It's Not Easy Being Lean

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or

"Lean -- it's not just for manufacturing anymore"

or

" Do I have to be Mean to be Lean?"

Abq INCOSE

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What is Lean?

- Maximizing competitive advantage through operational excellence *(yawn)*
- Increase efficiency by consistently and thoroughly eliminating waste *(more promising)*
- A way to do more with less while coming closer and closer to providing customers with exactly what they want *(more business oriented)*
- Philosophy and practice of continuous improvement through people who are engaged, empowered, motivated and trained in problem solving techniques *(whew -- but this understands the importance of people)*
- Value-added flow; flow without waste *(short and sweet)*

What is Lean?

- Compressing time; creating value; minimizing waste *(good elevator speech)*
- Reducing the time line by reducing the non-value adding wastes; from the moment a customer gives us an order to the point where we collect the cash *(all about flow and removing barriers)*
- A technique to reduce costs, people and resources *(this is the evil definition)*
- A way of thinking; a culture; an attitude *(good end result)*
- Creating an environment that allows people at every level in the organization the ability to use common sense everyday in every activity *(my personal favorite)*

Why be Lean?

- Competitive Edge
- Survival (not a luxury anymore)
- Need to “do more with less”
- “Work smarter”

But we're not a manufacturer . . .

- What started as a method of improvement for the automotive industry is now in all sectors
  - Software
  - Service
  - Business
  - Health care
  - "Mom and Pop" (e.g., mechanics)

Where do we start?

1. Define organizational goals
2. Define ‘value’
3. Identify problems / potential improvements
4. Define improvements / solutions
5. Develop plan to implement improvements
6. Measure improvements

Define Organizational Goals

Define Organizational Goals

- Strategic plan
  - Who are we in 1 yr; 2 yrs; 5 yrs?
  - What are our core products or services?
  - Who are our customers?
- Business / program goals
  - What does our customer expect?
  - What is our funding / revenue model?
- Commitments / constraints
  - Contract commitments; Funding constraints
  - Size, location, product / service line
- Competitive analysis
  - What would make us better?
  - What are our differentiators?

Define ‘value’

- What the customer buys
  - Product
  - Service
  - Quick-turn around time
  - Precision / lower defects
  - Expertise

When do you make money?

When are you productive?

This is really what ‘value added’ means

Identify Problems

Identify Problems
(opportunities for improvement)

- Easy improvements / low hanging fruit (**5s**)
  - **Sorting -** going through all of the tools, materials, etc. and keeping only essential items. Everything else is stored or discarded
  - **Straighten or Set in Order -** Focus on efficency. Arrange tools, equipment, etc. to maximize work flow
  - **Sweeping / Cleanliness -** Keep the workplace neat and clean; end of each shift / day.
  - **Standardizing -** Standardize work practices; everyone understands their roles and responsibilities and how to effectively perform them.
  - **Sustaining Discipline -** Maintaining and reviewing standards; do not "slip back into old habits"; ensure work practices are kept current
  - **(Safety -**Ensure safety standards are in place and being followed **)**

Part of everyday practice; culture; institutionalization

Identify Problems (2)

- Ask the right questions and **LISTEN** to the answers
  - What keeps you up at night?
  - What's the "stupidest" thing you did today?
  - What's the "stupidest" thing your boss did?
- Determine the real **CAUSE** (not just the symptoms)
  - Keep asking WHY? (not *Who*)

. . . more general questions

- Are there steps that are clearly “Un-Lean”? (inspection or over-processing steps)
- Are there counter measures that can improve the quality of Input and output either at the workstream or workgroup level?
- Are there opportunities that can reduce batching or rework wastes within a process (in-process opportunities)?
- Are there ideas that can improve information flows or product flows across/within the workgroups?
- Are there opportunities that can dramatically reduce motion or waste, i.e. reduce search time or retrieval time of data from systems?
- Are the SIPOC steps sequentially correct? (For e.g. there can be inspection steps both at the start and at the end of the process?)

