

# TCS' Digital Manufacturing Solution



Discrete manufacturing industries face numerous delivery challenges across global production and supply chain units, due to varied processes, methods, and technology. They require robust solutions to restructure business processes and close the gaps in the matrix. Most original equipment manufacturers (OEMs) are looking to improve the design to production process cycle to meet the increasing industry demand. By harnessing digital innovation, process data can be made available across facilities in a seamless and secure manner.

Tata Consultancy Services' (TCS') Digital Manufacturing Solution (DMS) enables organizations to create, validate, and efficiently manage manufacturing process and resource data, as well as reuse information across plant facilities. Helping manufacturers become agile in incorporating design changes, the solution serves a host of industries including automotive, aerospace, heavy engineering, medical devices, hi-tech, and shipbuilding. The solution helps reduce the time to market through product, process, and facility validation, as well as optimized resource allocation and lucid assembly process flowcharts.

## Overview

Global manufacturing companies must tackle a range of operational and strategic issues amid stiff competition and stringent deadlines. This includes the management of an extensive product portfolio and navigation through engineering and production challenges. Further, dependency on raw data or information that has not been analyzed, reinforces the need to have a dependable system and well trained and experienced manufacturing teams. It is vital to control operating costs, reduce the time to market, and lower instances of rejection and non-conformance. Manufacturers can address these requirements through appropriate process planning, efficient data management, and comprehensive plant layout design, while consistently enforcing efficiency standards across the manufacturing value chain.

TCS' DMS employs a concurrent engineering platform, harnessing the comprehensive and efficient management of process and resource data – from creation to validation. TCS provides a range of services customized to an organization's business needs, including manufacturing business process consulting, global manufacturing framework design, and technology implementation. TCS' DMS ensures operational excellence through a seamless digital validation of the various production activities. It shrinks the product realization cycle time, builds resource utilization, and improves productivity.

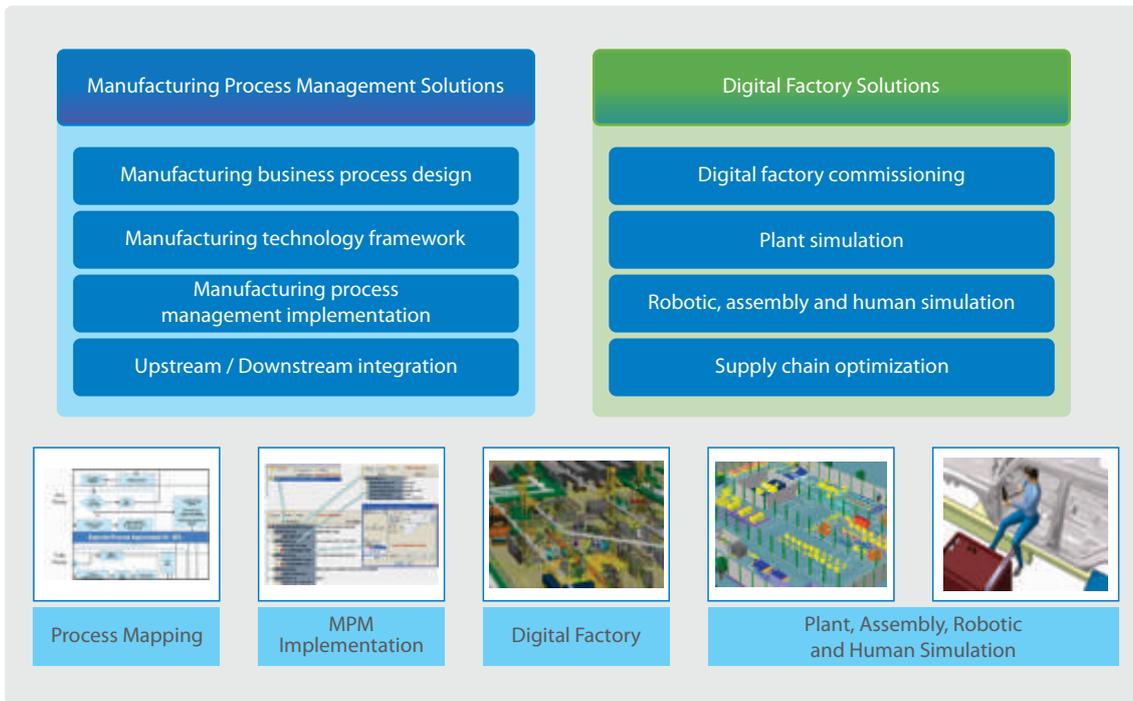
## Our Solution

TCS' DMS markedly improves manufacturing operations, bringing in the benefits of standardization, validation, optimization, and management of process data in digital technology enabled platforms. The key components of the solution are:

### **Manufacturing Process Management (MPM):**

These solutions provide an integrated framework for managing product, process, plant, and resource information. TCS provides services for consulting, implementation, and sustenance of MPM solutions, as well as integration with upstream ERP and downstream MES systems.

