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Lab Quality Confab, 2019

Atlanta, GA

Value Stream Mapping, Prioritizing Projects and Selecting the Right Tools

(Two-hour Lean Certification Workshop)



Credentials



Global Healthcare
Consultant
since 2016



Global Solutions
Optimizations
Specialist
2012-2016

HWCUSTOMERSF
IGBLOYMJACL
SRRLSCWASTE
TKAIZLHBIJU
OBVRCLEHBA
LWELGENSESY
QERPCAVONDA
GMNUANVKWQ
YNQUAITYLSR
MBJSGQPWAE
NRALIADCWTH
IMPROVEMENTM

Improve Performance and Deliver
Faster Results
NEW Lean Histology® Consulting Service

Living up to Life



Workflow
Consulting
2009 - 2012



Quality
Management
2001 - 2003

6σ

Six Sigma
Black Belt
2003- 2005



DBSL
2005 - 2009



Topics

- **VSM Introduction**
- **Elements and metrics of a VSM**
- **Current State VSM**
- **How to generate value in a process**
- **Future State VSM**
- **In summary...**



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Value Stream definition



A Value Stream is

The set of activities required to deliver a product or service (or product family) to your customer.

The product can be physical, information or materials

A Value Stream Map (VSM) is

A visual tool that maps the process how the material/service and information flows

VSM levels



Single department within an organization
(e.g. bacteriology)



Multiple departments within an organization
(e.g. microbiology)



Single institution (e.g. hospital)



Multiple institutions (e.g. hospital network)

VSM advantage



When striving for Continuous Flow, VSM is an important tool to create a roadmap for the improvement opportunities

A VSM provides a “big picture” view of the current state Value Stream and it’s sources of waste

This scope is needed to avoid selective implementation of improvement efforts, resulting in islands of success within a sub-optimal process

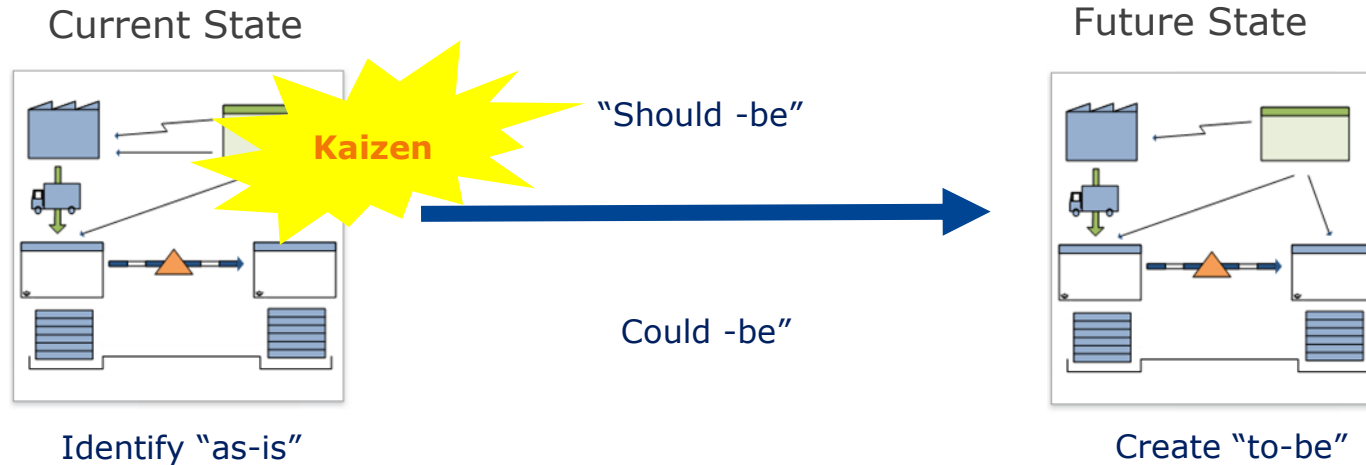
VSM is extremely straight forward

Provides a blueprint for the future state and follow up action

Opportunities for improvement are obvious

VSM purpose

A process improvement tool Identifying "as-is" process and improving them by creating "to-be" processes

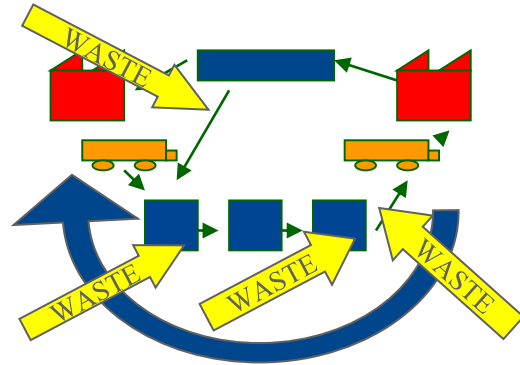


The only way to improve is by eliminating waste and create value!

Mapping a Value Stream

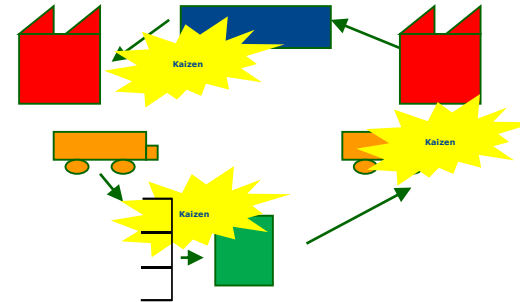
Current State

Follow a process path from **end to beginning** and draw a visual representation using icons of the material/service and information flows



Future State

Re-draw the VSM to show **how the value should flow**.
Identify kaizen events to bridge the gap to the future state



Beware



A VSM is a snapshot in time the day the process is observed, and does not deliver statistical relevant data

