The People Side of Software
A Lesson Plan for Establishing a Successful Training Program

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The Global Systems Mobile (GSM) Base Station System (BSS) is a Motorola Cellular Infrastructure Group (CIG) project initiated for the purpose of developing a competitive product for the European digital cellular market.

Abstract

Training is vital to keeping up with industry, customer and employee demands. Specifically, training is necessary for the development of quality software which is dependent on knowledgeable and skilled employees. They, in turn, will perform their roles more effectively and efficiently. It is as important for new hires as it is for current employees. Therefore, training is an on-going and never-ending process.

In addition, training plays a key role in handling growth, which is what the GSM project is so fortunate to be experiencing today. However, growth is only positive if you are prepared to handle it and keep up with it. When a high growth rate is added to existing demands, the training challenge is multiplied.

It is the purpose of this paper to share the steps the GSM project has taken to produce, implement and improve (through feedback) a well-rounded Software Engineering Institute (SEI) level three capability training program. This paper will focus on the resources (i.e., people and capital) and the components (e.g., mentoring, curriculums, individual training plans, in-house training, metrics) that are essential in establishing and managing a smooth-running training program for a software development organization.

This paper will also demonstrate the growing demand for knowledge and how its reuse is necessary to increase the Motorola knowledge base at a rate that allows Motorola to remain an industry leader.

1. Introduction

When dealing with typical daily software pressures (e.g., slipped release dates, a high number of initial defects released into the field), it is easy to overlook the need for training. Training is vital to keeping up with industry (or competition), customer and employee demands. Specifically, training is necessary for the development of quality software which is dependent on knowledgeable and skilled employees who can, in turn, perform their roles more effectively and efficiently. It is equally important for new hires and current employees. Therefore, training is an on-going and never-ending process that should never be overlooked.

If the proper steps are taken, training oversights can easily be avoided. It is the purpose of this paper to share the steps the GSM project has taken to produce, implement and improve a well-rounded SEI level three capability training program. This paper will focus on the resources (i.e., people and capital) and the components (e.g., mentoring, curriculums, individual training plans, in-house training, metrics) that are essential for establishing and managing a smooth-running

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training program.

2. Prerequisites

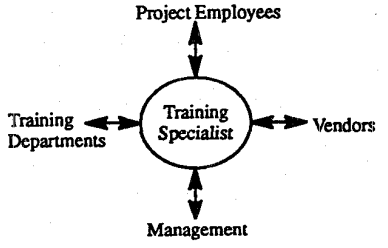
Before deciding on training specifics such as what training project employees need to produce feature X, and what should count as training and what should not, it is essential to review project resources such as people and capital. This is the first step toward owning a successful training program.

2.1 Resource Review

2.1.1 People

2.1.1.1 Training Specialist

The GSM project designated a person for the position of Training Specialist. It is necessary for this person to have the ability to manage multiple projects and interface with multiple levels of personnel. This person should also have strong communication and follow-through skills. The following picture depicts the liaison role the Training Specialist plays:



From a communications perspective, the Training Specialist/liaison provides the connection between two or more groups within a system without belonging to any group. Specifically, the liaison links groups by strengthening informal communication networks, thereby improving information flow between people who would not otherwise communicate with one another.

The Training Specialist at the GSM project performs the above role while working under the stated charter: "To provide timely and effective training in order to meet customer, corporate and employee requirements."

2.1.1.2 Internal Trainers

When looking at project resources, it is also imperative to consider those resources which are vital in carrying out trainer/presenter/mentor roles. This point is supported by two facts:

1. New hires need to be assimilated into an organization as quickly as possible in order to be depended on as full contributors of the organization.
2. There needs to be a mechanism in place for continuous dissemination of "expert" knowledge throughout an organization.

In spite of the effort existing employees or "experts" will expend while teaching others, there is still a need to meet software release schedules. This is why it is imperative that the expended

effort and learning curve time be taken into account during staffing planning.

