



EPITA Information Management Master

Introduction to Six Sigma 6σ Module 4

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Course Schedule

- **3 Theoretical sessions : Jan 11, Jan 25**
- **1 Practical case studies : Jan 12**



Exam

- **Participation to the 4 modules/sessions (40% of your score)**
- **Practical session (game play) 40%**
- **Quiz (20 questions) with no document 20%**



DMAIC

- **DEFINE** – Clarify opportunities/issues, set goals, make sure we're working on the right things. Understand and balance stakeholder needs.
- **MEASURE** – Target the right facts and data to build understanding, improve decisions, evaluate results
- **ANALYZE** – Assess relationships between actions and results, reasons for problems, potential impact of new solutions or innovations
- **IMPROVE** – Develop effective new ways to get things done that gets results
- **CONTROL** – Ensure solutions and innovations last, and can be leveraged to maximize benefit



IMPROVE



- In the Improve phase, teams move on to solution development
 - Create Flow
 - Mistake-Proofing: Poka-Yoke
 - Visual Management & 5S
- Improve or optimize the current process based upon data analysis using techniques such as design of experiments, poka yoke or mistake proofing, and standard work to create a new, future state process.
- Set up pilot runs to establish process capability.

Go Beyond Paradigms

Everything that can be invented, has been invented

- Charles H. Duell,
U.S. commissioner of patents, **1899**

There is no reason for any individual to have a computer in their home

- Kenneth Olsen, President of Digital Equipment Corp., **1977**

Apple's iPhone is the most expensive phone in the world and it doesn't appeal to business customers because it doesn't have a keyboard which makes it not a very good e-mail machine...

- Steve Ballmer, Microsoft's CEO, **2007**



Television won't last because people will soon get tired of staring at a plywood box every night

- Darryl Zanuck, american film producer, **1946**

Who the \$*&@ wants to hear actors talk?

- Henry M. Warner, Warner Brothers,
1927

Stocks have reached what looks like a permanent plateau.

- Irving Fisher, professor of economics, Yale University, Oct. 17, **1929**



Tradition is the illusion of permanence [Woody Allen]



Improve

- **What actions will fix the problem ?**
- **Which solution is best (high impact, low cost & risk) ?**
- **Is the improvement working (results & buy-in) ?**





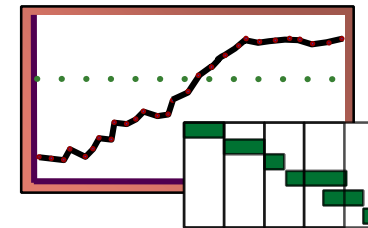
Improvement Plan



Generate Ideas
and select
Solution



Think how to
evaluate & Test
Solution



Draft plan to
implement Solution
& confirm Results



Filter Matrix





The “5S”

- **Technique and guidelines for improving the organization, accessibility and cleanliness of a work environment**
- **Also, a process for maintaining discipline, order, and reducing waste and errors**





The “5S”

1. **SORT (Seiri)** - Place items according to where and when needed
2. **SET IN ORDER (Seiton)** - A place for everything, and everything in its place – easy to locate, use and replace
3. **SHINE (Seiso)** - Everything is clean, and cleaning is used to inspect the area, equipment, processes
4. **STANDARDIZE (Seiketsu)** - Sort, Set-in-Order and Shine are established and followed consistently
5. **SUSTAIN (Shitsuke)** - Ensure that 5S activities become a habit that everyone performs continually
6. **Optional Sixth S = Safety!!**



Before



After





The “5S” Number Game

30 24 29 46
9 2 13 16
4

The Number Game

17 21 10 41
28 22 6 39
34

Round 1



- **Your job is to use a pen or pencil to Strike Out the numbers 1 to 49 in Correct Sequence**
 - You will have 30 seconds to complete this task
 - The Time Keeper will tell you when to start and announce the end of your task at the 30 second mark
- **When time has been called, ask each person to call out the highest number they crossed out and record these individual scores on a white board or flip chart**
- **Circle the Lowest Score – this is the Teams' Official Score for this round**





Round 1 Results

- **How do you feel about your score?**
- **What appeared to get in the way of achieving a higher score?**





