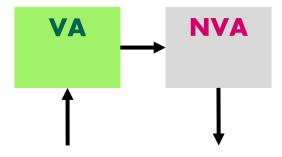
Continuous Improvement Toolkit



The Continuous Improvement Map

Managing Planning & Project Management* **Selecting & Decision Making** Risk **PDPC** Break-even Analysis Importance-Urgency Mapping Daily Planning PERT/CPM Quality Function Deployment Cost Benefit Analysis RAID Log* **FMEA MOST** RACI Matrix **Activity Networks** Payoff Matrix Delphi Method **TPN Analysis** Risk Analysis* **SWOT Analysis** Stakeholder Analysis Decision Tree Pick Chart Voting Four Field Matrix Fault Tree Analysis **Project Charter** Improvement Roadmaps Critical-to Tree Force Field Analysis Portfolio Matrix Traffic Light Assessment **PDCA** Policy Deployment Gantt Charts Decision Balance Sheet Paired Comparison Kano **DMAIC** Lean Measures Kaizen Events Control Planning OEE **Prioritization Matrix Pugh Matrix** Cost of Quality* Standard work Document control A3 Thinking **Process Yield Matrix Diagram** Pareto Analysis Earned Value **KPIs Cross Training Implementing Understanding** Capability Indices Chi-Square ANOVA **Descriptive Statistics** TPM Automation Solutions*** Cause & Effect Gap Analysis* **Probability Distributions** Hypothesis Testing Mistake Proofing Ergonomics Design of Experiment **Bottleneck Analysis** Multi vari Studies Histograms Just in Time 5S Simulation **Confidence Intervals** Reliability Analysis Scatter Plots Correlation **Graphical Analysis** Quick Changeover Visual Management Regression **Understanding** MSA 5 Whys Root Cause Analysis Data Mining Product Family Matrix Pull Flow Run Charts Performance** Spaghetti ** Process Redesign **Control Charts** Fishbone Diagram **Relations Mapping** SIPOC* Benchmarking*** Value Stream Mapping** Data collection planner* Sampling How-How Diagram*** Waste Analysis** Tree Diagram* Time Value Map** Value Analysis** **Brainstorming Check Sheets** SCAMPER*** Attribute Analysis Interviews Flow Process Charts** Service Blueprints Affinity Diagram Questionnaires **Focus Groups** Morphological Analysis IDEF0 **Process Mapping** Flowcharting Data Mind Mapping* **Lateral Thinking Observations** Collection **Group Creativity Designing & Analyzing Processes** Suggestion systems Five Ws

Value:

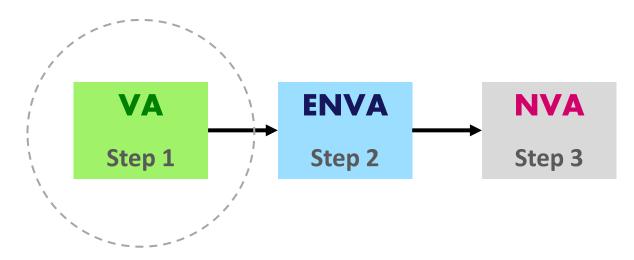
- One of the most important concepts within Lean.
- One of the most valuable outcomes Lean provides.
- Value Analysis focuses on what adds value to business processes as perceived by the customer.
- A process that does not add value to the product or service should be redesigned or eliminated altogether.

- Each step within a process can be classified into one of three categories:
 - Value added activities.
 - Essential non-value added activities (or unavoidable wastes).
 - Non-value added activities.



Value Added Activities:

- Increase the worth of a product or services from the customer's perspective.
- Common examples include:
 - Machining a part.
 - Serving a customer at a call center.



Essential Non-Value Added Activities:

- Add no value to a product or service.
- The customer is not willing to pay for them.
- However, they are necessary for the business due to the current settings of the process.

ENVA

Step 2

NVA

Step 3

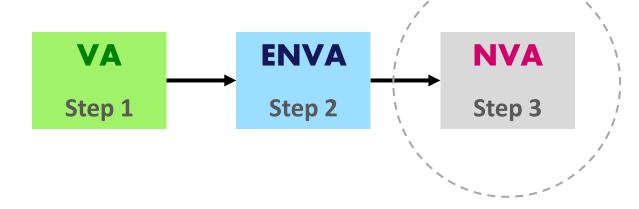
Common examples include: purchasing, R&D and inspecting parts for quality defects.

VA

Step 1

Non-Value Added Activities:

- Add no value to the product or service.
- Not required for business operational reasons.
- Must be eliminated immediately.
- Common examples include:
 - Rework an application form.
 - Handling of materials between operations.
 - Delayed starts.



