

Step 3: Improve



- Determine Root Causes
- Conduct Other Analyses
- Identify Improvements
- Prioritize and Decide
- Design Future State

DETERMINE ROOT CAUSES

Determine root causes

- After mapping the current state process and reviewing for obvious problems, apply techniques to understand the true causes of problems
- This will inform how to resolve problems at the source and improve the overall process
- There are several techniques available



Analyze root causes of problems

- Review the current state map for obvious issues
- Analyze data collected during the Explore step
- Use “5 Whys” method for providing root cause insight
- Summarize the main findings of the root cause analysis

Root cause documentation

Example: The purchasing process is slow; approvals take too long

Issue	Root Cause	Category (<i>People, Process, Policy, Technology</i>)
Approvals take too long	Multiple forms; forms hard to find on web	Technology
Approvals take too long	Raj's approval limit of \$200 is too low	Policy
Purchasing delay if Mario or Jane is out	Mario/Jane roles are unnecessarily unique	People
Holly holds the forms until Friday to create a batch, causing a delay	Easier for Holly to send once per week	Process
Nancy takes too long to get to her forms	She gets too many to review, so she waits until she has time	Process

OTHER ANALYSES

Identify waste

Address underlying causes of waste to improve performance

Seven causes of waste:

1. Correction/Rework
2. Overproduction
3. Unnecessary movement of items/materials
4. Unneeded motion
5. Waiting
6. Inventory
7. Over-processing/Complexity



7 causes of waste

1. Correction/Rework: Errors or mistakes; not doing it right the first time. Additional work or resources necessary to correct, rework, or otherwise mitigate defects and mistakes.

- Do we have data entry errors, typos?
- Do we have billing or coding errors?
- Do we forward incomplete documentation to the next process?
 - Do we receive incorrect information on a document?
 - Do we ever lose files or records?
 - Are your email distribution lists up-to-date?
 - Are instructions or requirements unclear or confusing?



2. Overproduction: Producing more of an item than is needed.

- Are we producing more reports than needed? ARE they needed?
- Are we making extra copies? ARE they needed?
- Are we printing, faxing, emailing more than what is needed?
- Are we entering repetitive information on multiple work documents or forms?
- Are we doing more work than requested?

7 causes of waste, continued

3. Unnecessary movement of items/materials: Unneeded travel or movement of materials used when producing an item.

- Are you delivering/routing documents that are not required?
- Are you doing excessive filing of work documents that will never be used again?

4. Unneeded motion: Unnecessary motion required by a worker to complete a task.

- Are you searching for computer files on your desktop? Unable to find or too many layers in electronic files?
- Are you searching for work documents (files) in cabinets? Digging through stacks of paper?
- Are you hand-carrying paperwork to another process or department regularly?
- Are you walking to a copier or printer?
- Are you spending a lot of time traveling to meetings?

7 causes of waste, continued

5. Waiting: Idle time while individuals wait for work to arrive; customers waiting for service.

- Are there bottlenecks?
- Are there excessive signatures or approvals required? (long approval cycles)
- Is there too much dependency on others to complete a task?
- Are there cross-departmental resource commitments issues? How do they know how to prioritize?
- Are there delays in receiving information?
- Is there time spent waiting for decisions?
- Are there system downtimes, slow systems?

7 causes of waste, continued

6. Inventory: Excessive inventory that ties up space and capital.

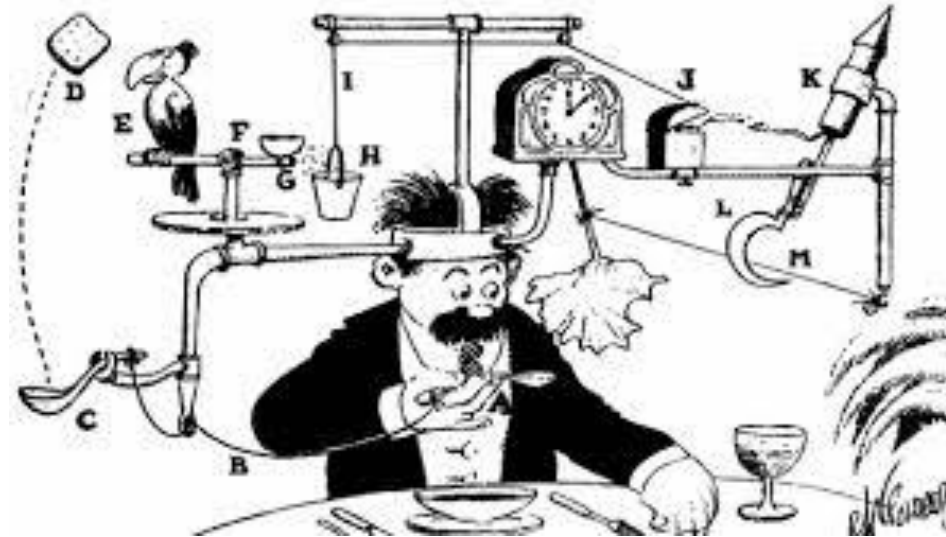
- Are files (work) sitting in an inbox (backlog of work)?
- Are we processing information in batches?
- Are we purchasing excessive supplies of any kind?
- Do we have any obsolete files/folders/equipment in the area?



