SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A+' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF MECHATRONICS ENGINEERING

19MCE302 – INTELLIGENT MANUFACTURING TECHNOLOGY

III YEAR V SEM

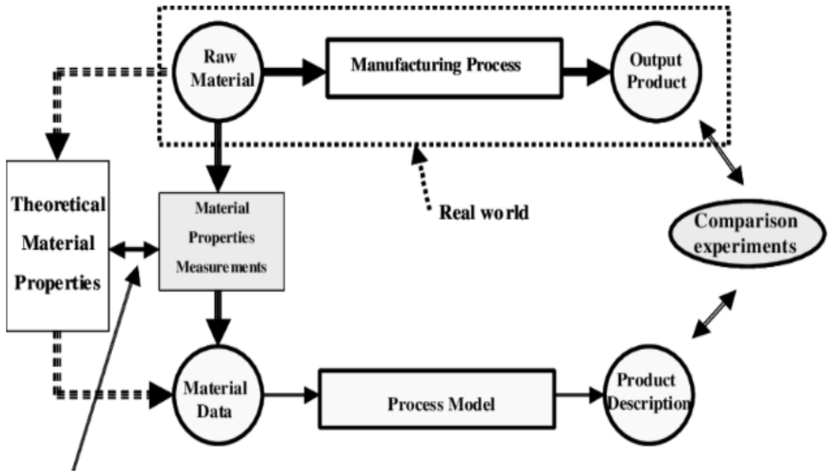
UNIT 1 – MANUFACTURING SYSTEMS AND MODELS

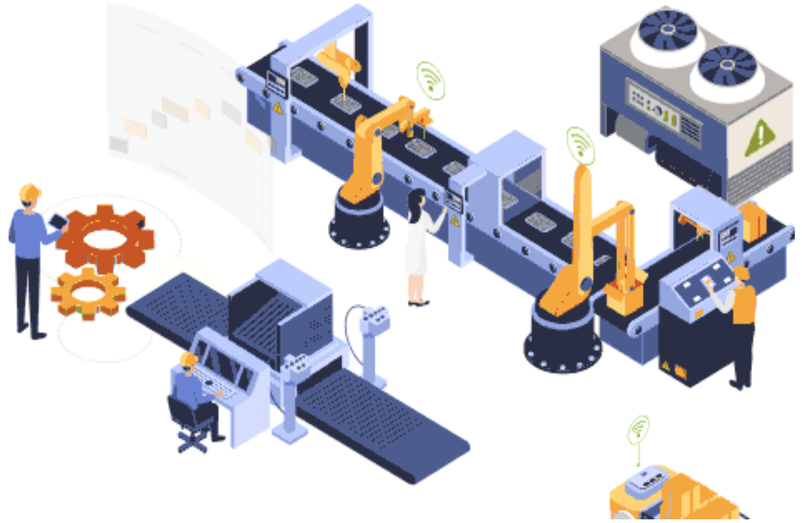
TOPIC 4 – USES OF MANUFACTURING MODELS

UNDERSTANDING MANUFACTURING MODELS

A manufacturing model is a blueprint for transforming raw materials into finished products. It encompasses resource allocation, production flow, inventory management, and quality control.

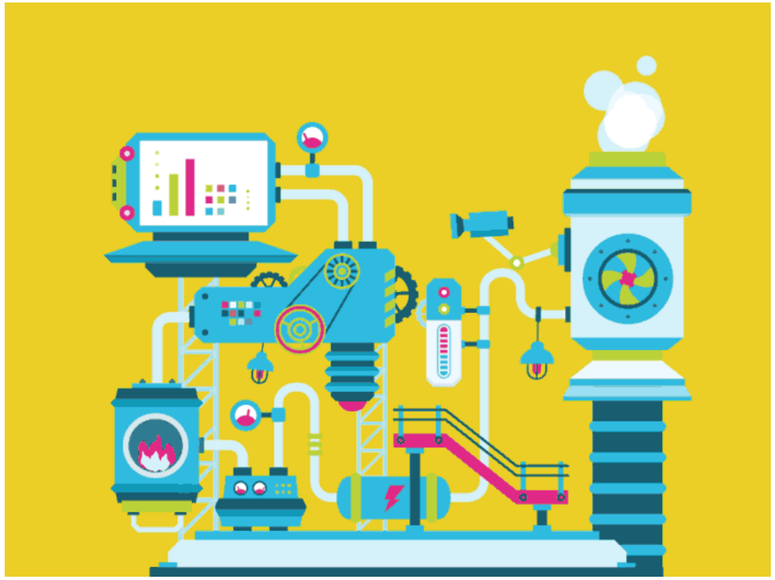
- **Lean Manufacturing:** Focuses on eliminating waste, improving efficiency.
- **Agile Manufacturing:** Emphasizes flexibility and rapid response to market changes.
- **Mass Production:** Produces high volumes of standardized products.
- **Cellular Manufacturing:** Groups related equipment and workers into cells.

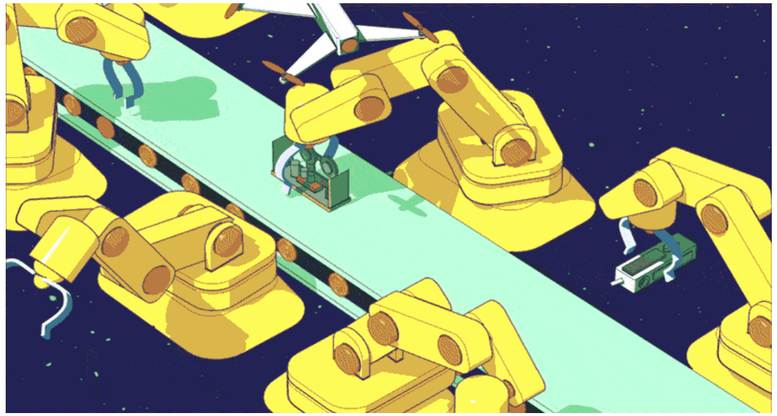




MANUFACTURING MODEL –USES

- Enhancing operational efficiency
- Driving innovation and product development
- Making informed decisions
- Achieving sustainable manufacturing





MANUFACTURING MODEL – USES:

Enhancing Operational Efficiency

Improving Productivity: Manufacturing models optimize resource allocation and reduce waste, leading to increased output and higher efficiency.

Streamlining Processes: Identify bottlenecks and redundant tasks, leading to smoother operations.

Case Study: Let’s see how Toyota used manufacturing models to enhance efficiency.

MANUFACTURING MODEL – USES:

Enhancing Operational Efficiency

Empathize: Understanding the Problem

- Toyota immersed itself in its manufacturing processes to identify root causes of inefficiencies.
- By observing workers, studying production flows, and analyzing data, Toyota uncovered key challenges such as excessive inventory, long lead times, and quality inconsistencies.

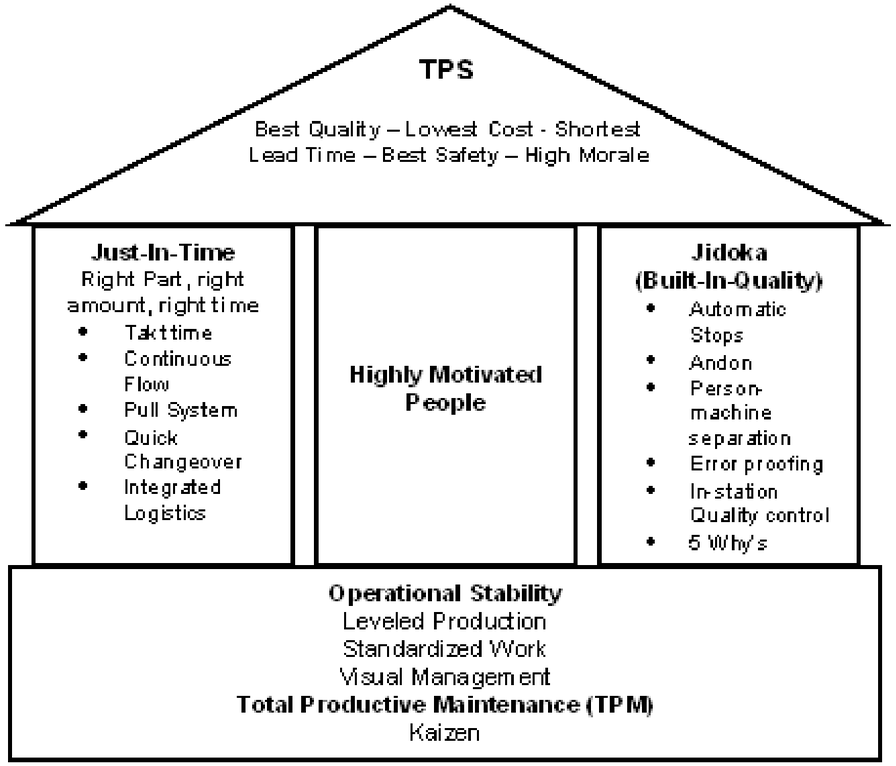
Define: Clearly Articulating the Problem

Based on the observations from the empathize stage, Toyota defined specific problem statements:

•How can we reduce inventory levels without impacting production?

•How can we shorten lead times while maintaining quality?

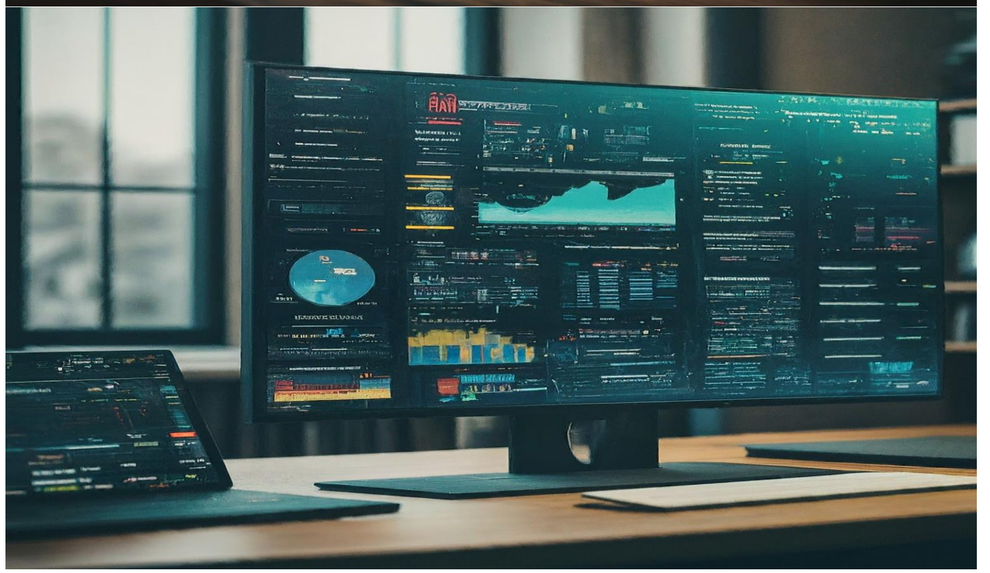
•How can we create a consistent production process with minimal defects?



MANUFACTURING MODEL – USES:

Making Informed Decisions

- ✓ **Risk Mitigation:** Identify and manage potential risks.
- ✓ **Capacity Planning:** Optimize resource allocation.
- ✓ **Supply Chain Optimization:** Improve supply chain efficiency.



MANUFACTURING MODEL – USES:

Achieving Sustainable Manufacturing

- ✓ **Environmental Impact:** Minimize waste and energy consumption.
- ✓ **Circular Economy:** Promote recycling and remanufacturing.
- ✓ **Social Responsibility:** Ensure ethical and fair labor practices.

THANK YOU

QUESTIONS?