Requirements Specification

SaintBook

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1.1 Product Overview and Summary

With the popularity of social networking sites ever increasing, it is important to take advantage of and expand on this trend. Social Networking sites allow people within a community to connect on a more personal level. Here at Siena College, Digital Evolutions would like to take this to a new height by implementing a project known as SaintBook. Dr. Eric Breimer, Professor at Siena College would like Digital Evolutions to create a networking site that is similar to Facebook, but solely for the Siena Community. The biggest difference between this site and Facebook will be that SaintBook will be group oriented rather than based purely on socializing. The site will allow Siena students, faculty and alumni to create personal accounts containing a profile page, pictures, friend, and group listings. One of the main purposes of the groups will be to promote the 6 learning goals, or 6 R’s of Siena. Groups will be labeled in connection with one or more of these goals and reports will be automatically generated showcasing how the groups are accomplishing the 6 R’s. Each member of the site will also have reports generated displaying how they personally are achieving the 6 R’s of Siena based on their involvement in their groups. Users who are not a member of the Siena community will also be able to access the site by using a guest account. Guests will have the ability to view profiles and groups. This will give guests the opportunity to learn more about everything that goes on inside the Siena community.

1.2 Development, Operating, and Maintenance Environments

SaintBook will be developed on two workstation computers provided by Siena College that are located on the 3rd floor of Roger Bacon in the Software Engineering lab. One of these workstations is a Dell Optiplex760 desktop which is running Windows Vista Enterprise Service Pack 2 (32-bit) on an Intel Core2 Duo processor clocked at 2.93GHz with 4.00GB of memory and 146GB of hard drive space. The other workstation is an iMAC5 desktop which is running MacOSX version 10.4.11 on an Intel Core2 Duo clocked at 2.00GHz with 1.00GB of memory and 148GB hard drive space.

SaintBook will be hosted for development purposes on Siena’s Oraserv server which is running CentOS Linux release 5.2 with Apache Web Server version 2.2.9 and PHP version 5.2.6 installed. Digital Evolutions has not decided what type of database will be utilized but Oraserv has MySQL version 5.0.45 and Oracle version 11.1 available for use. Unfortunately, at this time the hardware specifications for Oraserv have not yet been made available. The client has shown interest in utilizing a separate production server once the project is completed, and specifically noted Host Monster as a potential host. Host Monster’s servers run a version of Linux with Apache Web Server version 2.2.13, PHP version 5.2.9 and MySQL version 5.0.81. Similar to Oraserv, the hardware specifications for Host Monster’s servers have not been made available at this time.

SaintBook will be functional across Internet Explorer 7 and 8, Firefox 3.5, Google Chrome 3 and Safari 3.2.1 web browsers. Information regarding maintenance environments will be discussed at a later time.
1.3 UML Use Case Diagram

UML Use Case Diagrams are created to show the different users and major functions of a system. The users are known as Actors and the functions are known as Uses. Lines are drawn between both to show the relationship. A legend is shown below, followed by the actual diagram.

1.3.1 UML Use Case Legend

The above image displays a legend for our UML Use Case Diagram which is shown on the next page. This legend explains the different objects used in the diagram and what each represents.
This UML Use Case Diagram shows all the major functions of each user for the system. Users include both human and non-human.
1.4 User Case Narratives

**General User**  
**Students, Faculty and Staff**

Students, faculty and staff will all be classified as the general user. This user will have three different options upon first accessing the site. The General User can either log in using their username and password if already registered; the General User can register using only their @siena.edu e-mail, and the user can also change their password if forgotten. Once the user has logged in, the Student, Faculty or Staff will have the ability to manage their own profile by adding questions and pictures. This user will also have the ability to choose what will be displayed publicly and what will be kept private for the user’s personal profile. The Student, Faculty or Staff will be able to send friend requests and also accept or deny friend requests. The user will also be able to write on the wall of any other user they are friends with. The General User can also create a group and edit the group’s profile. The creator of the group will automatically become the president of the group and must name a vice president. The group creator will be able to control who can join the group. The president/vice president of a group will have abilities including but not limited to managing the groups profile page, accepting/rejecting/eliminating users from the group, and editing which members will appear on the home page. The General User will also be able to send join requests for the group, as well as post on the groups wall once becoming a member. To easily find groups on the site the General User will be able to use the search function or the A-Z index provided. The General User will also be able to view personal reports detailing their personal activity in each of the groups the user is a part of. These reports will show how the General User has accomplished the 6 R’s during the time the user has spent at Siena.
**Administrators**