7 causes of waste, continued

7. Over-processing/Complexity: Doing more work than is necessary to complete a task.

- Are we doing more work than is required for that process? (too many process steps)
- Are Job descriptions/work processes clear?
- Are we receiving unclear reports/memos?
- Are we duplicating reports or information?
- Are we entering repetitive data?
- Are we producing repetitive documents from scratch?



Identify Non-Value Add activities

Any activity that does not add value to the customer is considered Non-Value Add (NVA)

- Could this activity be eliminated if some prior activity were done differently or correctly? If YES, then it is NVA
- Does technology exist to eliminate this activity? If YES, then NVA
- Could this activity be eliminated without impacting the form, fit, or function of the customer product? If YES, then NVA
- Note that some NVA steps may still be necessary to meet business requirements (e.g. required by policy)

Bottleneck analysis

- Find the bottlenecks (e.g. where things stack up)
- Rate of the bottleneck = maximum speed of the overall process
 - Increase the throughput of the bottleneck by adding resources to that step
 - Slow everything else down to match the speed of the bottleneck; use the time to focus on quality, for example



Summarize main pain points

- Step Back. Look at your map. Look at your analysis.
 - Where is there a lot of activity that is not important to the customer?
 - Where do you see significant waste or NVA steps (delays, rework, inventory, waiting)?
 - How big is the difference between active time and overall elapsed time? Are there places where it is worse than others?
 - Identify frequently repeated steps (count the number of reviews, inspections, signatures)
 - Are there places with excessive handoffs (e.g. lane changes in a swim lane diagram)?
 - Are there places where you see poor physical positioning of process participants?
- Circle a few areas on your map with the most pain points – these indicate the most potential for improvement
- If you have begun to ID potential solutions, put them in one list

IDENTIFY IMPROVEMENTS

Brainstorm improvement ideas

- Establish an environment of possibility and creativity
 - Start with brainteasers or creativity exercises
- Remind group of principles of brainstorming
 - There are no bad ideas at this stage
 - Don't criticize any ideas
 - Do build on other people's ideas
 - Don't linger on any one idea too long
 - Aim for quantity vs quality
 - Use parking lot to capture discussions "other than" brainstormed ideas
- Brainstorm list of possible improvements

Killer phrases to avoid when identifying improvements



We've never done it that way before

We don't have enough people

It's not in the budget

Policy prevents us from doing it

Sounds good, but...

It won't work with our business

If it's not broken don't fix it

Ideas to consider when suggesting solutions

- Improve the process
 - Clarify handoffs: what's needed by whom, when, why
 - Reorder steps to be more logical
 - Ensure appropriate resources are available/used
 - Produce only what is needed
- Modify steps that could be
 - Combined or run concurrently
 - Eliminated altogether
 - Added earlier if they prevent rework later
- Standardize
 - Make faster via automation
 - Everyone agrees to do work the same way, consistently

Consider non-process issues as well

- Should the organizational structure be changed to facilitate the process and customer value?
- Is there opportunity to provide new products and services about which the customer cares?
- Can we leverage technology to better enable the process?
- Is the culture healthy? Can we make changes to promote desired behavior?

