UNIT 2 — PROCESS MAPPING & VISUALIZATION

Process mapping is the **language of BPR**. If Unit 1 explained *why* processes matter, Unit 2 explains *how to see them*. You cannot diagnose bottlenecks, waste, or redesign opportunities without visualizing the process.

2.1 Why Process Mapping is Necessary

Core idea

Process mapping converts **invisible work** into **visible structure**.

In real organizations:

- Work is scattered across people, systems, emails, forms, approvals
- Delays are hidden as “waiting”
- Responsibility is unclear
- No one owns the full process

Process maps:

- Make handoffs visible
- Reveal delays and duplication
- Show where data is re-entered
- Expose non-value-adding steps
- Create a shared understanding across stakeholders

Example

Before mapping:
“Student registration is slow.”

After mapping:
You can see:

- 4 approvals
- 2 data re-entries
- 1 long waiting queue

- unclear ownership

Only **after mapping** can redesign begin.

2.2 Flowcharts

Definition

A **flowchart** is a visual representation of a process that shows the **sequence of activities**, **decisions**, **inputs**, and **outputs** using standardized symbols.

It answers the question:
“What happens next?”

Standard Flowchart Symbols (EXAM MUST-KNOW)

1. **Oval (Terminator)**
   → Start / End of the process
2. **Rectangle (Process)**
   → An activity or task
   Example: “Verify documents”
3. **Diamond (Decision)**
   → Yes/No or branching logic
   Example: “Documents complete?”
4. **Parallelogram (Input/Output)**
   → Data entering or leaving the process
   Example: “Receive application”
5. **Arrow (Flow line)**
   → Direction of process flow

How to Read a Flowchart

- Follow arrows from **Start → End**
- Every decision must have **at least two exits**
- Loops indicate rework
- Long chains indicate complexity

Example (simple)

Loan application flow:

1. Receive application
2. Check documents
3. Decision: complete?
    - No → request missing documents
    - Yes → approve loan
4. Disburse amount
5. End

Strengths of Flowcharts

- Simple and intuitive
- Good for teaching and documentation
- Easy to draw quickly in exams
- Shows logical order clearly

Limitations of Flowcharts

- Does **not show who** performs each step
- Does not highlight handoffs
- Becomes messy for complex processes
- Limited for cross-functional analysis

Typical Exam Questions (Flowcharts)

Q1. What is a flowchart and why is it used in BPR?
A flowchart is used to visualize the sequence of steps in a process, helping identify inefficiencies, unnecessary decisions, rework loops, and delays. In BPR, it provides a clear "as-is" understanding before redesign.

Q2. Identify two weaknesses of flowcharts in process analysis.
Flowcharts do not show ownership or responsibility and cannot clearly capture handoffs between departments, which limits their usefulness for cross-functional redesign.

2.3 Swimlane Diagrams

Definition

A **swimlane diagram** is a flowchart divided into horizontal or vertical lanes, where each lane represents a **role, person, department, or system**.

It answers the question:
“Who does what, and when?”

Why Swimlanes Are Critical in BPR

Most inefficiencies come from:

- Handoffs
- Waiting for another person
- Approvals across departments
- Miscommunication

Swimlanes **expose responsibility gaps** and **handoff delays**.

Structure of a Swimlane Diagram

- Each lane = one actor (e.g., Customer, Agent, System)
- Activities are placed in the lane of the actor performing them
- Arrows crossing lanes = handoffs

Example (Airport check-in)

Before:

- Customer → Agent → Customer → Agent
  Many back-and-forth steps

After (with kiosk):

- Customer performs most steps
- Agent involvement reduced
- Waiting time drops

This exact logic is what you studied when comparing **agent vs kiosk** cost and time.

How Swimlanes Reveal Cost & Delay

When steps move across lanes:

- Training cost increases
- Coordination effort increases
- Waiting time increases
- Error probability increases

Swimlane analysis directly supports:

- Cost calculations
- CAPEX vs OPEX justification
- Business case for redesign

Flowchart vs Swimlane (6 Differences)

Aspect	Flowchart	Swimlane
Focus	Sequence	Responsibility
Shows ownership	❌ No	✅ Yes
Shows handoffs	Weak	Strong
Cross-functional	Poor	Excellent
Complexity handling	Limited	Better
BPR suitability	Moderate	High

Typical Exam Questions (Swimlanes)

Q1. Why are swimlane diagrams more useful than flowcharts in BPR?
Because they explicitly show responsibility, handoffs, and coordination between roles, which are common sources of delay and inefficiency targeted by BPR.

