

Managing GIS Projects

This work was supported in part by the National Science Foundation Grant Number 9752086.

This section on Project Management was developed by Work/Site Alliance with contributions by the following:

- Laura Pinto, Author
- Beverly Hunter, Editor
- Dr. Yiyi Sun, Technical Support
- CEITA Staff

Table of Contents

TABLE OF CONTENTS	III
1. EDUCATORS AS PROJECT MANAGERS	1
UNDERSTANDING PROJECT MANAGEMENT CONCEPTS	1
HISTORY AND ORIGINS OF THE DISCIPLINE OF PROJECT MANAGEMENT	3
THE ROLE OF PROJECT MANAGEMENT IN WSA/GIS	4
<i>Teachers as Project Managers</i>	4
<i>Student Acquisition of Project Management Skills</i>	4
THE PROJECT MANAGEMENT SKILL SETS	5
<i>Project Management Interpersonal Skills</i>	5
<i>Project Management Organization and Planning Skills</i>	6
OVERVIEW OF THE PROJECT LIFE CYCLE	7
<i>Start-Up Stage</i>	7
<i>Planning Stage</i>	10
<i>Execution and Control Stage</i>	14
<i>Close-Out Stage</i>	14
<i>Factors Affecting Project Success</i>	15
<i>Factors Affecting Project Failure</i>	15
2. PROJECT MANAGEMENT SOFTWARE APPLICATIONS	17
ADVANTAGES AND DISADVANTAGES OF PROJECT MANAGEMENT SOFTWARE	17
EXERCISES IN USING MICROSOFT PROJECT	18
2.1 GETTING STARTED WITH MICROSOFT PROJECT	20
STEP 1. LIST ALL THE TASKS IN THE SAMPLE PROJECT	20
STEP 2. OPEN MS PROJECT ON YOUR COMPUTER	20
STEP 3. UNDERSTANDING THE DEFAULT SCREEN	20
STEP 4. INPUT THE START AND END DATES FOR THE PROJECT IN THE PROJECT INFORMATION WINDOW	21
STEP 5. ENTER THE TASKS INTO THE ENTRY TABLE	21
STEP 6. DEFINE ATTRIBUTES OF THE TASKS	22
STEP 7. CREATE A RECURRING TASK	22
2.2 OUTLINING AND LINKING TASKS	23
STEP 1. OUTLINE YOUR TASK LIST	23
STEP 2. CREATE LINKS	24
STEP 3. VIEW AND ADJUST THE GANTT CHART	25
2.3 MANAGING RESOURCES	25
STEP 1: VIEW THE RESOURCE SHEET	25
STEP 2: UPDATE THE RESOURCE SHEET	25
STEP 3. CREATE MILESTONES	26
STEP 4. VIEW THE WBS	27
STEP 5. OBSERVE AND PRINT VIEWS	27
STEP 6. GENERATE REPORTS	28
2.4 ANALYZING AND TRACKING THE CRITICAL PATH	29

STEP 1. VIEW AND MODIFY THE CRITICAL PATH	29
<i>Step 2. View the baseline for the project.</i>	30
STEP 3. UPDATE STATUS OF TASKS	31
STEP 4. UPDATE RESOURCES	31
STEP 5. VIEW THE TRACKING GANTT CHART	32
SUMMARY	32
3. REFERENCES AND RESOURCES	33
REFERENCES ON PROJECT MANAGEMENT	33
Internet Resources.....	34
APPENDIX A	35
EXAMPLE PROJECT PROPOSAL PRESENTATION	35
APPENDIX B	38
EXAMPLE PROJECT CONTRACT	38
APPENDIX C	53
EXAMPLE PROJECT PLAN	53
<i>Summary</i>	53
<i>Hardware Overview</i>	54
<i>Software Overview</i>	54
<i>Performance Standard</i>	54
<i>Milestone Summary</i>	55
<i>Development Milestone Breakdown</i>	55
MILESTONE 1 BREAKDOWN	55
COMPETITIVE INTELLIGENCE REPORT	55
DATA ANALYSIS (6 DAYS)	56
REPORTING (4 DAYS)	56
MILESTONE 2/3/4/5 BREAKDOWN	56
RESEARCH (3 DAYS)	56
DATA ANALYSIS (10 DAYS)	56
REPORTING (4 DAYS)	56
APPENDIX D	57
PROJECT CONCEPT WORKSHEET	57
APPENDIX E	58
PROJECT TASK SHEET	58
Responsibility	58

1. Educators as Project Managers

A **project** is a process undertaken to achieve a specific goal that has defined scope and outcomes, can be accomplished within a specific time frame, utilizes human effort and a limited set of resources, and is characterized by a sequence of activities. This project management unit provides the following.

- An introduction to the basic elements of project management, including considerations for teachers and classrooms.
- Exercises in using project management software.
- Project management tools and resources you can tailor for your use in the W/SA Case Studies and in your own projects.

Understanding Project Management Concepts

A project is intended to come to an end and have a finite life, while the product or service of the project is generally intended to have a long or indefinite life. A project is a unique undertaking and follows a specific methodology to achieve a beneficial change with a specified outcome.

Examples of projects include:

- Design and creation of a new piece of software, such as a video game or word processing program.
- Creation of a public information system for a city.
- Design and creation of a new product, such as a new soft drink.
- The development of a curriculum or course of study.
- Modification of a computer system to perform a new function, such as adding a new service charge to a bank's central computer system.

Project Management is the approach used to manage non-repetitive work within the constraints of time, cost, and performance targets. It is characterized by both a set of skills and by a specific methodology, with a focus on deliverables (specific outcomes that can be measured, such as: schedules, personnel, and cost). The goal of project management is to assure successful completion of a project with respect to quality (performance), timing (schedule), and budget (cost).

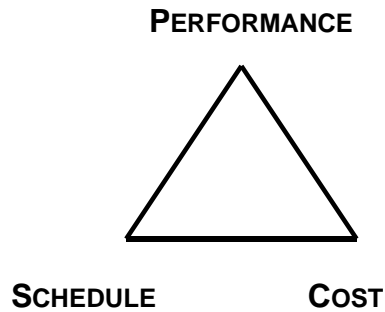


Figure 1.1: The Three Project Constraints¹

Within those constraints, project managers are responsible for:

- Designing the project – analyzing client requirements, articulating the idea, identifying the goals, breaking goals down into smaller tasks and interim products, and scheduling those tasks and products.
- Strategic planning - creating time lines that include all tasks, assigning tasks and roles to individuals and teams, and planning for potential problems and risk.
- Team management - leading the project teams through the process efficiently.
- Client interface - working with the persons, departments, or organizations that the end product affects, and ensuring that all of their needs are met.
- Resource allocation - taking available resources (monetary, materials, time, and human capital) and budgeting all of this into a reasonable, cost-effective plan for the project.

In order to perform their roles effectively, project managers must possess a variety of skills. These skills can be divided into two categories: Interpersonal Skills and Organization and Planning Skills. Each of the categories is equally essential to a project manager's success and will be discussed in more detail in section 5. Without the ability to communicate with and motivate others, a project manager will get little accomplished. Similarly, without careful planning and organization, a project will not succeed.

¹ Michael C. Thomsett, *The Little Black Book of Project Management* (New York: American Management Association, 1990), 7.

The project life cycle is a framework for accomplishment followed by project managers throughout North America. Every basic project management model requires the manager to first plan the work, then work the plan. Though models proposed by different theorists and organizations vary with respect to the names of the stages, but are extremely similar conceptually.

History and Origins of the Discipline of Project Management

Project management began as a process approximately forty years ago. It has grown in popularity among engineering firms and software developers. To date, no single methodology has been offered as the correct way to conduct a project. Many different methodologies have been brought forward throughout the history of the discipline, and these have been based on the needs of those managers creating them and the "fashionable" business principles of the day.² Similarly, different methodologies have been developed for different industries. One criticism of the disciplines to date is that they do not address all of the issues faced by project managers.

As the field of project management evolves, methodologies are being evaluated for effectiveness. Various organizations, such as the Project Management Institute, have established frameworks for their membership. Many of these organizations offer formal "Project Manager" certification based on course work and professional experience.

Project management is widely recognized as the new frontier in modern organizations. With increased global competition and fast-paced technological changes, the role of the project manager is becoming essential for organizations to grow and change in twenty first century. Organizations, such as the Project Management Institute, offer certification programs for their membership, giving them official Project Manager status.

As mentioned earlier, engineers and software developers have embraced project management. Though project management was originally developed for these industries, its popularity has gone beyond the scope of these industries. The project management skill set and methodology are applicable to virtually any situation and to any workplace. Following the methodology can simplify any task, from planning a party to building a piece of real estate.

² *Project Management - Forty Years Young and Still Looking for a Philosophy*, Project Manager Today, 1996.

The Role of Project Management in WSA/GIS

Project management focuses on the completion of a specific goal within a certain period of time using a specific, logical methodology to break down the goal into tasks, then schedule and allocate resources for those tasks. The discipline of project management is important in WSA/GIS projects for three main reasons.

- Many different people are involved in the projects and these people have different backgrounds, expectations, skills, and agendas. The discipline of project management helps to provide a common basis for understanding and communication among all participants.
- The teacher needs to be a project manager with his or her students.
- Students benefit from learning the skills and discipline of project management.

Teachers as Project Managers

On a daily basis, teachers act as project managers in the sense that they are leading a group of students toward a specific goal: mastery of specific learning objectives in a course. WSA/GIS is structured around the project-based learning model, and the role of a teacher managing such a project becomes increasingly similar to that of a project manager. In fact, by applying the methodology, a teacher can easily plan and track these sorts of events in an organized fashion.

Student Acquisition of Project Management Skills

Students can benefit from learning and practicing project management skills and roles in the classroom as a part of WSA/GIS project. By breaking an overall project team into student sub-teams, students can have opportunities to serve as project managers for their teams. The skills and knowledge will equip students with the tools necessary to survive in the current, dynamic working environment, thereby assisting in school-to-work transition. Students can apply these skills immediately to excel in time management and completion of school assignments, projects, and extra-curricular activities.

The Project Management Skill Sets

Project management requires two quite different sets of skills – interpersonal skills and organizational or analytic skills.

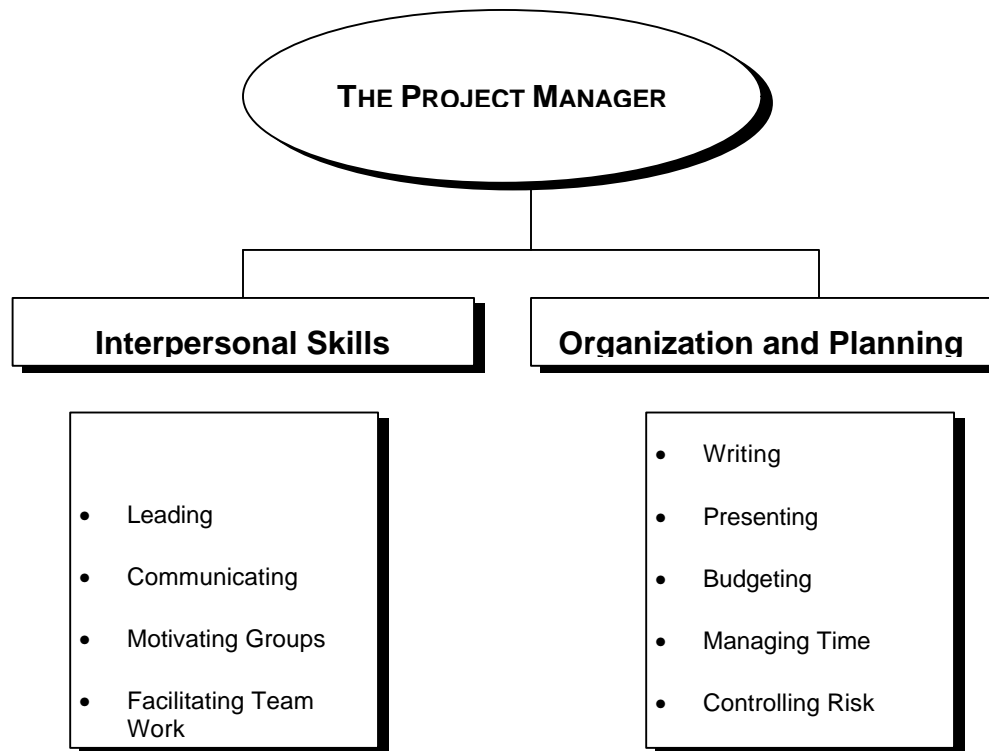


Figure 5.1: The Project Management Skill Set

Project Management Interpersonal Skills

Much of a project manager's day-to-day job consists of working with the project team and liaising with the client, so good interpersonal skills are a necessity. There are three major groups that a project manager must interact with:

- The project team.
- The client (an individual or organization who will use the product).
- Colleagues, co-workers and other departments within the organization who are involved, directly or indirectly, with the project.