Narrow your brainstorm ideas



- Critically discuss brainstorm ideas and eliminate those that the team cannot reasonably implement
- Use N/3 voting to weed out: Count the number of ideas; divide by 3
 - This is the number of votes each person has
 - Each person uses their votes for the items they want
 - A team member can put all votes in one place or give a few ideas only one vote
- Discuss results; Let the votes inform, but not rule, the discussion
- Finalize list of ideas, choosing those that are actionable and realistic; later you will review again and prioritize using set criteria

List of improvement ideas

- Compile top ideas in a list
- Clearly describe in simple terms, predicting benefits of each

Improvement	Description	Category (<i>People, Process, Policy, Technology</i>)	Benefit / Impact
Forms	Combine the 3 forms into 1 and put in one area on web site	System	Simplifies ordering
Increase delegation \$ amount	Change policy to increase approval delegation amount to \$500 for first line managers	Policy	Pushes responsibility to lower level; frees up senior manager time
Training	Define 'standard work' for Mario and Jane in Purchasing; cross train Mario and Jane so they can support each other's work	People	Standardizes process; backfills in cases of absence; no longer constrained by last name
Remove batch process	Bypass Holly's task and send forms directly to Purchasing as they get approved	Process	Removes the lengthy and non-value add wait time. Smooths the flow of forms to Purchasing

PRIORITIZE AND DECIDE

Agree on how you will prioritize

- Identify who will make the decision about which improvements to pursue first
 - This could be the process owner or the team itself, depending on authority
- Establish criteria – the important elements that will drive the decision
 - Start with the goals on the charter – what were you originally trying to do?
 - Were any goals changed or added since the start of the project? These could be items identified from a better understanding of customer needs
 - **Examples:** reduces cost; adds value per customer; shortens cycle time; ease of implementation; number of people positively impacted; support by sponsor; contribution to mission

Prioritization Method: Priority Matrix

- Assign a value to each solution idea for how well it meets the criteria. For example:
 - 3 – High likelihood will meet all parts of criteria and have positive impact
 - 2 – Moderately meets criteria, but not as well as High
 - 1 – Low. Has potential for some impact successfully implemented
 - 0 or blank – Does not meet the criteria
- Analyze each improvement idea individually, then sum results
- Use the results to discuss
 - Quickly accept top contenders as “yes”; eliminate bottom as “no”
 - There will be a few where there is no obvious decision or agreement – focus majority of discussion on those
- Choose the solutions you want to recommend

Priority Matrix

	Solution Ideas						
Criteria	A	B	C	D	E	F	G
Customer satisfaction	1	3		1		3	1
Reduce time	1	2	1	3	2		3
Reduce cost	1	2	1		3	1	1
<i>Total</i>	3	7	2	4	5	4	5

Recap all material for decision

- Organize your documentation and analysis to prepare for discussion and decision
- Meet with decision makers
 - If it is simply your team, it is still advised that you recap story as described here
- Tell the story with your documents
 - Describe the customers and the process (map)
 - Describe the problems (map)
 - Highlight the main pain points (map, root cause)
 - Add insights, descriptions of key discussions, questions
 - Present improvement recommendations by priority (priority matrix)
 - Ask for specific decision regarding number of improvements, over what time, with specific people involved in implementation

Decision

- This prioritization decision is key because it identifies the specific changes for the team to design and implement
- Decision makers can use systematic analysis but may also add judgment based upon overall knowledge of the environment
- Document the process and the outcome since all remaining work is based upon the results of this decision

DESIGN FUTURE STATE

Design Future State

- Create a future state process map incorporating the approved improvements
 - Redraw the current state map (or parts of the map) to show process steps, handoffs, technology interaction, decision points, roles
 - Dive in to areas needing more development; work through options and provide recommendations
 - In some cases, more than one alternative may be viable; document the options with data needed to make the choice later
- Add detail in specific areas to supplement map
 - Mock-up new form(s)
 - Describe suggested changes in roles (by unit or individual)
 - Draft policy change recommendation
 - Inventory data elements needed for technology (if appropriate)
 - Draft new procedures

