The Vision: With the proliferation of digital technologies and a rapidly changing global market, manufacturing paradigms will shift from automated to autonomous operations with more flexible flow chains. This in turn enables a more rapid realization of products from concepts in commercially viable ways, shorter time to market and faster throughput.

The digital thread of sensors, data, computation, and information is required to fully realize the potential of digitally-native production systems, with high-value, customized, products. The digitally native production system includes digital twins of the product, materials, manufacturing process, supply chain and production line.

A full framework of digital twins assist in simulating and integrating sensor data for data analytics. Digital twins enable greater throughput, early identification of bottleneck processes, supply chain issues and identification of novel process and production level opportunities.

And Demystified: Digital twins are, simply, physics-based and data driven models. They are design and decision tools. Let’s explore some examples.