



# MANAGING PRODUCTIONS AND SERVICE OPERATION

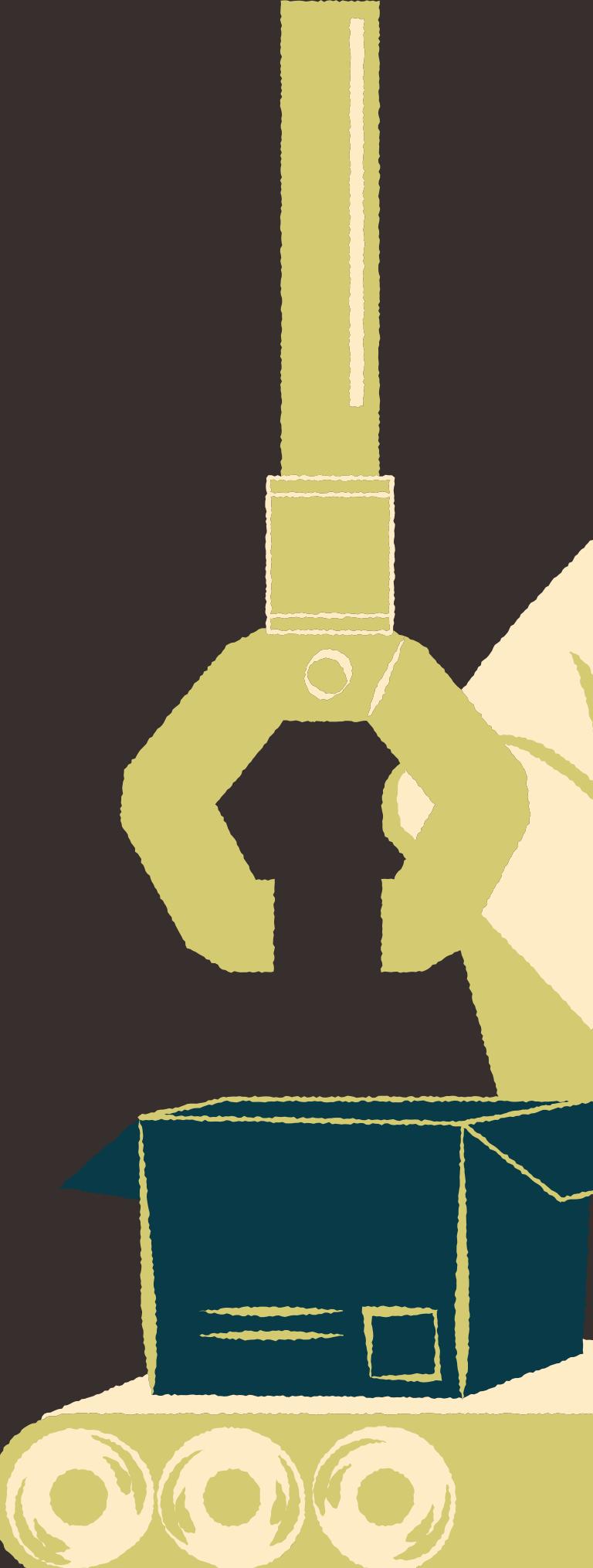
ENGINEERING MANAGEMENT

A presentation is a formal or informal communication method that involves conveying information, ideas, or a message to an audience.

# WHAT IS OPERATION?



- Processes and activities involved in **producing goods** and **delivering services**. It includes everything from sourcing **raw materials** to **manufacturing**, **logistics**, and **customer service**.



Producing industrial chemicals in chemical firms.



Assembling mechanical devices like forklifts and trucks.



Manufacturing electrical and electronic products like  
transformers and transistors.



Constructing buildings, roads, and bridges  
in construction firms.



Providing engineering consultancy services for project management.



# OPERATION MANAGEMENT





# WHAT IS OPERATION MANAGEMENT?



It is about planning, organizing, and controlling business activities to ensure products or services are made **efficiently** and **effectively**.

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BEING EFFICIENT

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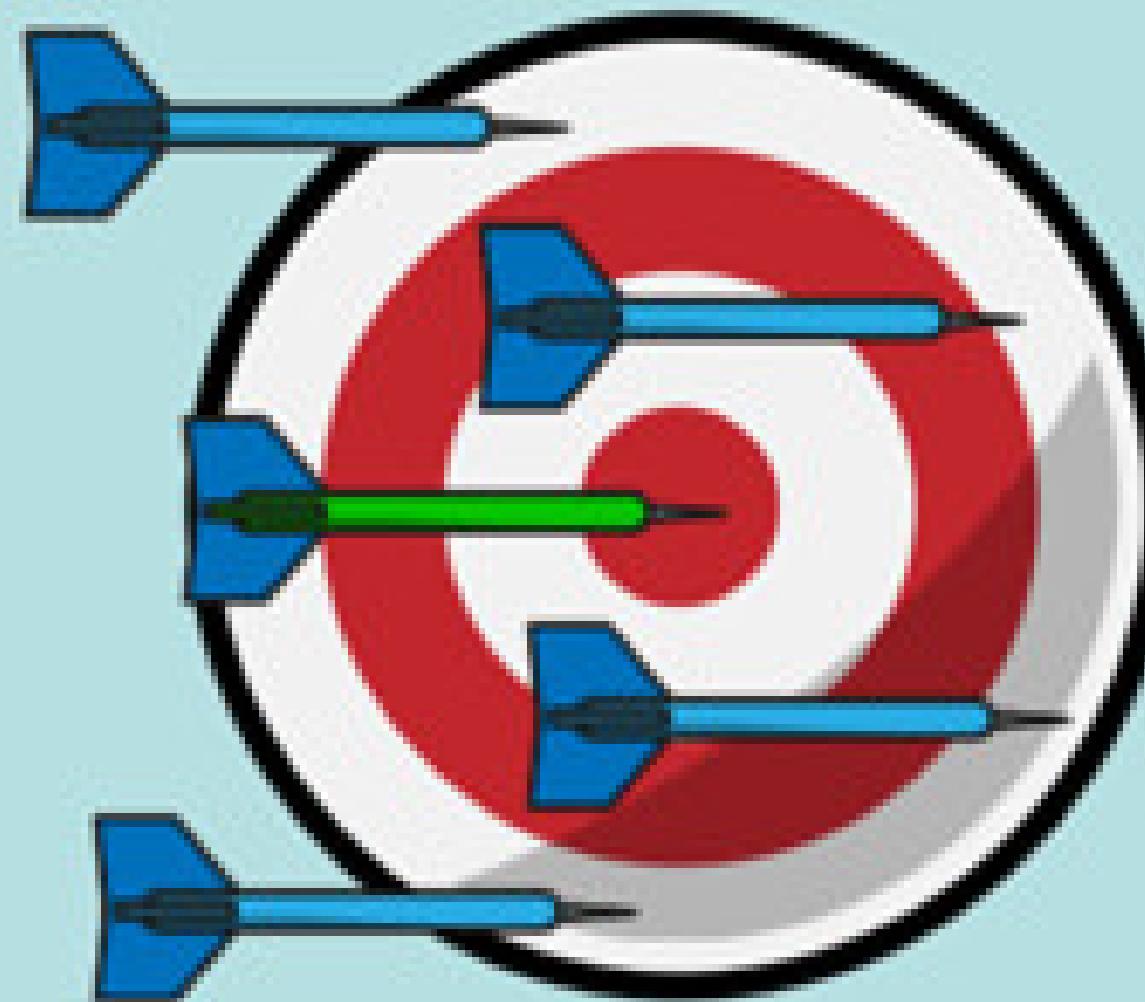
VS

