It has been 12 years since the term Industry 4.0 was introduced. This was at the Hannover Messe in 2011, when Professor Wolfgang Wahlster, director and CEO of the German Artificial Intelligence Research Center, addressed the audience at the opening ceremony. He urged companies to be ready for the next industrial revolution. Looking at where we stand, now 12 years later, things are still disappointing for many companies. In this blog, we look at the current situation and define 10 steps that will help organizations in the process of digital transformation.

Back in the early 2000s, the German government recognized that a new approach within industry was needed to remain competitive in the global market. In 2013, the German government launched a program called 'Industry 4.0', which aimed to promote the digitization of production processes and the integration of new technologies.

Industry 4.0 is often mentioned in the same breath as robotization, digital transformation, internet of things, big data and artificial intelligence. Many of these terms are still far away from the daily reality of an average organization. Even when the terms are understood, their application is often lacking.

As mentioned, we are now a decade into our journey of Industry 4.0 and the question is what is the status? Some articles state that we are still at the beginning of this revolution. And that is indeed the case for the vast majority of companies. Over the past decade, there has been a lot of attention for Industry 4.0, but few have taken actual steps that can be characterized as a 'revolution'. More often, small steps have been taken such as implementing certain software tools or sub-optimizing processes.

An industrial revolution is characterized by an upheaval initiated by a technical innovation accompanied by large-scale organizational and social changes. According to this definition, this is not the case when a new machine or a single software tool is installed. It really involves a completely different way of producing and working.

Not only in the Netherlands but throughout Europe digital developments are far behind America and Asia. Only 5% of European companies can be classified as Digital Champions (PWC, 2018). Over a third of Asian companies and a quarter of American companies have plans to develop mature digital ecosystems, compared to only 15% in Europe. We all know the big digital American platforms such as Microsoft, Alphabet (Google), Apple, Meta and Amazon, and the big digital Asian players such as Alibaba, Tencent, TSMC, Mitsubishi, Canon and Nintendo. The Forbes top 100 digital companies include only 16 European companies, with the Netherlands represented by Philips, ASML and NXP.

In addition to these tech giants, inspiring examples can also be found within companies around us. Consider 247TailorSteel, which will build this year its sixth factory of the future, or a chemical organization in Rotterdam where the production volume of chlor-alkali is automatically adjusted to the availability of green energy. Think also of Jungheinrich who is building a fully automated logistics center for the Dutch company Prodrive Technologies, or a water treatment plant that can run completely unmanned outside business hours. An example of product innovation is the organization Deron in Gendt (Gelderland) which developed a Smart mattress for healthcare that incorporates sensors that transmit information about patients' sleep status to minimizes false alarms.

The thesis in this blog is that every organization must proactively work on product innovation and digital transformation to ensure that the organization is future-proof. If an organization does not put enough effort to digitization, at some point another party will emerge and dominate the market. Think about what happened with the DVD or vacation booking agencies. Below 10 steps are listed to guide the process of digital transformation. The intention is not to start all steps at the same time, but it is important to proactively put some of these steps on the strategic agenda.

1. **Digital strategy:** develop a roadmap to make products and services more digitally. Look at where services can be added to the existing product portfolio (servitization) and what services can be offered online.

2. **Competence:** the digital transformation of an organization requires new competencies among managers and employees. In general there is a huge gap in digital knowledge. Also, acknowledge that technics are changing at a rapid pace. Ensure that the right knowledge and expertise is present within the organization through training and recruitment.

3. **Standardization and flexibility:** develop products and services based on standardized building blocks that fit together seamlessly (modularization). Realize that standardization and flexibility are not a contradiction. Ensure that machines and employees are able to switch seamlessly from one product to another (Agile).

4. **Simplification:** map key processes and appoint process owners. Eliminate Waste (Lean) and focus on simplifying processes as much as possible. Place ownership as low as possible in the organization and minimize management and authorizations.

5. **Automation:** map transfer points in the process. These are process steps where data is transferred from one system to another. Eliminate people to transfer data from one system to another. Automate data transfers using APIs or RPA (Robotic Process Automation).

6. **Error-free production:** map process steps where human interaction with the product occurs. Minimize the chance of human error by developing Poka Yoke solutions for activities that cannot (yet) be automated.

7. **Logistics process performance insight:** measure logistics performance such as start and end times for key process steps. Visualize performance in dashboards such as PowerBI.

8. **Qualitative performance insight:** ensure that critical characteristics for each product are measured throughout the process. These are characteristics of the product that are important for good performance and customer satisfaction. Visualize these characteristics in performance dashboards such as PowerBI and real time SPC-tools.

9. **Continuous improvement:** develop a process of continuous improvement, looking daily at product and process performance that do not meet requirements. Make data easily accessible for analysis for Green and Black Belts. Apply techniques such as Process Mining and Data science to analyze and improve performance.

10. **Reengineering:** the digital transformation of an existing organization can get bogged down by technical roadblocks and objections from employees or customers. Therefore, ask yourself the following question: *"What would the factory and organization look like if we didn't have to take anything or anyone into account, and we could develop everything from scratch instead?"* This will undoubtedly lead to new insights.

Like any transformation, digital transformation is a real challenge. Most managers and employees see problems rather than opportunities. On top of that, the techniques and tools necessary for digital transformation are changing rapidly. However, doing nothing is not an option. In any case, make sure you are informed about current techniques and developments. Participate in events and follow training to stay on top. Organize an inspiration session with the entire management team to discuss the possibilities of Industry 4.0 and digital transformation. On September 28 Symbol B.V., together with its partners is organizing an event on Digital Transformation. More info can be found at https://www.symbol.nl/event-digital-transformation. Also, our consultants can help your organization go through the above mentioned 10 steps of digital transformation. Take the first step today and contact us for a no-obligation consultation.

About Lean Six Sigma Academy B.V.

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About the Author

Having graduated from the University of Twente (Enschede, the Netherlands) in 1994, Theisens (1969) developed his experience of process improvement as a consultant in the automotive and high-tech industry at Texas Instruments, Sensata Technologies, Thales and several other companies. During a period of 20 years he was given the opportunity to help a broad range of organizations deploying Continuous Improvement initiatives in a wide range of industries.

In a production plant in Mexico he led several 5S programs, Kaizen initiatives and a Lean transformation. In several plants in Europe and Malaysia he executed and coached around 50 Six Sigma breakthrough projects. At an automotive engineering department he supported the introduction of Design for Six Sigma.

Currently Theisens is Managing Director and Master Black Belt of a Consultancy and Training company in the Netherlands that is specialized in 'Business Improvement' and he is a guest lecturer at the University of Twente. Theisens is also founder of the LSSA – Lean Six Sigma Academy©.