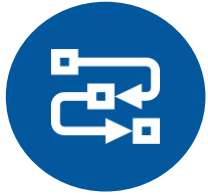


A VSM does not fix the process – it visualizes where the improvement opportunities are



VSM is an analytical tool to highlight inefficiencies in your process flow

Value Stream Mapping is teamwork



Follows the same process as a kaizen event



Duration: 2 days



Observation dependent on time of day when the process is executed

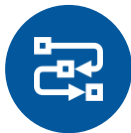


Assemble team of stakeholders from the entire Value Stream

Benefits



The big picture



Focus on each sample type
and its Value Stream rather
than the organizational
design



Allows leader to
translate business
strategy into site
deliverables



Basis for the
implementation plan
and budgeting



Ties together Continuous
Improvement techniques
Lean
Six Sigma
Validation
Executive steering committee

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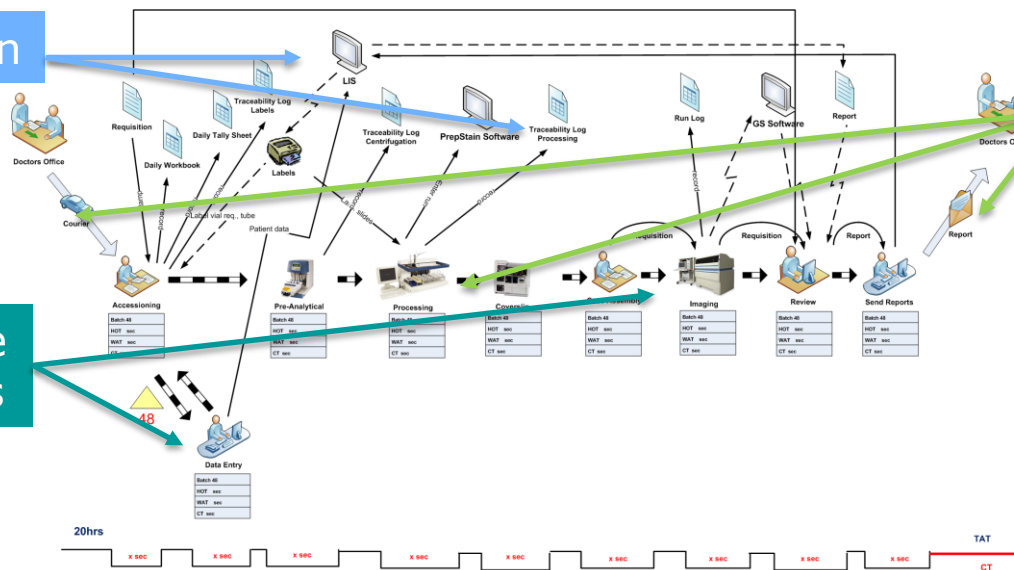
Elements of a VSM

