45º COLÓQUIO DA QUALIDADE

APQ

QUALIDADE NA ERA DA TRANSFORMAÇÃO DIGITAL

11 DE NOVEMBRO 2021 | 09H30 - 18H30

PATROCINADORES

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Intelligent Quality for you Company

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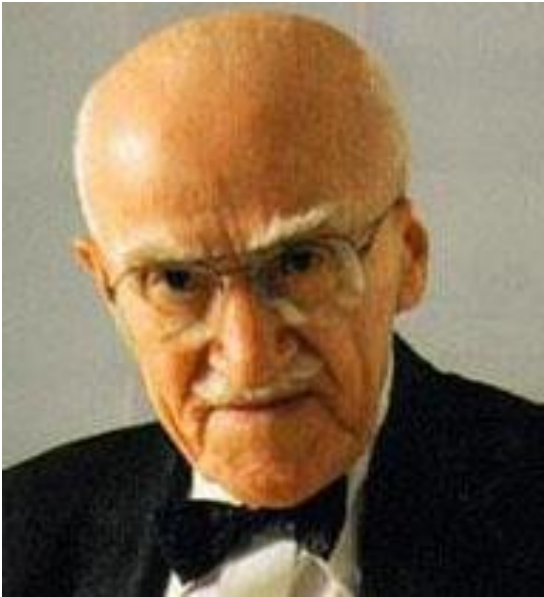SIEMENS
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Taking Charge of Quality Direction in a Time of Turbulent Disruption
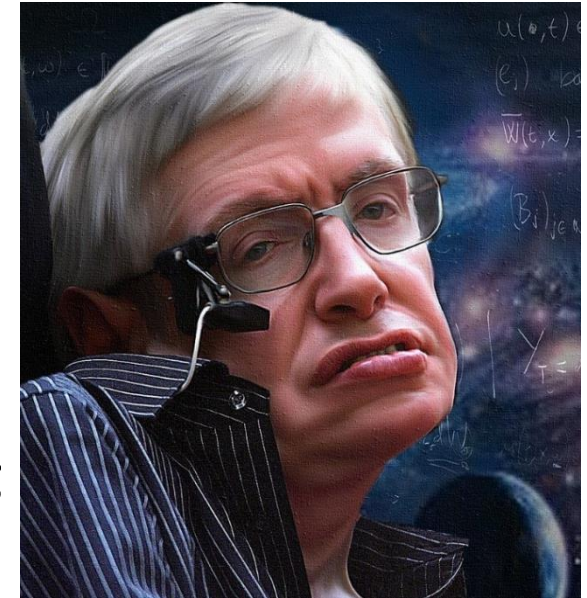
Dr. Gregory H. Watson

Chairman, Business Excellence Solutions, Ltd.

What is the issue of the 21st Century?

Joseph M. Juran
(1904-2008)

Stephen W. Hawking
(1942-2018)

Joseph M. Juran commented in 1997:
"The next century will be the Century of Quality!"

Stephen W. Hawking commented in 1997:
"The 21st Century will be the Century of Complexity!"

Influences creating quality turbulance:

Digitalization Disruption:

Big Data, the Internet of Things (IoT), digital sensors, robotic control systems, 5G, Cloud, AI, ML, ANN, and multi-variate statistics have combined to disrupt the way we manage with data to create value in organizations. These digital methods, in combination with collaborative communications, have disrupted our businesses.

Environmental Chaos:

Global heating has created systemic consequences in terms of extreme weather events, drought, and food shortages, with critical health implications for people. Human activities have polluted our air and water which endangered the viability of our biosphere. Also, human activities have not responded to political promises aimed at reducing and controlling their negative effects. Things are getting worse, not better.

Transforming through Quality 4.0:

"**Quality 4.0 is *an era of exceptional disruption* to the practice of quality management in all of the dimensions of its application. Expanding global challenges, shifting organizational priorities, and rapidly expanding technological capabilities are driving an acceleration of the changes that were already accelerating over the prior decade.**"

