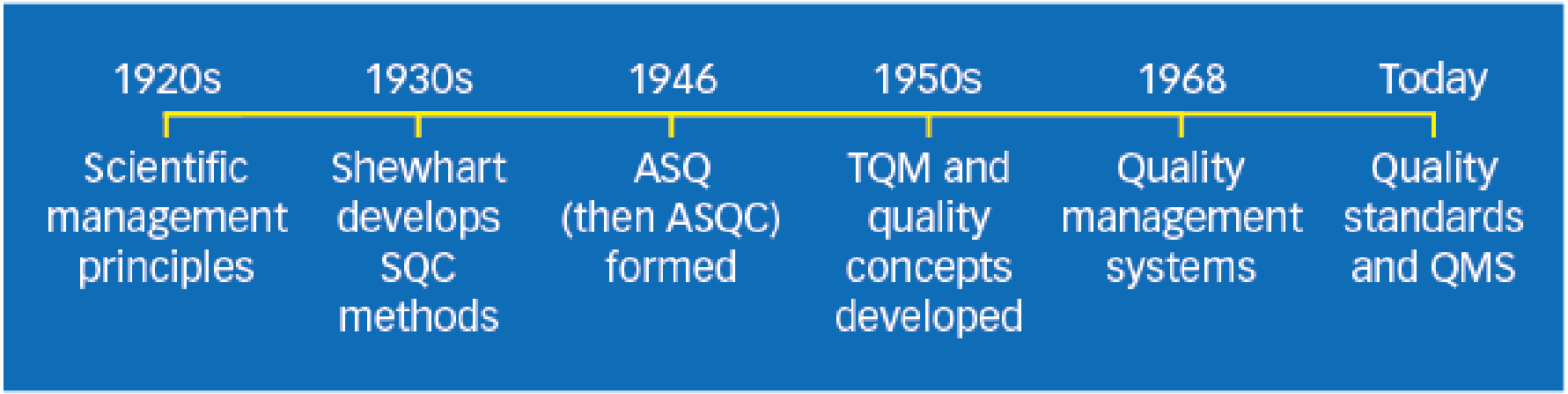
b) aims to **enhance customer satisfaction** through the effective application of the system, including processes for improvement of the system and the **assurance of conformity to customer** and applicable statutory and regulatory **requirements**.

Quality Dimensions

Performance:
Will the product/service do the intended job?
Reliability:
How often does the product/service fail?
Durability:
How long does the product/service last?
Serviceability:
How easy to repair the product / to solve the problems in service?
Aesthetics:
What does the product/service look/smell/sound/feel like?
Features:
What does the product do/ service give?
Perceived Quality:
What is the reputation of the company or its products/services?
Conformance to Standards:
Is the product/service made exactly as the designer/standard intended?

Area	Examples
Airlines	On-time, comfortable, low-cost service
Health Care	Correct diagnosis, minimum wait time, lower cost, security
Food Services	Good product, fast delivery, good environment
Postal Services	fast delivery, correct delivery, cost containment
Academia	Proper preparation for future, on-time knowledge delivery
Consumer Products	Properly made, defect-free, cost effective
Insurance	Payoff on time, reasonable cost
Military	Rapid deployment, decreased wages, no graft
Automotive	Defect-free
Communications	Clearer, faster, cheaper service

Timeline


1920s
Scientific management principles
1930s
Shewhart develops SQC methods
1946
ASQ (then ASQC) formed
1950s
TQM and quality concepts developed
1968
Quality management systems
Today
Quality standards and QMS

Gurus

Carl Friedrich Gauss (1777–1855)

The letter sigma (σ) (uppercase Σ), as a measurement standard, can be traced back to Carl Friedrich Gauss, who introduced the concept of the “normal curve.”

Henry Ford (1863–1947)

Henry Ford defined the Lean concept in one sentence: “We will not put into our establishment anything that is useless.” In 1913 he introduced interchangeable parts with standard work and moving conveyors to create what he called “flow production.” Thus “waste” elimination and “speed” became hallmarks of Lean production.

Philip B. Crosby (1926–2001)
Philip B. Crosby entered the quality world in 1952, after his military service in Korea. In the nearly five decades that followed, he became widely renowned in business circles as a guru of quality management. He stressed the importance of "doing it right the first time." Crosby is perhaps best known for promoting a standard of excellence based on nothing—the concept **of zero defects** (ZD).

Walter A. Shewhart (1891–1967)

Six Sigma, as a measurement standard for variation in processes, can be traced back to the 1920s when Walter Shewhart showed how three sigma from the mean is the point where a process requires correction and, at six sigma from the mean, the process runs at 3.4 defects per million (DPM).

