Process Observation

What is It

Improvement tool to **measure** how much time people / machine spend on each part of a process.

When

- In the **Measure** and **Analyze** phase of **DMAIC**.
- **Optimize** the use of material, machines and manpower.
- To **improve** human effort.

Goals

- Support the Line Balancing method.
- Support the VA-NVA Analysis.
- Build a solid understanding of processes.

How

Analisys

What is to be measured.
Identify steps (Process map).
Approach to the experts.
Draft standard time.

Measurement

Use of timing device.
Consider allowances.
Record several runs.

Synthesis

Use template to enter data.
Get results and validate them.
Determine Standard times.

1. Define the Objective
2. Analyze the Operation
3. Select Operator
4. Record Information
5. Divide the operation
6. Time Operator for each Element
7. Collect and Record Data
8. Calculate Normal Time
9. Calculate Allowances
10. Determine Standard Time

Hints

- Use the **largest sample** possible.
- Take **people's skills** into consideration.
- Try **not to record** while observation is executed.
- Beware the **Hawthorne Effect*.**
- Do not lose sight of the **goal**.

*Individual change an aspect of their behavior in response to his awareness of being observed

Example

PathStone Group

Time Motion Study Worksheet

Operator ID	Task / Operation	Type of Operation	Cycle Time (seconds) 1	2	3	4	5	Ave Obs Time (sec)	Ave Obs Time (min)	Normal Time (min)	Standard Time (min)	UOM: Pouches Target Pouches/hr
	1 Open the box with tubes	Manual	2	3	5	5	2	3.40	0.06	0.06	0.003	169,412
	2 Fit box inside dispenser	Manual	5	3	5	7	6	5.20	0.09	0.09	0.004	112,769
	3 Fill kanban bin with tubes	Manual	3									
	4 Pick up empty kanban bins	Manual	2									
	5 Take one tube and label it	Process	3									
	6 Place tube on bin	Manual	4									
	7 Pass tube to check weigher machine	Machine	3									
	8 Place 12 tubes in a case	Manual	4									

Sample Size		Conf Level	z value
Preliminary mean of observation time	34	90.0%	1.65
Standard deviation of observed time	2	95.0%	1.96
Confidence level required (z Value)	1.96	95.5%	2.00
Maximum acceptable error	5%	98.0%	2.33
		99.0%	2.58
	5		

	Performance Rating Factor	Allowance Factor	
Manual Operation	100%	5%	Personal Allowance is with Manual Operation
Machine Operation	100%	5%	Machine Allowance is with Machine Operation
Process (Manual+Machine)	85%	8%	Process Allowance is with both Manual & Machine

Working Hours	8.00	
Total Cycle Time	30.6 sec	
	0.51 min	
Total Normal Cylce Time	0.50 min	
Total Standard Cylce Time	0.03 min	<--- Can be the used for Takt Time
Expected Target	149,077 Pouches/hr	