Value Streams depict three flows

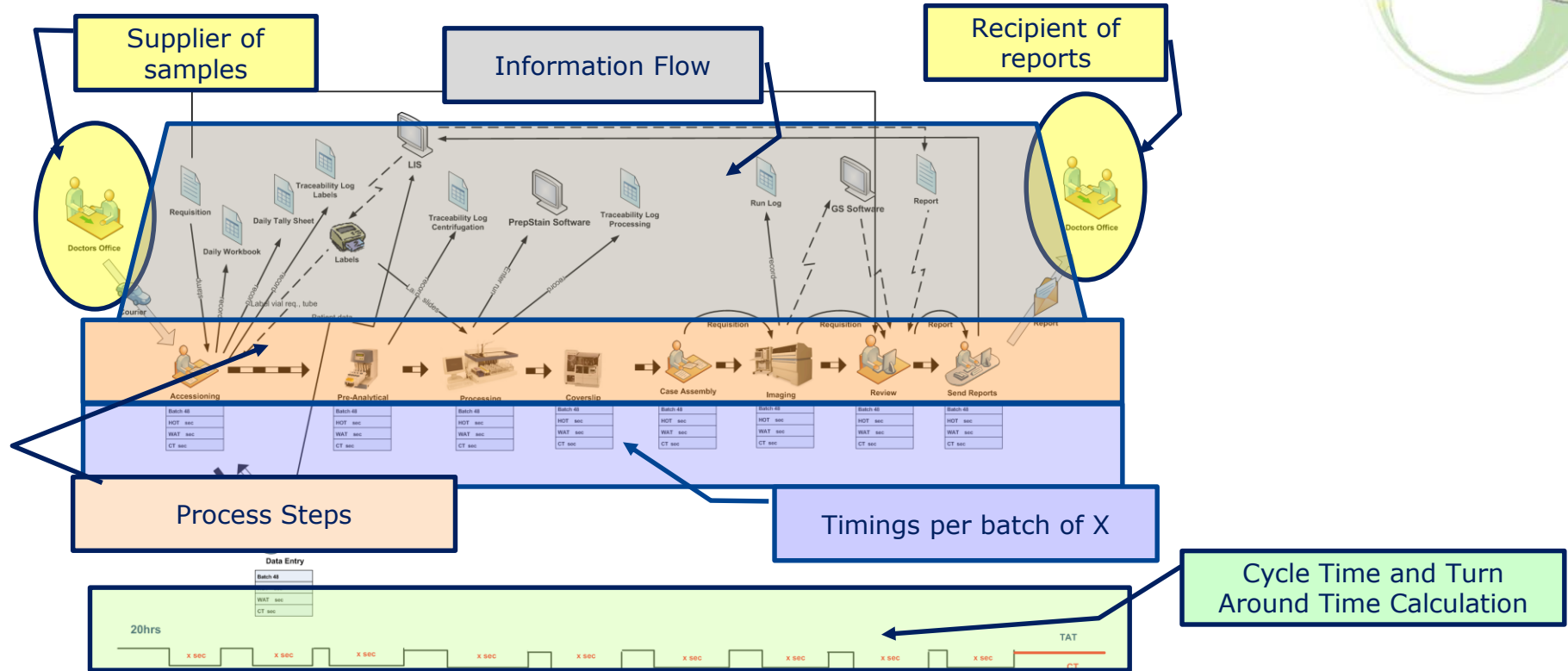
Flow of information

Flow of material

Flow of people and processes



VSM elements



Suppliers and recipients

Suppliers of sample

- Local doctors office
- Doctor in hospital
- Nurse
-



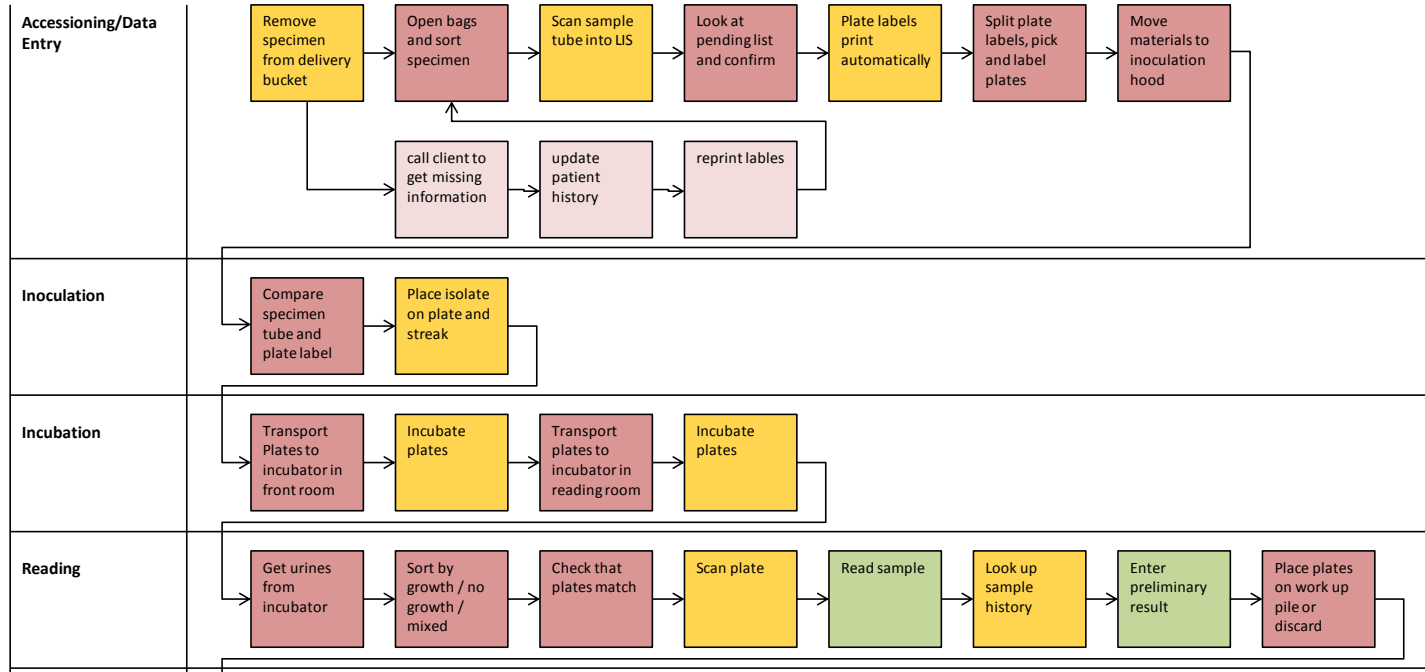
Recipients of result/ report

- Local doctors office
- Doctor in hospital
- Nurse
- Pharmacy
-



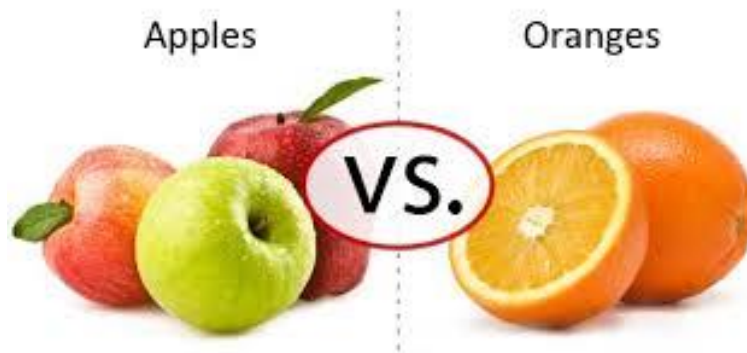
VSM Process steps

Which level is the right level of detail?



Data box batch size

- Determine the right batch size to display
- Standard batch size implemented?
- Apples to apples comparison for before and after state
- Instrumentation throughput?
-



Databox



What **could** we measure?

- Operator Cycle Time (OCT)
- Machine Cycle Time (MCT) or Walk Away Time (WAT)
- Uptime
- Value Added Time / Non Value Added Time
- First Pass Yield
- How many shifts
- How many FTE's
-

What should we measure?

