



# Neural Manufacturing™

Building Value Chains  
with an Intelligent Edge

Manufacturing

The manufacturing industry has been evolving steadily over the last 100 years thanks to globalized supply chains, lean methodologies, and digitalization of processes and products. The pace of this transformation has accelerated multifold post the pandemic, demonstrating the industry's resilience and agility.

TCS Neural Manufacturing™ enables manufacturers to become future-ready by building connected, cognitive, and collaborative ecosystems. With businesses focused on unparalleled agility and exponential growth for competitive advantage, their transformation roadmap would require building next-generation value chains. These value chains would have intelligence built on the edge of their networks enabling faster decision making, thus helping businesses to orchestrate ecosystem-centric business models.

## Overview

We believe that the future of manufacturing is neural. Purpose-centric ecosystems such as personal mobility, wellness, and nutrition are emerging as future business models. These require human-like neural capabilities such as simultaneous central and distributed decision-making.

Combinatorial trends encompassing data analytics, artificial intelligence (AI), machine learning (ML), cognitive computing, cloud computing, agile methodologies, and ubiquitous connectivity are bringing about paradigm shifts in the operating models as well as business strategies for manufacturing enterprises.

These enterprises will start gravitating towards orchestrating purpose-driven ecosystems and a stream of value-added services for customers to deliver superior business results.

# Our Solutions

The TCS Neural Manufacturing suite offers enterprises three core solutions for their transformation:

- **Cognitive Enterprise:** To build AI and prescriptive analytics capabilities across the enterprise functions, enabling autonomous behavior in products, processes, and customer engagements. These can be made possible through a neural information fabric.
- **Connected Value Chains:** To bring visibility across value chain partners to drive agility and co-innovation and establish new target operating models.
- **Collaborative Ecosystems:** To design and operate purpose-centric ecosystems which create exponential business value.

The triangulation of these core capabilities can pivot manufacturing enterprises to build new sources of sustainable competitive advantage, as depicted in Figure 1.

The transformation to the future manufacturing enterprise is powered by data and a contemporary, scalable digital core. TCS enables this journey with a phased roadmap:

- **Phase 1:** Neural thinking for enterprises to plan their business strategy, target operating models, and ecosystem constructs. TCS helps with an opportunity assessment and business case.
- **Phase 2:** Neural capabilities, including a neural information fabric, to build the digital core and enable the orchestration of ecosystems through data-driven platforms.
- **Phase 3:** To demonstrate neural behaviors, manufacturers can introduce adaptability and resilience in their ecosystem operations, thus creating a true agile enterprise with a portfolio of intelligent products and services.

With a “neural by design” approach, TCS helps enterprises to sense, perceive, and act in a near autonomous way while orchestrating purpose-driven ecosystems with neural capabilities.

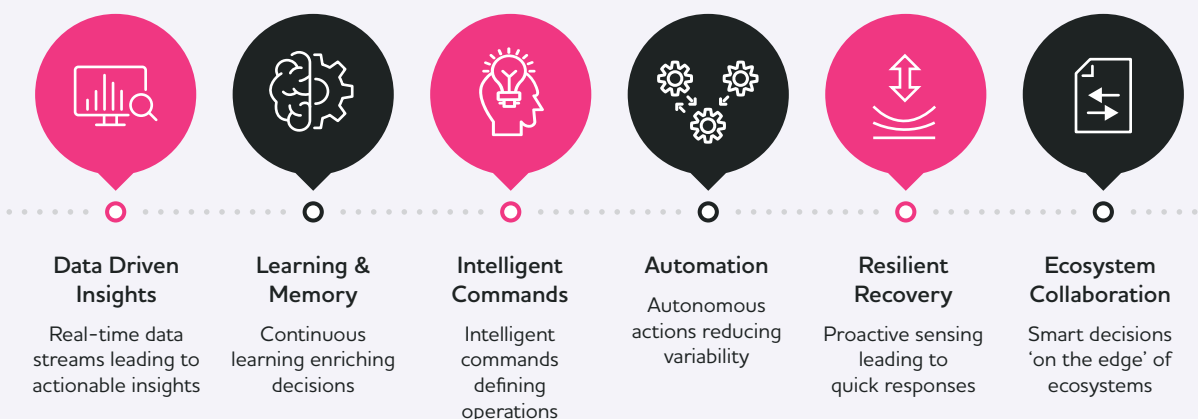


Figure 1: Neural Manufacturing for the future enterprise

# Benefits

The TCS Neural Manufacturing approach helps enterprises:



To develop adaptive capabilities to serve end-customers with personalized experiences, services, and products.



To augment human capability and help enterprises engage with smart connected products and assets with automation and AI in business operations.



To ensure circularity and sustainability in business operations.



To orchestrate purpose-driven ecosystems for innovation and growth using connected, collaborative, and cognitive capabilities, as against the left to right cost-plus model.





## The TCS Advantages



**Cross-industry experience:** Building and orchestrating products and services by leveraging TCS' expertise of working with customers across industries such as travel and transportation, retail, insurance, and more.



**Deep domain and technical expertise:** Leveraging product and enterprise knowledge and technological expertise across the manufacturing value chain to create operating business models and technology applications that are benchmarked against industry standards.



**Assets and frameworks:** TCS' experienced consultants, backed by mature best practices, data and analytics-centric platforms and solutions, enable faster solution deployments.



**Global presence:** A well-established global footprint helps TCS achieve smoother rollouts and deliver robust post implementation support.



**Co-innovation:** Accelerating enterprises' path to value through a network of start-ups, academic partners, and facilities like the TCS Neural Automotive and Industrial Experience Center, TCS Pace Port™, and TCS Rapid Labs.

### To know more

Visit the Manufacturing page on [tcs.com](https://www.tcs.com)

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### About Tata Consultancy Services Ltd (TCS)

Tata Consultancy Services is a purpose-led transformation partner to many of the world's largest businesses. For more than 50 years, it has been collaborating with clients and communities to build a greater future through innovation and collective knowledge. TCS offers an integrated portfolio of cognitive powered business, technology, and engineering services and solutions. The company's 469,000 consultants in 46 countries help empower individuals, enterprises, and societies to build on belief.

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