

Collaborative Requirements Development Methodology

Business Process Redesign Participant's Guide

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MAILING ADDRESS

PO Box 900922
Seattle, WA 98109
USA

ADDRESS

2201 Westlake Avenue
Suite 200
Seattle, WA, USA

TEL: 206.285.3500

FAX: 206.285.6619

www.path.org



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TABLE OF CONTENTS

Five steps in business process redesign	4
Sally's Sandwich Shop: Task flow diagram	5
Choose a process to redesign	6
Measure process quality and efficiency.....	6
Application: Choosing a process to redesign and selecting measures.....	10
Examine the value chain	12
Redesign principles and key concepts	14
Application: Redesigning a process.....	16
Test using the Plan-Do-Study-Act cycle.....	17
PDSA worksheet.....	19
Change management plan	20

Five steps in business process redesign

C Choose

Choose a process to redesign.

M Measure

- Identify appropriate measures of process quality and efficiency.
- Gather data related to measures to establish a baseline.

E Examine

- Identify the purpose of all tasks in the process, in order to identify the value chain and possible process improvements.
- Brainstorm ways to improve the process.

R Redesign

- Create potential new task flows.
- Involve stakeholders in designing and approving new task flows.

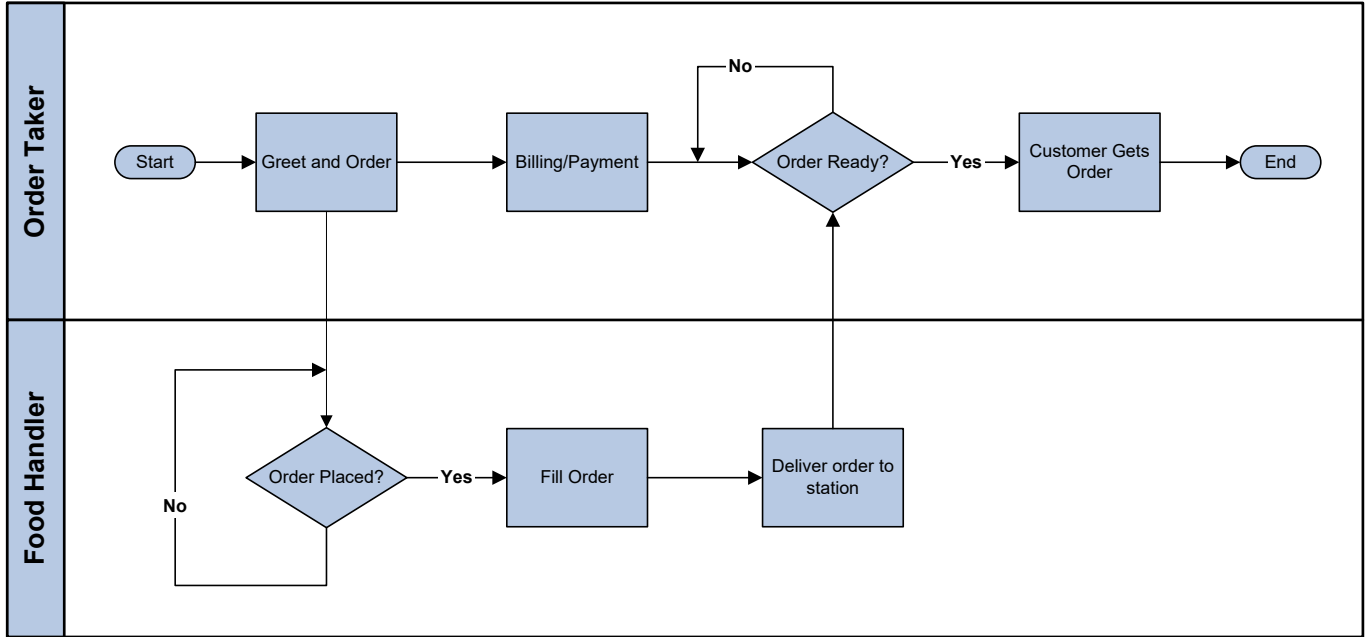
T Test

- Develop a plan for testing new task flows.
- Implement new task flows and gather data on quality and effectiveness.

Repeat this process until you achieve appropriate levels of quality and efficiency.

Sally's Sandwich Shop: Task flow diagram

Review the task flow for Sally's Sandwich Shop.



Choose a process to redesign

Directions: Consider the following questions to determine the likelihood that redesign will make a difference.

Is it inefficient?

- Waste of money, effort, or time
- Results in excessive errors or rework
- Requires amount of resources disproportionate to its importance

Is it inconsistent?

