INTRODUCTION TO WORK ENVIRONMENT

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INTRODUCTION

The purpose of this discussion is to give the students an introduction to the tools and methodologies contained in the Total Quality (TQ) process.

Total Quality means satisfying our external and internal customers by continuously improving all our work processes. The TQ process is an excellent strategy for achieving a long-term competitive position because it provides specific tools and techniques. It builds skills and knowledge, involve top management, focuses on constantly gaining improvements, and builds a corporate culture that values customer delight more than anything.

A customer is any person or group whom you must satisfy in order to achieve and maintain reputation, image, market share, more challenging work, profit, or the like. A customer is any person or group who influences you current and future success.

There are two classes of customers: internal customers and external customers. There are three distinctions between the internal and external customers. The first distinction is the degree of freedom that external and internal customers can have. The external customers have the freedom to use or not use our services or products, whereas the internal customers rarely have such freedom. The second distinction is that our external customers have direct power over our reputation, our profitability, our market share, and, ultimately, our program's existence; our internal customers have very little direct power over us. The third distinction is that the payoffs from our internal and external customers. Our internal customers shape the image, in turn, better work is given to us, better people are assigned to us and the level of resources increase also. Our external customers have payoffs also only they are different kinds from the internal customers. The payoffs from the external customer ultimately lead to the great success of the program.

Total Quality starts with the individual, with each person's dedication to excellence. One of the most effective ways of helping individuals strive for quality is by the use of teams to improve processes and tackle problems. Teams are an integral part of the Total Quality system. The pooling of diverse resources and ideas into a team provides reinforcement, helps encourage individuals to make the maximum contribution to the quality process, and fosters a sense of "ownership" of the quality program.

We view teams as much more than merely groups of people with common goals. Our teams are collections of people who rely on cooperative group efforts and the unique skills and abilities of each member. Through effective teamwork, we generate superior solutions to problems.

Quality teams boost performance, increase our productivity, and improve our competitiveness. They are an invaluable means of tapping our most important asset - our "people power," the expertise of those who actually perform the functions that fuel our activities. Teams provide the cross-functional expertise that allows systematic evaluation and improvement of key processes, and that enables achievement of breakthrough objectives deployed through quality planning.

Teams also boost quality and productivity indirectly. By the effective use of teams, we want to signal to employees that the company values their opinions, that it recognizes the wealth of information they possess about what they do, that it encourages them to use their expertise to develop ideas and suggestions, and that it fully supports all quality improvement efforts.

The material is going to focus on the 9-step TQ process improvement/problem solving problem, quality planning and group skills/team building.

I. 9-STEP PROCESS

The TQ 9 step process:

A. The first step is to identify opportunities. We want to look at the information and processes that we currently have to see if we can identify any areas where we could make improvements. We want to set-up a system, so we can measure the improvements. We also need to write a problem statement, which will determine what we have to accomplish. These steps are taken in order to pick the right project.

B. The second step is to form the team and scope project. We select talented team members who can work together and find a way to solve the initial problem. We should then define the limitations and process boundaries of the problem area.

C. The third step is to analyze the current process. The members then as a team evaluate and analyze the current process in greater depth. One way we can examine the problem more carefully is to look at prior history and reports. We want to develop a detailed understanding of the current process, what works and what doesn't work.

D. The fourth step is to define the desired outcomes for improved processing. We define our vision "To-Be". We then develop and agree on a conceptual model (vision) of the improved process. The team should agree on the process performance measures and set process performance goals. Generating alternative improvement strategies is always a good idea.

E. The fifth step is to identify root causes and proposed solutions, in other words figuring out what's stopping us. We determine obstacles (barriers) to improvement and perform root cause analysis. We develop alternative solutions and agree on improvement actions. Root cause is ultimately what cause the problem to begin with.

F. The sixth step is to prioritize, plan and test the proposed solutions. The purpose of this step is to try out the best solutions and to conduct a process improvement test.

G. The seventh step is to refine and implement solutions. Integrating and improving results into full-scale benefits. Involving more people helps us to gain acceptance of change and to sustain progress. This leads to the execution of the implementation plan.

