

Software Plan

Requested by: Dr. Timoth Lederman
Professor of Computer Science
Siena College
Computer Science Department

Project United



Prepared by: Dustin Clark – Web Master
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September 20, 2013

**Project United
Software Plan**

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System Definition

1.1 Problem Definition

For many people who take joy and pride in their classic automobiles, it is difficult to find others to enjoy their cruising experience with. People with an interest in a more specific vehicle may even have a harder time finding people that understand their passion. Dr. Timothy Lederman, an active participant and administrator of an antique GMC truck forum, has expressed the interest in an easy to use web based mapping system for finding people with those common interests specifically in antique GMC trucks.

1.2 System Justification

The purpose of this system is to provide an intuitive map based interface that allows for GMC truck owners to arrange meetings, gatherings, and cruises with fellow forum members. Such a system would assist in the organization of social events, provide for cruising route suggestions, and even insure them that there would be someone around with the tools to help if they were to break down.

1.3 Goals for the System and on the Project

The goal of this system is to address organizational issues for members of the GMC truck forum by making an easy to use web based interface. The interface needs to be simple enough to accommodate people of all ages, and software preferences.

1.4 Constraints for the System and on the Project

- Compatible with browsers of varying type and age
- Compatible with varying resolution sizes
- Administrator control of user data input
- Must use MySQL

1.5 Functions to be Provided

These functions will be implemented.

- User sign up
- Location based data
- Google Map scrollable visual
- Automated back-up after user input
- Administrator account

1.6 User Characteristics

There will be two different users of this system:

- oldGMCTruck.com forum members will be able to:
 - Add their address
 - Add events
 - View other members addresses
 - Retrieve directions to other members addresses
- Administrators will be able to:
 - Add events
 - Delete users as well as the users address
 - Delete events

1.7 Development/Operating/Maintenance Environment

Development Environment

Server

Operating System: CentOS 5.2, Kernal 2.6.18-92e15

Server Name: oraserv.cs.siena.edu

CPU: Intel Xeon 2.66 GHz

RAM: 8GB

Macintosh Computer

Operating System: OSX Version 10.7.4

Proc: Intel Core i5 @ 2.5GHz

Ram: 4GB 133 MHz DDR3

HDD: 500GB

Windows Computer

Operating System: Windows Vista

Proc: Intel Core 2 Duo E7500 @ 2.93 GHz

Ram: 4GB

HDD: 297GB

Operating Environment

The solution will be a web-based application by Web Hosting Pad. The web-based application will be accessible by oldGMCTrucks.com forum members.

Maintenance Environment

There should be minimal if any maintenance of the solution, however, if needed, the maintenance environment will include all the same software and hardware used in the Development Environment.

1.8 Solution Strategy

BitSize Solutions will fulfill all requirements imposed on them by loosely following the classical waterfall model. This will ensure all requirements are met and the solution will be provided on time in a completed form. Greater detail of this plan can be seen in section 2.1:

- Software Plan
- Requirement Specifications
- Preliminary Design
- Detailed Design
- Development and Testing
- Acceptance Test