- Researches has shown that value added activities are typically less than 10% of the total process lead time.
 - The work that the customer cares about is only 10%.



- □ The first step when analyzing the value of any process is to determine who the ultimate customer is.
- □ An **ultimate customer** is the end user of the product or service.
- Understand their expectations clearly and know exactly what they are willing to pay for.
- Listen actively to your customers.
- Encourage them to send feedback on how well your product or service meets their needs (for future process improvements).

- Patients are the ultimate customers in medical services.
- □ It is important to provide them with comprehensive and personalized health care.
- □ Patients instead often get stuck in processes that don't add value to their primary care:
 - They are often asked to fill out medical forms multiple times.
 - They wait too long to receive a consultation from their primary doctor.



- □ The traditional approach to process improvement is to focus on reducing the time to perform the value added work.
 - Normally through capital investment.
- The Lean approach however focuses on eliminating the root causes of the 90% of the non-value added activities.
 - Much cheaper and more effective.



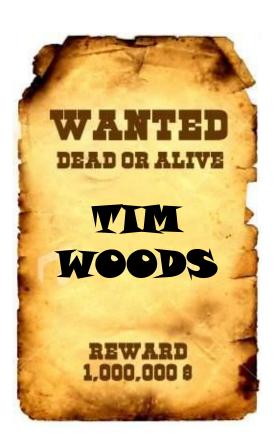
Tools to identify and analyze non-value added activities:

- The eight wastes.
- Waste walks.
- Waste recording forms & waste logs.
- Opportunity process map.
- Value matrix.
- Value timeline.
- VA/NVA metrics.



The Eight Wastes:

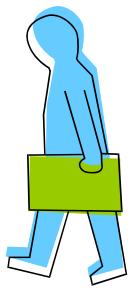
Transport
Inventory
Motion
Waiting
Overproducing
Over Processing
Defects
Skills



Waste Walks:

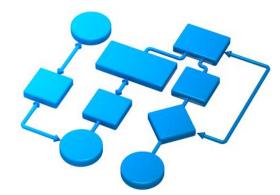
- Used to quickly identify waste within an area or in a process.
- Allows walkers to understanding how the process really works.
- Helps them quickly identify waste and identify continuous improvement opportunities.

Observe the process with an eye towards waste



How to Conduct a Waste Walk:

- Clearly describe the objective of conducting the waste walk.
- Select the process or area and define the boundaries.
- Prepare an observation form to collect the desired information.
- Get permission from the process owner or supervisor to conduct the walks and talk to the people there.
- Walk the flow of the process and look for each of the eight types of waste.
- Collect data, observe actual practices, interview people and ask questions.
- Identify opportunities to eliminate waste.
- Prioritize improvement actions as appropriate.



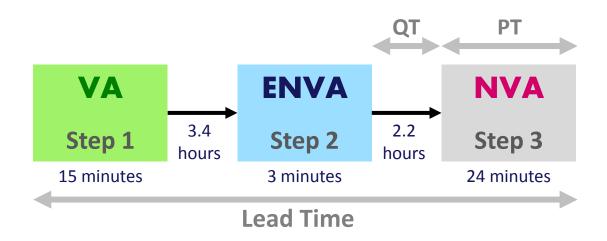
Waste Recording Form:

- Helps identify and record wasteful activities.
- It usually contains a place to classify the waste according to the eight wastes.
- It may also contain a place that encourages the team to propose priority areas for action.

Process	Waste Category	Description	Possible Cause	Proposed Action

Opportunity Process Map:

- Provides a visual picture of how the process works and where wasteful activities exist.
- A type of process map with additional information about whether activities are value added or non-value added.



Value Matrix:

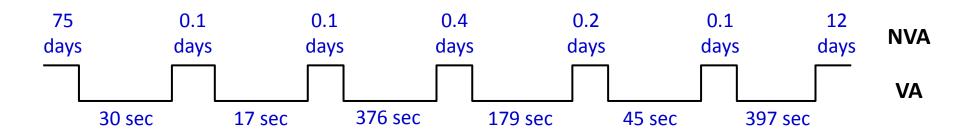
- Used to help make correct decisions about wasteful and nonvalue added activities.
- If the activity is unnecessary and adds no value to the product or service, then you need to eliminate it immediately.
- If the activity adds no value but is necessary for business operational reasons, then it can be reduced, integrated or simplified to optimize the process.



Necessary Unnecessary

Value Timeline:

- Reflects the value added and the non-value added activities of the core process.
- Helps approximating VA and NVA percentages.
- Placed at the bottom the value stream map.



VA/NVA Metrics:

- Total Value Added Time.
- □ Value Stream Ratio (VA%) The proportion of time spent in the process that a product or service is actually being worked on a way that is adding value.