

DRIVING CONTINUOUS IMPROVEMENT.

Unlocking Potential With Value Stream Mapping

[November 6, 2025]



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Agenda

The fundamentals stay the same

1. What is Value Stream Mapping?
2. The Evolution of Continuous Improvement
3. Traditional vs. Digital VSM
4. Key Steps and Tools
5. Real-World Applications
6. Why VSM Still Matters
7. The Road Ahead

The Spirit of Continuous Improvement

- **Continuous Improvement = learning every day, not just fixing problems**
- **VSM = The lens that reveals opportunity**
- **Technology changes, but the purpose doesn't.**



The Evolution of Value Stream Mapping

Era	Key Development
1920s	Ford's CANDO system – foundation for 5S (Cleaning, Arranging, Neatness, Discipline, Ongoing improvement)
1970s-80s	Toyota's Material & Information Flow Mapping – the internal root of VSM.
1980s	US quality movement (Deming & Juran) - Total Quality Management (TQM) -> early Six Sigma
1990s	VSM introduced to Western industry through Learning to See (Lean Enterprise Institute)
2000s	Lean Six Sigma and Kaizen formalize mapping-based improvement.
Today	Digital VSM powered by IIoT – faster data, same purpose

From Paper Maps to Digital Dashboards

Traditional VSM

- Manual data collection with stopwatches
- PDCA cycle in weeks or months
- Static maps reviewed occasionally
- Kaizen events after the fact



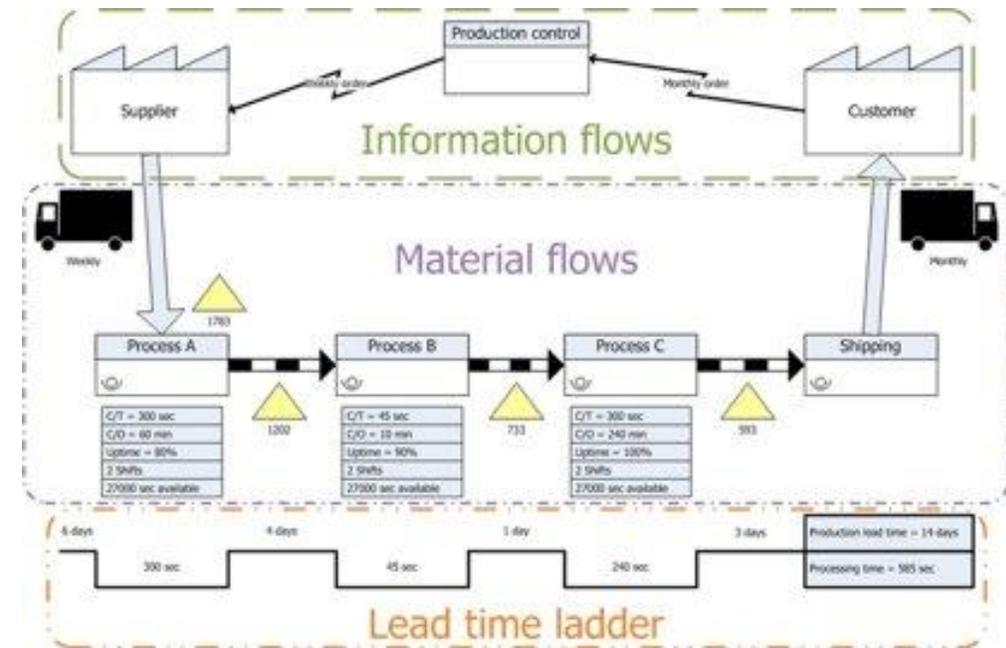
Digital VSM (Industry 4.0)

- Automated data from sensors, MES, ERP
- PDCA in hours or days
- Live dashboards driving daily action
- Continuous improvement build into daily flow



