Software Plan

Virtual Network Device Mapping System

Requested by: **Mr. Ken Swarner**
Systems & Operations Manager
Siena College
School of Science

Mr. Eric Crossman
Assistant Systems & Operations Manager
Siena College
School of Science

MAJIK Software Solutions

Prepared by: Amanda Danko
Kevin Johnson
Ian Kost
Kelly Morgan
Mark Riley

September 19, 2006

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the Virtual Network Device Mapping System

1.1   Problem Definition

Mr. Ken Swarner and Mr. Eric Crossman have no cohesive information source on the network devices which they manage in the Siena College School of Science. The recent expansion of their responsibilities from the Computer Science department to the entire School of Science has made this an untenable situation. Currently, they often have to physically search for devices in Roger Bacon and the Morrell Science Center. Additionally, the information Mr. Swarner and Mr. Crossman have about these devices is stored in a manner not easily retrieved or interpreted. Our clients have requested that we develop a web based network mapping tool which will coordinate network device information and present it in a graphical form.

1.2   System Justification

The purpose of the Virtual Network Device Mapping System is to save our clients time and energy. The graphical display of information pertaining to network devices will allow Misters Swarner and Crossman to quickly and easily locate those devices. Our clients will also be able to gather important information regarding specific devices, allowing them to work more efficiently.

1.3   Goals for the System and for the Project

The goal of this software is to be able to access a website and view a graphical representation of the floor plans in the School of Science. These floor plans will be able to display the location and layout of network devices. In addition, the program will be able to display information specific to those devices.

The software will also be extensible. A static layout or floor plan would easily be made obsolete by renovations within the School of Science. This makes it essential that the graphical components be able to be changed and added to.

Our team goal is to gain experiential knowledge in the field of software engineering, with a focus on improving our interpersonal skills and applying our talents to a real world problem. We expect to gain proficiency with the Linear Sequential Model, also known as the Classic Waterfall Model. Finally, we plan to meet our client's needs through teamwork and innovation.

1.4   Constraints on the System and on the Project

The largest constraint on this project is that the graphical representation can not be accomplished with static images. Any change to floor plan or layout would render those static images obsolete and drastically reduce the effectiveness of the program. Therefore, a method must be discovered to dynamically generate the required graphics. The website must incorporate a secure login, utilizing the HTTPS standard. Also, the website will be run on an Apache web server, and the information will be stored in an Oracle database named oraserv. Finally, the deadline for this project is April 2006.

1.5   Functions to be Provided (hard & software/people)

- A web based graphical representation of the floor plans and room layouts of Roger Bacon and the Morrell Science Center. The room layouts will include the locations of all network devices.

- A display of pertinent information specific to each network device. This information will be available upon selecting an individual device.

- A server database to hold information regarding network devices. This information will include, but is not limited to: physical location, MAC address, faculty use, and IP address.

- An Apache Web Server to host a website accessible to users which allows communication with the database.

- Search functionality within the information associated with network devices. A specific example would be searching a faculty member's name to find the computer associated with them.

- A web based interface which allows modification of the information stored in the database. This interface will also include functionality in altering the graphical displays.

1.6   User Characteristics

There will only be two different types of users. The first will be those viewing information about network devices. They will sign into the website and access whatever information they need. The second will be users editing or adding to the information. They may be adding or removing rooms and devices, altering the layout of a room, or changing information associated with a device.

1.7   Development/Operating/Maintenance Environments

The Virtual Network Device Mapping System will be created on the Siena College Software Engineering workstations. It will be compatible with the Internet Explorer, Firefox, and Safari internet browsers. Users will be able to access the website from any computer with an active internet connection and one of the above named browsers. Extensibility will be included as a part of the website interface, allowing for maintenance by qualified users.

1.8   Solution Strategies

Our team will utilize the Linear Sequential Model (Classic Waterfall Method) to meet our clients' needs. The following steps outline our process:

Software Plan - Definition of the problem and outline of the overall expectations of the final project.

Requirement Specifications - Gather information from the clients in order to establish requirements and specifications.

Preliminary Design - Address the requirement specifications in a representation of the final project.

