



SNS COLLEGE OF TECHNOLOGY

(An autonomous institution)



## *Department of Mechanical Engineering*

### *New Product Development*

#### **Unit – I**

#### *Product Development and Customer Needs*

Topic

### **Types of Design**

Text book

Kevin Otto and Kristin Wood ,” Techniques in Reverse Engineering and New Product Development”

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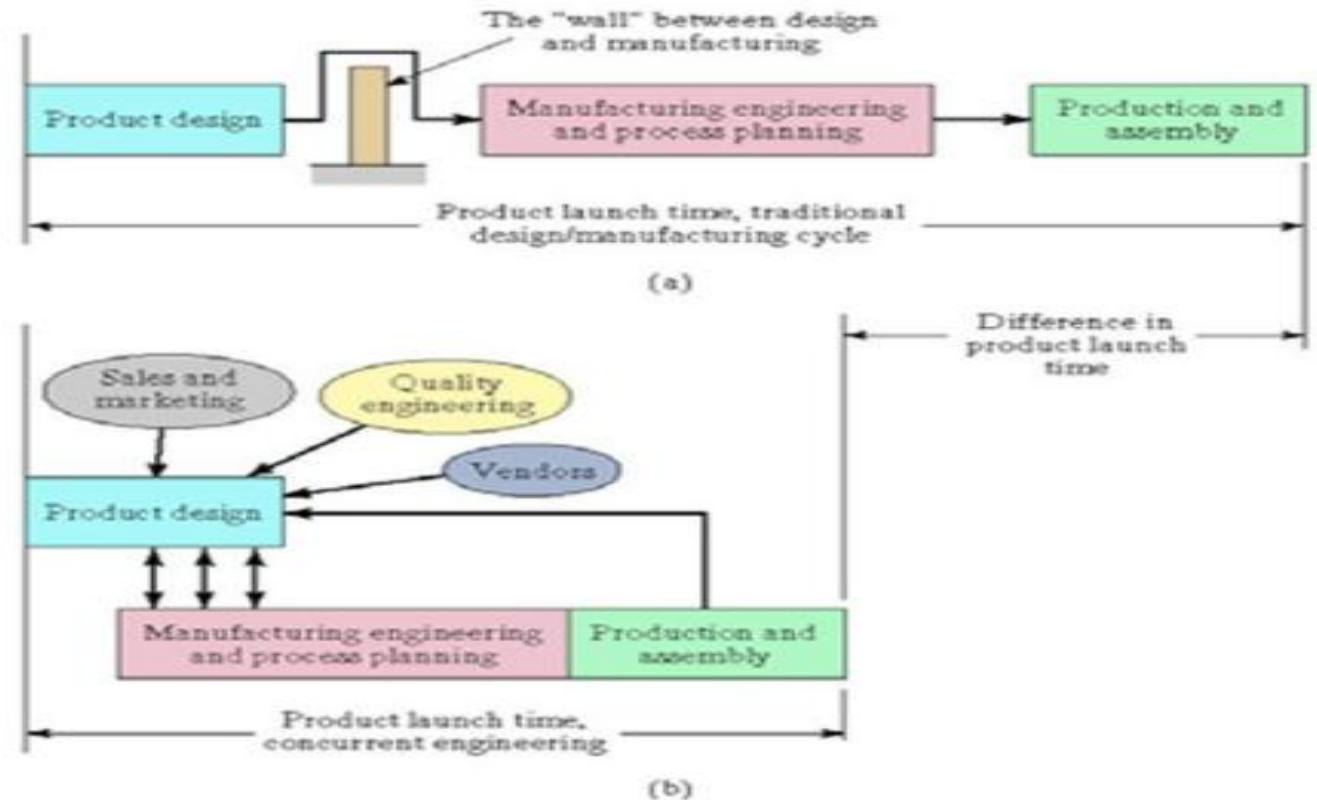