Only what is relevant for the project

Only what is in scope for the project

Process performance metrics – Takt Time / Cycle Time / Turn Around Time



Takt Time



Cycle Time



Turn Around Time

Takt Time (TT)



Frequency to Produce a Quality Result

Customer Demand = Daily Workload

$$TT = \frac{\text{Available Time per Day}}{\text{Customer Demand per Day}}$$

Example:

Customer Demand
800 samples/day

Available Time
600 Minutes / day

$$TT = \frac{600}{800} = 0.75 \text{ min}$$

Cycle Time (CT)



CT = Total Time required to complete the process



HOT (Hands On Time)



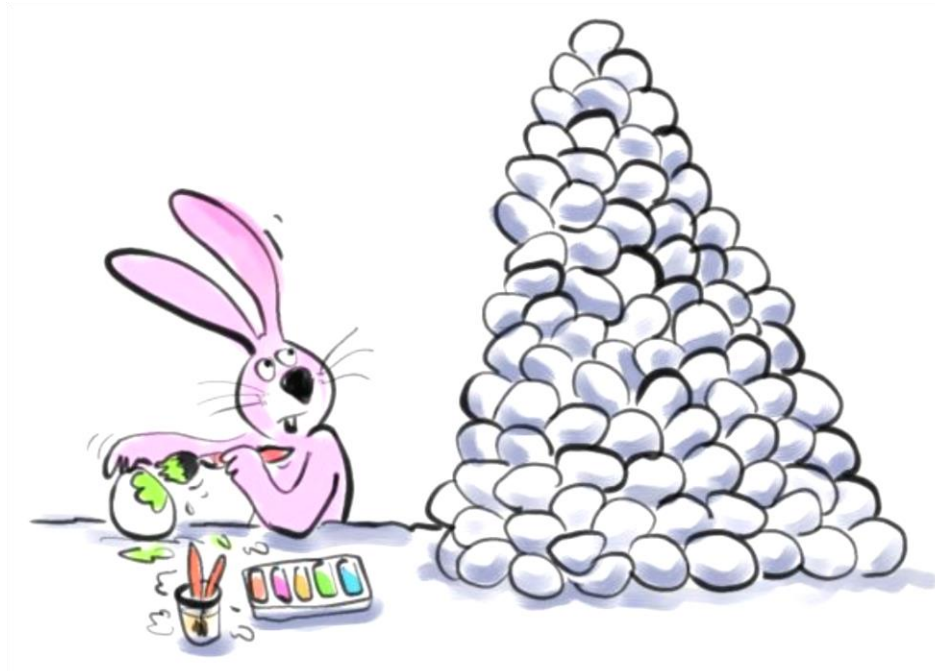
MCT (Machine Cycle Time) / WAT (Walk Away Time)



$CT = HOT + WAT$



Cycle Time vs Takt Time



Cycle Time = What we can do

Takt Time = What we need to do

Turn Around Time (TAT)



**Total Process Time including
Wait Time**



TAT = Cycle Time + Wait Time



TT / CT / TAT – Benefits



Base line for improvements



Identify customer demand (TT)

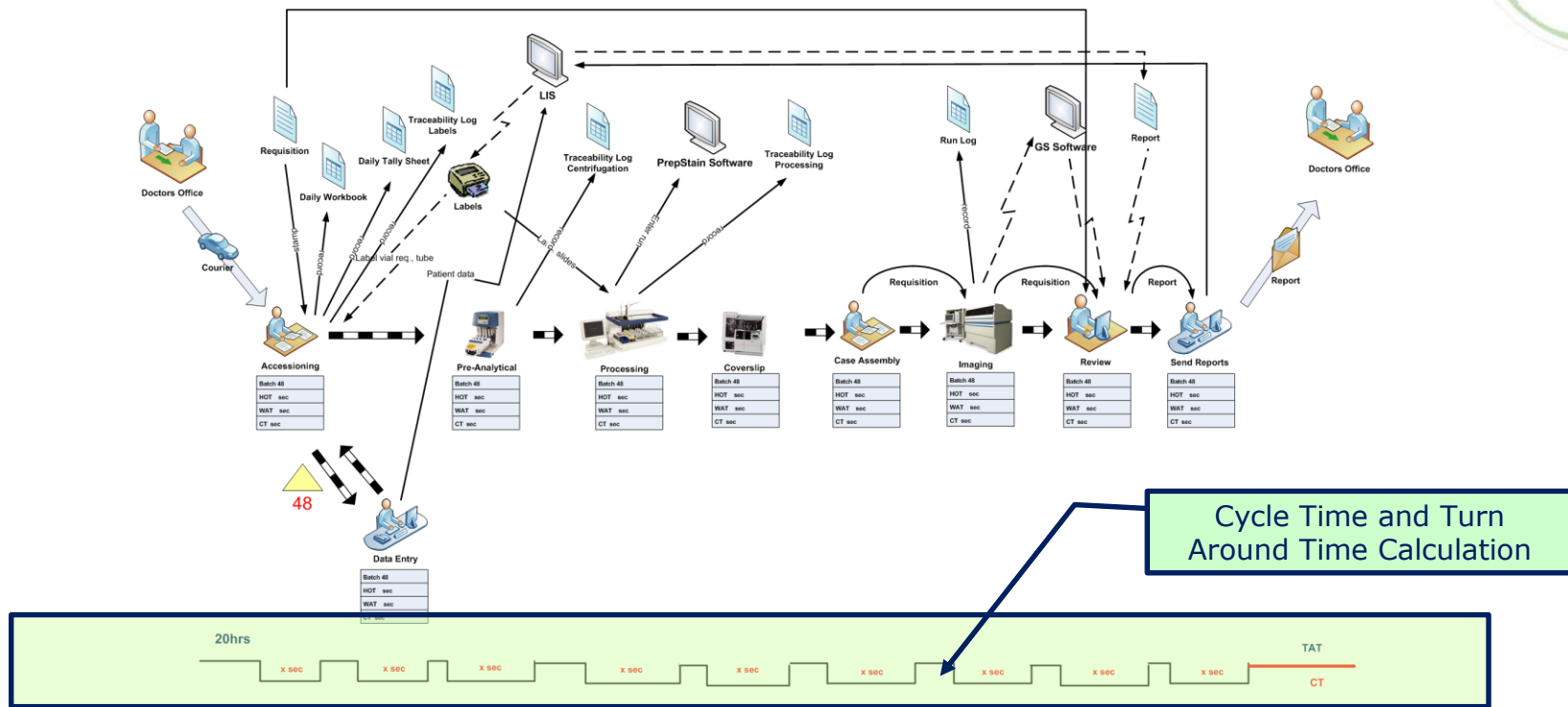


Focus what / where to improve



Measure the impact of process improvements

VSM elements: "Heartbeat"



