

## Lecture 9

The concepts of production:  
“Just in time”  
and Kanban



# Learning Objectives

- To understand what we mean by the terms just-in-time
- To understand what we mean by the term Kanban

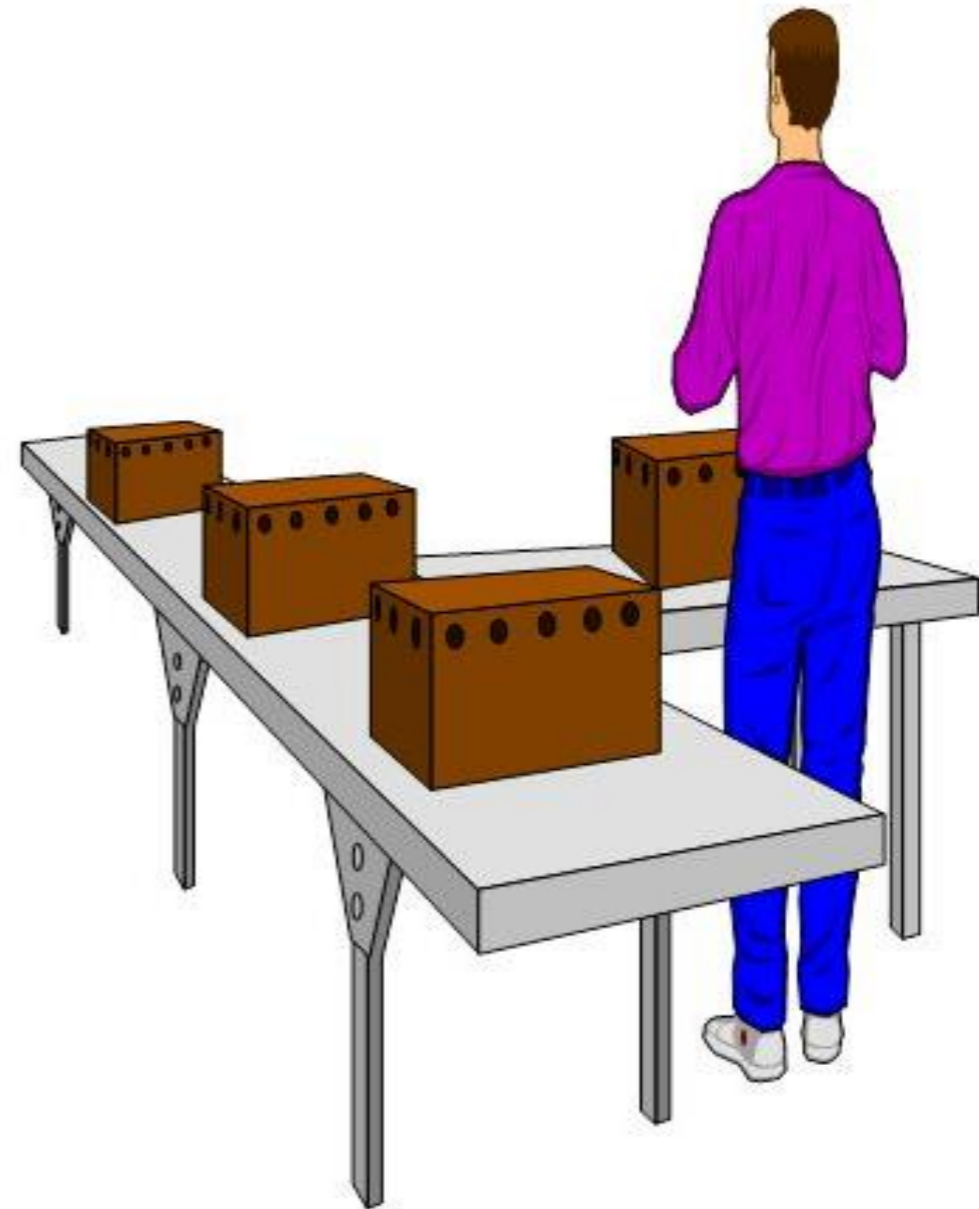


# Agenda

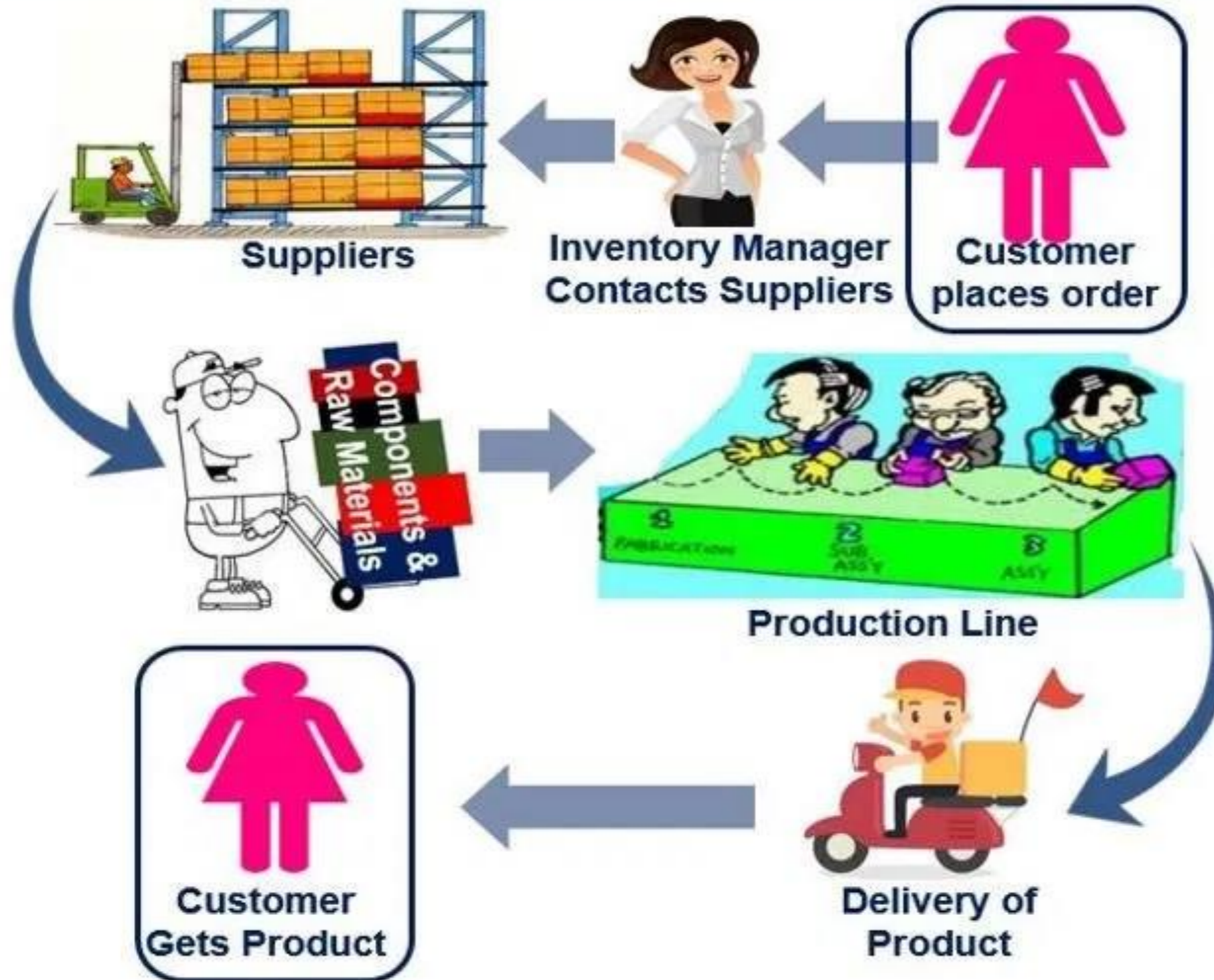
- ✓ Definition and history of JIT
- ✓ Benefits and key components of JIT
- ✓ Kanban concept

# WHAT IS JIT?

- *JIT is a manufacturing philosophy involving an integrated set of procedures/activities designed to achieve a volume of production using minimal inventories.*
- *A highly coordinated processing system in which goods move through the system, and services are performed, just as they need.*



# Just In Time



# Definition of JIT

• "...Just-in-time (JIT) operations organise materials to arrive just as they are needed... By coordinating supply and demand, they eliminate stocks of raw materials and work in progress"

(Waters, 2009:286)



# Definition of JIT

- A set of techniques to increase productivity, improve quality, and reduce cost of an operations.
- A management philosophy to promote elimination of waste and continuous improvement of productivity.