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BEING EFFECTIVE

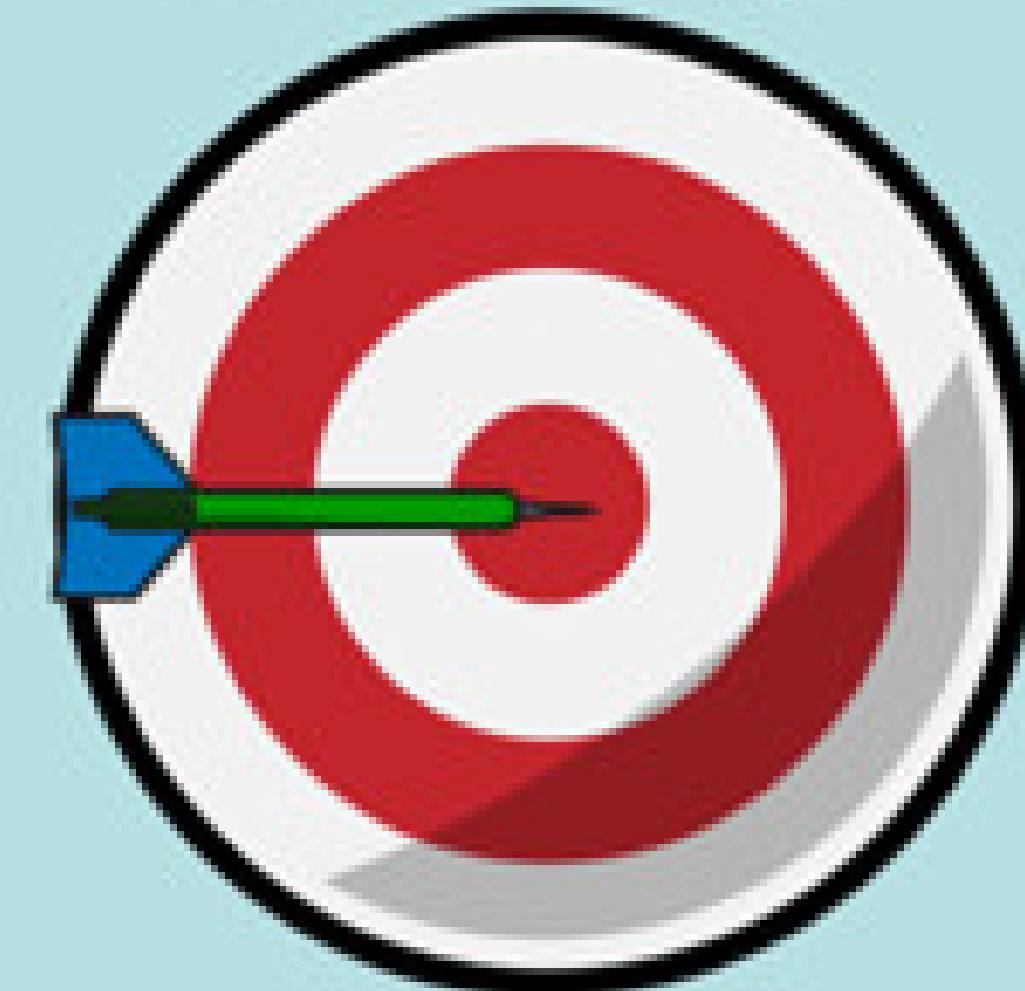
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5 attempts



focus on process and do  
things right

1 attempt



focus on goals and do  
right things



## Core Aspects of Operation Management:

1. **Process Design** - efficient task organization
2. **Capacity Planning** - sufficient resources to meet demand
3. **Inventory Control** - managing material and products
4. **Quality Control** - ensuring product/service quality
5. **Supply Chain Management** - coordinating materials and goods flow





## Why is Operation Management important?

- **Efficiency** - maximizes resource utilization
- **Customer Satisfaction** - meets customer needs and expectations
- **Cost Control** - reduces operational costs
- **Adaptability** - adjusts to changes effectively





## Operation is the core of Production

The fundamental role of operations is to produce products or services.

Like any manager, the engineer manager is expected to produce some kind of output, regardless of their management level.

The typical engineer manager is one with several years of experience in operations division and possesses an academic background in engineering.

# OPERATIONS AND THE ENGINEER

## E X A M P L E S :

- Manufacturing Engineer - Their role is to "determine and define the equipment, tools, and processes required to convert the design of the desired product into reality in an efficient manner."
- Construction Engineer / Engineer in charge of operations - They are responsible for the actual construction of projects (like bridges or roads) using the "least expensive and the easiest methods."