Detailed Design - Expand upon the Preliminary Design representation with more code and initial testing.

Acceptance Test - Conclude the Life Cycle Model with final testing and delivering the product to the client.

1.9   Priorities of System Features

A key feature required of this system is the ability to add and remove network devices from the interactive maps. Any future changes to the layout of a building or to the information pertaining to network devices should be easily made in the program. For this reason it is important that the program is as adaptable and extensible as possible to future situations.

1.10 System Acceptance Criteria

The program will successfully meet the following criteria:
- Web-based mapping tool for the network.
- Zoom feature to view the maps in more detail.
- Ability to add and remove computers.
- Password protected.
- Function properly in multiple browsers.
- Search function for computers and faculty.

1.11 Sources of Information

The information presented in this Software Plan was gathered in meetings with our clients, Mr. Ken Swarner and Mr. Eric Crossman, of the Computer Science Department of Siena College. Other information included was collected from the textbook for this course, Software Engineering: A Practitioner's Approach by Roger S. Pressman. Additional information and layouts was gathered from Software Plans created in previous years by students in the Software Engineering course.

2.1   Life Cycle Model: Linear Sequential (Classic Waterfall) Model
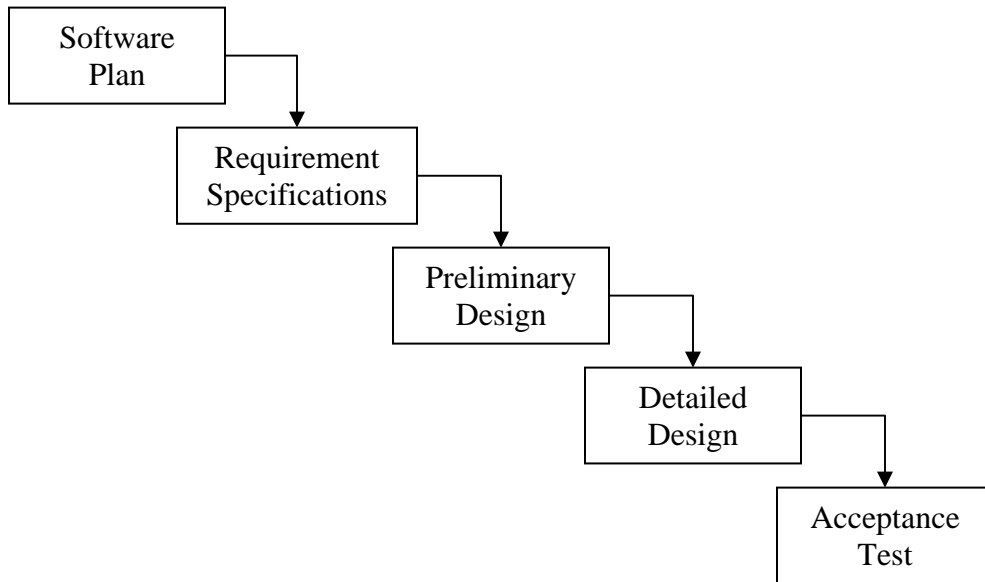
Software Plan
Definition of the problem and outline of the overall expectations of the final project.

Requirement Specifications
Gather information from the clients in order to establish requirements and specifications.

Preliminary Design
Address the requirement specifications in a representation of the final project.

Detailed Design
Expand upon the Preliminary Design representation with more code and initial testing.

Acceptance Test
Conclude the Life Cycle Model with final testing and delivering the product to the client.

2.2   Organizational Structure

MAJIK Resource Systems is comprised of these team members

Name	E-mail	Phone Number
Kelly Morgan	skm6207@siena.edu	518.283.2788
Amanda Danko	a03dank@siena.edu	518.879.5681
Kevin Johnson	skj9398@siena.edu	518.469.4830
Ian Kost	sik7217@siena.edu	518.782.6034
Mark Riley	smr7862@siena.edu	518.782.5655

The team members are organized in the following positions.

