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# Process Mapping for Improved Health Logistics System Performance

*John Snow, Inc./DELIVER*

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**DELIVER**  
No Product? No Program. Logistics for Health

## **DELIVER**

DELIVER, a six-year worldwide technical assistance support contract, is funded by the U.S. Agency for International Development (USAID).

Implemented by John Snow, Inc. (JSI), (contract no. HRN-C-00-00-00010-00), and subcontractors (Manoff Group, Program for Appropriate Technology in Health [PATH], and Social Sectors Development Strategies, Inc.). DELIVER strengthens the supply chains of health and family planning programs in developing countries to ensure the availability of critical health products for customers. DELIVER also provides technical support to USAID's central contraceptive procurement and management, and analysis of USAID's central commodity management information system (NEWVERN).

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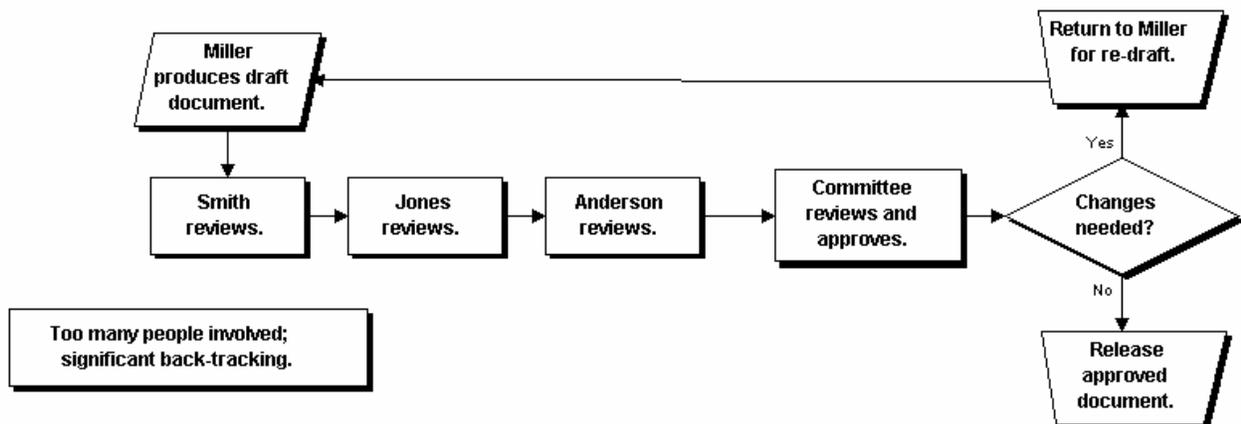
## Introduction

Process mapping helps organizations improve the efficiency of their systems by examining the steps required to complete particular tasks. Rarely, if ever, do organizations examine an entire process for accomplishing work services or outputs such as ordering, receiving, and distributing health commodities. In addition, no one person is knowledgeable about or responsible for an entire process from the beginning to the end. As a result, how work gets done evolves over time. As much as 80 percent of organizational work is informal and undocumented. Process maps make all the significant steps visible; they can be used to chart the current, actual way work is being conducted in a process or they can show how work could be done differently.

Many private industry experts consider process mapping to be the most important new process improvement tool to come along in more than a decade. Developed at General Electric, process mapping has been used by IBM, NASA, Tandy Electronics, Exxon, and others to reduce the cost of operations by eliminating as many as 50 percent of the steps in most processes, as well as the root causes of systemic quality problems. Health programs can benefit from these same efficiencies in the management of their commodity supply chains.

## The Process Map

A process map is a tool for conducting a workflow analysis and improvement. It is a diagram that describes the chronological sequence of work steps used to achieve a particular desired outcome or result, including all process steps, inputs, and decisions. Another name for a process map is a flow chart. Examples of processes include publishing a book, delivering a pizza, operating a photocopier, and evaluating a field project. See example below.



Maps can be used in a number of ways to analyze work performance:

1. To evaluate how the work activities actually flow as compared to the policies and procedures that were established to describe and ensure the efficiency and effectiveness of the work system.

