Title: A Pilot Project to Introduce Total Quality Management Concepts to Multnomah County's Information Services Division

Course:
Year: 1993
Author(s): J. Munz

Report No: P93025

Abstract: This project was to develop a continuous improvement plan for one of the processes at Multnomah County's Information Services Division with total quality management concepts. The goals of the project's two phases were: 1) to introduce the management team at the Information Services Division (ISD) to the concepts and ideas of total quality management; and, 2) to undertake a project which would provide some or all of the management and staff with experience in the use of the tools and processes of Total Quality Management.

A Pilot Project to Introduce TQM Concepts to Multnomah County's Information Services Division

Jim Munz

EMP-P9325

A Pilot Project to Introduce Total Quality Management Concepts to Multnomah County's Information Services Division

Jim Munz

Instructor: Dick Deckro
EMGT 510/610
Total Quality Management
June 2, 1993

Introduction

This is the final report of a project to develop a continuous improvement plan for one of the processes at Multnomah County's Information Services Division to Total Quality Management Concepts. After initial discussions with the management team at the Information Services Division, the project was divided into two phases. The goal of phase I was to introduce the management team at the Information Services Division (ISD) to the concepts and ideas of total quality management. The goal of phase II was to undertake a project which would provide some or all of the management and staff with experience in the use of the tools and processes of TQM. My hope is that these initial efforts will generate enough of an interest that a quality management program can be put in place.

Organization Description

The Information Services Division provides a full range of data processing and telecommunications services to all Multnomah County departments and divisions. The division operates with an annual budget of over $9 million and a staff of 80 technical and professional individuals. The services provided include:

- **Computer Support** - ISD provides a full range of online and batch computer processing services to all county departments. These services

are available 24 hours a day, seven days a week. They can be accessed through any of the more than 2000 computer terminals and personal computers which are connected to the County's wide area network.

- **Network Services** - The County has over 40 local area networks (LANs) which serve the needs of the various agencies and three independent wide area networks (WANs). The Network Services staff plans, designs, and directs the installation and changes to the County's WANs and LANs.
- **Information Systems** - The County has a portfolio of computer applications worth in excess of $30 million. Information Systems is responsible for the maintenance and enhancements to the computer application systems which support the work of county government.
- **Telecommunications** - The County has one of the largest privately owned telephone systems on the West Coast. The Telecommunications Group is responsible for new installations, resolving problems, and planning for new services.

An organization chart and a chart describing the organization by functional areas are included in appendix A.

Identification of the Process for Continuous Improvement

I suggested the idea of identifying an area for improvement at the

management staff meeting on April 20, 1993. The staff meeting is attended by the six first line managers in the division. It was immediately apparent that the group had little knowledge of TQM concepts and not a lot of enthusiasm for undertaking a project. This was the point at which the project became a two-phased effort. The first phase was to provide some education about TQM and the need for continuous process improvement. The second phase would be to do a pilot project which could be used to demonstrate the effectiveness of the concepts. These two efforts went on at the same time but it is easier to describe them as two seperate sets of activities.

Phase I, Creating Top Management Commitment

After the lack of support for a continuous improvement project I decided to approach this as a formal effort. I identified two goals of this phase:

1) I wanted to create a sense that the organization could benefit from improving the quality of the products and services that we deliver.
2) I wanted to demonstrate that the group could be more effective if they would learn to work as a team rather than a working group.

One of the key elements of the TQM process is to benchmark existing

each of the individuals along with a scoring matrix. I pointed out the importance of coming to group or team consensus on the individual items in order to provide an accurate indication of how we compared to a world class organization. The evaluation criteria is divided into seven categories which correspond to those used by the Malcolm Baldrige national Quality Award and the Software Engineering Institute (SEI). After several hours it became obvious that we were not going to complete the evaluation in the time we had available. The major stumbling block seemed to be terminology and focus. We seemed to be spending a great deal of time making sure that everyone understood the concepts that were identified in each level for almost every question.

After lunch we shifted to the survival simulation. We had discussed consensus decision making earlier that morning so I distributed the simulation with a reminder that this was a exercise which would allow us to examine our problem solving/decision making in detail. The Jungle Survival Situation is a simulation which is especially designed for people who have had other survival simulations. Since I knew that at least two members of the team had been through other survival simulations, the Jungle Survival was a good choice. The plan was to complete the simulation and evaluation and then return to the SIM Quality Assessment. As it turned out, we spent

the rest of the day evaluating the results of the simulation exercise.

At least two-thirds of the members of the group got a better score than the team score. The evaluation of the team decision process identified that the management team was nearly dysfunctional when it came to developing consensus decisions. They preferred to operate as a working group[2] and changed leaders several times before a decision was reached. At least one individual dropped out of the process before it was completed. As it turned out, this was the only individual in the group who had chosen the correct strategy for survival. The management team is now working hard on developing team skills and has budgeted for special training for the team next year.