# Product Development: Two approaches



Comparison of:  
(a) traditional product development cycle,

(b) Product development using concurrent engineering

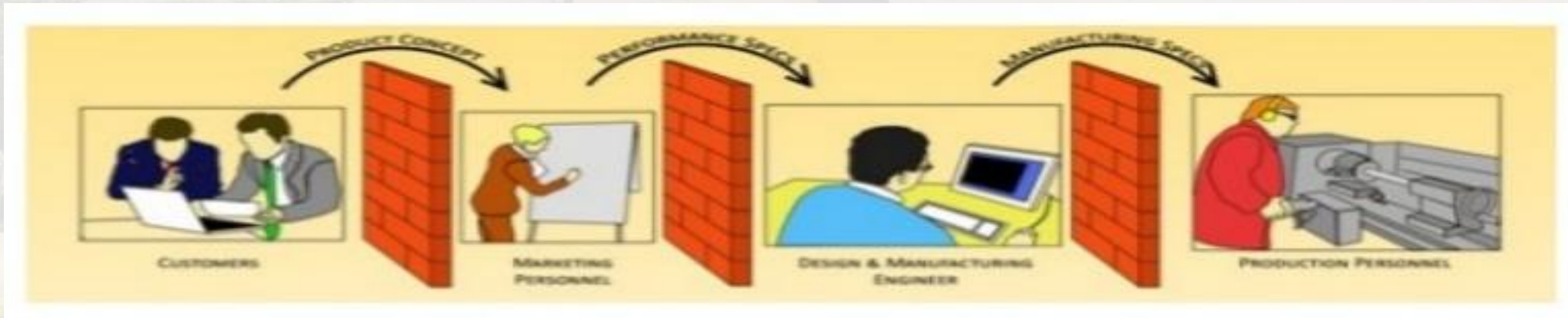




# Concurrent engineering



## Traditional Engineering



## Concurrent Engineering





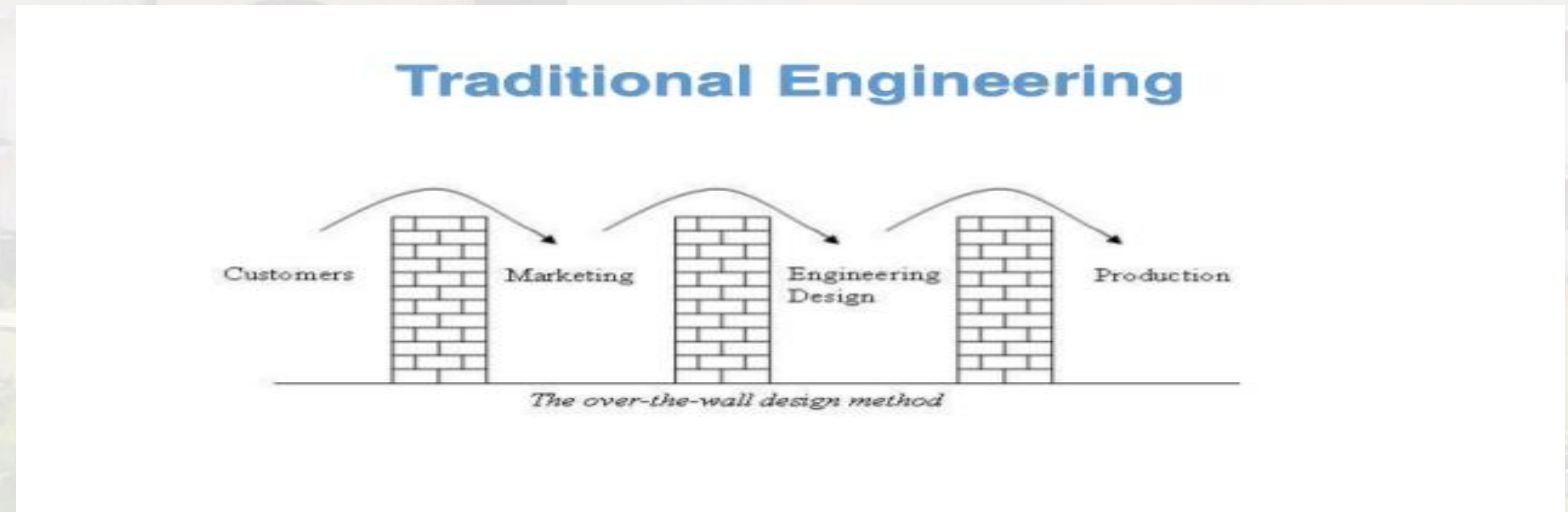
# Traditional engineering

**Traditional engineering**, also known as sequential engineering.

It is the process of

- Marketing
- Engineering design
- Manufacturing
- Testing and
- Production

where **each stage of the development process is carried out separately**, and the next stage cannot start until the previous stage is finished.