- Unpredictable results
- Unpredictable quality

Is it antiquated?

- “The way we’ve always done things”
- Manual process being automated
- New technology is being introduced (upgrade of software or other tools)

Do we need to document this process?

- People need to be trained
- People need jobs aids or other resources to complete the work
- An organization restructuring requires documentation in case new people are assigned to this process

Is it feasible and likely that redesign will succeed and have a positive impact?

- Strategically important
- Within our ability to change

Measure process quality and efficiency

Key Question: What can we measure to understand differences in performance between the old process and the redesigned process?

Measurement is a critical part of testing and implementing changes; measures tell a team whether the changes they are making actually lead to improvement.

LOOK at the information in the business process matrix, particularly the objective and outcome for the process. Also, consider using a balanced set of measures for all improvement efforts:

Customer Outcome Measures (voice of the customer):

How is the system performing? What is the result?

Process Efficiency Measures (voice of the organization):

How do we know if the process is efficient?

Balancing Measures (looking at a system from different directions/dimensions):

Are changes designed to improve one part of the system causing new problems in other parts of the system?

NOTE: Adapted from www.ihl.org, a resource provided by the Institute for Healthcare Improvement.

Here are some of the indicators that business analysts have found helpful in establishing outcome, process, and balancing measures:

- Time and efficiency: Cycle time, delays, amount of time to appointment, amount of time to get test results, amount of waiting time, number of contacts required
- Volume: Throughput, percentage of population affected/reached, number of people seen, production rate
- Cost: Person hours, materials, number of handoffs and reviews, duplicated efforts, unnecessary efforts, amount of waste, missed opportunities, clinician hours devoted to clinical work
- Quality: Defect rate, errors, standardization, inventory levels, customer satisfaction measures, redo's required, public health outcomes

Process	Sample Measures		
	Customer Outcome	Process Efficiency	Balancing
<i>Billing & Accounts Receivable</i>	Client receives timely invoices	Decrease the time between visit/procedure and processing invoice	Accuracy of invoices are not compromised when increasing number of timely invoices
<i>Communicable Disease & Clinical Intervention & Treatment</i>	Timely diagnosis and treatment of disease	Timely receipt of lab results	Accuracy of lab reports are not compromised in increasing timeliness
<i>Community Health Assessment</i>	Public health practitioners develop projects that target current population trends based on health assessment reports	Increase timely development and dissemination of reports	Accuracy and completeness of the report is not compromised due to increase in timeliness
<i>Environmental & Safety Inspection</i>	Decrease in exposure to environmental hazards	Increase timely inspection of facilities with possible environmental hazards	If number of facilities inspected increases, quality of reports are not compromised
<i>Immunization Administration</i>	Reduce vaccine preventable disease incidence	Increase the percentage of people vaccinated	Other clinical services are not overlooked
<i>Grantee Administration</i>	Funder receives timely financial reports	Decrease the time for approval of expenditures	When decreasing time of approval, expenditures meet grant requirements

CHECK to make sure that you have chosen the most practical, useful measures to use in your redesign project:

- Is it related *directly* to this process?
- Will it show differences in performance when we change the process?
- Is it logical, relevant, and easy to understand?
- Can data be collected as a natural part of the process?
- Is the level of detail sufficient to identify and analyze problems and opportunities?
- Have we used measures like this successfully in the past?

Note: Measures may evolve as you identify changes and potential effects of changes.

FOLLOW THROUGH

and implement your measures. Keep in mind that measures and redesign support each other. That is, choosing measures will help shape the nature of the redesign, but you may also find that your redesign shapes your measures. For example, if you decide that increasing cycle time is an important measure, then you will try to create a redesigned process that has a reduced cycle time. If, while creating your redesign, you develop a task flow that you hope will increase the number of customers you can serve, then you will probably want to add a measure for that purpose. The following guidelines should help you implement whatever measures you choose.

Plot data over time. Improvement requires change, and change is, by definition, a temporal phenomenon. Much information about a system and how to improve it can be obtained by plotting data over time, such as data on length of stay, volume, patient satisfaction — and then observing trends and other patterns. Tracking a few key measures over time is the single most powerful tool a team can use.

Seek usefulness, not perfection. Remember, measurement is not the goal; improvement is the goal. In order to move forward to the next step, a team needs just enough data to know whether changes are leading to improvement.