1.9 Priorities of the System Features

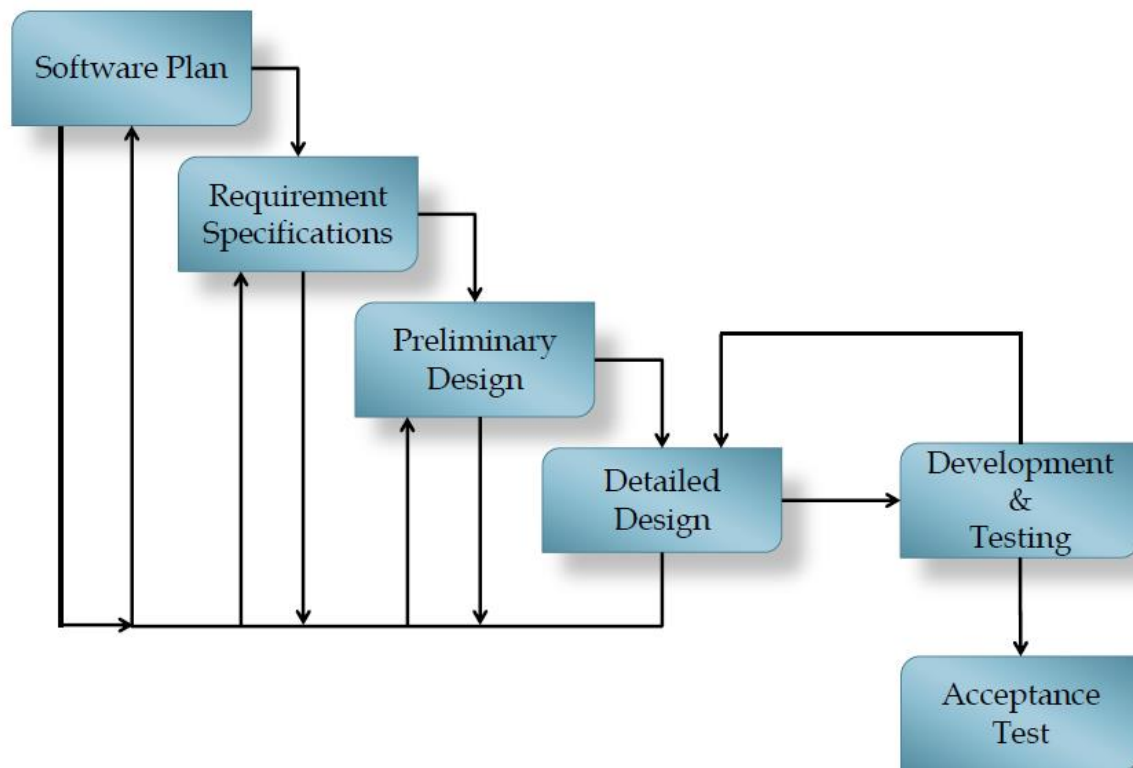
The primary purpose of the solution will be to allow oldGMCTruck.com forum members a simplified way to add their own addresses and information to a web-based mapping system.

1.10 System Acceptance Criteria

BitSize Solutions will provide a solution that meets all requirement specification agreed upon by the client, Dr. Timoth Lederman, and BitSize Solutions to be considered acceptable. These required specifications will be demonstrated and BitSize Solutions will provide proper documentation on the solution.

Project Plan

2.1 Project Management & Development Model



- **Software Plan**
 - BitSize Solutions will gather necessary information from the client, Dr. Timoth Lederman, in order to determine the best action toward a solution. From the problem given by Dr. Lederman, team meetings will be organized in order to make essential decisions. After defining the software plan, BitSize Solutions can move forward to the requirement specifications.
- **Requirement Specifications**
 - BitSize Solutions will set up meeting times with Dr. Lederman in order to discuss more about the specifics of the problem. These meetings will help acquire more information on the project in order to develop a suitable solution.

- **Preliminary Design**
 - Using the software plan and requirement specifications, a basic outline and design can be developed. BitSize Solutions will incorporate all of the information from the requirement specifications to develop a preliminary solution.
- **Detailed Design**
 - After creating a preliminary design, BitSize Solutions will present the design to Dr. Lederman before taking the next step. If the client is satisfied with the contents, BitSize Solutions will refine the preliminary design in order to fulfill the previous requirements. A finalized solution could then be developed from the previous design.
- **Development & Testing**
 - Necessary developments to the project design will be taken in order to create a detailed finalized product. Testing of each process will be conducted in order to examine errors or improvements that will be necessary. Each testing period will advance the project to its more finalized state.
- **Acceptance Test**
 - After final developments and testing, the final product will be demonstrated to the client for an acceptance or rejection of the product. The product would be accepted if it has met all of the client's constraints and performs the desired task in satisfaction for the client.