## SKILLS NEEDED:

- Technical Expertise
  - Management Skills
  - Cost Consciousness
- Quality Focus  
Output Focus





# TYPES OF TRANSFORMATION PROCESSES

## I. MANUFACTURING PROCESSES

- 1.1 Job Shop
- 1.2 Batch Flow
- 1.3 Worker-paced Line Flow
- 1.4 Machine-paced Line Flow
- 1.5 Batch/ Continuous Flow Hybrid
- 1.6 Continuous Flow

## II. SERVICE PROCESSES

- 2.1 Service Factory
- 2.2 Service Shop
- 2.3 Mass Service
- 2.4 Professional Service

# TRANSFORMATION PROCESSES

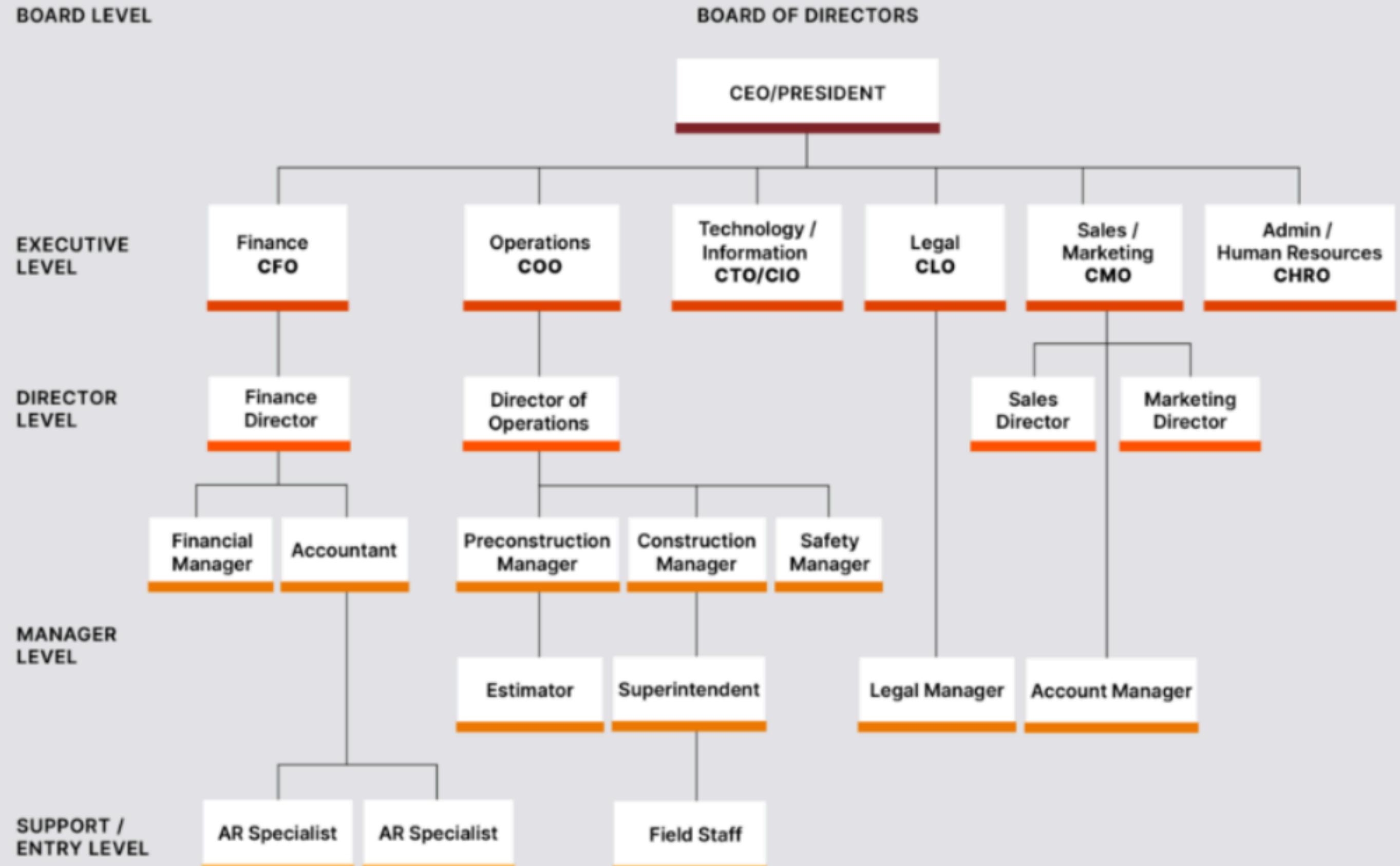


- Transformation processes refer to the conversion of raw materials into finished goods.
- Manufacturing processes play a crucial role in production industries