Use sampling. Sampling is a simple, efficient way to help a team understand how a system is performing. In cardiac surgery, the patient volume is typically low enough to allow tracking of key measures for all patients. However, sampling can save time and resources while accurately tracking performance. For example, instead of monitoring the time from catheterization to cardiac surgery continuously, measure a random sample of 10 to 20 cardiac surgery patients per month.

Integrate measurement into the daily routine. Useful data are often easy to obtain without relying on information systems. Don't wait two months to receive data on patients' average length of stay in the hospital from the information systems department. Develop a simple data collection form, and make collecting the data part of someone's job. Often, a few simple measures will yield all the information you need.

Use qualitative and quantitative data. In addition to collecting quantitative data, be sure to collect qualitative data, which often are easier to access and highly informative. For example, ask the nursing staff how weaning from medications is going or how to improve the sedation protocol. Or, in order to focus your efforts on improving patient and family satisfaction, ask patients and their families about their experience of the cardiac surgery process.

NOTE: Adapted from the International Healthcare Improvement website, <http://www.ihl.org/IHI/Topics/Improvement/ImprovementMethods/Measures/>.

Application: Choosing a process to redesign and selecting measures

I: Choose a process to redesign.

Record your chosen process, along with your rationale, on the chart below.

II: Choose balanced measures.

1. Use your business process matrix. Study the details for the process you have chosen.
2. As a team, brainstorm a list of possible measures.
3. Discuss the items on the list you brainstormed.
4. Select at least one outcome, one process, and one balancing measure—you may have more than one of each—and record them on the chart below.

Process to Redesign:		
Rationale for Redesign:		
Balanced Measures		
Customer Outcome	Process Efficiency	Balancing

III: Create a flipchart of your work.

Your flipchart may look like the chart on the previous page, or it may take another form of your choosing. Your flipchart should show your chosen process, rationale, and balanced measures. This flipchart will be a tool for looking at the “big picture” of your work.

IV: Be a “critical friend.”

“Critical friends” are the people we trust to push our thinking and help us move forward in a positive direction. Critical friends help us think about an issue more thoroughly. They do this by gently asking probing questions and giving positive constructive feedback. The use of a critical friend can help you be more thoughtful in your planning process.

In this part of the exercise, you will work with two other teams, sharing work and serving as critical friends to each other. Each team will present its work, and the other teams will provide feedback and ask probing questions to help move the work forward. Some examples of questions you might ask (and others might ask of you) include:

- Why did you choose this process for redesign, instead of the others?
- What did you learn from your stakeholders that helped you with this decision?
- Do you think your stakeholders will support this decision? Why?
- What were your key concerns in choosing these measures? What are you trying to achieve?
- Did you have any redesign ideas in mind when you chose these measures? If so, what were they?
- Do you think there will be changes to your business process matrix after redesign?
- What other measures did you consider? Why? Why did you not use them?
- How might you gather data related to these measures? What data will be needed to establish a baseline and how will you gather it? How will you gather data that helps measure the new process?
- What help will you need from stakeholders to gather data related to these measures? How do you plan to get it?
- Can data be collected on these measures as a natural part of the process?
- Is the level of detail sufficient to identify and analyze problems and opportunities?
- Have you used measures like this successfully in the past?

V: Summarize and share your learning points.

Create a second flipchart with “issues we faced,” “insights we gained,” and “questions we still have.” Choose a speaker to present your poster to the large group for further discussion.

Examine the value chain

Types of tasks

Typically, business processes include all three types of tasks listed below:

Value-added tasks:

Tasks that must be performed in order to reach the process objective(s).

Required, non-value added tasks:

These tasks do not contribute directly to the process objective but are necessary because they are required by law or regulation, required by business necessity, or the process would be in jeopardy if they were removed. These tasks include:

- Some *quality tasks* (tasks that ensure the process meets standards related to things such as accuracy, completeness, or compliance)
- Some administrative tasks (tasks that help the organization run smoothly)
- Enabling tasks (tasks that make it possible for the process to occur)
- Mandated tasks (those tasks required by policy, law, or regulation)

Non-value added tasks:

These tasks are neither required nor essential. They may include:

- Some quality tasks
- Some administrative tasks
- Rework
- Handling
- Setup
- Storage

The value chain

When redesigning a business process, we need to identify the *value chain*. The **value chain** is the minimum set of tasks that are essential to reach the process objective(s). Note: If you change the objective, then you need to change the value chain, as well.

Application: Examining the value chain

I: Identify task types.

Use the information on the previous page, label each of the tasks in your process as value-added, required non-value added tasks.

II: Label the value chain.

Highlight, circle, or otherwise identify the tasks in the value chain.

III: Pair and share.