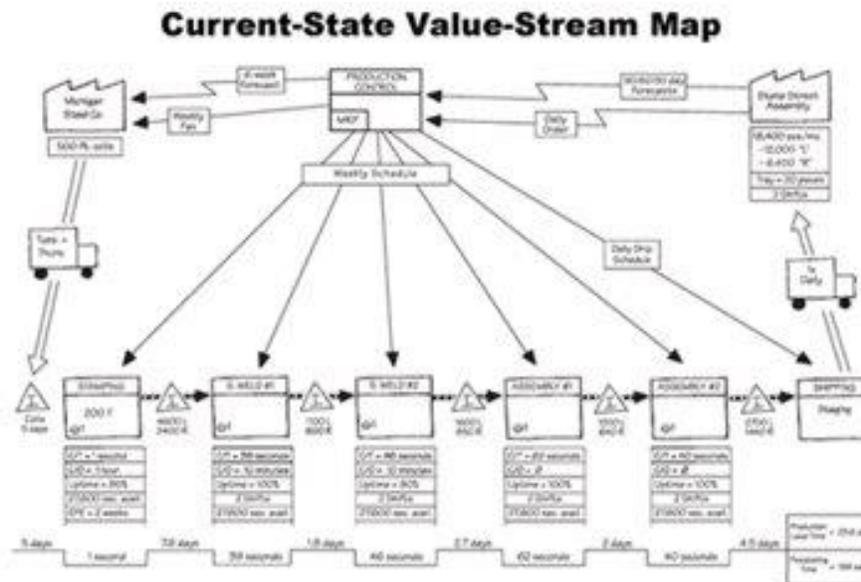
What is Value Stream Mapping?

- A visual tool that capture how materials and information move through a process.
- Identifies value-added vs. non-value-added activities.
- Reveals bottlenecks, rework, and delays that limit performance.
- Creates a shared understanding of how work really flows – not how we think it flows.



The Purpose of VSM

1. See the process as it really operates
2. Identify bottlenecks, waste (MUDA), and inefficiencies
3. Design a future state that supports better flow and performance
4. Create a roadmap to move from insight to action



The 8 Wastes of Lean (DOWNTIME)

Letter	Waste	Example
D	Defects	Rework, scrap, missing info
O	Overproduction	Making more than needed
W	Waiting	Idle time between steps
N	Non-utilized talent	Skills underused or ignored
T	Transportation	Unnecessary movement of materials
I	Inventory	Excess parts or WIP
M	Motion	Excess movement, searching
E	Extra Processing	Doing more than required

PDCA – The Foundation of Continuous Improvement

- **Plan:** map and analyze the current state
- **Do:** test improvements and design the future state
- **Check:** measure results and verify impact
- **Act:** standardize success and sustain gains
- **Kaizen:** "Change for the better" - small, continuous improvements guided by PCDA



