

Quality: past, present and future



*“Appreciation and remembrance
are two vital tools that can
advance our progress in life.”*

**Wisdom Kwashie Mensah,
Inspirational speaker and author**

*“Yesterday is gone. Tomorrow
has not yet come. We have
only today. Let us begin.”*

Mother Teresa

2019 is a significant year for the CQI: we are delighted to be celebrating our milestone centenary as well as 100 years of quality.

Having already proudly told our story in *The History of the CQI* (available to download from our website), we now have another, more important, story to tell about our profession's invaluable role in the past, present and future.

Back in 1919, the CQI was formed by weapons inspectors to resolve the reliability problems we experienced with WW1 munitions. The main quality method at the time was control rather than assurance, so we expected to encounter issues with products, and those issues were rife.

A hundred years on, product quality has become paramount, so too have quality professionals with the right know-how and

confidence. We can now design systems that not only govern but also assure quality of service. What's more, the profession has driven world progress and transformed the scope of quality into an organisation-wide responsibility.

Our discipline and the experts who work within it are becoming even more important to both business and society. As leader of the global quality profession, the CQI is excited to be part of that future and instrumental in helping to shape it.

We would like to thank Catalyst Consulting for their support in putting this booklet together.

Estelle Clark
Executive Director – Policy
CQI

This look at the past, present and future of quality doesn't claim to be exhaustive, but addresses the approaches and concepts that have shaped the way we work and inspired our thinking, as well as the trends that we're currently observing.

It seems that the focus of quality has broadened dramatically, from inspecting the quality of a finished product, to managing the impact that an organisation has on the whole world around it. At the same time, quality professionals are also now focusing in on tiny details, even paying attention to the structures in the brain that shape our responses to change, and how this

knowledge can help organisations function better. What an exciting time to be a quality professional.

The legacy of gurus and advancements from the past are clearly evident in our current activities, highlighting the importance our profession places on learning and building on best practice. These legacies and advancements have also provided a springboard for adapting and innovating, so that we can shape a quality future for the next 100 years and beyond.

Jo Dowdall and Martin Brenig-Jones,
Catalyst Consulting

We've come a long way together...



Quality has helped drive great progress through quality control and quality assurance, from corner shop to supermarket.



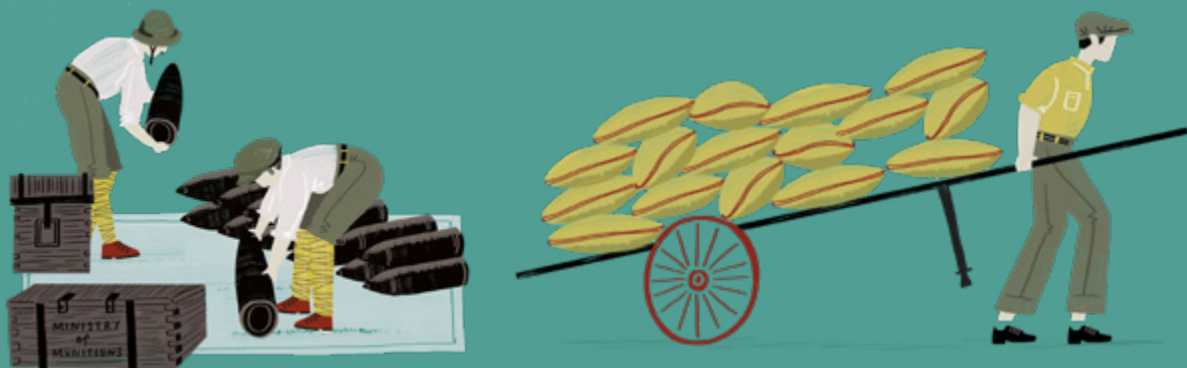
All good progress that has happened in the last 100 years has happened because of quality. It's a bold statement, but true. The methodologies, standards, principles, tools and techniques established to keep us safe, drive consistency, motivate us and help us measure, understand, improve and innovate have played an essential part in getting us where we are today.

Accelerating technological advancements, increasing expectations and the ability to

connect and communicate more easily and immediately than ever, make this an exciting time to be a quality professional. Our world has changed radically in the century since the CQI was established, and it continues to do so. But what good will quality be in the future? Here we consider the role that quality will play in shaping the next 100 years, current applications and trends in quality, and the developments that inspired them and brought us to this point.

QUALITY: PAST, PRESENT & FUTURE

QUALITY PAST



Today's quality practices and ideologies have evolved from those used by quality professionals (or inspectors) in the past, to adapt to and support a constantly changing world. Looking at the history of quality management highlights how the way we work, and the way we think about quality, has changed – but it also shows how the profession has responded and developed, indicating that it will continue to do so for the next 100 years and beyond.

It was the job of Ford Motor inspectors to check the quality of new cars on the world's first assembly line.



Focus on the finished product

The term 'the Age of Inspection' is used to describe the ethos of quality 100 years ago. Henry Ford had developed the first assembly line in 1913, and mass production had replaced 'craftsmanship' as the way the work was done. Now that components were being bought in to

organisations rather than being made in-house, inspection techniques were used to ensure quality. The inspector's role was to decide whether to accept or reject products, and as inspectors got busier, standards and training were introduced to support their testing and measurement practices.