Join with one other team and show them your process, how you labeled tasks, and your value chain. Ask for feedback. Switch roles and repeat this step.

IV: Summarize learning points.

Record any thoughts and insights you have that might help with redesign:

Insights to keep in mind for redesign:

Each pair should be prepared to share one insight with the large group.

Redesign principles and key concepts

Products and services are produced by processes. How does work flow in these processes? What is the plan to get work through a process? Are the various steps in the process arranged and prioritized to obtain quality outcomes at low costs? How can we change the work flow so that the process is less reactive and more planned?

Improving processes

Popular methods of improving overall flow include identifying best practices found in similar processes; standardizing repeatable task series, forms, and instructions; use co-located teams to resolve complex issues; combine operations; reduce/eliminate handoffs; move sequential activities close together; identify alternatives to the process. For instance, is it more efficient to have a vendor perform this service? Below are some redesign principles to *consider* as you look at ways to improve a given process.

Redesign principles:

- **Eliminate non-value added tasks.** Ensure that every task is value-added. For every task, ask, “Would a reasonable customer pay for this if he or she knew it was being done?” Each task should accomplish a stated change in the direction of completion, which usually excludes moving and checking.
- **Streamline non-value added required tasks.** Make individual tasks “rich” enough that duties match staff potential.
- **Consider grouping administrative tasks** across several departments, if possible.
- **Perform steps in parallel rather than in sequence.** Many processes are designed so that tasks are done in series or a linear sequence. The second task is not begun until the first task is completed. This is especially true when different groups in the organization are involved in the different steps of a process. Sometimes improvements in time and costs can be gained from designing the system to do some or all tasks in parallel. For example, the work on step 5 can begin as soon as step 1 is complete, rather than waiting until steps 2, 3, and 4 are done.
- **Use multiple versions** of the same process for special situations.
- **Minimize handoffs.** Many systems require that elements (e.g., a customer, a form, a product) be transferred to multiple people, offices, or work stations to complete the processing or service. The handoff from one stage to the next can result in increased time and costs and cause quality problems. The work flow can be rearranged to minimize any handoff in the process. Redesign the process so that any one staff is only involved once during an iteration of a process. Sometimes changes in organization structure or position descriptions can minimize handoffs.
- **Find and remove bottlenecks.**
- **Smooth work flow** to redistribute work during peak demand periods.

- **Avoid cumbersome translations and interfaces** such as re-keying data from one system to another.
- **Use automation.** Seek straight-through processing and automate clerical activities, especially those that move a transaction from one system to another.
- **Help all participants in the process feel ownership** of the process.
- **Measure outcomes,** not tasks or handoffs.

Symptoms of inefficiency

- Duplication of effort—common tasks performed in different places of the process or by more than one entity.
- Quality checkpoints that are too far removed from the process.
- Unnecessary tasks. Evaluate each task not in the value chain. Is the task needed for the process to meet the objective? Organizational change may make some tasks unnecessary.
- Long cycle times that can be shortened by eliminating sequential activities, hand offs, checkpoints and waiting time (idle) between tasks.
- Data is input multiple times or transformed repeated from secondary sources.
- Excessive errors that result in re-work.
- Participants in the process do not understand how it is done, why, or the impact of their performance.
- Process is structured to meet some objective not related to the strategic goals of the organization.
- Process is not standardized.

Adapted from the Institute for Health Care Improvement website, at <http://www.ihc.org/IHI/Topics/Improvement/ImprovementMethods/Changes>

Application: Redesigning a process

I: Redesign your process.

Redesign the process that you selected yesterday. This means creating a new task flow that will help you improve the measures you selected. (You may also need to add or change measures based on your redesign.) Post your redesign on a flipchart.

II: Revise matrix as needed.

Revisit the row of your business process matrix that contains information on this process. Is it still accurate? Do you need to revise it based on your redesign? Make revisions as needed.

III: Create a flipchart of your work.

Your flipchart should represent your thinking and your final decisions.

IV: Be a “critical friend.”

Work with two other teams, sharing work and serving as critical friends to each other. Each team will present its work, and the other teams will provide feedback and ask probing questions to help move the work forward. Some examples of questions include:

- What were some of the problems with the existing process?
- What did you hope to achieve with this redesign?
- Do you think your stakeholders will support this decision? Why? How do you plan to involve them?
- What were the changes to your business process matrix after redesign?
- What other redesigns did you consider? Why? Why did you not use them?
- How do you think you can gather data to measure the new process?
- What concerns do you have about this redesign?

V: Summarize and share your learning points.