2.2 Organizational Structure



Name	Phone Number	E-mail
Clark, Dustin	(518) 338-7543	do06clar@siena.edu
Hurley, Devin	(845) 544-0002	dw11hurl@siena.edu
Tomaszewski, Joshua	(518) 928-9379	j13toma@siena.edu
Tran, Chan	(518) 596-2170	cs05tran@siena.edu
Witter, Zachary	(315) 292-8632	z114witt@siena.edu

Bitsize Solutions consists of the following team members:

Clark, Dustin	Webmaster Designs and maintains the look and feel of all documents bearing the BitSize Solutions name. This includes but is not limited to all websites, formal documentation, and presentations.
Hurley, Devin	Lead Programmer Responsible for the underlying design and implementation of all software. Actively participates in all parts of software development maintaining quality insurance, and a strong knowledge of the code structure behind user experience.
Tomaszewski, Joshua	Database Administrator In charge of the development of database's for team BitSize Solutions, including its processes and design.
Tran, Chan	Data Scientist Gathers, studies, and maintains all information used by the team throughout the course of the project. Responsible for all ends of the BitSize Solution's resources ranging from meeting documentation to systems administration.
Witter, Zachary	Team Leader Manages the processes required in all projects done by the BitSize solutions team. Analyzes requirements and divides the workload appropriately to those with the time and capability to complete the tasks in a timely and efficient manner. Organizes team gatherings and takes part in all factors regarding project completion.

Team BitSize Solutions is a strong team of Software Engineers dedicated to doing whatever necessary to complete their projects to specifications and then go the additional mile to satisfy their customer. We are a close team with great interpersonal skills to make the project experience for both parties as enjoyable as possible. All members of our team will play an integral role in the development of our projects to provide the ultimate end product satisfaction.

2.3 Development Schedule, Time-Line (Gantt Chart)

	Task	Assigned To	Start	End	Dur	%	2013			
							Sep	Oct	Nov	Dec
	Project United		9/8/13	12/2/13	58	23				
1	Software Plan		9/8/13	9/19/13	9	100				
2	Software Plan Due		9/20/13	9/20/13	1	100				
3	Software Plan Presentation		9/21/13	9/23/13	1					
4	Requirement Specifications		9/24/13	10/25/13	23					
5	Requirement Documents Due		10/26/13	10/26/13						
6	Requirement Presentation		10/26/13	10/28/13	1					
7	Preliminary Design		10/29/13	11/29/13	22					
8	Preliminary Design Due		11/30/13	11/30/13						
9	Preliminary Presentation		11/30/13	12/2/13	1					
10	Meetings		9/15/13	9/19/13	4	100				
10.1	Team Meeting		9/15/13	9/15/13		100				
10.2	Team Meeting		9/16/13	9/16/13		100				
10.3	Client Meeting		9/16/13	9/16/13		100				
10.4	Team Meeting		9/18/13	9/18/13		100				
10.5	Team Meeting		9/19/13	9/19/13		100				

From the Gantt chart shown above, Bitsize Solutions will ensure regular meeting teams, at least twice a week, as well as regular client meetings, once a week, in order to manage time most efficiently. Due dates for documents and presentations will be clearly listed in order to provide a sense of direction and progress for each week and month. Goals will be kept in order by maintaining this schedule and staying on the task at hand.

2.4 Project Monitoring and Control Mechanisms

In order to keep track of progress, Bitsize Solutions will maintain a weekly meeting for the team members as well as for the client. Two team meetings will be necessary in order to observe progress throughout the week and one client meeting per week will be used to update the client on the project progress. If there are certain days where the team or client cannot physically meet, an online meeting will be taken place using the Google+ chat system. Email will also be very crucial in maintaining contact and progress between team members and between Bitsize Solutions and Dr. Lederman.

2.5 Tools and Techniques

We will be using Web Hosting Padas our hosting provider. The Eclipse environment as well as some text editors such as gedit, vim or sublime text will be used. A modified Waterfall model, as explained in a previous section, will be used for managing the project itself. We will also be utilizing the Google Maps API.

2.6 Programming Languages

The web application will be built using HTML and CSS on the client side and a combination of Python, PHP,MySQL and javascript on the back-end. The Google Maps API returns JSON, which we will be using as opposed to XML. We may find that other technologies not listed will be used as appropriate. This document will be updated accordingly if this is the case.