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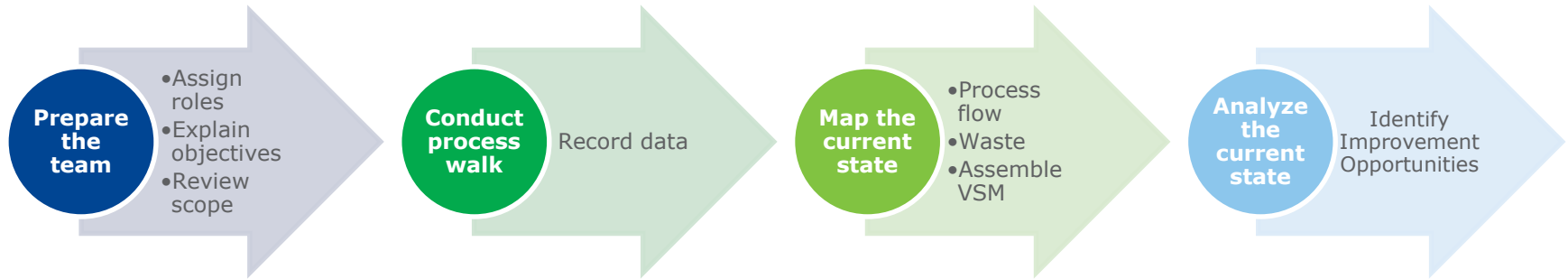
Project Charter

If you don't put what you are doing in writing, you will probably let the project slide and grow to the point that it is unmanageable

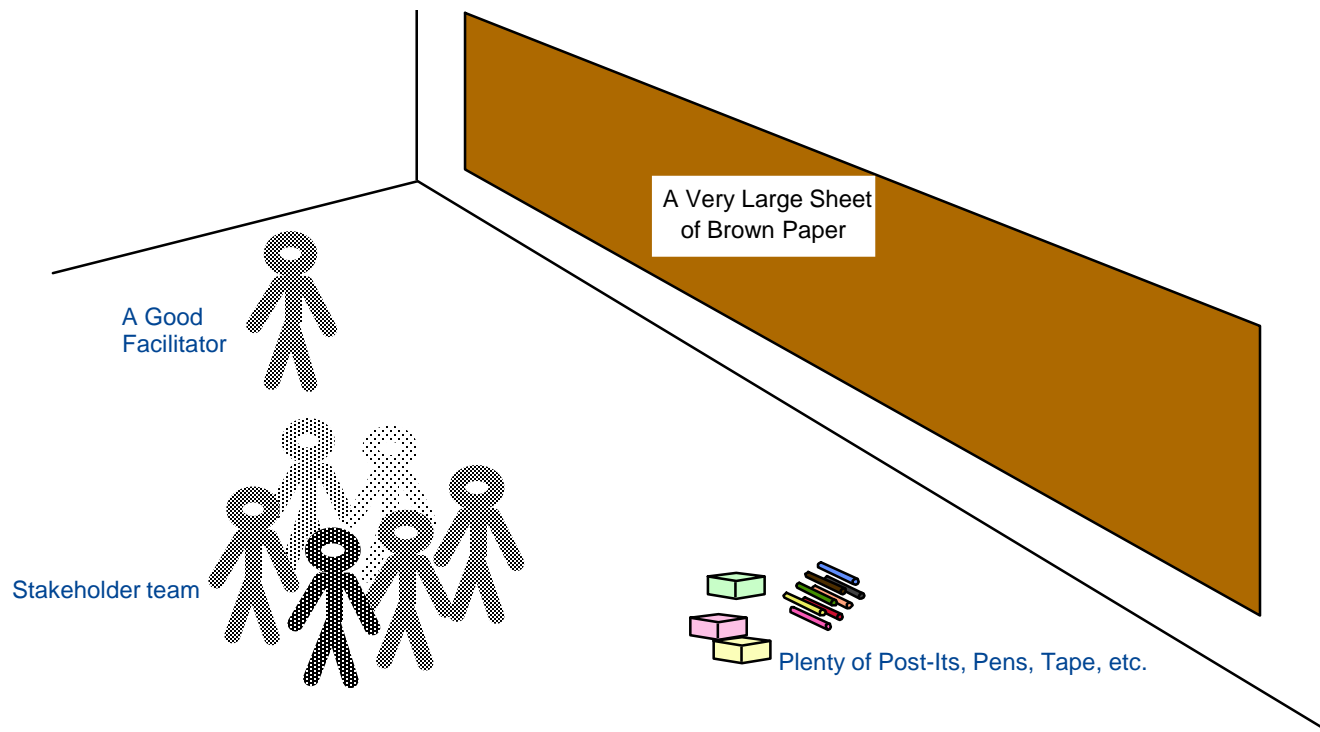
Elements

- ✓ Scope of the project
- ✓ Who is on the team?
- ✓ When will the event happen?
- ✓ Where will it take place?
- ✓ What do you want to accomplish?

Current state VSM mapping process

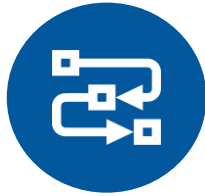


The team



The team

VSM is teamwork



**Ensure the process can
be observed that day**



**Inform employees about
the event**



Assign roles for observation

Who asks questions?

