Chapter 13
Process Tools

FOCUS: This chapter details the process understanding tools and techniques.

Introduction

❖ Understanding the process is critical to any customer-driven project management (CDPM) effort.

❖ Process diagrams define the process.

❖ Input/output analysis identifies interdependency problems.

❖ Supplier/customer analysis helps obtain and exchange information for conveying your requirements to suppliers and mutually determining the needs and expectations of your customers.

The Process

❑ A process is a series of activities that takes an input, modifies it (work takes place and/or value is added), and produces an output. Thus, a process is the job itself. Figure 13.1 presents a graphic representation of a process.
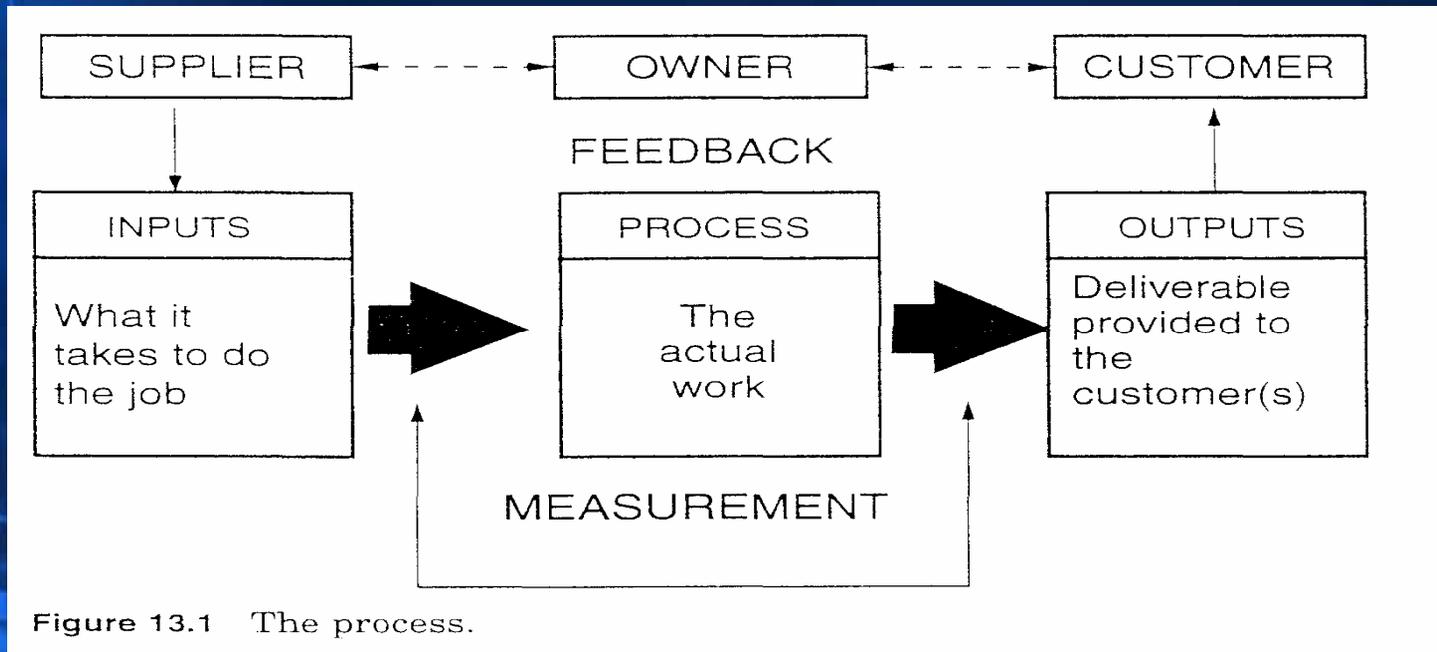

Figure 13.1   The process.

Process States

- A process can be in one of several states depending on variation and capability. Figure 13.3 lists the states of a process.

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- State 1 is the unknown state. In this state, the process performance has not been measured. There is no target.


Unknown

- State 2 shows the process out of control. There is a target, but the performance cannot be predicted. In this state, the process performance is an element of chance.