3700%

increase in the CQI's
membership since 1919

The CQI was formed in 1919 – as the Technical Inspection Association – by weapons inspectors from the Ministry of Munitions, who wanted to develop engineering and inspection practices. A hundred

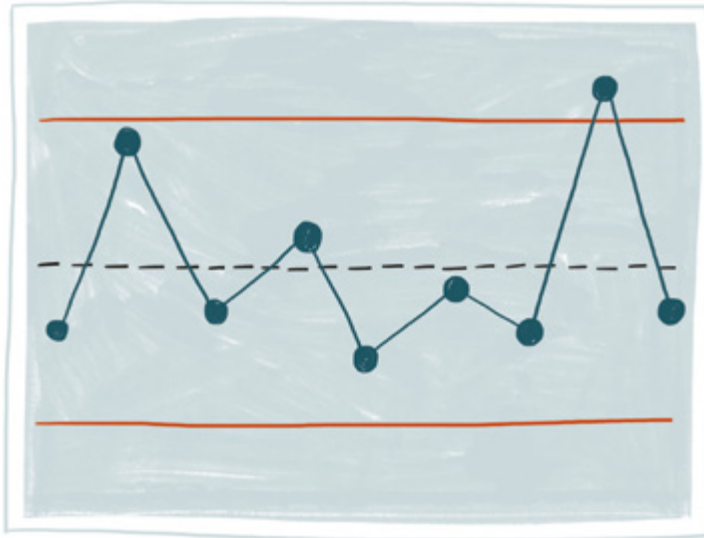
years later, the CQI continues to support professionals all over the world, from every sector, to address governance, assurance and improvement requirements. Its membership has increased by 3700% since its formation.



Weapons inspectors from the Ministry of Munitions formed the Technical Inspection Association (TIA) in 1919



Developing a process focus

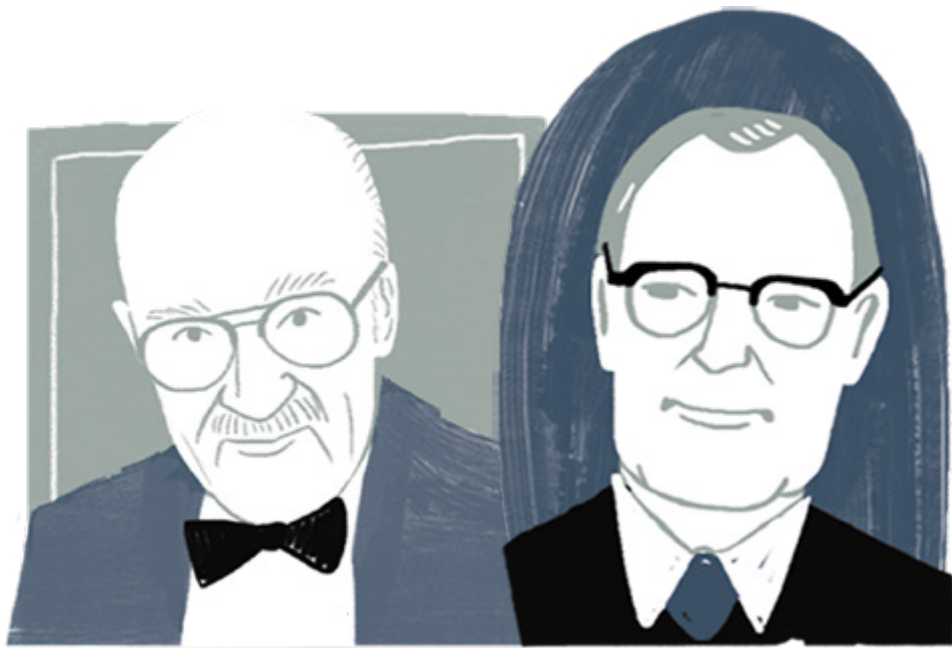


The control chart is a graphic quality tool from the 1920s used to monitor how a process changes over time.

The use of statistical methods to analyse process performance supported inspection and measurement. This marked the beginning of a shift in focus. Whereas inspectors concentrated on the quality of finished products, process control techniques were prioritising the processes that delivered them. Walter Shewhart, working in the engineering department of the Western Electric Company, highlighted

the significance of variation in manufacturing processes, proposing that responding to ‘chance cause’ (common cause/natural cause variation) had the effect of increasing variation and reducing quality. His theory – what we’d now call a control chart – was initially sketched out onto an internal memo. It shaped the Statistical Process Control techniques we use to understand and manage process performance today.

Shewhart’s work influenced, among others, W Edwards Deming, and the Age of Inspection gave way to the Age of Quality Management. During the Second World War, Shewhart and Deming, alongside Joseph Juran and other contemporaries, worked to apply statistical techniques to control materials and manufactured products. Deming developed firm beliefs about the importance of managers in quality – highlighting their role in removing barriers to continuous improvement and establishing a sound system of processes.



Joseph Juran and W Edwards Deming were the kings of quality. They helped to create a shift in attitudes and encouraged organisation-wide commitment to quality.

The human side of quality

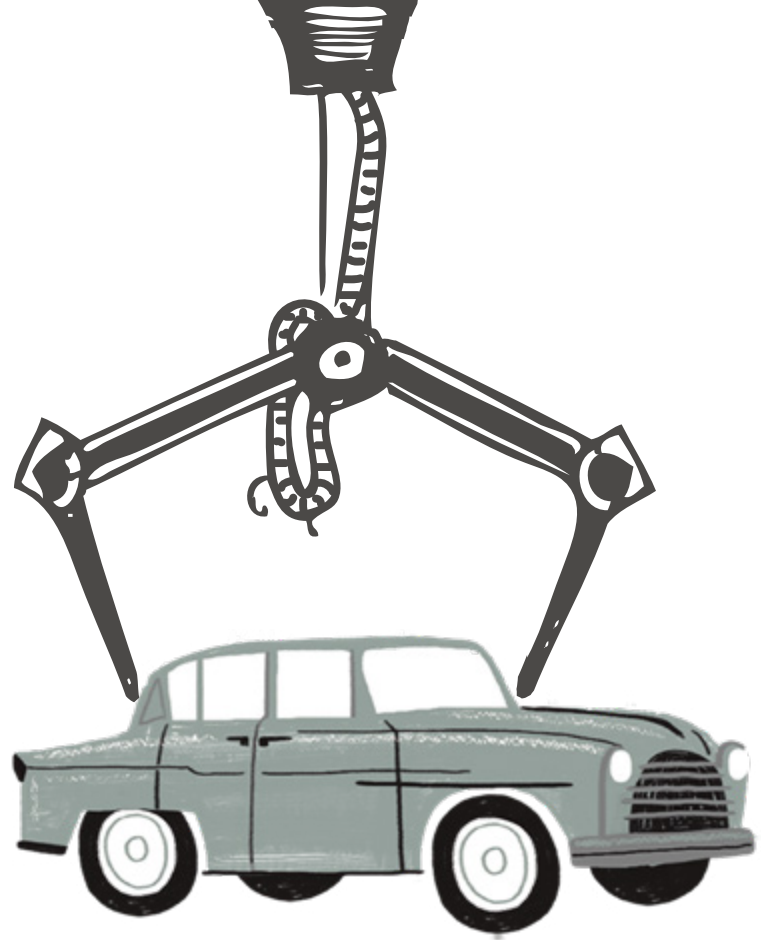
And now the 'human' side of quality came into focus. Deming and Juran placed importance on the education and training of managers, and the value of a long-term commitment to quality. The engagement of the whole workforce

in continuous improvement was a key consideration. Both believed that people at every level in an organisation have a right to feel pride in their work and a vital contribution to make.