It took us three sessions to finally complete the Quality Assessment and Planning Tools for IS. The results of the assessment are summarized in Figure 1. The assessment tool and the detailed scoring sheets are included in Appendix B and C. I think the first thing that is evident from the assessment is that ISD is not a world class TQM organization. We seem to do reasonably well in our strategic quality planning. We do poorly when it

---

[2] Jon R. Katzenbach and Douglas K. Smith. "The Discipline of Teams." The Harvard Business Review. (March-April 1993):111-120

Figure 1

OVERALL ASSESSMENT

1. Leadership	Best	ISD	Percent
1.1 Senior Executive Leadership	45	23	51.11%
1.2 Management for Quality	25	11	44.00%
1.3 Public Responsibility	20	12	60.00%
Total	90	46	51.11%

2. Information and Analysis	Best	ISD	Percent
2.1 Scope and Management of Quality and Performance Data and Information	15	7	46.67%
2.2 Competitive Comparison and Benchmark	25	16	64.00%
2.3 Analysis and use of Company Level Data	40	21	52.50%
Total	80	44	55.00%

3. Strategic Quality Planning	Best	ISD	Percent
3.1 Strategic Quality and Performance Planning Process	35	26	74.29%
3.2 Quality and Performance Plan	25	16	64.00%
Total	60	42	70.00%

4. Human Resources Development and Management	Best	ISD	Percent
4.1 Human Resource Management	20	8	40.00%
4.2 Employee Involvement	40	13	32.50%
4.3 Employee Education and Training	40	8	20.00%
4.4 Employee Recognition and Performance Measurement	25	10	40.00%
4.5 Employee Well Being and Morale	25	11	44.00%
Total	150	50	33.33%

5. Management of Process Quality	Best	ISD	Percent
5.1 Design and Introduction of Quality Products and Services	40	27	67.50%
5.2 Process Management – Product and Service Production and Delivery Proces	35	16	45.71%
5.3 Process Management – Business Process and Support Services	30	17	56.67%
5.4 Supplier Quality	20	8	40.00%
5.5 Quality Assessment	15	9	60.00%
Total	140	77	55.00%

6. Quality and Operational Results	Best	ISD	Percent
6.1 Product and Service Quality Results	75	53	70.67%
6.2 Company Operational Results	45	27	60.00%
6.3 Business Process and Support Services Results	25	12	48.00%
6.4 Supplier Quality Results	35	7	20.00%
Total	180	99	55.00%

7 Customer Focus and Satisfaction	Best	ISD	Percent
7.1 Customer Relationship Management	65	30	46.15%
7.2 Committment to Customers	15	6	40.00%
7.3 Customer Satisfaction Determination	35	11	31.43%
7.4 Customer Satisfaction Results	75	45	60.00%
7.5 Customer Satisfaction Comparison	75	15	20.00%
7.6 Future Requirements and Expectations of Customers	35	23	65.71%
Total	300	130	43.33%

Total	1000	488	48.80%

comes to human resources development or in including our customers in our efforts to improve.

The benchmarking exercise achieved one of my two goals. As a result of the exercise, the management team has a indication of how we rank as a quality organization and is beginning to define projects for next year's work plan to address some of the identified weaknesses. We are actively looking for ways to include customers in evaluating service levels. As we identify improvement projects, it is our intention to include customers and suppliers as members of the project team.

The other area of weakness was human resource development and management, especially the area of education and training. This is a difficult area for us to address. The financial situation in local governments makes it difficult to direct resources to employee education. The other area in which we are weak is involving employees in the decision making process. This may be related to the difficulties the management group had in working as a team.

My second goal was to improve our consensus decision making ability. I feel that we have made an important step toward identifying a problem area. If

resources development or in including our customers in our efforts to improve.

The benchmarking exercise achieved one of my two goals. As a result of the exercise, the management team has a indication of how we rank as a quality organization and is beginning to define projects for next year's work plan to address some of the identified weaknesses. We are actively looking for ways to include customers in evaluating service levels. As we identify improvement projects, it is our intention to include customers and suppliers as members of the project team.

The other area of weakness was human resource development and management, especially the area of education and training. This is a difficult area for us to address. The financial situation in local governments makes it difficult to direct resources to employee education. The other area in which we are weak is involving employees in the decision making process. This may be related to the difficulties the management group had in working as a team.

My second goal was to improve our consensus decision making ability. I feel that we have made an important step toward identifying a problem area. If

we can improve in this area, we may also be able to increase the level of employee involvement in the decision process.