Out of control
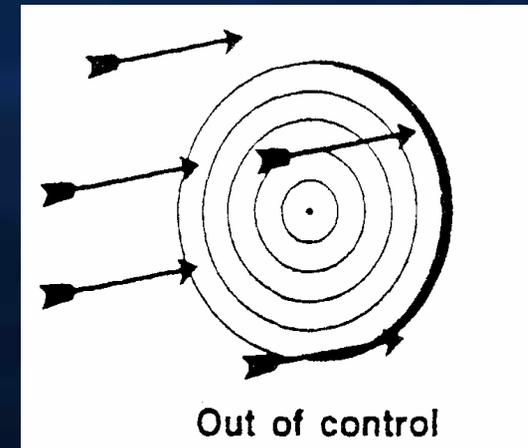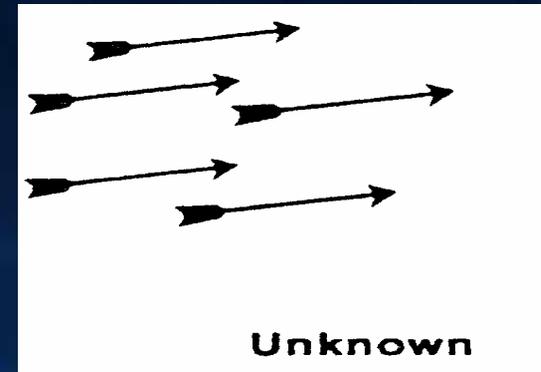
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♣ State 3 displays a process in control, but the process is not capable. Performance can be predicted, but it will not always hit the target. In this state, the process is not within limits.

In control, not capable

♣ State 4 is a process in control and capable. Process performance can be predicted within the target.

In control, capable
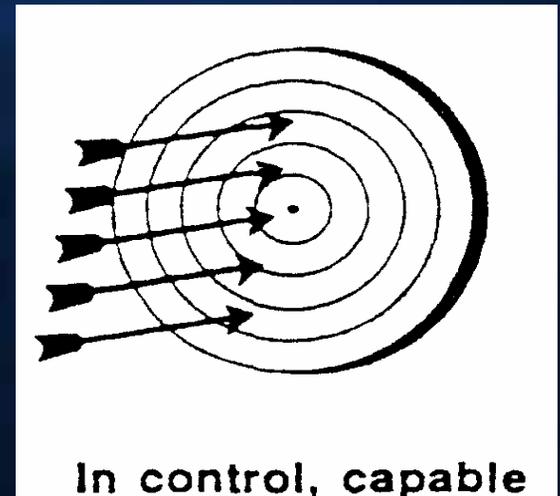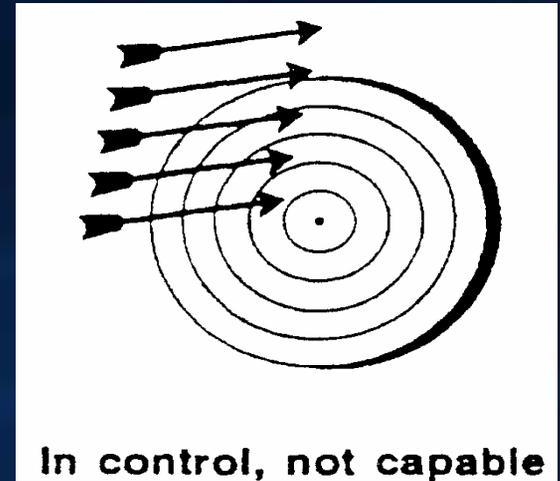
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▶ State 5 is process improvement. In this state, the process is improved to reduce variability to the target value. The aim is to consistently hit the bull's-eye or center of the target.

Process Improvement

▶ State 6 is continuous improvement. In this state, the process is constantly improved to its best possible performance. The target keeps getting smaller and smaller while still continuously hitting the bull's-eye.
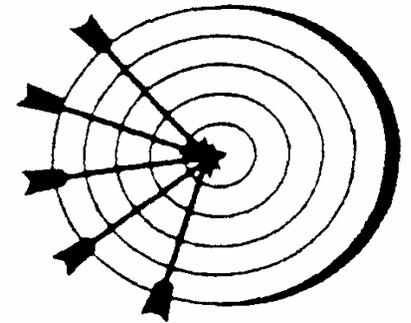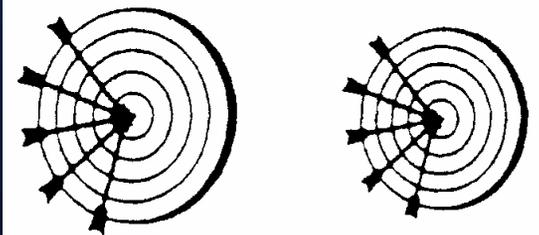
Continuous improvement

Process Measurement

♦ All process performance can be measured through process indicators. The major process indicators focus on quality, cost, quantity, time, accuracy, reliability, flexibility, effectiveness, efficiency, and customer satisfaction.