Kelly Morgan	Team Leader
Amanda Danko	Information Specialist
Kevin Johnson	System Administrator
Ian Kost	Project Engineer
Mark Riley	Webmaster

The team is designed as a democratic unit. The decisions are made with the majority vote, with the team leader deciding ties, and setting the agenda.

The description of each position is as follows.

Team Leader	Organizes and sets agendas for meetings, sets the plan for the semester, sets goals for other team members.
Information Specialist	Documents meetings, organizes reports, keeps track of documentation.
System Administrator	Maintains all software and hardware on the team's computers, and administrates user accounts.
Project Engineer	Performs design and engineering tasks related to the development of the software solution.
Webmaster	Designs and updates the team's website.

2.3   Preliminary Staffing and Resource Requirements

Our team will need to utilize various hardware, software, and human resources. The hardware needed includes computer systems, a LINUX based web server with Oraserv, printers, and the like. The software needed includes Dreamweaver, Fireworks, Flash, and Oracle. Our human resources include Mr. Eric Crossman, Assistant Systems and Operations Manager, and Mr. Ken Swarner, Systems & Operations manager for the School of Science, as well as Dr. Tim Lederman, our Software Engineering Professor.

Finally, we will be utilizing spreadsheets listing information about the computers in each building, along with floor maps of the buildings we will be tracking computers in.

2.5   Project Monitoring and Control Mechanisms

Our team will have a minimum of one meeting a week, often with two team meetings, which will ensure consistent contact between the members of the group, facilitating smooth interaction, as well as ensuring individuals are up to date. There will be a weekly meeting with the client to ensure both sides are in tune with the project's vision. Finally, weekly meetings with the team leader help to stay on task.

2.6   Tools and Techniques to be Used

The team will be using computers loaded with Windows XP, with software including MS Project, Dreaweaver, Oracle, and Microsoft Office will be used. Dreamweaver will be used for the web development. The management of the system will be done with Oracle. MS Project will be utilized in the process of development of software, to keep the project on schedule, and to illustrate in detail where the project stands. We will be using software engineering techniques to complete the design process.

2.7   Programming Languages

Our team will use HTML, as well as PHP to design web pages that will illustrate computer locations on each section of the building. We may develop other software to work in conjunction using C++ or Java.

2.8   Testing Requirements

After each project component is completed, that component will be tested. The clients will be encouraged to aid in the testing process, and will also be made aware when the project reaches a segment where it will enter testing. The final testing will include all requirements and conditions from our client. It is our goal that the product will be compatible with all major computer platforms.

2.9   Supporting Documents Required

We will be providing supporting documentation to our client at least five times during the software engineering process, with more added if it is determined to be necessary. They will be delivered to the clients, as well as posted to a company website. The five times currently provided are:

Project Definition / Project Plan	September 19, 2006
Software Requirements Specifications	October 23, 2006
Preliminary Design	November 27, 2006
Detailed Design	February 19, 2007
Acceptance Test	April 16, 2007

## 2.10 Manner of Demonstration and Delivery

We will be illustrating our progress to our clients, as well as to our class, using PowerPoint and paper documentation. The dates of the presentations are subject to revision.

Project Definition / Project Plan	September 20, 2006
	September 22, 2006
Software Requirements Specifications	October 25, 2006
	October 27, 2006
Preliminary Design	November 29, 2006
	December 1, 2006
Detailed Design	February 2007
Acceptance Test	April 2007

2.11   Sources of Information

Much of the information found in the software plan was provided by our clients, Mr. Eric Crossman and Mr. Ken Swarner. Additionally, the Software Engineering Class taught by Dr. Lederman, and its accompanying textbook, *Software Engineering: A Practitioner's Approach* by Robert Pressman. Finally, previous Software Engineering projects helped to provide a template for this document.