International Academy for Quality, "Statement on Quality 4.0: Defining Challenges for its Incorporation and Deployment," 24 June 2021 (International Academy for Quality (iaquality.org)).
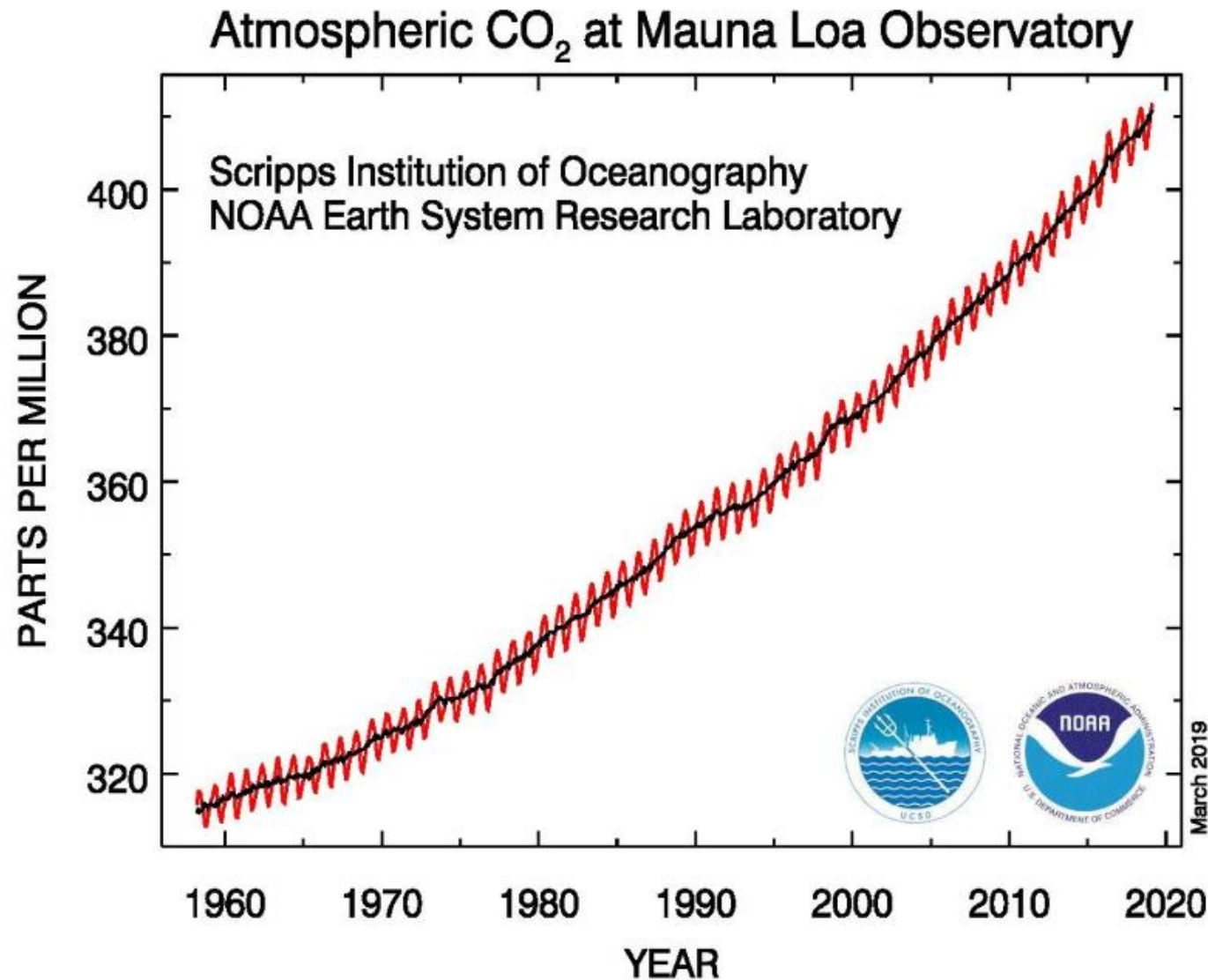
"**Quality 4.0 is [an era of disruption which is characterized by] the *leveraging of technology with people to improve the quality of an organization*, its products, its services, and the outcomes it creates.**" [additions made by G. H. Watson]

Chartered Quality Institute, "Defining Quality 4.0," *Quality World*, Summer 2021, pp. 25-31.

"**In a truly *macroeconomic sense quality must become an action-oriented approach* where the "persistent pursuit of goodness is coupled tightly with the relentless avoidance of badness" for the mutual benefit of humanity and the biosphere.**"

Pedro Saraiva and Gregory H. Watson (2021), "Macro-Quality Emerges from Quality 4.0," *The International Journal of Quality and Reliability Management*, submitted.

The Earth's environmental is threatened:

Atmospheric CO_2 at Mauna Loa Observatory

Scripps Institution of Oceanography
NOAA Earth System Research Laboratory

PARTS PER MILLION

400
380
360
340
320

March 2019

1960   1970   1980   1990   2000   2010   2020

YEAR

Good intentions, best efforts, and political promises have not decreased the curve of humanity's expanding CO_2 contributions to the Earth's atmosphere.

