The impact of emerging and disruptive technology on the quality profession

Introduction

Technology is developing at an exponential rate, having revolutionised business and society in ways which may have seemed inconceivable when computers sat in basements and were operated using punch cards. Few may have predicted that by the early 21st century nearly 40% of the world population will carry in their pocket more computational power that was used to land spacecraft on the Moon.

What can, and should, cause concern for industry is not just the magnitude of change which technological advances can bring but also the pace at which it occurs.

IDC FutureScape: Worldwide IT Industry 2017 Predictions forecasts the emergence of digital transformation (DX) at a macroeconomic scale 2017-2020. Cloud, mobility, artificial intelligence (AI), Internet of Things (IoT), augmented reality/virtual reality (AR/VR), will fuel digital transformations which will pose businesses with whole new kinds of challenges. Additionally, the IDC report finds that change is happening faster than previously predicted.[1]

Similarly, Gartner's Hype Cycle for Emerging Technologies, 2017 identifies "AI everywhere", transparently immersive experiences and digital platforms as providing *"unrivalled intelligence, …profoundly new experiences and platforms that allow organizations to connect with new business ecosystems."*[2]

The quality professional is in no way immune from such change. If it is to effectively exploit emergent and disruptive technology, it needs to assess the opportunities and threats presented. Quality professionals must acquire the knowledge, skills and experience necessary to lead organisations through rapid and dramatic change.

In a discussion, hosted by Crowdoscope, the CQI asked members to discuss changes they believe to be the most likely to affect the quality profession, what the impact may be, and how imminent the change.

About Crowdoscope

Crowdoscope is an interactive survey and discussion platform designed to harness the collective intelligence and insight of groups of people. It helps users to navigate discussions easily, facilitates collaboration and enhances participant involvement.

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[1]

https://www.idc.com/getfile.dyn?containerId=US41883016&attachmentId=47265871&id=null&bid=null&cid=null&patnerId=null

2 https://www.gartner.com/newsroom/id/3784363

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It uses a feedback mechanism that gives participants the opportunity to interact in an open forum. Each response can be viewed, rated, and commented on. Through this approach, it is easy for us to identify the themes and comments which resonate with the community.

In this discussion, CQI members were asked to answer the question, **"What do you think is the main emergent/disruptive technology which will impact the quality profession over the next ten years? Please explain what the impact will be."**

Members then rated answers based on:

1. how likely such an event was to happen;
2. how much an impact would it have on the profession.

Summary of key findings

The following themes emerged as being both highly likely and potentially having a high impact on the profession.

1. **Digitalisation will provide quality professionals with more data, facilitating the professions role as drivers of solutions rather than firefighters.**
   The growth of a digital ecosystem in which businesses and their interested parties (including competitors, customers, regulators) form an interdependent business network.
   Digitalisation will allow the profession to improve communication with stakeholders, better understand their expectations, and provide better solutions. The quality function will increasingly become business improvers.

2. **Robotics and automation of processes will continue to extend beyond simple manufacturing production line.**
   Increasing investment in advanced robotics in the pursuit of perfection, increased productivity and reduced costs cement the future of the robot. Perfect quality, first time every time, may reduce the need and associated cost of human inspection.

3. **Real-time communication and connectivity will support remote and automated monitoring and decision making.**
   Connected devices, Cloud based documentation systems, communication applications enable remote and automated performance monitoring and decision making in real time. There will be an increasing dependence on highly skilled technical support, and supply chain control.

4. **Increasing uncertainty, driven by the rapid pace of change.**
   The pace of change will continue unabated. With it will come increased uncertainty, including management dilemmas as to the specific options to select, and employee anxiety over whether changes will reduce job security.

5. **Building Information Modelling (BIM)**

Sharing complex and detailed digital representations of the physical and functional characteristics will challenge quality professionals to find new ways to assess and manage quality.

6. **Mobility**
   An increasingly **mobile work force using mobile devices** and applications facilitates more work being carried out in the field. Methods of managing and communication information must adapt accordingly.

7. **Continuous improvement driven by more and better data**
   Organisations can collect great quantities of data on customers and operations almost instantaneously, which can be used for predictive analysis, and risk-based and evidence decision making.