Meanwhile in Japan...

It was the Japanese who paid most attention to these approaches. After the war Deming and Juran were invited to work with the Union of Japanese Scientists and Engineers (JUSE) to share statistical techniques and management theories. They had a sensational impact, supporting Japan's transformation to economic powerhouse status, and giving Deming the nickname 'the American who taught the Japanese about quality'.

The Deming Prize was established in Japan in 1951 in Deming's honour, to recognise excellence in quality management. It is the longest-running award of its type and is still shown on Japanese TV each year. Among its list of esteemed winners is Toyota Motor Corporation – winner of the prize in 1965. The Toyota system (now referred to as the Toyota Production System or the Toyota Way) had been developing over



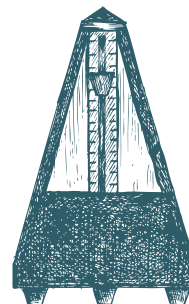
Japan pioneered Juran and Deming's work and by the 1970s the Toyota Production system had become a gold standard.

several years, with emphasis on waste identification/elimination, takt time, standardised work and inventory reduction. Here was real evidence of a shared responsibility for quality (management, workers and suppliers included) and its impact on improving performance and reducing costs. The approaches established set standards that the rest of the world would want to follow.

Taiichi Ohno launched the Just in Time system at Toyota in 1938 - concepts of eliminating waste, Takt time, standardised work charts and inventory developed.



MANUFACTURING
TIME TO PRODUCE

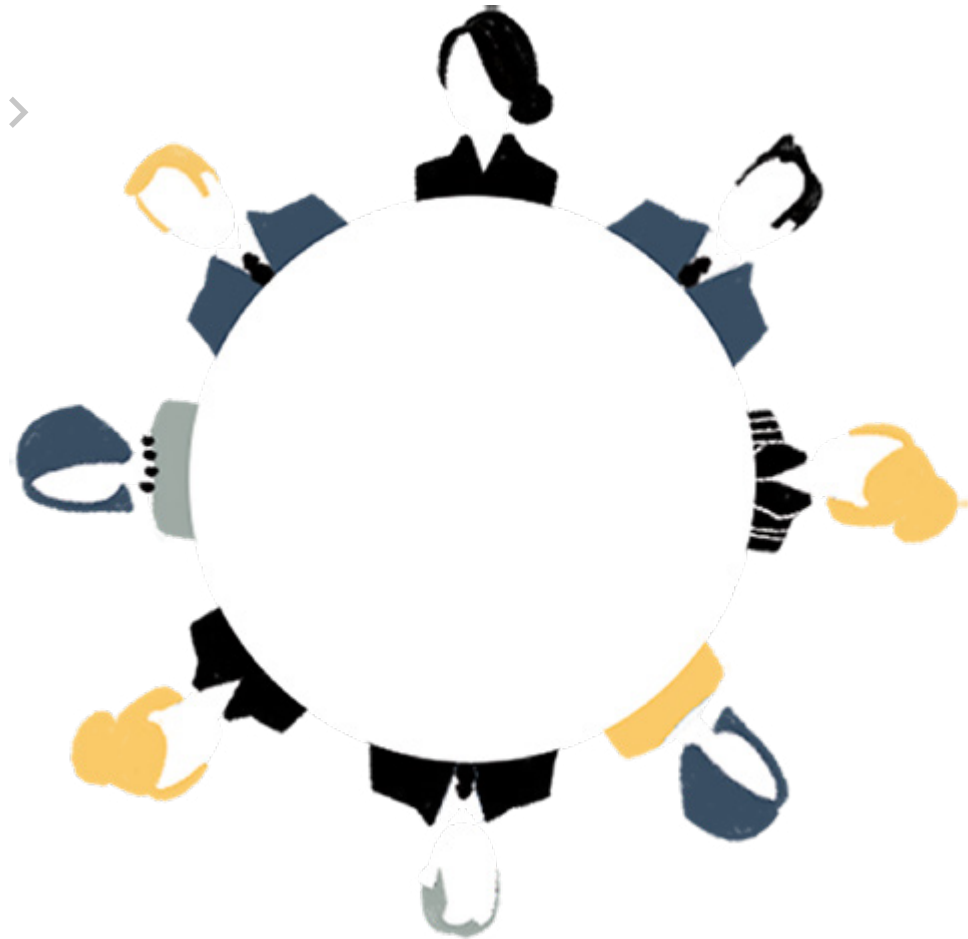


CUSTOMER DEMAND
RATE OF SALES



Everyone has a role to play in Total Quality Management (TQM)

A Quality Circle is a TQM technique that involves employees in solving process operations problems.



By the 1970s, the US and Europe were finding it difficult to compete with Japan in terms of cost and quality. It took the airing of a TV show to mobilise organisations to take action. The documentary *If Japan can...why can't we?* was shown by NBC in 1980 and highlighted the impact of quality. US companies such as General Motors, Ford Motor Company and Xerox responded by

adopting the quality practices they'd heard about. Providing training on aspects of quality and implementing Quality Circles became a focus, and importance was placed on engaging process operators as subject matter experts to make things better rather than blaming the workers when things went wrong. The ethos was described as Total Quality Control or Total Quality Management (TQM).