Administrators will be an important user for this project. This user will also be able to log in to the site using their registered user name and password, or the user can register themselves using the required @siena.edu domain. Administrators can also have their own personal profiles to manage, add questions to and post pictures on, and choose which pages of this profile will be displayed as public and which pages will be left private. Administrators can request to become friends with other users and can also accept or deny their own friend requests. Administrators will also have the ability to write on the wall of any other user they are friends with. This user can create and edit groups on the site and the creator of any group will automatically become president of that group and must immediately name a vice-president. As president or vice-president, Administrators will have control over the profile page of the group, any pictures or posts on it, and control over any and all members wishing to join or remain in the group. This user also controls which members appear on the homepage for the group. These abilities are subject to change as the project becomes more in depth. Administrators are also able to post on the wall for a group once becoming a member, just like students, faculty and staff are allowed to do, and Administrators will be able to send join requests as well. Additional abilities of Administrators over the General User include the ability to label individual groups with attributes or certifications dealing with the 6 R's (learning goals). Administrators can view reports about each of these groups discussing the ways in which the groups are connected to and live up to the goals outlined by the 6 R's. Administrators can also delete groups which do not seem pertinent to the Siena community and will monitor wall postings, pictures, and activities of the groups to be sure everything is kept up to the standards set forth by Siena.

**Alumni**

Alumni will still have the option to be a user of this site. This user will have many of the same abilities as the Students, Faculty, and Staff. Once Alumni navigate to the homepage of the site Alumni will be able to log in, still using their @siena.edu email address. Or if Alumni have not done so already, Alumni can register using this @siena.edu email address. This user can create, edit, and manage personal profiles and post information, pictures, and questions to the profile. Just like Administrators and the General User, Alumni will be able to decide which pages of the profile will be open to the public and which pages will be left private. Alumni can also send out friend requests to any registered user and can also accept or deny personal friend requests. This user will be able to write on the wall of any user they are also friends with. The biggest difference in Alumni's ability compared to the abilities of Students, Faculty, Staff and Administrators is that Alumni will not have the ability to create groups. This also means Alumni can never have control over any of the groups. Alumni can still join groups and show support, post to the wall and have their personal involvement shown, but the total extent of their abilities within the groups will be determined at a later date.
Guests

Guests will be a very unique type of user. The abilities of this user will be very limited. Guests will be able to self-register using an email other than @siena.edu. Once this user registers with this different email and has it verified, the user will automatically be labeled as a guest. Guests will be able to do a few minor things. Guests will not be able to create personal profiles, but Guests will be able to view any public profile created by current registered users, such as the Students, Faculty, Staff, Administrators and Alumni. Guests can also view the different public groups on the site but this user will not be able to join any groups. Guests cannot post or change any content in any of the groups or elsewhere on the site. The main purpose for Guests being able to log in to the site is to have the chance to see what current members of the Siena community do with the time spent at the college.

Super Administrator

The Super Administrator will not be an actual user, but a special user account. This account will be a single user name and password that multiple users may have access to. The sole purpose of the Super Administrator account will be to promote registered General Users to the status of Administrator or to demote Administrators down to the status of General User.

1.5 Data Flow Diagrams

The purpose of Data Flow Diagrams is to show the “flow” and transformation of data through the system. These diagrams are used as a visualization tool to help the audience get a better idea of what exactly is going on in the system. The first image shown below will be a legend describing what each of the different items in the diagrams are and what they represent. A Context Diagram is shown next, which is the general overview of each of the different agents interacting with the system. The Level 0 Diagram shows some more details about which processes each of the agents will be interacting with. Arrows are drawn to show the flow of data between the agents and processes. Following the Level 0 Diagram are two Level 1 Diagrams, each for one of the processes of the system. Each Level 1 Diagram shows that individual process in greater detail and contains labeled arrows to indicate what information is flowing to and from the processes and agents.
1.5.1 Data Flow Diagram Legend

Entities/Sources/Sinks of the system which represents the users. Data will flow from and to these entities.

Processes of the system which represents the functions. Data will flow from and to these processes.

Stores of the system which represent what stores the data. Data will flow into, be saved and be pulled from these data stores.