2.1.2 Capital

As usual, money is always a key factor in deciding what is possible or not possible. The amount of money that can be allocated to training must be determined and serves as an input to decision-making. This information is vital to decision-making. For instance, the training specialist and management will make decisions on what training is needed, how much it will cost and how to get more money! In addition, competitive cost comparisons and analyses of the value of various training tools will be conducted.

Managers may be under pressure to meet budgets and reduce costs, but one area where a cut should not be attempted is training. As stated earlier, training is vital to keeping up with industry, customer and employee demands. Training serves as an aid in achieving quality.

3. Planning

Once the above prerequisites are achieved, training planning can begin. Planning includes three modules, 1. assessment of the project training situation, 2. review of the corporate and project goals and 3. prioritization.

3.1 Module One - Assessment

The first task in the course of planning is to assess the project's current training activities. The following questions should be answered:

1. What are we doing now to provide training for our people?
2. How do we communicate training goals?
3. Do we have a process?
4. What training are our employees taking?
5. Do we track training?
6. Do we have curriculum guides for all employee types to serve as an aid in individual training planning?
7. Do we have a waiver procedure?
8. Is training information easily accessible?
9. Do we have a mechanism in place to receive training feedback?
10. What is the breakdown of people in relation to time employed on the project?
11. What are the project's hiring plans?

The answers to these questions are only half of the information required to complete the prioritization module (see section 3.3).

3.2 Module Two - Goals Review

The second planning task is to conduct a review of both corporate and project goals. It is necessary to look closely at corporate initiatives or directives and their deadlines for roll-out and completion. Some corporate goals may require management or employee training before roll-out and institutionalization. For example, one 1994 goal was to reach SEI PMM level three by fourth quarter. This goal required the GSM project to learn the who, what, why and how of SEI. Another example of a corporate initiative is the requirement that all Motorola employees receive a minimum of 40 hours of training per year. This goal required the GSM project to have a

tracking system, a verification and validation process, and quarterly metrics.

As for project goals, it is necessary to review specifics such as customer demands and release schedules. The following questions should be answered:

1. What features do we need to provide our customers in order to remain competitive and win market share?
2. What timeframe are we working under with regard to new features or release delivery to our customers?
3. What are our areas for improvement?

After answering the above questions, the project management team should be able to decide how they are going to reach their goals. Also, the project management team will know what types of activities, such as training, are necessary to achieve these goals. This information serves as the second half of the information needed to carry out module three.

3.3. Module Three - Prioritization

Once module one - assessment and module two - goals review are completed, module three - prioritization can begin. During this stage, the project management team and the training specialist will compile the information or output from modules one and two to learn how much work needs to be done in order to produce, implement and improve a well-rounded training program. This to-do list needs to be prioritized before proceeding. For instance, due to the fact that the GSM project had plans for hiring over fifty new employees, mainly college graduates, it was essential that the first priority be the implementation of a mentoring program. At the same time, the GSM project realized that the training database records were not up-to-date. Therefore, it was imperative to implement a verification and validation process to get the data accurate to better assess what training was taken and what training was needed.

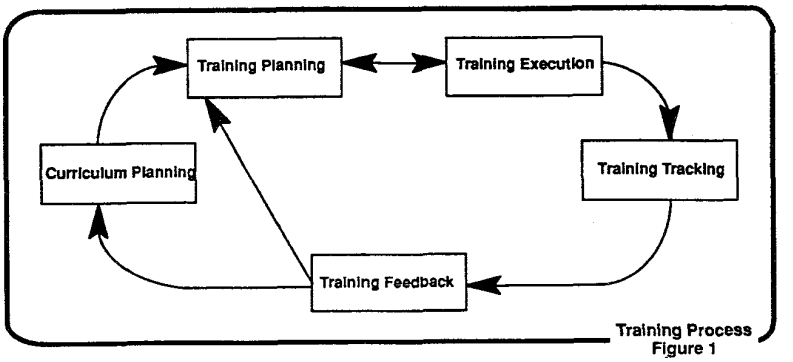
4. Training Program Development

Now that the project requirements are identified training program development can begin. The outputs from planning must be used as an input to this Program. For instance, the author of the Training Program should know what the SEI training key process area requirements are for both levels three and four. Specifically, SEI CMM level three states, "A waiver procedure for required training is established and used..."