The three teams working together should create a flipchart with “issues we faced,” “insights we gained,” and “questions we still have.” Choose a speaker to present your poster to the large group for further discussion.

Test using the Plan-Do-Study-Act cycle

While all changes do not lead to improvement, all improvement requires change. The ability to develop, test, and implement changes is essential for any individual, group, or organization that wants to continuously improve. The Plan-Do-Study-Act (PDSA) cycles can help test a change or group of changes on a small scale to see if they result in improvement. Use this tool to evaluate whether your changes to a process advance the organization toward desired objectives. If you see progress, expand the tests and gradually incorporate larger and larger samples until you are confident that the changes should be adopted.

Plan

- Plan the test or observation, including a plan for collecting data.
- State the objective of the test.
- Make predictions about what will happen and why.
- Develop a plan to test the change. (Who? What? When? Where? What data need to be collected?)

Do

- Try out the test on a small scale.
- Carry out the test.
- Document problems and unexpected observations.
- Begin analysis of the data.

Study

- Set aside time to analyze the data and study the results.
- Complete the analysis of the data.
- Compare the data to your predictions.
- Summarize and reflect on what was learned.

Act

- Refine the change, based on what was learned from the test.
- Determine what modifications should be made.
- Prepare a plan for the next test.

NOTE: Adapted from the Institute for Health Care Improvement website, at www.ihc.org/IHI/Topics/Improvement/ImprovementMethods/HowToImprove/

PDSA case story: Sally's Sandwich Shop

Sally's Sandwich Shop is a small café serving less than 50 customers per day. A large office building is being built next door which could easily double the number of customers per day. Sally has decided to redesign order fulfillment with the assistance of business analyst, Pat, to be able to serve more customers per day without affecting food quality.

Data collected indicates staff working in the stations spend a lot of time standing around waiting, while the order taker is busy all the time. Average number of meals served per hour during the busy period is 16.5. Also, there have been complaints from customer about receiving the wrong orders (average of 4.2 complaints per day), resulting in cost overruns for discarded food.

Sally decided to test a new process for order fulfillment by adding a food handler to take care of some of the cashier's duties. She would like to test this change without making major changes to her staff or restaurant. With the business analyst's assistance she decides to test the change by reassigning a cashier to the food handler position for the "lunch rush," a busy time of day, for one week.

During the one-week trial period, the average number of meals served during the lunch rush rose to 17.8, and complaints decreased to under two per day.

Sally is going to continue with the redesigned process for now.

She is currently considering using new self service ordering kiosks, which would free up one person to assist with food preparation, increasing capacity even more.

Sally is also interested in seeing if the use of kiosks will further decrease errors and increase "up selling" of items such as fruit smoothies and homemade granola bars.

Sally and the business analyst, with the help of a vendor, are setting up a new PDSA cycle to test the kiosks.

PDSA worksheet

Directions: Use this worksheet to plan, implement, and evaluate tests of changes. This worksheet provides a one-page summary of your process to use with all stakeholders.

1 Plan *Write your goal (what you hope to accomplish through this test of change) and measure(s)*

Tasks/activities needed to set up and implement test of change	Who	When	Where

2 Do *Describe what happened when you ran the test:*

3 Study *Describe measured results and how they compared to predictions:*

4 Act *Describe what modifications to the plan will be made for the next cycle from what you learned:*

Change management plan

Directions: Think of each of the components of a change management plan, as listed in the chart below. Brainstorm ideas for tackling each component, then more concretely create an action plan, with specific accountabilities.

Part	Our Ideas	Our Plan
<p>Diagnose/assess</p> <ul style="list-style-type: none"> • What questions will you ask to learn more about what some barriers and bridges might be? • How will you get those questions answered? 		
<p>Communications messages</p> <ul style="list-style-type: none"> • Who are the audiences for the various types of messages we want to convey about this change? • How can we most effectively communicate with different stakeholders? What vision of the future do we want to communicate? How? 		

Part	Our Ideas	Our Plan
<p>Relationships</p> <ul style="list-style-type: none"> • Who are our stakeholders? • What relationships are key to the success or the project? • How can we leverage our existing relationships to increase the chances of success? • What concerns might people have? How can we discuss them honestly? 		
<p>Developing insights</p> <ul style="list-style-type: none"> • What opportunities can we provide for people to develop their own insights about the nature of the change? • Who should be involved? • What strategies should we use? • What can we do to help people see how the work can be improved through this change? 		
<p>Reinforcement</p> <ul style="list-style-type: none"> • How can we reinforce our vision and messages? 		