2. To connect the personnel, work activities, resources, and location in a process that helps in the assessment of its capability.
3. To identify how the suppliers, processors, and customers communicate during the process.
4. To identify the cross-functional areas of responsibility for activities and decisions.
5. To identify customer and supplier requirements.
6. To identify breakdowns in the current system—duplication of effort, gaps, bottlenecks, and so on—and to connect them to their impact on customer requirements and expectations of products or services.
7. To identify the current time cycle, staffing requirements, logistical support needed, etc., to operate the process.
8. To identify current strengths and weaknesses of the system in carrying out its purpose to the satisfaction of customers and stakeholders.
9. To identify major implications for the redesign of the system.

## **DELIVER’s Experience Using Process Mapping**

DELIVER’s mission is to increase the availability of priority health commodities to clients in the developing world by helping Ministries of Health and nongovernmental organizations improve their product supply chains. The project’s motto—No Product? No Program!—is a reminder that public health programs cannot function without a continuous flow of essential health supplies. A critical part of increasing the availability of essential health commodities is to improve the efficiency and effectiveness of the logistics systems. DELIVER has used process mapping in a number of countries as a tool to assess, design, and create logistics systems.

### **What You Can Do through Process Mapping**

1. People involved in or affected by the work activity or result can assess the system’s capability to produce the desired product or service.
2. Can identify specific problems and breakdowns (such as bottlenecks, duplication, rework, and inconsistencies).
3. Can reveal informal communication methods including recording, analyzing, and documenting, with the roles of personnel, groups, and sub-processes that are otherwise hard to visualize.
4. People can see where they fit into the work process; they can identify the impact they have on the system across various activities and locations.
5. Can easily identify suppliers and customers, internal and external.
6. Can visualize work output standards and results.

### **What Process Mapping Cannot Do**

1. Cannot capture the macro context (culture, politics norms, etc.).
2. Cannot tell you the way the system should be (technical).
3. Does not always have to lead to re-engineering: can be used for smaller work improvement.

## **Ghana**

In Ghana, the Ghana Health Services wanted to improve the efficiency and effectiveness of its drug supply system to improve customer service. Four separate supply chains were mapped by a team that included managers, policymakers, and implementers from national, regional, and local levels. During the process mapping exercise, the team discovered that it took more than—

- moving essential drugs and non-drug consumables from the central medical stores to health facilities took *700 steps*
- moving contraceptives to the same facilities took *200 steps*
- moving vaccines took *100 steps*.

The process mapping team also determined that more than 50 percent of the steps were administrative, and did not contribute to the goal of better serving customers. By eliminating unnecessary steps and simplifying others, the team was able to reduce inventory costs by—

- reducing reorder intervals
- removing a tier in the supply chain
- shortening lead times at Central Medical Stores.

The anticipated results of improved supply chain efficiency for the Ghana Health Service are improved availability of drugs at health facilities and a 43 percent cost savings, valued at \$1.4 million. Because the cross-functional team was involved throughout the process mapping exercise, the most significant aspect of this activity was that the breakdowns were evident to all team members and so were the solutions. Therefore, the needed changes had support from all levels and were implemented without resistance.

## **Tanzania**

In Tanzania, the Ministry of Health asked DELIVER to find the best way to distribute donated HIV test kits to peripheral health facilities. The government assumed that HIV tests, because they are laboratory items, they would be distributed through the same supply chain that resupplied laboratory reagents. To determine the best fit for HIV test distribution, the team mapped the processes used to supply essential drugs, contraceptives, and laboratory reagents to these facilities to determine the strengths and weaknesses of each available option.

Throughout the process mapping activity, the team discovered that there was no supply chain for laboratory reagents. The process for resupply was causal—laboratory technicians took their reagent bottles to the regional capital to fill them whenever they could get there. The team also discovered that the contraceptive supply system was erratic at the lowest distribution level and that facilities were often not resupplied with contraceptives. The essential drug system was the most effective but sometimes orders were delayed. The team examined the processes for the essential drug system and made improvements by eliminating steps and clarifying other steps. The recommendation that came from the process mapping exercise, and is now being implemented, is the HIV tests with the essential drugs, to distribute and the contraceptives are integrated into the same system.

These are just two examples that show how process mapping has been used to improve supply chain effectiveness and efficiency.