Phase II, The Continuous Improvement Project

The area that was chosen for the continuous improvement project was Information Systems. Jim Manthe who is in charge of this group had read several articles on TQM and expressed some interest in participating in a project. Information Systems provides two basic services: 1) they are responsible for the development of new computer applications or the replacement (reengineering) of existing computer applications and; 2) they are responsible for the maintenance and enhancement of the existing computer applications. Both of these activities are charged to the end-users for the work which is done. The new development work is done on a project by project basis. Each project is estimated independently and is managed to a time and dollar estimate. The maintenance work is done on a time-and-materials basis. The maintenance group provides about $1.2 million of services annually. After some discussion, we agreed to focus on the maintenance section.

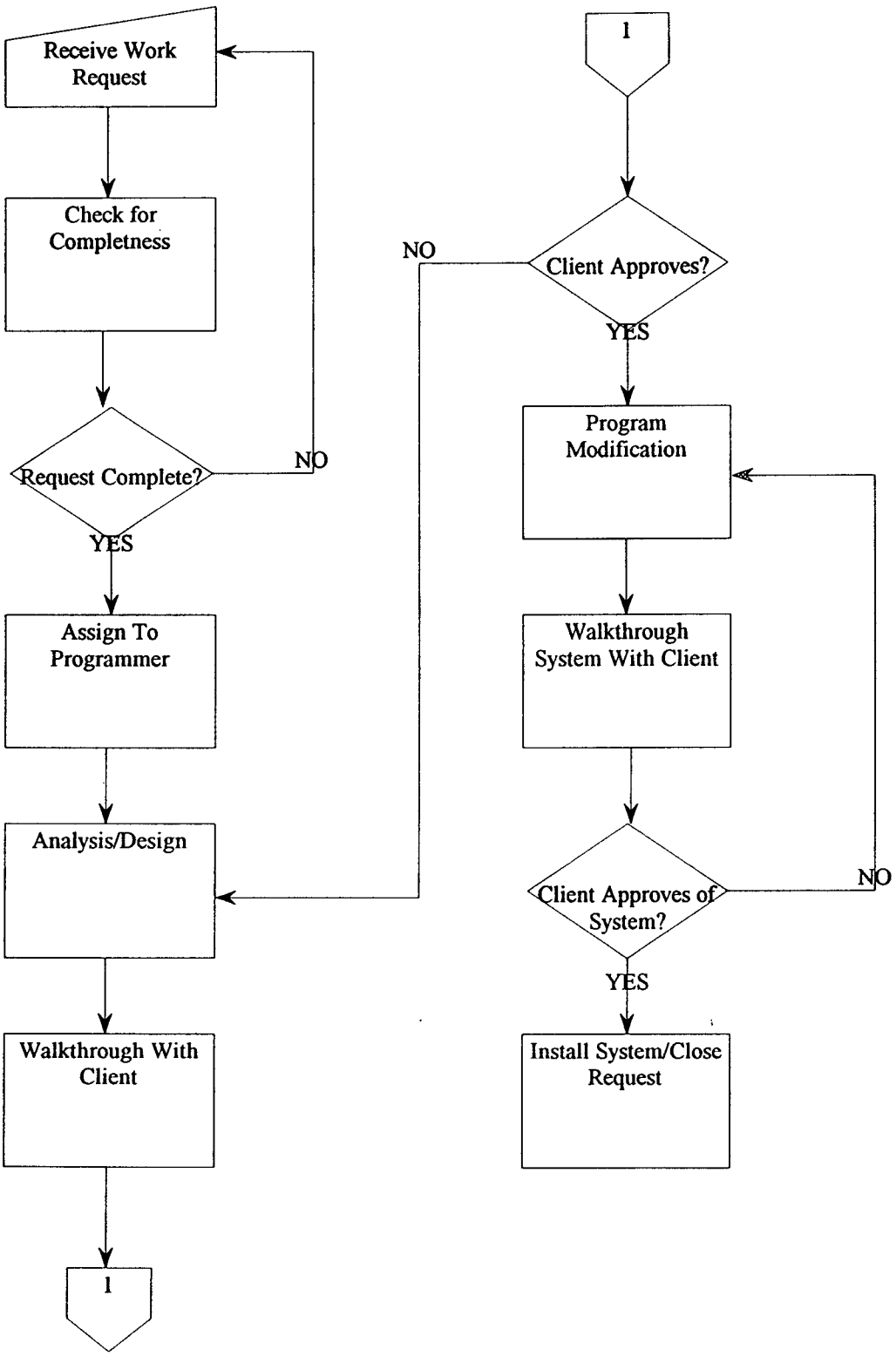
The maintenance section is divided into two sections. One section is responsible for all financial applications; the other section is responsible for

health services, criminal justice and other related applications. Each section includes seven programmer/analysts and is headed by a Systems Manager. Jim Manthe identified four people who would be the project team for this effort. The team included: Elise Nicholson, the Systems Manager of the financial group; Patty Bowser, a senior programmer/analyst; Gloria Pickering, the County's Data Administrator who is not part of the Information Systems section; and Jim Manthe, the manager of Information Systems.