A project manager must first act as a leader in initiating and managing the project. In addition to having the qualities that make a good leader, a project

manager must be able to communicate effectively with the project team and the client in order to complete a project.

As the project team's leader, the project manager must be able to motivate the group to complete tasks effectively and on time. Much of this may be dependent on the team working together as a group. A project manager must be a good listener, so he or she can understand the ideas and motivations of how each team member. The project manager must be able to facilitate group work in order to obtain high productivity among the members. Finally, the project manager must be able to utilize positive influence skills to meet personal and group objectives.

Project Management Organization and Planning Skills

Though essential, interpersonal skills alone do not make an effective project manager. Virtually all projects begin with proposals. A project manager must be able to articulate his or her vision for a project in writing, and be able to effectively present it. Without these skills, a project will not get off the ground.

Any successful project must be carefully planned, with clear objectives and outcomes that are understood by all parties involved. Crucial areas of planning for project managers include:

- Budgeting money, time, equipment access, and other resources.
- Establishing and meeting deadlines.
- Identifying data sources.
- Scheduling team members for various tasks within the project.
- Ensuring quality at each step in the project.
- Identifying and controlling risk.

In order to perform these functions, a project manager will be more successful and efficient if he or she uses a well-considered methodology. Project management professionals prescribe a methodology based on the four-stage project life cycle. To be most efficient, project managers use technological tools to help them budget, plan and organize. A great deal of technology is available to assist project managers. They must be able to identify the appropriate technology, adapt it to their projects, and use it to its fullest potential.

Overview of the Project Life Cycle

The project life cycle is a framework followed by project managers throughout North America. Every basic project management model requires the manager to first plan the work, then work the plan. Though models proposed by different theorists and organizations vary with respect to the names of the stages, the model we will examine is proposed by the Project Management Institute. A description of how these stages relate to WSA/GIS projects appears in *Appendix D, Project Overview Sheet*.

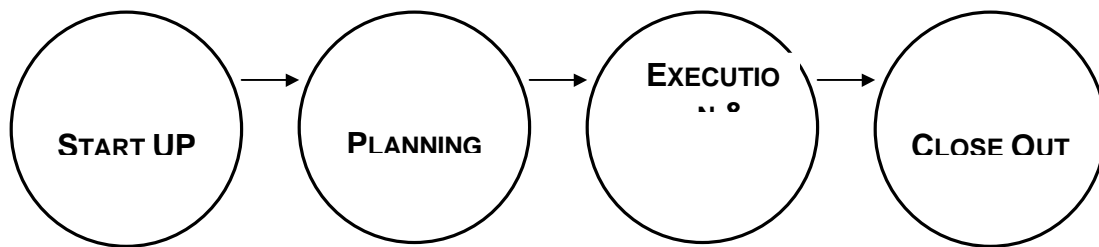


Figure 6.1: Stages of the Project Life Cycle

Table 6.1: Components of Stages in the Project Life Cycle

Start-up	Planning	Execution and Control	Close-out
Pre-Conceptual	Conceptual	Execution and Acceptance	Documentation
Definition	Definition & Development	Delivery	Support
Proposal	Start-up	Implementation	Evaluation
Defining	Planning	Leading and Monitoring	Completing
Concept	Development	Documentation	Finishing or Termination

Start-Up Stage

Sometimes called the proposal stage, this start-up stage is when the project idea gets formulated. Objectives are determined, and the staffing is established. The start-up stage can take a surprisingly long time, involving many meetings among the various stakeholders. In the Work/Site Alliance, some projects have spent as long as a year in the Start-Up Stage. Often, the project manager must obtain information from the client and negotiate a contract. The manager must design

and proposal and present it to all appropriate parties during this stage to obtain permission to proceed.

A teacher or school initiating and organizing a WSA/GIS project during the start-up stage should complete the following tasks.

- **Identify Key Individuals within the Alliance.** The project manager must identify key individuals within the school, school board, client organization, and WSA/GIS team who should be involved in the planning of a project. Commitment from those individuals should be obtained.
- **Identify Potential Client/Partner Organizations.** If a client has not already been established, the teacher/project manager must locate organizations that might be willing to act as clients/partners in a WSA/GIS project.
- **Make an Initial Presentation to Potential Client/Partner Organizations.** A sample of a presentation appears in *Appendix A, Sample Presentation – Central Bank*. The presentation should suggest ways in which the organization could benefit from participation in a WSA/GIS project.
- **Describe Purpose of the Project.** The outcomes of the project should be defined in as much detail as possible.
- **Evaluate Feasibility of the Project.** This will allow the teacher who will manage the project an opportunity to ensure that the project is feasible and realistic with respect to **complexity, difficulty, flexible and reasonable time lines, resources, and technology**. Some types of resources that may be needed include workstations with appropriate software; data; procedures; equipment such as scanners, digital cameras, GPS units and printers; physical space for doing the work; transportation to field sites; and training materials. Other considerations that may arise may include intellectual property rights and ownership of data; privacy of data; child labor laws; parental permission requirements; union concerns. If the project as originally conceived is not feasible, alternatives should be discussed between the parties involved. The following are some guidelines the W/SA teams have found to be desirable when defining projects involving schools and students.
- **Keep the specifications stable.** It is common for client organizations to need changes in the project as it goes along, due to new understandings of what is possible or due to changing circumstances in the client

organization. For a school project to be successful, however, it is important to keep the specifications stable.

- **Start with a prototype or “demo” for a deliverable rather than a full operational system.**
- **Break large projects into smaller deliverables.** It is often possible to identify within a large project the client has in mind, a smaller subset that is appropriate for students to work on.
- **Assess Client/Partner Organization Needs and Expectations.** Ensure that the client/partner organization has realistic expectations about the project, and is willing to participate in a learning process along with the school, students, and teacher.
- **Negotiate a contract or memorandum of understanding with the Client/Partner Organization.** Some schools and school districts prefer that a fairly informal agreement or memorandum of understanding be used, while others engage in formal contracts. A sample contract appears in *Appendix B, Sample Contract – Central Bank*. Whether the agreement is formal or informal, all involved parties should be involved in negotiation, including executives/managers from the client organization, teachers to be involved, technical support personnel, the school principal, and in some cases representatives from the school board. Refer to school board policy to determine who is authorized to sign the contract. A formal contract should include (but is not limited to) the following information
 - Purpose of contract.
 - Description of purpose of project, services to be provided, deliverables, and end product.
 - Acceptance criteria for services and end product.
 - Communication schedule (individual contacts and frequency of communication).
 - Compensation levels and schedule and method of payment.
 - Level of technical or training support offered by client/partner organization.
 - Data or resources to be furnished by both parties.

- Provisions for lateness of deliverables.
- Confidentiality agreements (for data and information provided by the client).
- Indemnification clauses.
- Notice of material changes clause.
- Provisions for termination of the contract.
- Compliance with laws clause.
- Authorization clause.
- **Document Initial Project Objectives and Scope.** To complete this component, a general description of objectives for the project must be defined. This includes a deadline, potential problems that may be encountered, quality expectations, and, if possible, a budget. This provides a general idea of the size and scope of the project, which is crucial to the formation of a team and the planning phase. This information should be included in the contract.
- **Assign a Project Manager.** If a project manager (likely the teacher who will be executing the project in his/her class) has not already been assigned, he or she must be at this time. As well, the authority and responsibilities of the project manager must be defined.
- **Form Project Team.** The project manager must determine the types of individuals that are required for the team, and how many of each. In the case of WSA/GIS, the teacher will likely act as project manager, and students will make up the bulk of the project team. In addition, individuals who will provide technological support and/or training for the project must be identified. In many cases a subject-matter expert is also needed on the team.

Planning Stage

During the Planning stage, the project manager performs detailed planning of all aspects of the project. This stage mainly focuses on the creation of a project plan. Project management software, if available, should be used to facilitate the development of timelines and documentation. Components of this stage are:

- **Develop a Team Charter.** A charter is a document prepared by the entire project team defining their mission, goals, objectives, scope, assumptions and constraints. It is a tool to promote team building and ownership of the project. Charters are considered essential to the success of a team's efforts in working cooperatively. As a project manager, a teacher involved in WSA/GIS should consider creating a team charter with the class, and displaying it in a visible place in the classroom.
- **Develop the Project Plan.** The project plan should be completed prior to the execution phase the project. It should be shared with the client and team members. A sample of a project plan appears in *Appendix C, Sample Project Plan (Abbreviated) – Central Bank*. Supporting documentation, such as timelines, baseline, and work breakdown structure, should be produced to supplement the plan. This information should be distributed to all relevant parties, and posted in the classroom for student reference.
- **Define the Scope.** Scope definition involves sizing a project through before breaking it down into very detailed tasks. To some degree, scope definition should have been established in the start-up stage. It should be reiterated in detail in the project plan. Four types of scope are usually assessed in detail.
 - **Technical** - Defining the level of technology needed to complete the project, and identifying any gaps.
 - **Work** - What sorts of work the team will produce.
 - **Deliverables** - Outcomes that take place during the course of the project.
 - **Milestones** - Deliverables that are measured and/or tested to give the team feedback.
- **Define the Tasks.** Using the scope definition as a guide, establish a detailed list of tasks to guide the process. To assist in task definition, use *Appendix E, Project Task Sheet* to brainstorm a list. The outcome of task definition is a work breakdown structure (WBS), or a chart that organizes, defines, and graphically displays the total work for the project. The WBS justifies each step, and ensures that it is necessary and cost-effective to the final outcome. Some important tasks common to most WSA/GIS project include:
 - Collecting and assessing the quality and relevance of available data.
 - Creating a data model.

- Converting and pre-processing data.
- Synthesizing data into ArcView or other GIS software.
- Performing analyses of the data.
- Interpretation of results of data analysis.
- Making recommendations to client.
- Creating a presentation.
- Delivering the presentation to client.
- **Define the classroom team structure in relation to the tasks.** This is a critical step for the classroom teacher who is managing a project. The overall project and its tasks need to be structured in some logical manner that corresponds to the way the student teams will be organized. The project may be subdivided by geographic areas, by subject-matter, or by function.
 - **Geographic breakdown.** For instance, a study of historic buildings in a city may be broken down into neighborhoods, with each student team responsible for one neighborhood.
 - **Subject-matter breakdown.** For instance, the Parks and Recreation Facilities project was broken down into different types of parks, with each student team responsible for a particular type of park or recreation facility. (See W/SA Case Study: Parks and Recreation).
 - **Functional breakdown.** The project tasks may be grouped into functional groupings, such as data collection; digitizing source data; spatial analysis; and designing a presentation or end product. Each team is responsible for specializing in a particular function and developing expertise in that area.
- **Task Sequencing.** Task sequencing involves arranging all the tasks from the WBS in a logical order, and linking them to establish dependencies and constraints. This is most efficiently performed using project management software. Arranging and linking tasks correctly will ease the tracking process during phase three. It is useful to design the tasks in such a way as to minimize dependence of one task on another.

- **Duration Estimating.** Duration estimation builds on task sequencing. The length it will take to complete each task is determined, generally by those who will be completing the work. Accuracy is very important. Take into account the school calendar, possible snow days, etc. in planning the duration of a task.
- **Project Scheduling.** This is the process of converting the WBS to an operating timetable based on the constraints determined in the previous three steps. Generally, project managers use software to perform this task. Results are depicted using a visual-scheduling tool such as a Gantt chart or simple flowchart, which can be generated using project management software.
- **Resource and Cost Estimating.** Resources, including human, technological, and physical resources, are allocated to each task in the WBS. From this, costs are estimated. Again, project management software assists in this process.
- **Resource and Cost Budgeting.** Five main budgets are created during this stage: responsibility budget, labor budget, technology budget, equipment budget, and space budget. The sum of these budgets creates the project budget. If the project budget is not consistent with what a customer is willing to pay, adjustments must be made by either the customer or the project manager.
- **Risk Management Plan.** Project managers generally assess levels of three types of risk for each project: technical; schedule; and cost. Risks are identified, analyzed, and assigned to the team members who can best minimize them. The project manager must take steps to reduce or avoid risks. For example, a teacher should consider how to deal with the possible of school closures during winter months as a result of inclement weather. This information is documented for all parties.
- **Project Quality Plan.** The project manager must identify both the level of quality required in the final outcome, and how the quality will be tested and assured. This information should be available through the contract with the partner/client organization.
- **Project Communication Plan.** This plan first identifies what items will be communicated, and how often. Information should be distributed to the partner/client organization, to students, and possible to school or school board administrators. Additional documentation, such as schedules, might

need to be distributed. Second, this plan identifies who will receive this information. Mailing and e-mail address lists are prepared in this plan.

- **Student Evaluation Plan.** Students as individuals and teams need to know how they will be evaluated for their learning and work on the project, and what evidence they need to assemble concerning their activities and progress. One way to do this is to establish a list of items that each student and team should keep in their project portfolio, and a rubric for evaluating the quality of each item.
- **Establishing a Project Baseline.** A baseline is simply a snapshot of the project against which a project manager can compare changes as progress is made toward completion. This is automatically generated by project management software.

Execution and Control Stage

Project execution consists of overseeing the project as the project team is completing it. Project control involves monitoring all aspects of the project throughout its execution. It includes documenting task completions, and making necessary changes. Components of this stage are:

- **Managing the process** until the project is complete. This can be tracked using project management software or manually against a Gantt chart.
- **Making necessary changes** to the project, tasks or schedule as they arise.
- **Tracking completion** of tasks and milestones on charts.
- **Reporting on the status** of completion to all appropriate parties. For some projects this involves submitting milestones to the client as deliverables and obtaining feedback before proceeding further.

Close-Out Stage

The final stage of the project management process, project close-out involves "wrapping up" all aspects of the project. Outcomes and processes are assessed and documented. Student work, both individual and teams, is evaluated. Recommendations are made for future projects. *Appendix F, Project Evaluation Sheet*, can be used to assist WSA/GIS project managers in leading discussions with parties and obtaining feedback. Information gathered can be synthesized into one document and presented as closing reporting. Components of the project close-out are:

- **Obtaining feedback** from all parties.
- **Assessing the quality** of the outcome against the required level established during planning.
- **Preparing post-implementation documentation.**
- **Making and critiquing student presentations**
- **Evaluating student portfolios**
- **Formal closing activities/ceremonies.**
- **Making written recommendations for future projects.**

Factors Affecting Project Success

The following are some of the project management factors that have been found to contribute to success of projects.

- | | |
|--|---|
| • thorough definition of objectives and outcomes | • early identification of changes |
| • use of appropriate data | • strong sense of teamwork |
| • appropriate scheduling | • participation of all members in decisions |
| • resource allocation | • clear understanding of roles and responsibilities |

Factors Affecting Project Failure

The following are some of the project management factors that contribute to lack of success of projects:

- poor project management skills
- poor project proposals
- unclear objectives
- inappropriate or poorly specified data model
- insufficient or over-committed resources
- poor tracking of progress
- lack of user commitments
- unclear roles and responsibilities
- poor communication
- decision makers not part of the team
- schedule not followed
- not enough fun
- unclear mandates
- lack of institutional commitment and support

2. Project Management Software Applications

Many major software manufacturers have developed software programs specifically designed to assist project managers. These programs combine features of word processor, spreadsheet, and database to ease the organization and tracking process for project managers. All the elements of the project management programs are linked, so that information entered is transferred into a variety of documents, including calendars, financial reports and schedules.

Advantages and Disadvantages of Project Management Software

The main advantage to using project management software is that it eases the complex organization process of a project. Projects are made up of numerous tasks, many of which are inter-related. The software allows a project manager to input these tasks, and the computer is then able to organize them into schedules, budgets, and reports. Tied to that, project management software provides the benefit of a system that records, stores, and recalls all details of a project in one place. This is useful throughout the duration of the project, and also serves as a historical record once the project is complete. Once project information is inputted into the program, the software acts as a tool to analyze information in various ways. Finally, project manager software assists a project manager by easing the communication of progress to other parties through reporting features, data sharing and e-mail.

There are two main disadvantages of project management software. First, in order to benefit from project management software, the user must have an understanding of the project management methodology and vocabulary. Most project management software packages rely on this as a prerequisite. Unless the user follows basic planning and task definition steps, the software will not be of any benefit, and may, in fact, complicate the project.

Second, the information that a project manager inputs into the software is likely to change throughout the course of the project. Reports and analyses produced by the software are based on the data entered in the planning phase. As problems occur and things do not go as planned, the information stored in the software is no longer valid. Consequently, a project manager using software must enter any changes into the computer as they occur, and re-generate analyses and reports. Some project managers feel that this adds to their workload, and outweighs the benefits of the software.

Exercises in Using Microsoft Project

The following hands-on exercises will take you through the project planning for an example project. Microsoft Project was selected for this W/SA project management unit because it is among the most widely used project management software programs. It is accessible to most people, and is considered to be the easiest program to use. Because it is a Windows based application, the basic features of the program are intuitive for most Windows users.

Scenario for Example Project Central Bank and Newtonbrook Secondary School

Background

Newtonbrook Secondary School approached Central Bank's Personal and Commercial Financial Services (PCFS) Division to establish a WSA/GIS partnership.

Newtonbrook is a high school with a population of approximately 2,000 students. As a semestered school, classes meet daily for 70-minute periods for five months. Semester one begins in September, and ends in January. Semester two begins in February and ends in June. The school has an established technology program in which ArcView GIS has been delivered as a part of the geography curriculum for several years. Newtonbrook hopes to expand the use of GIS as a part of the WSA/GIS program. Partnering with Central Bank would allow them to deliver authentic, project-based learning in senior level marketing courses.

Located in the same community as Newtonbrook is Central Bank's head office. Central Bank is a major financial institution in the region, with over two million customers. Prior to commencing discussions between the two organizations, it was established that both use ArcView GIS, ensuring that files exchanged between the two organizations would be compatible.

Central Bank had recently established a *Consumer Knowledge Data Base* (CKDB), which tracks customer information. This database was constructed to describe customer behaviors at the "household" level, while integrating this information with demographic and psychographic information already available. By plugging CKDB information into ArcView GIS, Central Bank is able to assess complex customer information, and make informed strategic business decisions.

A presentation was made to Central Bank (see Appendix A, Sample Presentation – Central Bank), resulting in a verbal agreement to proceed with a partnership. A contract was subsequently negotiated and accepted by both parties (see Appendix B, Sample Contract – Central Bank) which lead to the preparation of an initial project plan (see Appendix C, Sample Project Plan (Abbreviated) – Central Bank). Though Central Bank has not yet provided specific Business Cases for Newtonbrook to work on, they anticipate a scenario such as:

Central Bank wishes to increase the level of "100% banking relationships" with customers in the Willowdale community. Based on the data available, who are the customers that should be targeted? Generate a mailing list based on the criteria of partial banking relationships. Analyze the banking behaviors of those targeted. What do they have in common? How could a direct mail campaign be crafted to address those behaviors?

Central Bank would provide background information about banking behavior, as well as the appropriate data sets, codes, etc. to support Newtonbrook's work on this initiative.

Challenge

1. Using the information provided in the appendices, create a detailed task sheet (use Appendix E as a guide) to support this project. Each milestone should be broken down into detailed tasks. For tasks assigned to student, simply call them "Student 1," "Student 2," etc. Remember to include tasks for the close-out stage of the project as well as during execution.
2. Following the steps below, create an electronic project plan using Microsoft Project. You will be required to use many of the software's features, and create several reports.

Exercises

2.1 Getting Started with Microsoft Project

In this exercise you will use the information from the sample project scenario shown above, and related supporting materials in Chapter 3 of this Project Management unit. You will create a new Project and enter a set of tasks for the project.

Step 1. List all the tasks in the sample project

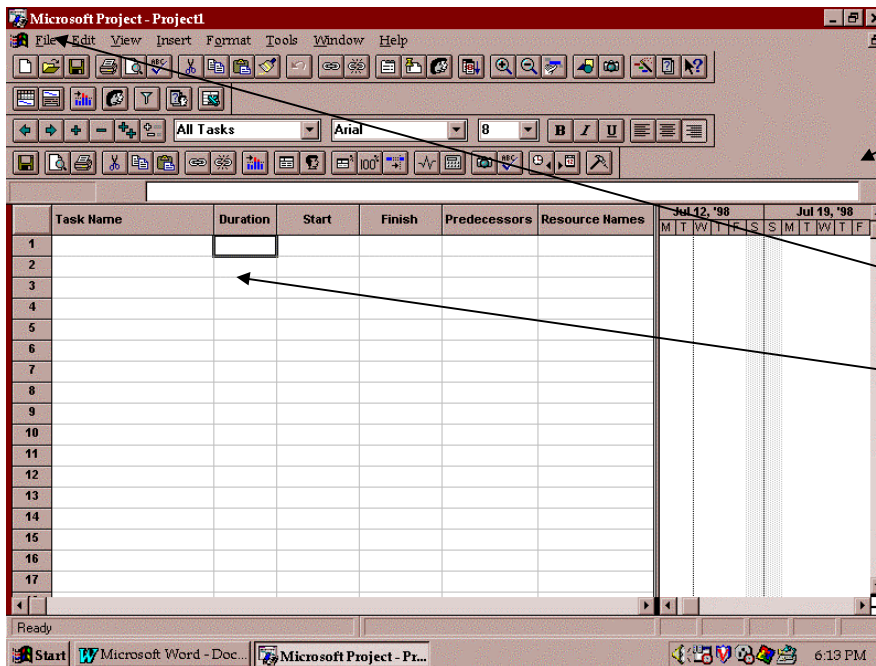
On paper or whiteboard, work with a small group to make a list of all tasks for this project and assign them to individuals (use Appendix D, Project Overview Sheet, and Appendix E, Project Task Sheet as guides).

Step 2. Open MS Project on your Computer

- As soon Microsoft Project is opened, the "Welcome to Microsoft Project" dialogue box appears.
- Close the "Welcome to Microsoft Project" dialogue box since you will be creating a new project. The MS Project default screen appears.

Step 3. Understanding the Default Screen

- Make the following observations about the MS Project screen. When starting a new project, the MS Project default screen that first appears is known as "Gantt Chart" in the View menu.
- Drag with the mouse to move the line that separates the **Gantt Chart** from the **Entry Table**.
- The left side of the screen is the **Entry Table**. It functions like a spreadsheet. Data is entered into the cells, and is linked to the Gantt Chart, which is automatically updated.
- The **Entry Table** will provide a detailed list of every task associated with a project. Dependencies and links are also entered into this table. The **Gantt Chart** provides a visual representation of the overall project schedule that is based on the information entered into the **Entry Table**.

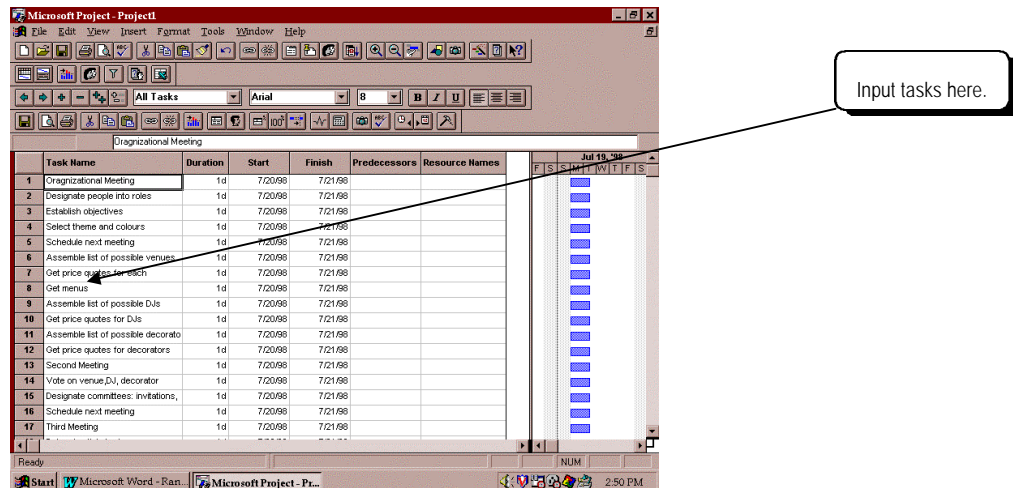


Step 4. Input the start and end dates for the project in the Project Information window

- From the **Project** menu, select **Project Information**. The project information screen appears.
- Take a few moments to familiarize yourself with the buttons on the toolbar for MS Project.