FROM: Dealing with Business Process Complexity The No Frillls Lean Six Sigma Way Author: Avijit Paul and Dr. Prasad Chitimalla

Identify Problems (3)

Identify appropriate tools to help

- **SIPOC -** Suppliers, Inputs, Process, Outputs, Customer; High-level picture of the process that depicts how the given process is servicing the customer.
- **Process Maps -** Defining exactly what a business entity does, who is responsible, to what standard a process should be completed and how the success of a business process can be determined
- **Value Stream Mapping -** Technique used to analyze the flow of materials and information currently required to bring a product or service to a consumer; help identify opportunities for improvement

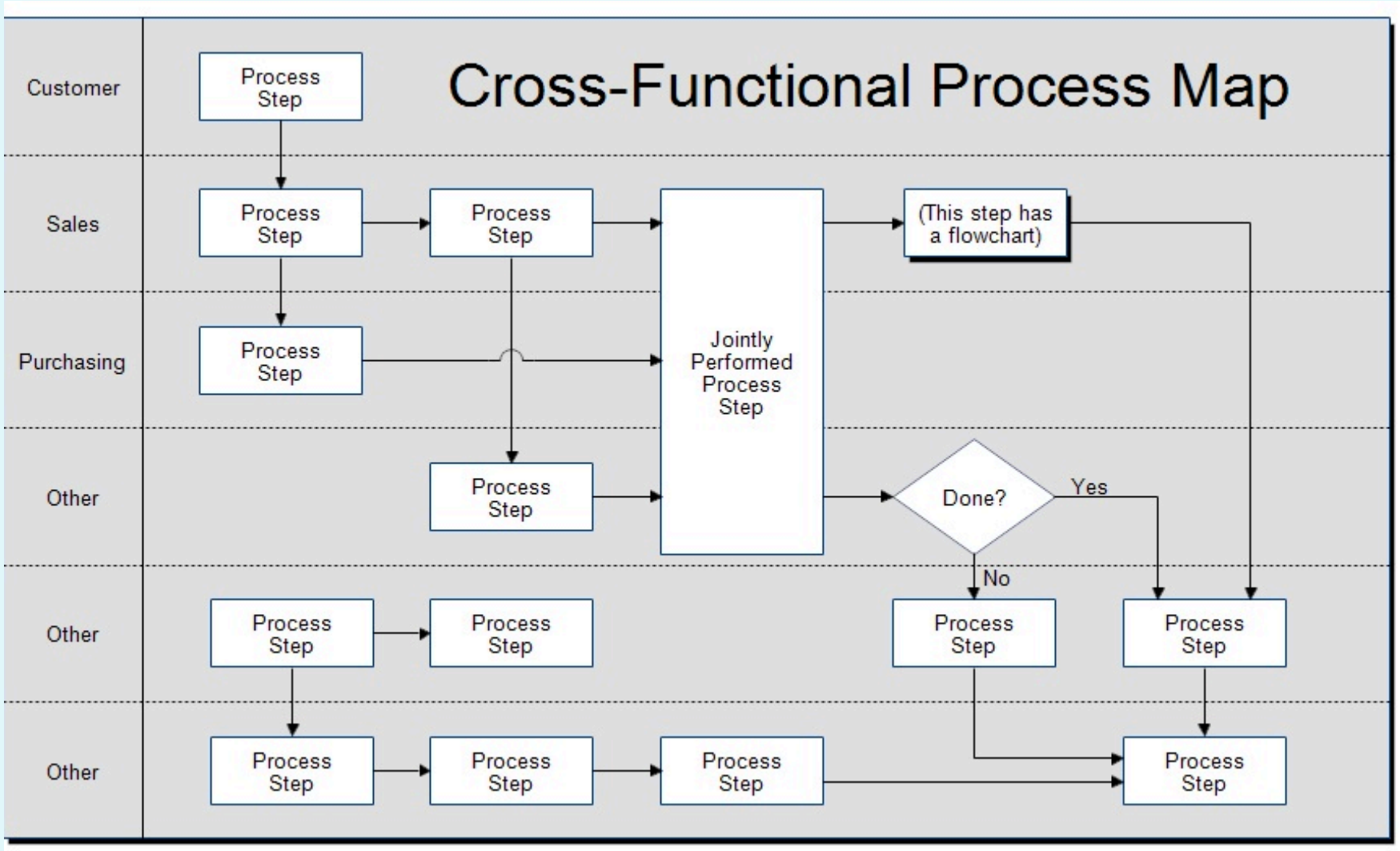
  As-is model (current state); To-be model (future state)

