Is Digitalization Different From MES? (Part 3)

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In Italy we say, “There’s no two without three!” So here is the third and last part of my thoughts on the relationship between a manufacturing execution system (MES) and digitalization. It began as a single blog post, but after getting so much feedback on the first article, I was convinced to spend more time on the topic to better explain my point of view. In the second part, I touched mostly on the importance of starting from the review of processes in any digitalization initiative and on the need for the existing standards to adapt to the new landscape.

There’s still a very sensitive point that many provided feedback on: the relationship between MES, digitalization and Industry 4.0. Again, it’s a very hot spot, since it relates to a topic that is very popular today and is a core initiative of many manufacturing industries right now.

We started to hear intensively about Industry 4.0 a couple of years ago. At that time, it was basically a concept and a topic for conferences and events. There was still some debate about whether the European Industry 4.0

initiative or American Smart Manufacturing would win in the market. Today, the situation is totally different. It's not a concept anymore, and there's no doubt that—at least in terms of slogan popularity—Industry 4.0 won.

I cannot say that all the requests we receive to support those kinds of initiatives have a clear understanding of what moving toward Industry 4.0 means, however. There's still a lot of confusion and a lot of need to educate, especially since governments have put some stimulus on those initiatives and created a sense of urgency. This has convinced people about the need to do something, but it has not necessarily made it clear how to go about it. Nonetheless, it's well accepted that digitalization and MES need to be part of the Industry 4.0 initiative.

Industry 4.0 constitutes a shift of approach from optimizing the behavior of each physical asset to optimizing how data and information are shared and leveraged along the full product lifecycle. This optimization builds on an end-to-end digital information flow that enables a digital representation of the product or of the process at each stage of its lifecycle. At each step, the digital representation of the information is not the goal, but rather an enabler to exchange data easily and efficiently, to provide data to users through different interfaces and tools (from the most innovative smart glasses to tablets and smartphones), and to implement automatic actions and reactions of the assets themselves so that leveraging their intelligence can become an active part of the organization and interact with users.

Based on this understanding, digitalization is an enabler—I would say a fundamental one—of any Industry 4.0 initiative.

> But the goal is a stronger integration between the different functions that participate in the supply chain; a better cooperation between different actors, not only the ones that have been traditionally part of the supply chain, but including suppliers and end customers as well.

To this, MES is critical. MES has from the beginning been the platform to integrate data, provide holistic views of the plants, inform users at every business level (from the line operators to strategic levels) with information shaped and delivered in the right way, with the right timing, to take the most correct decisions—decisions that need to not be siloed, but take into account and try to optimize the full supply chain. It's clear that the focus is moving from optimizing one single production site to optimizing production networks, taking into account multiple sites belonging to the company as well as to the company's suppliers and end users.

In this sense, we could say that digitalization and MES are different tools or initiatives and in part they are. This is truer when we take into account the integrated supply chain approach, since digitalization does not overlap with MES in connecting the different rings of the chain. It is less true when we look at a single plant. In this case, digitalization is, in my opinion, not so different from MES if we look at it as an initiative. If we look at it as a tool, I see it as a pillar upon which to build MES.

I hope my two cents are of interest and can contribute to the clarification of topics we are asked to discuss every day with colleagues and clients. If not, I hope they at least moved someone to reflect further on these topics. For sure, they are among the most relevant to evolve existing manufacturing companies and to keep

them competitive (which sometimes means alive) in a very challenging and fast-transforming market.