H. The eighth step is to validate progress and holding gains. The purpose of this step is to check on progress. By taking this step we find out if the improvements worked.

I. The ninth step is acknowledging the team and communicating the results. This provides motivation for future projects and encourages continuous improvement through the demonstration of success.

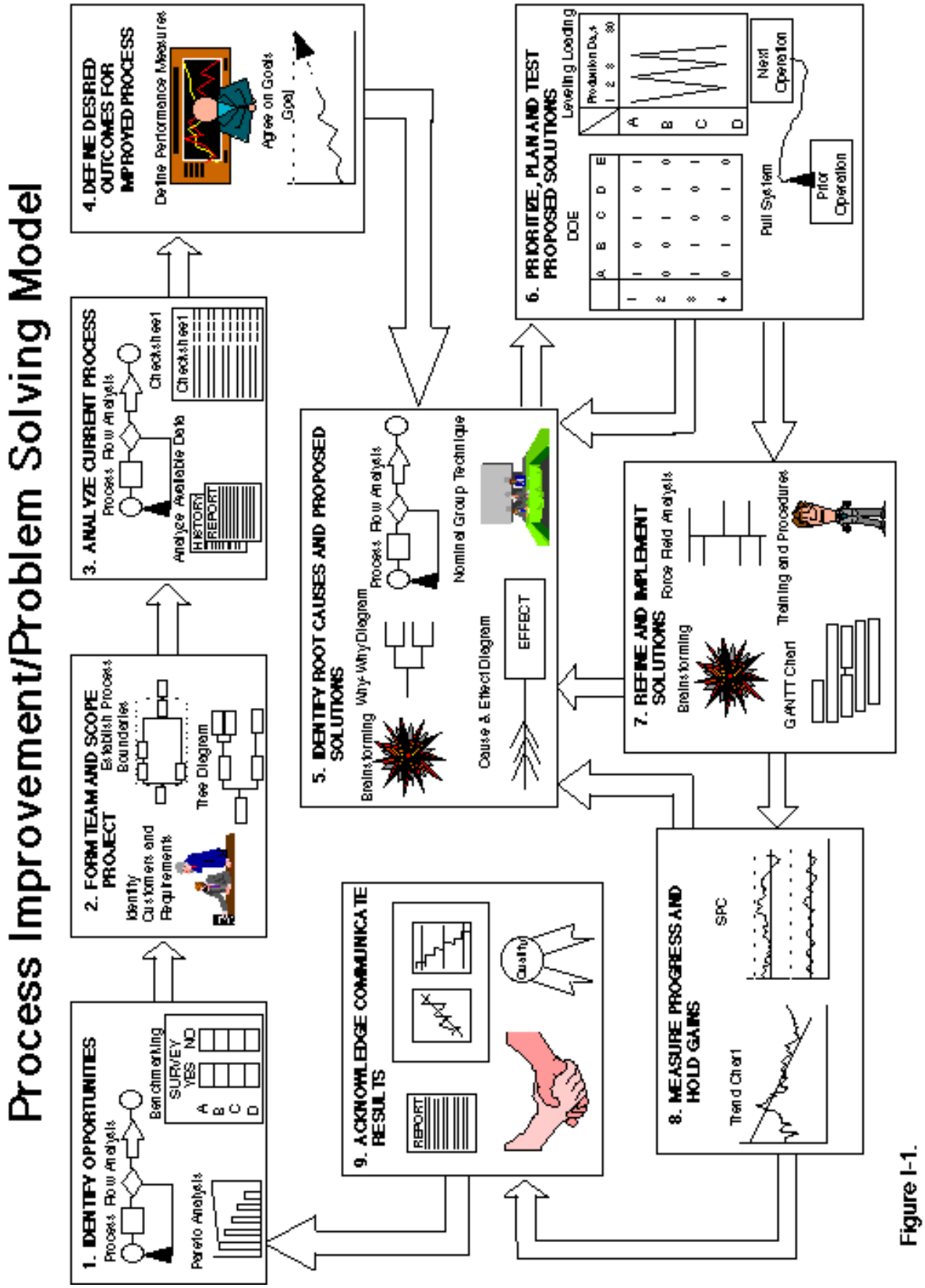

Process Improvement/Problem Solving Model
1. IDENTIFY OPPORTUNITIES
Process Flow Analysis
Pareto Analysis
Benchmarking
SURVEY
YES NO
A
B
C
D
2. FORM TEAM AND SCOPE PROJECT
Identify Customers and Requirements
Establish Process Boundaries
Tree Diagram
3. ANALYZE CURRENT PROCESS
Process Flow Analysis
Checksheet
Analyze Available Data
HISTORY
REPORT
4. DEFINE DESIRED OUTCOMES FOR IMPROVED PROCESS
Define Performance Measures
Agree on Goals
Goal
5. IDENTIFY ROOT CAUSES AND PROPOSED SOLUTIONS
Brainstorming
Why-Why Diagram
Process Flow Analysis
Nominal Group Technique
Cause & Effect Diagram
EFFECT
6. PRIORITIZE, PLAN AND TEST PROPOSED SOLUTIONS
DOE
A B C D E
Leveling Loading
Production Days
1 2 3 ∞
A
B
C
D
Pull System
Prior Operation
Next Operation
7. REFINE AND IMPLEMENT SOLUTIONS
Force Field Analysis
Brainstorming
Training and Procedures
GANTT Chart
8. MEASURE PROGRESS AND HOLD GAINS
SPC
Trend Chart
9. ACKNOWLEDGE COMMUNICATE RESULTS
REPORT

Figure I-1.

II. PLANNING

Planning allows the integration and comprehension of complex problems or processes. Planning is figuring out what you want, then all the steps you must take in order to get it. Within the CSLP the execution of many special projects will require planning in order to assure successful implementation, and therefore the accomplishment of our mission.

Planning is needed to eliminate or reduce uncertainty and to improve efficiency of the operation. Planning is also needed to obtain a better understanding of the objectives and to provide a basis for monitoring and controlling work.