All of the individuals have some background in computer applications systems analysis, design and implementation. They readily accepted the idea that a good place to start the project was to construct a **flow chart** of the process. This would insure that we had a common understanding of the process we hoped to improve. The construction of the flow chart might also point out any inefficiencies that existed in the process. The initial flow chart is presented in Figure 2.

We spent the rest of the meeting identifying sources of data about the maintenance process. Each Systems Manager keeps a file which contains copies of work requests received and completed work requests. In addition, each programmer/analyst fills out a weekly time sheet which identifies the

Figure 2 - Work Request Flow Chart



work requests that he/she worked on and how many hours are charged. A copy of a completed work request and the time sheet which contains the work request is in Appendix D.

Our next step was to gather statistics about how well the process was currently working. A check of the billing records indicated that 1,155 work requests were received during the 18 month period beginning July 1991 and ending in December 1992. This is an average of 64 work requests each month. The next step was to begin to define categories of errors and construct a **Pareto Chart**. The Pareto Chart would allow us to rank the different types of errors or reasons for customer dissatisfaction which occur during the process.

We took a sample of work requests which had been completed in the last month and attempted to identify problem areas. We examined a sample of 27 work requests that had been completed recently. On 9 of the work requests, the "DATE NEEDED BY" field was not filled in. There were three types of error conditions which appeared in the sample. In addition, the group was able to identify two more types of errors which occur but which didn't appear in the sample. The categories of errors which were identified include:

1) **LATE** - this error occurs when the work is not completed by the date

which the user requests. This error occurred five times in the sample.

2) **WRONG** - this error occurs when the work which is delivered to the user does not solve the user's problem.

3) **INCORRECT** - this error occurs when the work which is delivered to the user includes errors which gives incorrect answers or output. This error occurred once in the sample.

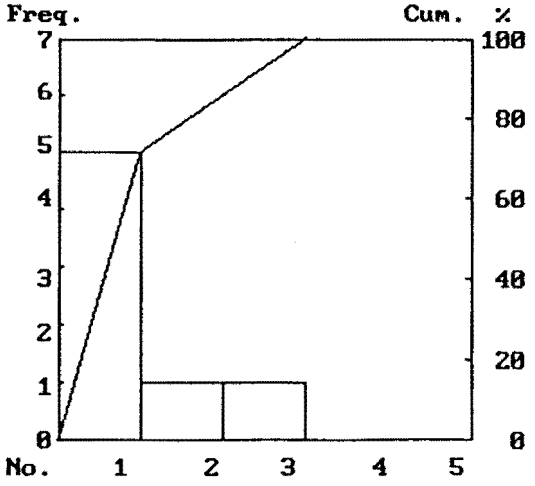
4) **INCOMPLETE** - this error occurs when the work which is delivered only solves part of the identified problem.

5) **SEFFECT** - this error occurs when the work which is delivered to the user is correct but the programming required creates errors in other areas of the system. This error occurred once in the sample.

The pareto chart in figure 3 contains the results of our investigation into types of errors and their frequency of occurrence in the sample of computer system maintenance requests.