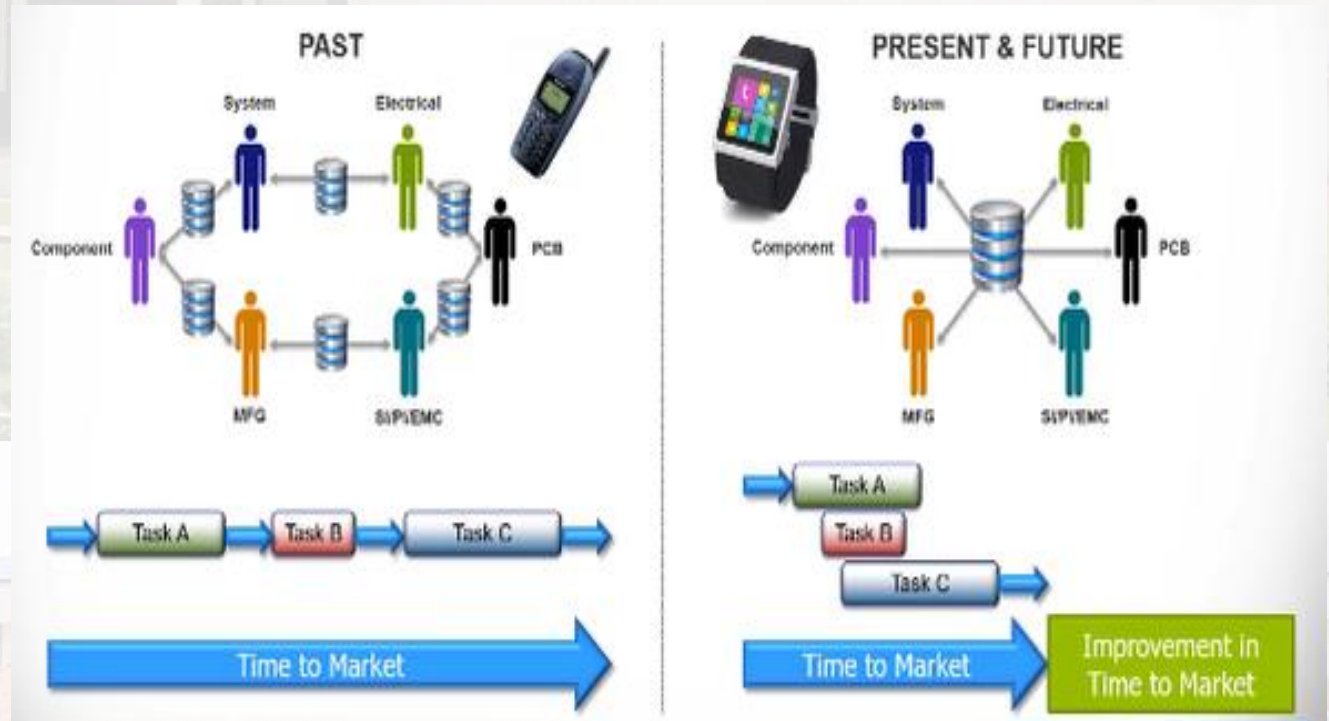
# Concurrent engineering



**Concurrent engineering**, also known as **simultaneous engineering**, is a method of designing and developing products, in which **the different stages run simultaneously**, rather than consecutively.

It decreases

- Product development time
- Time to market
- Improved productivity
- Reduced costs





# Fuzzy Front end activities



The entire set of **preliminary product development activities** that happened before a product is given the go-head for development is called **fuzzy front end**.



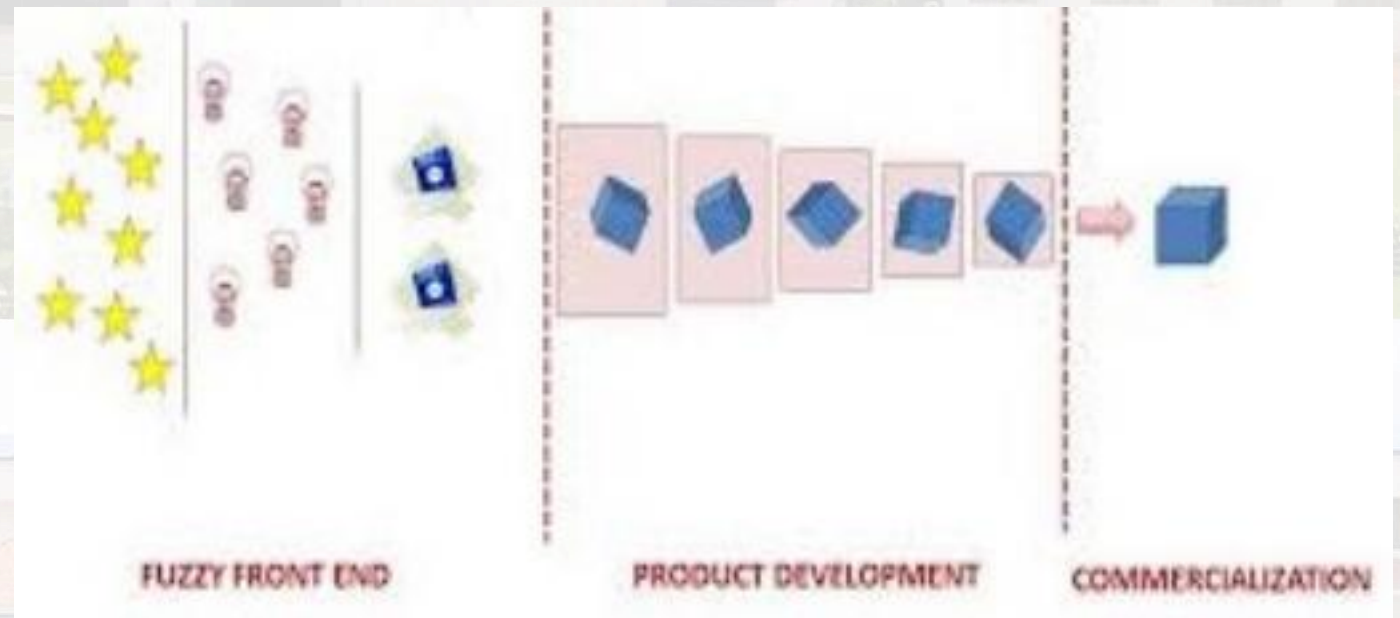


# Fuzzy Front end activities



## Includes

- What **product** to consider for development
- What **technologies and market** (Company should compete in)
- Business alliances
- Portfolio architecture





# Practise Quiz



**1. Concurrent Engineering deals with carrying out the following activities at the same time while designing the product:**

- (A) Design and Sales
- (B) Manufacturing and Sales
- (C) Design and Re-engineering
- (D) Design and Manufacturing

Ans:D







# Types of design

## Types of design

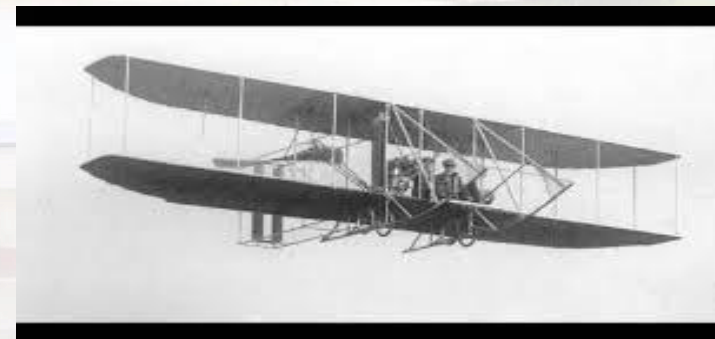
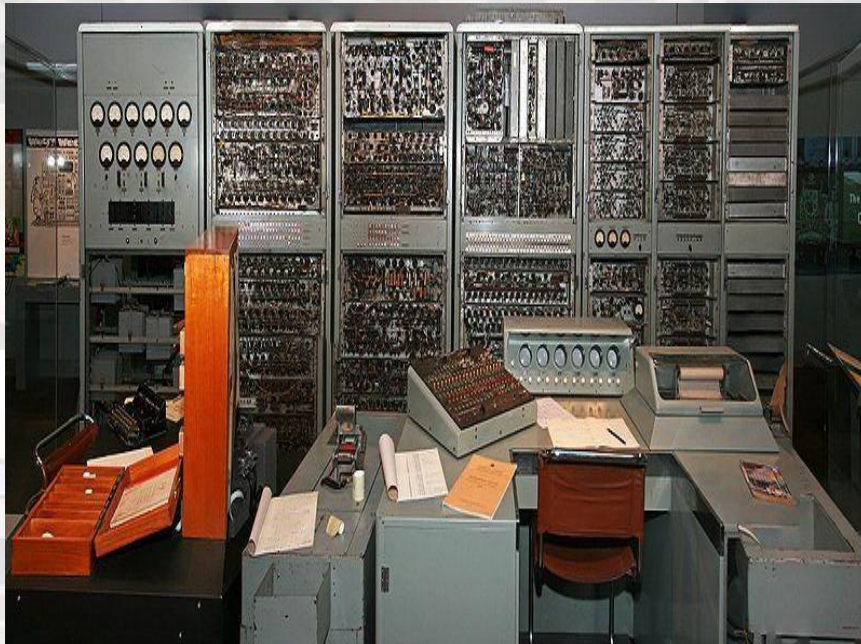
- Original design
- Adaptive design
- Variant design