This discussion will provide some basic planning process training to allow you to effectively plan, implement, track, and improve your project process.

Poor planning can often result in project initiation, wild enthusiasm, disillusionment, chaos, search for the guilty, punishment of the innocent and promotion of the non-participants. Good planning can result in elimination of uncertainty, improve efficiency, obtain a better understanding of the objectives, a basis for monitoring and controlling the work, an assessment of whether it can be done, adequate preparation and better chance of success.

In the planning process key relevant points must be included. Goals and objectives must be set that define specific needs of the customer by the team. The goals must be ordered primary/secondary so that the work load is limited to a doable, manageable amount. You should define the work need to be done by brainstorming out all the things that must get done. Grouping and leveling tasks logically is always helpful. We should then start scheduling and ordering the work. The team assigns dates of accomplishments based on the ability of the team and the time available. The team should also add slack on the schedule being created. Listing and collecting all needed resources to complete the task makes the team more efficient. Work should always be assigned to the people who volunteer to do the task and to people with skill and experience. There should always be a backup assignment and team. Monitor, track and adjust the your progress frequently. If there is deviation from the original plan, it will be easier to catch and then can be resolved immediately. There should be always be a report on the progress. After the goals and objectives have been met there should be discussion amongst the team members on how there can be an improvement for next time.

To make planning easier there are some corporate planning tools used. The first one is the Work Breakdown Structure (WBS). Others are the Project Milestone Chart, Actions Items List and the Performance Management Plan.

