

# THE SMART MANUFACTURING ECOSYSTEM

## CONNECTING ALL ASPECTS OF DESIGN-TO-MANUFACTURING



### BRIDGING THE HISTORIC DIVIDE

Businesses strive to serve existing customers, create new markets, and gain new customers, and innovation is key to achieving these goals. In an economy where new competitors can come from anywhere, the only real offensive is to out-innovate them in all aspects of your business—from product development to product delivery to supply chain management.

For years, outdated processes have separated design from the manufacturing aspect of product development. Siloed organizational structures, adherence to outdated processes, and the disparate tools used for each side of the business have done much to reinforce the separation.

This divide inevitably leads to costly mistakes that wreak havoc on timetables, budgets, and talent. Loss of critical information, fragmentation and alteration of design concepts, loss of product and process knowledge, stagnation in original, innovative ideas—all are compounded results from a broken and outdated model of work.

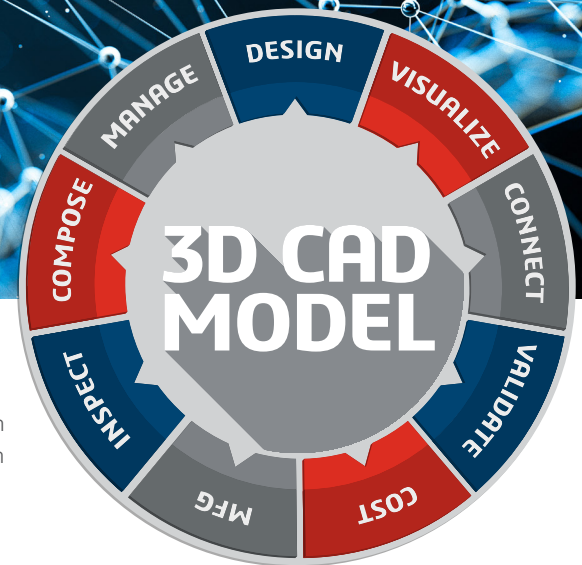
To create an alternative to this divide, a bridge between product design and manufacturing requires not just new tools, but a new approach to how parts and products are made. Only by rethinking the entire development workflow can faster, stronger, more collaborative methods be realized.

## THE ARRIVAL OF SMART MANUFACTURING

Smart Manufacturing is a term used to describe a connected and seamless flow of intellectual property to all teams involved, from design to manufacturing. The creation of IP involves knowledge-capture early in the design process with intelligence from varied skill sets, such as design, costing, quality, manufacturing, marketing, supply chain. In Smart Manufacturing, information is available when it's needed, where it's needed, and in the form in which it is most useful. Manufacturing intelligence is built up front to actively integrate the three major components in the development process: design, manufacturing and innovation.

**"Smart Manufacturing is more than 'integrated' manufacturing. It also means taking advantage of the rich content contained in the 3D CAD model."**

— Gian Paolo Bassi,  
CEO of SOLIDWORKS



## SMART MANUFACTURING DRIVEN BY INDUSTRY TRENDS

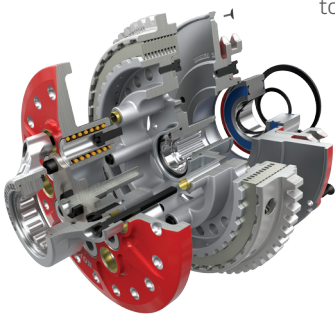
The one certainty about engineering is that it's always changing. Advancements in technology and intense competition, both at home and abroad, will always push organizations to innovate new processes for product development.

## EMPHASIZING DESIGN

According to CEO of SOLIDWORKS Gian Paolo Bassi, "In Smart Manufacturing, IP capture in design is king. The entire process works to serve the design that best addresses our customer's need. It helps companies make better decisions, which leads to better products, shorter time to market, and the agility to respond to the customer's demands."

The SOLIDWORKS design-to-manufacturing process provides the tools needed to implement a completely integrated design-through-manufacturing strategy, all without ever having to leave the familiar SOLIDWORKS environment. These tools enable design and manufacturing teams to work together, without having to export and import data from one system to another. With IP embedded in the 3D design model, and at the center of the MBD (model-based definition) process, changes from design or manufacturing automatically flow to all related CAD models, CAM programs, drawings, and documentation. Thus, changes become faster and easier to handle. Optimization of design for function and manufacturability becomes natural to the teams.

Additionally, all the information for manufacturing, inspection, and simulation and verification is directly linked to the design, so it always reflects the current design iteration.

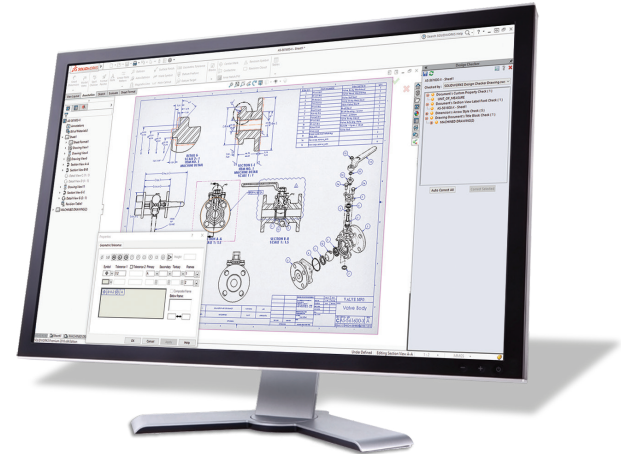


## REDEFINING MANUFACTURING

“In the global manufacturing ecosystem, the marketplace is changing massively and redefining contract manufacturing,” says Kishore Boyalakuntla, SOLIDWORKS portfolio management director. “Now, designers and engineers have a ‘manufacturing consultant’ built into the system.”

Rules-based machining with knowledge capture allows for the automation of manufacturing programming, and lets engineers and designers execute CAM programming and tasks. By doing so, they gain a greater understanding of how their designs are made, leading to the creation of less expensive and easier-to-produce products. The method also allows design teams to create prototype parts faster than outsourcing, and can bring critical manufacturing in-house to control quality, cost, and delivery.

This creates the option of a “build to order” strategy in which a company can customize and personalize their products online using automated design and manufacturing functions. Designers and engineers can now create CAD prototypes without having to deal with production runs or use outside vendors. Smart Manufacturing compresses the time frame for manufacturing, allowing turnaround in as little as 24 hours and facilitating in-house production.



## MAXIMIZING INNOVATION

Smart Manufacturing gets good ideas to market faster, more efficiently, and cost-effectively. But it all starts with the idea and innovation.

By eliminating redundancies and automating parts of the design-to-manufacturing process, talent is freed from repetitive tasks and has space for imagination and creativity. The focus is no longer on the process of moving information, but on maximizing ideas and design.

“SOLIDWORKS tools allow the designer not just to create geometry or a functional shape, but optimize their ideas,” says Bassi.





## SMARTER MANUFACTURING REQUIRES CONNECTED AND INTEGRATED PROCESS SOLUTIONS

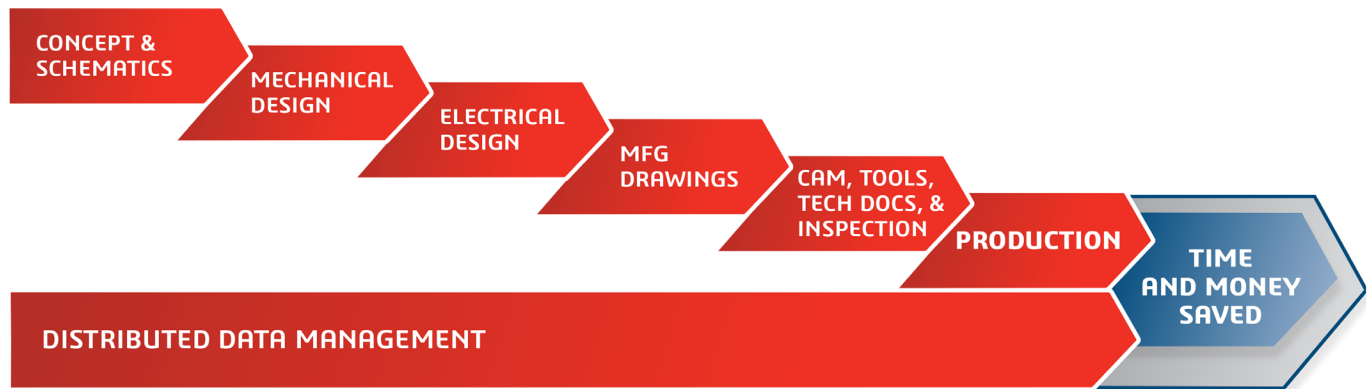
Achieving the benefits of Smart Manufacturing is a simple matter of having the right tools. In SOLIDWORKS 2018 you'll find a suite of software solutions capable of bringing your design-to-manufacturing process into a single, unified solution.

## SOLIDWORKS CONCURRENT AND INTEGRATED PROCESS VERSUS TYPICAL SERIAL PROCESS

### Typical Serial Design-to-Manufacturing Process



### Concurrent and Integrated Design to Manufacturing Process



Learn more about SOLIDWORKS 2018 and all our Solution Processes by visiting <https://launch.solidworks.com>.

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