**Behavioral change and an action-orientation are required to halt and reverse this trend.**

Hope is not enough!

IAQ: Revitalizing the Quality Manifesto:

- **Deepen our art and science:** deepening the profound knowledge of quality sciences and widening the art of its application into all spheres of endeavor for the benefit of humanity.

- **Do no harm:** embedding the idea that not causing harm and doing good for society and the ecology of the planet are not limiting conditions of quality applications but are integral to framing improvement objectives at the highest levels.

- **Extend our scope:** extending the application of quality to all geographies, sectors, functional domains, as well as supporting smaller enterprises;

- **Go beyond business:** developing beyond major corporate applications to cause intense shifts in management of education, health care, environment, and government.

- **Serve our customers:** emboldening all organizational leaders to forever commit to the precedence of satisfying the needs of their customers-patients-students-citizens as their principal objective.

- **Build strategy the quality way:** sensitizing managers to the way vision and objectives must be established, not only to avoid an organization's internal weaknesses and vulnerabilities and assure harmony with strengths and opportunities, but also in service to all of its stakeholders.

- **Involve everyone:** stimulating the universal involvement of all individuals in an organization, creating ownership and capabilities for assuring the quality of their own work and in making improvements endlessly.

- **Create trust and happiness:** encouraging organizations to create an environment wherein all employees gain security through their experience of prosperity, happiness, trust, and inner confidence through their rising abilities and self-respect.

- **Bring data into daily conversation:** rendering, in an age of data profusion, everyone from board members to frontline associates skillful in generating and interpreting data for applications in control, improvement, and daily conversation.

- **Embrace the new technologies:** weaving quality seamlessly into emerging digital, biological, materials and other advanced technologies.

The Ishikawa model of Total Quality:

A systems perspective of quality-related activities:
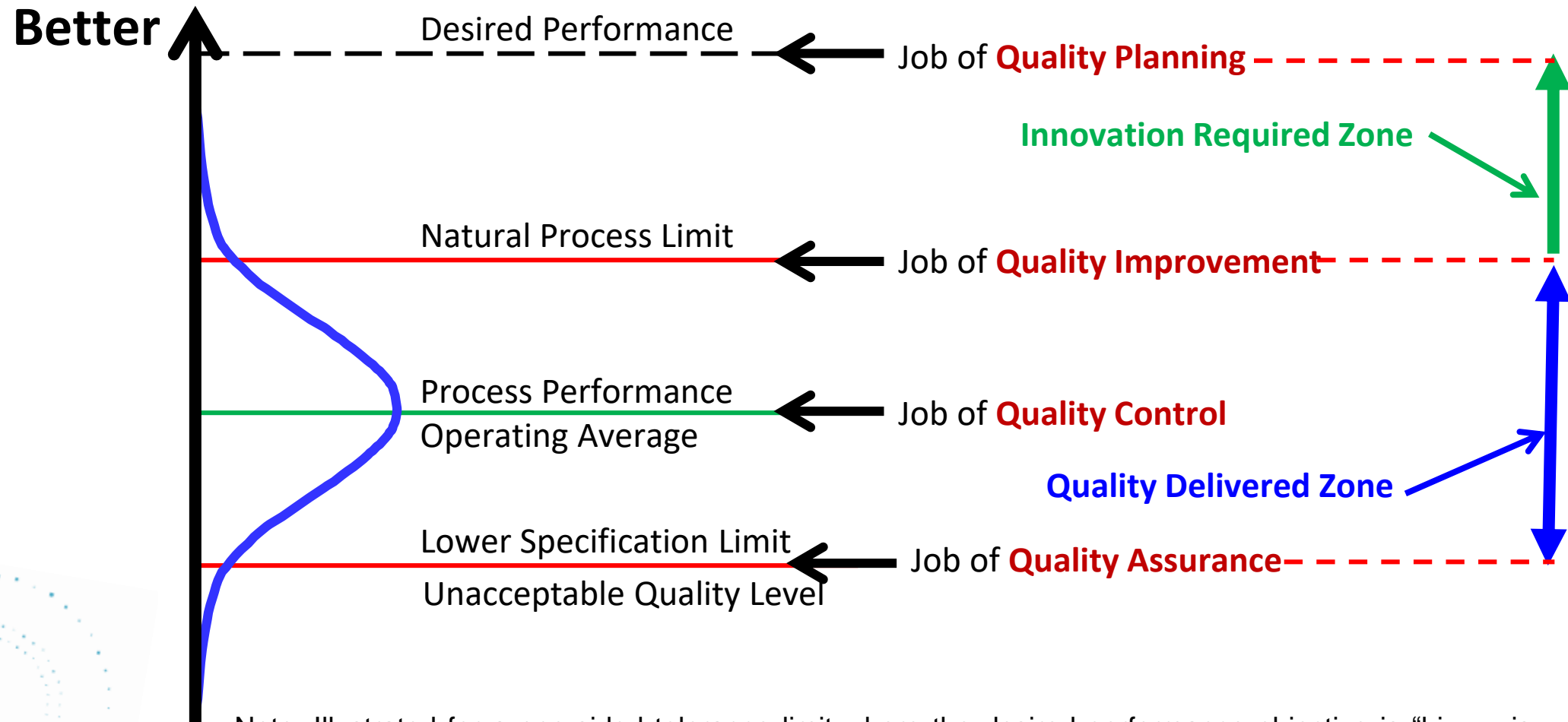
Note: Illustrated for a one-sided tolerance limit where the desired performance objective is "bigger is better" – higher performance above the lower tolerance limit is desirable.