♦ Each organization and process owner must determine their own process performance indicators.

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- Each organization determines specific process measurements based on the following key areas of business performance:

1. Customer satisfaction.
2. Market share.
3. Product and service quality.
4. Productivity and operational effectiveness.
5. Human resources performance/development.
6. Supplier performance/development.
7. Public responsibility.

Process Variation

- Variation results from common and special causes.

- Common Causes are the normal variation in the established process.

- Special/assignable causes are abnormal variation in the process.

Process Diagram

♣ A process diagram is a tool for defining the process, which is a major focus of CDPM activity.

♣ A process diagram uses symbols and words to describe a process. It provides an indication of improvement opportunities, non-value-added tasks, and where simplification is possible.

♣ A process diagram identifies graphically the interrelationships of the process to show the roles and relationships between processes.

Types of Process Diagrams

o There are three types of process diagrams

Top-level process diagrams

✓ A top-level process diagram is a picture of the entire process. This type of process diagram shows the input(s), the process, and the output(s).
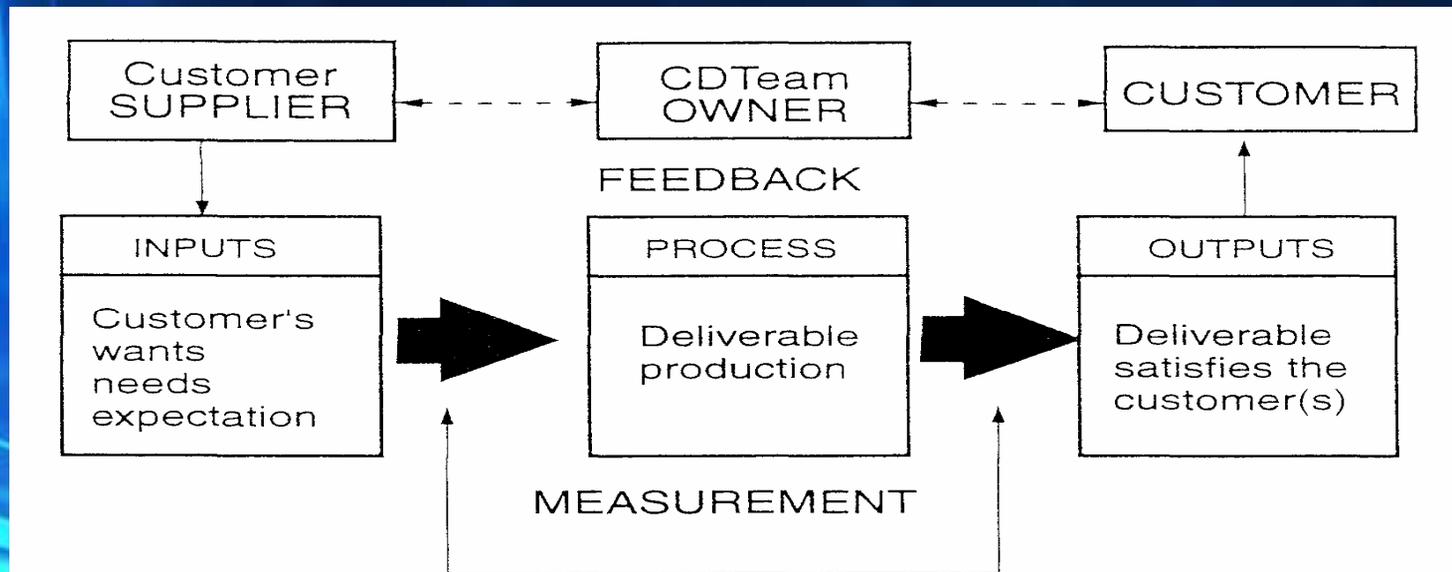
Figure 13.4   Top-level process diagram.

Top-level process diagram steps

❖ The steps involved are:

1. Define the specific outcome of the process, focusing on the customer.

2. State the process in terms of what work has to be done to meet the outcome.

3. Determine the input(s) required to satisfy the customer.

4. Measure the process. This measurement is usually the difference between inputs and outputs.

5. Use the CDPM improvement methodology to improve, invent, or reengineer the process.

Top-down process diagrams

❖ A top-down process diagram is a chart of the major steps and substeps in a process. By examining the major steps, the opportunities for improvement are focused on the essential steps in the process.