The GSM Training Program, implemented since, October 1993, defines training process, policies and practices. Specifically, the Training Program explains the roles and responsibilities of all parties involved in the training program, the activities carried out by all parties, and the forms and tools utilized in carrying out the activities. The GSM Training Program provides the infrastructure necessary to plan, execute, track and report on the training required for project employees.

4.1 Training Process

There are five components to the training process which is outlined in the GSM Training Program. Each component has inputs, tasks and outputs with respective owners.



Training Process
Figure 1

4.1.1. Curriculum Planning

Curriculum planning, performed on an annual basis, cannot begin until the following inputs are gathered:

1. Industry or business demands.
2. Corporate requirements.
3. Project goals.
4. Employee feedback.

*1-3 are gathered during Module Two - Goals Review (refer to section 3.2).

*4 is gathered during Training Feedback (refer to section 4.1.5).

Once the above inputs are collected the Training Specialist can begin the curriculum planning task. This task involves answering the following questions:

1. Did the project required courses for the year satisfy project goals? If not, what can be done differently?
2. Did the project required courses for the year satisfy employee needs? If not, what can be done differently?
3. Did the project meet the corporate training requirements? If not, why and what can be done to resolve this problem?
4. What training is necessary for the upcoming year with respect to meeting employee needs, corporate requirements, project and industry demands?
5. What training will be considered as top priority for the project?
6. What is the target audience for the identified training?
7. What resources are needed to teach the identified training or support the development of the identified training?
8. How often is the training for the upcoming year needed?
9. What is the timeframe that the training specified for the upcoming year needs to be delivered to be most effective?

Once the Training Specialist has this information, he/she can produce the project Curriculum Guides and In-House Training Plan.

4.1.1.1. Curriculum Guides

The GSM Curriculum Guides are the templates used for identifying and keeping status of training needs to be met (i.e., individual training plans). The courseware listed on these Guides is not intended to be a complete list of available training but a list to serve as an aid in identifying training areas and needs.

GSM has a Curriculum Guide for each type of working group on their project -- management, engineering and administrative. (Note that it is essential to include administrative staff in every aspect of your training program. The more project knowledge administrators have, the more support they can offer to the project.) These working group curriculums are further broken down according to functional area -- New Hire, Software, Systems Integration and Testing, Configuration and Performance, Project Management and Systems Requirements. This supports the fact that training needs to be handled on an individualized basis versus a group-wide basis.

In addition, the Curriculum courseware is categorized by personal development (e.g., effective personal leadership, time management), Motorola business (e.g., Six Sigma, Total Cycle Time), technical (e.g., Introduction to Digital Cellular, Advanced C Programming), process (e.g., Fagan, SEI) and tools (e.g., UNIX System Fundamentals, Change Control Tool). Each category includes open slots for electives to further support the fact that training must be handled on an individualized basis. Furthermore, the courseware categories support training that comes from industry, corporate, project and employee requirements.

The key associated with the Curriculum Guides is as follows:

x essential/required
o recommended as needed
√ completed
+ exempt/waived
P planned (include date)

4.1.1.2. In-House Training Plan

The GSM project realized that all of their training needs could not be met by utilizing only formal courseware from Motorola training departments and external vendors. This is due to the fact that there is a great deal of project specific information that needs to be learned.

The In-House Training Plan is a document that provides information on the given year's training activities that are owned, managed and delivered by and for GSM employees. Specifically, the Plan includes the training activity descriptions, goals, owner(s), intended audience and dates of delivery.