2.7 Testing Requirements

A series of tests will be run on the front-end and back-end technologies, and those same tests will be run again after the two have been hooked up together. We will also be running interface tests for the client and any test users willing to run beta tests.

2.8 Supporting Documents Required/Time of Documentation

Title of Documents	Date of Delivery	Date of Presentation
Software Plan	September 20, 2013	September 23, 2013
Requirement Specification	October 25, 2013	October 28, 2013
Preliminary Design	December 2, 2013	December 2, 2013
Detailed Design	Spring of 2014	Spring of 2014
Acceptance Test	Spring of 2014	Spring of 2014

2.9 Method of Delivery

The documents will be delivered on the dates listed above, as well as their respective presentations. All of these documents will also be available on our team website when they are released on their date of delivery.

2.10 Sources of Information

Client meetings with Dr. Lederman will be the primary source of information for this project. We will also be acquiring technical knowledge from the documentation of the API's and programming languages that will be employed throughout the duration of this project. Dr. Lederman's lectures will also provide insight regarding the process of developing the system software.

Appendix A: Team Résumés

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Hurley, Devin 14

Tran, Chan 15

Tomaszewski, Joshua 16

Witter, Zachary 17

Dustin Clark

Address: 1216 Hudson Ave., Stillwater, NY 12170

Phone: (518) 338-7543

Email: dustin2524@gmail.com

Website: www.DustinOClark.com

Objective

Seeking a full-time professional position in a computer science-related field with an emphasis on databases.

Education

Bachelor of Science, Computer Science and Mathematics May 2014
Siena College, Loudonville, NY GPA: 3.87

Skills

Platforms: Windows, Mac OSX, Linux
Languages: Java, JavaScript, Erlang, Python, MIPS, HTML, CSS
Courses: Web Design, App Development, Database Management

Related Experience

Internship, DePauw REU Program, Greencastle, IN Summer 2013

- Problem-solving using Parallel Computing
- Created a solver for the board game Ricochet Robots
- Used various methods to parallelize multiple search algorithms

Significant Class Projects

Ticket To Ride, Object-Oriented Design and Programming Spring 2013

- Collaborated with a group to create a 4 player interactive graphical version of the board game Ticket To Ride

GMC Truck Membership Mapper, Software Engineering Fall 2013/Spring 2014

- Worked with 4 other Seniors for 2 semesters to produce a mapping of users from a GMC truck forum

Publications

Parallel Implementations of Search Algorithms September 2013

- Comparison of different methods of parallelization in regards to search algorithms

Other Work Experience

Subway Employee, Subway, Mechanicville, NY July 2008-August 2013

- Long-time trusted employee of 5 years during summers and weekends

DEVIN W. HURLEY

48 Wesley Hill Lane
Warwick, NY 10990
(845) 544-0002

dwl1hurl@siena.edu

<https://github.com/dhurley14> - Some projects I've worked on

Siena College Class of 2014
B.S. Computer Science
Minor in Mathematics and Computational Science

Objective: To obtain a position where I can solve challenging problems which reside within the realm of computer science while continually learning and building upon my analytical skills.

Experience:

June 2013 – August 2013 – Content Intern at TradingScreen

- Developed a standalone application for use by TradingScreen's office managers around the globe to send information on clients to a database.
- Worked on a redesign of the front-end web chat client.
- Researched different technologies to use for our in-house chat client that was being upgraded as a cost-saving measure.

June 2012 – September 2012 – User Experience Intern at Pitney Bowes MapInfo

- Researched best practices in user interface design
- Prototyped user interfaces for future versions of MapInfo Professional in Microsoft Expressions

Project Euler (2012 - current) – <https://github.com/dhurley14/projectEuler>

November 2011 – May 2012 – helpdesk consultant at Siena College ITS

- Worked with students and faculty to solve their computer issues
- Ran solitary shifts at the help desk at Siena's School of Science.

Summer 2011 – Westcon Group, Tarrytown NY– IT specialist

- Created a portal for a customer's sales team to access sales info and communicate with the team at Westcon.
- Used Google Apps script to automate a notifications system for the site as well.