Round 2

- **We are going to implement 5S in this work area. The first step is to Sort**
- **Our initial analysis shows numbers 50 to 90 are not essential to our daily tasks...they have been removed from the work area**
- **In a moment, you will repeat the Strike Out task in the Sorted Work Place on the following page.**
- **Same rules apply:**
 - **Use a pen to strike out numbers 1 to 49 in sequence during a 30 second shift**
 - **Record your individual scores and circle the lowest as your Official Team Score for the round**





Round 2 Results

- **How do you feel about your score?**
- **What appeared to get in the way of achieving a higher score?**



Round 3



- Having achieved some improvement, we will now move to the next 5S step **Straighten**
- We have installed some racking in the work area using a 3 x 3 grid
- We have organized the numbers so that each grid has one number from a different decade
- Same rules apply:
 - Strike out numbers 1 to 49 in sequence during a 30 second shift.
 - Lowest individual score is your Official Team Score.



Round 3 Results

- **How do you feel about your score?**
- **What appeared to get in the way of achieving a higher score?**



Round 4



1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27
28	29	30	31	32	33	34	35	36
37	38	39	40	41	42	43	44	45
46	47	48	49					

What are the 2 missing numbers ?





1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17		19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41		43	44	45	46	47	48	49	





The “5S” Numbers Game Reflection

- **What did you learn in this 5S numbers game?**
- **How might you incorporate the 5S process into your current workplace?**
- **What difference would you expect it to make?**



The “5S” Assessment Checklist

5S Assessment						
Work Area		Auditor Name				
<p>Directions: Assess the area using the below checklist. Rate each item on a scale 1 to 5. This checklist may be used 5 times for consecutive assessment of the same area to check progress against goal.</p>	1	Non Existent (Buried)				
	2	Poor (Stuck in a hole). A tremendous amount of time will be needed to comply				
	3	Average (Has not started climbing the mountain yet). Some attention has been given but more effort will be required to comply				
	4	Above average (Climbing the mountain and almost to the top). Visible effort has been given and very little effort will be needed to comply				
	5	Excellent (King of the Hill), World Class and sustaining the gains.				
	N/A	Not applicable for area being audited				
		Date				
	Category	Assessment				
SORT	ONLY KEEP WHAT IS NECESSARY TO PERFORM TASKS IN THE WORK AREA	No Excess or unneeded equipment, tools, files, data, fields, forms, etc				
		No Excess or unneeded inventory, supplies, equipment, materials, info, etc				
		No Outdated or Unneeded items on the walls, bulletin boards, files, etc.				
		Data is sorted into meaningful categories (e.g. security, ownership, app, source)				
		No items or information "hidden" where they don't belong				
		No unclear conditions exist				
STORE	PUTTING THINGS AWAY...THE RIGHT WAY	Clear naming conventions, correct places for items are clearly marked/labeled				
		Data, files, folders are marked/labeled clearly				
		Data is stored in a proper location based on its objective/classification				
		Information and items are returned to their proper location immediately after use				
		Height and quantity limits for inventory are clearly marked				
		Inventory storage locations are clearly marked				
SHINE	THE PATHWAY TO WORKPLACE CLEANLINESS	Temporary data files are deleted on a regular/timely basis				
		Data is archived on a regular/timely basis				
		Equipment is clean and free of dirt, oil, dust, processing by-product, etc.				
		Lines, labels, signs, wires, etc are clean and easy to identify				
		Needed cleaning materials are available in the area (broom, dip towels, etc)				
		No other cleanliness related problems are present (food, trash, etc)				
STANDARDIZE	MAINTAINING CLEANLINESS AND ORDER	Sites to maintain the first 3 S's have been set and are visually displayed				
		Checklist for maintenance of first 3 S's are being used regularly				
		Team members, colleagues know their responsibilities				
		Short, clear, easy-to-understand documentation is easily accessible				
		Visual aids are deployed where possible				
SUSTAIN	KEEPING THE 5S PROGRAM ALIVE AND WELL	Workers in the area have been trained on the 5S				
		Workers in the area understand standards, location of tools, inventory, etc				
		Daily 5S being performed				
		Audits being performed by 3rd party minimum monthly as accountability etc				
		Individual can be easily stored				
		Sum Total:				