What is A “Waste?”

Anything that exceeds the minimum resources needed for the appropriate value.

Toyota's seven deadly wastes:

- Overproduction (excessive production resources)
- Inventory
- Waiting
- Transportation
- Defective parts



## Developments of JIT Operations

- 1960's: Developed as Toyota Production System by Taiichi Ohno and his colleagues
- 1970's: U.S. and European auto makers began to apply JIT to improve quality and productivity
- 1990's and beyond: Expanded the JIT concept to streamline all types of operations

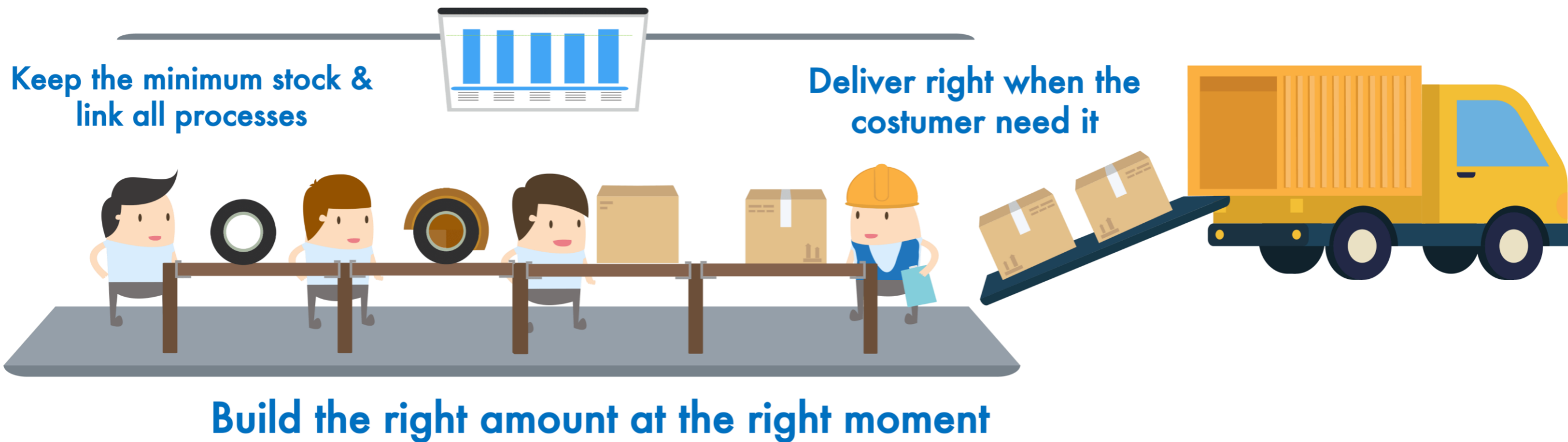


# Expected Benefits of JIT

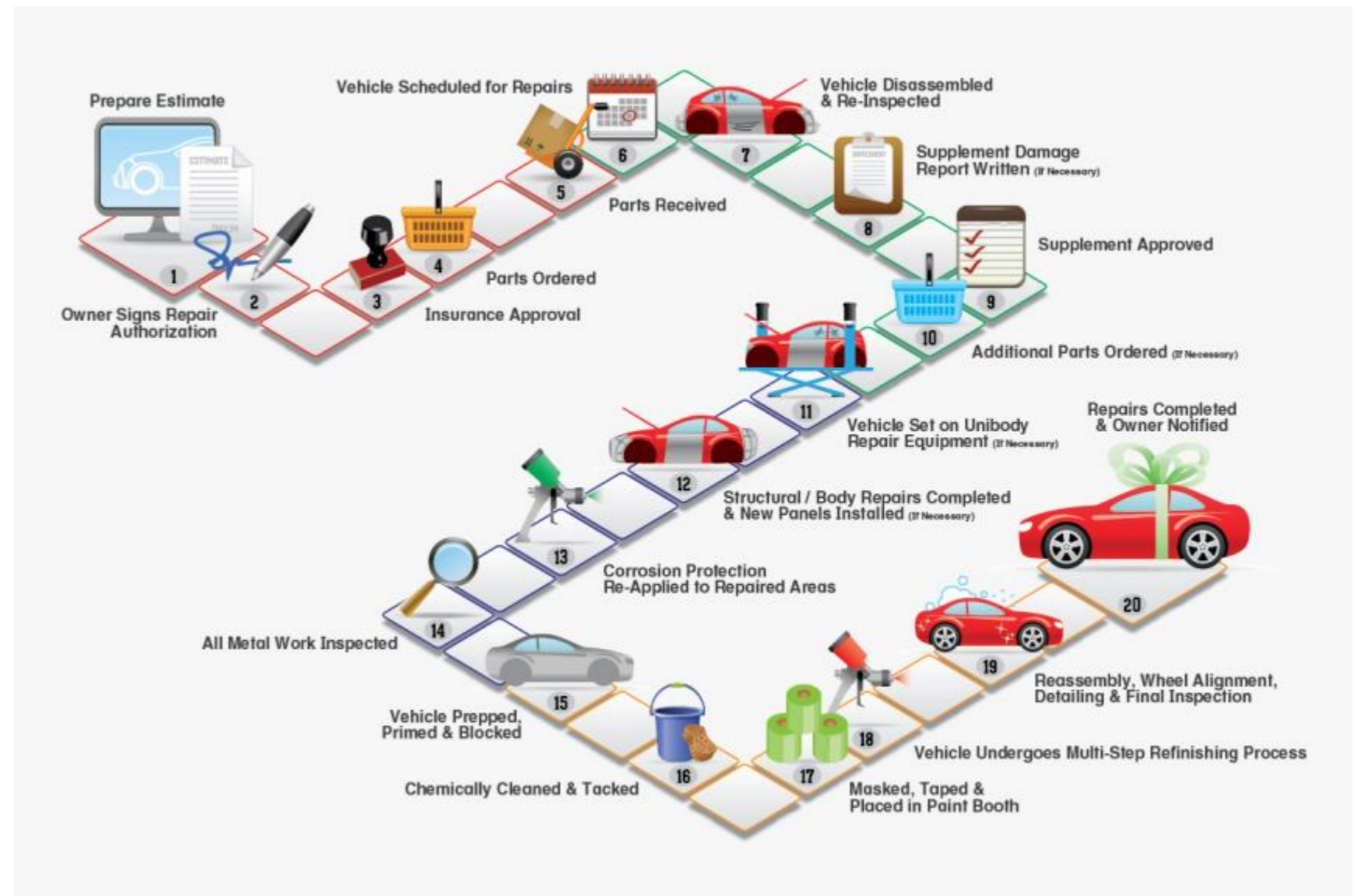


- Reduction in throughput times (production cycle)
- Improvement in quality
- Improvement in productivity
- Reduction in resource requirements
- Reduction of warehousing costs
- Reductions in workspace
- Improvement in customer satisfaction

- Companies employ this inventory strategy to increase efficiency and decrease waste by receiving goods only as they need them for the production process, which reduces inventory costs. This method requires producers to forecast demand accurately.



One example of a JIT inventory system is a car manufacturer that operates with low inventory levels but heavily relies on its supply chain to deliver the parts it requires to build cars, on an as-needed basis. Consequently, the manufacturer orders the parts required to assemble the cars only after an order is received.



## Success factors of JIT

- steady production;
- high-quality workmanship;
- no machine breakdowns;
- reliable suppliers.

## Main Elements of JIT

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- Elimination of waste;
- Quality at the source;
- Balanced and flexible workflow;
- Respect for people;
- Continuous improvement (Kaizen);
- Simplification and visual control;
- Focus on customer needs;
- Partnerships with key suppliers.

1.



CUSTOMER ORDERS A BATCH OF PRODUCTS -  
COMPANY ORDERS QUANTITY OF PARTS/MATERIALS  
EQUAL TO NUMBER OF PRODUCTS REQUIRED

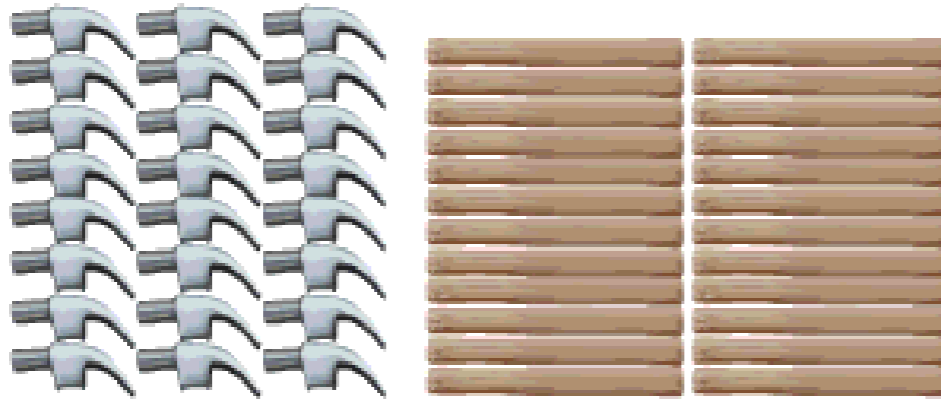
2.



THE CORRECT NUMBER OF PARTS / MATERIALS  
ARRIVE AND UNLOADED



3.



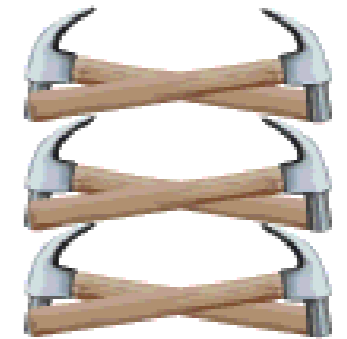
PARTS/MATERIALS STORED FOR SHORT TIME  
UNTIL REQUIRED FOR THE PRODUCTION LINE

4.



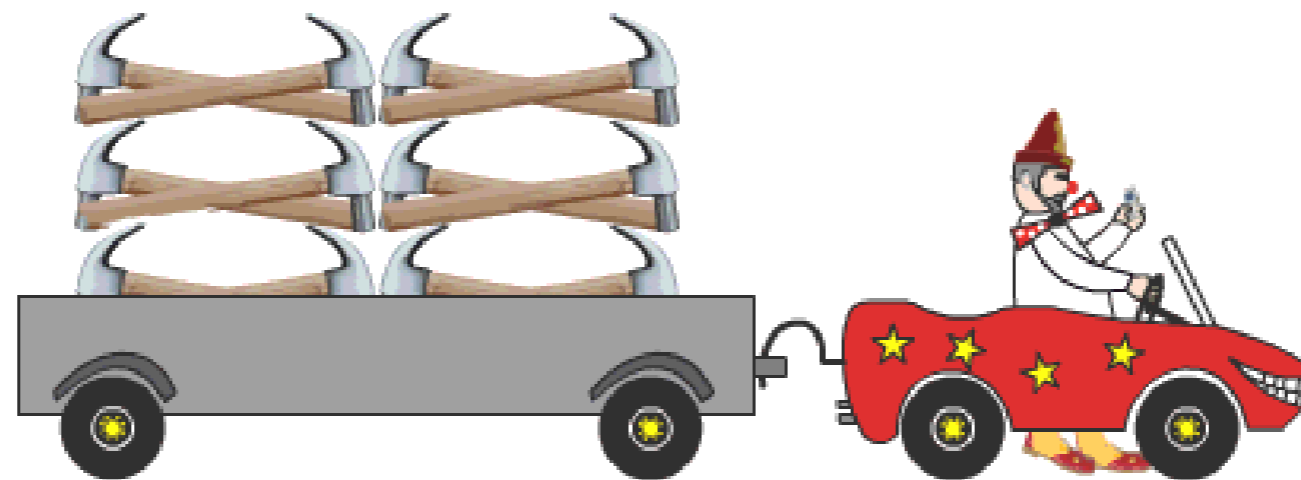
PARTS ASSEMBLED ON THE PRODUCTION  
LINE SHORTLY AFTER THEY ARRIVE IN STORAGE

5.

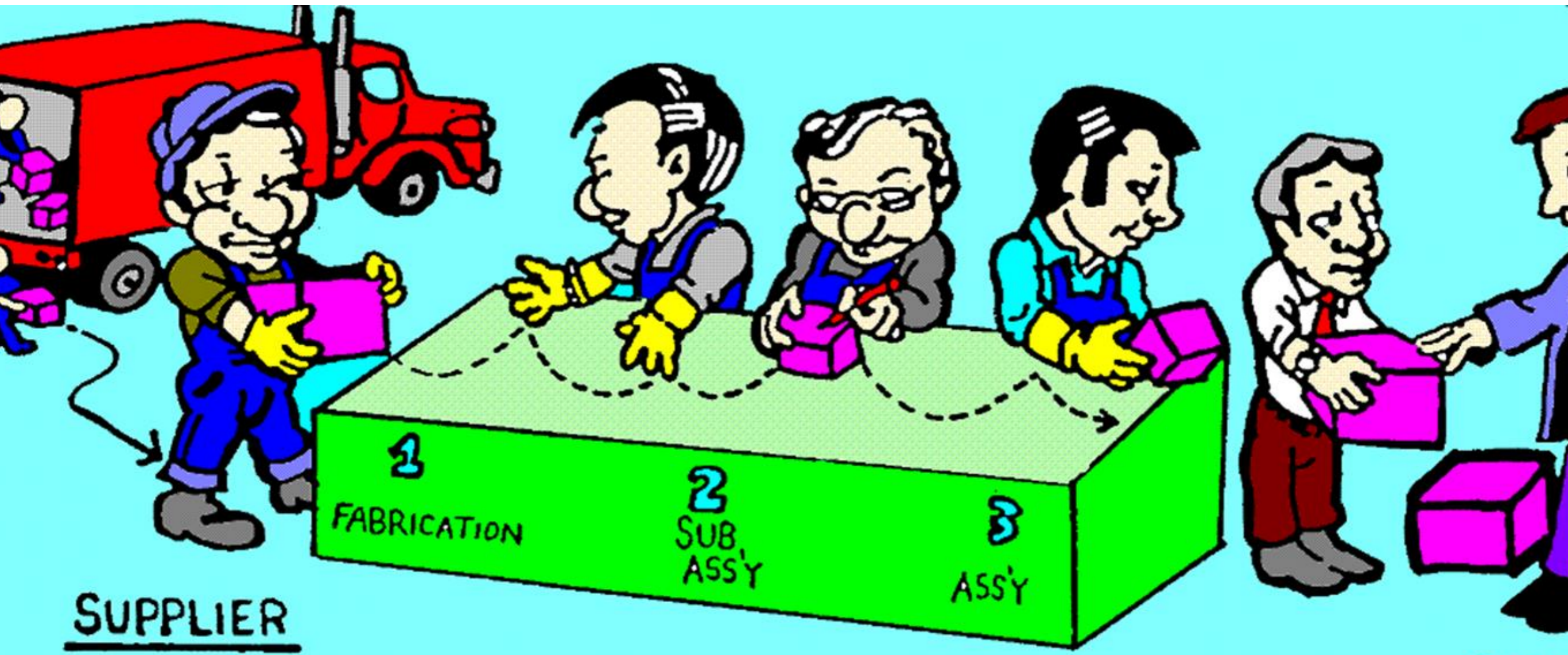


ASSEMBLED PRODUCT  
READY FOR DISTRIBUTION

6.



FINISHED PRODUCT DISTRIBUTED SOON AFTER ASSEMBLY



# THE ULTIMATE FACTORY

- BALANCED
- SYNCHRONIZED
- SIMPLIFIED
- WASTE FREE
- RATIONALIZED