Relevant Academics:

Calculus I; Calculus II; Calculus III; Discrete Math I; Discrete Math II (Theory of Computation)

Intro to Computer Science with Python; Intro to Programming with Java; Data Structures with Java; Object Oriented Programming with Java; Assembly Language and Computer Architecture; Data Base Management; Communications and Networks; Analysis of Algorithms; Numerical Methods.

Honors and Awards: Presidential Scholar 2010 - (current); Mu Alpha Theta – National Math Honor Society – appointed April 2008; NYSPHSAA Scholar Athlete Award recipient.

Extracurricular Activities:

Toys for Tots 2010 - 2011

Outing Club 2010 – 2013

Additional Skills:

Proficient in Java, Python 2.7, Unix,

Play Drums and Piano

Ski and Snowboard Instructor

DEVIN W. HURLEY

48 Wesley Hill Lane
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Extracurricular Activities:

Toys for Tots 2010 - 2011

Outing Club 2010 – 2013

Additional skills:

Proficient in Java, Python 2.7, Unix,

Play Drums and Piano

Ski and Snowboard Instructor

Chan Tran

23 Rolling Hills Road (518) 596-2170
 Schenectady, NY 12309 cs05tran@siena.edu

EDUCATION

Siena College, Latham, NY Senior student in double bachelors in Physics and Computer Science (GPA: 3.6). Expected graduation in May 2014.

Colonie Central High School, Albany, NY Graduated June 2010 with Advanced Regents Diploma
 GPA: 95 (Honor Roll Grades 9-12)

RESEARCH EXPERIENCE

06/2013 - 08/2013 Research Experience for Undergraduates on nanowires using First-principles Calculations of Phonon Dispersion in Silicon Polytypes. **Advisors:** Dr. Frederic Sansoz, University of Vermont.

05/2013 - 08/2013 Data analysis on neutrinos for Daya Bay Reactor Neutrino Experiment and refurbishing Viper Radio Telescope, National Science Foundation. **Advisors:** Drs. John Cummings and Allen Weatherwax, Siena College.

04/2011 - 08/2011 Developed a Twitter search engine for the Microblog Track - Text Retrieval Conference (TREC), National Institute of Standards and Technology (NIST). **Advisors:** Drs. Small and Lim, Siena College.

WORK EXPERIENCE

10/2011 to present Mentor children (5th - 12th grade) in Urban Scholars, **Siena College**, Latham, NY.

09/2011 to present Tutor in Physics and Chemistry, **Siena College**, Latham, NY.

08/2010 to 05/2013 Cashier, **BJ's Wholesale Club**, Albany, NY.

01/2011 to 06/2011 Teaching Assistant in General Physics, **Siena College**, Latham, NY.

ACTIVITY INFORMATION

04/2012 to present **Sigma Pi Sigma National Physics Honor Society** Membership.

09/2011 to present **Physics Club Membership**, Siena College, Latham, NY.

04/2009 to 06/2010 **National Honor Society Membership**, Colonie Central High School, Albany, NY.

11/2007 to 05/2010 **Robotics Club Membership**, Colonie Central High School, Albany, NY.

07/2009 to 09/2009 Volunteer at **Saint Peter's Hospital**, Albany, NY.

CONFERENCE CONTRIBUTION

11/15/2011-11/17/2011 Poster: *Utilizing Google for Query Expansion in STIRS* (Siena Twitter Information Retrieval System). **TREC 2011 Conference**, NIST campus, Gaithersburg, MD.

HONORS AND AWARDS

- ❖ **Siena College**, Latham, NY. President Scholarship and Siena Grant from 2010 to 2013 academic years.
- ❖ **Colonie Central High School**, Albany, NY.
 - US. President's Education Award Program for Outstanding Academic Excellence, June 2010.
 - Outstanding Academic Achievement Award for National Honor Society Membership from 2007 to 2010.
 - Achievement Citation: Principal's Prize, June 2010.
 - Xerox Award for Innovation and Information Technology for outstanding achievement in the pursuit of innovative approaches, May 2009.
- ❖ **Saint Peter's Hospital**, Albany, NY.
 - Certificate of Recognition for the contribution of time to volunteering, August 2009.