The “5S” Garage

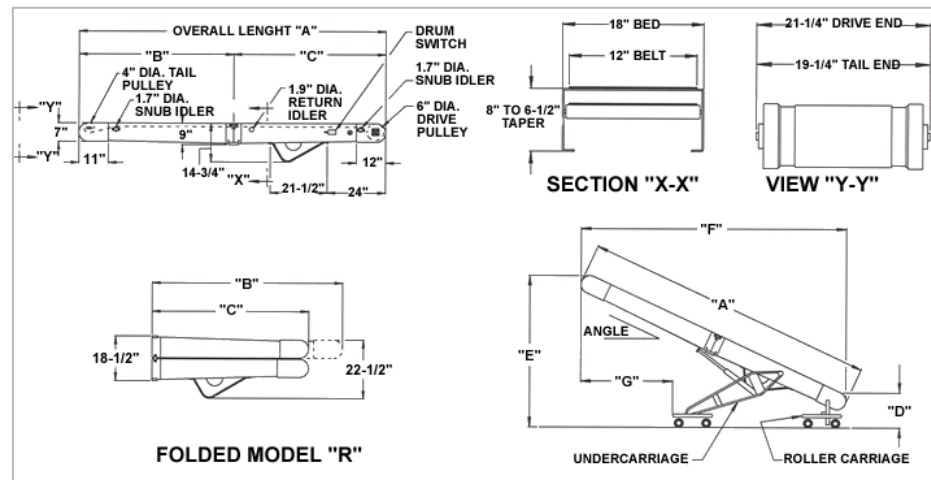


- **Video**

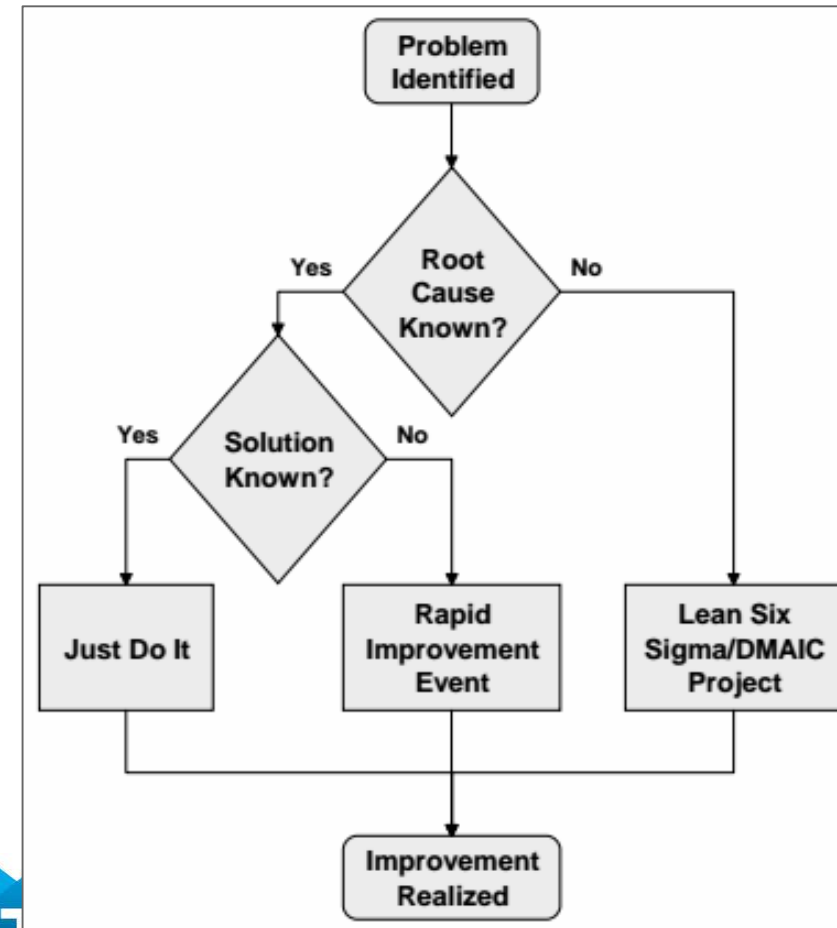
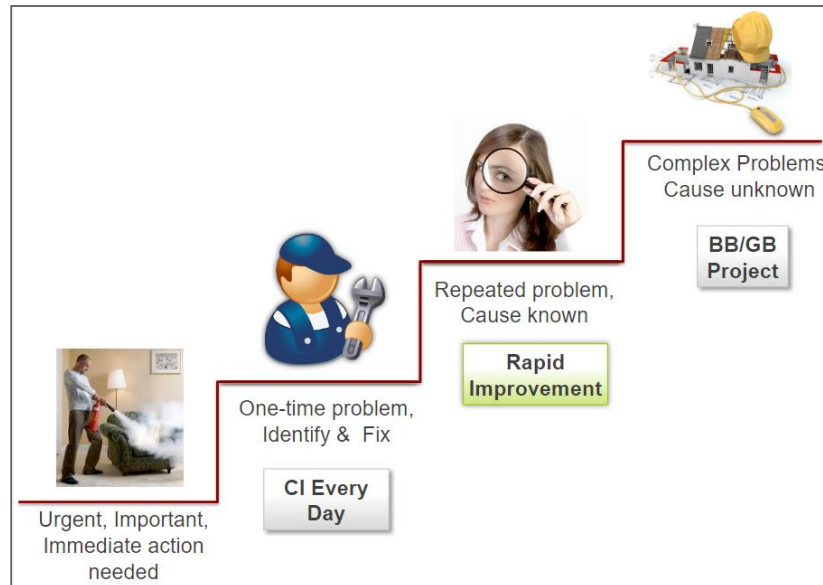
Think about making the solution Lean by Design and about upstream / downstream side-effects avoidance