3.1 Gantt Chart
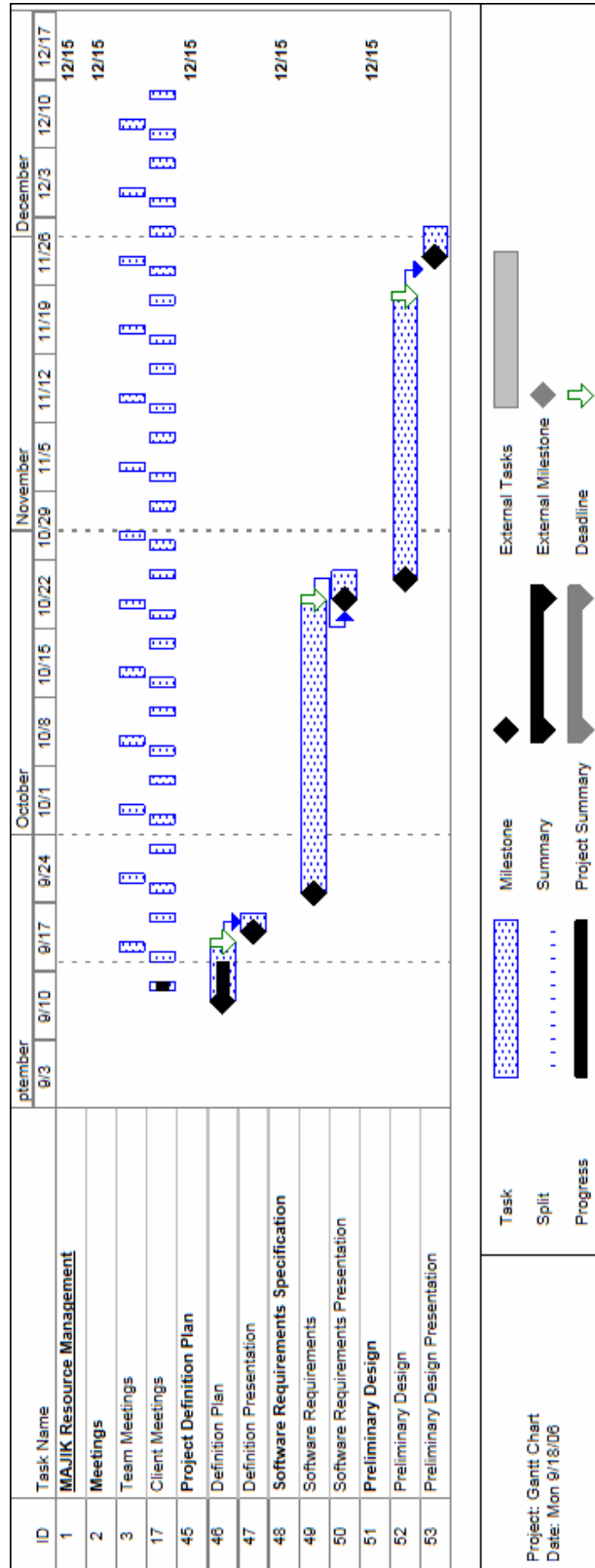
3.3   Glossary of Terms

Database – A collection of data organized to be readily available for use.

Gantt Chart - A chart that displays progress over time, in this case used to keep track of a project.

Linear Sequential Model / Classic Waterfall Model – A systematic, sequential approach to software development that progresses from this Software Plan to Requirement Specifications, Preliminary/Detailed, and finally Acceptance Tests.

Network Device - A computer, peripheral or other related communications equipment attached to a network.

MAC address - Media Access Control address, given to a device in a network. It consists of a 48-bit hexadecimal number (12 characters). The address is normally assigned to a device, such as a network card, when it is manufactured.

Virtual - Something which is a representation rather than the 'real' thing, thus 'virtual reality'.

3.2 Team Resumés

Amanda S. Danko

Current Address: Permanent Address:
515 Loudon Rd. SPOB 3801   1133 Old Schaghticoke Rd.
Loudonville, NY 12211   Schaghticoke, NY 12154
Email: a03dank@siena.edu   Mobile Phone: (518) 879-5681

Objective
    A position in the field of computer science; special interests in programming, software analysis.

Education
Siena College, Loudonville NY
B.S. in Computer Science, Spanish Minor, complete by May 2007

Relevant Courses of Study
- **Computer Science**: Analysis of Algorithms, Object-Oriented Design & Programming, Computer Architecture and Assembly Language, Data Structures, Physics and Discrete Structures 1 & 2, Introduction to Computer Science, Introduction to Programming Languages.
- **Spanish**: Spanish Language Study Tour (in Spain), Communicative Competence in the Spanish Language, Intermediate Spanish 1 & 2, Communications in Spanish 1 & 2.