In 1984 Philip Crosby introduced the concept of a 'quality vaccination serum', which promotes a culture of quality based on certain crucial elements that need to be 'inserted' into an organisation.

Philip Crosby's easy-to-read book *Quality is free* was influential at this time. Crosby explained his Four Absolutes of Quality as: quality is defined as conformance to requirements; the system for causing quality is prevention, not appraisal; the performance standard must be zero defects; the measurement of quality is the price of nonconformance. Crosby went on to develop the idea of a Quality Vaccination Serum – a set of key “ingredients” that could ensure quality in an organisation.

The Total Quality Management movement that was now emerging emphasised the importance of customers. From a TQM perspective, quality is defined by customers' requirements, which should be clearly understood within the organisation, with products and services shaped to deliver to them. Tools and approaches advocated by the Japanese quality guru Dr Kaoru Ishikawa, such as the cause and effect analysis, were now being used to pinpoint problems in order to improve performance and increase customer satisfaction.



Crosby's zero defects philosophy frames quality management in terms of tangible, measurable results and focuses on prevention as opposed to inspection and cure.

The key to success?

At this time a number of comparative studies were carried out to understand how processes (chiefly production processes) differed, and what constituted best practice. John Krafcik, a researcher for MIT, visited hundreds of organisations in 20 different countries, including Toyota in Japan. Looking for a label to describe what he had found, he observed that the Toyota Production System needed less human effort to design products and services, created products with fewer defects, took less time, needed less inventory, required less investment for a given amount of production capacity and caused fewer employee injuries. Less of everything. He coined the

term 'Lean' to describe it. Krafcik's studies contributed to the book *The machine that changed the world* by Womack, Jones and Roos. This book defined the key principles that underpin Lean ways of working: understanding the customer and their perception of value; identifying and understanding the value stream; enabling the value to flow; letting the customer pull the value through the process according to their needs; and continuously pursuing perfection.

And it was difficulties in competing that inspired the development of Six Sigma. Bob Galvin, CEO of Motorola, had set a stretching goal of ten-fold improvement in five years,



The machine that changed the world, by Womack, Jones and Roos, introduced the systematic method now known as 'lean production' or 'lean manufacturing', which aims to highlight what adds value by reducing what does not.



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The DMAIC methodology, the core tool used to drive Lean Six Sigma projects, was developed in the 1980s.

and the Six Sigma approach was developed by engineers Bill Smith, Bob Galvin and others in pursuit of this goal.

Six Sigma provides an approach for improving processes, with importance placed on improving the capability of processes to deliver right-first-time, reliable outputs on a consistent basis. The approach places importance on reducing variation, and on using facts and data to understand performance. The DMAIC methodology (Define, Measure, Analyse, Improve, Control) provides a roadmap for problem solving, and creating sustainable improvements.

By the 1990s other organisations had adopted the approach and someone suggested to Jack Welch, CEO of General Electric, that he ought to give it a try. Welch was initially sceptical, viewing it as ‘just another

quality initiative’ or ‘flavour of the month’. However, when he agreed to pilot it and saw very real financial results – and other benefits – he drove the implementation of Six Sigma into all of the GE businesses, proving that the approach was not just beneficial to manufacturing processes or even ‘front-line’ processes, but to any type of process in any type of organisation.

The 2001 book *Leaning into Six Sigma* is notable because it introduced the concept of combining Lean and Six Sigma, and also because one of its co-authors, Barbara Wheat, is the first woman to make an appearance in this history of quality management. Combining both approaches has clear benefits – with Lean bringing a focus on the flow of work through the process and the ease of the process journey from A to B, and Six Sigma emphasising the importance of an effective process output, time after time.

Lean Six Sigma is now widely used as a process improvement methodology by organisations of all types, sizes and sectors. Design for Six Sigma (DFSS) emerged in the late 1990s to support the design of new processes, and the DMADV methodology (Define, Measure, Analyse, Design, Verify) was developed to support innovation and major changes.

The 1980s and 1990s marked another shift in focus, as the attention moved from processes and systems of processes towards ‘organisational’ systems and the quality of the entire enterprise.



The ISO management standards are adopted by organisations worldwide, ensuring their operations function effectively, safely and consistently, and in accordance with the latest guidance and legal requirements.

Quality of the organisation

In the US, President Ronald Reagan signed the Malcolm Baldrige National Quality Improvement Act in 1987 and created an award to promote excellence. In Japan the Shingo Prize for Excellence in Manufacturing was established in 1988 and in the same year in Europe the EFQM (European Foundation for Quality Management) was founded, and went on to develop the Business Excellence Model, now known as the EFQM Excellence Model. These models bring together all aspects of an organisation, including activities and performance results and outcomes. A holistic view is provided, facilitating an understanding of parts in relation to the whole, and the impacts and influences that components of an organisation have on others.

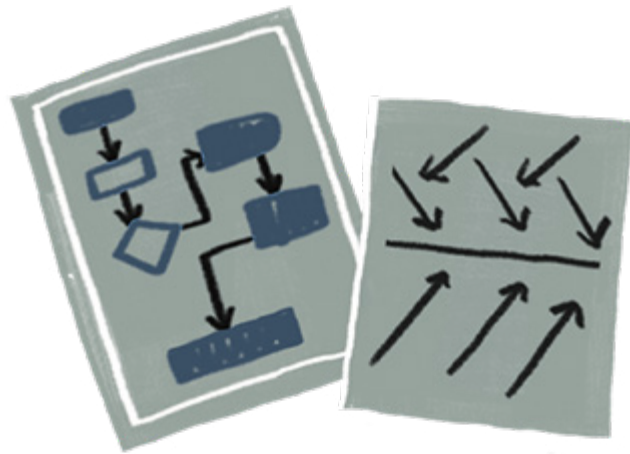
The ISO 9000 series of quality management standards was introduced at the same time (1987) to define internationally consistent standards. The ISO 9001 standard (one of the standards in the series) sets out the requirements for an effective quality management system. Organisations using the standard have a framework through which they may operate effectively, safely and consistently, and provide customers with reassurance of the same. ISO 9001 has been updated several times since its introduction, in conjunction with technical experts, to ensure that it continues to offer a robust model for quality management systems.