4.1.1.3 Mentoring

Even though GSM new hires attend a one day Cellular Orientation program where they receive introductions to Motorola and Cellular and an employee handbook, they still need a GSM orientation to learn specific project goals, values, styles of work, morals and task how-tos (e.g., how to use the GSM library, e-mail, Interleaf, Mosaic and lab equipment).

GSM's mentoring program was implemented with the following goals in mind:

1. Reduce cycle time for those people who were being called on bit-by-bit to answer new hire questions.
2. Assimilate new hires as quickly as possible so they can be depended on as full contributors of the organization.

3. Socialize the new person as quickly as possible so his or her expectations are met, he or she is satisfied and he or she believes there is a good person-organization fit.

Mentoring is an on-going process that requires mentors to spend the most time with the newcomer during his or her first six months. The GSM mentoring program is used for all types of new hires (i.e., summer interns, college graduates, internal transfers and experienced external hires) and requires that all employees in the organization play important roles in the process.

Each role that is played during the mentoring process (i.e., immediate supervisor, mentor, administrator or co-worker) has respective tasks that must be carried out within specified time limits. For example, it is mandatory that the immediate supervisor meet with the designated mentor one week prior to the newcomer's arrival to provide background information on the newcomer and answer any questions the mentor might have regarding his or her upcoming responsibilities. Another example from the mentoring program is that during the second week of the newcomers arrival the mentor conducts tool demonstrations.

4.1.1.4. Functional Area Workshops

Weekly lunchtime functional area workshops were instituted to enhance new hire assimilation and spread knowledge throughout the organization to gain cross-utilization power and a systems view. These workshops are videotaped and are being re-used by GSM Ireland and United Kingdom GSM employees.

At the same time the attendees are gaining valuable knowledge, the engineers who are presenters gain experience and skills in public communication. This experience is utilized when these engineers are called upon to present to customers during technical review meetings.

In addition to the mentoring program and functional area workshops that are defined in the GSM In-House Training Plan, the GSM project also provides the following training:

- Process Improvement Training
- GSM Software Lab Training
- Change Control Tool (CCT) Training
- Utilizing Six Steps to Six Sigma (CD-ROM)
- Keyboarding (on-line program)
- Courseware from our Customer Documentation and Training Department *

* After a long search for digital cellular training, GSM Arlington Heights realized that the courses that were being developed for their customers would be extremely useful for their new hires and existing employees. These courses have helped fill the digital or GSM specific training gap.

4.1.2. Training Planning

As mentioned earlier in this paper, the curriculum guides for each respective GSM role are the templates used for individual training planning. These guides and the In-house Training Plan must be completed before Individual Training Planning can begin.

On the GSM project, it is mandatory that every employee (all types and levels) has individual training plan for each year of employment. The plan is produced, agreed upon, reviewed and updated by employees and their immediate supervisors every six months (during Individual Training Planning meetings). The first of these two meetings is conducted during the employee's Performance Appraisal and Career Planning (PACP). This is a natural time for the conversation to occur because strengths and areas for improvement are being assessed.

The second individual training planning meeting occurs six month's after the employee's

PACP. This meeting is used to validate and re-plan if necessary. For instance, an engineer named Sue could not make it to the planned Advanced C class because of an urgent customer problem her manager wanted her to handle. This training will be re-scheduled. In other words, there are many reasons why the planned training may not take place or may not be needed anymore. This is why the follow-up Individual Training Planning meeting is vital to planning and training tracking.

Training planning is a time designated for employees and their immediate supervisors to communicate training issues that may not otherwise be discussed. The following questions should be answered:

1. What are the employee's strengths and areas for improvement?
2. What are the employee's needs and wants (i.e., career planning)?
3. Does the training plan cover a combination of the various training areas (i.e., Personal Development, Motorola Business, Technical Skills, Tools, Process)?
4. Does the training plan meet the mandatory project training for the year?
5. What will be the best timing for the training to be received?
6. What will be the best medium for the training to be received through (i.e., formal lecture based course or project sponsored -live class, -video, -CD-ROM, or -book).

