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NUANCES THAT THE QUALITY PROFESSIONAL WILL FACE IN THE AGE OF AI & INDUSTRY-4.0

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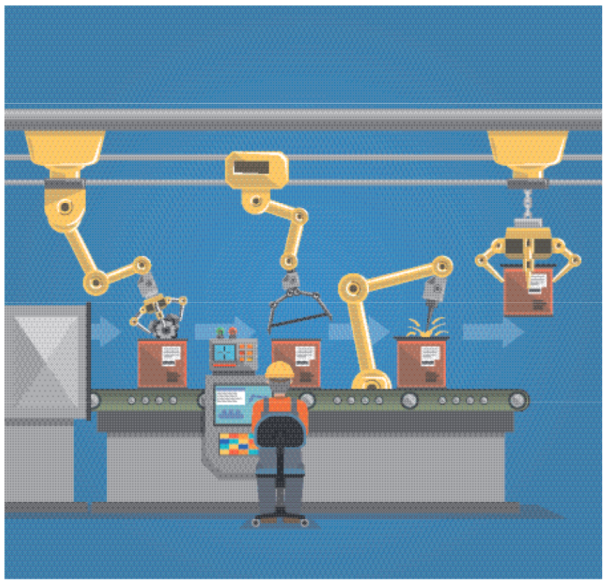
Industry-4.0 (and Smart Factory-4.0) are here. Gartner estimates that by 2020, more than three million workers will be supervised directly or indirectly by a 'robo-boss'. PWC's research in 2015 reconfirmed that almost 60 percent of U.S. manufacturers are using some sort of robotics technology. Many organizations that have started using these technologies and harvesting the data are reporting that they see anywhere between 20-50 percent reduction in the total cost of Quality.

'Quality' is an all permeating function in businesses today. It touches every individual and every department or function. It is hence imperative, we need to identify how the role of this critical function will change with Industry-4.0 – and explore key aspects that you, as the Quality Leader or Professional will affect you. We explore the essential nuances you will face (or already be facing) with increase in AI across industries. We also look at how can one navigate what seems to be chaos and be successful.

1. Inability to define clearly where & when 'Quality' should get involved in product development and delivery. Most traditional paradigms that are used today have the quality assurance function or role get involved right at the beginning of the PDLC. Typically, at the requirements gathering phase or just after the product team has analyzed requirements. Quality function then plans on the involvement for the reminder of the phases and what activities would they be performing in supporting the product teams.

2. Confusion on the 'what' and the 'how' of the involvement – QA can often get confused or blurred in terms of what level of visibility the AI powered processes should get from a QA perspective, as most AI powered processes tend to be algorithm driven and rather limited to no human involvement. QA leaders may feel these processes cannot have any value-add by adding a QA role. The 'let's wait for the product to be out' usually prevails. The 'How' is also an issue of much concern as one does not fully know what to review and audit from a QA perspective in such work processes.



3. Product owners and team (somehow) believe that 'AI' powered work processes tend to be of 'higher' quality – with little or no human intervention, engineers tend to think the product or sub-product created with primarily AI-based learning or algorithms are of 'higher' quality. There is confusion on what is 'Quality' at these junctures. While theory tells us that, AI leads to a certain level of mastery of behaviors, and hence a better solution may be created in much lesser time, the same is always not true. Think of the example, when Alexa plays a different song from a different band, assuming it is closely aligned with your choices in the past, and you may tend to like it. These decisions are made as a virtue of learning, and hence the dilemma is what if anything, can QA value-add?

4. Slow erosion or dilution of the value-add of QA as seen by engineers – all these nuances could lead to the eventual gradual erosion of perceived value-add of QA activities by the staff engineers.

We examine some simple aspects could make these nuances appear less intense or to address them, albeit partly:

1. Realign 'Mission Quality' & Vision: From redefining and setting expectations on whether Quality is limited to only post production activities or active involvement throughout the life cycle. Many organizations today use various quality and process improvement models/standards such as the ISO standards, CMMI, FDA/FAA, and so on. Some of these models inherently expect the QA function to be an active involvement throughout the lifecycle, while focusing on quality control or testing to break, find and fix defects. With AI and increased automation, involvement of quality function at the early stages needs to be re-aligned in terms of the Who, Why, and How of the activities. Obtain buy-in from engineers and management before agreeing on what QA's involvement will be.

2. Use the Power of Increased Data Availability & Analysis: In the current 'Smart Factory' scenario, one availability of more real time data, powered by the availability and close-knit operations of Cyber Physical Systems. Choosing and using the right type of data analysis will lead to prevention – using predictive analysis is more critical than ever before. Predictive analysis includes the use of statistical & quantitative methods for analyzing trends, formulating baseline performance, and establishing models to predict one more parameter of critical business concern. With Industry-4.0, powered by AI & Machine Learning (ML), analyses methods are likely to be lot more reliable, due to availability of data that is powered from CPS and non-manual data. So be prepared to learn and understand (new) data analytics methods and models.

3. Practice Day-to-Day Risk Management: Risk management gains importance as the learning process with AI & Machine Learning being much more fast, capable of making decisions quicker. The quality professional has to be ready for more proactive and rapid approach to risk management.

4. (Quality) Process Automation: While we have quite a few process and workflow automation tools available, quality function has to evolve and think of incorporating at least some level of automation themselves. Whether it is for metrics analysis, or for quality audit automation, this will aid in ensuring quality function can perform and institutionalize activities much more efficiently, especially in an AI-powered environment.

Being cognizant about these nuances and possible ways to mitigate them will make you better prepared to lead a team of quality professionals for the 21st century or be a practitioner in these changing times!CEO