Instructions for Preparing the SIPOC Diagram:

1. Go through the process step by step, describing the major activities. List each of this activities under the Process column.
2. Add two columns, one to the left of the Process column Input and one to the right of the Process column Output.
3. Work to the left of each activity in the Process and describe the Input into this Activity.
4. Now work to the right of the activity in the Process and describe the Output from this Activity.
5. Add two more columns, one to the left of Inputs labeled Supplier and one to the right of Ouput labeled Customer.
6. Now work down the Input column and describe each source or supplier of the Input.
7. Do the same for the Output column and work down, describing who gets the output.

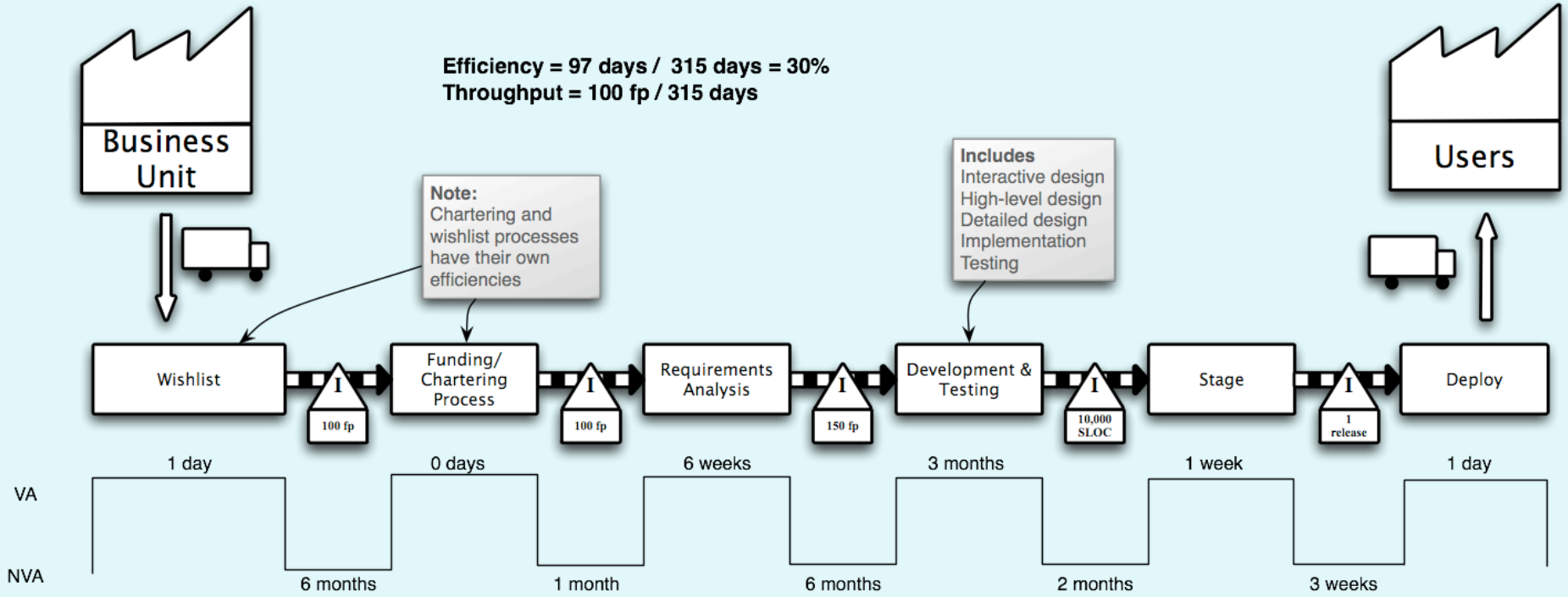
From: PD-Trak Solutions

Process Map Example - "Swim Lanes"

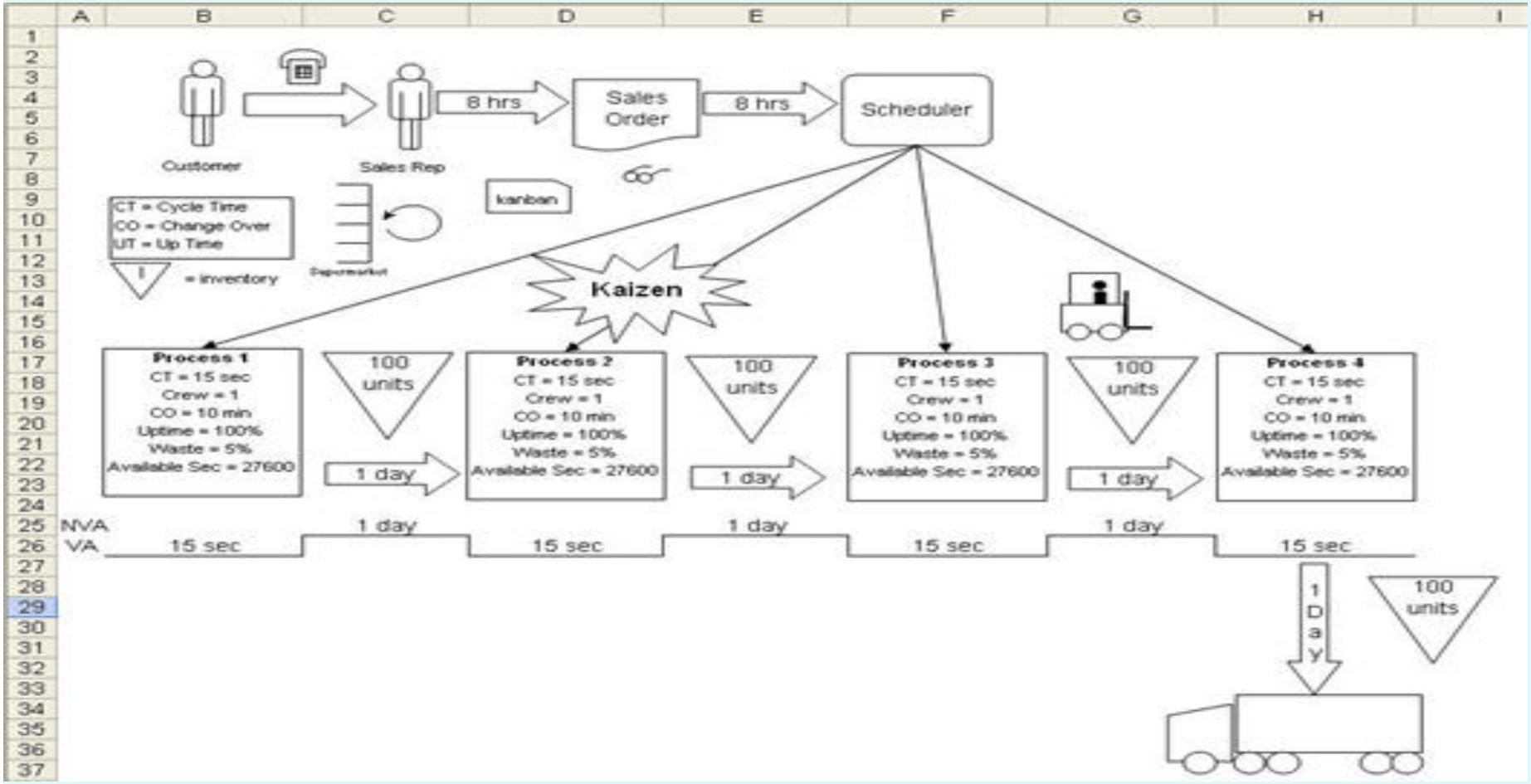


From: RFFlow5

Value Stream Map - SW Example



VSM - Manufacturing Process Example

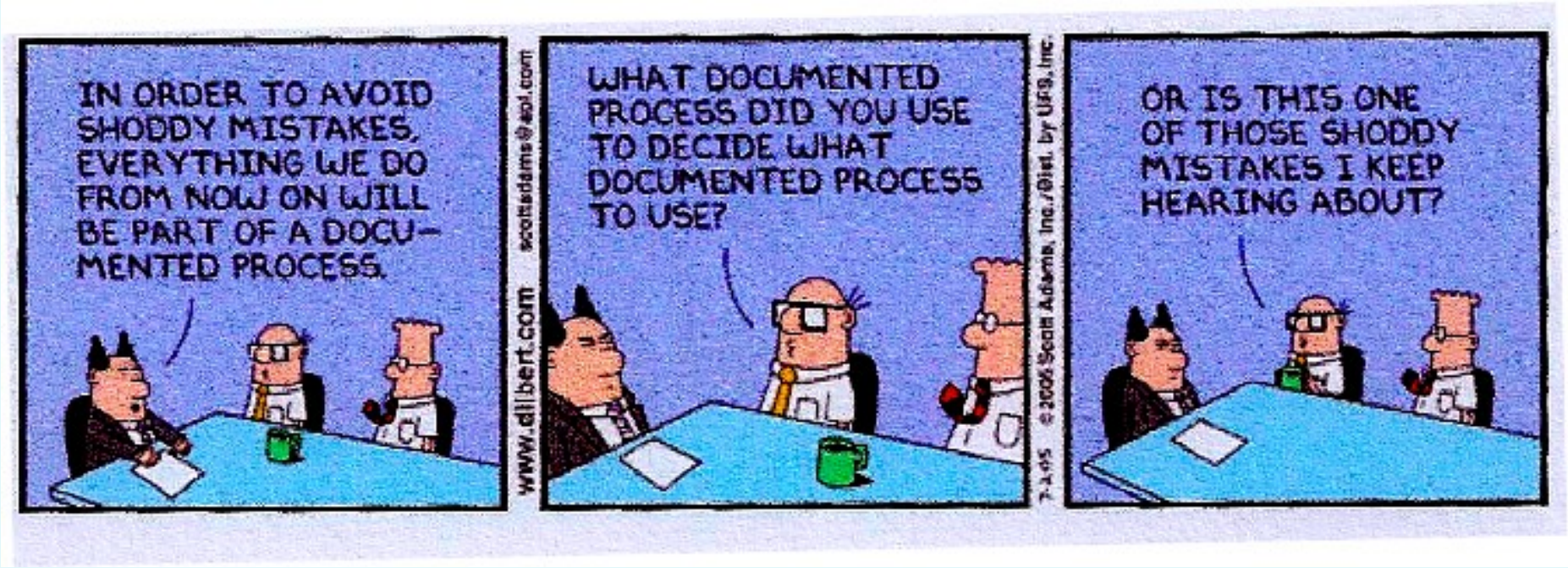


Choose Wisely …

Select the project(s) and the team(s) wisely

- For the problem identification phase AND the solution AND the implementation stage
- Think about:
  - The scope of the project or process
  - The importance and visibility
  - This risk and associated consequences of failing
  - The about the type of people that will be involved
    - Are they experts?
    - Are they respected?
    - Do they have the time?
    - Are they interested / enthusiastic?

Define Improvements



Define Improvements / Solutions

- Based on the problems identified in previous step, how can they be fixed?
  - Realistic; objective
  - Phased approach; Break into smaller efforts; pilots
  - Highest priority / "biggest bang for your buck"
  - Kaizen burst / Kaizen blitz
  - Future state
- What are the goals of the improvements?
  - Adding value? Reducing waste?
  - Aligned with strategic goals?
  - Metrics to evaluate success?
- Weigh the risks
  - What if you try and fail?
  - What if you do nothing?

Solution Quandry

What if the solution includes eliminating people?

- Might want to / need to address this up front; if people know that their jobs are at stake, identifying problems may be difficult

- Often, freeing up time / people means that they can:
  - Do other things that are currently not getting done
  - Do the things better, more accurately, more rigorously
  - Work on finding solutions to other problems or less "mundane" activities

But, sometimes there will be a need to reduce personnel …

Pick the right implementation tools

- **5s -** Sorting, straightening, sweeping, standardizing, sustaining discipline, (safety)
- **KanBan** - A system of continuous supply of components, parts and supplies, such that workers have what they need, where they need it, when they need it. Pull.
- **Poka Yoke** - mistake-proofing (idiot proofing); (e.g., desk instructions, physical guides) leads to zero defects
- **SixSigma** - improve the quality of process outputs by identifying and removing the causes of defects (errors) and minimizing variability in manufacturing and business processes. 99.99966% of the products are free of defects.
- **TPM** - Total Productive Maintenance; engage all levels and functions in an organization to maximize the overall effectiveness of production equipment.
- **TQM -** Total Quality Management; reduce errors in the process leading to increased customer satisfaction; can use statistical process control. Can use ISO 9000 or CMM standards.

Develop Improvement Plan

Looks like a project plan (more than just a schedule:)

- Goals (problems to be solved; desired end result)
- Scope (boundaries; where does it start / stop)
- Tasks to be implemented
  - Level of breakdown relative to project / organization / task
  - Include piloting, training, improvements
- Resources needed
  - What is required from management
  - Type of people / experts needed
  - Equipment, materials, etc.
  - Estimated cost
- Risks and mitigations
- Schedule
- Associated metrics

Measure Improvements

- **How do we know that the improvements have added value / made a difference / are working properly?**
  - What are the goals of the improvements?
  - What is the value that is being increased? What waste is being decreased / eliminated?
- **In terms of units, time, complexity, schedule, defects, errors, cost** (rework, training, customer satisfaction, help desk calls)
- **Metrics program:**
  - How will these be measured?
  - What method?
  - What system will be used for tracking and analyzing?
  - What will be done with the results? (Good vs evil)
  - How do you get buy in for the metrics program?

Do It Again

and again, and again ….

An Ending Note…

Toyota's Philosophy for Manufacturing Excellence

(maybe they should revisit this…)

"Brilliant process management is our strategy.

We get brilliant results from average people managing brilliant processes.

We observe that our competitors get average results from brilliant people managing broken processes"

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Being lean in today's environment

What:

- Definitions …
  - Doing more w/ less
  - Effective
  - ABILITY to use common sense

Why:

- Competitive edge
- Survival
- Part of the culture (not a luxury)

- What started as a method of improvement for the automotive industry is now in all other sectors
-

How:

- Define goals
  - Define value
- Identify problems
  - Make the easy improvements (5s)
  - Use the tools (SMED, Kanban, TPM, 6sixgma)
- Identify strengths
  - VSM; involve everyone; identify waste
- Define solution (options, costs/benefits, risks (including doing nothing))
- Develop plan
- Implement plan
- Determine if solution is working (measure it)

- What keeps you up at night?
- What are your business goals?
- What are your commitments (business and personal)?
    - Are these the same?

- Determine the cause of the problem (not just the symptoms – sometimes this will take a while; may need to work "backwoards")
    - E..g: The product is always late getting shipped to our customer
        - Don't have enough people to package the product quickly; can't keep up w/ production
            - WHY?
                - *Look at the process ---*
                - Need to check the contents, paperwork, package, label, file
                    - WHY?
                        - Final check before it leaves
                            - WHY?
                                - No one else
                                - WHY?
                                - …….

SOLN (options):

- Break it up – each person does one or 2 things
- One person checks, and then files at the end
- Cheaper labor to print labels, etc. and package…

Toyota:

"Brillian process management is our strategy.

We get brilliant results from average people managing brilliant processes.

We observe that our competitors get average results from brilliant people managing broken processes"

- Compressing time; creating value; minimizing waste

Study and understand lean principles, their pros and cons
2. Glean best practices from other practitioners

3. Hire employees or consultants with a lean manufacturing track record
4. Map and review your current manufacturing operations to identify excesses and inefficiencies

5. Start small, with a single step or process and hold a "Kaizen" " or continuous improvement " event so employees can find and test lean techniques.

6. Involve all factory floor employees, as well as procurement, management and administrative staff. Expect resistance and the need for training.

7. Continue to hold Kaizen events regularly. Require employees to always look for ways to improve their own and other job functions.

8. IT systems should mirror the real-time communication and flows a lean manufacturing environment requires -- batch-and-queue systems aren't typically a fit.

9. Once up and running, look to extend the initiative beyond your factory floor to other parts of the business and to your suppliers' and customers' operations.

10. Recognize lean manufacturing implementations take time, are evolutionary, and are never finished.

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Takt Time = Net Available Time per Day / Customer Demand per Day
Takt Time is expressed as “seconds per piece”, indicating that customers are buying a product once every so many seconds.