4.1.2.2. Waiver Procedure

During the course of Individual Training Planning, GSM's waiver procedure is available. The waiver procedure was established to avoid redundancy or unnecessary training. Specifically, the procedure is a tool used to determine whether individuals already possess the knowledge and skill required to perform in their designated roles.

The GSM waiver request form requires employees to do a skills inventory and identify equivalent training activities (e.g., course, seminar, experience) listing their respective dates, place and hours. It is recommended that the equivalent activities be acquired within the last five years to be used for credit.

4.1.2.3. Individual Training Plan Data Compilation

Copies of GSM individual training plans are collected by the Training Specialist for course data compilation. This task was implemented from feedback that GSM employees were experiencing training scheduling roadblocks such as booked and cancelled classes. This data also pointed to the fact that there was a lack of communication between the Motorola training departments and GSM.

Once the communication gap was realized, it was decided that the only way scheduling roadblocks could be improved was by informing the training departments of the project training plans or needs. GSM individual training plan data is now compiled and forwarded to the respective Motorola training departments. This data enhances the Motorola training department course offering planning which, in turn, helps service those in need of the courses.

4.1.3. Training Execution

The inputs to training execution are the Individual Training Plans and course enrollment. GSM employees are responsible for enrolling themselves in the training they have agreed to take and recorded on their Individual Training Plans.

In order for the actual competency to be learned, it is not only essential that the employee

attends the training event, but that he or she participates in the training event. Then the learned competency needs to be applied on the job and the employee must complete the proper forms for tracking purposes (Training Information Forms) and training evaluation feedback.

Currently, the GSM project has Level One training feedback instituted. The form, in a survey format, gathers information related to training content, skills acquired, materials used, instructor rating and interest in a follow-on course in the subject. These forms/surveys are kept on file in the GSM Library and are accessible to all project members. The information is used by employees who want to know what their peers thought of certain training they might be thinking about attending. The information is also used to improve course content, materials and instructor skills.

4.1.4. Training Tracking

The input for training tracking is the Training Information Form (TIF). It is essential for employees to fill out this form for all training that is attended and used as credit towards the Motorola minimum requirement of 40 hours of training per year.

The proper forms for higher education (i.e., Educational Assistance Program forms or GSM Higher Education Recognition forms) also need to be filled out in order for GSM employees to receive credit towards the 40 hour requirement. GSM credits job related higher education courses toward the required 40 hour minimum of training per year.

4.1.4.1. Data Entry

The Motorola Training Information System (MTIS) is being used to track training for the GSM project. MTIS contains Motorola University, Cellular Education & Development and Technical Education & Development training. MTIS also contains training records for any other external classes, seminars, workshops or conferences that have had TIFs forwarded to the Cellular Education & Development department. This data entry is managed by the Cellular Education & Development department.

The Educational Assistance database is being used to track higher education for the GSM project. The database contains higher education records for employees who have participated in Motorola's Educational Assistance Program (i.e., tuition reimbursement). This data entry is also managed by the Cellular Education & Development department.

4.1.4.1.1. Report Generation/Training Validation

On a quarterly basis, the GSM Training Specialist generates employee training history reports that are distributed to employees for validation. The Training Specialist works with the Cellular Education & Development department to update inconsistent information. This task is essential to individual training planning and metrics reporting.

4.1.5. Training Feedback

The last (perhaps the most important) component of the training process is feedback. Feedback serves as an input to curriculum and individual training planning and plays an important role in improvement activities.

4.1.5.1. Feedback Collection

4.1.5.1.1. Quantitative Data

The GSM project gathers both quantitative and qualitative feedback. Quantitative feedback is collected from the Motorola Training Information System and the Educational Assistance database. The quantitative data consists of information such as number of employees who have taken class X, course hours, course cost, number of employees enrolled in higher education and number of employees with degree X.