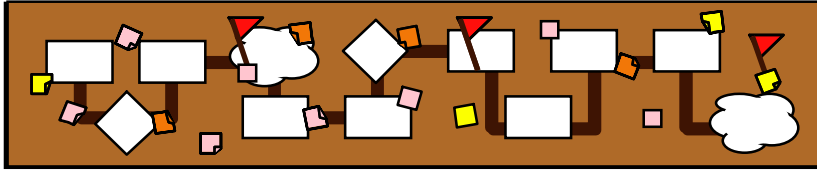
Who traces walking patterns?

Who is recording time?

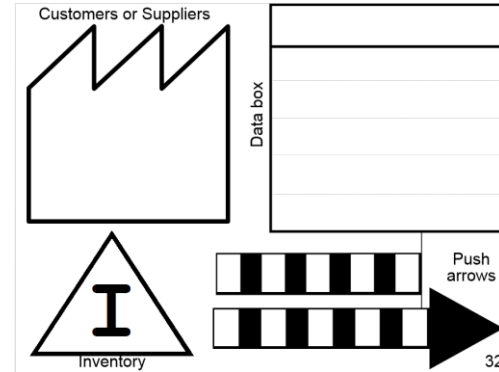
Who is recording process steps and
information flow?

Who is recording waste?

Mapping tools during VSM event



Paper / Flip charts

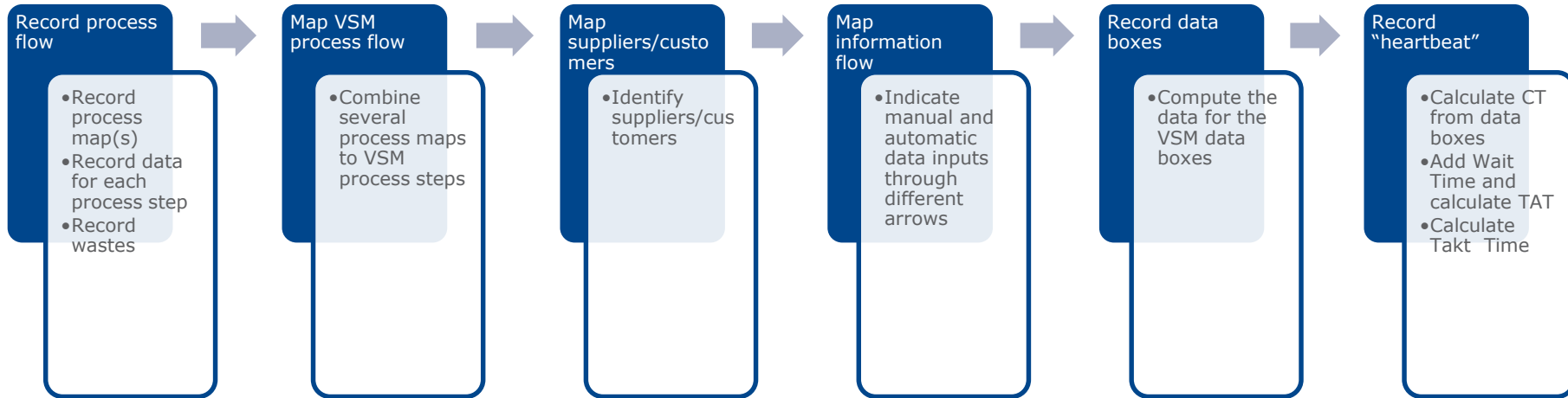


Pre-cut icons, post it notes,
markers, scotch tape

Advantage

Icons and post it notes are moveable and can be rearranged until
the final VSM is created

Assemble the current state VSM



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Analyze VSM: objective



Correct specification of value



Elimination of wasteful steps



"Flow where you can"



"Pull where you can't"

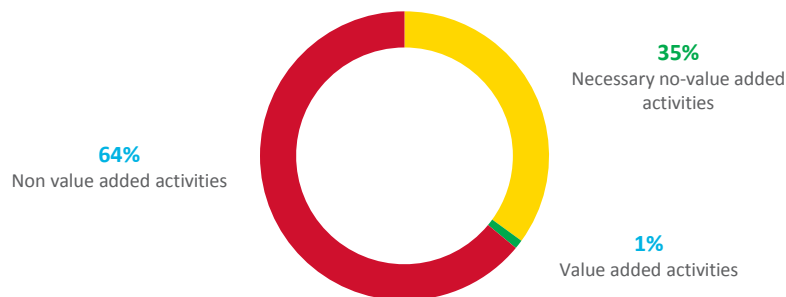


Management toward perfection

Value categorized



To design a smooth process flow, “process wastes” or non-value added process steps are identified and removed



Value added activities	Necessary non-value added activity	Non-value added activities
<p>An activity that transforms or shapes (for the 1st time) material or information to meet customer requirements.</p> <p>Process time for which an informed patient is willing to pay</p>	<p>Classified as enabling or incidental: maintenance, calibration, quality control</p> <p>Process time for which an informed patient is not willing to pay but is required by regulation</p>	<p>Activities that take time or resources but do not add value to customer</p> <p>Process time for which an informed patient is willing to pay</p>

Optimization of a value stream (VS)

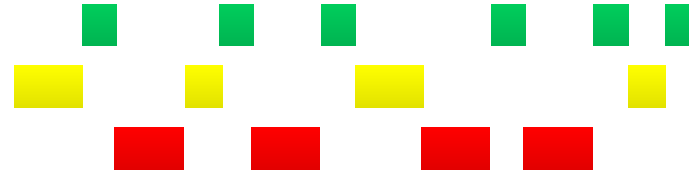
1. Categorize "value" in the VS



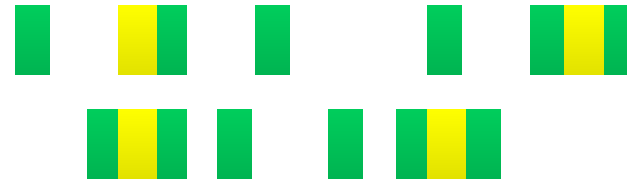
Increased Turn Around Time



2. Analyze each activity and identify VS improvement opportunities



3. Create an improved VS through waste reduction



Reduced Turn Around Time

8 Wastes - description



Type of Waste

Description



Defects

Time spent detecting errors, correcting errors, missing information



Overproduction

Producing more than what is needed, acquisition of it before they are required



Waiting

Materials waiting for the next process step or waiting for information



Non-utilized talent

Underutilizing talent by not assigning them or deploying them for tasks better suited to them



Transportation

Unnecessary movement of materials or by people



Inventory

Excess inventory cost through wastage, movement of inventory, storage



Motion

Unnecessary movement of person when executing a process step



Extra Processing

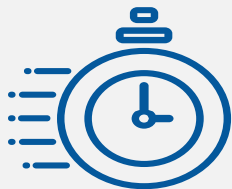
More process steps than required to execute a task, additional processes

Remember: DOWNTIME

Example: ideas in current state Value Stream Map



Let's create a current state VSM



45 minutes

- 5 min review of process map provided
- 15 min creation of VSM
- 10 min waste identification
- 15 min group discussion

1

Split into groups

2

Review process map provided

3

Create current state VSM

4

Identify Wastes

5

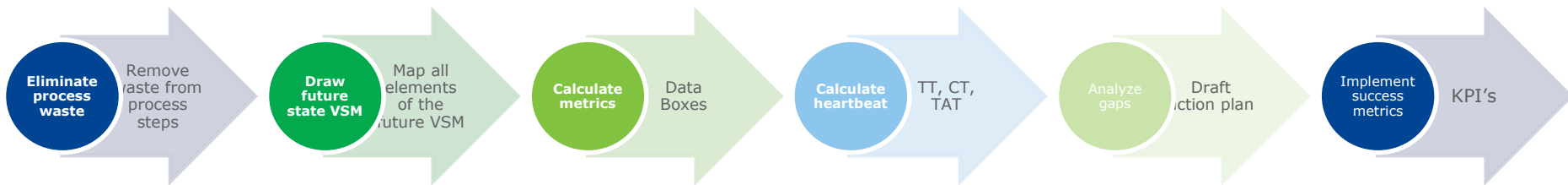
Present to the group

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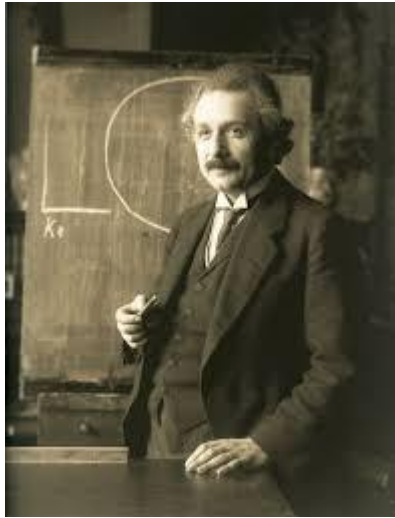
Future state VSM mapping process



Breakthrough Thinking



**“The Problems That Exist in the World Cannot
Be Solved by the Level of Thinking That Created
Them”**



-Albert Einstein

Lean Thinking



Focus on each product and its value stream rather than the organization, its assets, and technologies



Ask which activities are waste and which truly create value



Then enhance the value & eliminate the waste!

Eliminate process waste

question – obtain answers – investigate - challenge

Why do we perform each and every step?

Can the order of the steps be changed?

Are there any steps that are labeled “Value” that we can combine?

Because the process has been performed for so long, are there any assumptions that may not be accurate?

Are the current controls suitable for the process?

Which steps create value for the customer?

What does the customer really need as an output?

