Industry 4.0: Where does it leave lean?

LMJ editorial board member Dr. Torbjørn Netland from the Norwegian University of Science and Technology presents his arguments on where the digital revolution can incorporate lean and how they can feed off each other.

Germany—the European manufacturing powerhouse—has set a new course for its future high-tech industry. Under the strategy Industry 4.0, Germany is in transition to the fourth industrial revolution. Cloud computing, internet of things, real-time sense-and-response technologies, cloud-based services, big data analytics, robotics, artificial intelligence, 3D printing and so on are foreseen to revolutionise how we make things and deliver services today. Indeed, our factories and businesses are changing. But where does this leave lean? Will developments in technology leave lean irrelevant? Is lean a hype that is soon to end?

The Four Industrial Revolutions

Industry 4.0 is the current high-tech manufacturing strategy of the German government. If Germany thinks it is the right direction for its future competitiveness, we should all probably listen. Industry 4.0 was first presented as a concept in 2011, and has been researched, debated and further defined since then. Industry 4.0 is based on tight integration of modern information technology in the manufacturing and supply chain operations (called cyber-physical production systems). The objective is to create the intelligent factory during the two next decades.

Industry 4.0 refers to the fourth industrial revolution. The first industrial revolution started in Great Britain and took place around 1760-1840. It involved the establishment of factories using mechanical machines and steam or water power to move from craft production to industrial manufacturing in the textile industry. A century later, around 1870-1930, the second industrial revolution took advantage of electrical power and moving assembly lines to introduce the era of mass production. The third industrial revolution started...
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On the other side, with radical changes in the environment come changes in lean as a practice. Assumably, there will be less physical kanban cards, less andon cords, less whiteboards and similar technical lean solutions in future factories. But that is not a pity; Toyota has never looked at these tools and practices as objectives in their selves, they are just technical solutions to minimise wasteful processes. One of the most promising advances in technology is the possibility to share—and act on—real-time information in a coordinated end-to-end supply chain. This enables a radically improved form of instant just-in-time pull production.

In short, Industry 4.0 technologies may be exactly what we need in order to create lean supply chains and networks. Lean is about doing more with less—today and in the future.

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