The Flows of the system which represent the chunk or packets of information going from one component to another.

The above image displays a legend for the Data Flow Diagrams. This legend explains all objects used in the diagram and what they represent.
1.5.2 Context Diagram

This diagram depicts a broad representation of the entities of the system and their interaction with the system.
1.5.3 Level 0 Diagram

This diagram depicts a detailed interaction or data flow between the entities and the processes of the system.

Key:
A. Login request    F. Process sign request    M. Process assign label
B. Use functions    G. Insert label
C. Sign up request  I. Give access
D. Process login request  J. Receive access
E. Process functions  K. Process granted access
1.5.4 Level 1 Diagram: Authenticate

This diagram depicts a more detailed representation of the Authenticate process of the system.
1.5.5 Level 1 Diagram: Register

This diagram depicts a more detailed representation of the Register process of the system.
1.6 Prototypes Used for Discovery

This past summer, a member of team Digital Evolutions, Alan DiStasio, implemented a site with some of the same features that will be implemented for SaintBook. This site was used as a reference point to gather information for design and structure features that may be used for SaintBook. Below are a few screen shots of the site that was referenced. This is only a prototype that was used to gain further knowledge and is not necessarily how SaintBook will actually be developed.

![Login Screen](image1)

The above figure is an image from the prototype site that displays the login screen for users.

![Posting Screen](image2)

The above figure is an image from the prototype site that shows how users are able to post something to their wall.
Digital Evolutions has also developed an additional mockup shown below. This image will be used as a template and starting point for SaintBook. This layout for the site is subject to change based on feedback from the client and further ideas developed by the team.

The above figure displays a sample mockup of the home page for SaintBook.
1.7 Functional Requirements Inventory

This site will run on all major browsers including, Internet Explorer 7 and 8, Mozilla Firefox, Safari and Google Chrome.

The following is a list of the functional requirements for each user. The requirements are grouped by user case and there are 5 different users for SaintBook.

The General User

- Will be able to register for the website using @siena.edu email
- Will be able to securely login to the system using a registered username and password
- Will be able to reset/change password
- Will be able to modify profile page
  - Will be able to upload/delete individual photos
  - Will be able to add/remove questions and answers
- Friends
  - Will be able to add/remove friends
  - Will be able to send friend requests
  - Will be able to accept/decline friend requests
  - Will be able to view all profile pages of friends
- Creating Groups
  - Will be able to become president of the group
  - Will be able to and are required to name a vice-president
  - Will be able to edit the profile of the group they create
    - Will be able to upload/delete individual photos
    - Will be able to add/remove questions and answers
  - Will be able to accept/decline member join requests
    - Will be able to write how the person is involved in the group if accepted
  - Will be able to remove users from the group
  - Will be able to feature users on the groups home page
  - Will be able to accept/decline fan requests from other groups
  - Will be able to send requests to become a fan of another group
  - Will be able to choose which of the groups pages (profile, home, friends, groups) can be viewed by non-members of the group
The General User continued

- Will be able to send a request to join a group and state why they want to join that group
  - Will be able to view all pages of groups they are members of
- Posting
  - Will be able to post on the walls of friends only
  - Will be able to post on walls of groups they are members of
- Will be able to modify the home page to display their favorite groups
- Will be able to choose their top three groups to always be displayed in the page header
- Will be able to upload a profile picture
- Will be able to choose which pages (profile, home, friends, groups, report) can be viewed by non-friends
- Will be able to view a list of all users and a list of all groups
- Will be able to search for groups and people
- Will be able to view a personal report page that shows groups labeled with one or more of the 6 R’s that they are a member of

Administrator

- Will be able to register for the website using @siena.edu email
- Will be able to securely login to the system using a registered username and password
- Will be able to reset/change password
- Will be able to modify profile page
  - Will be able to upload/delete individual photos
  - Will be able to add/remove questions and answers
- Friends
  - Will be able to add/remove friends
  - Will be able to send friend requests
  - Will be able to accept/decline friend requests
  - Will be able to view all profile pages of friends
- Creating Groups
  - Will be able to become president of the group
  - Will be able to and are required to name a vice-president
  - Will be able to edit the profile of the group they create
    - Will be able to upload/delete individual photos
    - Will be able to add/remove questions and answers
  - Will be able to accept/decline member join requests
    - Will be able to write how the person is involved in the group if accepted
  - Will be able to remove users from the group
  - Will be able to feature users on the groups home page
Administrator continued