Zachary L. Witter

6648 West Carter Rd. Rome, NY 13440
zl14witt@siena.edu
315-292-8632

Education

Siena College **2010-2014**

B.S. in Computer Science

- Overall GPA: 3.21; Major GPA: 3.73
- Undergraduate Coursework: Robotics, Algorithms, Database, Android Application Development

Languages and Technologies

- Proficiently skilled in Java, and JavaFX, moderately skilled in Python
- Capable of productively operating BlueJ, Eclipse, and NetBeans

Employment

Software Intern **2013-present**

X-Ray Optical Systems

Active Developer in the creation of automated systems for scientific instruments

- Developed a user guided automation for testing Vacuum tubes used in Scientific Instruments
- Research on uses and implementations for new JavaFX 2.2 JDK
- Actively developing IOP testing software for newly released "HD Mobile" Product

Student Researcher **2012**

Siena College Institute of Artificial Intelligence

Partaking in the creation of Siena's Automatic Wikipedia Update System (SAWUS)

- Constructed a Knowledge Base Acceleration program built to speed up the process of multi-user upkeep for informational resource websites
- Designed the algorithm that isolates the most relevant key words for a given entity
- Wrote the comparison logic that determined a document's relativity to an entity
- Submitted and presented at the Text Retrieval Conference (TREC), hosted by the National Institute of Standard Technologies (NIST)
- Displaying the responsibility necessary to complete both independent and team goals in an efficient and timely manner

Project Experience

Vacuum Tube Tester - Java, JavaFX **2013**

- Designed and implemented a full application for testing Vacuum Tubes
- Produced a graphical user interface to guide a user through an automated test on Vacuum tubes used in scientific products.

Ticket To Ride Simulator - Java

- Java based team organization project that simulated the board game "Ticket to Ride" **2013**

Piano Bot - Python, Linux, Robotics Operating System **2012**

- Exhibited ability to communicate cooperatively with team members in a collaborative group project
- Programmed a mini-maxwell robot to play on a piano the songs presented to it by an audience
- Focused on the communication between nodes and timed execution of movements

Extra-Curricular Activities

- Skilled in automotive restoration of the 1979 Pontiac Trans Am and 1978 Z28 Camaro
- Earned a first degree black belt by practicing Tae Kwon Do at Scalise Martial Arts

Appendix B: Glossary of Terms

API – **A**pplication **P**rogramming **I**nterface specifies how some software components should interact with each other.

CSS – **C**ascading **S**tyle **S**heet is a style sheet language used for describing the presentation semantics (the look and formatting) of a document written in a mark-up language.

Eclipse – a multi-language Integrated development environment (IDE) comprising a base workspace and an extensible plug-in system for customizing the environment.

Gantt – a chart in which a series of horizontal lines shows the amount of work done or production completed in certain periods of time in relation to the amount planned for those periods.

gedit – a text editor for the GNOME desktop environment, Mac OS X and Microsoft Windows.

HTML – **H**yper**T**ext **M**arkup **L**anguage is the main markup language for creating web pages and other information that can be displayed in a web browser.

Javascript – an interpreted computer programming language using client side web pages.

JSON – **J**ava**S**cript **O**bject **N**otation, is a text-based open standard designed for human-readable data interchange.

MySQL – the world's most widely used open-source relational database management system (RDBMS) that runs as a server providing multi-user access to a number of databases.

PHP – **P**HP **H**ypertext **P**reprocessor is a server-side scripting language designed for web development but also used as a general-purpose programming language.

Python – a widely used general-purpose, high-level programming language.

Sublime Text – a cross-platform text and source code editor, with a Python application programming interface (API).

vim – a text editor based on the vi editor. Vim was developed by Bram Moolenaar.

Waterfall Model – a sequential design process, often used in software development processes, in which progress is seen as flowing steadily downwards.

Web Hosting Pad – a web hosting site with support for server-side programming and front-facing web pages.

XML – **E**xtensible **M**arkup **L**anguage is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable.