

Chapter 7: A Summary of Tools

Focus: This chapter outlines all the customer-driven project management tools and techniques and provides recommendations for use within the customer-driven project management improvement methodology.

Introduction

- ❖ Customer-driven project management requires an orderly, disciplined, customer-driven improvement methodology to ensure that projects are performed and improved for total customer satisfaction.
- ❖ Specific CDPM tools and techniques are most effective in certain phases of the customer-driven project management methodology.
- ❖ each organization and individual is encouraged to use the tools and techniques in any way that seems appropriate to their specific applications.

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Tools and techniques for CDPM

- ❖ For organizational purposes, the tools and techniques are arranged in the following categories:
 - Customer driven teams
 - People involvement
 - Definition
 - Understanding
 - Selection
 - Analysis
 - Project management
 - System development

Customer-Driven Teams

- ❑ Customer-driven teams are the primary technique for performing customer-driven project management. Customer-driven teams are as follows:
 - ✓ Customer-driven project management teams. These are customer-driven teams whose purpose is to complete a specific project, program, or task.
 - ✓ Customer-driven quality-improvement teams. These customer-driven teams focus on improving a specific process.
 - ✓ Customer-driven work teams. These customer-driven teams constantly perform and improve their particular process.

People Involvement Tools and Techniques

- People involvement is one of the key tools of customer-driven project management.
- People involvement includes both individual and team activities.
- They include individual involvement, teams and teamwork, communication, listening, focus setting, team meetings, brainstorming, and presentation.

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- People involvement tool are:
 - Individual involvement is the involvement of each person in the organization in the work itself and in improvement of the work.
 - Teams and teamwork. Teams are a group of people working together toward a common goal. Teamwork is a technique where the individual team members work together to achieve a common goal.
 - Communication is a technique for exchanging information.
 - Listening is a communication technique for receiving and understanding information.

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- Focus setting is a technique to establish a focus on a specific outcome.
- Team meeting is a tool for bringing a group together to work for a common goal.
- Brainstorming is a tool that encourages the collective thinking power of a group to create ideas.
- Presentation is a tool for providing information, gaining approval, or requesting action.

Definition Tools and Techniques

- The definition tools and techniques distinguish the quality/customer satisfaction issues. These tools and techniques for definition help the customer-driven project lead team recognize the customer's needs and expectations and critical project processes.
- These tools are:
 - ☞ Quality function deployment (phase 1) is a disciplined approach for listening to the voice of the customer to get customer requirements that are converted into deliverable conditions.

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- ☞ Benchmarking is a method of measuring your organization against those of recognized leaders.
- ☞ Metrics are meaningful measures that target continuous process improvement actions.

Understanding Tools and Techniques

- ◆ The tools and techniques for understanding help the customer-driven project team recognize the keys to success in focusing resources. The understanding tools and techniques are process diagrams, input/output analysis, and supplier/customer analysis.
- ◆ The tools are:
 - ▶ Process diagrams are tools for defining the process.
 - ▶ Input/output analysis is a technique for identifying interdependency problems between the input and the output of the process.

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- ▶ Supplier/customer analysis is a technique for obtaining and exchanging information to convey your needs and requirements to suppliers and to mutually determine the needs and expectations of your customers.

Selection Tools and Techniques

- Selection tools and techniques are used at each decision point during customer-driven project management to help clarify assumptions and focus on consensus. Selection tools are used during day-to-day customer-driven project management operations. The tools are:
 - ➔ Voting is a technique to determine majority opinion.
 - ➔ Selection matrix is a tool for rating problems, opportunities, or alternatives based on specific criteria.
 - ➔ Selection grid is a tool for comparing each problem, opportunity, or alternative against all others.
 - ➔ Consensus decision making is a technique for getting a team to accept and support a decision.

Analysis Tools and Techniques

- A critical step in customer-driven project management involves thorough analysis of the project and all the processes within the project. The tools and techniques for analysis help improve the project and/or process, determine underlying causes, identify the vital few, measure performance, and describe both sides of an issue. The tools are:
 - Process analysis is a tool to improve the process and reduce process cycle time by eliminating non-value-added activities and/or simplifying the process.

