



**“Smart Factories could add \$500 billion to \$1.5 trillion in value to the global economy in 5 years”**

- Capgemini: “Smart Factories” Report May 2017

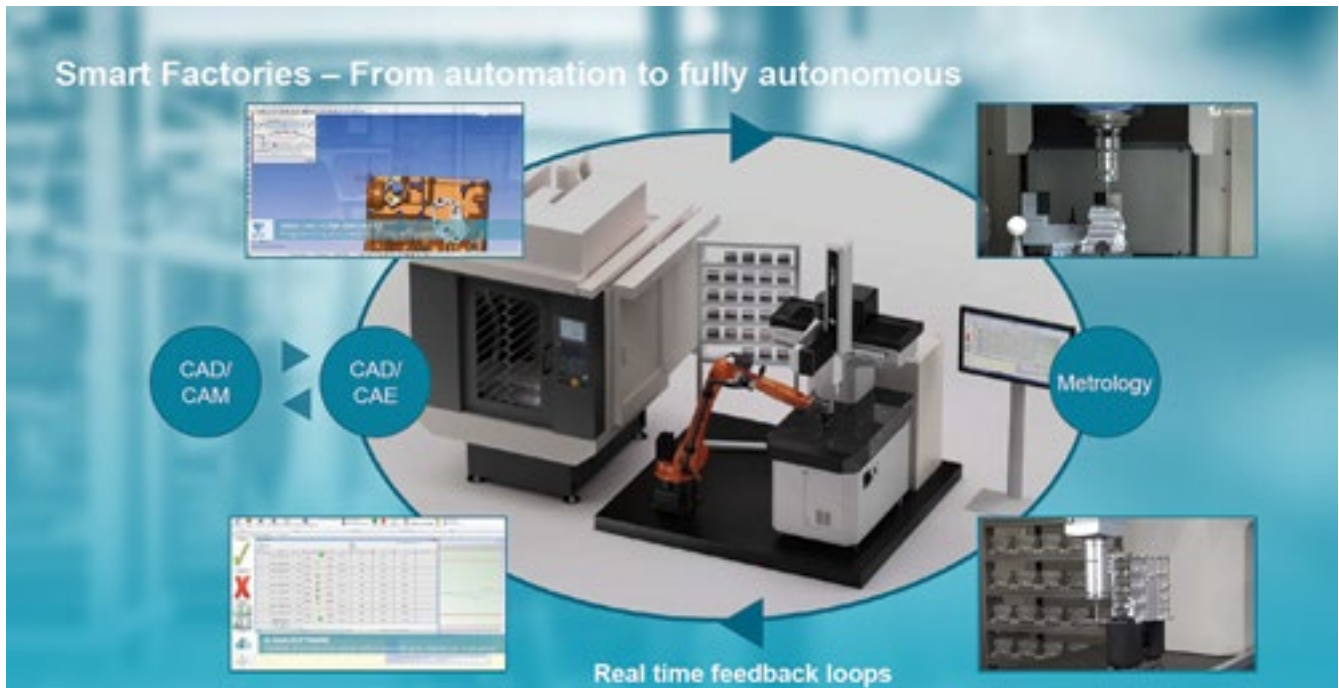
# Hexagon’s Smart Factory Opens its Doors

By **Brian Shepherd, Senior Vice President  
Software Solutions, Hexagon  
Manufacturing Intelligence**



In June 2018 we announced at HxGN LIVE in Las Vegas that Hexagon Manufacturing Intelligence is building an ambitious new strategy around **Smart Factory Solutions**. What does that mean for you, our MSC Software customers? For a start, it is important to recognize that we are going through a fourth industrial revolution called Industry 4.0. This is the name given to the current trend of automation and data exchange in manufacturing technologies. It

includes cyber-physical systems, the Internet of Things (IoT), cloud computing and cognitive computing. The previous three revolutions were mechanization in the 18<sup>th</sup> century, mass production in the early 20<sup>th</sup> century and computing and robotic automation in the late 20<sup>th</sup> century. The term ‘smart factory’ is a convenient overall term for a set of industry initiatives that our customers are pursuing to deploy new advanced technologies and digital



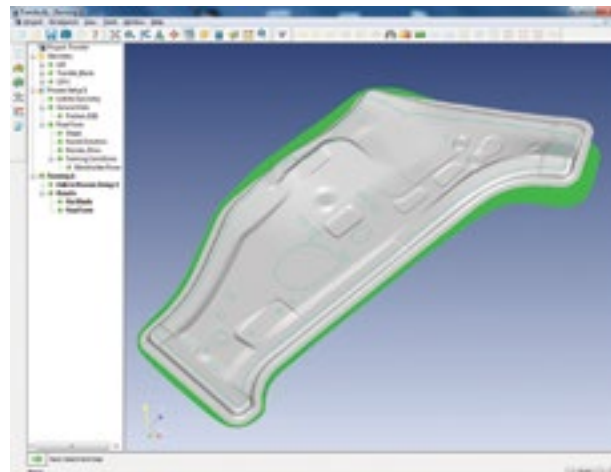
transformation across the entire enterprise to drive the next wave of productivity and quality improvements in product manufacturing. Capgemini, an Industry Analyst company, calculated in a 2017 report that Smart Factories could add up to \$1 trillion in value to the global economy by 2022. As well as new technologies, I believe a mindset change is coming.

Let's take a look at a few of our Hexagon Smart Factory technology initiatives in some more detail:

1. An important element of a 'smart factory' is **Connected Devices**. Everyone has heard of the 'Internet of Things' (IoT) when it comes to consumer devices like thermostats, light bulbs, and smart refrigerators in our homes. But this concept also makes sense for our customers like you as you seek to use advanced new technology to connect all of your devices in your factory so that you can monitor and control them remotely, and, by looking at production data and sensor trends even predict when the machines will need servicing.
2. Another important 'smart factory' descriptor is the so-called '**Digital Thread**', a simple, but powerful, concept of connecting sources of data to consumers of that data in order to create value. Today, many of our customers have various silos of information. You have

plenty of data, in fact some of you are drowning in massive volumes of data, but the challenge you face is how to use this data to create value. The 'digital thread' assists in breaking down these silos, letting the data flow smoothly through your organization to the teams and tools that need it in order to make decisions and take action. An example of this is Hexagon Manufacturing Intelligence's integrated manufacturing cell offering where we are breaking down the silo around metrology information and flowing product quality data "upstream" in the manufacturing process to make corrections and improvements to the manufacturing process, yielding even better product quality on subsequent parts. Another example of this is Hexagon Manufacturing Intelligence's Die Build Improvement project. Here we will combine cloud-of-point inspection data from metrology with CAE tools from MSC and Forming Technologies Inc. (FTI) to more quickly and accurately calculate the die face geometry needed to correct for springback in a die set (see the FTI forming simulation prediction on the next page). Further capitalizing on our 'digital thread' and breadth of products, we will pass that geometry to our CAD/CAM production software in Vero to create a new cutting routine for the machine tool to cut the corrected die set.

3. Another promising technology under the 'smart factory' umbrella is **Artificial Intelligence (AI)** – sometimes called machine learning (ML). As ordinary consumers, we see AI/ML in practice every day with technologies like dynamic routing in navigation systems, face recognition in social media apps, and fraud detection in credit card transactions. Our customers want to use the advanced mathematical techniques of AI/ML to analyze the massive amounts of data that you have collected over time in order to gain some insight, make some predictions, and potentially even take direct autonomous action without human intervention.



FTI Forming Simulation of an automotive metal panel

At Hexagon, our newly announced Xalt framework provides a powerful technology base for us to expand on our metrology, CAD/CAM and CAE solutions and help solve our customers' most important problems. That is the goal of our new Smart Factory Solutions team that I lead. With you, our customer's help, I believe that we can transform current industrial age factories and processes into highly productive and increasingly autonomous 'smart factories' of the future. The factories of the future must be flexible, modular working environments with data-driven ecosystems that embed agility and quality into every phase of the production process.



Hexagon's Xalt, the backbone of our Digital Thread strategy, for Connectivity – Automation – Monitoring – Insights

We, at Hexagon, have backed up our 'Smart Factory' strategy by investing approximately €90 million in a new 52,000-square-meter, state-of-the-art production facility in Hongdao, China, that we announced in 2017 to demonstrate and embody our initiative. It will be completed in 2020. The new site, which will primarily produce metrology systems for our Manufacturing Intelligence division, utilizes Hexagon's smart manufacturing technologies to produce and calibrate the systems, as well as house software development and customer support teams covering our wider Hexagon portfolio.

Finally, I believe that three words will encompass the Smart Factory in future:

Responsive. Agile. Connected.

If you want to know more about this exciting initiative, do contact me directly or visit HxGN LIVE 2019 in Las Vegas to hear of our exciting new product releases in this area.