INTRODUCTION TO SEVEN WASTES

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Value and Waste

- Value Added

  - An activity that transforms or shapes raw materials or information to meet customers needs

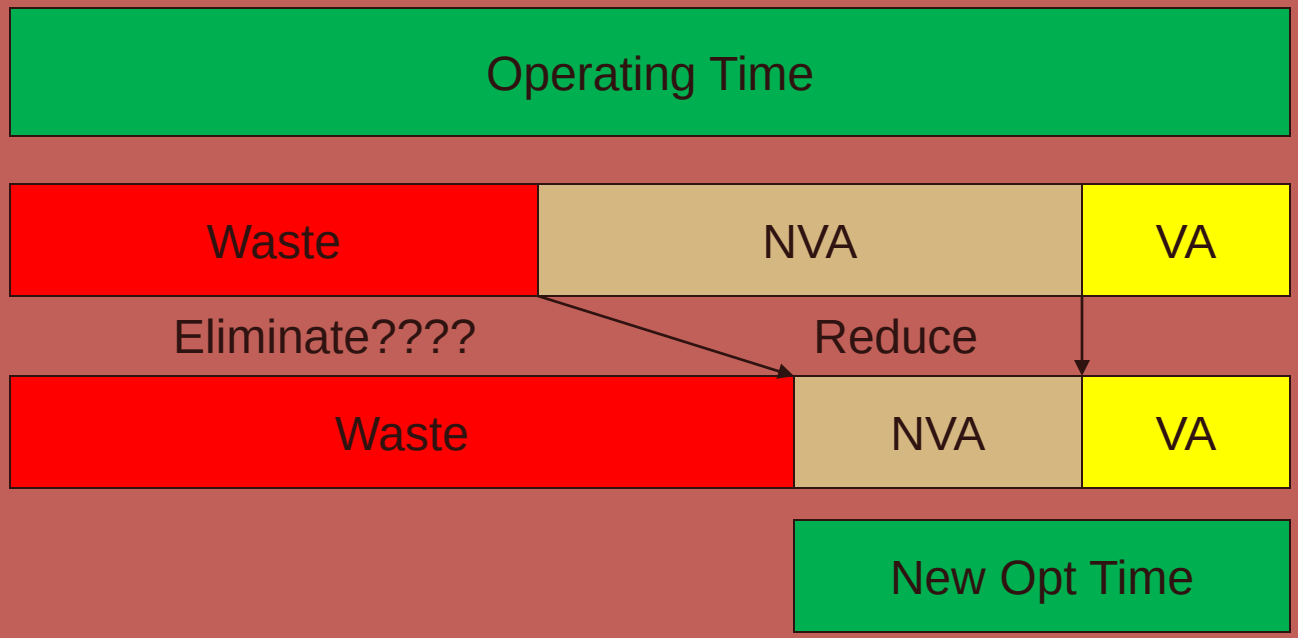
- Waste

  - Activities that consume times, resources and space but do not contribute to satisfying customer needs

The Three Dimensions of Work

- Value Added
  - Any process that changes the nature, shape or characteristics of the product, in line with customer requirements
  - Eg: Assembly, welding etc. (maximize)
- Non Value Added
  - Any work carried-out, which is necessary under current conditions, but dose not increase product value
  - Eg: part movement, tools changing etc. (minimize)
- Waste
  - All other meaningless, non-essential activities
  - Eg: 7 waste categories

Objective: To raise the ratio of VA to NVA and Waste



Toyota Waste

- The Toyota Motor Company is credited as being the most efficient Automotive Manufacturer in the world, yet have 85% waste in their process
- This clearly demonstrates the opportunities for other Automotive Manufacturer's

Waste Elimination

- Toyota Production System is driven by one guiding principle
- The elimination of waste, of which there are 7 types

Over production	Parts becoming obsolete, more storage area
Waiting	Parts shortages
Processing	Going beyond customer requirements
Transportation	Excessive distance between stores and line side
Motion	Poor process layout
Inventory	Poor stock rotation, increase handling
Rework	Delay to customer, area required for rework

The Elimination of Waste

Identify, **C**ategorize, **E**liminate all waste

Benefits:

- Reduced costs
- Encourage problem solving
- Improved production capacity
- Identify bottlenecks

Overproduction

- What?

  - Producing more than customer demands

- Why?