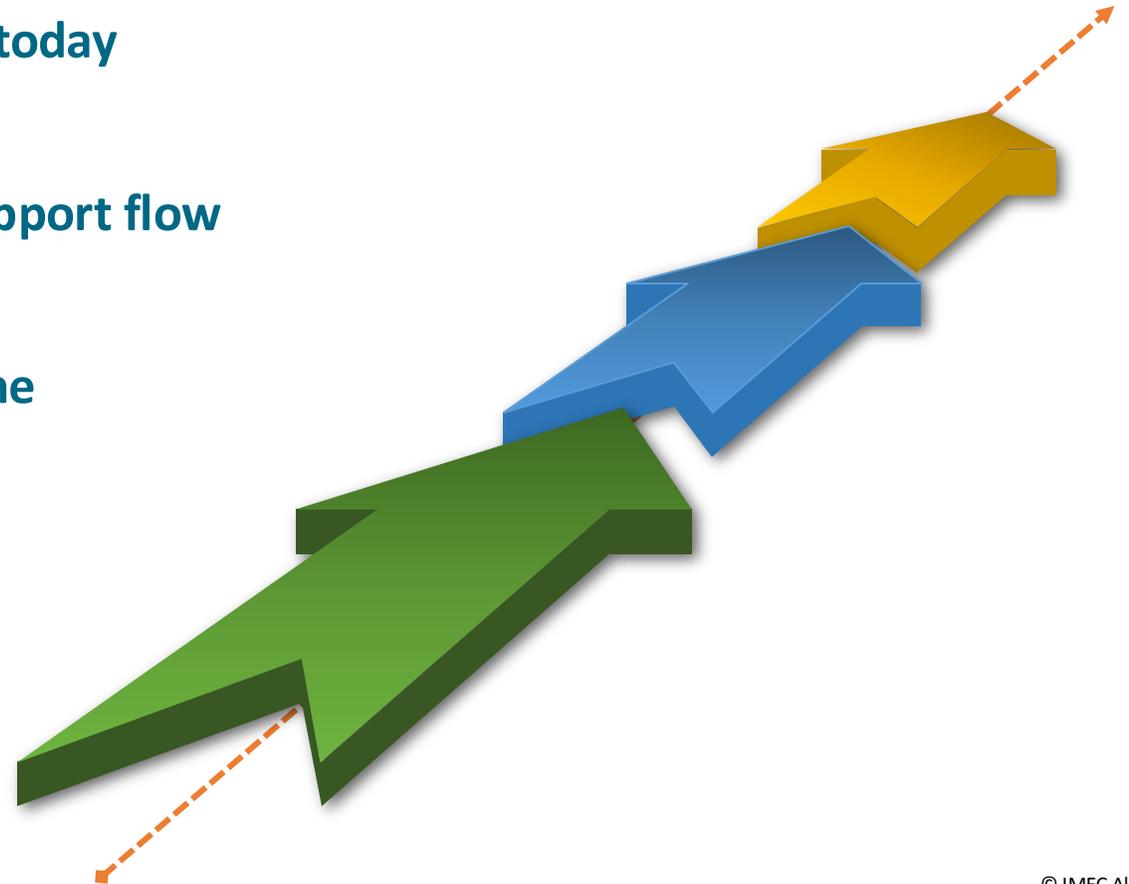
改善

Kai = Change

Zen = Good

Key Steps in Value Stream Mapping

- **Map the Current State**
 - Understand how things actually work today
- **Design the Future State**
 - Identify how things should work to support flow
- **Build the Implementation Plan**
 - Define actions, ownership, and timeline



Building the Right Team

- Include operators, engineers, and leaders
- Encourage direct observation and open discussion
- Collect real data, not assumptions
- Foster a culture of shared ownership



IoT vs. IIoT – What's the Difference?

IoT (Internet of Things)