- Will be able to accept/decline fan requests from other groups
- Will be able to send requests to become a fan of another group
- Will be able to choose which of the groups pages (profile, home, friends, groups) can be viewed by non-members of the group
- Will be able to send a request to join a group and state why they want to join that group
- Will be able to view all pages of groups they are members of

Posting
- Will be able to post on the walls of friends only
- Will be able to post on walls of groups they are members of
- Will be able to modify the home page to display their favorite groups
- Will be able to choose their top three groups to always be displayed in the page header
- Will be able to upload a profile picture
- Will be able to choose which pages (profile, home, friends, groups, report) can be viewed by non-friends
- Will be able to view a list of all users and a list of all groups
- Will be able to search for groups and people
- Will be able to view a personal report page that shows groups labeled with one or more of the 6 R’s that they are a member of

Will have a control panel
- Will be able to delete any user
- Will be able to delete any group
- Will be able to delete any post
- Will be able to delete profile questions/answers
- Will be able to delete any photos

- Will be able to label groups with one or more of the 6 R’s if the Administrator feels the group meets the requirement of the R(s)
- Will be able to view statistics showing how many groups are accomplishing which of the 6 R’s

**Bold** indicates abilities of the Administrator that are not abilities of the General User
Alumni

- Will be able to register for the website using @siena.edu email
- Will be able to securely login to the system using a registered username and password
- Will be able to reset/change password
- Will be able to modify profile page
  - Will be able to upload/delete individual photos
  - Will be able to add/remove questions and answers
- Friends
  - Will be able to add/remove friends
  - Will be able to send friend requests
  - Will be able to accept/decline friend requests
  - Will be able to view all profile pages of friends
- Will be able to send a request to join a group and state why they want to join that group
  - Will be able to view all pages of groups they are members of
- Posting
  - Will be able to post on the walls of friends only
  - Will be able to post on walls of groups they are members of
- Will be able to modify the home page to display their favorite groups
- Will be able to choose their top three groups to always be displayed in the page header
- Will be able to upload a profile picture
- Will be able to choose which pages (profile, home, friends, groups, report) can be viewed by non-friends
- Will be able to view a list of all users and a list of all groups
- Will be able to search for groups and people
- Will be able to view a personal report page that shows groups labeled with one or more of the 6 R’s that they are a member of

Guests

- Will be able to register for the website using a non ‘@siena.edu’ email
- Will be able to securely login to the system using a registered username and password
- Will be able to reset/change password
- Will be able to view only public information of groups and users

Super Administrator

- Will be able to securely login to the system using a registered username and password
- Will be able to make any already registered General User an Administrator
- Will be able to make any Administrator a General User
1.8 Non-Functional Requirements Inventory

The following is a list of non-functional requirements. These are the requirements that specify how the system should be.

- The system must be user friendly
- The system must run fast and efficiently
- The system must be easily maintainable
- The system must be easily modifiable
- The system must be stable

1.9 Exception Handling

At this time it is unclear exactly what types of exceptions may need to be handled for SaintBook, however, as more information is gathered and as Digital Evolutions moves through the next phase of development and design, it will become clearer. Types of exceptions that are anticipated may include having to deal with incorrect input entered by a user; only correct data will be accepted and if incorrect information is entered then this will be dealt with by notifying the user of the mistake. Another exception could be if a user attempts to hack the system in an attempt to gain access to the database. This would be dealt with by ensuring all information sent by a user is valid and safe. Lastly there will be folders on the system that contain data that users do not need to see. To prevent a user from entering a relative URL in an attempt to gain access to these folders, measures will be put in place to redirect the user away from the data.

1.10 Early Subsets and Implementation Priorities

The important priorities that need to be implemented are:

- The ability to run on all major browsers
- The ability to have a friendly user interface
- The ability to have a secure login and registration for all users
- The ability to have email verification for registration
- The ability for users to create profiles
- The ability for the site to be updated and improved in the future
1.11 Foreseeable Modifications and Enhancements

In the future, there are several possible modifications and enhancements that could be made to SaintBook. The search function that is being implemented now will just be a basic search function for an exact match. This search could be greatly improved in the future by displaying results that are also similar and not only exact matches. The ability to hide certain information could also become more in depth in the future whereas right now users will only have the ability to hide entire pages.

