Continuous Improvement Toolkit

Waste Analysis


Managing Risk
PDPC
FMEA
RAID Logs
Fault Tree Analysis
Risk Assessment*
Traffic Light Assessment
Deciding & Selecting
Pros and Cons
Importance-Urgency Mapping
Break-even Analysis
Cost -Benefit Analysis
Force Field Analysis
Voting
Pugh Matrix
Decision Tree
TPN Analysis
QFD
Matrix Diagram
Kano Analysis
Prioritization Matrix
Critical-to Tree
Paired Comparison
Planning & Project Management*
RACI Matrix
Stakeholders Analysis
PEST
PERT/CPM
Activity Diagram
SWOT
Roadmaps
Project Charter
Gantt Chart
PDCA
Control Planning
Gap Analysis
Hoshin Kanri
Kaizen
How-How Diagram
Tree Diagram**
Standard work
Lean Measures
KPIs
OEE
Capability Indices
MSA
RTY
Descriptive Statistics
Cost of Quality
Reliability Analysis
Graphical Analysis
Cause & Effect Matrix
Pareto Analysis
Confidence Intervals
Understanding Cause & Effect
Probability Distributions
ANOVA
Hypothesis Testing
Design of Experiments
Scatter Plot
Correlation
Regression
5 Whys
Chi-Square Test
Multi-Vari Charts
Relations Mapping*
Identifying & Implementing Solutions***
Simulation
TPM
Mistake Proofing
Pull Systems
JIT
Ergonomics
Work Balancing
Automation
Bottleneck Analysis
Visual Management
Flow
Value Analysis
5S
Wastes Analysis
SMED
Understanding Performance
Run Charts
Control Charts
Benchmarking
Sampling
Fishbone Diagram
TRIZ***
Brainstorming
Analogy
SCAMPER***
Nominal Group Technique
Mind Mapping*
Affinity Diagram
Attribute Analysis
Lateral Thinking
Visioning
Creating Ideas**
Time Value Map
Process Redesign
IDEF0
Value Stream Mapping
SIPOC
Flow Process Chart
Process Mapping
Flowcharting
Service Blueprints
Designing & Analyzing Processes
Data Collection
Focus groups
Interviews
Photography
Check Sheets
Measles Charts
Surveys
Critical Incident Technique
Observations

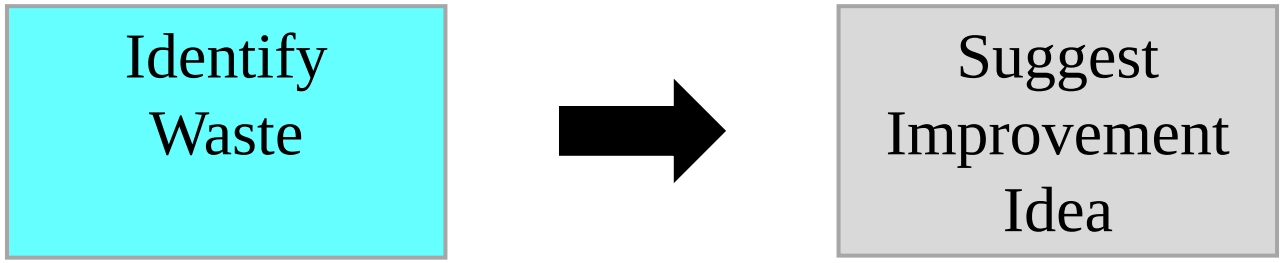
- Waste Analysis

- **Waste** are activities or resources beyond what is needed to meet customer requirements.
- **Muda** is a Japanese term that means “waste”.
- Taichi Ohno of Toyota identified what are called the **eight Mudas**.

- **Waste Analysis** involves identifying, quantifying, eliminating and preventing the 8 wastes in a process.
- **Value** is defined as an activity or step the customer cares about and is willing to pay for when done right the first time.

- Waste Analysis

- Reducing or eliminating Muda is one of the fundamental objectives of any quality-oriented person.
- Lean provides the methodology, tools and techniques to reduce eliminate all wastes.
- All lean concepts strive to continually identify and reduce waste from processes.

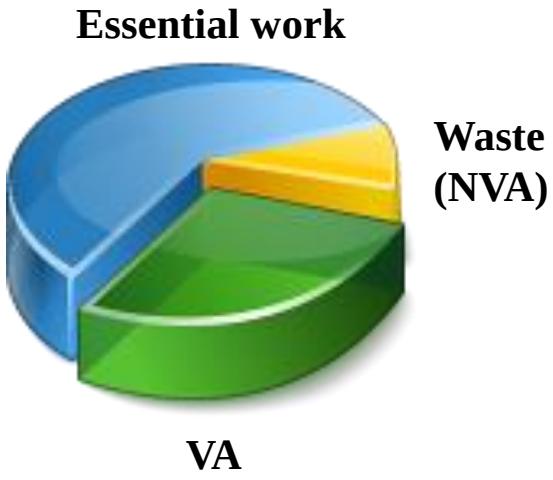


- Waste Analysis

We Can Track any Work Item into One of 3 Categories:

- **Value Added Activities (VA):**
  - Increase the value of the product or service from the customer perspective.

- **Essential Non-Value Added Activities:**
  - Necessary for the business, but the customer would not be willing to pay extra for them (unavoidable wastes).



- **Non-Value Added Activities (NVA):**
  - Add no value and not required for business operational reasons.

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The Causes of Waste:

- Misunderstanding of the customer's true requirements.
- Pressure to maximize production to justify expensive equipment and technology costs.
- Outdated or inappropriate policies.
- Variability in machinery or processes.
- Lack of training.
- Poor management work-force relations.

- Waste Analysis

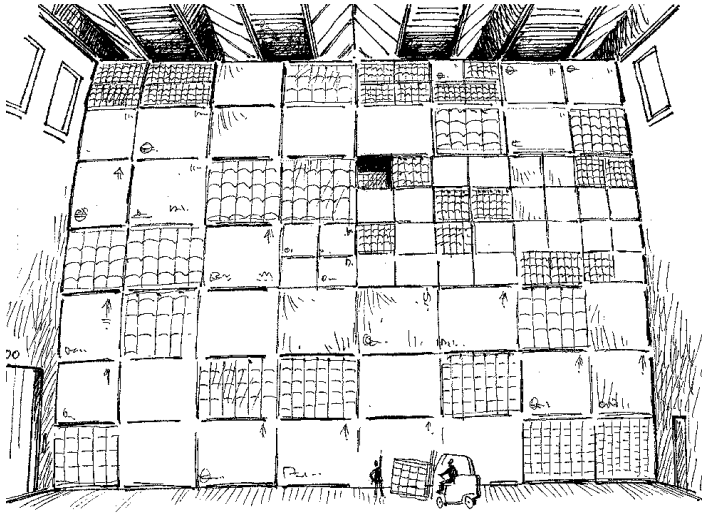
The 8 Wastes:

- Overproduction
- Waiting
- Unnecessary Transportation
- Over Processing
- Unnecessary Inventory
- Unnecessary Motion
- Defects and Errors
- Wasted Human Skills and Potential

- Waste Analysis

Overproduction:

- To produce sooner or in greater quantities than what customers demand.
- This waste:
  - Increases WIP and lead times.
  - Requires extra storage.
  - Hides poor quality rates.
  - Prevents other essential activities from taking place.

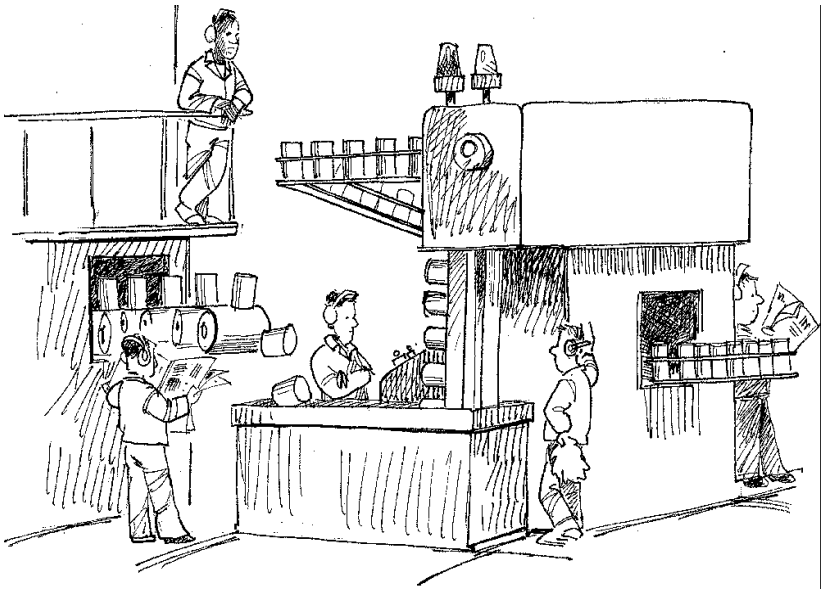


Produce only what the customers wants, and when they want it

- Waste Analysis

Waiting:

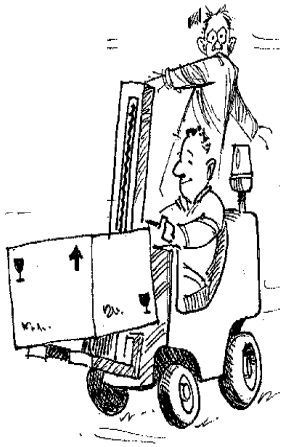
- Under-utilizing people or parts while a process is running.
- Any time a product is waiting, lead times are increasing, and no value is being added.
- Essential wait time can be filled productively.
- Rebalance activities to remove waiting.
- Make essential waiting visible.

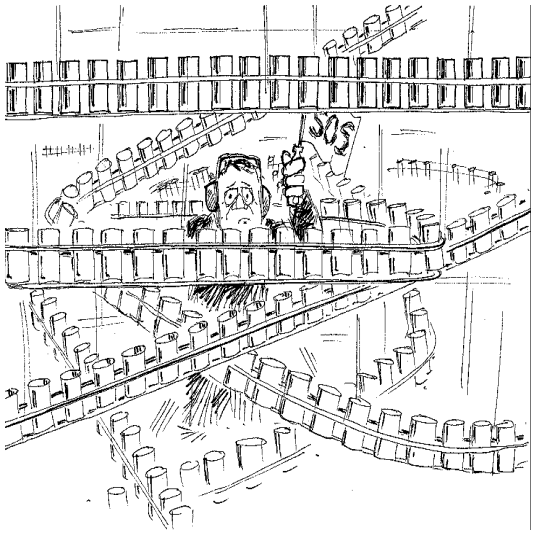


- Waste Analysis

Unnecessary Transportation:

- Unnecessary movement of parts, information or people between processes.
- Moving things costs money and time.
- Can create handling damage and cause production delays.
- You may need to relocate processes.
- Introduce standard sequences for transportation.

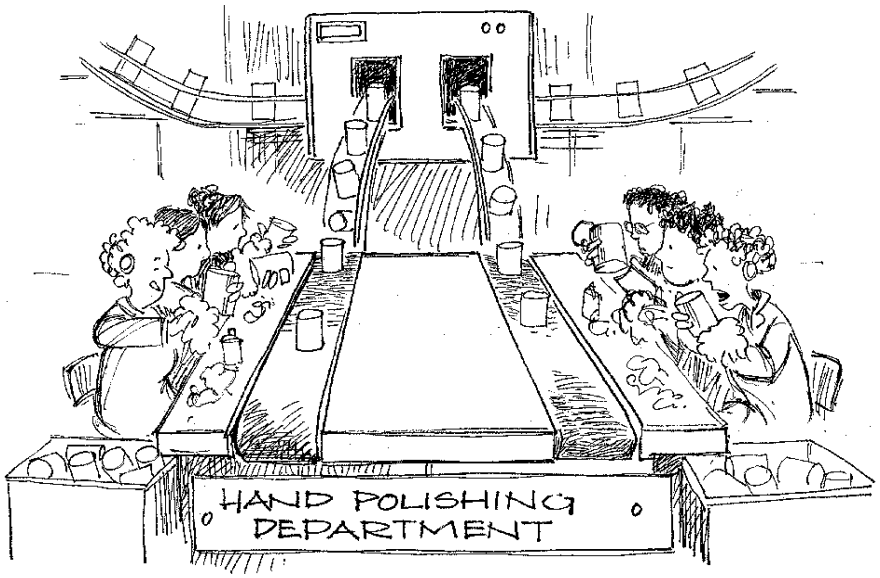




- Waste Analysis

Over Processing:

- Processing beyond what the customer requires.
- Or providing more value to a product or service than the customer will be pay for.
- Often arises where standards are difficult to define.
- Provide clear customer-driven standards for every process.