Top-down process diagram steps

➢ The steps involved in top-down process diagram are:

1. List the major steps in the process. Keep it to no more than seven steps.

2. List the major substeps. Keep it to no more than seven steps.

MAJOR PROCESSES	ANALYSIS	DESIGN	DEVELOPMENT	IMPLEMENTATION	EVALUATION	
SUBPROCESS 1	Performance analysis	Objectives	Lesson plan	Presentation techniques	Evaluation plan	
SUBPROCESS 2	Process analysis	Lessons	Training materials development	Presentation preparation	Evaluation instruments	
SUBPROCESS 3	Task analysis	Measurements	Production of training materials	Presentation delivery	Conduct analysis	
SUBPROCESS 4		Course outline		Training administration	Analyze results of evaluation	
SUBPROCESS 5		Training plan				
SUBPROCESS 6						

Figure 13.6 Top-down process diagram worksheet.

Detailed Process Diagrams

♠ A detailed process diagram is a flowchart consisting of symbols and words that completely describe a process.

♠ This type of diagram provides information indicating improvement opportunities, identifying areas for data analysis, determining which elements affect process performance, and documenting and standardizing the process.

♠ This type of process diagram is useful for training, documenting, and explaining the process to others.

Detailed Process Diagram Steps

❑ The steps in completing a detailed process diagram are:

▶ Decide on specific detail and boundaries of the detailed process diagram.

▶ List all the steps required in the process within the boundaries.

▶ Construct a process flow diagram.

▶ Determine times and costs of each activity, if appropriate.
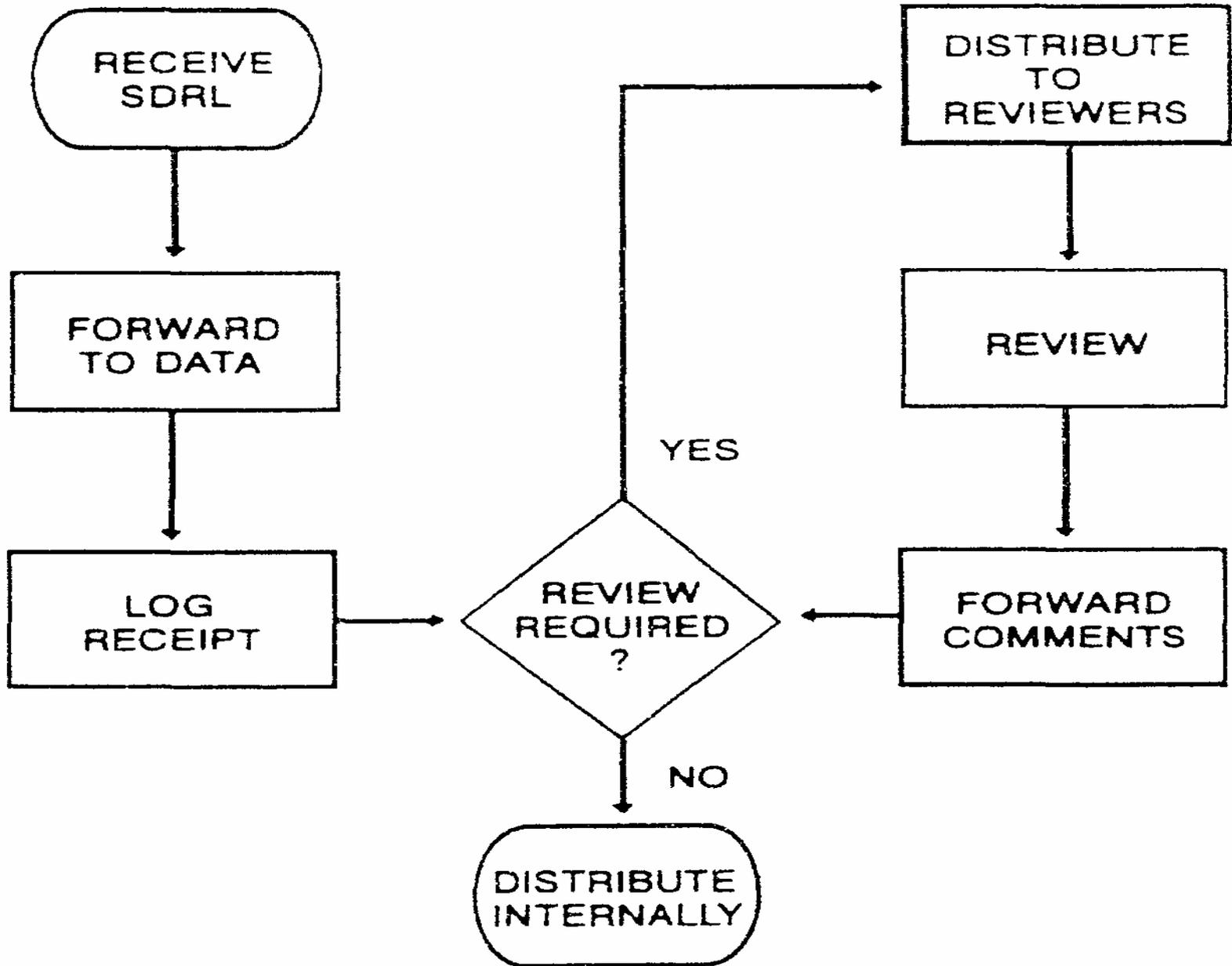
Figure 13.9 Detailed process diagram example (SDRL, subcontractor data requirement list).