  - Hides manufacturing problem

  - Creates inventory resulting in ALL other wastes

  - Consumes resources ahead of schedule

Inventory

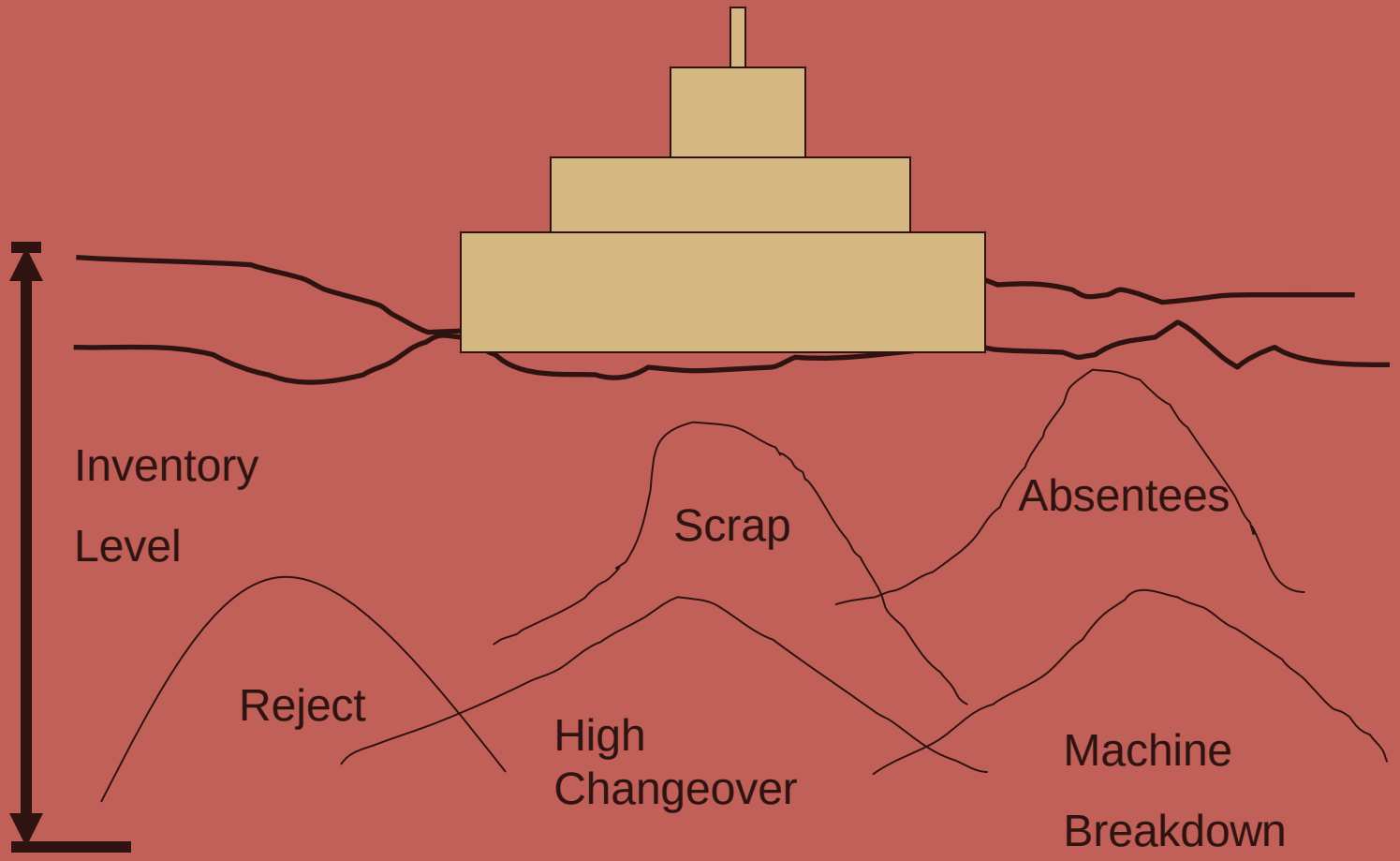
- What?

  - Stocks of raw materials, WIP and finished goods

- Why?

  - Does not add value but adds costs

Excess Inventory



Transportation

- What?
  - Unnecessary moving or handling of parts
  - Handling equipment moving with no part
  - Raw material bath size not matching production batch size
- Why?
  - Transportation does not add value

Waiting (Idle Time)

- What?

  - Operator inactivity during cycle

  - Machine inactivity during cycle

- Why?

  - When an operator or machine is idle, no value is being added to the product

Processing

- What?
  - Excessive set-up or downtime
  - Inappropriate processes
  - Excessive movement in process cycle
- Why?
  - Because it does not add value

Motion

- What?

  - Any unnecessary or excessive walking, bending, turning and reaching

- Why?