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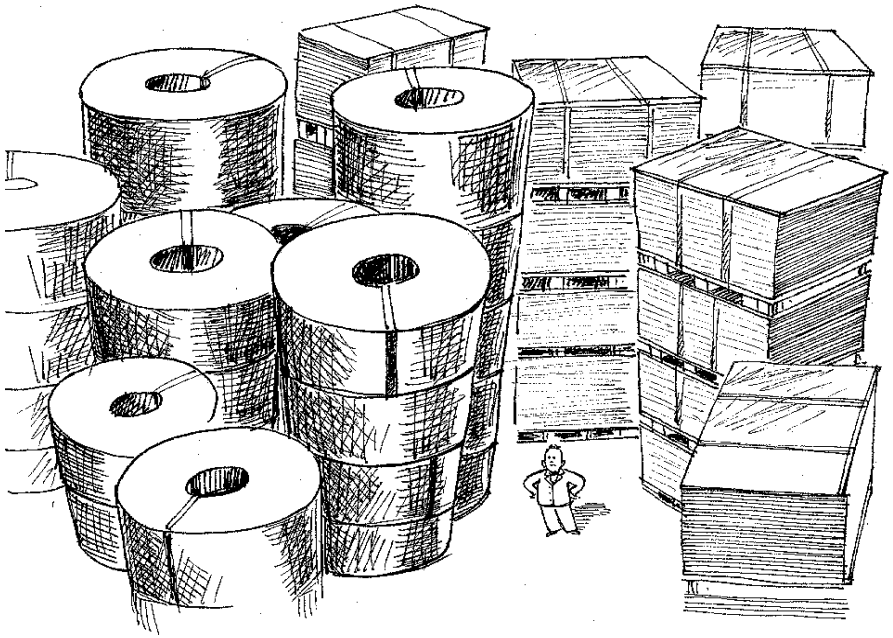
Unnecessary Inventory:

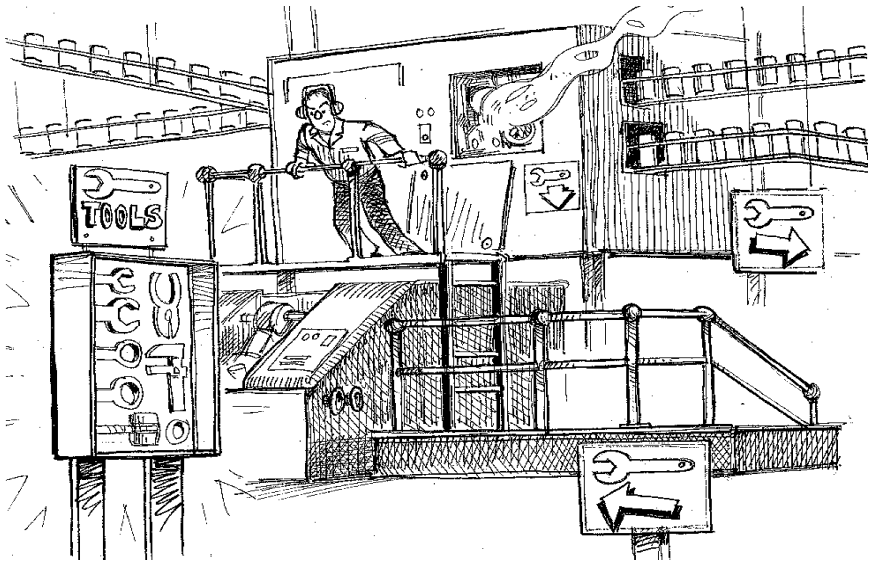
- Storing parts, pieces, documentation ahead of requirements.
- Symptomatic of a hidden problem.
- Have a significant impact on the working capital and the operational costs.
- Increases lead times.
- Some inventory is necessary, but most processes can be managed differently to minimize inventory.



- Waste Analysis

Unnecessary Motion:

- Unnecessary movement of parts or people within a process.
- Results of a poor layout or workplace design.
- Not only it will affect the overall efficiency, but also it will increase health & safety issues.
- Layout and flow should always be evaluated to identify chances to streamline the processes.
- Arrange people and parts around stations.
- Locate the required tools and hardware close to hand.