The Practice of Quality Management:

A Gemba-1 approach to "Managing for Quality"

A systems approach to quality management:

Quality Assurance +

Quality Control +

Quality Improvement =
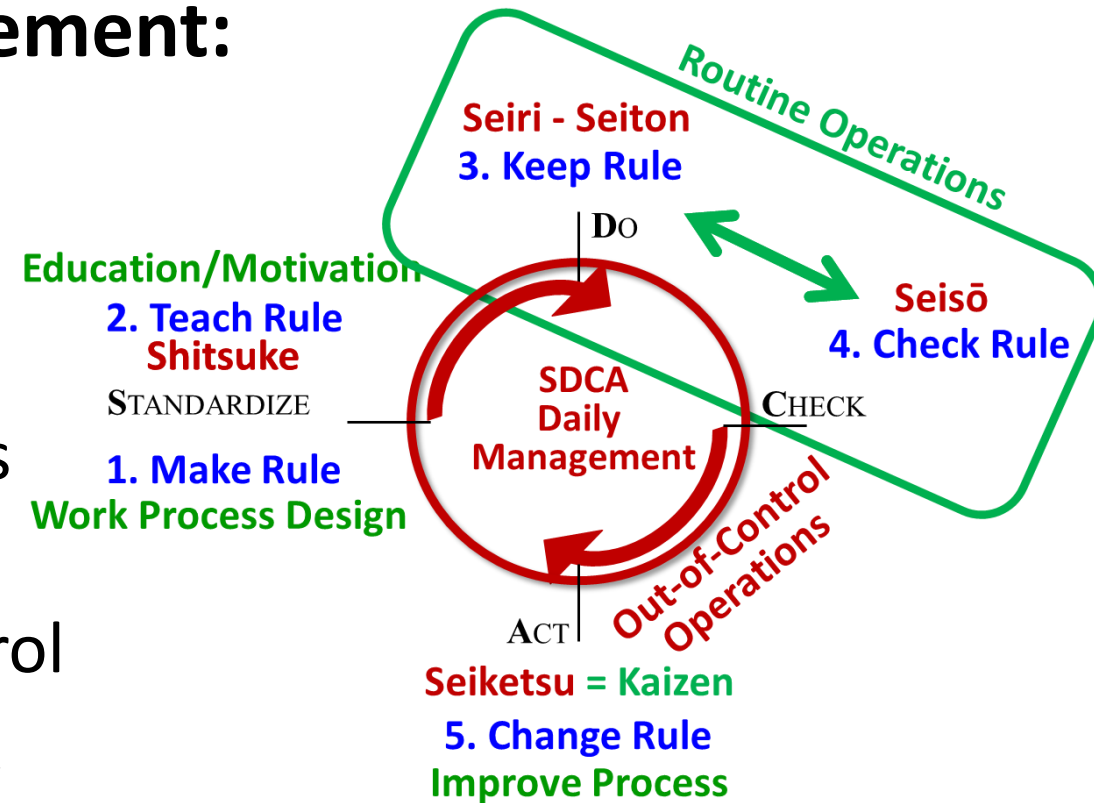
Quality Management

This approach optimizes the investment already made in the system development.