# I. MANUFACTURING PROCESSES



# Organizational Chart for Large Contractor



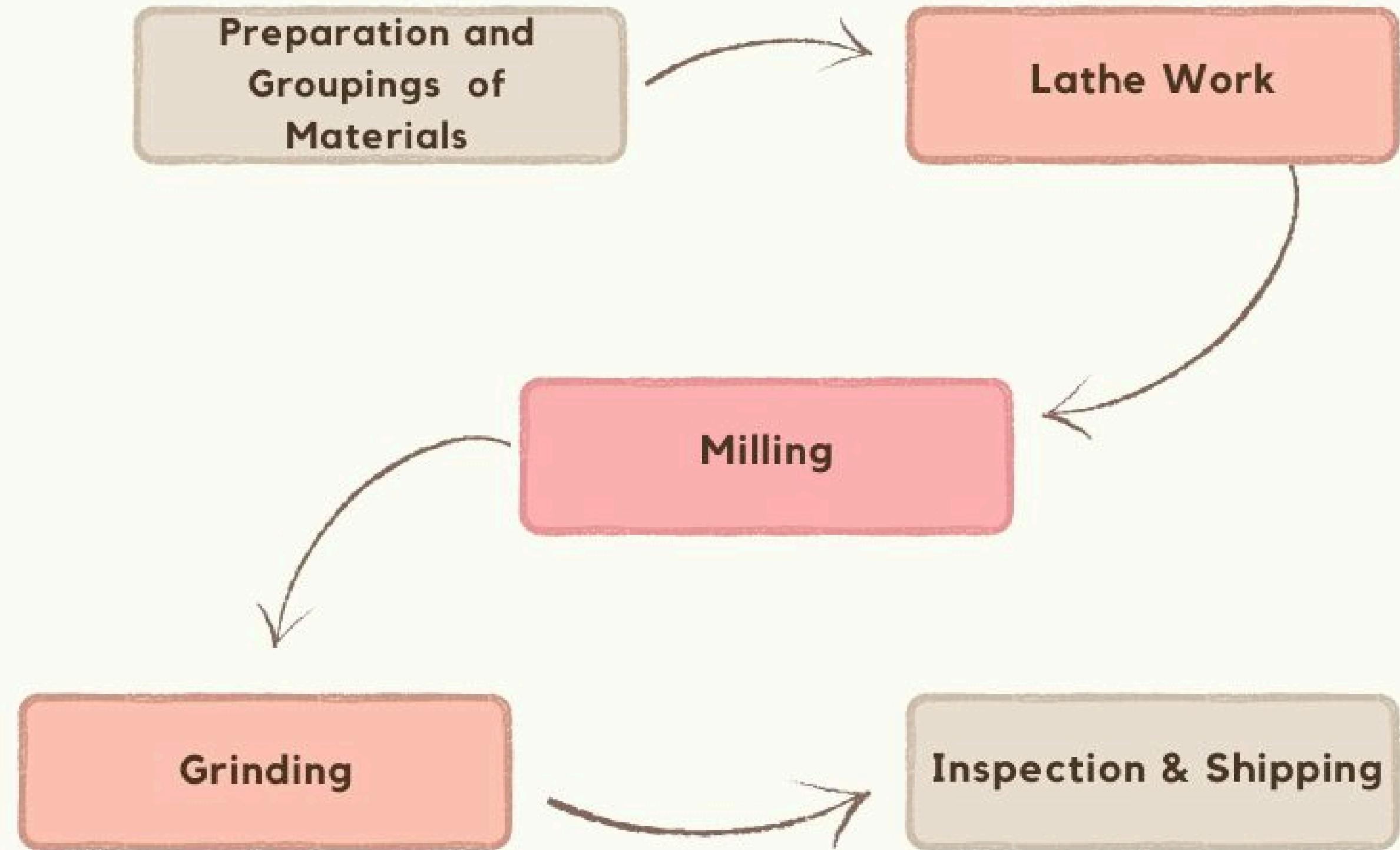
## A. JOB SHOP

- A type of manufacturing process where small batches of different products are made.
- Production is based on customer orders rather than mass production.

- Common in precision machining, metal fabrication, and custom manufacturing



# PROCESS FLOW DIAGRAM FOR A JOB SHOP FLOWCHART

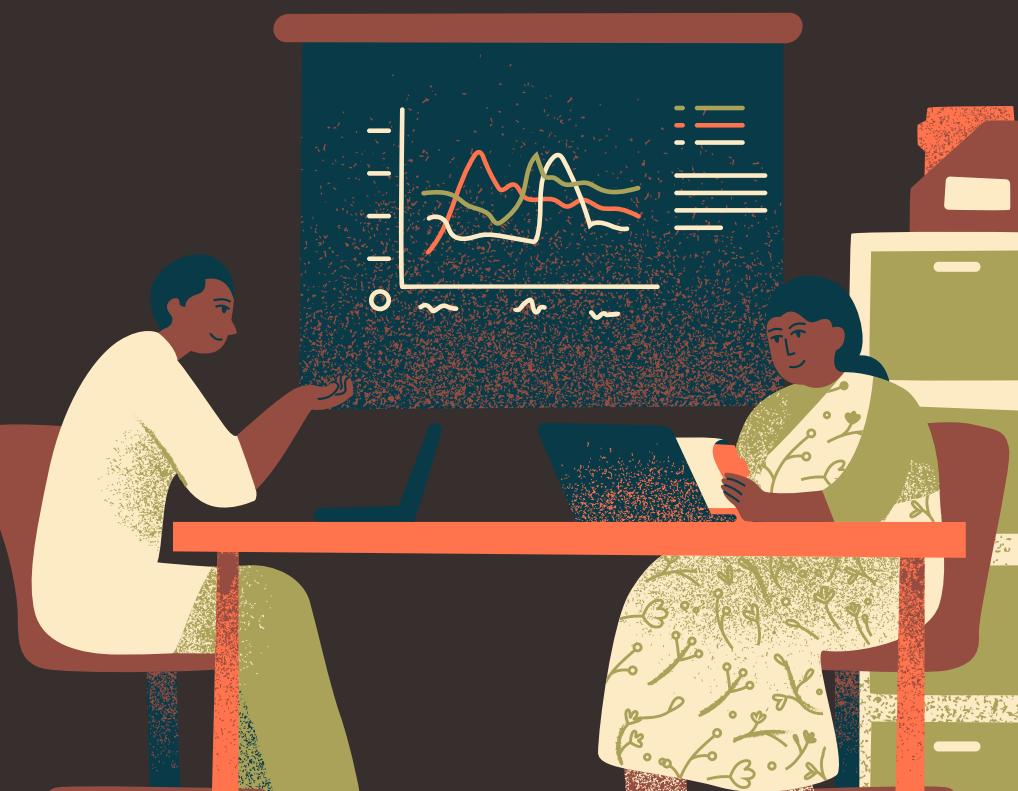


# MILLING MACHINE



LATHE MACHINE

GRINDING MACHINE



## B. BATCH FLOW

- The batch flow process is where lots of generally own designed products are manufactured.
- It is characterized by:
  1. Flexibility to produce low or high volumes
  2. Not all procedures are performed on each product
  3. Type of equipment used are mostly for general purpose.