Change Management becomes a focus...

It's no co-incidence that the Change Management movement began to take shape at this time. Organisations were making changes of significant scope and scale, often with multiple projects running simultaneously, and realised the value of structured approaches to making change. John Kotter's 1996 book, *Leading change* was listed as one of the top 25 most influential business management books of all time by Time magazine in 2011.

In 1996 ISO developed a series of system standards for environmental management, to support all types of organisations to manage their environmental responsibilities, minimise negative environmental impacts and apply continuous improvement. Concern for the environment was not new, and organisations had already adopted a number of voluntary codes of conduct and environmental auditing schemes. The ISO 14001 series was born out of recognition that a standardised approach would add value. Shortly afterwards, the OHSAS 18001 standard was developed to bring the same consistency to health and safety practices.

Interestingly, it is said that it was the desire to espouse values, and really 'live and breathe' excellence and

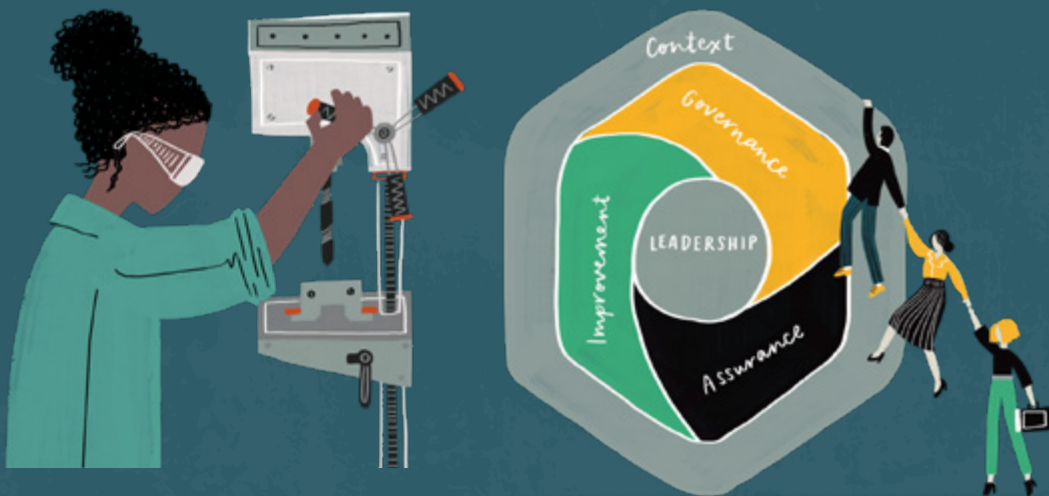


customer centricity in the world of software development, that led to the introduction of Agile. The Agile Manifesto was developed by a small group of people to find common ground among several different methodologies. "We are uncovering better ways of developing software by doing it and helping others to do it," they stated. "Through this work we have come to value individuals and interactions over processes and tools, working software over comprehensive documentation, customer collaboration over contract negotiation, responding to change over following a plan." With this thinking, the traditional 'waterfall' method of delivery of software in a single release (that may take several months), was replaced with a more rapid release of software with further releases every few weeks or days. This sounds a lot like continuous improvement!

Agile change management is a widely-used project management approach based on the assumption that circumstances change as the project develops.

QUALITY: PAST, PRESENT & FUTURE

QUALITY PRESENT



A blended approach

Today, quality professionals have the benefit of a rich heritage of methodologies to draw from, along with the theories of quality gurus to shape the way we think and work. The theory that advancement is built on previous advancements is exactly in the spirit of continuous improvement and the building on best practice that our profession advocates.

‘Taking the best of both’ was the proposition that brought Lean and Six Sigma together into Lean Six Sigma: the process improvement approach that delivers efficient processes as well as consistently good quality outputs that meet customers’ needs. Quality professionals are now blending this with wisdom propounded by Agile workers, e.g. by adopting Kanban techniques to keep project progress visible and flowing, while delivering benefits on an ‘early and continuous’ basis.



< The CQI's competency framework sets out the skills, knowledge, experience and behaviours that quality professionals need in governance, assurance and improvement – helping both individuals and organisations to be successful.

Other examples of blending include the development of integrated management systems to organisations, to incorporate quality management, environmental management and the management of health and safety into a single system.

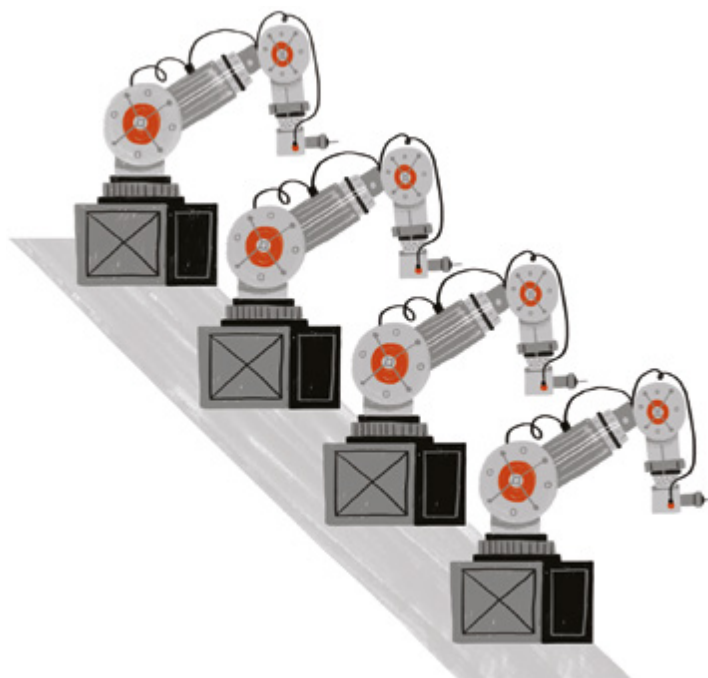
At the same time, the competencies required by quality professionals to support success have been 'blended' into a competency framework by the CQI. This addresses the knowledge, skills and behaviours required in relation to governance, assurance and improvement within the context of the quality professional's organisation and sector, and with emphasis on their leadership skills.