## Creating a Process Map

Because most work processes are undocumented, process maps are created in a collaborative process through interviews with the personnel who do the work. A cross-functional team is organized to develop the maps, and should include those who actually do the process work; those who manage the process; and, if possible, those who are suppliers to the process and customers of the process.

Begin a process mapping activity by reviewing the purpose and relevance for mapping: what is to be accomplished in the work session and what are the desired outcomes. The interviewer should ask to be taught how the process being mapped works. It is important that the worker feels free to describe how the work is done, with confidentiality and no consequence for the worker understood.

The interviewer and interviewee first develop the map on paper using Post-It notes and large sheets of newsprint; this is easier when paper is posted on a wall. Later maps can be transferred into any of the commercially available flow charting software packages. Additional data can be collected in notebooks or on wall maps. Insights and questions that are not answered by the process mapping should be captured in interview notes for a later discussion. To develop a process map—

- Identify, for example, outputs of a health commodity supply chain that may include drugs ordered, drugs delivered, or reports received.
- Identify the customers of those product outputs and their understanding of their customers' requirements and expectations.
- Identify suppliers of output products and their requirements and expectations of their customers.
- Identify all steps taken and decisions made, including what happens if problems or other process breakdowns occur; do this from the time the process begins until the output is achieved. For example, from the time a product is received from the supplier until it is passed on to the customer (forecasting, ordering, receiving, transport, storage and inventory, shipping or dispensing, and cost recovery, where applicable).
- Write each step in the process on a Post-It note; place the steps on the paper in the order in which it occurs. Include any alternative steps in the process to achieve the output.
- Review all activities for frequency, average time (or range of time), number of people involved and their functional role, direct cost of labor, and resources used.
- Refer to all types of data in constructing the process map:
  - logs, check lists, and other information-gathering books
    - manuals, SOPs, and other official documents
    - correspondence
    - independent verbal corroboration.
- Allow sufficient time to construct the process map; it often takes more time than expected.

After a process map is developed, it is analyzed for breakdowns and inefficiencies. Breakdowns that are often identified from process maps include—

- too many choices of possible actions in a process

- too many people involved
- repetitive action/loops and backtracking
- unnecessary steps
- unnecessary complexity
- missing steps
- lack of coordination
- low productivity
- wrong process.

## **Basic Methods to Improve Work Flow Performance and Results**

After the breakdowns in a process are identified, the solutions are often obvious. Just documenting the process may be the solution. Other interventions for improving the performance of a process that has been mapped include—

- Eliminate unnecessary or non-value-added steps.
- Document the process.
- Simplify decision and communication process.
- Add tools to make steps more effective.
- Decrease the number of people in the process.
- Add missing steps.

For more information about how DELIVER has used process mapping to improve supply chain efficiency in health programs, please refer to the following documents. They can be found on the JSI/DELIVER website: [www.deliver.jsi.com](http://www.deliver.jsi.com):

- Ghana: Process Mapping. First Step to Reengineering the Health Supply Chain of the Public Sector System
- How to Cut 100 Steps from Your Contraceptive Supply Chain.

## Bibliography

- Bashein, Barbara, M. Lynne Markus, and Patricia Riley. 1994. "Preconditions for BPR Success and How to Prevent Failure." *Information Systems Management*, Spring 1994, vol. 11, no. 2.
- Daniels, Brian. 1999. "Integration of the supply chain for total through-cost reduction." *Total Quality Management*, July 1999.
- Klein, Mark M. 1994. "Reengineering Methodologies and Tools." *Information Systems Management*, Spring 1994, vol. 11, no. 2.
- Manganelli, Raymond L., and Mark M. Klein. 1994. *The reengineering handbook: a step-by-step guide to business transformation*. AMACOM.
- Moriarty, George B. 2001. "How Planning System Redesigns Can Succeed." *Financial Executive*, Dec. 2001 vol. 17, issue 9.
- Rucker, Rochelle. 2000. "Increasing efficiency: Teamwork at Citi Uncovers Ways to Save Time, Better Serve Customers." *Financial Services Marketing*, March–April 2000 vol. 2, issue 2.
- Webster, D., and M. Black. 1998. "Business Process Re-engineering. A Case Study of a Developmental Approach." *Total Quality Management*, May 1998 vol. 9, no. 2–3.





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