Lab 1 – RocStar Application Product Description

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1 Introduction

Mobile applications are becoming an essential form of communication for organizations as mobile devices increase their user base; it is extremely important for organizations to have an application presence for both their customer-side and business-side interfaces. The Roc Solid Foundation, a nonprofit whose mission is to help children who are suffering from childhood cancer, as well as their families, must have a strong online presence through a mobile application. Organizations such as the Roc Solid Foundation must keep up with the changing aspects of Internet traffic. The Roc Solid Foundation also provides families with Ready Bags, bags filled with essentials such as toiletries, clothing, and money for hospital vending machines, when they find out their child has to be admitted to the hospital. This relieves some stress on the families because they do not have to worry about the small things that are often overlooked in preparation for an extended hospital stay. Since Roc Solid gives families tablets in the Ready Bags when they learn their child has cancer, a pre-loaded RocStar application on the tablets will facilitate communication from all involved parties. A mobile application is critical for Roc Solid’s future growth, because, according to Statistica.com, the projected number of app downloads in 2017 will exceed 268 billion (Statistica, 2016). Roc Solid must have the advantage of a mobile application for growth so that they can continue changing the lives of kids diagnosed with childhood cancer. According to CureSearch, “each year, the parents of approximately 15,700 kids will hear the words ‘your child has cancer’” (CureSearch, n.d.). A mobile application such as the RocStar Application will help Roc Solid to establish better communication with cancer patients’ families, doctors and hospital staff, and volunteers for the
philanthropic efforts for which Roc Solid is known. Creating a mobile application soon will help Roc Solid remain relevant in the world of mobile application usage in order to better serve families with children diagnosed with cancer.

The addition of a mobile application will not only help families better communicate with hospital staff, doctors, and Roc Solid volunteers, but it will also help Roc Solid better integrate their communication with all the involved parties. The communication methods currently used by Roc Solid—e.g., fax and phone calls—are dated and inefficient, and a mobile application available to all involved parties will improve this communication. It is essential for Roc Solid to know, in real time, the status of build projects, the status of the children they are helping, and the number of volunteers they currently have available to them. They also need to be able to track the distribution of Ready Bags that are kept in stock at various hospitals across the country. Volunteers must be able to be assigned to specific families and projects, materials for build projects must be bought and a list of materials maintained while still communicating with the families. It is clear to see that this is a tedious process when done manually, as it is done today, but the RocStar mobile application can automate this manual process to better serve the families, volunteers, hospital staff, and Roc Solid staff.

From the point of first contact with the family, Roc Solid performs nineteen steps to manage their involvement with the case, as shown in Table 1. Additionally, relevant information must be manually entered into their customer relationship management software, NeonCRM; this manual process is reflected in Roc Solid’s current process flow, which is depicted in Figure 1. The RocStar application will help automate some of these processes so that Roc Solid staff can be more efficient in other areas, rather than manually manipulating the data. Because of the extensive number of manual steps that must be taken by Roc Solid, it is important for them to
have an integrated software solution that can benefit all those involved, so the process can be run more professionally. With the addition of the RocStar mobile application, this process can be greatly reduced and automated.

<table>
<thead>
<tr>
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<th>Description</th>
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<td>Contact Family</td>
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<td>15</td>
<td>Order Limo</td>
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<td>16</td>
<td>Confirm Hotel</td>
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<td>17</td>
<td>Confirm Transportation</td>
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<td>18</td>
<td>Order Table/Chairs</td>
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<tr>
<td>19</td>
<td>Confirm with Family on Activity</td>
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*Table 1: Current manual steps taken by RSF from point of first contact: This figure illustrates the extensive manual processes RSF takes from the beginning of family meeting to completion of a build project.*

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Figure 1: Current Process flow: This figure illustrates the steps that RSF must take from the point of first contact with a family to the completion of a build project.