A new world...

We've seen the focal point of quality management broadening from product towards process, and from people towards organisations, the governance of enterprises and ultimately across society. Today's advanced quality professionals are now addressing all those aspects, based on the foundations and quality principles that have been developed over time and the application of numerous tools and techniques that can be 'blended' to suit all kinds of situations. After all, the way work gets done has changed fundamentally since the CQI began in 1919, and so should the way we deal with quality.

Let the robots do the dirty work?



One significant way that work continues to change is the rise automation and artificial intelligence (AI). Robotic Process Automation (RPA) is the name given to the development of software ‘robots’ to deliver our processes, incorporating the use of AI. An RPA system will ‘watch’ a process operator carry out particular tasks in an application’s interface, and then perform the tasks itself – with no errors, in high volume and at high speed. This releases process operators to undertake more value adding work, and more interesting work, elsewhere. This kind of thinking is not new – Taiichi Ohno of Toyota (1912-1990) wanted workers to address “tedious and boring tasks” so that they could be free to undertake value-adding activities.

There are overlaps between RPA and the AI world, where machines learn what to do. AI approaches incorporate re-writing in response to what they see and the environment they work within. AI can already, among other things, drive, recognise emotions in speech, handle insurance claims and beat humans at Texas Hold ’em poker. In response to fears over the ‘existential risk’ associated with AI, OpenAI was developed by Elon Musk of Tesla and others, with a mission to ensure that artificial general intelligence – highly autonomous systems that outperform humans at most economically valuable work – benefits all of humanity. The importance of quality governance and assurance in this sphere is unequivocal.

The advent of artificial intelligence raises questions about the future of work that will have an impact on the quality profession.



Quality in the eyes of the customer, and at their fingertips

The ethos of quality in the eyes of the customer is more relevant today than ever. The Agile movement has a clear focus on delivering customer value, stating that “our highest priority is to satisfy the customer through early and continuous delivery of valuable software”. Of course, it’s not just about software, as organisations recognise the value of Agile principles at organisation level, not just when it comes to ‘product’. We’re now talking about business agility: being responsive to customer demands and flexible enough to meet them, and doing so without compromising quality.

In Agile organisations delivering for customers is not about defining the list of deliverables up front and striving to provide them all together and in full. Rather it is focused on delivering ‘nuggets’ of value to customers early and often, and providing customers with an opportunity to refine and shape the next nugget. Ongoing collaboration with customers provides the opportunity to improve, innovate and ensure the deliverables really do add value.

Customers that pull

In addition to understanding customer value, Lean principles in action today feature an understanding of ‘pull’ – customer demand for services and products. Operations must be managed in sync with the rate of demand.

Producing in advance and stockpiling is unnecessary when a ‘pull’ system is operated – the customer pulls the value through the process when they need it, and in the quantity needed. The result is less inventory, less space, less waste and easier planning. In Toyota for example, the pull comes from customer demand in the form of a vehicle order. Closer to home, Netflix allows us to pull what we want to watch when we want to watch it, whereas traditional TV channels broadcasting to us ‘push’ their schedules, and Spotify allows



us to select particular tracks on demand, rather than buying and listening to an entire album.

Today’s customers have access to information about products and services at their fingertips – they can and do interact with organisations 24/7 and expect to do so across a range of different channels. In addition, they provide invited and uninvited feedback to organisations and to other audiences habitually. Take, for example, the 320 million monthly users of Twitter, the 430 million reviews that have been posted to TripAdvisor, or the million reviews submitted to Trustpilot every month. Reputations can be made or broken based on these reviews and how they are handled. Online Reputation Management (ORM) now features in the strategies of many organisations.

The importance of honesty



It is true that not all reviews are genuine, and that the online world promulgates unsubstantiated stories and standards that are practically impossible to achieve in real life. 'Fake news' has become a catchphrase, and the term 'post-truth' was added to the Oxford English Dictionary in 2016, describing circumstances where objective facts are less influential in shaping public opinion than appeals to emotion and personal belief.

Meanwhile the phenomenon of 'data journalism' has emerged to help us understand the facts about what's happening in our world. Seeking the truth about the world in numbers is not new, of course. "To measure is to know", said the 19th century physicist, mathematician and problem solver Lord Kelvin. "When you can measure what you

are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind." Seeking for more than meagre and unsatisfactory knowledge, modern day data guru Mona Chalabi says she wants to "take the numb out of numbers" and to bring transparency to the assumptions behind the statistics we see and hear.

