

Learning Resource

Analyzing Process Improvements Supported by IT

This section will explain how the business analyst analyzes and documents the process and identifies the benefits of applying an IT solution. Keep in mind that the analysis requires both IT and functional expertise and that both groups work together to identify ways that IT can help improve processes.

Document the As-Is (Current) Process

The first step is to understand how a process is conducted currently; this is often referred to as the “**as-is**” process. There are a few approaches that the business analyst can take:

- observe the process;
- conduct interviews with the stakeholders (executives, managers, end users, or even customers) and the people performing the process; or
- bring together representatives of the process stakeholders to collectively define the current process, mapping out the process for all to see.

The analyst begins with asking the stakeholders about the input, the process, and the output. The **input** consists of all the resources (knowledge, skills, materials, information) needed for the process to occur. The **output** is the result of the process. The **process** takes the input and transforms it into the output.

Before dealing with a business, consider an example of something that anyone can relate to –making lunch for a child to take to school. The inputs consist of the bread, peanut butter, jelly, fruit, dessert, and the packaging materials (food wrap and paper bag). The process is the assembling of the bread, peanut butter, and jelly into a sandwich and combining it with the fruit and dessert in the lunch bag. The output will be a peanut-butter-and-jelly sandwich, an apple, and cookies for dessert, all in a small paper bag to be placed in the child's backpack.

- The **supplier** is the supermarket.
- The **inputs** are peanut butter, grape jelly, white bread, a piece of fruit, a small pack of cookies, food wrap, a small paper bag, and a knife.

- The **process** is collecting all of these items, selecting bread slices, spreading on the peanut butter and jelly, putting the bread together, slicing the sandwich, wrapping it in the food wrap, and placing the wrapped sandwich, fruit, and cookies into the small paper bag.
- The **output** is the packed lunch in the paper bag, ready to be placed in the child's backpack.
- The **feedback** at this point is that the supply of peanut butter is low and more should be purchased. The child (the **customer**) eats lunch and when he gets home, he provides additional feedback when he says that lunch was great, but his sandwich needed more jelly.

This simple example illustrates the three main components of a process (input, process, and output), the high-level steps in completing the process (in this case, of making a school lunch), and the importance of feedback.

Once listed, the steps in the process are then put into the sequence in which they occur, even though the interviews and other sources of information may not clearly indicate the order in which the steps are performed. The analyst documents the current process as it is actually performed.

In the school lunch example, the inputs, process, and output of packing a child's lunch have been defined, but how is the process carried out? In this scenario, Mom and Dad plan a short vacation away from the kids, and Grandma comes to visit. When asked to define the process, Dad omits several pieces of information that are in his head. Assuming Dad is primarily responsible for making school lunches, he knows where all the necessary supplies are kept, the fact that his son prefers apples and his daughter prefers bananas, and that beverages are provided at school. Grandma has been left a list of what is to go into the lunch, yet important information is missing: Where is the peanut butter kept? What kind of fruit should be included? How do they prefer their sandwiches to be cut: cut the crust off or leave it on? What about drinks?

So, Grandma does her best, and this is what the analyst observes and how he documents the as-is process that Grandma uses:

- She reviews the list.
- She goes to the cupboard and gets out a loaf of bread.
- She goes to the refrigerator and gets out the jelly.
- She opens several cupboards to find and retrieve the peanut butter.
- She takes out two slices of bread and makes one peanut butter and jelly sandwich.
- She goes to another cupboard and gets the wrap.
- She wraps the sandwich.

- She goes back to that cupboard and gets the paper lunch bag.
- She puts the sandwich in the bag.
- She assembles the second peanut butter and jelly sandwich.
- She wraps the second sandwich and puts it in its bag.
- She goes to the refrigerator and gets two apples.
- She washes the apples, dries them, and puts them in the bag.
- She goes back to the cupboard where the bread was stored and gets the cookies.
- She wraps two cookies and puts them into each lunch bag.
- She goes to the refrigerator and looks to see if there are any drinks that look like they should be packed in the lunch bags; she finds nothing.
- She hands one lunch bag to Bill and one to Maria as they set out for school.
- Grandma puts all the supplies away and cleans up the kitchen.

Look for Problem Areas—Process Analysis

The next step is to analyze how the process operates in order to determine possible improvements by eliminating inefficiencies and duplication of effort. Before the business analyst makes any assumptions about where the problem areas are, he will talk with the people involved in the process and ask them about the issues they see. These interviews are documented for future reference.

Returning to the school lunch example, the analyst asks the children and Grandma about how things went:

- Billy said he does not like crusts on his sandwich.
- Maria said she does not like apples and always has a banana instead.
- Both said that the apple had squished their sandwich, which "never happens when Dad packs my lunch."
- Grandma says that it took her way too long to prepare the lunches and that she felt like she was running back and forth the whole time. She asks how she could improve this process. Not only does she want to be more efficient, but she wants to prepare each child's lunch the way each likes it.

Of course, in observing the process, the analyst saw that she really was very inefficient in preparing lunch. After reviewing the documented list of steps, the analyst came up with the following improved (streamlined) process:

- Gather all ingredients and supplies

- Bread, peanut butter, and cookies from food cupboard
- Jelly and fruit from refrigerator
- Food wrap and paper bag from supplies cupboard
- Make two sandwiches at once
 - Lay out bread
 - Spread jelly on two slices
 - Spread peanut butter on two slices
 - Assemble sandwiches
 - Cut crust off of one
 - Wrap sandwiches
- Put fruit in bags first (to prevent them from mashing the sandwich)
 - Wash and dry apple
 - Put banana in one bag, apple in the other
- Prepare and pack cookies
 - Take out two cookies, wrap, and place in bag
 - Repeat for other lunch bag
- Place wrapped sandwich into each bag, ensuring the crust-less one goes in with the apple
- Put everything away and clean up kitchen

The analyst's suggestions also include that Dad should tell Grandma where the supplies are located and how each child likes their lunch (crusts cut off; what kind of fruit). In this case, she now knows all that and is ready to make lunch the following day, using the steps in the streamlined process.