==========Pareto diagram==========

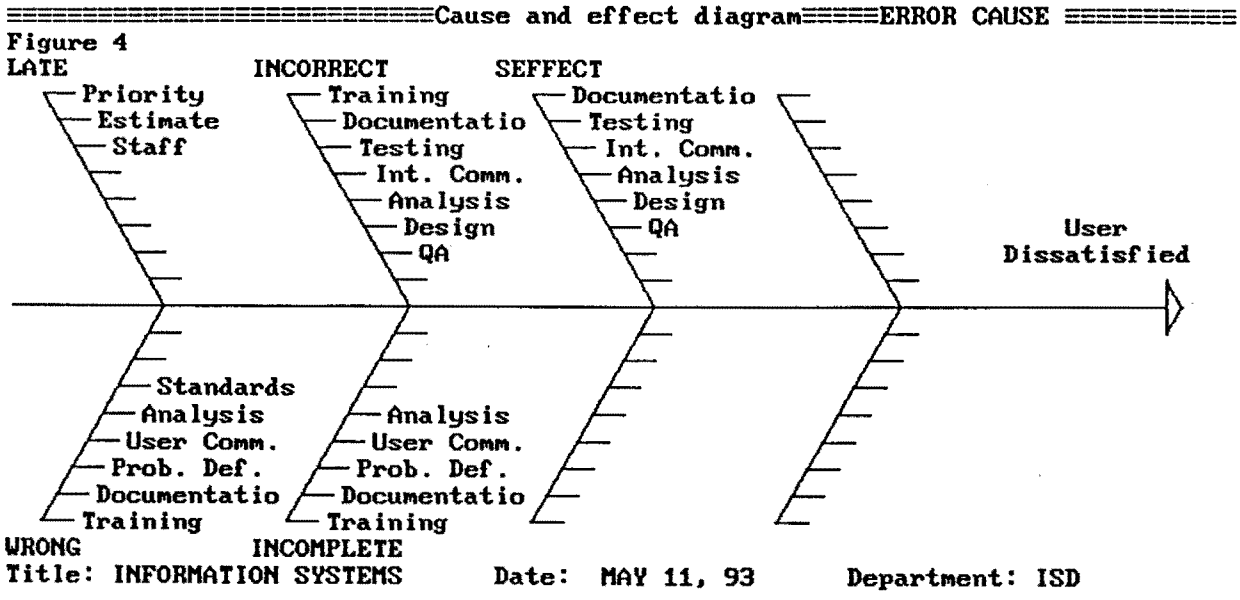
Figure 3 Maintenance Errors



No.	Item	Freq.	Cum. Freq.	Cum. %
1	LATE	5	5	71.4
2	SEFFECT	1	6	85.7
3	INCORRECT	1	7	100.0
4	WRONG	0	7	100.0
5	INCOMPLETE	0	7	100.0
Total		7	7	100.0

The group spent some time deciding if we were correctly classifying errors. Work that is wrong or incomplete could also be included in the late category. At the same time, it is possible for work to be delivered to the user incomplete. Then to have the work reworked and still delivered on time. It was decided, that the category "LATE" would be reserved for work that did not fit into any of the other categories.

Our next step was to begin to identify possible causes for the types of errors we had identified. Each of the types of error was defined as an "effect" or undesirable situation. The team generated a list of causes and then assigned causes to the effects. The result of that exercise is described in the **Cause-and-Effect Diagram** in figure 4.



Given the limited data, this was as far as our identification of the problem was able to go.

Results

Our investigation into the process had produced two results. First, based on our limited sample, nearly 20% of all work requests were being completed late. Second, we now recognized that we had very little data about how effectively the maintenance process is performing.

The most important definition of how well any process is performing is in the user's perception of the quality of the product. All of our analysis of work requests had been done with available data and without end-user involvement. An important part of any plan for continuous process improvement would be to define how end-user involvement would take place. It is also important that data be collected each time a work request is completed. None of the members of the project team was comfortable that the sample of work requests we were working with was an accurate representation of the total work being done. With the low volumes which the process produces, it should be possible to monitor all of the output.

Plan for Continuous Improvement

The team met again on May 25, 1993 to develop a plan for the proposed improvement project. Since late work requests appeared to be the most frequently occurring problem, we decided to focus our improvement efforts in

this area. If we had been able to obtain end-user input about the impact on the user agency of the different types of errors, we might have chosen a different area for improvement. It may be that a single instance of having a wrong or incomplete answer creates more negative impact that 5 late reports. Since we did not have access to data about the effect of different types of errors, everyone agreed that late was a good place to start.

In our in brainstorming session about the types of errors and their causes, we had identified three causes for work requests being completed late. These reasons included:

1) **Priority** - each systems manager determines the priority to be assigned to the work request when it is given to the programmer/analyst who will do the work. One reason for late work requests could be incorrect priorities being assigned or priorities being set independent of the other work which the programmer/analyst has waiting to be worked on.

2) **Estimates** - this proved to be an area of some confusion in the team. Based on the discussion, it appeared that each of the four individuals who assigns work requests handles estimates differently. Also, some individuals use different methods with different user groups. Everyone agreed that this may be part of the reason for programmer/analysts

failing to have work done by the requested date.

3) **Staff** - cutbacks in local government as a result of the passage of Ballot Measure 5 have reduced the staff in maintenance by 40%. We are now attempting to maintain the same number of computer applications systems with reduced staff. There was a lot of sympathy for this being the reason why work was being completed late.

The group quickly focused on estimates as the area which the improvement plan needed to address. Two of the four individuals who routinely receive and assign work requests do not fill in the "ESTIMATED COMPLETION" field. The programmer/analysts are instructed to use the "DATE NEEDED BY" field which is provided by the user. Since the users do not have the technical knowledge necessary to estimate the effort required, these dates are often un-realistic. The users also have no idea of the amount of work waiting to be completed or how the relative priorities have been established. One of the individuals who assigns work requests meets with her two largest user areas every week and re-estimates and re-prioritizes all of the work requests in both areas. The fourth individual only handles work requests from a single large user group. He maintains a separate list of outstanding work requests and assigns them individually to the staff that reports to him. In both areas where estimates were being given to users, they were not filled in

on the original work request. Only in the last area where a single senior programmer/analyst was responsible to a single large user group, were the estimates being passed on to the programmer/analysts responsible for the work. Given our original sample, it was not possible to determine whether one of the processes for assigning work requests was more likely to have the work request completed on time.