Worker-Paced Line Process

## C. WORKER-PACED LINE FLOW



- refers to a production where each worker controls the speed at which they work

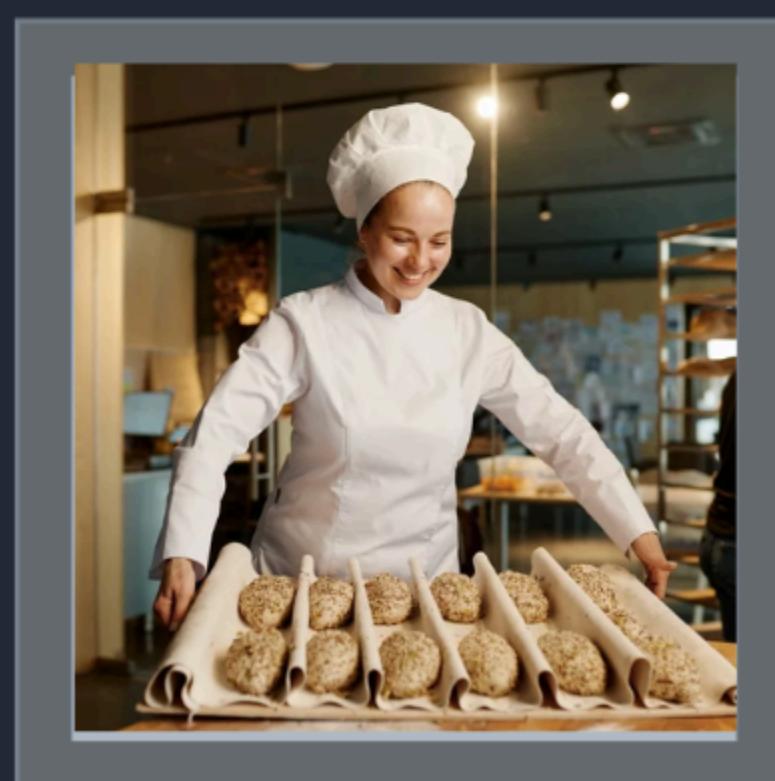
The worker-paced assembly line is characterized by the following:

1. Standardized Products
2. Clear Process Pattern
3. Specialized Equipment
4. Variable Size of Operation
5. Worker-Paced
6. Line Flow Layout
7. Labor as a Significant Cost





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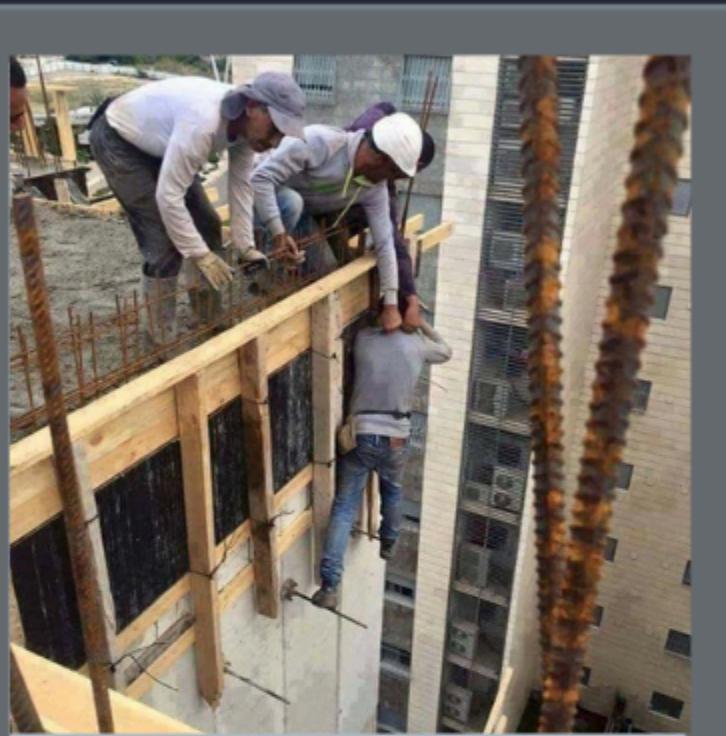
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A R B A I C  
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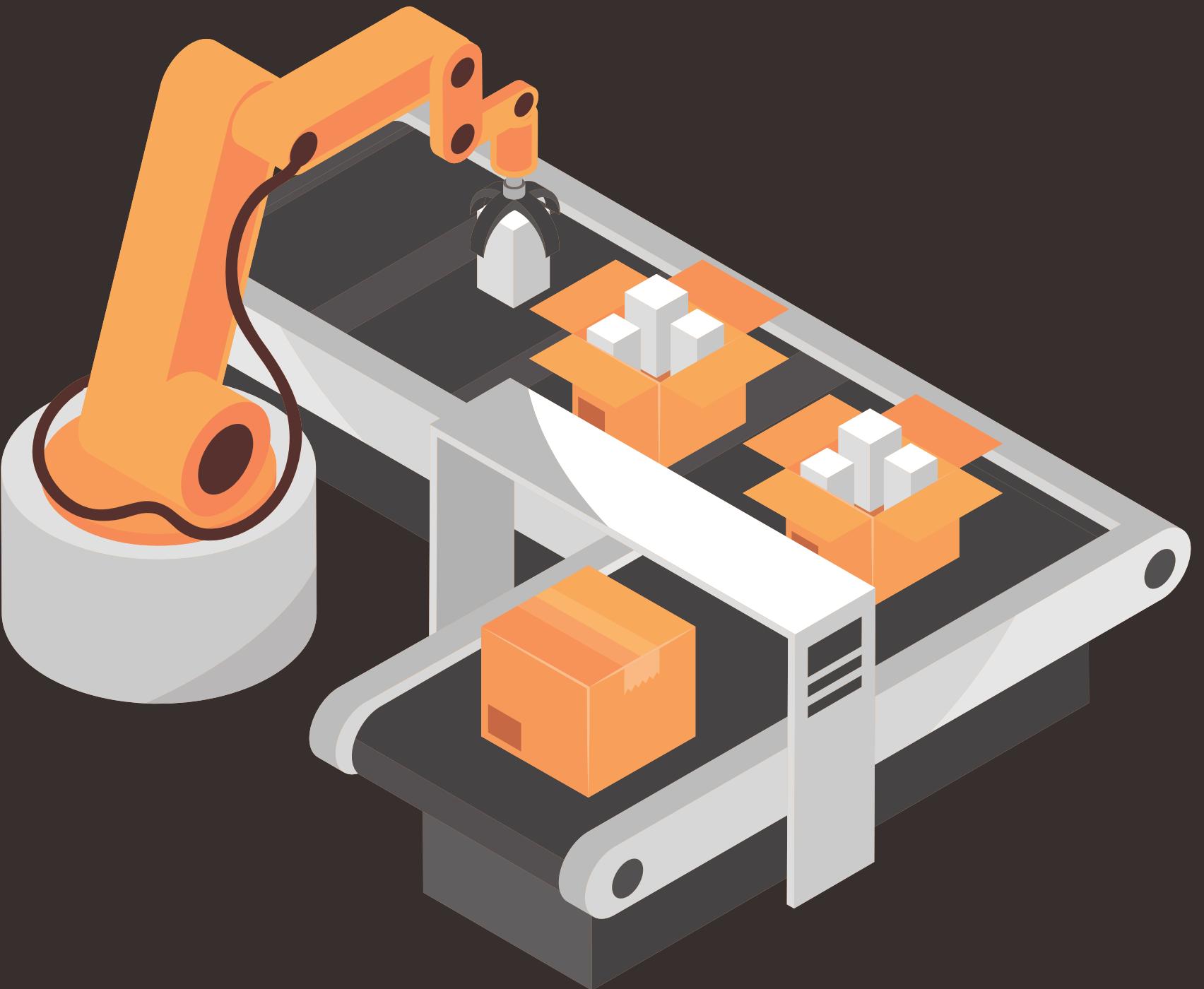