# Types of design

## Original design (Inventing)

- Involves **elaborating original solutions(new)** for a given task
- Invention

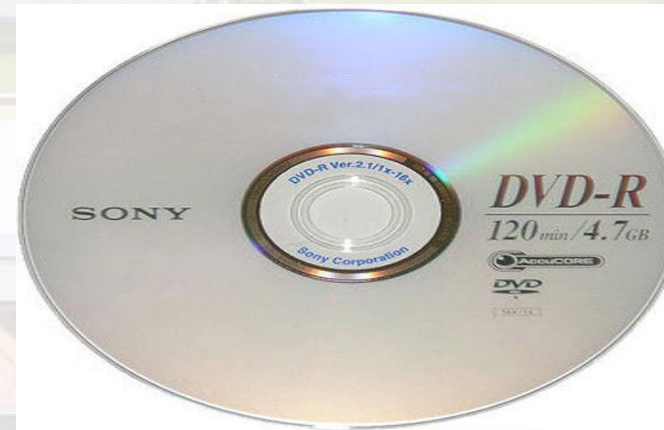




# Types of design

## Adaptive design (Synthesis)

- Adapting a **known system to a changed task** or evolving a significant subsystem of a current product
- **Do not require a massive restructuring of the system** within which the product operates

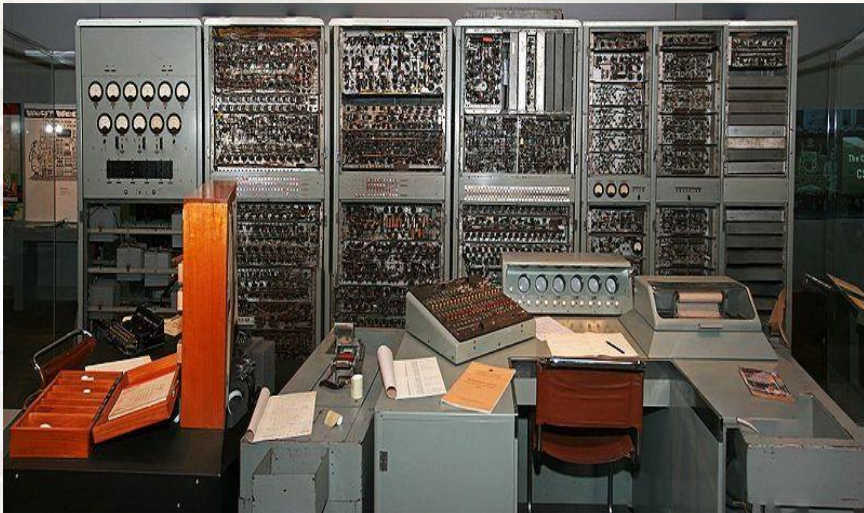




# Types of design

## Variant design (Modification)

- **Varying the parameters** (Size, Geometry, Material Properties, Control Parameters etc..)
- To develop a **new and more robust design**
- Modifying the performance of subsystem without changing its configuration





# Industry specified questions



**1. Product cost can be reduced by considering the following aspect(s) at the design stage**

- (A) Minimum number of operations
- (B) Unnecessary tight tolerance should not be provided
- (C) Design should consist of standard parts
- (D) All of the above

**Ans:D**



# Industry specified questions

**2. The “simplicity to operate and easy to understand” of product is concerned with its following aspect**

- (A) Functional aspect
- (B) Operational aspect
- (C) Durability aspect
- (D) Aesthetic aspect

Ans:A





**THANKYOU**