Q2. How do swimlanes help in cost analysis?
They help identify how many people are involved, how often handoffs occur, and which roles consume the most time, enabling labor cost and complexity analysis.

2.4 SIPOC Diagram

Definition

SIPOC stands for:

- **Suppliers**
- **Inputs**
- **Process**
- **Outputs**
- **Customers**

It is a **high-level process boundary definition tool**.

It answers the question:
“What is this process, who feeds it, and who receives it?”

Purpose of SIPOC

- Define scope
- Avoid getting lost in details
- Align stakeholders
- Clarify inputs and outputs

SIPOC is often done **before detailed mapping**.

SIPOC Structure (Example: Student Registration)

Supplier	Input	Process	Output	Customer
Student	Application, Documents	Registration	Enrollment confirmation	Student
Finance	Fee info		Receipt	University

What SIPOC Is NOT

- It does NOT show sequence
- It does NOT show timing

- It does NOT show decisions

It is **strategic**, not operational.

SIPOC vs Flowchart (4 Differences)

Aspect	SIPOC	Flowchart
Level	High-level	Detailed
Focus	Scope	Sequence
Timing	❌ No	✅ Yes
Ownership	Indirect	Direct

Typical Exam Questions (SIPOC)

Q1. What is SIPOC and why is it used before process redesign?
SIPOC defines the boundaries of a process by identifying suppliers, inputs, outputs, and customers. It ensures alignment and prevents scope creep before detailed analysis.

Q2. Give one limitation of SIPOC.
It does not capture sequence, timing, or internal decision logic, so it must be followed by detailed mapping.

2.5 Value Stream Mapping (VSM)

Definition

Value Stream Mapping is a process visualization tool that shows:

- All steps in the process
- Time spent on each step
- Which steps add value vs do not add value

It answers:
“Where is time actually going?”

Core Components of VSM

1. Process steps
2. Process time (PT)
3. Waiting time (WT)
4. Information flow
5. Value-adding vs non-value-adding classification

VA vs NVA in VSM

- **VA time**: transforms the product/service
- **NVA time**: waiting, movement, approvals, rework

Key insight:
In many processes, **VA time < 10%** of total lead time.

Example

Total lead time = 10 days
Actual work time = 4 hours

This reveals massive redesign opportunity.

VSM vs Flowchart (5 Differences)

Aspect	VSM	Flowchart
Time visibility	Strong	Weak
VA/NVA	Explicit	Implicit
Bottleneck focus	Strong	Moderate
Data-driven	Yes	Mostly logical
Redesign power	Very high	Medium

Typical Exam Questions (VSM)

Q1. Why is VSM powerful in BPR?
Because it quantifies waiting and non-value-adding time, making inefficiencies measurable and justifying radical redesign.

Q2. How does VSM help identify bottlenecks?
By showing where waiting accumulates and where cycle time is highest relative to value added.

2.6 As-Is vs To-Be Process Models

As-Is Process

Definition:
The current-state process showing how work actually happens today.

Purpose:

- Identify waste
- Understand constraints
- Establish baseline metrics

To-Be Process

Definition:
The redesigned future-state process showing how work *should* happen after reengineering.

Purpose:

- Remove NVA steps
- Reduce handoffs
- Improve speed, quality, cost
- Leverage data and technology correctly

As-Is vs To-Be (6 Differences)

Aspect	As-Is	To-Be
Time	Slower	Faster
Steps	More	Fewer

Handoffs	Many	Reduced
Technology	Legacy / fragmented	Integrated
Control	Approval-heavy	Rule/data-driven
Customer experience	Poor/inconsistent	Improved

Common Exam Question

Q. Why is it dangerous to jump directly to To-Be without As-Is?
Because without understanding the current process, redesign decisions may ignore real constraints, root causes, and stakeholder impacts, leading to failed implementations.

UNIT 2 – Consolidated Exam Question Bank

1. What is process mapping and why is it essential in BPR?
2. Explain flowcharts with symbols and limitations.
3. Why are swimlane diagrams superior for cross-functional analysis?
4. Define SIPOC and explain its role in scoping.
5. What is Value Stream Mapping and how does it reveal waste?
6. Differentiate flowchart, swimlane, SIPOC, and VSM.
7. Explain As-Is vs To-Be with examples.
8. How do process maps help identify bottlenecks?