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The image shows two rows of six 3D blocks each, arranged horizontally. The top row contains the letters C, I, O, T, N, and C from left to right. The bottom row contains the letters R, U, O, T, S, and N from left to right. Each block is white with a brown base and features a large green letter in its center.

## D. MACHINE-PACED LINE FLOW



- Machine-paced line flow refers to a manufacturing or production process where machines dictate the pace at which products are created

# The machine-paced assembly line is characterized by the following

1. The process is of clear, rigid pattern.
2. Specialized type of equipment is used.
3. The line flow layout is used.
4. Capital equipment is a bigger cost item than labor.
5. Operation is large
6. The process is machine-paced.



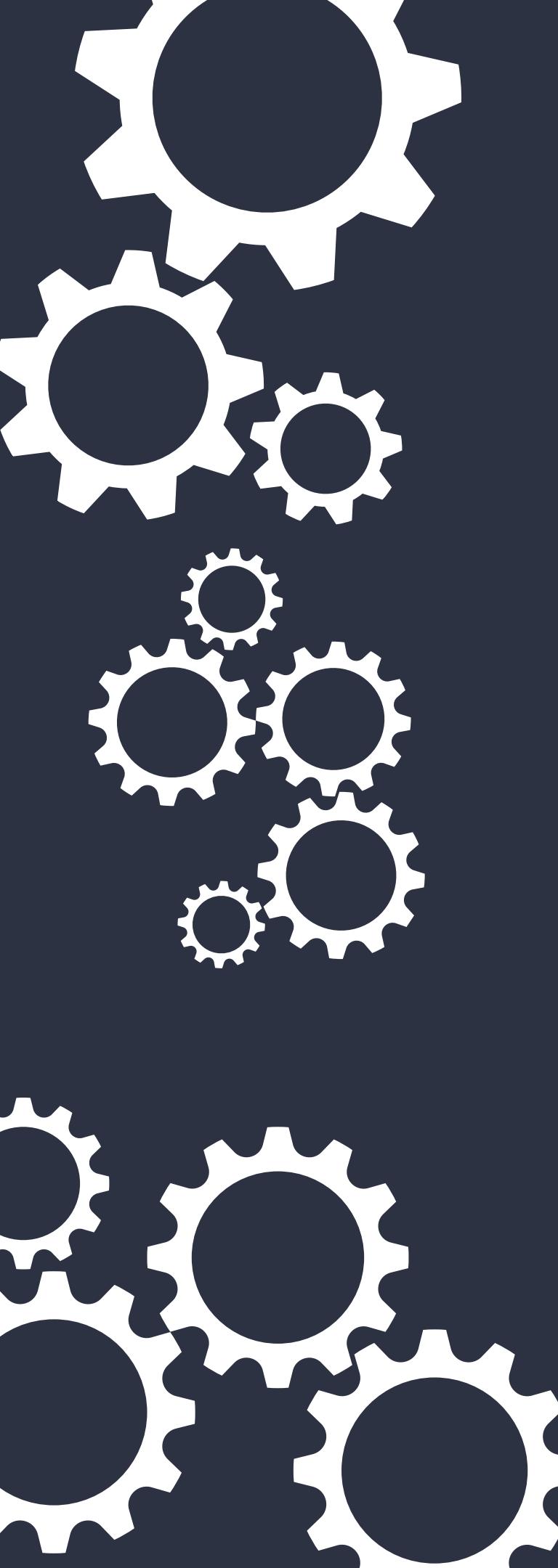
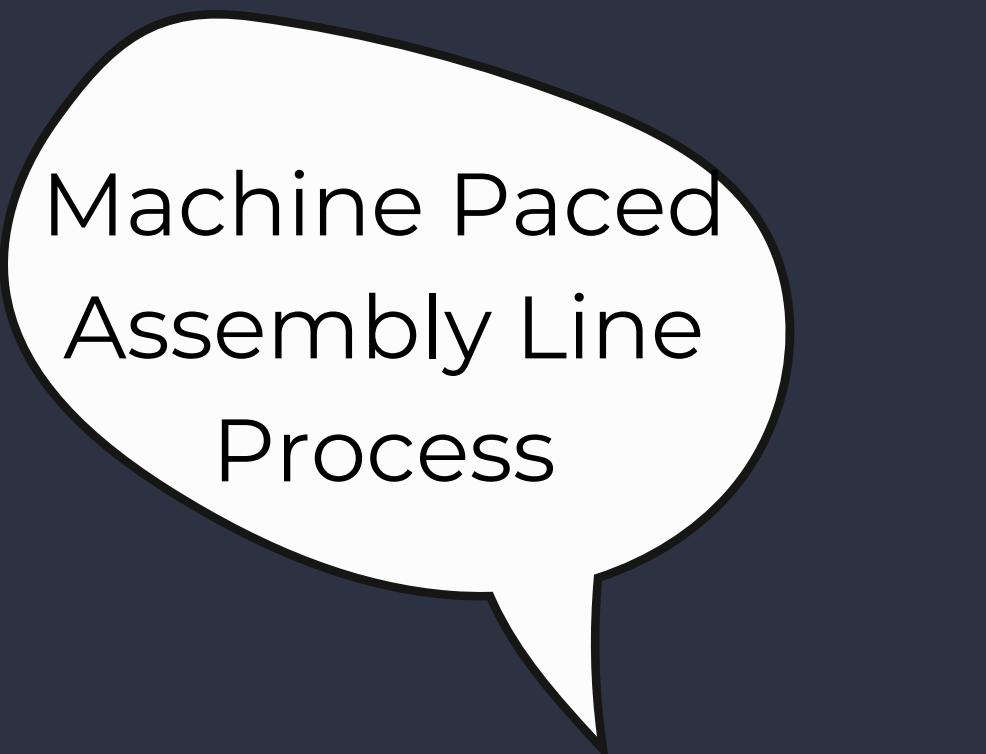
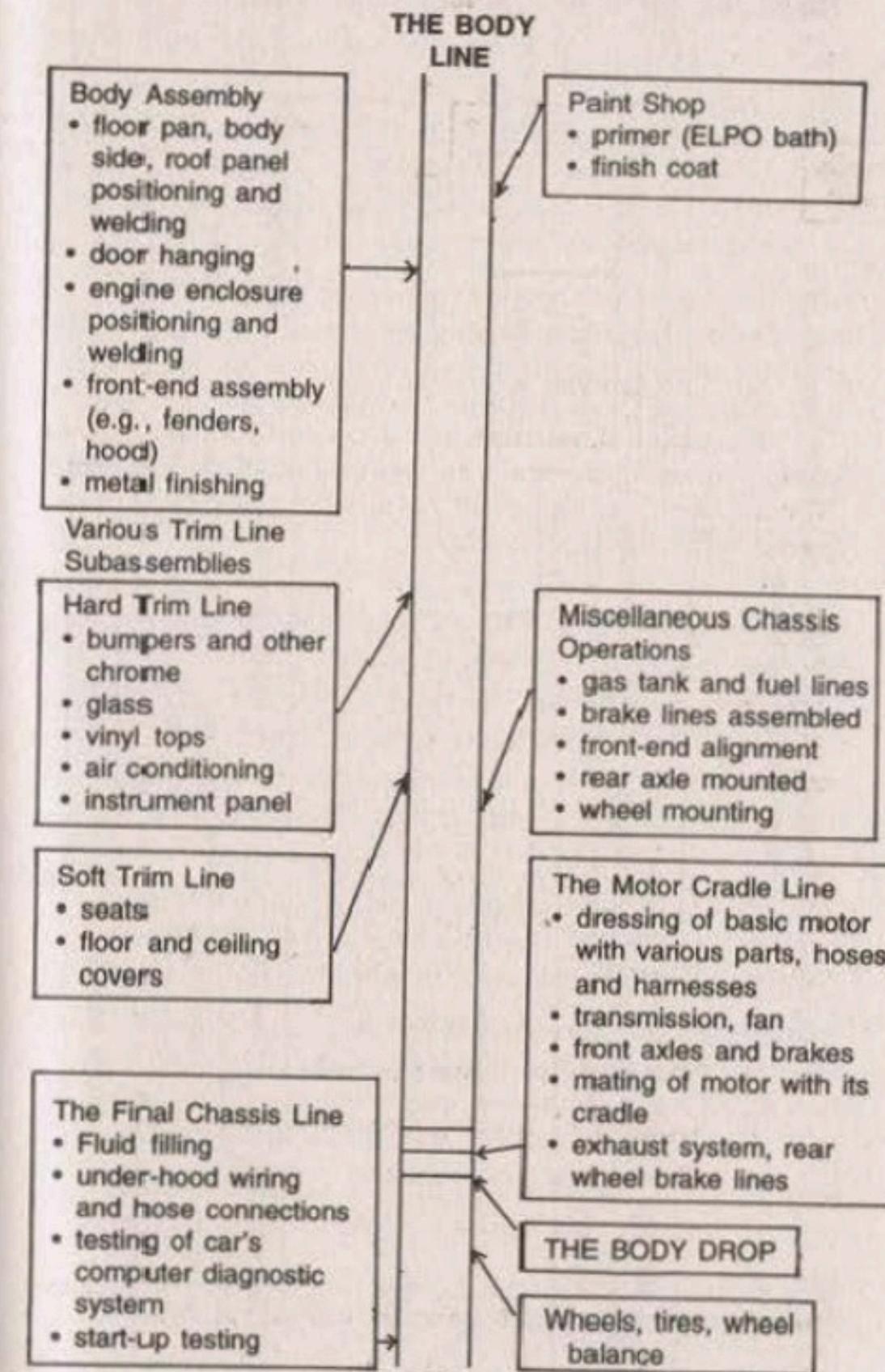