Practicalities of Macro-Quality – 1:

Impact of Maintenance and Improvement:

Focus on:

- Setting standards for work
- Teaching fundamentals of working
- Performing work according to standards
- Using process measurement for control
- Holding the gains through process control
- Assuring performance of standard work
- Continuously improving cost and efficiency
- Delivering quality through service

Job #1: Deliver the Current Capabilities

The Practice of Quality Development:

A Gemba-2 approach to "Managing for Quality"

Forging the path to the future of quality:

Quality Planning +

Breakthrough Improvement +

**Quality by Design =**

Quality Development

This is the process for creating differential quality through new investments.

Practicalities of Macro-Quality – 2:

Impact on Innovation and Breakthrough:

Focus on:

- Developing new products
- Entering new markets
- Integrating advanced technologies
- Future-proofing daily management
- Managing continual business improvement
- Assuring sustainability of the firm
- Strengthening organizational culture
- Achieving strategic plans and objectives
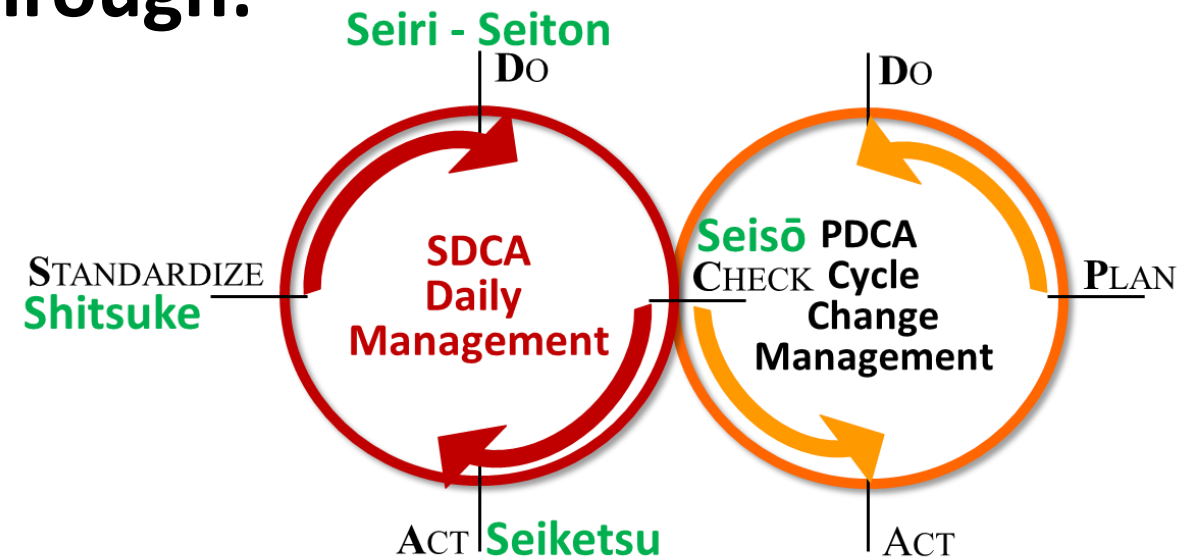
Job #2: Deliver the Future Capabilities

Designing Leadership through Quality:

A Gemba-3 approach to "Managing for Quality"

Managerial engineering of the business system:

Quality Management +

Quality Development +

**Quality Culture =**

Leadership through Quality

This is the process for assuring long-term sustainability of profitable growth.

Practicalities of Macro-Quality – 3:

Impact on Globalization and Culture:

Focus on:

- Creating cultural consistency
- Developing external sensitivity
- Seeking long-term perspective
- Visioning the desired future state
- Assuring viablity of strategic vision
- Assigning resources to capture the desired future vision
- Collaborating with communities to assure quality for humanity
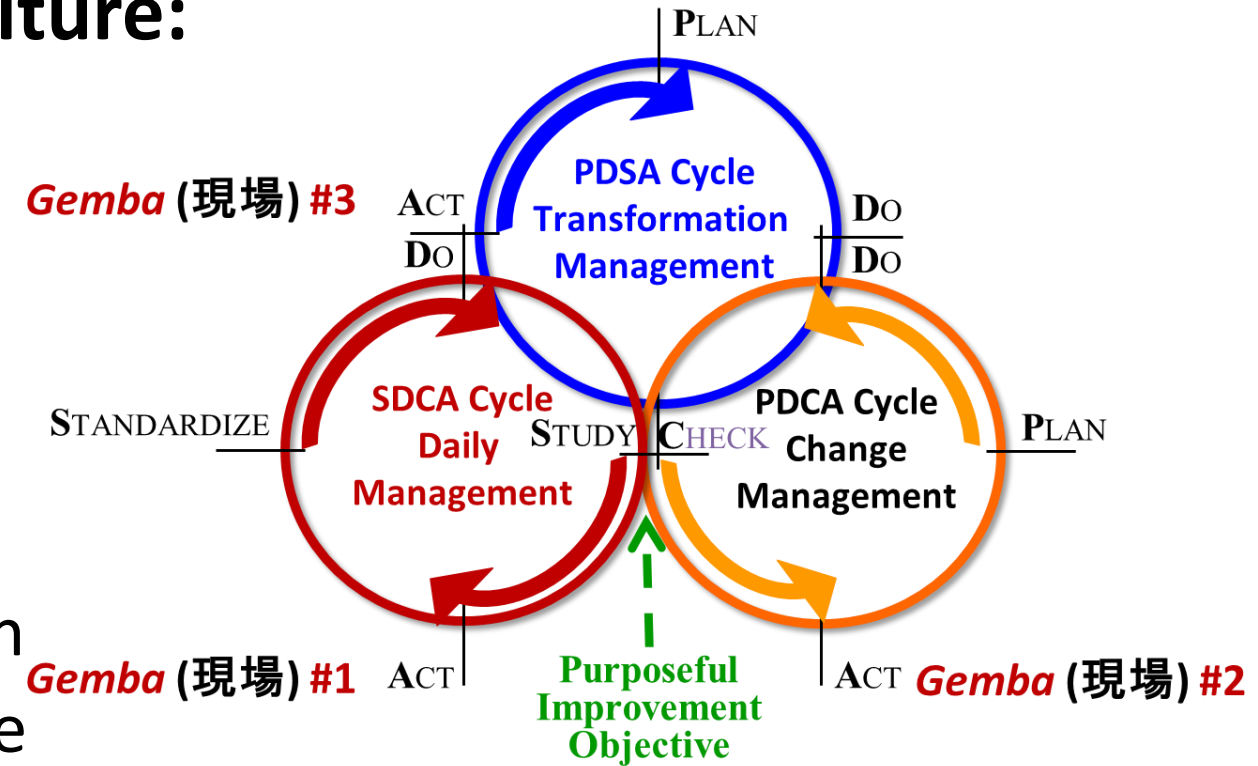
Job #3: Assure Agility that will Deliver Dynamic Capabilities

Sorting Quality Jobs in the 21st Century:

What will become the future job of quality professionals?

Quality professionals will not need to focus on managing maintenance of the daily managememt systems of large corporations – this will be a function that will be automated.

Quality professionals will not need to manage customer relationships as these circumstances will be managed by software robotic agents.

Quality professionals will not need to be concerned about the complex situations that create problems of these large organizations as these investigations will be the focus of artificial intelligence applications.

BUT, quality professionals will be required to aid the Small-to-Medium Sized Enterprises (SMEs) and to work in large organizations to design a more flawless operational system. Most of the activities that are now in the responsibility of quality professionals will continue to exist in the near term.

What must we change?

Quality Professionals in Large Organizations:

Quality professionals will need to become technology maestros that are competent in the new required skills of organizational design, systems thinking, data science, multi-variate statistical applications, as well as all relevant technologies related to digital transformations now occurring.

They must become the innovative thought leaders and trusted advisors.

Quality Professionals in Small-to-Medium-Sized Enterprises:

Quality professionals in the SMEs must become "renaissance people" who are competent in all of the disciplines of quality from both their technological and managerial perspectives. The quality disciplines of the past will converge into a unitary field of generalized maintenance and improvement rather than a tool-based smorgasbord of skills that are wielded by specialists.

What does this mean for you?

Macro-Quality will become important in BOTH applications!

- Two questions we must continually ask ourselves as we develop:
  - **"Why does quality exist as a profession?"**
  - **"What is the purpose of a quality professional?"**
- Quality was originally a supervisory task the work oversight process that assures workers do a good job in their assigned tasks.
- Quality expanded through specialized analytical skills and experience in methodologies to measure, test, analyze, and manage objective functions for delivering requirements to customers in products and services.
- However, quality has an ethical or moral dimension which implies that we "deliver what ought to be" or "goodness" for intended recipients while avoiding any "badness" effect on their way of living – this benefit should be delivered to all humanity! No matter the size of organization we serve.
- **Quality must extend to embrace all of humanity globally.**

"… one knows from daily life that one exists for other people."

- Albert Einstein

Muito obrigado!

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