WBS is used to “break down” work into tasks. This is the first step after project requirements are divided into small, manageable, and measurable tasks.
The following is an example of a WBS for the task of selecting a class schedule:

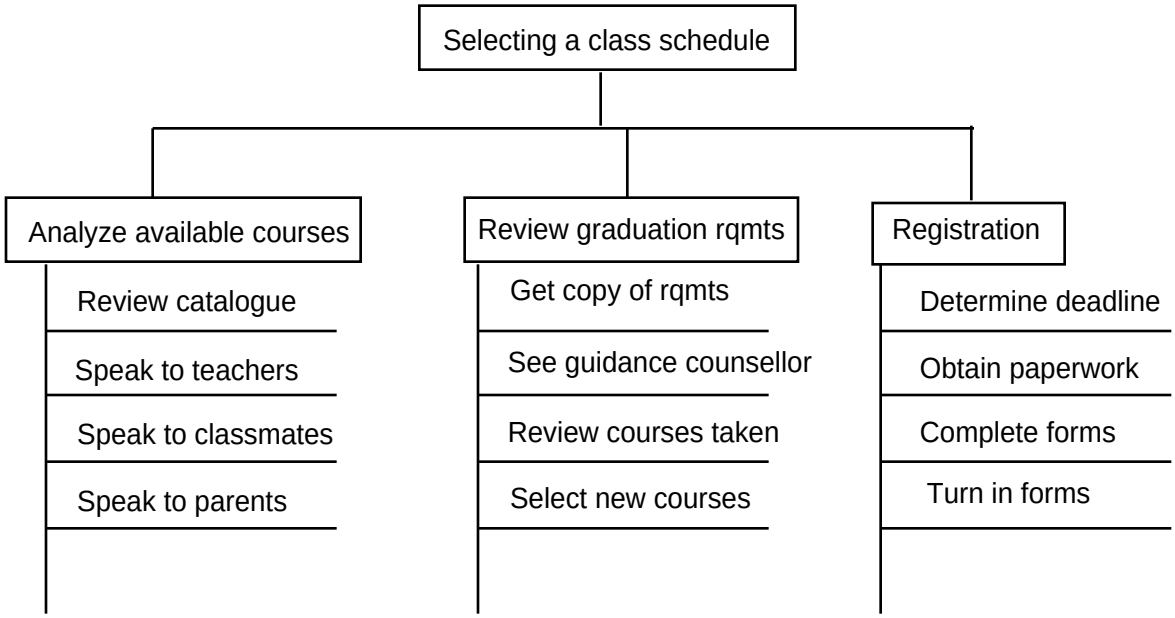


Figure II-1. Planning tool: Work Breakdown Structure (WBS)

The milestone chart is used to visually display progress of the project. It contains information such as project start/end date, important milestones (reviews, meetings, etc.), and deliverables (e.g. reports). A project milestone chart shows progress of tasks on the WBS. An example is listed below:

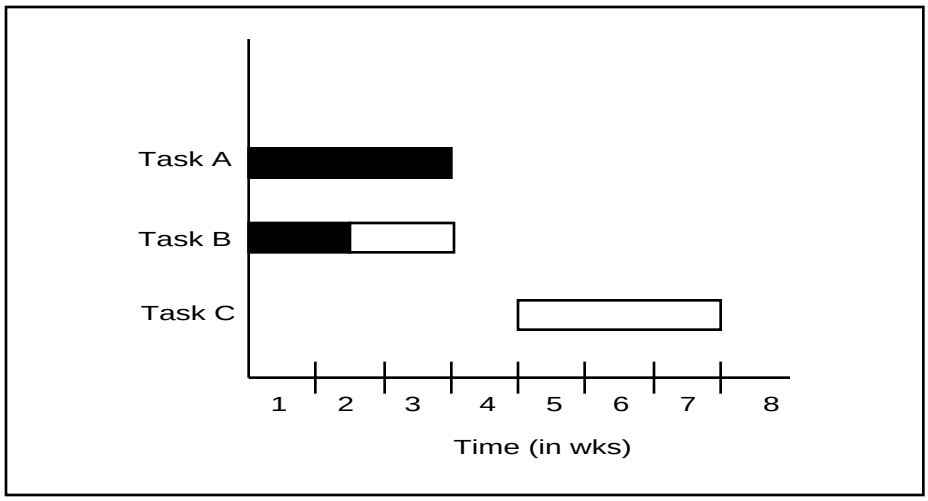


Figure II-2a. Planning tool: Milestone Chart

Bars start out white, and are shaded as tasks are completed. Tasks A and B are being performed simultaneously. Each task was allocated 3 weeks for completion. Task A has been completed, Task B is 50% complete, and Task C has not yet been started.