Figure 10.7 A Machine-Paced Assembly Line Process:  
Automobile Manufacturing



## E. BATCH/CONTINUOUS FLOW HYBRID

- combination of batch and continuous flow.

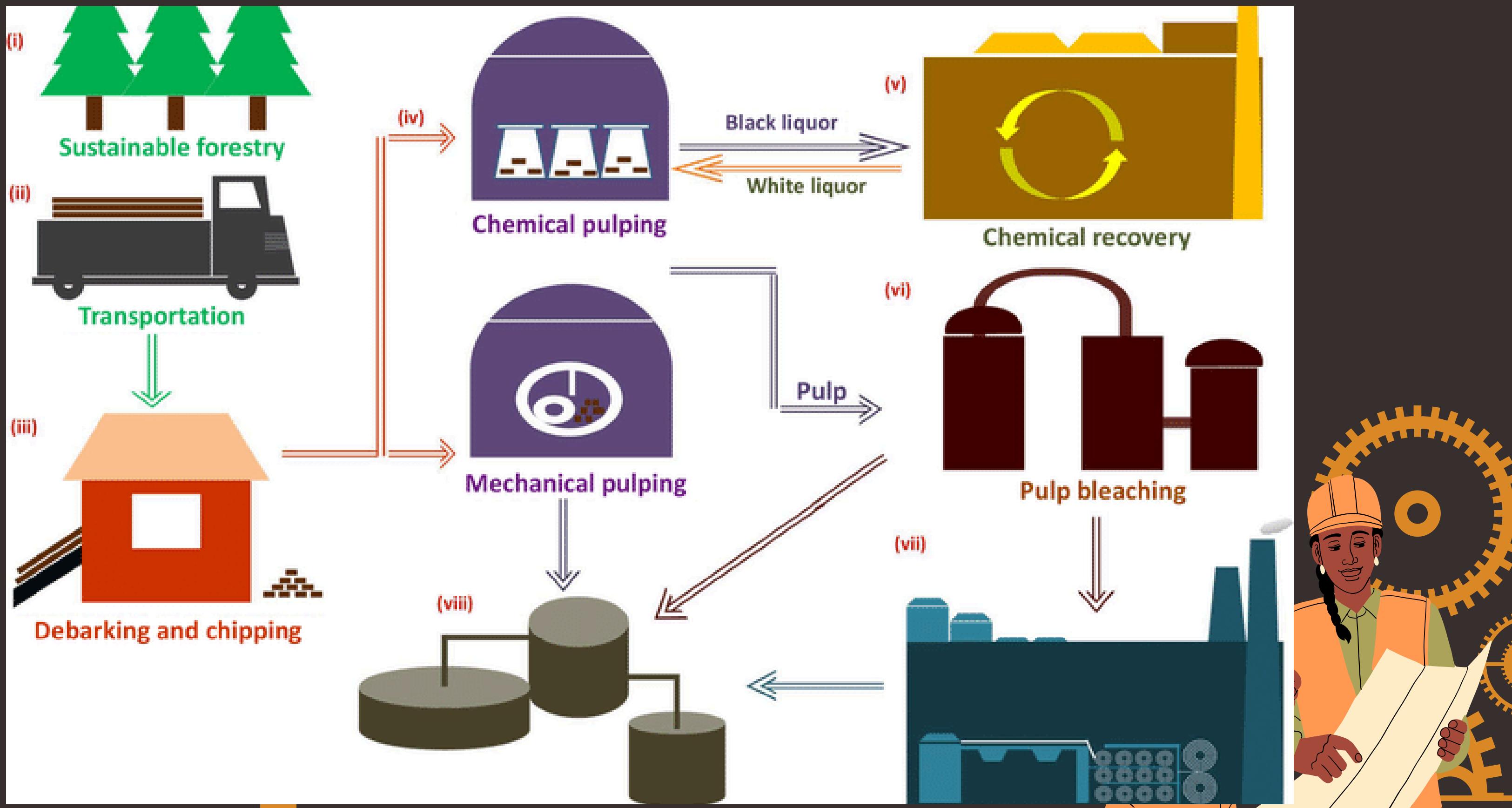


## F. CONTINUOUS FLOW

- “the rapid rate at which items move through the system.”



# Diagram of the Continuous Flow Process of a Paper-making Company



## II. SERVICE PROCESSES



# Service Processes

- Service processes are those that refer to the provision of services to persons by hand or with machinery.



# A. SERVICE FACTORY

- A service factory offers a limited mix of services which results to some economies of scale in operations.
- This also affords the company to compete in terms of price and speed of producing the service.
- ex. McDonalds and Shakeys



## D. PROFESSIONAL SERVICE

- These are companies that provide specialized services to other firms or individuals.
- ex. Health service, Legal Service, Accounting Service, etc..



## B. SERVICE SHOPS

- A service shop provides a diverse mix of services. The layout used are those for job shops or fixed position and are adaptable to various requirements.
- ex. Megashell and Servitek



## C. MASS SERVICE

- A mass service company provides services to a large number of people simultaneously.
- A unique processing method is, therefore, necessary to satisfy this requirement.
- ex. supermarkets



Professional service firms Strategies that may be used depending on the situation are as follows:

1. The use of staggered work-shift schedules.
2. The hiring of part-time staff .
3. Providing the customer with opportunity to select the level of service.
4. Installing auxiliary capacity or hiring subcontractors.
5. Using multiskilled floating staff.
6. Installing customer self-service.



# IMPORTANT PARTS OF PRODUCTIVE SYSTEMS

1. PRODUCT DESIGN
2. PRODUCTION PLANNING AND SCHEDULING
3. PURCHASING AND MATERIALS MANAGEMENT
4. INVENTORY CONTROL
5. WORK FLOW LAYOUT
6. QUALITY CONTROL



# PRODUCT DESIGN

- A good product design assures that this will be so. Customers avoid buying products with poor product design.
- **PRODUCT DESIGN** - "the process of creating a set of product specifications appropriate to the demands of the situation."



# PRODUCTION PLANNING AND SCHEDULING

- **PRODUCTION PLANNING** - "forecasting the future sales of a given product, translating this forecast into the demand it generates for various production facilities, and arranging for the procurement of these facilities."
- **SCHEDULING** - "phase of production control involved in developing timetables that specify how long each operation in the production process takes."



# PURCHASING AND MATERIALS MANAGEMENT

- Firms need to purchase supplies and materials required in the various production activities.
- The wider variety of supplies and materials needed adds to the necessity of proper managing and purchasing of materials.
- **MATERIALS MANAGEMENT** - "the approach that seeks efficiency of operation through integration of all material acquisition, movement, and storage activities in the firm"



# INVENTORY CONTROL

- The process of establishing and maintaining appropriate levels of reserve stocks of goods.
- Too much reserves of stocks will penalize the firm in terms of high storage costs and other related risks.
- Too little reserves may mean lost income opportunities if production activities are hampered.



# INVENTORY CONTROL

## WAYS OF ACHIEVING PROPER INVENTORY CONTROL

1. Determining reorder point and reorder quantity
2. Determining economic order quantity
3. The use of just-in-time (JIT) method of inventory control
4. The use of the material requirement planning (MRP) method of planning and controlling inventories.



Work-flow layout is the process of determining the physical arrangement of the production system.

# WORK FLOW LAYOUT



# WORK FLOW LAYOUT

1. Minimize investment in equipment.
2. Minimize overall production time.
3. Use existing space most effectively.
4. Provide for employee convenience, safety, and comfort.
5. Maintain flexibility of arrangement and operation.
6. Minimize material handling cost.
7. Minimize variation in types of material-handling equipment.
8. Facilitate the manufacturing (or service) process.
9. Facilitate the organizational structure.



- Quality control refers to the measurement of products or services against standards set by the company.

# QUALITY CONTROL





P R E S E N T A T I O N

# THANK YOU FOR YOUR ATTENTION

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