The work plan which we agreed to has two deliverables. The first deliverable was to put in place a set of reports that will allow us to monitor the quality of the work being performed. Each work request is logged into a computer system for billing purposes. This report is being modified to include four date fields. These fields will be used to record the date the work request was received, the date it was assigned to a programmer/analyst, the date the user needs the work completed, and the actual date the work is completed. If this data can be collected, we should be able to produce a statistical control chart that describes the performance of the maintenance effort in completing its work on time. The report will be of little value if these fields are not filled in consistently and accurately. This is the second deliverable in our work plan.

The second deliverable of our work plan is to develop a set of standards and procedures for handling the estimates on work requests. A two-person team

has been given the responsibility for developing a set of procedures for logging and estimating work requests. The group agreed that these procedures should address the following issues:

1) Work requests should be checked for completion when they are received.

2) Completed work requests should be logged into the system on the day received.

3) The Systems Manager or assigned programmer/analyst should complete the "ESTIMATED COMPLETION" field and this should be entered into the system. If the estimated completion is later than the date the user provided in the "DATE NEEDED BY" field, the user should be notified.

4) Once the work is completed, the completion date should be entered into the system.

A report will be developed that lists all completed work requests each month. The report will indicate the estimated completed date and the actual completion date. This data will be used to develop a control chart which describes the on-time performance of the maintenance process.

The team discussed the idea that we should not change any procedures until we had an opportunity to monitor the existing process for several months to

see if we were dealing with a real problem. Or at least we could determine how much of a problem this was. After some discussion it was decided that we would have to change our procedures if we were going to collect the data necessary to evaluate the process. A situation where the procedure changes are necessary to allow us to measure the quality of the current process will change the results. The team decided to move ahead with the two-part plan.

Conclusion

There are a number of things that came to light during the project. First, I think that anyone who is interested in starting a Total Quality Management project in a company needs to focus on creating an atmosphere where the project can be successful. In an organization which feels the quality of service which they currently provide is adequate or better than average, you may have trouble getting the commitment of time and resources necessary for a successful project.

Second, I was surprised that a process in an organization whose purpose is to help others improve quality or quantity through the use of automation, could be as out of control as this one seemed to be. The maintenance process at ISD had little or no consistency in how it was performed. While there were systems in place to log work requests and to make sure that users were billed

for the work performed, these systems provided almost no data about the quality of the process. All of the data about quality was gathered manually by reviewing completed work requests.

Third, I was disappointed with the SIM Quality Assessment & Planning Tools for IS. Within the IS activity there are a number of services or outputs which are common to all IS departments. The assessment tended to group these together to provide an overall assessment of the organization. I would have liked to see some of these services and their associated processes singled out and evaluated separately. This might have provided some data about which services we should focus on for improvement projects. The choice of process for this project was based on the willingness of the manager in charge of the area.

Fourth, if there had been more time, I would have done several things:

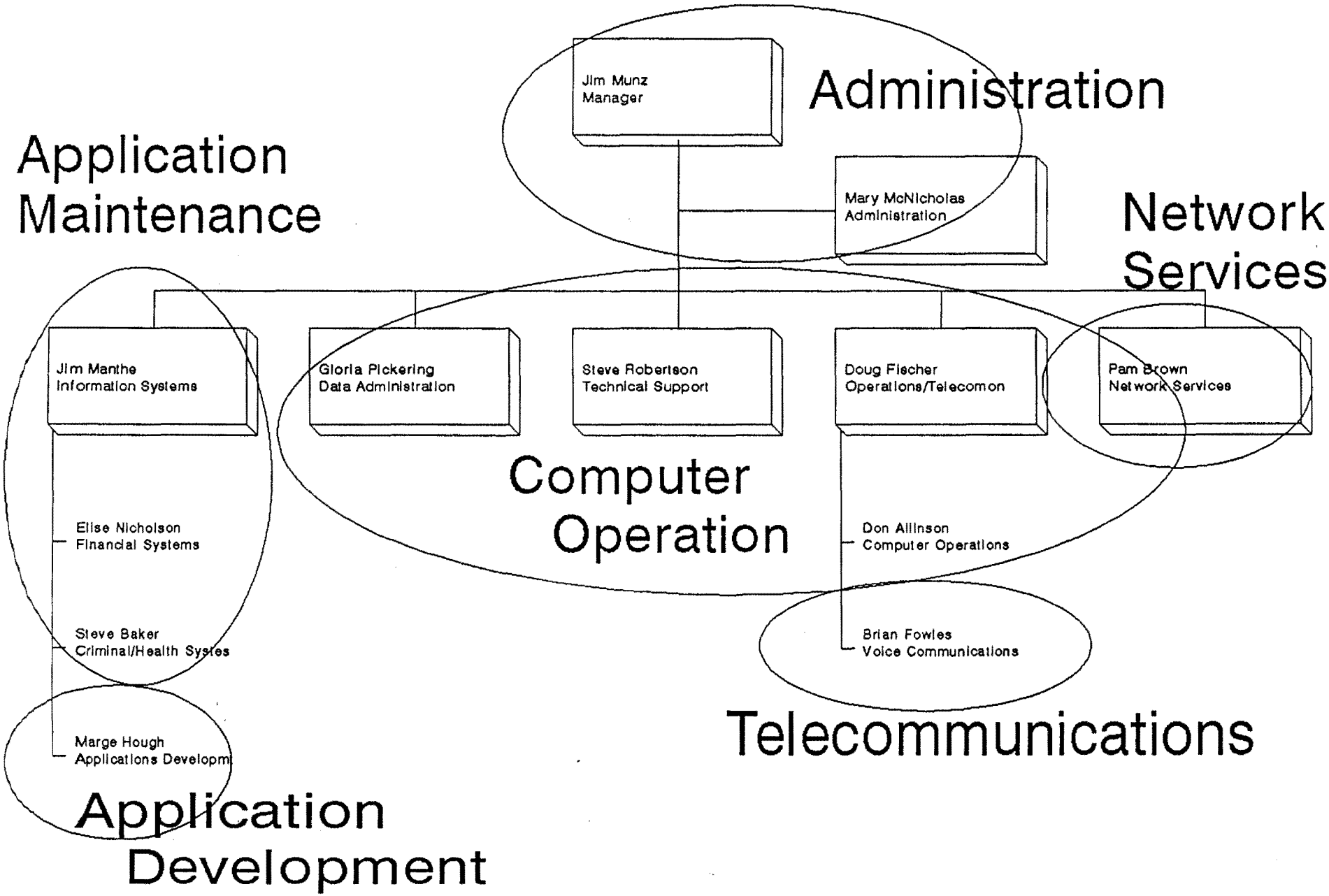
1) I would have found some way to involve users of the services in the evaluation process. We chose LATE as the problem to address but this may or may not have been the area of most impact.
2) I would have had the team evaluate more work requests. If we had started gathering data about work requests and the types of errors which occur in early April, we could have sampled twice as many work

requests. This may or may not have changed the pareto exercise.

3) We could have finished the standards and procedures for logging work requests. It would have been nice to be able to include these as part of the project report.

Finally, continuous improvement projects take more time and effort than you originally budget.

INFORMATION SERVICES DIVISION



1. Leadership

1.1 Senior Executive Leadership (45 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
1.1 (a)			X			3
1.1 (a)			X			3
1.1 (b)			X			3
1.1 (b)		X				2
1.1 (c)		X				2
1.1 (c)			X			3
1.1 (d)		X				2
				Total Points		23

1.2 Management for Quality (25 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
1.2 (a)		X				2
1.2 (a)		X				2
1.2 (b)		X				2
1.2 (c)			X			3
1.2 (d)		X				2
				Total Points		11

1.3 Public Responsibility (20 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
1.3 (a)				X		4
1.3 (a)			X			3
1.3 (b)		X				2
				Total Points		12

2. Information and Analysis

2.1 Scope and Management of Quality and Performance Data and Information (15pts

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
2.1 (a)		X				2
2.1 (b)			X			3
2.1 (b)		X				2
2.1 (c)		X				2
2.1 (c)			X			3
				Total Points		7

2.2 Competitive Comparison and Benchmark (25 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
2.2 (a)				X		4
2.2 (b)				X		4
2.2 (c)		X				2
2.2 (d)			X			3
				Total Points		16

2.3 Analysis and Uses of Company Level Data (40 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
2.3 (a)			X			3
2.3 (b)			X			3
2.3 (b)			X			3
2.3 (c)	X					1
2.3 (d)			X			3
				Total Points		21

3. Strategic Quality Planning

3.1 Strategic Quality and Performance Planning Process (35 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
3.1 (a)				X		4
3.1 (a)			X			3
3.1 (b)			X			3
3.1 (b)				X		4
3.1 (b)				X		4
3.1 (c)				X		4
				Total Points		26