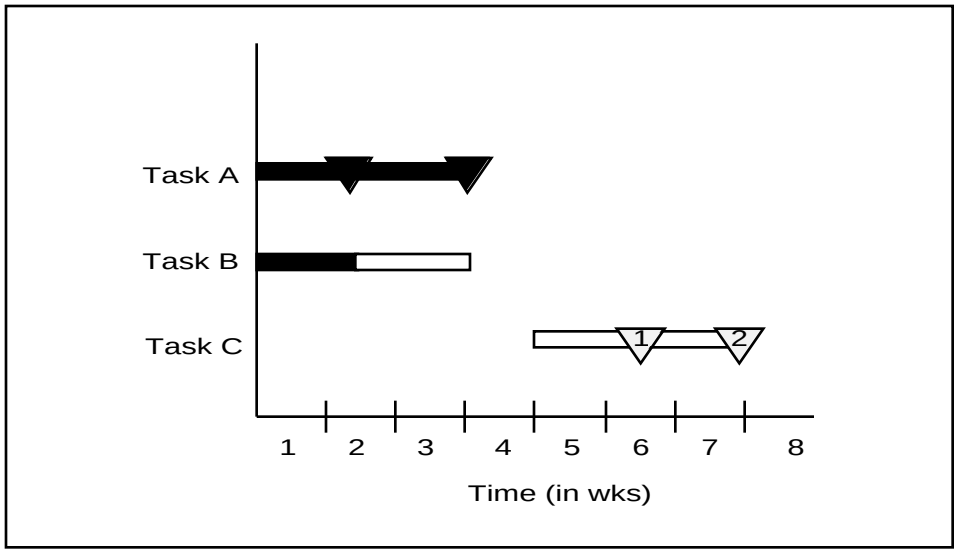


Figure II-2b. Planning tool: Milestone Chart

The Project Milestone Chart is just a modified bar chart shown using triangles.

Another important feature of the milestone chart is the configuration management information in the header. This tells the reader who creates the chart, who approves it, when it was created and when it was last changed.

