



ASIAN PRODUCTIVITY ORGANIZATION

**Institutional Strengthening of NPOs  
by Development of Productivity Practitioners**

Phnom Penh, Cambodia  
5 – 16 December 2016

**Lecture Title:**

**Analyzing Factories  
through VSM**

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**Phases in Value Stream Mapping (VSM)**

**Phase 1:** Planning and Preparing for VSM

**Phase 2:** Understanding the Current State

**Phase 3:** Designing the Future State

**Phase 4:** Formulating the Transformation Plan

**Phase 5:** Implementing the Transformation Plan

**Phase 6:** Evaluating and Sustaining the Improvement



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## Phase 1: **Planning and Preparing for VSM Project**

- Establish the VSM Structure
- Educate and train VSM Team
- Preliminary analysis and data collection
- Develop the Value Stream Mapping (VSM) Charter
- Publicise and communicate VSM Charter

## Phase 1: Planning and Preparing for VSM Project **VSM Structure**

- Executive Sponsor
- Value Stream Champion
- Facilitator
- Logistics Coordinator
- Mapping Team



## Phase 1: Planning and Preparing for VSM Project **Educate and Train VSM Team**

- Overview of value stream mapping to the mapping team and leaders
- Fundamental understanding of Lean principles
- Objective and benefits of VSM



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## Phase 1: Planning and Preparing for VSM Project **Preliminary Analysis & Data Collection**

- Current and forecasted customer demand
- Demand patterns, service levels, lead time, productivity, etc.
- Quality reports that quantify internal or external issues



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## Phase 1: Planning and Preparing for VSM Project Develop VSM Charter

- Scope
- Current state problems and business needs
- Targets of improvement
- Benefits of improvement
- VSM team endorsement



## Value Stream Mapping Charter

Value Stream Mapping Charter				
Scope		Current State Problems & Business Needs		
Targets of Improvement		Benefits		
VSM Team Endorsement				
(Signature)	(Signature)	(Signature)	(Signature)	(Signature)
Name:	Name:	Name:	Name:	Name:
Position:	Position:	Position:	Position:	Position:
Date:	Date:	Date:	Date:	Date:

## Phase 1: Planning and Preparing for VSM Project

### Communicate VSM Charter

- Lays the foundation for successful execution of improvement
- Reduces risk of obstacles and difficulties among parties during project
  - Affected leadership
  - Mapping team members
  - Employees in the areas of study



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## Phase 2:

### Understanding the Current State

1. Prepare “kick-off” venue
2. Team introduction and rules of engagement
3. Address by executive sponsor
4. Review of VSM Charter
5. Execute the “Gemba” walks
6. Document the “Current State” VSM



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## “Gemba” Walks

**Gemba: The real place where the work is actually done**

- Observe the work
- Talk to the staff in their environment
- Learn about the ‘obstacles to flow’
- Information required:
  - Work-in-Progress (WIP)
  - Number of People
  - Number of hours worked
  - Process effectiveness
  - Work volume or demand rate at each process
  - Work trigger



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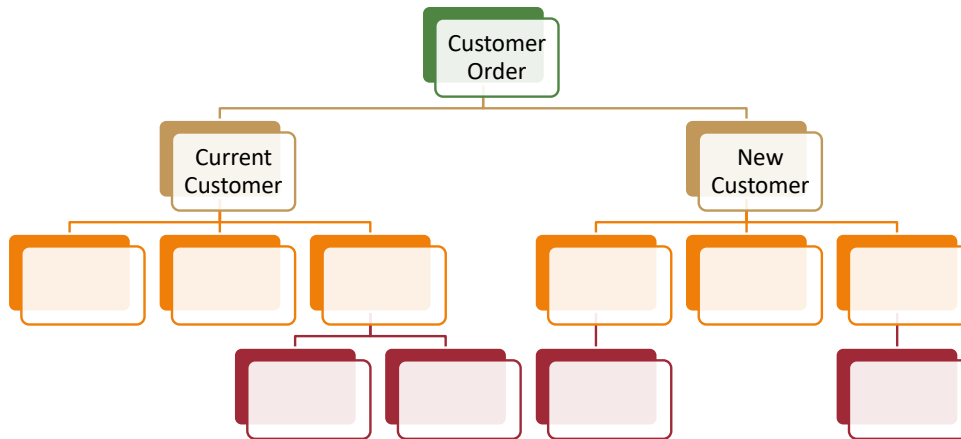
## Document the “Current State” VSM

- Build a rudimentary view of the value stream based on:
  - What is done
  - Who does it
  - In what order
- Agree on the process blocks that will form the value stream based on the scope
- Establish how the value stream performs
- Identify significant “barriers to flow”
- Establish timeline and Map Summary



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## VSM Scoping



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## Value Stream Process Blocks