Improved and faster conveyor belt...



Improvement dimensioning



CONTROL

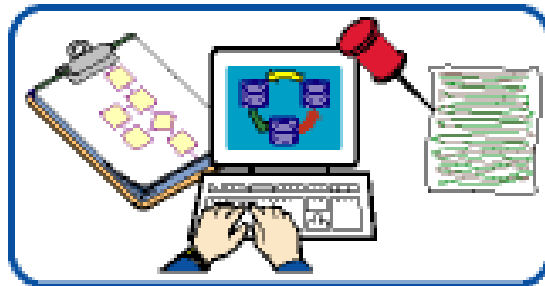


- **The Control phase is the final phase of Lean Six Sigma. The team focuses on how to sustain newly achieved improvements by passing it on to other employees**
 - **Process Control Plan**
 - **Monitoring & Response Plan**
 - **Documentation & Storyboard**
- **Control the future state process to ensure that any deviations from target are corrected before they result in defects.**
- **Implement control systems such as statistical process control, production boards, visual workplaces, and continuously monitor the process.**



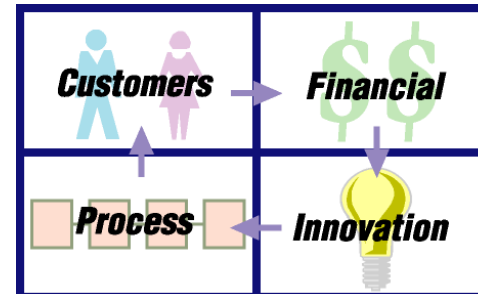
Control

- **Who will make sure the solution sticks ?**
- **How will we asses or measure performance ?**
- **What will we do if things aren't right ?**



Support
Documentation

Control phase



Measures &
Monitoring



Celebration &
Sharing



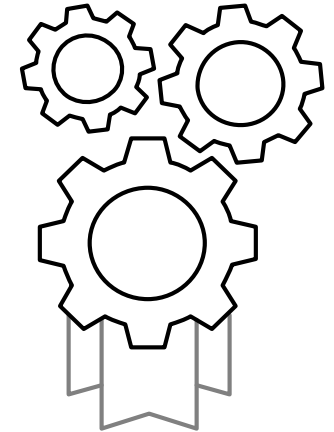
What final steps will be needed ?

- **Consider likely final steps that will be needed for your improvement including...**
 - Updated Documentation
 - Training
 - Measure of Results
 - Ongoing measure(s) : should align with Problem and Goal
- **Determine the next steps for your improvement**

Ensure that the improvement is real and sustained



- **How will we ensure the solution has the greatest chance for lasting success?**
- **What new standards should be developed?**
- **How will we track of performance over time?**
- **How can we celebrate and recognize our success?**



Excellence in execution

Fun

- <https://youtu.be/vpl3udi6OJg>

