The path towards total interconnectivity – challenges and chances for SMEs

Every manufacturing company has probably already dealt with ‘Industry 4.0’. Unquestionably, ‘Industry 4.0’ or ‘IoT’ (Internet of Things) offers incredible potential and numerous possibilities for improvement, such as process improvement or the fostering of new business models. The latter are the result of data that emerges through new technical possibilities - either on site or at the client.

However, total interconnectivity also holds challenges. Industrial companies from the DACH region – especially SMEs (small and medium-sized enterprises) – usually face one or more of these.

**Heterogeneous machine parks**

Usually companies comprise heterogeneous machine parks that further complicate uniform digitalisation. Machines from different generations and with different control systems exist. The machine manufacturers’ analytical systems often only take machines of one generation into account and ignore machines of other manufacturers or generations. The quickest way towards complete digitalisation thus falls short due to practical and technical conditions. To use each manufacturer’s respective analytical system will bring about information about one specific machine – but a comprehensive overview is simply not possible. Additionally, the transfer of gained knowledge from one machine to another, and thus the implementation of uniform results into uniform reactions, seems impossible.

**Incomplete process digitalisation**

Often individual subdivisions, such as the process from a commission to the machine and to the manufacturing feedback, are depicted as a digital process. However, the process’s complete digitalisation – from the commission or ideally from the order initiation to the provision of raw materials, surveillance and control of production, to automated shipping and delivery, invoicing and accounting – is not consistently implemented. Manual steps or analogue aids are commonplace. These situations not only hold optimisation possibilities through analytics but also solid saving potential through process improvement, inventory reduction and more.

**Grown IT infrastructure**

At its core, the central company IT consists of an ERP system, which is often based on outdated technology. Built from demands of different times, the systems were further fortified with the expectation to exchange them soon. Many time periods later, they hardly offer any expansion potential and a changeover to digital processes and their connection to interfaces represent
a seemingly insurmountable hurdle. As a first task, the change of the central IT would be listed on the digitalisation list. An aggravating factor is the purchase of different IT systems during company acquisitions. These might be sufficient for the current tasks at individual branches, but they cause major problems while depicting comprehensive, generalised processes. Often, isolated, rural company locations are simply the obstacle to a central network due to a weak digital connection.

**Fearing change**

Employees from all levels fear new processes, production methods and findings that can be derived from new data. They see it as threats to their jobs or they fear that the loss of expertise that seemingly goes hand in hand with it reduces their value in the company. These fears are a barrier to change and pose a threat to successful project implementation. Without the support of know-how carriers, projects with such high change potential can hardly be sensibly realised.

**Further developing IT**

For the central IT department, an inevitable development is imminent: from a ‘bothersome’ cost centre to a fixed part of the value chain. It needs to participate in developing new business models and in contributing to value creation. The IT departments’ human resources are, however, usually not geared towards supporting such complex processes. There is a lack of experts that are qualified to meet the present and technical challenges of digitalisation and that comprise economic and technical know-how to enhance old business models or to develop entirely new ones. In summary, it can be said that comprehensive in-house changes, as well as additional know-how, is needed for such projects. At the same time, a competent change management is needed to involve employees in the change and thus, to secure their motivation and commitment.

**The solution?**

First of all, a clear strategy with a big picture is needed. A comprehensive solution with a focus on holistic digitalisation seems inappropriate due to the mentioned obstacles. But, even with step-by-step procedure, vision and strategy for digitalisation are indispensable.

The second decisive factor is workforce training and the expansion of project teams through experienced advisors. Many tasks need know-how in areas in which little or no expert knowledge is found within a company. Workforce strengthening, know-how development and partial consultation of experienced specialists thus seem sensible.

The third factor is the identification of lighthouse projects that convince sceptics within a company and that keep stakeholders happy. The measure that brings about the largest possible benefit and has the best chance of success needs to be identified. When one starts with such projects, one achieves the stakeholders’ acceptance of the strategy. This simplifies change management and secures financing and continuation.

The fourth factor is project division into individual projects, so-called loops. Controlling and measuring these is easier and thus, secures the overall project’s success. Mistakes become ‘lessons learned’ and improve the follow-up project as well as market changes can be considered.

**Conclusion**

The challenges are diverse and complex. Grown company structures and systems are often difficult to transform into a digital process. The enormous complexity of a ‘large digitalisation project’ often leads into dead ends, success often comes later and the risk of stakeholders dropping out early is great. Creating a clear digitalisation strategy, identifying exemplary projects, dividing projects into learning loops and strengthening internal and external know-how not only make digitalisation manageable – it turns into a future opportunity for companies. The first step? Starting!

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