Post-It Note

**Activity**

**Function(s)**

**Barriers to flow**

**Number of people in process**

**%C&A**


**PT**  
**LT**

Post-It Note

**Prepare P.O.**

**Procurement**

**Batching: 2 days**

 **3**

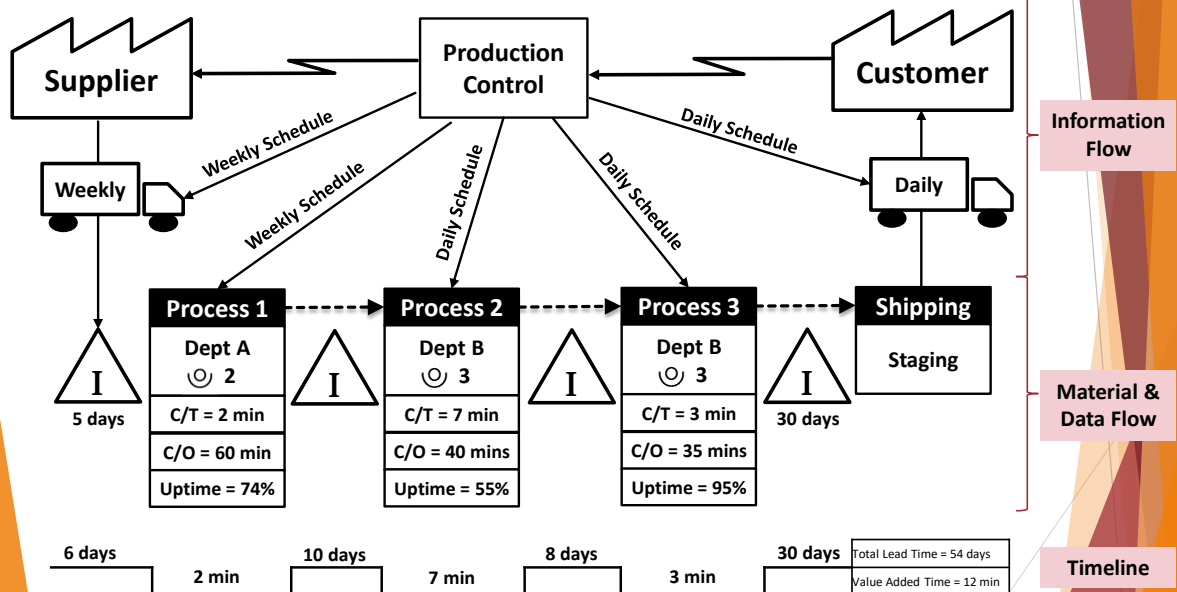
**6 hours**  
**12 days**

**50%**

%C&A: Percent complete and accurate  
 PT: Process time  
 LT: Lead time

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## “Current State” Value Stream Map



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## Metrics for each Process Block

- Process Time (PT)
- Lead Time (LT)
- Percent Complete and Accurate (%C&A)
- Uptime
- Changeover Time (Set-up Time)
- Utilisation

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## Process Time (PT)

- Reflects human effort (sometime equipment time)
- Comprises both value-adding and non value-adding effort
  - 2 types of non value-adding work:
    - Necessary (essential) work – Type 1 Muda
    - Unnecessary (non-essential) work – Type 2 Muda



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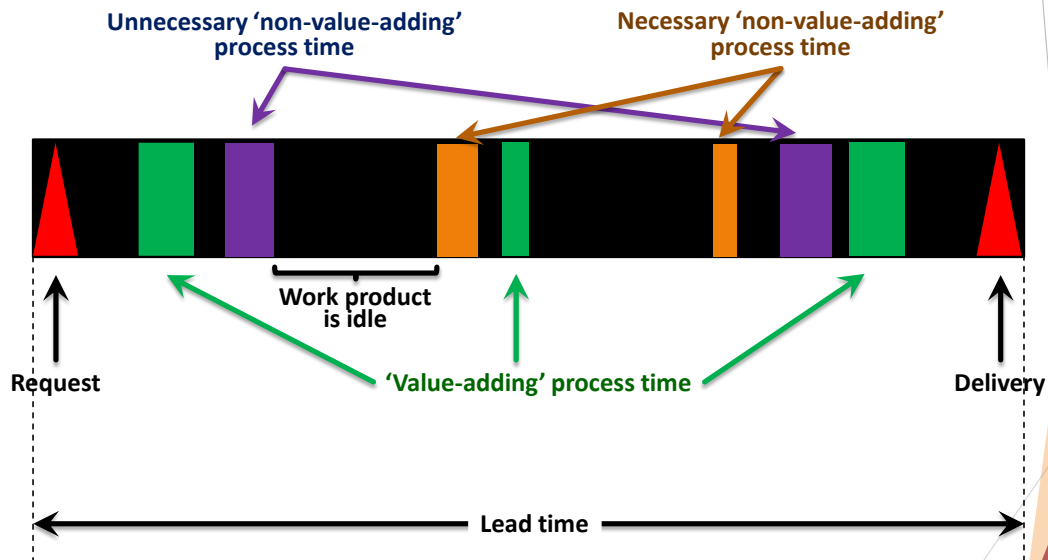
## Lead Time (LT)

- The elapsed time from the moment work is made available until it has been completed and made available to the next stage in the value stream.