Everyday connectivity – smart homes, watches, devices

Makes life easier

Convenience and comfort



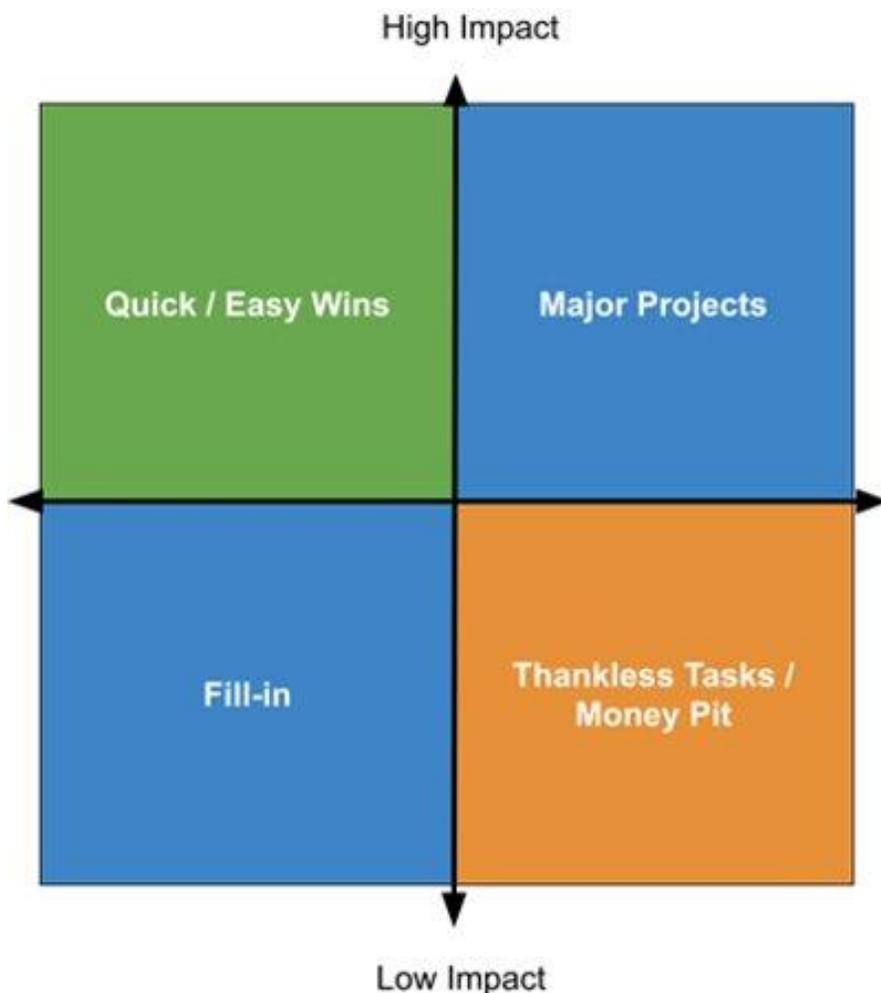
IIoT (Industrial Internet of Things)

Factory-level connectivity – machines, sensors, systems

Makes production smarter

Productivity, safety, and performance

Prioritizing Improvements for Maximum Impact



- Focus on high-impact, low-effort "quick wins"
- Identify longer-term strategic opportunities that align with business goals
- Assign clear ownership and target dates for each improvement
- Review progress regularly through visual management and daily meetings

VSM for Large-Scale Manufacturing

Example 1 – Small Shop (Traditional VSM)

- **Challenge/issue**
 - Inconsistent scheduling and long lead times
- **Action**
 - Manual mapping revealed hidden waiting and rework loops
- **Result**
 - Improved scheduling and smoother flow

Example 2 – Large Manufacturer (Digital VSM 4.0)

- **Challenge/issue**
 - High defect rate in soldering process
- **Action**
 - Integrated VSM & IIoT data exposed excess solder paste
- **Result**
 - Automated adjustment reduced defects by 45% and downtime by 20%

Why VSM Still Matters

- 95-99% of lead time in most processes is non-value-added (Lean Enterprise Institute)
- VSM exposes hidden waste that technology alone can't identify
- Lead time ↓ 59%, Inventory ↓ 61%, VA/NVA ratio ↑ 138% in real-world studies.

Takeaway: Even in digital environments, improvement starts with seeing the flow.

"Lean + Digital = Smarter Improvement"

Common Pitfalls and How to Avoid Them

- **Skipping data validation**
 - Relying on assumptions instead of facts
- **Mapping in silos**
 - Excluding key voices from the process
- **Focusing only on the map**
 - Forgetting the action plan
- **Lack of leadership follow up**
 - No accountability, no sustainment



The Road Ahead

Continuous Improvement in a Changing World

- **Traditional VSM → Foundation for seeing and improving flow**
- **Modern VSM → Lean + Smart Technology working together**
- **Sustained Success → Mapping + Kaizen + People + Data**

The goal: A culture that adapts and improves continuously

Where Are You on Your Continuous Improvement Journey?

"What is your organization's current state today – and where do you need to go next?"

Driving Continuous Improvement Forward

- We covered how VSM continues to be the starting point for every journey, from Lean's early days to today's smart factories.
- Remember: the fundamentals don't change: Seeing flow, reducing waste, and engaging people remain at the core of improvement.
- If your team is ready to map your process – whether for the first time or as a digital upgrade – IMEC is here to help guide the way.
- Together, let's keep driving continuous improvement forward.

Thank You!

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