Step 5. Enter the Tasks into the Entry Table

- Type each of your task names into **Task Name** column, sequentially if possible.
- If a task is missed, you can add a line by going to **Insert/Insert Task**. The computer will automatically default to a duration of 1 day, starting on the project start date that was entered in the **Project Information** window.



Step 6. Define attributes of the tasks.

- Select the cell by clicking or tabbing.
- Type in the correct information.
- Press **<enter>**.

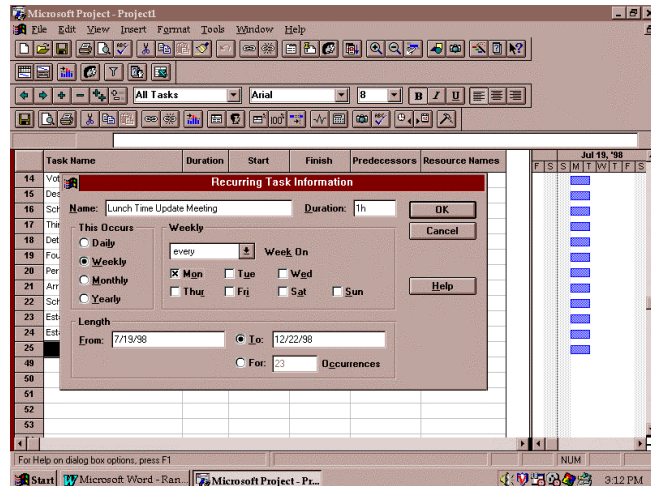
For instance, to change task duration from 1d to 5h, select that cell, type "5h" and press enter. Adding special columns through **Insert/Insert Column** can customize the table.

As changes are made, the **Gantt Chart** is automatically updated.

Step 7. Create a recurring task.

Recurring tasks (such as weekly meetings) can be set, so that the user only has to define the attributes of the task once. This is accomplished by performing the following steps when setting that task the first time it is listed.

- Click **Insert/Recurring Task**. A dialogue box will appear,
- Set the attributes of your task.
- Click **OK**. The task will be placed into the entry table in the frequency identified. The task name will only be shown once, while each individual task is "hidden" (this will be discussed in subsequent sections).



2.2 Outlining and Linking Tasks

In this exercise you will learn the concepts of Outline and Link; perform these functions on the tasks you entered in Exercise 2.1, and view the Gantt Chart.

Outlining is an MS Project term that refers to the ability to indent and outdent tasks to form a hierarchy that illustrates which tasks are subordinate to each other. A **summary task** is one that is comprised of many small (or subordinate) tasks. In the entry table, it is shown as a subtitle. The completion of a summary task is dependent upon the completion of its **subtasks** (those subordinate to it on the hierarchy). Therefore, MS Project will not allow users to set durations on summary tasks.

MS Project allows you to have several levels of summary and subtasks. Subtasks must appear directly beneath the summary task to which they are linked.

Step 1. Outline your task list

- Select a group of subtasks.
- Click on the **indent** button (arrow pointing right).

If a second level of subtasks are in the way of this procedure, hide them by selecting the group, then click on the "-" button. They can be revealed by clicking on the "+" button.

This will take a bit of practice to master, and a clear understanding of how the tasks on an individual project are connected.

Step 2. Create Links

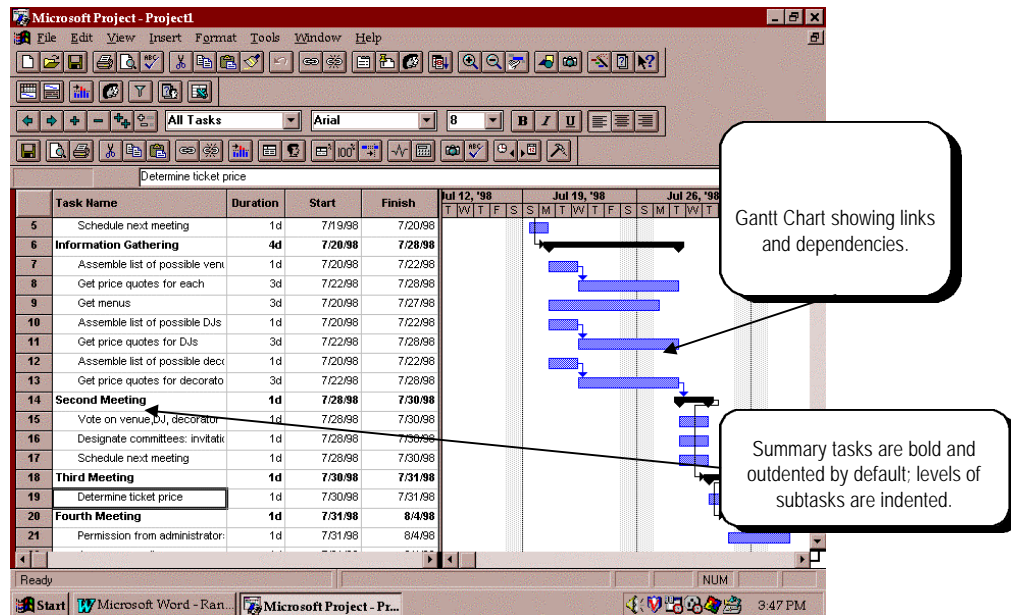
Once tasks are outlined, the next logical step is to create **links** where appropriate. A link is a type of dependency or relationship between two tasks, where the start of one task is dependent upon the completion of another. Linking the task list will result in significant changes to the **Gantt Chart**. In particular, the schedule will visibly spread out based on the durations identified. As well, arrows appear to show which are linked.

- Select an entire group of tasks to be linked.
- Click the **link** button.

Start by linking the lowest level of subtasks. Next, hide those groups of subtasks using the "-" button. Link the next level of tasks. Continue linking and hiding until the project is finished. Hidden tasks can be revealed by selecting all remaining tasks, and clicking on the "++" button.

The default link is known as a "finish-to-start" (FS) link, meaning that once the first task is finished, the next linked task starts. MS Project is able to create more complex links by double clicking on the link line in the Gantt Chart. Other types of dependencies available are finish-to-finish (FF), start-to-start (SS), and start-to-finish (SF).

Additionally, MS Project allows users to create constraints, lags, and leads to tasks. These will not be discussed in this chapter.



Step 3. View and adjust the Gantt Chart

Observe the changes in the **Gantt Chart** that result from your outlining and linking of tasks. To make adjustments in the appearance of the chart:

- Double click on any bar in the **Gantt Chart**. The dialogue window appears.
- Alter the default.
- To Change text attributes in the **Entry Table**, select the cells that require changes, then either use the button bar or the **Format/Text** feature.

2.3 Managing Resources

The **resource sheet** provides users with a detailed list of all the resources to be used in the project.

Step 1: View the Resource Sheet

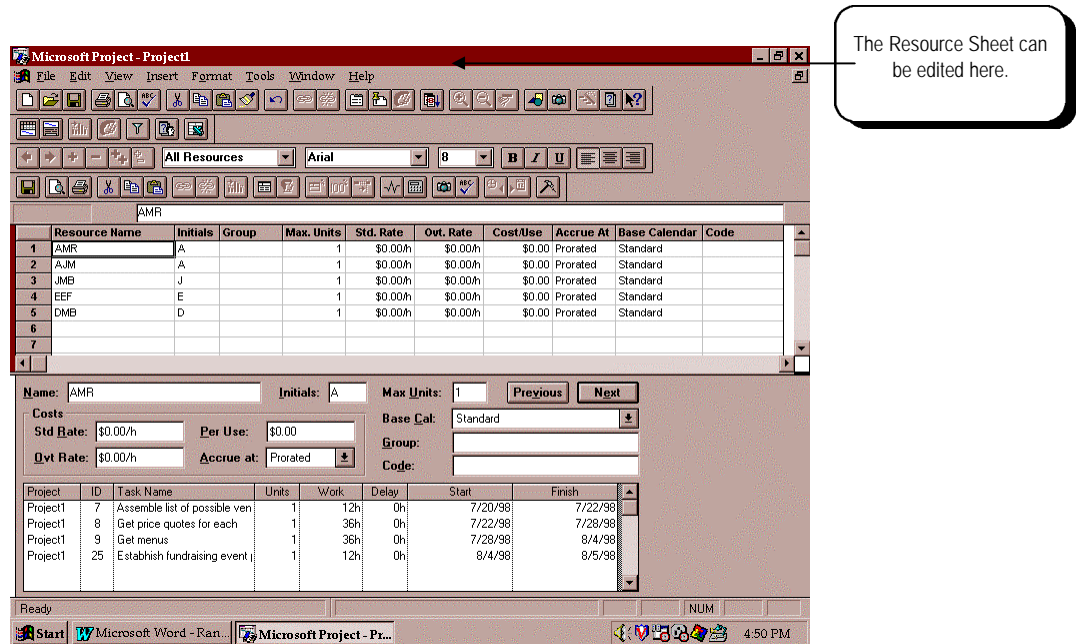
- Select **Resource Sheet** from the **View** menu. The Resource Sheet appears.

Step 2: Update the Resource Sheet

Use the example project materials to enter all of the resources for the project.

These include: human resources, consultants, equipment, departments, space, meeting rooms, materials, and so on. MS Project automatically adds some

resources to the resource sheet as they are added to the **Entry Table**. By clicking on **Window/Split**, you can view and update the details of a selected individual resource.



Step 3. Create Milestones

As defined earlier, milestones are deliverables that are measured and/or tested to give the project team feedback. In MS Project, a milestone is a task with zero duration that acts as a marker for the beginning or end of something. For instance, "banquet hall reserved" may be a milestone for a school prom project. More commonly, milestones have titles like "Phase 1 Complete". Because it is a marker, MS Project will not allow the user to input a duration for a milestone. Similarly, milestones do not have resources, costs or any other characteristics common to tasks. A milestone appears on the Gantt Chart in the form of a solid diamond-shape with a date next to it.

- Type the title of a milestone into the **Entry Table** in the task column
- Enter the duration as "0d". MS Project will automatically update the remainder of your file.

Step 4. View the WBS

WBS (Work Breakdown Structure) is defined in MS Project as "a hierarchical structure used to organize tasks for reporting schedules and tracking costs." MS Project automatically codes each task, giving the user the option of re-coding with a unique system. To view the WBS or to change codes, click on the information button on the toolbar .

Step 5. Observe and print Views

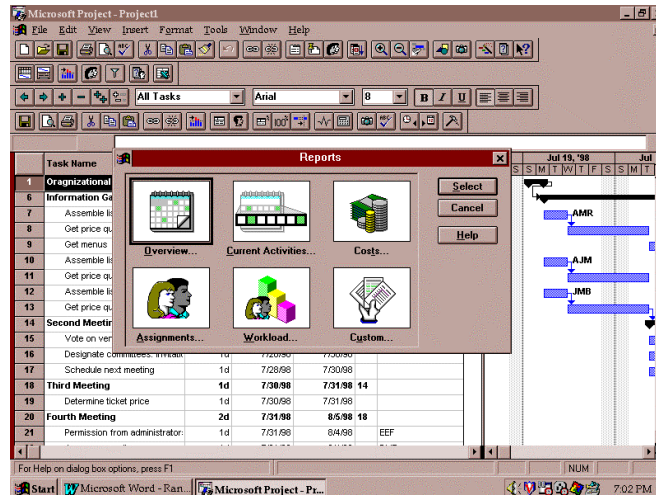
MS Project provides project managers with a multitude of ways to view various aspects of a project. The left-hand side of the screen should provide a series of buttons that can be clicked to provide a specific view. Alternately, using the View menu, the user selects different page and information layouts. By choosing the **More Views** option, additional views can be selected. The default view (which contains the Entry Table) is called the **Gantt Chart** in the **View** menu. View and print each of the following for your example project:

- Calendar - shows the tasks in date boxes similar to a standard calendar. The scale of the calendar can be changed by using the zoom-in and zoom-out icons. Double click on any day, and view or change information details.
- PERT (Project Evaluation and Review Technique) Chart - a network diagram with boxes that represent tasks, and lines between to indicate relationships. It can be used for task entry (instead of the Entry Table) or to edit task information.
- Task Form - reviews tasks with associated resources. It is used to show current status in hours and comparisons with baseline.
- Task Detail Form - very useful for editing single tasks.
- Resource Form - a table that shows each resource with details that may be edited. It is useful if adjustments need to be made for one specific resource.
- Resource Graph - a graph that shows resource information and usage over time. It is very useful in allocating human resources, and notifies the user what resources are over-allocated.
- Resource Usage - a table listing the usage of each resource. It is helpful in analyzing the volume of use assigned to one resource over time.