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## Lead Time



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## Takt, Cycle, Target Cycle and Lead Time

### Takt Time

- The pace at which the customer requires products

### Target Cycle Time

- The pace at which we will produce to ensure we meet the customer requirements

### Cycle Time

- The time at which a process cycles

### Lead Time

- The total production lead time from product start to finish

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## Percent Complete and Accurate (%C&A)

- Reflects the quality of each process's output
- Indicate the percentage of the time a process owner receives "usable"/quality work (information) from its upstream supplier.



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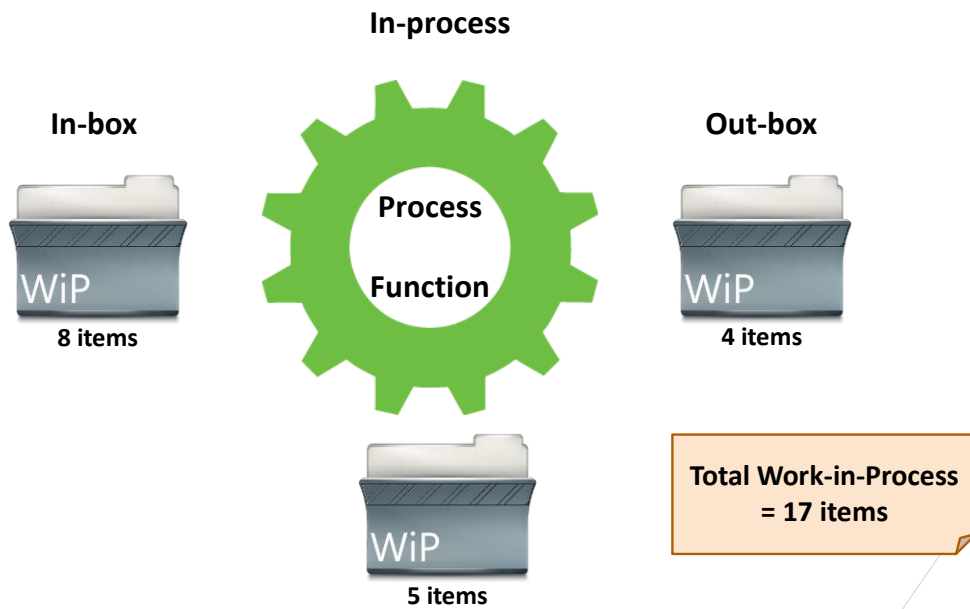
## Barriers to Flow

- Batching
  - Batch size
  - Batch frequency
- System downtime or sub-optimal performance
- Shared resources or inaccessible staff
- Switch tasking/interruptions
- Prioritization rules (e.g. orders from strategic accounts, specific types of order, specific location)



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## Work-in-Process (WIP)



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## Value Stream KPIs

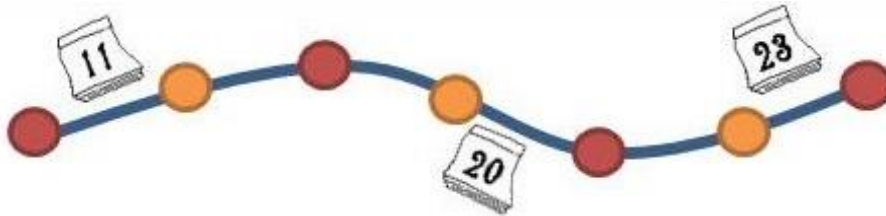
- Quality
- Cost
- Delivery (Speed and Customer Service)
- Safety
- Morale

*\*Value Stream KPIs reinforced by Process-level KPIs*

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## Establish Timeline of the Value Stream

- Create the current stream map to demonstrate:
  - Degree of flow present
  - Speed at which services/products are delivered to the customer
  - Amount of work involved across the value stream



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## Compute the Summary Metrics

- Total Lead Time (Total LT)
  - Total time it takes to deliver on a customer request
- Total Process Time (Total PT)
  - Total work effort required by all functions of the value stream
- Activity Ratio (AR)
  - The degree of flow in the value stream ( $\text{Total PT} / \text{Total LT} \times 100$ )
- Rolled Percent Complete and Accurate (Rolled %C&A)
  - The compounded effect of the quality of output across the value stream

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## Performance Metrics Table

Metric	Current State	Projected Future State	Projected % Improvement
Total Lead Time			
Total Process Time			
Activity Ratio			
Rolled % Complete & Accurate			



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# Thank You

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