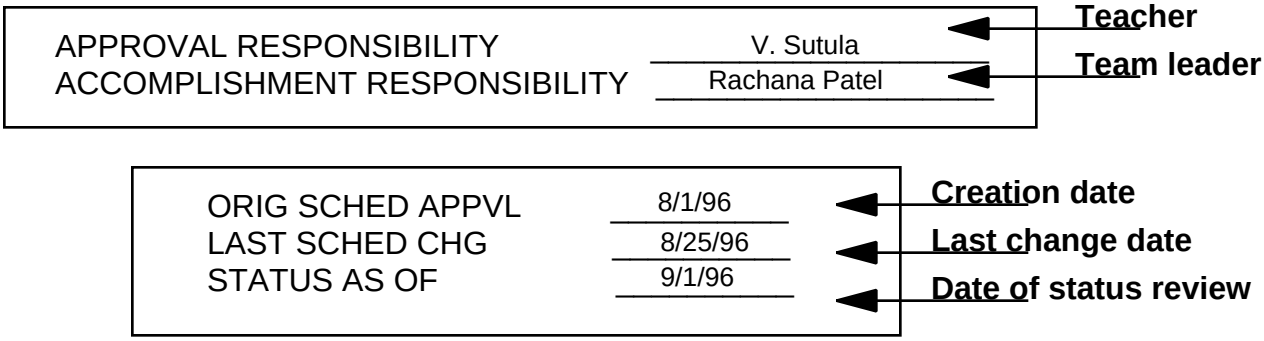
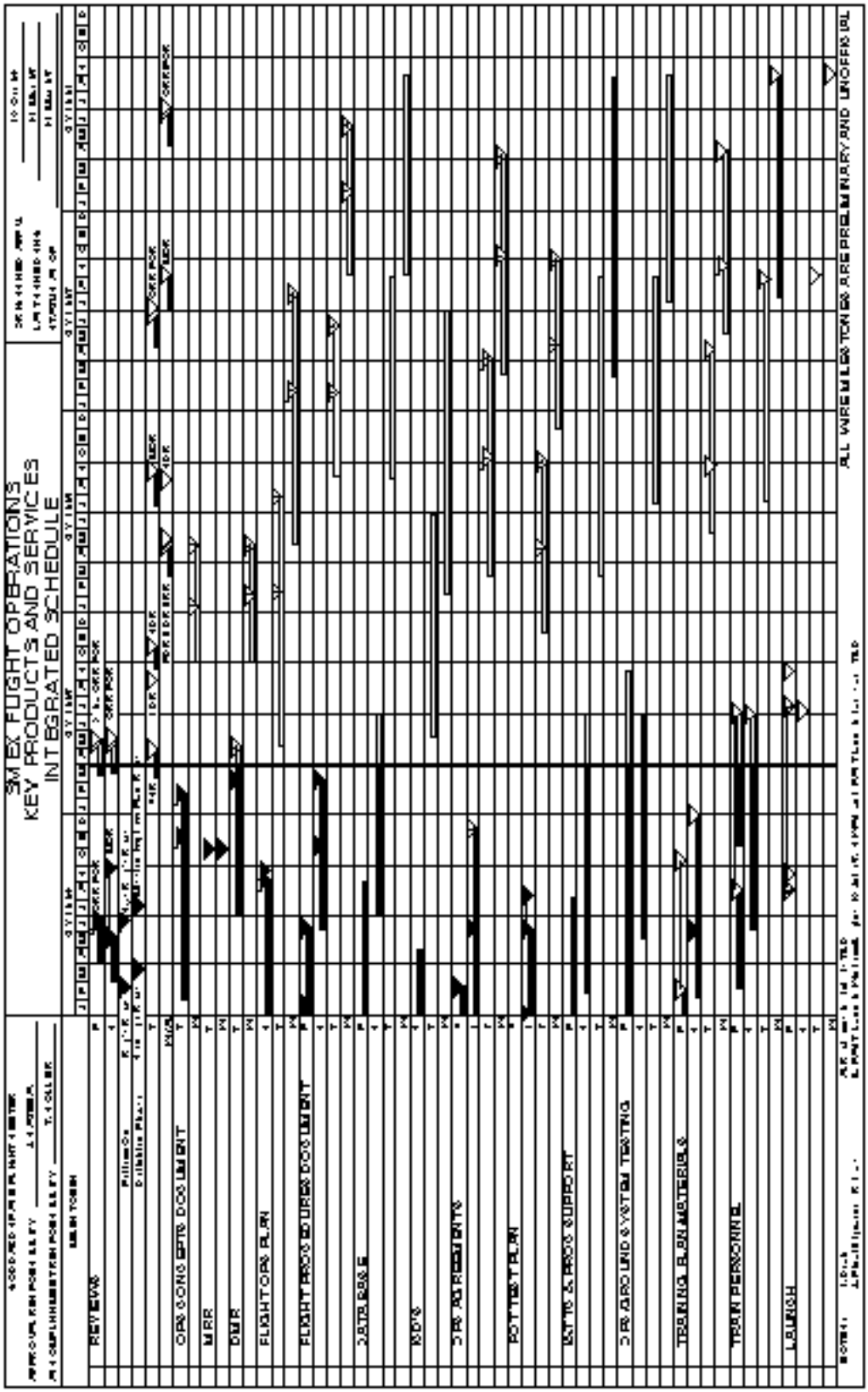


Figure II-3.



SMEX FOT Milestone Chart

Figure II-4.

The Action Items List is used to document which team member is responsible for each task on WBS, when task should be completed, and assign priority of task. It's use is to track actions to be done by team members. Suspense date is the date when task must be completed. Team leaders work with team to set priorities. Priorities range from 1 (Highest) to 3 (Lowest). The team should review the AI list each week to evaluate progress. Task priorities will change over time (as a deadline approaches, for example). Low-priority task this week may be the highest priority next week.