Step 6. Generate reports

In addition to tables and graphic views of project attributes, MS Project will generate reports for the user based on the data contained in the file.

- Select **Reports** from the **View** menu. This will bring up the Reports dialogue box.



The six categories of reports are: Overview, Current Activities, Costs, Assignments, Workloads, and Custom. Each category allows you a multitude of template options. The custom option allows you to change any of the other reports or create your own. Table 2.1 illustrates the reports available in each category.

Table 2.1: Reports by Category

Overview	Current Activities	Costs	Assignments	Workloads
Project Summary	Unstarted Tasks	Weekly Cash Flow	Who Does What	Task Usage
Top-level Tasks	Tasks Starting Soon	Budget	Who Does What When	Resource Usage
Critical Tasks	Tasks in Progress	Overbudget Tasks	Weekly To-Do List	
Milestones	Completed Tasks	Overbudget Resources	Overallocated Resources	
Working Days	Should Have Started Tasks	Earned Value		
	Slipping Tasks			

- Generate any two reports of your choice.

2.4 Analyzing and Tracking the Critical Path

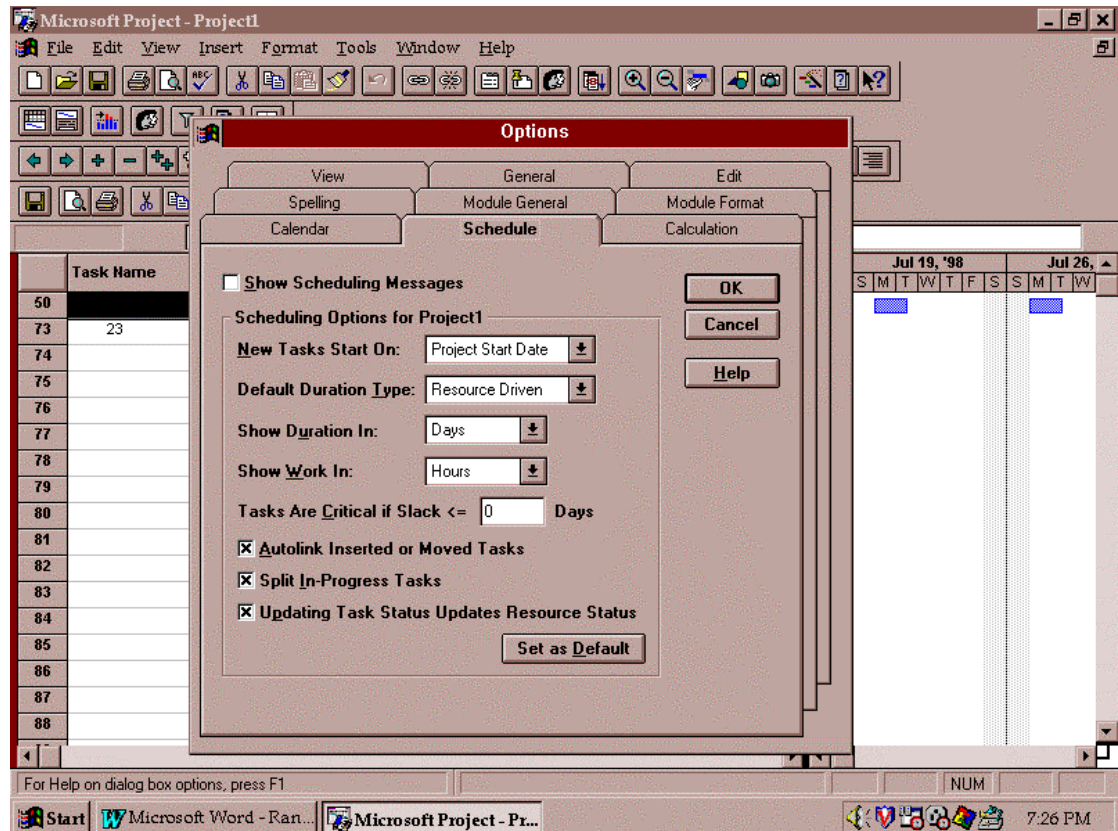
CPM (Critical Path Management) is a management technique that requires a manager to identify which tasks are critical a project's successful completion. Through a complex mathematical formula, MS Project analyzes the difference between the time frame you have set for a project, and the project duration as calculated from the sum of all tasks. If a significant difference exists, the program isolates all tasks that cannot be delayed because of their relationship to other tasks. This string of tasks directly affect prompt completion of project. They are considered to be the critical path.

MS Project sets the critical path automatically as the user enters project information.

Step 1. View and modify the critical path

- Click the **Gantt Chart Wizard** button to view the critical path.
- Menu select **Tools/Options/Schedule**.

- Set a day limit under "Tasks are critical if slack <=".
- Click **OK**. The critical path will be updated.

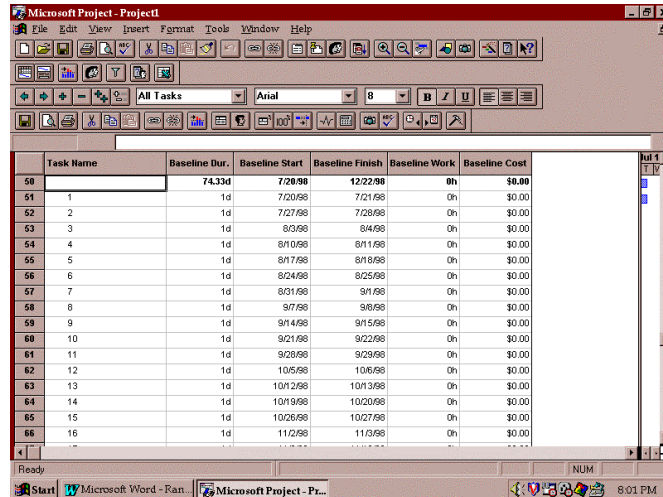


Step 2. View the baseline for the project.

Tracking refers to monitoring the project as in progresses. Before tracking can begin, a baseline must be established. A **baseline** is the project plan against which project progress is measured. Therefore, all relevant information with respect to tasks, schedules, and resources must be inputted correctly and verified prior to baseline creation. Once a baseline is created, it cannot be easily changed.

- Activate the **Gantt Chart** view (or any task view).
- Select menus for **Tools/Tracking/Save Baseline** to activate the baseline dialogue box.

- Activate **The Save Baseline** and **Entire Project** radial buttons.
- Click **OK**; the baseline is set and saved.
- Select **View/Tables/More Tables/Baseline** to view the Baseline.



Task Name	Baseline Dur.	Baseline Start	Baseline Finish	Baseline Work	Baseline Cost
50	74.33d	7/28/98	12/22/98	0h	\$8.00
51 1	1d	7/20/98	7/21/98	0h	\$0.00
52 2	1d	7/27/98	7/28/98	0h	\$0.00
53 3	1d	8/3/98	8/4/98	0h	\$0.00
54 4	1d	8/10/98	8/11/98	0h	\$0.00
55 5	1d	8/17/98	8/18/98	0h	\$0.00
56 6	1d	8/24/98	8/25/98	0h	\$0.00
57 7	1d	8/31/98	9/1/98	0h	\$0.00
58 8	1d	9/7/98	9/8/98	0h	\$0.00
59 9	1d	9/14/98	9/15/98	0h	\$0.00
60 10	1d	9/21/98	9/22/98	0h	\$0.00
61 11	1d	9/28/98	9/29/98	0h	\$0.00
62 12	1d	10/5/98	10/6/98	0h	\$0.00
63 13	1d	10/12/98	10/13/98	0h	\$0.00
64 14	1d	10/19/98	10/20/98	0h	\$0.00
65 15	1d	10/26/98	10/27/98	0h	\$0.00
66 16	1d	11/2/98	11/3/98	0h	\$0.00

Step 3. Update status of tasks

The project is tracked against baseline information. Consequently, information must be collected regularly to update the status of all tasks currently active in the schedule. Generally, the types of tracking information entered are: actual start, actual finish, percent completed, revised duration, actual work, and actual costs.

- In the **Task Sheet View**, select a task to be updated.
- Click the **Update Tasks** button.
- Type the update information for the task.

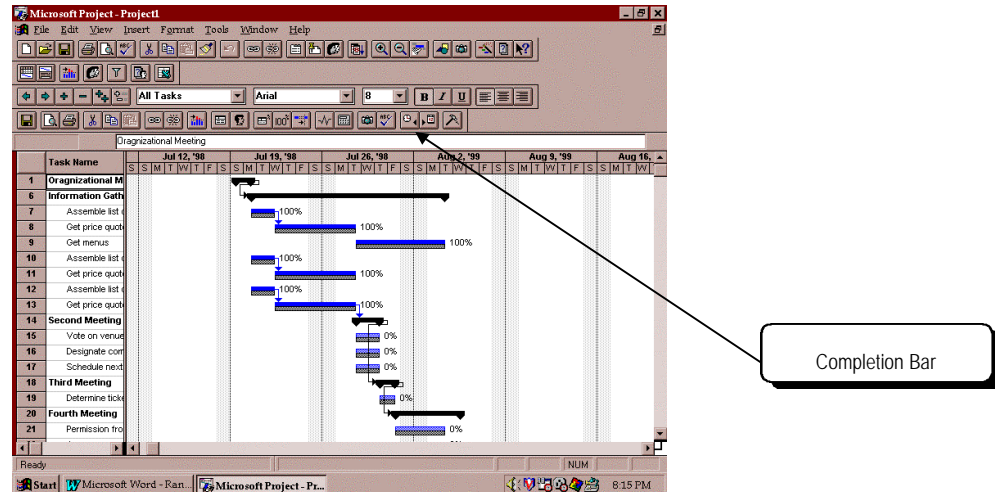
Step 4. Update resources

- In the **Resource Sheet View**, select a resource to be updated.
- Click the **Update Resources** button.

- Type the update information for the resource.

Step 5. View the Tracking Gantt Chart

Task progress is summarized in the **Tracking Gantt Chart** view. It adds a completion bar (which is a thick black bar) and the percentage of each task completed, making it easy to see the relative completion rate at a glance.



Summary

Through the exercises in this chapter you have had an opportunity to try out some of the functions of Microsoft Project, a commonly used project management software package. You have created a list of project tasks for an example project scenario and assigned resources to the tasks. You have viewed the Gantt chart, observed and modified the critical path, and generated reports. You have updated the project file to reflect example progress on some tasks. Through these activities you have become familiar with some of the basic concepts used in project management and are now in a position to evaluate whether such software tools would be useful to you in managing your next project.

3. References and Resources

This chapter contains general references on project management, a set of resource materials related to the example Project, and worksheets you can use in your own project planning.

References on Project Management

Cattaneo, Julian, and others. *Management for Productivity*. Toronto: John Wiley & Sons, 1988.

Fast Company Magazine. *Fast Company Online Archives*. Available: www.fastcompany.com, 1998.

Fosberg, Kevin, Hal Mooz and Howard Cotterman. *Visualizing Project Management*. New York: John Wiley & Sons, 1996.

Heck, Mike. "Project Management." *PC World Magazine*. October 1997. Available: www.pcworld.com/software/

Kayser, Thomas A. *Mining Group Gold*. El Segundo, CA: Serif Publishing, 1990.

King, Nelson. *Teach Yourself Microsoft Project for Windows 95*. New York: MIS Press, 1996.

McKay, Matthew, Martha Davis and Patrick Flanning. *Messages: The Communication Skills Book*. Oakland, CA: New Harbinger Publications, 1983.

Norton, Robert. *Communicator Style*. Beverly Hills, CA: Sage Publications, 1983.

"Project Management - Forty Years Young and Still Looking for a Philosophy." *Project Manager Today*. Available: www.projectnet.co.uk/pm/pmt/, 1996.

Sandia National Laboratories. *Project Management Guidelines Handbook*. Available: www.ca.sandia.gov/pubs/PMGHhome, 1996.

Situation Management Systems Inc. *Positive Power and Influence Program*, 4th ed. Hanover, MA: Situation Management Systems Inc., 1996.

Thomsett, Michael C. *The Little Black Book of Project Management*. New York: American Management Association, 1990.

Van Fleet, David. *Contemporary Management*. Boston: Houghton Mifflin Company, 1988.

Willcocks, Graham and Steve Morris. *Successful Team Building*. New York: Barron's, 1997.