3.2 Quality and Performance Plan (25 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
3.2 (a)			X			3
3.2 (b)				X		4
3.2 (b) & (c)			X			3
3.2 (d)		X				2
3.2 (d)			X			3
3.2 (e)				X		4
				Total Points		16

4. Human Resources Development and Management

4.1 Human Resource Management (20 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
4.1 (a)		X				2
4.1 (a)		X				2
4.1 (a)			X			3
4.1 (a)		X				2
4.1 (b)		X				2
4.1 (b)		X				2
4.1 (c)	X					1
				Total Points		8

4.2 Employee Involvement (40 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
4.2 (a)		X				2
4.2 (a)	X					1
4.2 (b)		X				2
4.2 (c)	X					1
4.2 (c)	X					1
4.2 (c)		X				2
4.2 (d)		X				2
				Total Points		13

4.3 Employee Education and Training (40 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
4.3 (a)	X					1
4.3 (b)	X					1
4.3 (c)	X					1
				Total Points		8

4.4 Employee Recognition and Performance Measurement (25 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
4.4 (a)			X			3
4.4 (a)		X				2
4.4 (a)		X				2
4.4 (a)				X		4
4.4 (a)		X				2
4.4 (b)	X					1
4.4 (b)		X				2
4.4 (b)	X					1
4.4 (b)		X				2
4.4 (c)	X					1
				Total Points		10

4.5 Employee Well Being and Morale (25 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
4.5 (a)		X				2
4.5 (b)			X			3
4.5 (b)		X				2
4.5 (b)		X				2
4.5 (c)			X			3
4.5 (d)		X				2
4.5 (e)	X					1
				Total Points		11

5. Management of Process Quality

5.1 Design and Introduction of Quality Products and Services (40 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
5.1 (a)			X			3
5.1 (a)				X		4
5.1 (a)			X			3
5.1 (b)				X		4
5.1 (c)			X			3
				Total Points		27

5.2 Process Management – Product and Service Production and Delivery Process (35 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
5.2 (a)		X				2
5.2 (b)		X				2
5.2 (b)			X			3
5.2 (d)		X				2
				Total Points		16

5.3 Process Management – Business Processes and Support Services (30 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
5.3 (a)			X			3
5.3 (a.1)			X			3
5.3 (a.2)			X			3
5.3 (b)		X				2
				Total Points		17

5.4 Supplier Quality (20 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
5.4 (a)		X				2
5.4 (b)		X				2
5.4 (c)		X				2
				Total Points		8

5.5 Quality Assessment (15 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
5.5 (a)			X			3
5.5 (a)				X		4
5.5 (a)		X				2
5.5 (b)			X			3
				Total Points		9

6. Quality and Operational Results

6.1 Product and Service Quality Results (75 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
6.1 (a)				X		4
6.1 (b)			X			3
				Total Points		53

6.2 Company Operational Results (45 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
6.2 (a)			X			3
6.2 (b)			X			3
				Total Points		27

6.3 Business Process and Support Service Results (25 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
6.3 (a1)			X			3
6.3 (a2)		X				2
6.3 (b)		X				2
				Total Points		12

6.4 Supplier Quality Results (35 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
6.4 (a)	X					1
6.4 (b)	X					1
				Total Points		7

7. Customer Focus and Satisfaction

7.1 Customer Relationship Management (65 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
7.1 (a)			X			3
7.1 (b)			X			3
7.1 (c)			X			3
7.1 (d)		X				2
7.1 (d)		X				2
7.1 (d)		X				2
7.1 (e)		X				2
7.1 (f)		X				2
7.1 (g)		X				2
				Total Points		30

7.2 Commitment to Customers (15 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
7.2 (a)		X				2
7.2 (b)	X					1
7.2 (c)			X			3
				Total Points		6

7.3 Customer Satisfaction Determination (35 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
7.3 (a.1)		X				2
7.3 (a.1)		X				2
7.3 (a.2)	X					1
7.3 (a.2)	X					1
7.3 (a.3)	X					1
7.3 (a.3)				X		4
7.3 (a.3)	X					1
7.3 (b)	X					1
7.3 (c)	X					1
				Total Points		11

7.4 Customer Satisfaction Results (75 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
7.4 (a)			X			3
7.4 (b)			X			3
7.4 (a,b)			X			3
				Total Points		45

7.5 Customer Satisfaction Comparison (75 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
7.5 (a)	X					1
7.5 (a)	X					1
7.5 (b)	X					1
7.5 (c)	X					1
				Total Points		15

7.6 Future Requirements and Expectations of Customers (35 pts)

	Levels					
ELEMENTS	1	2	3	4	5	SCORE
7.6 (a)				X		4
7.6 (b)			X			3
7.6 (c)			X			3
				Total Points		23