1.12 Acceptance Criteria and Testing Requirements

The acceptance criteria will be determined by the functional requirements inventory listed in section 1.7 of this document and the non-functional requirements inventory listed in section 1.8 of this document. By definition, functional requirements are what the system will be able to do and what is testable about the system while in contrast, the non-functional requirements define how the system will be; the elements of the system that are not testable. At the completion of this project, team Digital Evolutions will determine which of these requirements were met and which were not met. Please refer to the sections listed above to see the complete listing but keep in mind that these requirements are subject to change and can be added to as more information is gathered.

SaintBook will be tested on both Windows and Mac operating systems and with the four major browsers Internet Explorer 7 and 8, Mozilla Firefox, Safari and Google Chrome. Testing requirements will be decided upon and developed by Digital Evolutions. The first set of tests will be a set of individual unit tests that will break the system down into separate modules. Once it has been determined that each individual module works on its own, then another set of tests will be run on the entire system. This will connect all of the modules and bring the entire system back together to be tested further as one whole entity. These two sets of tests will be outlined in great detail in both the Preliminary Design document as well as the Detailed Design document. The results of all of these tests will be presented in the Acceptance Test document where it will be determined whether or not all requirements were met and work properly and efficiently.
1.13 Design Hints and Guidelines

Since it is still very early in the development phase of this project, there are not many design hints and guidelines known at this time. One thing that has been stated by the client regarding this topic is that there will be no external applications developed for SaintBook. The client has specified that contrary to Facebook, which has applications such as the bumper sticker application or the Farmville application, SaintBook should not be developed with the ability to create any items similar to this. SaintBook should be built based around things related to Siena College only. In the future, more guidelines may be laid out by the client or discovered by the team, in which case those guidelines would be taken into account and implemented properly.
Appendix A: Sources of Information

The information presented in this document was gathered through meetings held with the client, Dr. Eric Breimer. Information was also taken from class lectures held with Dr. Lederman and from documents written by past Software Engineering groups.
Appendix B: Glossary of Terms

6 R’s - Learning goals that Siena abides by as a Franciscan College. They are:

- Reason (Informed Reasoning)
- Rhetoric (Effective Communication)
- Reflection (Meaningful Reflection)
- Regard (Regard for Human Solidarity and Diversity)
- Reverence (Reverence for Creation)
- Responsibility (Moral Responsibility)

Apache - A web server software.

Database - A collection of data arranged for ease and speed of search and retrieval.

Facebook - A global social networking website that is operated and privately owned by Facebook Inc.

Functional Requirements Inventory - Define what the system will be able to do and what is testable about the system.

Gantt Chart - A Gantt chart is a type of bar chart that illustrates a project schedule. Gantt charts illustrate the start and finish dates of the terminal elements and summarize elements of a project.

Group - Groups bring together a collection of people associated with some aspect of the community, and will be the main focus of the site.

Internet - A global system of interconnected computer networks that use the standardized Internet Protocol Suite (TCP/IP) to serve billions of users worldwide. It is a network of networks that consists of millions of private and public, academic, business, and government networks of local to global scope.

Label - The process in which administrator’s associate groups with the 6 R’s.

MySQL - A Multithreaded, multi-user Relational Database Management System.

Non-Functional Requirements Inventory - Define how the system will be; the elements of the system that are not testable.

Oracle - A relational database management system produced by Oracle Inc.

PHP - PHP Hypertext Preprocessor - An open source (free) programming language that is used for dynamic pages and is a high-level scripting language.
**Profile** - Information about a student including but not limited to personal information, groups, friends and reports showcasing their involvement in campus activities and the 6 R’s.

**UML - Unified Modeling Language** - A standardized general-purpose modeling language in the field of software engineering.

**UML Use Case Diagram** - This is a type of behavioral diagram defined by and created from a Use-case analysis. Its purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as use cases), and any dependencies between those use cases.

**URL - Uniform Resource Locator** - Global address of documents and other resources on the World Wide Web.
Appendix C: Timeline - Gantt Chart

The Gantt Chart is utilized by team Digital Evolutions as a timeline of what needs to be completed for the semester. This timeline displays items such as project deadlines, team meetings, client meetings, and any other important events for the semester.

The Gantt Chart is displayed on the following page.
The Gantt Chart displays our timeline for the semester, showing team meetings, client meetings, and milestones.