Design Future State, continued

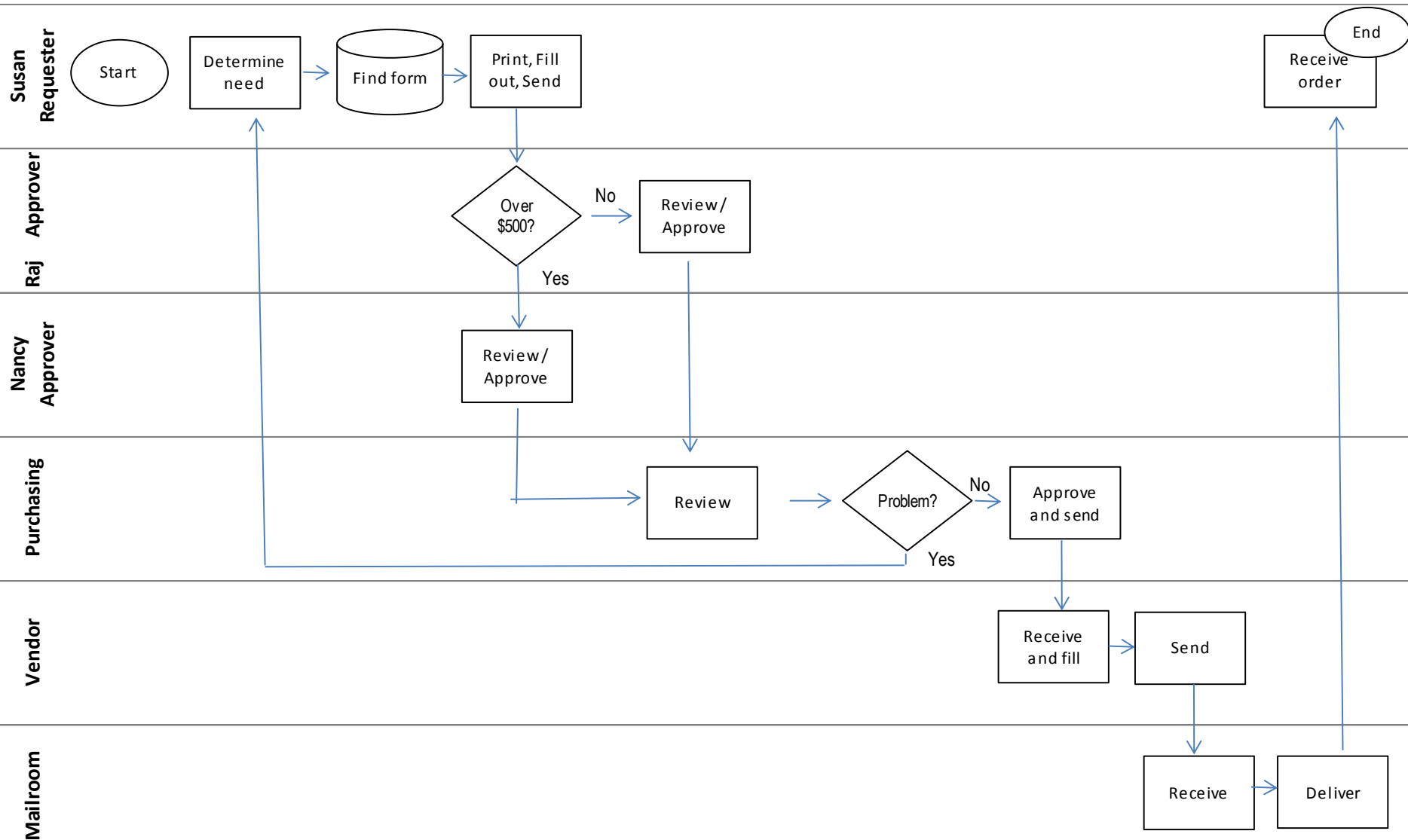
- Suggest improvement goals of the changes
 - Example “*decrease overall process time by 15 days*”
 - Use metrics from the current state process or recommend additional
 - Suggest where you want to be in 30/60/90 days with current resources
- Use Summary of Targeted Changes matrix
 - Revise and embellish recommended changes from earlier list
 - Add detail emerging from discussions
 - Add links for supplemental information (e.g. future state map, form mock-up document, roles & responsibilities list)

Get feedback on your design



- Talk with your SMEs about your map and documents and ask for feedback
- Preview roles and process changes with those who may be affected and ask for input
- If systems are involved, talk with IT personnel for input
- Designing the future state is an iterative process with increasing levels of detail added as you go

Future state map



Summary of Targeted Changes

Improvement	Description	Additional Details	Example (e.g. link to mock-up; sample)
Remove batch process	Bypass Holly's task and send forms directly to Purchasing as they get approved	Holly will no longer be involved in the process; No longer separate into different piles by last name	
Purchasing training	Define 'standard work' for Mario and Jane in Purchasing; cross train Mario and Jane so they can support each other's work		Draft of standard work mapped at U://std_work_Purchasing.xls
Increase delegation amount of 1st line manager from \$200 to \$500	Change policy to increase approval delegation amount to \$500 for first line managers	Need to meet with policy group	Draft of policy change in U://policy_draft.doc