Internet Resources

Directory of Project Management Resources	www.synapse.net/~today/PMForum/specint.htm#FRAME
International Journal of Project Management	www.elsevier.nl/estoc/publications/store/3/02637863
International Research Network on Organizing by Projects	www.fek.umu.se.irnop
Project Management Centre	www.infogoal.com/pmc/pmchome
Project Management Forum	www.pmforum.org
Project Management Institute	www.pmi.org
Project Management Journal	www.pmi.org/publictn/project_management_journal.htm
Project Manager Today	www.projectnet.co.uk/pm/pmt
Scandinavian Journal of Management	www.elsevier.nl/estoc/publications/store/1/09565221/SZ955825.shtml

Appendix A

Example Project Proposal Presentation

**Slides
1 & 2**

GIS Partnership Proposal

**A presentation by
Newtonbrook Secondary School
for
Central Bank, PCFS Division**

Newtonbrook Secondary School

- Student body of nearly 2,000
- Relies on inquiry, investigation and problem-solving fostered through project-based learning
- Technological emphasis in all courses

**Slide
s 3
& 4**

Success Stories

- GIS partnerships between schools and businesses have resulted in mutual benefit
- Students have been highly successful in solving complex research problems

GIS Overview

- GIS software maps behavioral, demographic and sociographic data sets
- Facilitates problem-solving and research
- ESRI ArcView GIS package used by both PCFS and Newtonbrook

**Slide
s 5
& 6**

Partnership Possibilities

- By combining our resources, Newtonbrook School and Central Bank can both benefit:
 - Central Bank's PCFS division will receive assistance in research and reporting
 - Newtonbrook will receive data sets and authentic learning problems

Central Bank Involvement

Central Bank can help Newtonbrook meet its objectives by:

- Providing authentic research problems faced by PCFS
- Providing data sets that represent customer behavior and demographic information from the Bank's *Customer Knowledge Data Base*

**Slide
s 7
& 8**

Objectives of GIS Learning

Students will be able to:

- apply critical thinking skills to solve problems
- participate in "authentic learning" projects, enabling use of multi-disciplinary knowledge to meet research objectives
- acquire client-service and presentation skills

Value Proposition

In exchange, Central Bank will receive:

- Solutions to research and marketing problems
- Positive public relations
- Potential employees trained to use the latest GIS technology and familiar with Central Bank's operations

**Slide
s 9
& 10**

In addition, Newtonbrook will:

- Customize the Marketing course to Central Bank's PCFS, generating useful student projects such as:
 - detailed competitive intelligence reporting
 - research on trends in financial services
 - compilations of financial services industry advertising tactics
 - small-scale primary research projects

Critical Path

- Joint project planning to take place in June
- Classes begin September 8
- Data sets required by mid-July
- Research questions required in early September
- Results of research compiled and presented to Central Bank between October and January

**Slide
s 11
& 12**

Implementation of GIS

- Proposed for September
- To be used in senior level courses to enhance curriculum in urban geography and marketing
- Expansion into computer studies, mathematics, and science in the future

Conclusion

- This is an exciting opportunity for students to work with the latest technology in authentic situations while helping Central Bank meet organizational objectives
- Based on previous models, the potential for mutual benefits is great
- We look forward to further discussion about a GIS partnership with PCFS

Appendix B

Example Project Contract

THIS CONTRACT IS ENTERED INTO ON _____ BETWEEN CENTRAL BANK'S PERSONAL AND COMMERCIAL FINANCIAL SERVICES DIVISION ("THE BANK") AND NEWTONBROOK SECONDARY SCHOOL, ("THE CONTRACTOR").

1. Purpose

1.01 Central Bank independently develops and operates several departmental computer applications. Appendix I identifies and describes the activities of this Contract that are associated with a geographic mapping application.

In addition to performing internal, department level functions, some of these applications receive data from and/or provide data to other Bank computer applications including: a) Bank-wide, enterprise applications which are mainframe-based and are operated and supported by the Bank's department of Information Processing; b) client/server applications residing on various Bank local area or wide area networks.

2. Engagement of Contractor

2.01 The Bank engages the Contractor and the Contractor agrees to faithfully and diligently perform the services in accordance with the terms and conditions contained in this contract and consistent with the standard of practice in the community.

3. Scope of Service

3.01 The Contractor must perform the services in a satisfactory manner, as determined within the discretion of the Bank.

3.02 In the event there is any dispute between the parties regarding the extent and character of the services to be performed, the interpretation and determination of the Bank governs.

3.03 The services include all conferences and consultations deemed necessary by the Bank to properly and fully perform the services.

4. Services to be Provided

Please refer to Appendix I for a detailed description of the specific services to be provided.

5. Term of Contract

5.01 This Contract begins _____, and ends _____. The Contractor must expediently perform the services to achieve the objectives of this Contract.

6. Data To Be Furnished Contractor

6.01 Upon the request of the Contractor, without charge, the Bank must furnish copies of all information, data, reports, records, etc., That the Bank thinks is necessary to do the services. The

Contractor is entitled to visit Bank offices and key facilities as approved by the Bank, during regular business hours to obtain the necessary data. The Contractor will schedule conferences at convenient times with key administrative personnel of the Bank to gather the information.

7. Personnel

7.01 The Contractor warrants that all employees of the Contractor assigned to the performance of the services are qualified and authorized to perform the services under the state and local laws and governing professional association rules where the employee is employed.

7.02 Each employee must devote the time and professional ability as is necessary to most effectively and efficiently perform the services according to professional standards.

7.03 Whenever an employee assigned to this Contract must be replaced for any reason, the Contractor must supply an acceptable replacement as soon as possible and agrees not to substitute a lower classified employee to perform the services without obtaining prior Bank approval in writing.

7.04 The Contractor may determine employees' daily working hours. When the employees are working in or about a Bank facility, Contractor agrees to adjust its employees' daily working hours to be the same as those worked by Bank employees working at the facility.

8. Administration

8.01 The Contractor must inform the Bank as soon as the following types of conditions become known:

- A. Probable delays or adverse conditions, which do or may materially, prevent the meeting of the objectives of the Contract. The Contractor must accompany this disclosure with a statement or any remedial action taken or contemplated by it; and
- B. Favorable developments or events, which enable meeting, time schedules or goals sooner than anticipated.

9. Compensation

9.01 The Bank agrees to pay the Contractor for the performance of services under his Contract as stated in Appendix I.

This compensation includes all remuneration to which the Contractor may be entitled for performing the services described in Appendix II of this Contract. The Bank will not pay the Contractor for overtime, holiday or other premium charges or benefits. Total dollars paid under the terms of this agreement *shall not exceed \$3,000.00*.

9.02 The Contractor must, upon reasonable notice, be available to participate in any proceeding, whether legal, administrative or otherwise, or in any internal Bank preparatory meetings for the proceeding, in order to assist the Bank in any matter relating to the purpose or outcome of this Contract. The Bank will compensate the Contractor under a separately negotiated agreement for any services rendered pursuant to this section.

10. Method of Payment

10.01 The Bank will pay for the proper performance of the services, commensurate with the progress of the work as evidenced by the timely performance of the services, and after it receives invoices at the end of each month and after Bank has accepted the defined deliverables for that month. The invoices must certify the total cost of the services rendered to the project to date and the cost of all services for that billing period; and must describe the services rendered. If the invoice also requests reimbursement or payment for reimbursable expenses, the appropriate receipts must be attached. The Contractor must sign the invoice and send it to the Bank. This section is limited by the provisions of Section 9 with regard to the amounts payable for performance.

10.02 The Contractor must direct invoices to the attention of the individual specified in the Notice provisions, Section 24.

10.03 The Contractor must submit as part of the invoices, written monthly progress reports indicating the Contractor's activities during the reported month and signed by an authorized officer of the Contractor.

11. Records – Access

11.01 The Contractor must maintain complete books, ledgers, journals, accounts, or records in which it keeps all entries reflecting its operation pursuant to this Contract. The Contractor must keep the records according to federally accepted accounting practices.

11.02 The Contractor must maintain all records for a minimum of 3 years after the Contract's termination and completion.

11.03 The Bank has the right to examine and audit all books, records, documents and other supporting data as the Bank deems necessary of the Contractor, or any subcontractors, or agents rendering services under this Contract, whether direct or indirect, which will permit adequate evaluation of the services or the cost or pricing data submitted by the Contractor. The Contractor must include a similar covenant allowing for Bank audit in any Contract it has with a consultant or agent whose services will be charged directly or indirectly to the Bank. The Bank may delay payment to the Contractor pending the results of any such audit without penalty or interest.

11.04 The Contractor agrees that representatives of the Bank are entitled to make periodic inspections to ascertain that the Contractor is properly performing the services. The inspections may be made at any time during normal business hours of the Contractor. If, in the course of the inspections, the representatives of the Bank should note any deficiencies in the performance of the services of the Contractor, or any other mutually agreed upon performance deficiencies, the alleged deficiencies must be reported promptly to the Contractor, in writing. The Contractor agrees to promptly remedy and correct any reported deficiencies within 10 days of notification by the Bank.

11.05 If, as a result of any audit conducted by or for a Bank, State of Michigan or Federal, agency relating to the Contractor's performance under this Contract, a discrepancy should arise as to the amount of compensation due the Contractor, the Bank may retain the amount of compensation due the Contractor, the Bank may retain the amount of compensation in question from any funds allocated to the Contractor but not yet disbursed under the Contract. Should a deficiency still exist, the Bank may offset such a deficiency against the compensation to be paid the Contractor in any successive or future Contracts between the parties.

12. Relationship of Parties

12.01 The relationship of the Contractor to the Bank is and will continue to be that of an independent Contractor. No liability or benefits, such as workers' compensation or insurance rights, arising out of, or related to a Contract for hire or employer/employee as a result of this Contract. No relationship, other than that of independent Contractor will be implied between the parties, or either party's agent, employee or subcontractor. The Contractor agrees to hold the Bank harmless from any claims, and any related costs or expenses.

13. Insurance

13.01 The Contractor, at its expense, must maintain during the term of this Contract the following insurance:

- A. Professional liability insurance with minimum limits of \$1 million dollars per occurrence and \$1 million dollars aggregate.
- B. Workers' Compensation insurance which meets Michigan statutory requirements.
- C. Comprehensive General Liability Insurance with minimum limits or bodily injury of \$500,000 each person and \$1 million dollars aggregate and with minimum limits for property damage of \$500,000 each occurrence and \$1 million dollars aggregate.
- D. Comprehensive Automobile Liability (including hired and non-owned vehicles) with minimum limits for bodily injury of \$500,000 each person and \$1 million dollars each accident and with minimum limits for property damage of \$500,000 each accident.

13.02 If, during the term of this Contract, changed conditions or other pertinent factors, should in the reasonable judgement of the Bank, render inadequate the insurance limits, the Contractor will furnish on demand such additional coverage as may reasonable be required and available under the circumstances. The insurance must be effected under valid and enforceable policies, issued by recognized, responsible Michigan insurers, which are well rated by national rating organizations.

13.03 Insurance policies must name the Contractor as the insured, and must not be cancelled or materially changed without at least 30 days prior notice from the Contractor to the Bank. The Contractor must submit certificates evidencing the insurance to the risk management division at the time the Contractor executes the Contract, and at least 15 days prior to the expiration dates of expiring policies.

14. Indemnification

14.01 The Contractor agrees to save harmless the Bank against, and from any and all liabilities, obligations, damages, penalties, claims, costs, charges and expenses (including, without limitation, fees and expenses of attorneys, expert witnesses and other consultants) which may be imposed upon, incurred by or asserted against the Bank because of any of the following occurring during the term of this Contract:

- A. Any negligent or tortuous act, error, or omission held in a court of competent jurisdiction to be attributable, in whole or in part to the Contractor, or any of its personnel, employees, consultants, agents, or any entities associated, affiliated, (directly or indirectly) or subsidiary to the Contractor now existing, or to be created, their agents and employees for whose acts any of them might be liable.

- B. Any failure by the Contractor to perform its obligations either implied or expressed under this Contract.

14.02 The Contractor agrees that it is its responsibility and not the responsibility of the Bank to safeguard the property and materials that the employees of the Contractor use in performing this Contract. The Contractor must hold the Bank harmless for costs and expenses resulting from any loss of the property and materials used by its employees pursuant to the performance of the Contractor under this Contract. Contractor is specifically responsible for reimbursing Bank for the loss, theft, or repairs of Bank computer equipment and software loaned by the Bank to Contractor for the performance of work under this Contract.

14.03 The Contractor cannot hold the Bank liable for any personal injury incurred by the employee(s), agents, or consultants of the Contractor while working on this Contract which is not held in a court of competent jurisdiction to be directly attributable to the gross negligence of the Bank or any employee of the Bank acting within the scope of their employment. The Contractor agrees to hold the Bank harmless from any such claim by the Contractor's employees.