4.1.5.1.2 Qualitative Data

Qualitative feedback is collected via four mechanisms on the GSM project. First, via the Level One survey described in section 4.1.3. Second, via the GSM Training Feedback database. This database is open to all GSM employees who wish to enter any feedback they have in regard to training/education -- comments, questions or suggestions. This includes training/education offered by the Motorola education departments, in-house courses/workshops or any other outside institutions or vendors.

Here is an example of the feedback that was entered in the GSM Training Feedback database and how the issue was responded to:

Description: It would be beneficial for new hires to have a laboratory course in which laboratory procedures and equipment would be introduced and explained. Hands-on experience during the course would be imperative for understanding concepts involving simulation and testing. The current method of mentor introduction leaves new hires basically on their own to gather and utilize laboratory information with little guidance. Time should also be allocated for new hires to "play" with the equipment to allow them to understand the methodology in utilizing such equipment.

Closed. October 10, 1994. Description Owner Name: GSM Engineer of the Lab Support Group is currently developing a lab course that will cover the following: lab contacts, floor plans, scheduling procedures, safety and how-tos (e.g., bringing up a BSS and using HP emulators, the OMC, software tools and serial ports). The class will be roughly 4 hours and will include both lecture and hands-on training. The target date for completion is December 1994.

The third mechanism is the annual GSM Training Survey. The goals of this survey are to determine:

1. What roadblocks affect employees when trying to meet the 40 hour per year training requirement.
2. Whether or not GSM employee training needs are being met.
3. What areas GSM employees want or need more training in (e.g., tools, process, management, technical).
4. What is the best and worst training GSM employees' have received and why.

Overall, the 1994 GSM Training Survey data supported the following points:

- Training must be handled on an individual basis.
- Employees like interactive, hands-on training the best.
- Management support is obvious and highly valued.
- Class availability and lack of time are employee roadblocks in meeting the 40 hour minimum training per year requirement.

The last mechanism used to gather training feedback is interpersonal communication. This is

gathered through electronic mail or face-to-face conversations. It is crucial for the Training Specialist to develop strong interpersonal relationships with project employees. Employees should feel comfortable to communicate openly about their training needs. The GSM Training Specialist has developed a code of trust and confidentiality that has helped employees seek out personal development training that may not have been otherwise acquired.

4.1.5.3. Data Analysis/Presentation/Dissemination

Once the quantitative and qualitative data are collected you are ready to proceed with data analysis, presentation and dissemination of the findings.

Based on the feedback/data collected, metrics are produced on a quarterly basis by the GSM project Training Specialist (refer to Appendix A). The metrics are presented to GSM management during a regular scheduled project meeting. During this time, risks, action items and solutions are noted. Once the information has been reviewed by GSM management, it is disseminated to the rest of the project via the training bulletin board.

5. Communication

The greatest training processes, policies, practices, tools and forms can be created, but without the proper communication of them you will not be successful with institutionalization. The GSM Training Specialist utilizes the following communication mechanisms to ensure that all project populations are informed:

- Electronic Mail
- World Wide Web
- Bulletin boards
- "GSM Source" newsletter
- Functional Area and Project meetings
- "GSM Employee Quick Reference Guide"
- Training & Education Information Center
- GSM Training Feedback database

Before you communicate a message, it is important to determine what will be the best medium(s) to use. Remember, that your entire audience may not use the World Wide Web. This is why it is important to communicate your message via more than one medium. For instance, when the GSM Training Specialist communicates Technical Enrichment Matrix presentations, it is done so via electronic mail, the World Wide Web and bulletin boards.

Feedback is another important communication aspect that is essential to improvement of your training processes, policies, practices, tools and forms. Without feedback you will not be able to improve your program or gauge whether or not the users have the expected level of understanding.