Computer & Language Skills
- Experience with Java, VB, Assembly, the Microsoft Office package, Adobe Photoshop, and Windows 98/NT/2000/XP.
- Simulated board-type games such as Boggle and Guess Who.
- Object-Oriented Programming in Java.
- Proficient in Spanish.

Experience
Intern, **Captira Analytical**, Albany NY 2006
    Summer internship for programming in Visual Basic with the .Net Framework.
- *Head Cashier & Front End Sales*, **CompUSA**, Latham NY 2005-2006
    Supervise front end cashiers and customer service.
    Hired as cashier, recommended to a lead position in 2005.

Additional Experience and Activities
- *Work-Study Student*, **Siena College Office of Campus Programs** 2004-2006
- *Ambassador*, **Siena College Office of Admissions** 2004-2006
- *Volunteer,* **Albany Area High School Programming Competition,** Siena College 2006

Mark Riley

26 Victor St.
Albany NY 12206
(518) 496-8587 (Cell)
mark.riley@siena.edu

Objective: Obtain an internship utilizing my Computer Science Knowledge, as well as my leadership, communication, and business skills.

Education:
Siena College, Loudonville, NY
Three Years Studies in Computer Science
  Business Minor
  Presidential Scholar
  3.2 GPA (3.6 in Major)

Professional Experience:
Dunkin Donuts Albany, NY, 2003-Present

Shift Leader
  Lead team members through their work day
  Facilitated service to customers, solved customer issues
  Solved personnel disputes between crew members
  Was responsible for handling money during change of shifts

Siena College Student Events Board Loudonville, NY 2004-present
Concerts Co-Chair
  Brought back a struggling concert program at Siena
  One of two people in charge of planning and carrying out the concert
  Coordinated the efforts of different groups to ensure a smooth operation

Activities

Holy Cross Religious Education, Assistant Teacher (1999 – 2003)
Intramural Basketball (2006)

Skills

  Extensive knowledge of Microsoft Office, Intermediate Knowledge of HTML, Some Image-Editing Software Knowledge.

Kelly A. Morgan

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One Zermatt Drive
Wynantskill, New York 12198
Home: 518-283-2788; Cell: 518-588-2270
E-mail: kelly.morgan@siena.edu

OBJECTIVE: a position in an information technology department in a major corporation

EDUCATION
Siena College, Loudonville, New York

B.S. Computer Science; Mathematics Minor, December 2006
> ➢ Presidents List – GPA: 4.0 major, 3.88 overall
> ➢ NCAA Division I Scholar Athlete-Field Hockey (Freshman Year)

Major Courses

Intro to Programming; Data Structures; Assembly Language and Architecture; Object Oriented Programming; Web Design and Programming; Database Management; Advanced Database Management; Calculus I & II; Algorithms; Discrete Mathematics; Electronics; Digital Electronics

Software/Languages

Proficient in: Java; Blue J; NetBeans 5.0/5.5, Windows 2000/XP; Dreamweaver MX; MS Excel; MS PowerPoint; MS Word; Oracle 10g; HTML; XML; JavaScript; Cascading Style Sheets (CSS); SQL
Familiar with: Visual Basic; Flash; Fireworks 8; MS Access; XHTML; PHP; PL/SQL; JDBC; JSP

RELATED EXPERIENCE
Student Assistant, Siena College Computer Science Department 2004 - 2005 (4 semesters)
Independent Study, Summer 2005
> ➢ Redesigned Siena College's academic affairs website
> ➢ Collected requirements and specifications from the Office of the Vice President for Academic Affairs
> ➢ Organized and categorized over 300 pages of content into a central hierarchy
> ➢ Designed several prototype templates, and implemented PHP-driven scripts for dynamically inserting content into a centrally maintained template.