**Digital Factory:** These solutions help customers by simulating manufacturing processes even before the plant or production line is laid out, providing visualization beyond product design, thereby resulting in optimization of layout and resources, as well as enhanced throughput. TCS provides services for 3D factory modeling and plant simulation, as well as assembly, human, and robotic simulation. In addition, the solution also helps organizations optimize their supply chains.



### An Overview of TCS' Digital Manufacturing Solution

#### Benefits

TCS' DMS helps organizations achieve operational excellence by creating a simulated design palette across the manufacturing cycle, thus ensuring layout optimization and reducing product failures. Using this solution, organizations can:

- **Reduce the time to market:** The solution helps in significantly reducing the design to manufacturing lead times, thereby allowing faster product launches.
- **Streamline processes and improve agility:** By way of a simplified and standardized manufacturing and design process, the solution helps reduce redundancies and ensure a well-knit process framework. It also helps an organization notch up process agility and allows for greater traceability.
- **Enhance product design:** Manufacturers can leverage the simulated environments for superior design capabilities, and promote collaboration and reusability across different processes.
- **Improve resource management:** The solution helps maximize resource utilization and improve throughput. Based on engagements with leading industry players, we have observed that it ensures a 15-20 percent reduction in operational expenditure (OPEX).

#### The TCS Advantage

By partnering with TCS, organizations can benefit from:

- **Strong industry network and alliances:** An elaborate network comprising leading academic institutions and manufacturing companies, enables cross-pollination of ideas and fosters a collaborative approach toward addressing industry challenges. For instance, Advanced Product Design and Prototyping (APDAP) – a joint venture with the Indian Institute of Science (IISc), Bangalore, India – focuses on research, analysis, and manufacturing support facilitation. TCS also enjoys strong alliances with industry players like Siemens PLM Software, Dassault Systèmes, and DM3D Technology, LLC and other market leaders.
- **Multi-faceted teams:** Our domain consultants have extensive industry experience and have worked on various manufacturing tools available in the market, helping them holistically address customer requirements, in a timely fashion. Our seamlessly connected and well-constructed people-process-infrastructure framework delivers unmatched service excellence consistently.
- **Customer experience center:** TCS has established a digital manufacturing customer experience center – a showcase of our innovations – at Hyderabad, India. Ongoing research and competency development at this center helps us deliver breakthrough solutions to our customers by way of compelling proofs of concept and pilot runs.

## How We Help Our Customers

TCS helped a European manufacturer of aircraft engines increase its production by 90 percent, by deploying a 2D digital throughput simulation model for its pre-production assembly layout. A highlight of this initiative was that the customer realized significant increase in output by employing just about 15 percent additional resources. The simulation model developed by TCS helped the customer conduct a digital prove-out of the entire plant, which enabled timely assessment of the process productivity, bottlenecks, resource utilization, and asset optimization. Having accrued immense benefits from this implementation, the customer has decided to roll out the solution to other process lines to meet its objectives of improving the overall process efficiency and increasing the throughput.

## About TCS' Engineering and Industrial Services Unit

For over two decades, TCS has offered engineering and manufacturing solutions to leading companies from the discrete and process industry domains. Recognized as a Leader by Zinnov in its Global R&D Service Providers (GSPR) Rating 2013 across multiple industry verticals, TCS enables organizations to drive business transformations to realize product strategy, enhance manufacturing oversight and availability of assets, and enable emerging markets entry.

Designed to foster product innovation, improve operational efficiencies and accelerate time to market, our solutions are differentiated by our customer centric, process-driven approach, proprietary products and tools, strategic alliances, investments in emerging technologies and alignment with domain-specific quality paradigms.

Our state-of-the-art innovation labs and centers of excellence develop cutting edge solutions for embedded systems, avionics, high performance computing, control systems, and electro mechanical manufacturing. Our offerings provide end-to-end coverage for the engineering and R&D lifecycle encompassing New Product Development and Product Lifecycle Management, Plant Floor Solutions, and Geospatial Technology Solutions.

## Contact

For more information about TCS' Engineering and Industrial Services Unit, visit us at [www.tcs.com/eis](http://www.tcs.com/eis)

Email: [eis.marketing@tcs.com](mailto:eis.marketing@tcs.com)

### **About Tata Consultancy Services Ltd (TCS)**

Tata Consultancy Services is an IT services, consulting and business solutions organization that delivers real results to global business, ensuring a level of certainty no other firm can match. TCS offers a consulting-led, integrated portfolio of IT and IT-enabled infrastructure, engineering and assurance services. This is delivered through its unique Global Network Delivery Model™, recognized as the benchmark of excellence in software development. A part of the Tata Group, India's largest industrial conglomerate, TCS has a global footprint and is listed on the National Stock Exchange and Bombay Stock Exchange in India.

For more information, visit us at [www.tcs.com](http://www.tcs.com)

## IT Services Business Solutions Consulting

All content / information present here is the exclusive property of Tata Consultancy Services Limited (TCS). The content / information contained here is correct at the time of publishing. No material from here may be copied, modified, reproduced, republished, uploaded, transmitted, posted or distributed in any form without prior written permission from TCS. Unauthorized use of the content / information appearing here may violate copyright, trademark and other applicable laws, and could result in criminal or civil penalties.

Copyright © 2015 Tata Consultancy Services Limited