



# The Third Dimension of Smart Manufacturing – Value Chain Management

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As companies make progress on their smart manufacturing initiatives, the competitive intensity of new products, services and ecosystems raises the stakes for all manufacturers. There is a need to think differently about business models, ecosystems and ways to outflank the competition. The smart manufacturing strategy isn't just about incremental change or cost savings; it's about innovating products and services and incorporating innovation at a much higher pace than ever before.

Smart manufacturing is an endeavor to achieve higher levels of intelligence, orchestration and optimization within our factories and across the manufacturing value chain. This endeavor requires synchronization along three key dimensions: smart factory or Industrial Internet of Things (IIoT), product lifecycle and value chain management.

Many companies seem to be investing more on the product lifecycle and smart factory dimensions than on the value chain dimension. However, manufacturers focused on optimizing ecosystems offering new value and service levels to customers might very well end up being the true winners of the smart manufacturing race.

It is important to note that there are exceptions to the pattern of internal vs. ecosystem focus on smart manufacturing. For example, the food manufacturing industry is prioritizing more on the supply chain side. The industry is motivated to achieve higher levels of traceability in the food supply chain to meet customer demand for more information and guarantees about what they are consuming.

It is easy to be enticed by cool technology like highly automated machines and robots, and the local optimization of specific processes in the factory. The benefits can be realized quicker and the process change landscape is completely within the company's authority to make it happen. However, the goals of the smart manufacturing vision will not be achieved through strict accumulation of gains from continuous improvement projects within each plant. The value chain dimension will need to be tackled with a combination of strategic alliances and new business processes that link the value chain with new levels of digital data traveling along with physical materials, components and products. This type of initiative will require executive-level strategic vision. These projects might not show short-term payback and will require work outside the company walls to achieve new levels of collaboration with partners and suppliers.

The goal of the value chain management dimension is to minimize resources and access value at each stakeholder function along the chain, resulting in optimal process integration, decreased inventories, better products and enhanced customer satisfaction. The scope spans from managing suppliers of materials and parts to managing the handover of information through internal departments, including the production shop floor, and all the way to managing the delivery of the product to the end customer. It encompasses the procedures, forms and data handoffs that link these organizational entities into a value chain that delivers a final product and services for that product to the end customer.

The standardization of IT practices that enterprise resource planning (ERP) started decades ago for cash-to-order processes within the organization—covering activities like contracts, procurement, receiving, invoicing, purchase orders, delivery and payment—must be extended now across the entire value chain with an emphasis on open data exchange standards that enable publish/subscribe connections across the Internet and across each partner's manufacturing operations management system.

The value chain dimension in smart manufacturing requires as much or more attention than the smart factory dimension. Working on value chain innovation will yield much higher payback by positioning the company as a valuable partner in future manufacturing ecosystems.

There will be some technical challenges along the way to create the smart manufacturing connected enterprise, but the biggest challenges ahead are probably cultural. Companies that figure out how to establish and embrace new business models, new connected processes and new levels of transparency among partners in the ecosystem will be the leaders of future smart manufacturing ecosystems.