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- Work-flow analysis is a tool that shows a picture of how work actually flows through an organization or facility.
- Cause-and-effect analysis is a technique for helping a group examine underlying causes.
- Data statistical analysis is actually several tools for collecting, sorting, charting, and analyzing data.
- Force-field analysis is a technique that describes the forces at work in a given situation.

Project Management Tools and Techniques

- ❑ Customer-driven project management retains the traditional project management tools and techniques for planning, organizing, and controlling projects. The tools are:
 - ➔ Contract: A contract defines the deliverable specification, statement of work, and information requirements.
 - ➔ Work breakdown structure. The work breakdown structure defines the organization and coding of the deliverable.
 - ➔ Task list includes the development of the task involved in the project.

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- Network schedule is a technique for planning, scheduling, and controlling time and estimating, budgeting, and controlling resources.
- Risk management is the continual assessment of threat or opportunity in terms of time, cost, technical feasibility, and customer satisfaction.

System Development Tools and Techniques

- ❖ System development tools and techniques focus on the development or redesign of systems.
- ❖ These tools target invention and improvement of a system.
- ❖ The system may be the product and/or service itself or many systems within an organization. These tools are fundamental in customer-driven project management.

❖ The tools are:

- ✓ Concurrent engineering is a systematic approach to the integrated concurrent design of products and their related processes, including manufacture and support. This approach is intended to cause the developers, from the outset, to consider all elements of the product life cycle from conception through disposal, including quality, cost, schedule, and user/customer requirements.
- ✓ Quality function deployment is a disciplined approach for transforming customer requirements, the voice of the customer, into product development requirements.
- ✓ Robust design is a technique for designing a product that has minimal quality losses.

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- ✓ Design of experiments is an experimental tool used to establish both parametric relationships and a product/process model in the early (applied research) stages of the design process.
- ✓ Taguchi approach includes several techniques for reducing variations in product or process performance to minimize loss.
- ✓ Cost of quality techniques are techniques to identify cost of conformance and nonconformance.
- ✓ Cost of poor quality techniques are techniques that focus on minimizing the cost of nonconformance.
- ✓ Statistical process control is a statistical tool for monitoring and controlling a process to maintain and possibly improve quality.

Use of Tools and Techniques within the CDPM Improvement Methodology

- ❑ Customer-driven project management tools and techniques can be used in many places within the customer-driven project management improvement methodology.
- ❑ Customer-driven tools and techniques can be used to improve the project or processes. Specific tools and techniques are most beneficial during particular steps in the customer-driven improvement methodology. Figure 7.1 provides an overview of recommendations for using the CDPM tools and techniques.

x - very useful

o - useful

	Define quality issue	Understand process	Select improvement	Analyze opportunity	Take action	Concept	Definition	Production	Check results	Implement improvement	Operation	Monitor results	Closeout
Quality function deployment	X					X	X						
Benchmarking	X			O					O			O	
Metrics	X			X					X			X	
Process diagrams		X		X			O						
Input/output analysis		X					O						
Supplier/customer analysis		X					O						
Selection techniques	O	O	X	O	X	O	X	O	O	X	O	O	
Consensus decision making	X	X	X	X	X	X	X	X	X	X	X	X	X
Process analysis		X		X									
Work-flow analysis		X		X									
Cause & effect analysis				X									
Data statistical analysis	O	O		X			O	X	X		O	X	
Force-field analysis				X	X					X			O
Contract	X					X							O
Work breakdown structure							X	O	O	O	O	O	
Task list							X	O	O	O	O	O	X
Network schedule							X	O	O	O	O	O	X
Risk management					X	X	O	O	O	O	O	O	X
Concurrent engineering	X	X	X	X	X	X	X	X	X	X	X	X	X
Robust design						X	X						
Design of experiments						X	X						
Taguchi approach						X	X						
Cost of (poor) quality	X							X					
Statistical process control		O		O				X	X	X	X	X	

Figure 7.1 CDPM improvement methodology with tools and techniques.

Define quality (customer satisfaction) issue tools and techniques

- Customer-driven project lead team. The customer-driven lead team is formed to define the quality issue.
- Focus setting. Focus setting is used to establish the mission of the project. The mission provides guidance to the customer-driven lead team on achieving the vision.
- Quality function deployment. Quality function deployment is used to get the "voice of the customer." This gets the customer's requirements for the project. These requirements are translated into specific needs and expectations. The customer's needs and expectations are then converted into design requirements. This establishes the project processes.