Action	Actionee	Suspense Date	Priority
Analyze courses	Me	8/7/96	1
Review grad rqmts	Me	8/14/96	1
Registration	Me	8/21/96	1

Figure II-5. Actions Items List

The Performance Management Plan (PMP) is used by management to document employee's primary responsibilities (main 4 to 5 objectives for the year). Allied-Signal uses the PMP to measure employee performance during the year. Each employee meets with supervisor at start of the year to plan his/her main objectives. Objectives must be clear and measurable. At the end of the year, the employee is rated based on how well each objective is met. This is used to determine pay raises, promotions, etc.. This same tool will be used by CSLP teachers for student assessment.

AlliedSignal

Performance

Objectives

(Date and Year)

Employee Name

Supervisor: _____

List the 4 to 5 most important financial and other business objectives for this period, assuring

Include milestones and timing. Use additional sheets as necessary.

Objectives Milestones Timing	***Interim Review***	***Results***

Figure II-6.

III. GROUP SKILLS/TEAM BUILDING

There are a lot of advantages of working in teams. Primarily, it is a future workplace trend. By working in a team you can share resources and experiences and enhance your ability to coordinate complex tasks. Teams assign back-up of any individual's tasks which can make tasks less intimidating. You can get more immediate feedback and have fun working in a team.

To have an effective team, team member roles are needed. The roles are of a team leader, timekeeper, recorder, scribe, monitor, process observer, spokesperson.

A. Team member Roles

A major component of the CSLP process will be small teams working on special projects. Further, there will be larger team activities, as well as activities and coordination occurring at the broadest level, that being across the CSLP schools creating the whole CSLP "system". Consequently we must learn to work in groups (teams). Learning how to work effectively in teams allows us to achieve our goals in pursuit of our mission and vision.

By defining team member roles, you can accomplish more by working together to improve the system than having individual contributors working around the system.

1. Team leader

The team leader is responsible for guiding the group through activities and ensuring the objectives are discussed, determined by consensus, and met. The leader guides rather than directs and "makes things happen" without leaving "fingerprints". The leader may or may not be the groups manager.

Chief among the leader's responsibilities is ensuring that all members understand what is going on, while encouraging participation. Thus, he or she may encourage quiet members to share ideas and gently discourage more vocal members from dominating the discussion.

Some of the behaviors exhibited by a skilled team leader include:
• asking for facts, suggestions and opinions to encourage group discussion.
• summarizing major points in order to clarify.
• helping the group focus it's efforts on tasks that must be accomplished. (e.g.. ensuring agenda/code of conduct are created, used and adhered to)
• encourage individuals to be open, individualistic, and willing to take risks.
• promoting informed consensus, while avoiding pushing his or her opinions and preferences.

2. Timekeeper

The timekeeper ensures that time frames are applied to the agenda that the team is made aware when a time milestone is reached. At this point the team must decide if the agenda item has been successfully completed or if additional time need to be spent, either in the current meeting or at a later date. It the team decides to allot additional time to the agenda item immediately, then the time to be allotted must be

agreed to by the group and posted on the revised agenda. If the team decides the agenda item is to be addressed at a later date the scribe lists it on the parking lot and the recorder registers in the meeting notes. The timekeeper is expected to participate in brainstorming and other activities.

3. Recorder

When ideas begin to flow briskly, many can be lost if not recorded. The recorder acts as the teams "memory" and records ideas, decisions, options and so on. The recorder is responsible for publishing the notes of each meeting and distributing them as quickly as possible to the team members. This assures all team members understand what is going on. It is important to record the subtle (ex. comments that scribe may not post) discussions that may affect the flow and direction of the group. This will provide the continuity of information (understanding) between meeting and help avoid the long drawn out discussions caused by misunderstandings or lack of information transferal (ex. absentees or unclear group discussion)

4. Scribe

Much like the recorder, the scribe's role is to record ideas, decisions, options, and so on for the team. The scribe does this primarily by using a flip chart, white board, and/or overhead projector. This allows ideas, thoughts etc. to be posted in clear view so the group can refer to past work at a glance. When the pace exceeds the scribe's ability to keep up, appoint a second scribe rather that slowing the group down. The scribe is responsible for keeping a master copy of the completed activity pages. A few typical behaviors of a good scribe include:

- making sure flip chat stands, blank pads, 3x5 post-it notepads, pins or tape for posting are available for each meeting.
- writing down exactly what is said; does not interpret or change words without permission from the contributor. If the ideas are too long, the scribe may record key words or use abbreviations.
- ask contributors for clarification or explanation to help distill ideas.
- collects completed flip charts after the session and brings them back to subsequent sessions for reference. Sometimes the scribe may arrange typing of the flip chart contents for later distribution.

Like other group members the scribe is expected to participate in brainstorming and other activities.

5. Monitor

The monitor is the "expert resource" on the 9-step process improvement/problem solving approach. He or she acts as "Parliamentarian" for the leader to make certain the group is not wandering off track and omitting an important step or principle from the 9-step model. The monitor should make suggestions about the most efficient way to achieve a particular objective, as well as helping the group stay within the bounds of the process.

Some of the behaviors exhibited by a skilled monitor include:

- pointing out instances of evaluating during brainstorming.
- suggesting a tool that might help a group get over a particular hurdle.

• offering alternative methods of displaying or collecting data.
• leading the group through the list of questions to determine if they are ready to move on to the next step in the process.
• reminding the group of critical tasks within a new step.

The monitor should fully participate in all activities, such as brainstorming, offering personal opinions, and making suggestions not relating directly to the process.

6. Process observer

The interactive dynamics of a group can be controlled by a few participants if the process is not monitored and controlled by the group. Therefore, it is important that a member of the group perform this role to assure a consensus approach to team decision making is used. The primary responsibility of the process observer is to encourage participation of quiet members to share ideas while discouraging more vocal members from dominating the discussion.

Some of the behaviors of a good process observer include:
•Asking for facts, suggestions and opinions from all members of the group to ensure group understanding/participation of the current topic.
• suggesting the use of a participation type tool to direct the group toward full participation.
• discussing both individually and as a group (if needed) the negative behaviors of group members that may be effecting the performance of the group. Individual discussions may take place with the team leader's participation.

7. Spokesperson

Many times the TQL team will be required to present the analysis and the recommendations prior to implementation of the groups recommendations. This is the responsibility of the spokesperson.

Behaviors of a good spokesperson are:
• able to effectively communicate (verbally) the thoughts and ideas of the group.
• actively assists the group prepare the presentation of the group efforts.
• fully participates in all activities, such as brainstorming, offering personal opinions, and other group activities

HANDS-ON-PROJECT

Objective: The objective for the students is to demonstrate and explain what they have learned.

Time Requirement: Up to the teacher

Prerequisite skills: The understanding of the 9-step TQ process, group planning and team skills.

Materials: Each team needs volunteers (3) to serve as:
- Team Leader - to lead the discussion
- Scribe - to record tasks and draw the WBS
- Spokesperson - to report results to class

Preparation: A couple of years ago one of the CSLP classes in partnership with the art department of the school created some calendars designed by the students. The students decorated the calendar with nice pictures of spacecrafts etc. The calendars were set for a price of $7.00. Unfortunately this fund raising technique was not a big success. What we want you to do is to go through the 9-step process using the planning tools and come up with a solution that will help us to solve the problem if we were to sell calendars again.

Procedure: Working in teams at your table, come up with a WBS. Utilizing the WBS that you created, now develop a milestone chart showing how you will accomplish all tasks necessary. Map out all activities to be done each week over the 1 month planning period (total of 4 weeks). Utilizing the WBS and Milestone chart that you created, now develop an Action Items list showing which team member is responsible for each required task.

Note: Suspense dates for completion of tasks should be consistent with your milestone chart.

Give a brief (7- 10 min.) summary of your results to the class

REFERENCES

Kinlaw, Dennis C . Continuous Improvement and Measurement for Total Quality. A Team-Based Approach. Pfeiffer and Company, pg. 27, 98, copyright 1992.