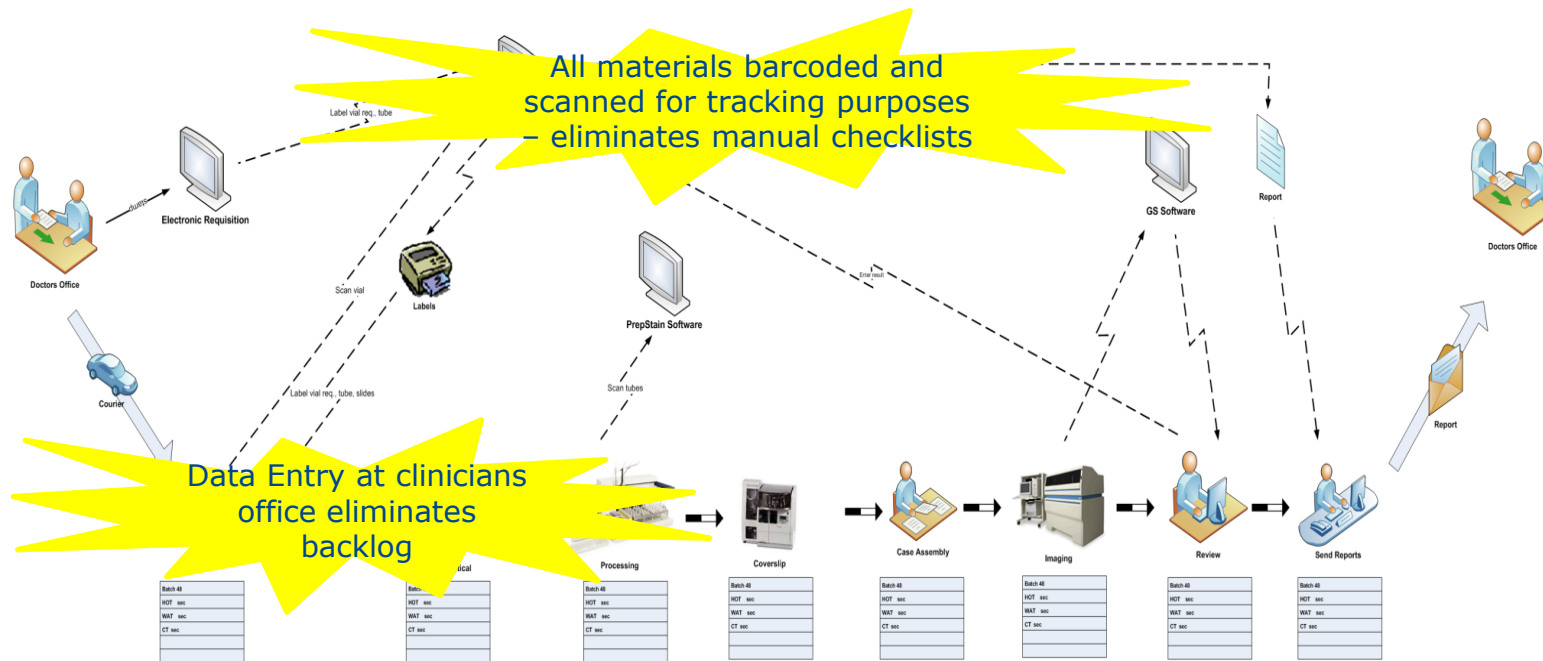
Which non-value added steps can be removed from the process?

Do each of the steps create waste based on their order?

What kind of metrics are going to ensure that the new process is working?



Example: Future State Value Stream



Action plan template



Strategy (How)	Action (What)	Responsible (Who)	Location (Where)	Timing (When)
Conduct Kaizen in Specimen Delivery Area	Data Entry Process from External Delivery to specimen dropped off in departments	Jane Doe	Building X	October 8 th -12 th
Work with LIS vendor to automate transfer of results	Meeting with LIS vendor to discuss automation of result transfer from equipment to LIS	John Doe Jr	Building Y	October 17 th

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VSM Summary



Define

- Define our Value Stream Scope
- Calculate our Customer Demand – Takt Time

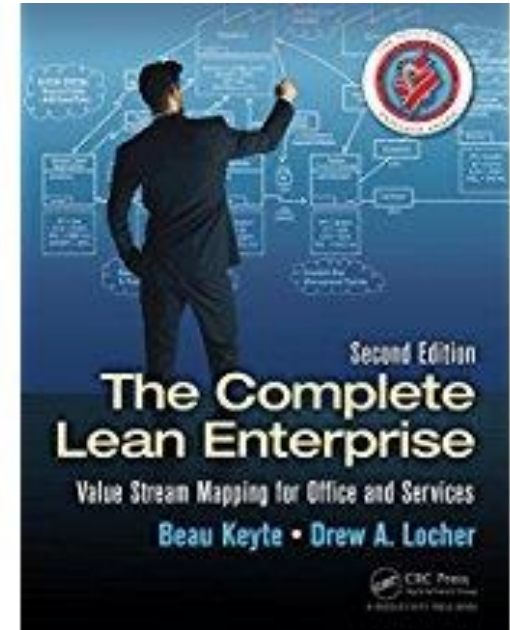
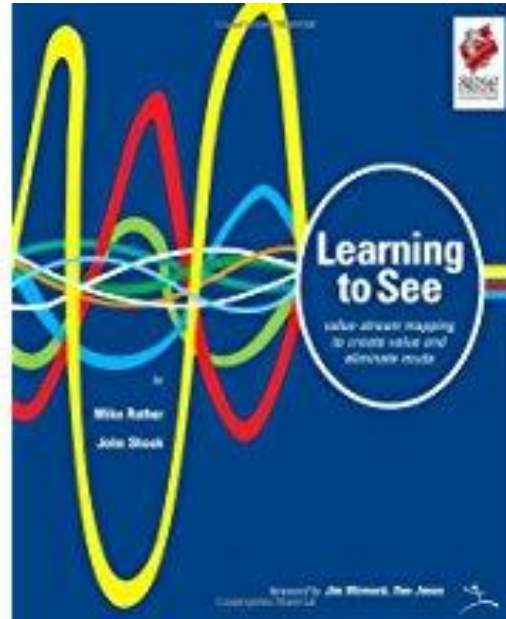
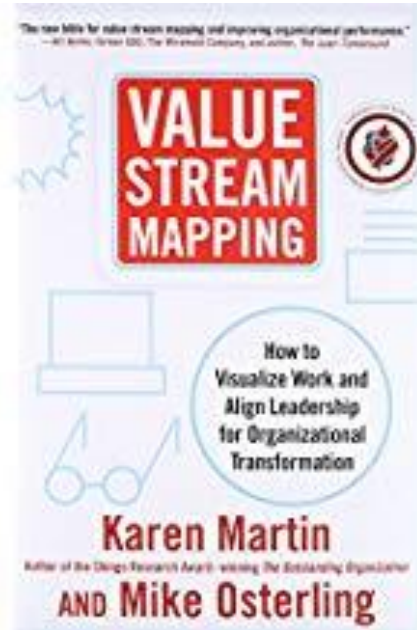
Map

- Map the Current State
- Identify areas for improvement by eliminating waste

Implement

- Propose the Future State
- Appoint a Value Stream Manager to drive the team forward
- Implement the future state via various LEAN tools

Literature



Questions?

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