5.1. Training Council

In order to enhance communication between the GSM Training Specialist and others with similar responsibilities, a Cellular Infrastructure Group Training Council was formed. The Training Council, established January 1995, is co-led by the GSM Training Specialist and the Wireless System Platforms Training Representative. The Council mission is: "To provide a forum for training representatives within Motorola to exchange ideas and share resources for implementing training programs."

Council membership includes representatives from various Cellular projects and Motorola training departments (i.e., Cellular Education & Development, Motorola University, Technical Education & Development). The Council meets on a quarterly basis to share status updates and discuss training program re-use. The Council works under the following directives:

- 40 hour minimum training per year for all Motorolans
- SEI
- Six Sigma Quality
- Total Customer Satisfaction
- Individual Dignity and Entitlement
- 10X reduction in cycle time
- 10X reduction in defects every two years

6. Re-use

Re-use is necessary to increase the Motorola knowledge base at a rate that allows Motorola to remain an industry leader. GSM's training program, both infrastructure and activities, have been re-used among the Cellular divisions. The following quotes support the importance of re-use:

"Turn around time was greatly reduced due to the fact that I had something to model after." Software Engineer, EMX2500, re-used the GSM Mentoring Guide.

"Being able to re-use each other's work has saved us much time (and time = money; reduced cycle time) allowing us to implement more than we could on our own. Each time something is re-used, new ideas are added and the end result is often times a better product. The GSM Mentoring Guide and Curriculum Guide I have re-used have sparked new ideas within our department on how to approach training." Lead Engineer, Wireless System Platforms.

"I've found the 'GSM Base Station Employee Quick Reference Guide' to be an excellent source and starting point for the creation of a similar guide for SuperCell employees. It is our intention to re-use the format they have selected and simply replace the GSM specific information with SuperCell information. By reading through the document we have also discovered tools we could potentially use in the SuperCell organization." Section Manager, SuperCell.

"At the time the organized training efforts began in my organization, there was very little information and direction with which to start. We were able to start with working processes so we had some direction and information to determine if our ideas were feasible. We were able to spend the time modifying a current working process for my organization's specific needs." Software Engineer, IS-41, re-used the GSM Mentoring Guide and Curriculum Guide.

7. Conclusion

Overall, the training program has helped the GSM project keep up with the rapid growth rate they have been experiencing since 1994. In addition, the training program has served as an aid in meeting employee, project and corporate goals.

The prime benefit the GSM project has gained is that training has been given the same priority as other typical software engineering project issues. In other words, training is given the attention it deserves in order for GSM to strive as a learning organization and continue to meet industry, customer and employee demands. This is supported by the fact that GSM has a full-time employee dedicated to training.

As stated in the "SRD Walkthrough" article Software People Champions, by Bob Lyon, GSS Vice President, and Linda Tucker-Kelly, Software Solution Team, "Organizations with focused training improve more rapidly."

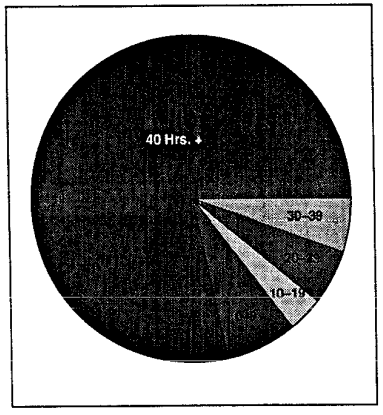
In addition, GSM employees are aware of the training goals. Employees also contemplate what training they need versus just taking any old training in order to meet the 40 hour requirement.

The GSM project also achieved SEI PMM level three in December 1994. The established GSM Training Program played an important role in this accomplishment.