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- Benchmarking. Benchmarking is used to determine process capability in relationship to the leaders of a specific process.
- Metrics. Metrics are used to measure the potential project processes.

Understand the process tools and Techniques

- ☞ **Customer-driven project management/quality improvement work- teams:** The customer-driven lead team determines project organizational structure. This could include other customer-driven project teams, customer-driven quality-improvement teams, and customer-driven work teams.
- ☞ **Focus setting:** Each customer-driven team must determine its focus to include mission and possible goals.
- ☞ **Process diagrams:** Each customer-driven team uses process diagrams to get a thorough understanding of its specific processes. At this stage, the top-level and top-down process diagrams are most useful.

- ☞ **Input/output analysis:** Input/output analysis is used to describe the inputs and outputs of each process.
- ☞ **Supplier/customer analysis:** Supplier/customer analysis provides information on the suppliers of the inputs to the process and customers of the process outputs.
- ☞ **Brainstorming:** All the issues related to a particular project process are brainstormed to define critical problems.

Select improvement opportunities tools and techniques

- **Voting**: Voting is used to get majority opinion on specific issues related to the information gathered during the understanding the process step.
- **Selection grid**: Selections can be limited by using a selection grid.
- **Selection matrix**: A selection matrix provides the team with additional information about an issue.
- **Decision making**: The customer-driven teams decide on critical processes and quality issues.

Analyze improvement opportunities tools and techniques

- ✓ **Process diagrams**: A detailed process diagram of any selected process is helpful at this stage.
- ✓ **Process analysis**: The detailed process diagram is used to perform a process analysis to make obvious process improvements.
- ✓ **Work-flow analysis**: The work-flow analysis provides a tool to make adjustments in the flow of the process to improve the process.
- ✓ **Cause-and-effect analysis**: The cause-and-effect analysis determines the underlying causes of the problems.

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- ✓ Data statistical analysis: Data statistical analysis focuses the team on the critical or vital few items.
- ✓ Force-field analysis: Force-field analysis helps generate alternative solutions.

Take action tools and techniques

- **Brainstorming:** Brainstorming generates a list of appropriate actions.
- **Selection techniques:** Selection techniques are used to decide on actions to take.
- **Contract:** A contract establishes the specific action to take.
- **Work breakdown structure:** The work breakdown defines the coding and organization of the action deliverable. The work breakdown structure can be bridged from the quality function deployment matrix.

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- **Task list**: The task list provides all the tasks involved in completing the project action.
- **Network schedule**: The tasks are planned, scheduled, and controlled using the network schedule.
- **Risk management**: Each task is continually assessed for risk in terms of cost, schedule, technical specification, and customer satisfaction.

Check results tools and techniques

- ▶ Data statistical analysis: Data statistical analysis provides information for focusing on a vital few, determining underlying causes and measuring process performance.
- ▶ Metrics: Metrics provide data on process performance.

Implement improvement tools and techniques

—→ Presentation: Presentation seeks approval and action.

Monitor results tools and techniques

—→ Data statistical analysis: Data statistical analysis provides information on the project.

—→ Metrics: Metrics focus on continuous process improvement.

Use of CDPM Tools and Techniques for Systems Development Project

- ❖ In a complex systems complex development effort, the customer-driven project management improvement methodology requires the use of additional tools and techniques in the project management phases of concept, definition, production, operations, and closeout.

- Tools and Techniques in the concept phase:
 1. Customer-driven teams.
 2. Concurrent engineering.
 3. Quality function deployment.
 4. Robust design.

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- Tools and Techniques in the definition phase:
 1. Quality function deployment.
 2. Metrics.
 3. Robust design.

- Tools and Techniques in the production phase:
 1. Statistical process control.
 2. Cost of poor quality.

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- Tools and Techniques in the operations phase:
 1. Cost of poor quality.
 2. Statistical process control.

- Tools and Techniques in the closeout phase:
 1. Brainstorming.
 2. Task list.
 3. Network schedule.