14.04 For purposes of the hold-harmless provisions, the term "Bank" includes the Bank of Wayne and all other associated, affiliated, or subsidiary departments or divisions now existing or to be created, their agents and employees.

14.05 This indemnity applies without regards to whether the claim, damage, liability or expense is based on breach of Contract, breach of warranty, negligence, strict inability, or other tort. This indemnity survives delivery and acceptance of services.

15. Bankruptcy or Insolvency

15.01 If the Contractor is adjudicated bankrupt or insolvent, or if a trustee is appointed over the Contractor or any of its property, whether it is a third party or Contractor as debtor-in-possession (referred to as "Contractor" in this Section unless the context clearly requires otherwise) the following rights, obligations and limitations control:

- A. Contractor or any trustee must not assign any or all of its rights, title or interest, in or to this Contract, as this Contract is for the delivery or professional services and related services, as to which the Bank is entitled to insist upon performance solely by the Contractor.
- B. Contractor or any trustee may only assume this Contract if it provides adequate assurance of future performance. Adequate assurance of future performance means proof reasonably satisfactory to the Bank of:
 - (i) Adequate financial capacity to employ or Contract with sufficient personnel to perform the services assigned to the Contractor as provided in this Contract, and to pay for all services Contracted for by the Contractor;
 - (ii) Adequate financial capacity to won, operate, lease or obtain sufficient facilities and supplies to perform the services assigned to the Contractor as provided for in this Contract; and

- (iii) Adequate financial and professional capacity to maintain the professional standard provided in this Contract. The reasonable determination of the Bank as to the adequate professional capacity of the Contractor is determinative.
- C. Because of the unique nature of the services this Contract requires the Contractor to provide, the Contractor agrees that any requests by the Bank that the trustee or it as debtor-in-possession assume or reject this Contract in a shorter time than provided for in 11 USC §365 is reasonable so long as the trustee or Contractor receives no less than 5 business days' notice.
- D. If this Contract is terminated during bankruptcy proceedings or if the trustee or debtor-in-possession or its trustee must cooperate with the Bank in arranging for the orderly transfer of responsibilities to persons or entities as the Bank may designate. The rejection is not effective until the orderly transfer of responsibilities, consistent with sound professional practice, has been completed.

15.02 Although neither party has the right to terminate the Contract merely because the other is adjudicated bankrupt or insolvent or a trustee or a debtor-in-possession is appointed over any parties' property, each party retains all of the other termination rights set forth elsewhere in this Contract during the period of any proceedings under the bankruptcy code.

16. Notice of Material Changes

16.01 The Contractor must immediately inform the Bank of material changes in its operation, ownership or financial condition. Material changes include, but are not limited to:

- A. Reduction or change in staffing assigned to the Contractor.
- B. Decrease in, or cancellation of, insurance coverage.
- C. Delinquent payment, or nonpayment, of tax obligations.
- D. Delinquent payment, or nonpayment, of payroll obligations.
- E. Delinquent funding, or non-funding, or pension or profit sharing plans.
- F. Delinquent payment, or nonpayment, of subcontractors.
- G. Termination of, or changes in, subcontracts.

17. Termination

17.01 The Bank may terminate this Contract without cause at any time, without incurring any further liability, other than as stated in this Section by giving written notice to the Contractor of the termination. The notice must specify the effective date, at least 10 days prior to the effective date of the termination, and this Contract will terminate as if the date were the date originally given for the expiration of this Contract. If the Contract is terminated, the Bank will pay the Contractor for the services rendered prior to termination, as soon as can be authorized. The final payment constitutes full payment. If the Contractor accepts the payment, the Contract is satisfied. The parties agree that no payments under this section will exceed the amount payable under Section 9.

17.02 After receipt of a notice of termination and except as otherwise directed by the Bank, the Contractor must:

- A. Stop work under the Contract on the date and to the extent specified in the notice of termination.
- B. Obligate no additional Contract funds for payroll costs and other costs beyond the date as the Bank specifies.
- C. As of the date the termination is effective, present all Contract records and submit to the Bank the records, data notes, reports, discs, and documents ("Records") as the Bank specifies, all pertinent keys to files, and carry out such directives as the Bank may issue concerning the safeguarding or disposition of files and property.
- D. Submit within 30 days a final report of receipts and expenditures of funds relating to this Contract.
- E. Place no further orders on subcontracts for materials, services, or facilities, except as may be necessary for completion of such portion of the work under this Contract as is not terminated;
- F. Terminate all orders and subcontracts to the extent that they relate to the portion of work so terminated;
- G. Submit with five days a listing of all creditors, subcontractors, lessors and other parties with which the Contractor has incurred financial obligations pursuant to the Contract.

17.03 Upon termination of this Contract, all Records prepared by the Contractor under this Contract or in anticipation of this Contract must, at the option of the Bank, become its exclusive property, whether or not in the possession of the Contractor. The Records are free from any claim or retention of rights on the part of the Contractor except as specifically provided. The Bank must return all the properties of the Contractor to it.

17.04 Any intentional failure or delay by the Contractor to deliver the Records to the Bank will cause irreparable injury to the Bank not adequately compensable in damages and for which the Bank has no adequate remedy at law. The Contractor will pay the Bank \$1.00 per day as damages, and not as a penalty, until it delivers the Records to the Bank. The Bank may seek and obtain injunctive relief in a court of competent jurisdiction and compel delivery of the Records which the Contractor consents to as well as all applicable damages and costs. The Bank has unrestricted use of the Records for the purpose of completing the services.

17.05 Access to the records prior to delivery must be restricted to authorized representatives of the Bank and the Contractor. The Contractor has no right to disclose or use any information gathered in the course of its work without obtaining the written concurrence of the Bank. All the information must be confidential and handled in such a manner at all times as to preserve confidentiality. The Records as well as any related products and materials are proprietary to the Bank, having been developed for the Bank for its own and sole use.

17.06 In addition, each party will assist the other party in the orderly termination of this Contract and the transfer of all aspects, tangible or intangible, as may be necessary for the orderly, non-disrupted business continuance of each party.

18. Assignment

18.01 The Contractor must not assign this Contract, nor any part, or subcontract any of the work or services to be performed without the Bank's prior written approval.

19. Ethics in Contracting

19.01 If the Contractor knowingly collaborates in or induces a violations of any of the ethical standards that are set forth in subsections C,D,E,F,H, I, J, K, or M of Section 15, the Bank has the right to impose any one or more of the following sanctions:

- A. Immediately terminate the Contract and require the Contractor to pay the Bank liquidated damages, and not a penalty, of 15% of the total Contract compensation.
- B. Debar or suspend the Contractor from consideration from competing for further Bank Contracts.
- C. Recover the value transferred or received in breach of the ethical standards by a Bank employee or other person.

20. Confidential Information

20.01 If the Bank discloses confidential information to the Contractor's employees pertaining to the Bank's past, present and future activities, the Contractor must instruct its employees to regard all information gained by each person as a result of the services to be performed as information which is confidential and not to be disclosed to any organization or individual without the prior written consent of the Bank.

20.02 The Contractor agrees to take appropriate action with respect to its employees to insure that the obligations of nonuse and non-disclosure of confidential information concerning this Contract can be fully satisfied.

21. Compliance with Laws

21.01 The Contractor must comply with and must require its employees to comply with all applicable laws and regulations.

21.02 The Contractor must hold the Bank harmless with respect to any damages arising from any violations of this Section by it or its employees.

22. Amendments

22.01 No amendment to this Contract is effective unless it references this Contract, is written, is signed and acknowledged by duly authorized representatives of both parties.

23. Nondiscrimination Practices

23.01 Each party must comply with:

- A. Titles VI and VII of the Civil Rights Act (42 U.S.C. §§2000d et. seq.) and the United States Department of Justice Regulations (28 C.F. R. Part 42) issued pursuant to those titles; and
- B. Age Discrimination Act of 1985 (42 U.S.C. §61 01 -07
- C. Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. §794);
- D. The Americans with disabilities Act of 1990 (42 U.S.C. §1 21 01 et. seq.) and its associated regulations;
- E. The Michigan Civil Rights Act (P.A. 1976 No. 453) and the Michigan Handicappers Civil Rights Act (P.A. 1976 No. 220);

23.02 The Contractor Must Not:

- A. Refuse to recruit, hire, employ, promote or to bar or discharge from employment an individual, or discriminate against an individual in compensation, terms, conditions or privileges of employment because of religion, race, color, creed, national origin, age, height, weight, marital status, handicap, sex or sexual orientation, or any individual.
- B. Limit, segregate, or classify an employee or applicant for employment in a way which deprives or tends to deprive any individual of employment opportunities or otherwise adversely affects the employment status of an employee because of religion, race, color, creed, national origin, age, height, weight, marital status, handicap, sex or sexual orientation.
- C. Print or publish or cause to be printed or published a notice, application, or advertisement relating to employment by the Contractor indicating a preference, limitation, specification, or discrimination based upon religion, race, color, creed, national origin, age, height, weight, marital status, handicap, sex, or sexual orientation.
- D. Make or use a written or oral inquiry or form of application that elicits or attempts to solicit information concerning the religion, race, color, creed, national origin, age, height, weight, marital status, handicap, sex, or sexual orientation of perspective employees. Make or keep a record of that information, or to disclose that information.
- E. Make or use a written or oral inquiry or form of application that expresses a preference, limitation or specification based on religion, race, color, creed, national origin, age, height, weight, marital status, handicap, sex or sexual orientation.

23.03 The Contractor must notify any subcontractor, if any, of the obligations relative to nondiscrimination under this Contract when soliciting the subcontractor. The Contractor will include the provisions of this Section in any subcontract, as well as provide the Bank a copy of any subcontractor agreement.

23.04 The Contractor and its subcontractors must not discriminate against minority business enterprises or women business enterprises (as defined in Equal Contracting Opportunity Ordinance No. 93-738) in selecting and retaining subcontractors to perform work on this Contract.

23.05 The Contractor and its subcontractors must not discriminate against any employee or applicant for employment, training, education, or apprenticeship connected directly or indirectly with the

performance of this Contract, with respect to hire, promotion, job assignment, tenure, terms, conditions or privileges of employment because of religion, race, color, creed, national origin, age, height, weight, marital status, handicap, sex or sexual orientation. This Section does not apply if it is determined by the Division of Human Relations that the requirements are bona fide occupational qualifications reasonable necessary to perform the duties required for employment. The burden or proof that the occupational qualifications are bona fide is upon the Contractor.

23.06 Breach of these covenants may be regarded as a material breach of this Contract.

23.07 If the Contractor does not comply with the non-discrimination provisions of this Contract, the Bank may impose sanctions as it determines to be appropriate, including, but not limited to:

- A. Withholding of payments to the Contractor under this Contract until the Contractor complies, and/or
- B. Cancellation, termination or suspension of this Contract, in whole or in part.

24. Notices

24.01 All notices, consents, approvals, requests and other communications (“Notices”) required or permitted under this Contract must be given in writing and mailed by first-class mail and addressed as follows:

If to the Contractor:

Newtonbrook Secondary School

ATTN: M. Brumwell

655 Hilda Ave.

Detroit, Michigan 48000

If to the Bank:

Central Bank

Personal and Commercial Financial Services

ATTN: W. Potomski

55 Bloor Street West, 15th Floor

Detroit, MI 48111

24.02 All notices are deemed given on the day of mailing. Either party to this Contract may change its address for the receipt of notices at any time by giving notice to the other as provided. Any notice given by a party must be signed by an authorized representative of such party.

24.03 Termination notices, change of address notices, and other notices of a legal nature, are an exception and must be sent by registered or certified mail, postage prepaid, return receipt requested.

25. Waiver of Any Breach

25.01 No failure by a party to insist upon the strict performance of any term of its Contract or to exercise any term after a breach, constitutes a waiver of any breach of term. No waiver of any breach affects or alters this Contract, but every term of this Contract remains effective with respect to any other when existing or subsequent breach.

26. Severability of Provisions

26.01 If any provision of this Contract or the application to any person or circumstance is, to any extent, judicially determined to be invalid or unenforceable, the remainder of the Contract, or the application of the provision to persons or circumstances other than those as to which it is invalid or unenforceable, is not affected and is enforceable.

27. Merger Clause

27.01 This document, including the appendices, contains the entire agreement between the parties and all prior negotiations and agreements are merged in this document. Neither party has made any representations except those expressly set forth. No rights or remedies are, or will be acquired by either party by implication or otherwise unless set forth.