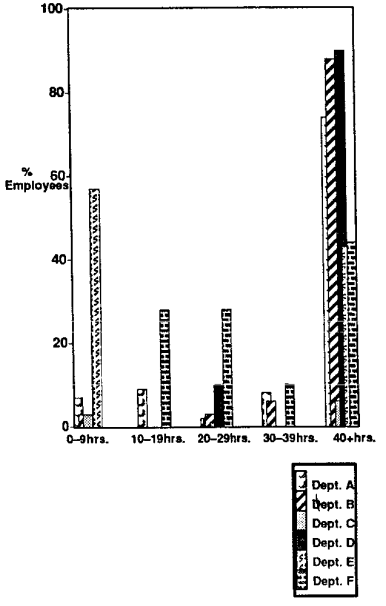
Last, it is important to remember that training is a "people" issue and "people" are an organizations most important resource. Therefore, training cannot be ignored.

Appendix A

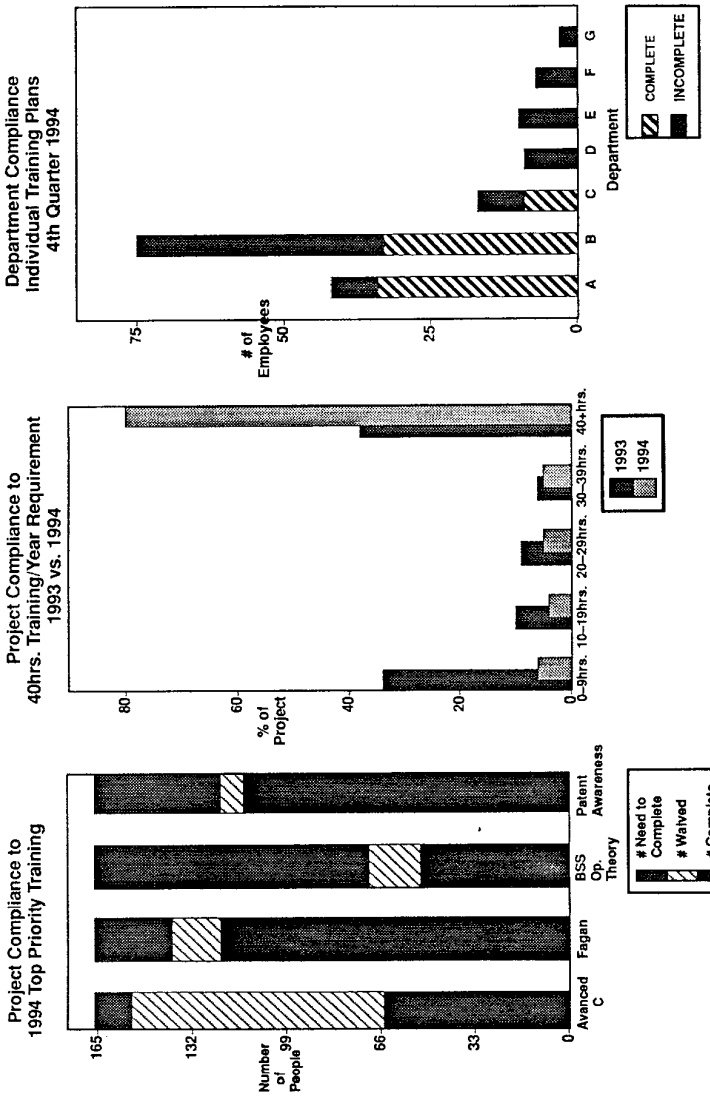
Employee Compliance
40hrs. Training/Year Requirement for 1994



Department Compliance
40hrs. Training/Year Requirement
4th Quarter



Appendix B


Project Compliance to
1994 Top Priority Training
Number of People
165
132
99
66
33
0
Avanced C
Fagan
BSS Op. Theory
Patent Awareness
Need to Complete
Waived
Complete
Project Compliance to
40hrs. Training/Year Requirement
1993 vs. 1994
% of Project
80
60
40
20
0
0–9hrs.
10–19hrs.
20–29hrs.
30–39hrs.
40+hrs.
1993
1994
Department Compliance
Individual Training Plans
4th Quarter 1994
# of Employees
75
50
25
0
A
B
C
D
E
F
G
Department
COMPLETE
INCOMPLETE