W. Edwards Deming (1900–1993)

In 1942, along with Walter Shewhart, he crafted the foundation for statistical quality control. This gave the United States a valuable edge during the war.

Five years after the war, in June 1950, Deming traveled to Tokyo to teach statistical methods at the behest of the Union of Japanese Scientists and Engineers (JUSE). Japan soon became the world leader in quality, leaving the United States far behind.

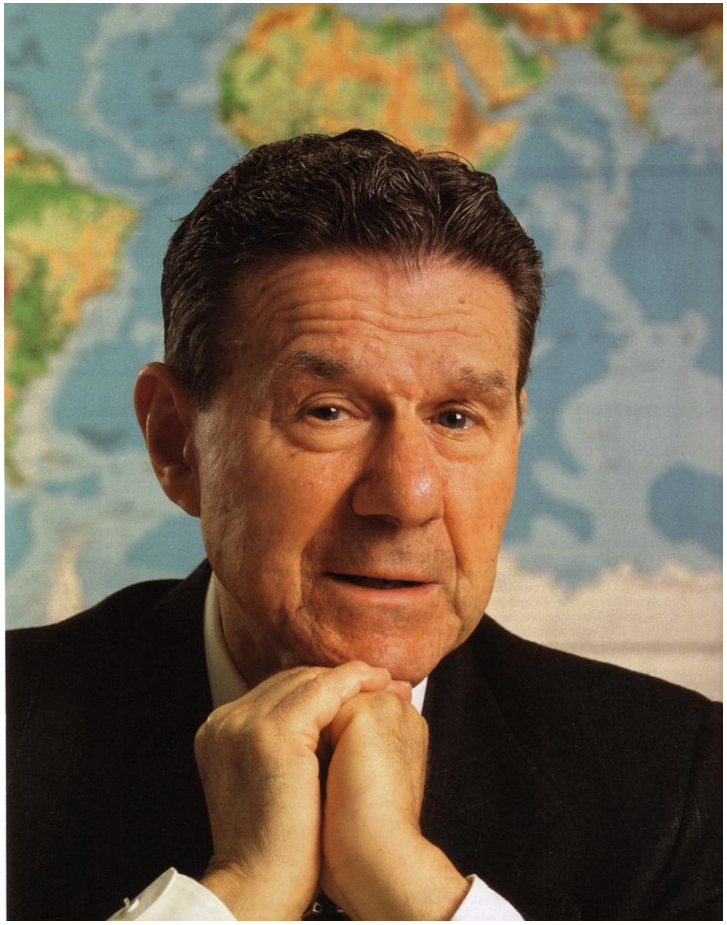
Joseph M. Juran (1904–2008)

Shortly after W. Edwards Deming's visit to Japan, Juran also made visits to Japan to share his knowledge of quality control. They influenced Japanese business leaders to change the way they ran their organizations. From there, Japan became a quality and economic giant and the quality movement began to spread throughout the world.

- "In the USA, about a third of what we do consists of redoing."

Kaoru Ishikawa (1915–1989)

Kaoru Ishikawa is best known for the quality tool named after him: the Ishikawa diagram—also known as the fishbone or cause and effect diagram. As one of the seven basic quality tools, the diagram identifies many possible causes for an effect or a problem and it can be used to structure a brainstorming session.



Armand V. Feigenbaum (1922–2014)

coined the term "total quality control"—known today as total quality management (TQM). Using financial performance as an indicator of poor quality, Feigenbaum was one of the first engineers to speak the management's language. In 1937, he began his career with General Electric (GE) as an apprentice toolmaker and was promoted to the corporate executive in 1958.

Bill Smith (1929–1993): “Father of Six Sigma”

Credit for coining the term “Six Sigma” goes to a Motorola engineer named Bill Smith. graduated from the US Naval Academy in 1952 and studied at the University of Minnesota’s School of Management. In 1987, he joined Motorola, serving as vice president and senior quality assurance manager for the Land Mobile Products Sector. His new quality control process, named “Six Sigma,” generated billions of dollars for Motorola.

John Krafcik (1962–)

MIT researcher John Krafcik coined the term “Lean” under the auspices of the International Motor Vehicle Program (IMVP). The term first appeared in his 1988 article, “Triumph of the Lean Production System” when he was a research engineer with MIT. Later, he joined Ford Motor Company and after a ten-year executive stint at Hyundai, five of which he served as CEO, he has now joined TrueCar, the online auto pricing service as president.