28. Jurisdiction and Law

28.01 This Contract, and all actions arising from it, must be governed by, subject to, and construed according to the law of the State of Michigan.

29. Nonexclusive Contract

29.01 The Bank or the Contractor may Contract with other firms providing the same or similar services so long as the Contractor's obligations to the Bank contained in this Contract will not be affected in any manner.

30. Miscellaneous

30.01 The Contractor covenants that is not, and will not become, in arrears to the Bank upon any Contract, debt, or any other obligation to the Bank, including real property and personal property taxes.

30.02 Sections 13, 14, and 24 survive termination of the Contract.

30.03 All the provisions of this Contract are "covenants" and "conditions" as though the words specifically expressing or imparting covenants and conditions are used in each provision.

30.04 If any affiliate of the Contractor takes any action, which, if done by the Contractor, would constitute a breach of this Contract, the action is deemed a breach by the Contractor. "Affiliate" is a "parent", subsidiary or other company controlling, controlled by or in common control with the Contractor.

30.05 Neither party is responsible for force majeure events. In the event of a dispute between the parties with regard to what constitutes a force majeure event, the Bank's reasonable determination is controlling.

30.06 The Contractor will not use any of the funds, materials, property or services contributed under this Contract, for any partisan political activity, or to further the election or defeat of any candidate for public office.

30.07 There shall be no religious worship, instructor or proselytization as part of or in connection with the performance of this Contract.

30.08 Unless the context otherwise requires, the words, "herein", "hereof" and "hereunder", and other words of similar import, refer to this Contract as a whole and not to any particular article, section, or other subdivision.

30.09 The headings of the Sections in this Contract are for convenience only and must not be used to construe or interpret the scope or intent of this Contract or in any way affect the Contract.

30.10 This Contract may be executed in any number of counterparts, and all of the counterparts taken together are one and the same document.

30.11 As used, the singular includes the plural, the plural includes the singular, and the use of any gender is applicable to all genders.

30.12 The Contractor warrants that any products sold or processes used in the performance of this Contract do not infringe upon or violate any patent, copyright, trademark, trade secret or any other proprietary rights of any third party. If a third party makes a claim against the Bank, the Bank must promptly notify the Contractor. Each party to this Contract must seek its own legal representative and bear its own costs, including judgements, in any litigation which may arise from performance of this Contract. Both the Bank and the Contractor understand and agree that neither party will indemnify the other party in such litigation.

31. Authorization and Capability

31.01 The Contractor warrants to the Bank that it has taken all corporate actions necessary for the authorization, execution, delivery and performance of this Contract. It is ready to perform its obligations. The Contractor further warrants that the person signing this Contract is authorized to do so on behalf of the Contractor and is empowered to bind the Contractor to this Contract.

32. Signature

32.01 The Bank and the Contractor, by their authorized officers and representatives have executed this Contract as of the date first above written.

Newtonbrook Secondary School

By: _____

M. Brumwell

Its: *Principal, Newtonbrook Secondary School*

Central Bank

By: _____

W. Potomskilts:

Vice President, Personal and Commercial Financial Services

Appendix I: Description of Services and Deliverables

Newtonbrook Secondary School will deliver milestones to Central Bank as mutually agreed upon. The Bank will log descriptive and control information concerning the quality assurance sample, then provide the sample to the Contractor for quality assurance processing.

1. Deliverable Milestone I: Competitive Intelligence Report

- Contractor will prepare a detailed competitive intelligence report detailing the services of all competitors within the geographical boundaries supplied by the Bank. The data will be entered into Microsoft Excel.
- Contractor will prepare a geocoded map and a presentation for PCFS executives describing the results of the research.

Acceptance Criteria:

- All competitors accounted for;
- Accurate and useful data presented and surrendered to the Bank;
- All supporting information and materials gathered through competitive research surrendered to the Bank.

2. Deliverable Milestones II, III, IV, V: Data Analysis and Recommendations

- Using database files provided by the Bank from *CKDB*, the Contractor will analyze, recommend, and display results in ArcView in response to three Business Case scenarios provided by the Bank. One analysis will be completed each month in October, November, and December. The final deliverable will be a summary/comparison of all three analyses.

Acceptance Criteria for Data Analysis and Recommendations:

- Presentation made to Bank executives;
- Thorough analysis of data;
- Recommendations made with supporting data analysis results;
- Maps presented depicting data analysis results prepared;
- All supporting information and materials gathered during analysis surrendered to the Bank.

Appendix II: Compensation Schedule

Contractor will be compensated under the following schedule:

- Contractor may invoice for \$500.00 upon signing of the contract for mobilization fees.
- Contractor may invoice for 3 payments of \$500.00 monthly.
- Contractor will be paid \$1,000.00 at completion of project.
- Total compensation for the project will be \$3,000.00.

The payment schedule may be accelerated by mutual consent if progress on the project warrants. The consent will be in the form of a letter initialed by both parties.

Appendix C

Example Project Plan

Work/Site Alliance

Abbreviated Project Plan for Central Bank – PCFS Division

Prepared by Newtonbrook Secondary School

Summary

Newtonbrook Secondary School will provide Central Bank's PCFS division with five deliverables. The first deliverable will consist of a detailed competitive intelligence report, including supporting documentation, geocoded into ArcView GIS. The second, third, and fourth deliverables will focus on specific data analysis and recommendations based on Business Cases supplied by PCFS. The fifth and final deliverable will consist of a summative report and recommendations based on the previous three. PCFS will supply Newtonbrook with data sets from its Consumer Knowledge Data Base (CKDB) that contain information about consumer behavior with respect to banking, as well as demographic data for those individuals.

Project Team and Contact Names

Contractor

Newtonbrook Secondary School

155 Hilda Avenue

Detroit, MI 48000

(313) 555-3200

Client

Central Bank

Wendy Potomski, Vice President

Personal and Commercial Financial Services Division

155 Bloor Street West

Detroit, MI 48111

(313) 555-8491

Principal – Newtonbrook S. S. Marion Brumwell

Supervising Teacher Adam Mock

Project Team 11th Grade Marketing Class

Hardware Overview

The hardware to be used will consist of a lab of IBM Pentium III machines, networked on the School Board WAN.

Software Overview

APPLICATION	MANUFACTURER/BRAND	VERSION
Geographic Information Systems	ESRI ArcView	v. 3.x
Word Processor	Microsoft Word	Windows 2000
Spreadsheet	Microsoft Excel	Windows 2000
Database	Microsoft Access	Windows 2000
Presentation	Microsoft PowerPoint	Windows 2000

Performance Standard

Our goal is a product, which will meet and exceed Central Bank's expectations with respect to quality and thoroughness of information. Students will perform additional research where necessary to ensure thorough and insightful recommendations to PCFS.

Milestone Summary

MILESTONE	DELIVERABLE DATE	DESCRIPTION
Milestone 1	September 30	Competitive Intelligence Report
Milestone 2	October 31	Business Case #1
Milestone 3	November 30	Business Case #2
Milestone 4	December 20	Business Case #3
Milestone 5	January 20	Summary/Comparison

Development Milestone Breakdown

Development begins on the first day of classes, September 8. A detailed task outline and work breakdown structure appears in the Gantt chart (available upon request). General notes regarding scheduling, dependencies and risks follow:

- Our schedule is based on 20 day months within the school calendar. The class taking on the project meets for 70 minutes per day. This allows for a built in contingency in case of absence or minor setbacks (such as cancellation of school due to inclement weather).
- Newtonbrook’s ability to meet deadlines is contingent upon the delivery of Business Cases and data sets from PCFS.
- The delivery of Milestone #5 is contingent upon acceptance of previous milestones by PCFS.

MILESTONE 1 BREAKDOWN

(September)

Competitive Intelligence Report

Research (6 days)

- All competitors are identified.

- Competitive information is gathered by visiting a branch of each, and obtaining disclosure materials.

Data Analysis (6 days)

- Data is organized into Excel.
- Map is geocoded.
- Overall results are determined.

Reporting (4 days)

- A report is prepared to summarize the product/service offerings of financial service providers in the area.
- A multimedia presentation for PCFS is prepared.

MILESTONE 2/3/4/5 BREAKDOWN

(October/November/December/January)

Business Case #1

Research (3 days)

- Any outstanding information is research and obtained

Data Analysis (10 days)

- Problem statement is established and research questions are identified.
- Data is refined if necessary.
- Models for analysis are created.
- Queries are performed.
- Overall results are determined.

Reporting (4 days)

- A report is prepared to make a recommendation for the Business Case.
- A multimedia presentation for PCFS is prepared.

Appendix D

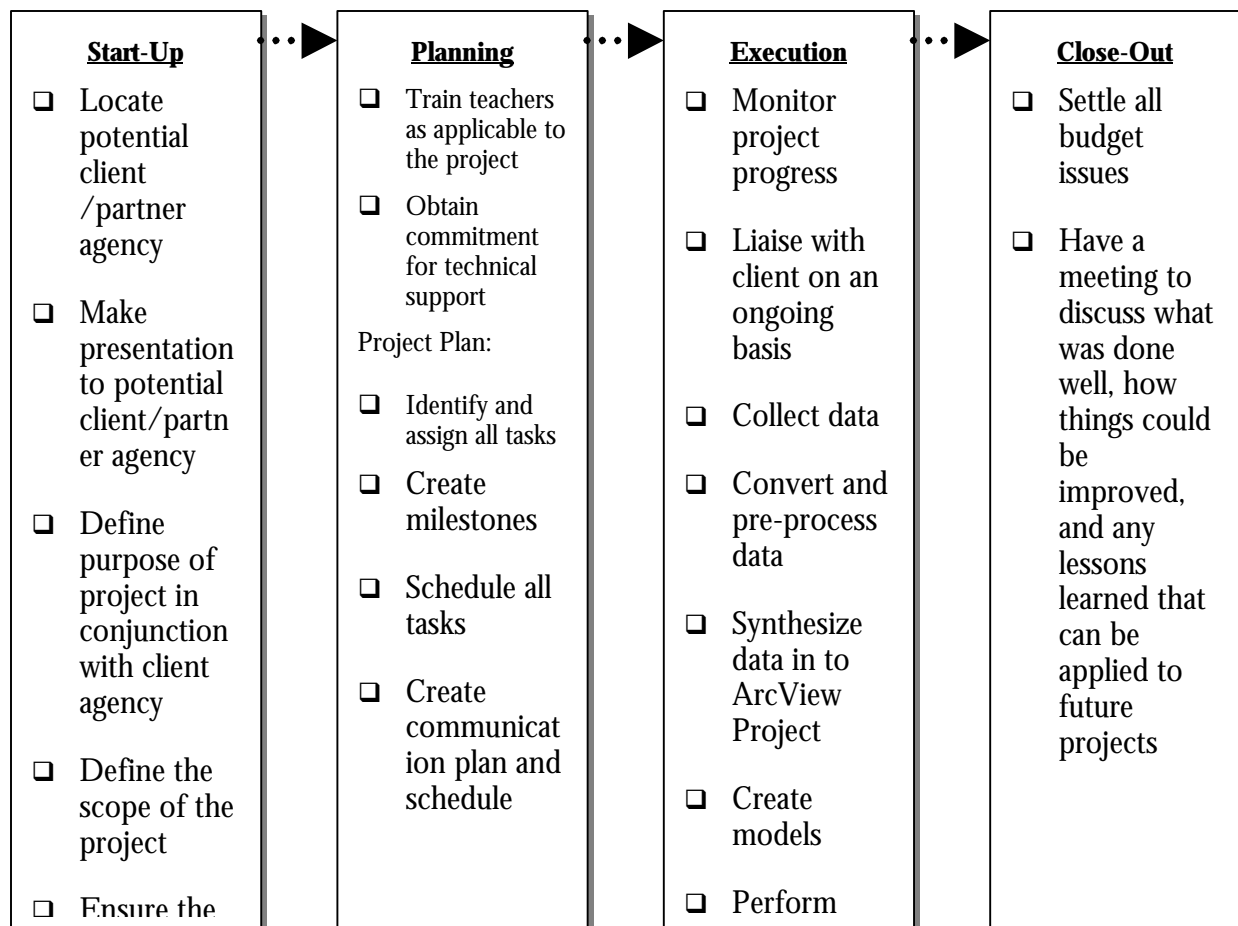
Project Concept Worksheet

Name of Project: _____

Brief description of the project:

Expected completion date:

Project Stages Checklist:



Appendix E

Project Task Sheet

Deliverable	TASKS	DEADLINE	Responsibility

Appendix F

DID WELL	DO BETTER

Summary of lessons learned for future projects:

Managing GIS Projects