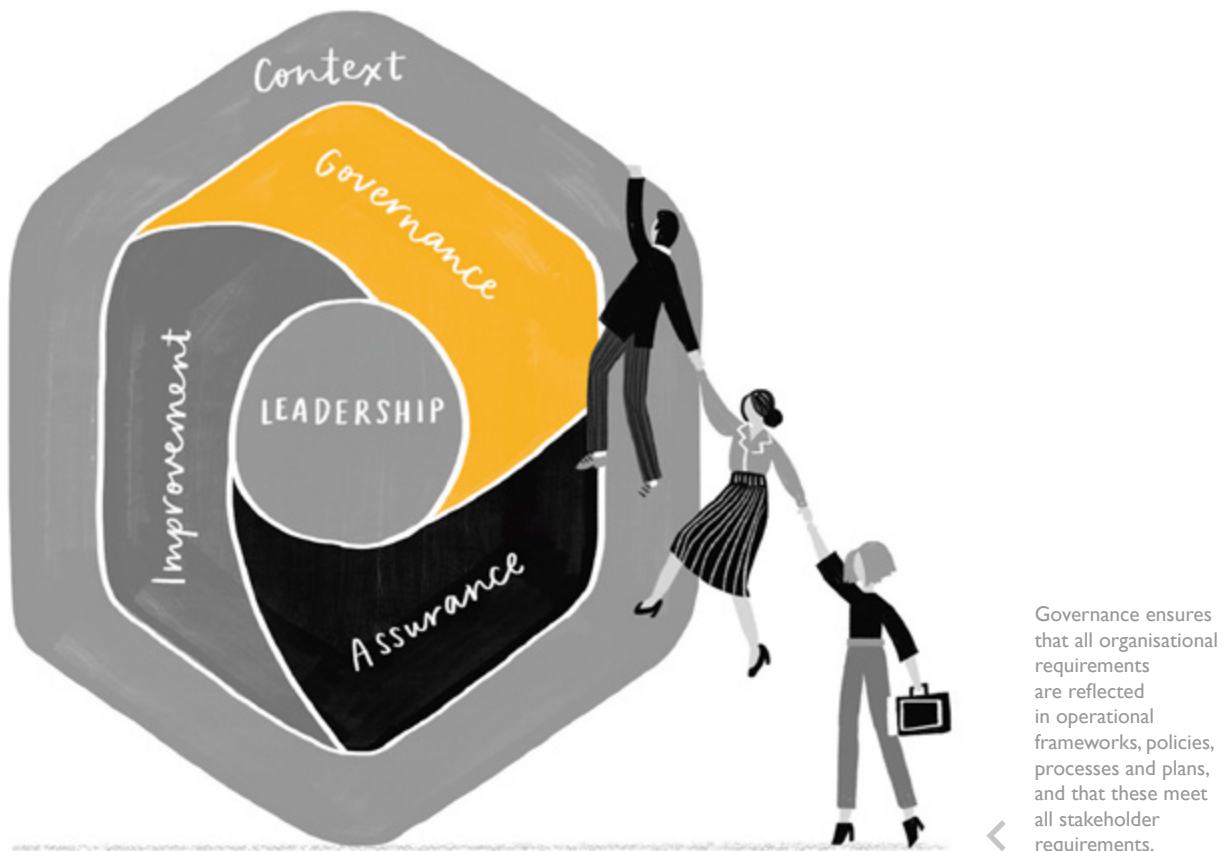
We can now measure performance and share performance information more easily than ever. Visual Management continues to play an important part in communicating and responding, facilitated by technology, but still done very effectively with a pencil and paper even in the most high-tech organisations.

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Fake news is a type of 'yellow journalism' (little or no legitimate well-researched news) or propaganda that consists of deliberate disinformation.

The rise of smart factories, big data, the Internet of things and AI have made transparency, accountability and ethical decision-making vital in quality management.



Compliance as well as innovation?



Effective governance is imperative, and the approach has evolved according to the changing world. For example, organisations now incorporate data governance into their methods to ensure that data is obtained, used and protected appropriately. They are focusing on gender issues to ensure boards

are representative and ensuring the workforce interest is represented. Climate change risk is also a key concern. The challenge is for a balance between short-term and long-term needs that supports agility and flexibility – a tension between compliance and innovation long familiar to quality professionals.

Open your eyes, look outside...



Toyota's founder, Sakichi Toyoda, was an early adopter of CSR. He designed his power loom to make life easier for the women who hand wove textiles.

2016 also saw 'woke' added to the Oxford English Dictionary to describe alertness to racial prejudice and other injustice in society, and awareness of what's going on in the community. This is something that the quality movement has been talking about for years. Leaders of Lean organisations are dedicated to adding value to their customers, to their society and to the economy, and they want to make the work 'easy' for their people. It is said that Sakichi Toyoda (1867-1930), founder of the Toyota group, developed the power loom because he wanted to improve life and conditions for the women of his village (including his mother) who were employed to weave textiles by hand.

The definition and adoption of responsible practices through Corporate Social Responsibility (CSR) approaches has grown to encourage organisations to apply clear ethics for accountability, establish ways

of working that reflect them, and be able to measure the impact of these on the societies in which they work. These societies include the ecological, economic and social entities an organisation interacts with and influences, and its supply chain. In January 2018 *Harvard Business Review* reported that among the largest 250 companies in the world, 92% produced a CSR report in 2015, whereas only 64% provided a report in 2005.

ISO 14001 is now the most widely used environmental management system standard, providing practical tools to support the development of a management system that is part of the strategic planning process of the organisation.

While there is focus now on the micro-environment of the organisation and the macro-societal environment, the quality movement has also begun to zoom in on tiny details.



Companies produced a CSR report in 2005



Companies produced a CSR report in 2015

And within the windmills of your mind

Neuroscience is being used increasingly as a means of understanding the impact of change on people, in their lives and in their work, and insights from this field are informing change management approaches. It is acknowledged that change is a constant, with major changes being made in organisations more frequently than ever before, and smaller changes being made almost continuously. In order to maintain

concentration and productivity during times of change, importance is placed on the impact of change and threat on people's ability to think and respond. In *Neuroscience for Organizational Change*, Hilary Scarlett highlights the value of “working with the brain, not despite it” to support performance and productivity. This can reduce negative impacts on mental health and wellbeing – a key present day concern.