- These activities do not add value to the product

Rework and Scrap

- What?
  - Producing scrap parts
  - Reworking of parts

- Why?
  - It interrupts scheduled production
  - It consumes resources
  - Extra overtime required to replace bad quality production

Focus for Improvement

Less than 1% of activity is value adding

YET

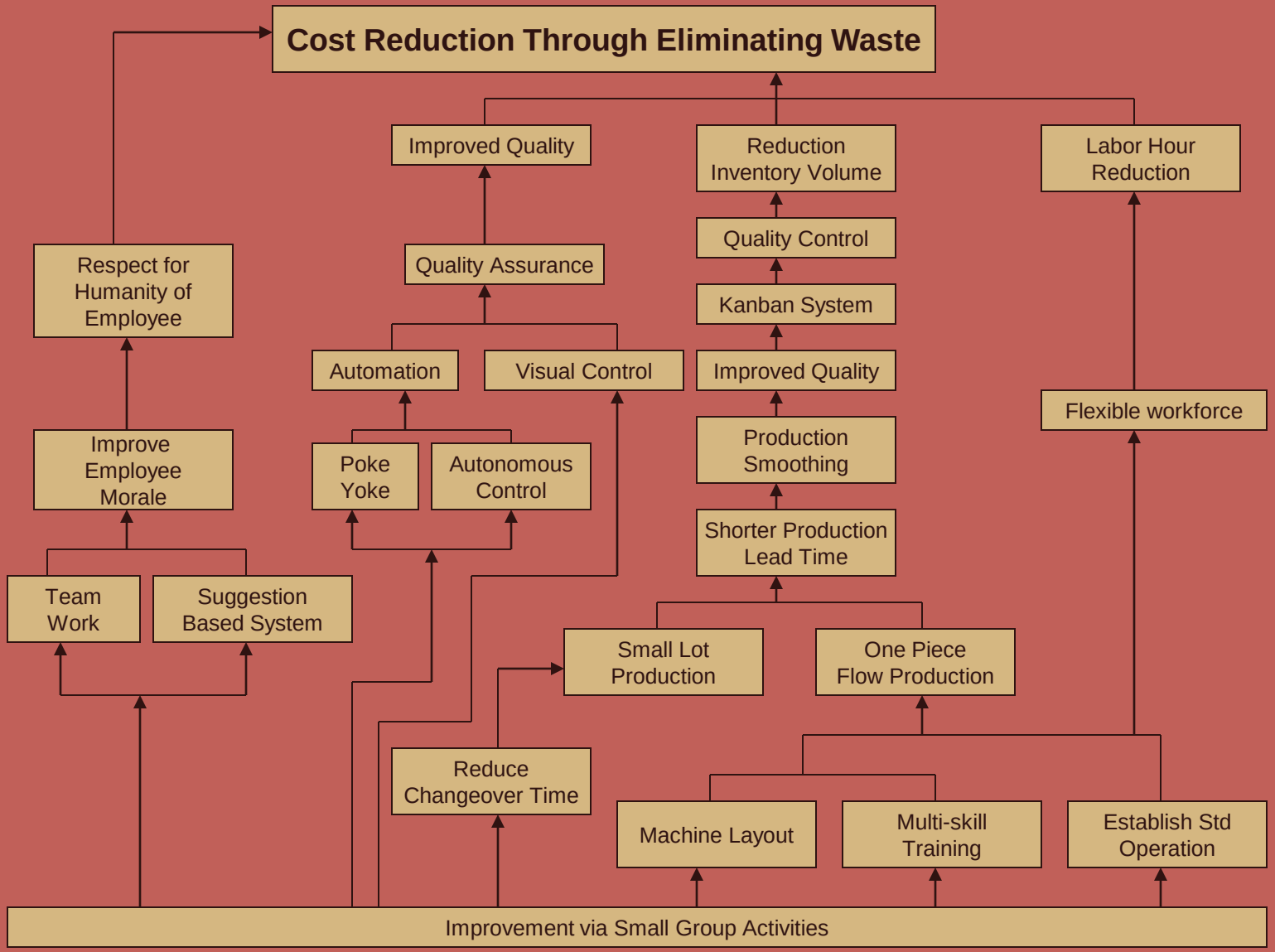
Typically, we pile resources into improvement of the 1% and ignore the other 99% opportunity

Introduction Task

- Using the 7 waste sheet, analyze a process which is undertaken within your work environment, eg:
  - Machining operation
  - Assembly operation
  - Packing
  - Despatch
  - etc.

Waste Record Sheet

Waste	Observation	Sketch
1. Over production		
2. Waiting		
3. Processing		
4. Transportation		
5. Motion		
6. Inventory		
7. Rework		


Cost Reduction Through Eliminating Waste
Improved Quality
Reduction Inventory Volume
Labor Hour Reduction
Respect for Humanity of Employee
Quality Assurance
Quality Control
Kanban System
Automation
Visual Control
Improved Quality
Flexible workforce
Improve Employee Morale
Poke Yoke
Autonomous Control
Production Smoothing
Shorter Production Lead Time
Team Work
Suggestion Based System
Small Lot Production
One Piece Flow Production
Reduce Changeover Time
Machine Layout
Multi-skill Training
Establish Std Operation
Improvement via Small Group Activities