Input/Output Analysis

► input/output analysis is a technique for identifying interdependency problems.

► This identification is done by defining the process and listing inputs and outputs.

► The first section of Fig. 13.10 shows the input/out put diagram template. The second section shows the inputs and out puts from the logistics process.

INPUTS	PROCESS	OUTPUTS
PEOPLE MATERIALS EQUIPMENT PROCEDURES FUNDS SCHEDULE REQUIREMENTS ENVIRONMENT	P R O C E S S	PRODUCT(S) SERVICE(S)

INPUTS	LOGISTICS	OUTPUTS
Contract Specs Design documents Drawings Reliability factors Maintainability Repair level analysis Project plans ILS plans Maintenance concept LSA/LSAR data Task analysis Test and support equip. Materials lists Provisioning data Personnel allocations PHS&T requirements Life cycle cost targets	L O G I S T I C S	Transportation Packaging Delivery Storage Inventory Spares and repair parts Trained personnel Technical documentation Test and support equip. Facilities Computer resources

Figure 13.10 Input/output diagram.

Input/output Analysis Steps

✓ Define the actual process.

✓ List inputs and outputs of the process.

✓ Determine prime (owner) and support (influencing) responsibilities.

✓ Match inputs and outputs with organizations.

✓ Define roles of the organizations.

✓ Document on input/output analysis worksheet.

✓ Use CDPM improvement methodology to improve, invent, or reengineer the process.

Supplier/Customer Analysis

➢ Supplier/customer analysis is a technique that involves your suppliers in the development of your requirements and their conformance to them.

➢ It is important to develop a partnership with your suppliers and a relationship with the customers you want to keep or gain .

➢ It is important to communicate, listen, and thoroughly analyze supplier and customer perceptions to continuously improve supplier performance, the process, and customer satisfaction.

Surveys

♦ Surveys and interviews are the major methods for getting information from suppliers and customers. Surveys involve the following:

- Set a survey strategy.
- Use simple, concise, and clear questions.
- Run a pilot.
- Use the most effective and efficient format.
- Ensure room for comments.
- Yield to comments.

Interviews

♠ Interviews involve the same considerations as surveys. The interviewer should do the following:

➢ Instill an atmosphere of openness, honesty, and trust.

➢ Nurture the self-esteem of the interviewee.

➢ Trust the interviewing process.

➢ Empathize with the interviewee.

➢ Respond to the interviewee frequently.

➢ Wait for the interviewee to respond.

➢ Invite the interviewee to build on ideas.

➢ Ensure that the interviewee gets feedback on the results of the inter view.

➢ Write down all information.

Supplier/ Customer Analysis

- Supplier analysis aims at ensuring that the supplier provides the required inputs to the process.

- Customer analysis focuses on ensuring that the process satisfies the customer.

Supplier/Customer Analysis Steps

1. Identify the customers (both internal and external customers) of the process.
2. Determine the needs and expectations of your customers.
3. Identify the products or services you provide to meet these needs and expectations.
4. Develop measures of your output that reflect customer expectations.
5. Determine if the customer expectations have been met or not.
6. Determine who "owns" or influences the product or service.

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7. Identify your principal inputs (personnel, material, machine, method, environment).

8. Determine if suppliers know their requirements and their effect on your meeting customer expectations.

9. Involve your suppliers in the development of your requirements and their conformance to them.

10. Identify suppliers that are not meeting requirements.

11. Document results on the supplier/customer analysis. worksheet.

12. Use CDPM, improvement methodology to improve, invent, or reengineer the process.