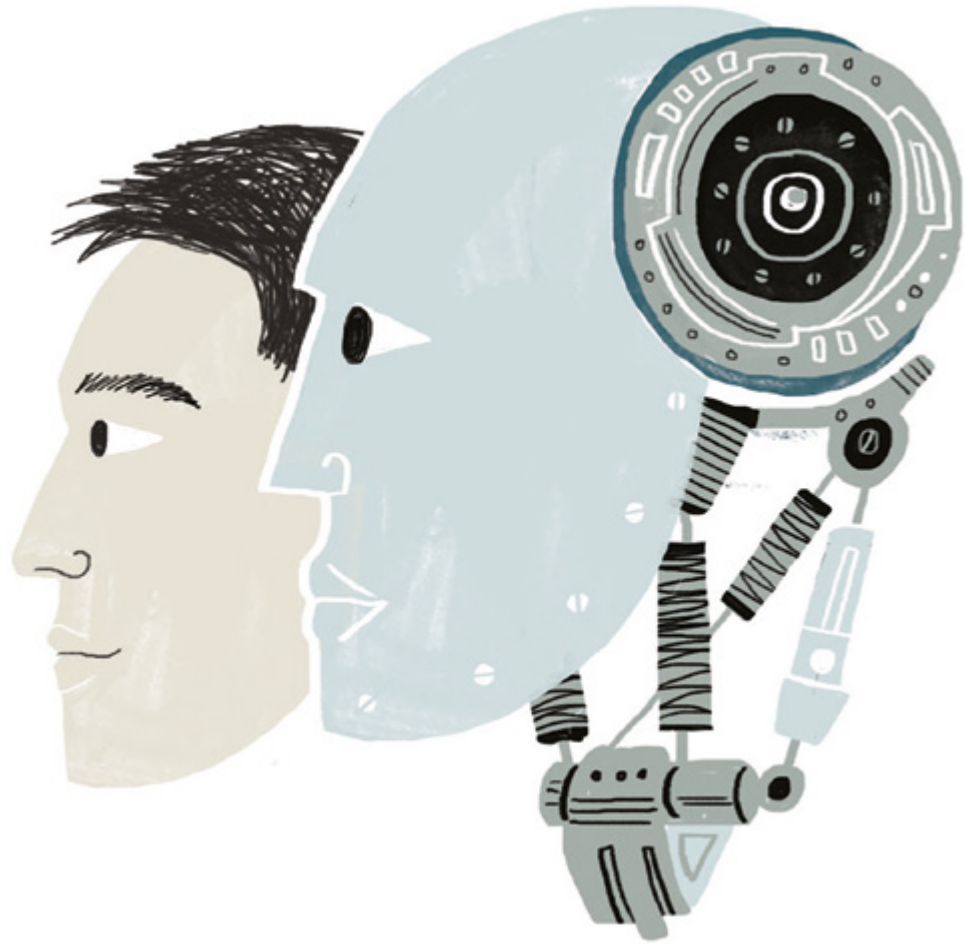
PERFORMANCE
PRODUCTIVITY

QUALITY: PAST, PRESENT & FUTURE

QUALITY FUTURE



What the future seems to hold is a world in which humans and technology can work effectively alongside each other.



Into the unknown

At the current rate of technological advancement, it seems impossible to predict what will happen in the next 100 years. The futurist Ray Kurzweil wrote in 2001 that “We won’t experience 100 years of progress in the 21st century—it will be more like 20,000 years of progress (at today’s rate).” To illustrate this, a recent study

published by the World Economic Forum on the future of jobs stated that in many industries and countries, the most in-demand occupations or specialties did not exist 10 or even five years ago. The study cited the estimate (from the famous 2007 Shift happens presentation by Scott McLeod and Karl Fisch) that 65% of children entering primary school today will end up working in completely new job types that don’t exist yet.

The management consultant Peter Drucker said that “the best way to predict the future is to create it”. So, in this age of accelerated change,



Enhanced technology will inevitably create new challenges in the future, and quality will have a key part to play in addressing them.

can we shape a future with quality, using all that has been learned so far to address workaday shortfalls and issues, quality of life concerns, and a sustainable future for the next 100 years and beyond?

While the ethos of quality in the eyes of the customer still holds, and customers are able to provide immediate and public feedback more easily than ever, customers are still not always receiving the quality of service of product that they expect. Why is this? What would it take to deliver 100% satisfaction? Perhaps Crosby's Quality Vaccination Serum will exist in the future, to enable its realisation.

While we have seen that the face of quality gurus is changing, we're still not realising the potential of the whole population. It was reported last year following a study by the public participation charity Involve that there are more people called David or Steve heading up FTSE 100 companies than there are women or ethnic minorities. And globally, women held under a quarter (24%) of senior roles in 2018. In 100 years, will diversity and inclusion in work be a fact of life?



Be the change you want to see in the world...

And amid fear that machines and robots will take our jobs (by 2060 AI will be capable of performing nearly all of the jobs currently done by humans, according to McLeod and Fisch), can we really release people from repetitive, dangerous work and free them to add value, to fulfil their real, human potential? Arguably we are in a better place than ever to address the world's issues, with tools that work, phenomenal technology, untapped potential, and the ability to build on previous advancements. It is already happening. For example, Bill Gates' list of breakthrough technologies to watch for 2019 included smart watches with electrocardiogram features and machines that catch carbon dioxide – innovations that help individuals and humankind.

Quality of life

So the focus of quality has the potential to expand again, to address quality of life. There's no shortage of opportunities: according to a UN report, more people in the world have access to a mobile phone than have access to a flushing toilet, and bad sanitation still kills hundreds of thousands of people every year. The quality of life for the next 100 years is something that every quality professional (in fact everyone, full stop) can have an impact on. Addressing climate change within the next decade is vital – those actions will have a profound effect on civilisation and the natural world.

We started with the assertion that all good progress that's happened in the last 100 years has happened because of quality. Will the same be said in the future? Edward de Bono said, "the quality of our thinking will determine the quality of our future". Can we do it? Can we capitalise on knowledge, technology, communication and accountability before it's too late?

Quality was, is, and remains, fundamental. The consequences of poor governance, for example in relation to the use of AI or the



management of environmental impacts, could be catastrophic. The focus on assurance – to ensure that policies, processes and plans are implemented appropriately – is still imperative, and quality professionals will play a vital role in ensuring that governance established in the boardroom flows through to assurance applied throughout the business.

The quality professional of today and tomorrow is a vital organisational asset, requiring a range of skills and a variety of perspectives. A truly 'T-shaped' person, they require deep expertise in their specialism, combined with the ability to work across a wide range of disciplines. Their focus must reach upwards, across and outside of the organisation, managing standards and compliance, while also maintaining a strategic outlook, and an eye on the possibilities of the future. Quality professionals must be guided by practical considerations and also by ideals – they are the movers and shakers.

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The future may be unknown, but good quality management will allow organisations worldwide to adapt to changing needs.

Let's make
progress.
The future is
ours to shape.

*“We are the music makers,
And we are the dreamers of dreams,
Wandering by lone sea-breakers,
And sitting by desolate streams; —
World-losers and world-forsakers,
Upon whom the pale moon gleams:
Yet we are the movers and shakers
Of the world for ever, it seems.”*

Arthur O'Shaughnessy, British poet

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