Now how would this relate to a workplace situation? Everyday employees perform tasks and complete processes in their organizations that may be duplicating the efforts of others, or they may be doing them very inefficiently. Each employee may be performing as efficiently as possible, but the order in which they are performing the tasks or how they interact with each other may introduce significant inefficiencies. All steps in a process need to be evaluated together to ensure the flow from start to finish is as efficient as possible.

Improve the Process

Improving the process means that

- extra steps are combined or eliminated
- resources (including time and people) are more efficiently used
- quality of the information collected and used is improved

Prior to implementing an IT solution, the organization should first ensure their processes are optimized.

Let us look at a business process example of creating an invoice, which consists of many more tasks or steps than the lunch example required. The tasks involved in creating an invoice may include:

- locating a customer's record
- confirming that shipment was made
- calculating cost (price x quantity)
- adding appropriate shipping charges and possibly sales tax
- updating the customer's record and the accounts receivable ledger
- generating hard copy of the invoice to be mailed

Back in the old (not really so old) days, a clerk manually performed the necessary calculations, inserted a preprinted invoice (typically a multipart form) into a typewriter and entered the information. Then the original invoice was mailed to the customer, a copy went to the accounts receivable department to update the ledger, and another copy was filed in the customer's file folder. This typical manual process provides numerous opportunities for human error along the way. It is also an ideal situation in which to use technology to improve the efficiency of the process.

Certainly, having an electronic system that enables all of the parties involved to receive updated information simultaneously would expedite the process. The current process is cumbersome and inefficient, however, and automating it would mean only that the invoice is now inefficiently created more quickly.

This is where business-process reengineering (BPR) comes into play. Instead of taking the existing invoice-creation process and automating it, one looks at what is trying to be accomplished (the output):

- to inform the customer of his obligation to the firm
- to update the accounting records so that the firm is aware of a customer debt, update the customer record to document the sale, and get payment from the customer.

Because the ultimate goal is to get payment from the customer. The question now becomes, "How can this goal be accomplished more accurately and efficiently?" rather than, "How can an existing process be automated?"

Automating the process will provide additional benefits to the company. The system can be used to ensure the correct and immediate flow of the work from one person to the next, improving communication, and strengthening relationships among everyone involved in the process.

- **Workflow** relates to defining roles and process steps—who is responsible for what—and how information, documents, and tasks flow from one step to another in a defined process. Information systems can define this flow of information and tasks, and can include specific rules (who does what, how, and when) to provide consistency and greater efficiency. An effective technology solution can automate some of these steps, as well as route information and provide specific timelines. A system could support the workflow in the invoice example above such that when the clerk entered the invoice into the system, the accounting department would receive a notification, and an accountant could approve the invoice, which would update the ledger. The customer support team would be notified by the system that the invoice had been posted and that an email had been sent to the customer providing them with the invoice. The customer support team could then follow up with the customer to ensure their satisfaction. Each person involved in the invoice process would receive their notifications instantly and be able to efficiently conduct their part of the process. The system provides a consistent structure for the invoice process to be performed the same efficient way each time, and all participants can be certain that they have played their role as expected.
- Using the automated system and the workflow capability improves **internal and external communication** as well. Each person with a role in the invoice process automatically and instantly receives notification of a new invoice; there is no time delay from when the invoice is created until the accountant is notified. Since the accountant is able to update the ledger very soon after the invoice is posted, the company's accounts receivable and cash flow situation are kept very current, improving communication throughout the company of the current financial status. The automated sending of the invoice in a timely way to the customer provides an improvement in external communication. And, the customer support team has access to real-time information and is kept informed of events involving the customer, and is therefore able to communicate in a timely way with the customer.
- Automated systems can also improve **relationships** both within the company, and, importantly, with customers and suppliers. Using a workflow system to communicate among employees can have a positive effect on morale since they are not dependent on the other employees to let them know when an invoice is created. Each person is able to perform their steps in the invoice process and carry out their responsibilities. When the system automatically sends an invoice to the customer and the customer

support team is able to follow up, the relationship with the customer is strengthened. From the customer's viewpoint, the company is functioning as one entity, and the customer support person knows exactly what is going on, can access the internal files and records, and provide efficient and effective customer assistance.

As the business process is improved, the additional capabilities that an automated system can provide should be considered and included. These capabilities may allow the organization to further optimize their processes and are important considerations in determining whether a system solution is required, or whether simply improving some manual processes will meet the need.

The business analyst will document the improved, optimized ("to-be") process for use in determining whether a system solution is required, and to begin defining requirements for a solution.

Implement or Change the System

The **"to-be" process** should be defined before seeking a technology solution. Otherwise, it is possible to implement a technology solution that only succeeds in performing a bad process faster rather than actually gaining the improvements desired to help achieve the organization's strategy. If a technology solution is needed to support the to-be process, there are some questions that should be answered, such as:

- What is the work to be done?
- What are the tasks or steps?
- How is the system going to help with the tasks?
- What can the system do to help work get done?

If the process currently involves use of a system, then an evaluation should be done to determine whether to modify the system to include the optimized process, or build or buy a new system. If a new system is required and the determination is made to purchase it, then the business analyst will identify areas where the system can help improve the business process(es), providing a competitive advantage to the organization. The analyst then documents how the processes will change and how that will benefit the organization.

Document the New Process

The new, improved process is documented so that employees know how to perform their parts of the process and so that IT support personnel can use the document as they make system changes that may be needed.

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