Intern, GE Global Research, Niskayuna NY, Summer 2006
> ➢ Designed and developed a high-level Java API to allow the integration of an existing document management system into web applications
> ➢ Provided full design and requirements documentation as per the Software Development Life Cycle Process
> ➢ Learned necessary new technologies to complete project
> ➢ Designed and implemented a functional test plan, test cases, and test suite
> ➢ Developed training and reference documentation for programming staff
> ➢ Presented the final project to upper management

HONORS/ACTIVITIES
> ➢ Inducted member of Delta Epsilon Sigma, Beta Psi Chapter, Siena College 2006
> ➢ NYS Lottery Leaders of Tomorrow Scholarship 2003
> ➢ Volunteer Coach - Challenger Sports League for Handicapped Youth & Adults 2001-2003
> ➢ Parish Rep to the National Catholic Youth Conference in Indianapolis – 2001

<div align="center">
Ian A. Kost
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Rego Park, NY 11374
(917) 584-2409
iakost@gmail.com
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Education	**Siena College**, School of Sciences *Major*: Computer Science *Coursework*: Intro. to Computer Science, Intro. to Programming, Data Structures, Assembly Language and Computer Architecture, Object-Oriented Design and Programming, Calculus I, Calculus II, Mathematics and Decision Making I & II, Analysis of Algorithms, Web Design, Networking and Communications. *Academic Honors:* Recipient of Siena College Franciscan Scholarship *GPA*: 3.00 **Xavier High School** Graduate Class of 2003
Experience Feb 2004 - Present	**Siena College – Office of Admissions** **Data Entry Assistant** Using the school's computerized record keeping system to accurately and quickly input prospective student information.
Summer 2005 and 2006	**Crossborder Solutions** **Quality Assurance Intern** Creating and modifying testing scripts to efficiently and effectively test internally built software. Performing various software development and information technology related projects as needed.
Computer Skills	Java Programming, Visual Basic Programming, Some C++ Programming, Assembly Language Programming, HTML Programming, Flash, Microsoft Office (Word, Excel, PowerPoint, Outlook), Computer Hardware Knowledge, Typing WPM: 45
Interests	**P**rogramming Games, Golf, Computer Maintenance and Repair
Future Plans	Completing my undergraduate degree in computer science and pursuing a career in programming. Possibly returning to school and completing a Master's Degree in computer science.

Kevin D. Johnson
14 Roland Drive
Albany, NY 12208
(518) 469-4830
kevin.johnson@siena.edu

OBJECTIVE

To obtain a challenging position in the field of computer science that utilizes my educational background and experience; with a particular interest in software engineering.

EDUCATION

Siena College, Loudonville, NY
B.S. in Computer Science, 86 Credits completed;
GPA: 2.65 / 3.52

RELEVANT COURSES

Introduction to Computer Science
Procedural Design and Programming
Data Structures
Assembly Language and Computer Architecture
Object-Oriented Design and Programming
Operating Systems
Communications and Networks
Bioinformatics
Software Engineering I
Learning Algorithms
Calculus I

ADDITIONAL EXPERIENCE

Research Assistant, **Siena College,** Loudonville, NY, Fall 2003
- Conducted research in the field of Bioinformatics and developed a program to analyze protein sequences with Dr. Eric Breimer.

EMPLOYMENT

*Bartender/Barback***, Pauly's Hotel**, Albany, NY, 2005-2006
Lifeguard, **Fort Orange Club***, Albany, NY, 2005
Assistant Chief Lifeguard, **John Boyd Thacher State Park,** Albany, NY, 2002-2005
- Supervised twelve lifeguards.
- Oversaw beach and pool operations.
- Responsible for scheduling, training, and documentation.
Lifeguard, **John Boyd Thacher State Park,** Albany, NY, 2000-2001

COMPUTER EXPERIENCE

Operating Systems: DOS, Windows 3.1/95/98/2000/NT/XP, LINUX, UNIX
Programming Languages: C++, C, Java, Scheme, Intel Assembly, HTML, PHP, CSS, JavaScript
Software Packages: Microsoft Office Suite, Microsoft Developer Studio, Macromedia Studio, Rational Rose, BlueJ, Dreamweaver