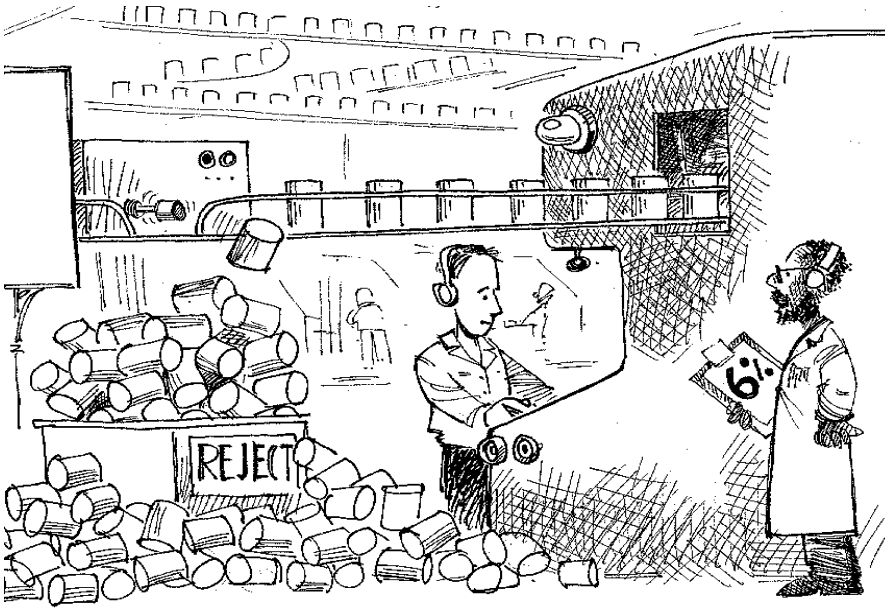


- Waste Analysis

Defects and Error:

- Failure to meet the “do it right the first time” expectation.
- This one is the most obvious and easily related to.
- Defects and mistakes require fixing or replacing.
- Have a direct effect on the bottom line.
- Caused by methods, materials, machines or manpower.

Analyze and solve root causes



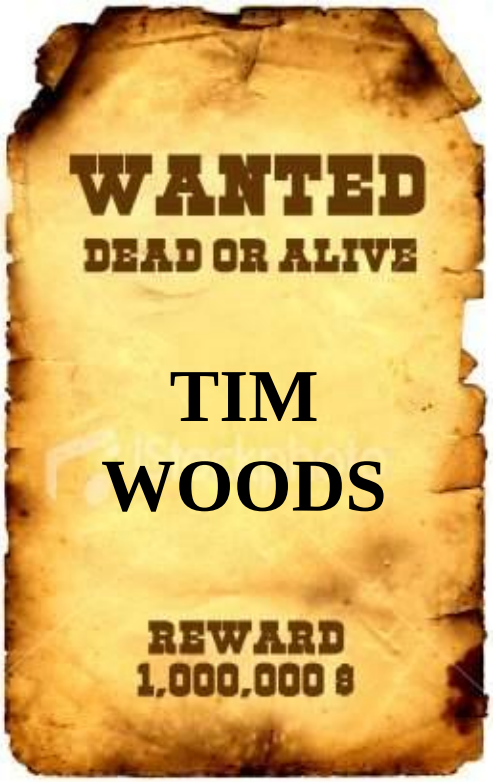
- Waste Analysis

Wasted Human Skills and Potential:

- The untapped, latent potential of people's ideas and actions.
- It is the under utilization of capabilities and creativities.
- Traditional hieratical cultures waste significant skills.
- Ensure that the ideas of employees are well heard.

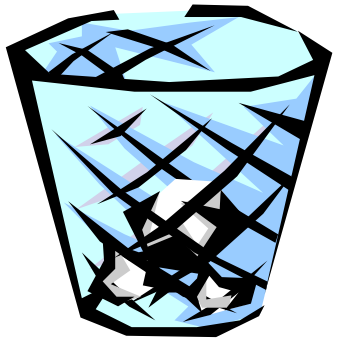
- Waste Analysis

Transport
Inventory
Motion
Waiting
Overproducing
Over Processing
Defects
Skills



- Waste Analysis

Benefits of Reducing the 8 Wastes:



- Product that meets customer expectations.
- Easier work.
- Safer work environment.
- Increased pride in work area and work quality.
- Improved productivity.
- Increased flexibility in the operations.
- Reduced costs.
- Improved quality.

- Waste Analysis

Other Type of Waste:

- **Wasted energy:** a hidden shared cost to all of us.
- **Pollution:** the producer is increasingly being made to pay for it.
- **Wasted space:** is a waste as the customer will not pay for.
- **Delay in provision:** Time is an important element of the value of a service.