Next steps

The information gathered from this discussion will help inform the work of the CQI Technology Working Group. This group is tasked with providing the CQI and its members with the information and guidance it needs to exploit the technology of today, and an informed forecast of the technology which may affect the profession in the future.

Members who would like further information about the CQI Technology Working Group, or the Crowdoscope discussion should contact Alexander Woods at awoods@quality.org.

This report has been produced by the CQI Policy Directorate.

Appendix – Crowdoscope data

Project name:
Emergent Technology Disrupting the Quality Profession

Grouping Question:
In which sector grouping do you work?

Discussion Question:
What do you think is the main emergent/disruptive technology which will impact the quality profession over the next ten years? Please explain what the impact will be.

Evaluation Criteria:
How likely is this to happen? (Very Unlikely - Very Likely)
How much impact will this have on the quality profession? (Low Impact - High Impact)

Data Collection:
2017.08.31 - 2017.09.13

Participation	
Number of responses	311
Average number of ratings given/received per person	4.9 ratings
Average number of replies per comment	0.4 replies
Average number of visits per person	1.2 visits

In which sector grouping do you work? (%)	
Automotive	4.8
Chemicals	2.3
Construction	11.3
Food	4.5
Forestry, metals, mining	1
Health	6.1
Industrial	7.4
Oil & gas	12.9
Tech	7.1
Utilities	1.3
Other	41.5

Top ten comments (unedited)	Score 1	Score 2	# ratings
The next ten years will be impacted by the emergence of digitalisation, the next step from digitization The Quality function will be seen more as a driver of solutions rather than the firefighter and auditor by having more access to data Digitalisation will allow us to use this digital technology and information to enhance all aspects of the business We will communicate better with customers and have better understanding of their expectations, we will provide them with better solutions, we can digitalize the data that is used in manufacturing to predict tool wear and improve LEAN activities, we will have access to supplier data to ensure testing is done timely and efficiently The Quality function will change to be business improvers	76	69	5
I believe it will be the years in which science fiction becomes fact. Robots will and already have been employed for an increasing range of job roles well beyond the simple manufacturing production line as we currently know it. Increasing investment in advanced robotics in the pursuit of perfection, increased productivity and reduced costs cement the future of the robot. Perfect quality, first time every time, reduces the need and associated cost of human inspection.	74	67	14
Online communications in real time, via media such as Skype, Google Hangouts,. Cloud based documentation systems, Internet of Things enabling performance monitoring and decision making in real time both automated and remotely. Impact will be loss of human contact, dependency on a few highly skilled tech support people and control by suppliers (specially for IoT).	74	59	5
Communications technology has developed so quickly over the past 10 years that it is hard to conceive that this trend will not continue: main issue will be the uncertainty associated with rapid change, including management dilemmas as to the specific options to select, and employee anxiety over whether changes will further reduce security of employment - which in turn gives rise to further management challenges to maintain morale and commitment	74	65	12
In my sector (engineering), Building Information Modelling (BIM) will challenge quality professionals to find ways to assess and manage quality.	74	74	7
Smart Phones and tablets will dominate online use - traditional computers will be used less so Management Systems will need to adapt. Traditional ways of Managing information and communication may need to change to include modern technology to prevent becoming obsolete.	73	68	6
use of apps/mobile devices will increase productivity in construction as it caters for work being carried out on site as opposed to being desk bound. Problem may be cost/availability of IT	73	66	6
Ubiquity of networked sensors and software, available for pennies. Enabling organisations to collect an enormous quantity of real-time data on its customers and operations in a way unfathomable before. Use of machine learning to capitalise on this data for predictive analytics and risk-based thinking. Data-driven rather than hypothesis-driven continuous improvement.	72	72	11

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Collaborative platforms, particularly with cloud applications. This will give clear audit trails about who has done what and when, and enable software to be built around processes rather than processes being compromised to work with existing technology. This also encompasses use of mobile technology. https://www.zoho.eu/creator/ and http://www.matssoft.com/ are two current examples.	72	62	9