The solution to these issues is an integrated software solution that benefits all involved parties, both around the Roc Solid Foundation, as well as volunteers, families, and hospital staff. The most important characteristic of this software product is the direct line of communication available to all involved parties. Another important characteristic is the ability for real-time collaboration of volunteers on build projects, with things such as shared checklists and location-based notifications. These areas, along with the capability of family members to complete forms and waivers inside the app to save time and effort, will greatly improve the effectiveness of Roc Solid’s philanthropic efforts.
2 Product Description

RocStar is an HTML5-based web application that will be coded into a wrapper application that will be available on both iOS and Android platforms for the improvement of communication and coordination of all parties involved with the Roc Solid Foundation. With the inclusion of important functionality such as completing waivers and online forms, shared documents and checklists among members, direct communication between families and RSF staff, and the greatly improved response time afforded by digital communication, RocStar should greatly improve the efforts of the Roc Solid Foundation. Also, because of the exposure given to Roc Solid from being on the Google Play Store and Apple’s App Store, Roc Solid will see more brand awareness from people who may not have heard of them otherwise, as app placement on respective party’s App Store platforms helps advertisement.

2.1 Product Features and Capabilities

There will be various levels of user permissions with Team Orange’s RocStar application, and each of them will fit the type of user involved. Volunteers, once signed in, will only see information that is relevant to them, such as checklists for build projects, volunteer lists, and build information for upcoming projects. Hospital staff will only see information relating to the referral of child patients to RSF and communication methods for them to interact with the children’s families, as this maintains a level of confidentiality for others who Roc Solid is affiliated with. When families log in to the application, they will be given access to inspirational videos to help them during their difficult situation, a family website used to communicate with others in the same situation, and a direct line of communication to hospital staff and RSF staff. When a RSF staff member logs in, he should be given an overview of each of the previously mentioned areas of interest, as well as pertinent information relating to the day-to-day operations
of the Roc Solid Foundation. This application is not designed to, in any way, diagnose an illness, nor is it intended to allow for the sharing of health records of any kind. HIPPA regulations are also not an issue once the family digitally completes the waiver allowing hospital staff to share information about the child’s condition with RSF staff. Because of the varying types of information that is displayed, depending on what type of user is signed into the application, the users will be able to easily access the information that is relevant to their role. Because of RocStar’s ability to streamline the communication and coordination of each of these user roles, the process flow with RocStar implemented, as illustrated in Figure 2, is greatly improved versus the process flow as it currently exists.
When families register for an account within the RocStar application, will be given the capability to enter their child’s name and health condition information, as well as sign waivers and family forms that Roc Solid needs to fulfill their volunteer efforts. They can also donate to RSF directly within the application, buy RSF merchandise, access their family website, receive push notifications about information on their family website, and access content such as videos and games.

When a volunteer authenticates into the RocStar application, he or she will be given only the information relevant to the volunteer role. They would have access to current and upcoming build projects, supplies checklists, team leaders’ and other volunteers’ contact information, and the appropriate forms to be completed for their participation. They can donate money to RSF,
access the RSF volunteer manual, and have a calendar of events. They will not have the same
information given to them that families will, for example.

Hospital staff members’ information in the RocStar application will be the most limited,
as they do not have many roles that need to be performed other than the referral form to register
a family with a Ready Bag. Beyond this, hospital staff can still send information to the family
members, but they will not need to spend a great deal of time within the application past the
initial referral. They can request RSF send them additional Ready Bags and communicate with
RSF staff. Volunteer coordinators and team leaders will be given elevated privileges over
volunteers. They will have the ability to see a list of all volunteers that can either be assigned to
specific projects or already are assigned to them, they can see the projects they are managing, as
well as notifications to keep them updated on the status of current projects. Lastly, RSF will need
to have testers in place to ensure that regular application updates are pushed to their respective
platforms to ensure the latest security updates are utilized and information is updated. They will
also need to spend extensive time testing the application for bugs and simulate each of the above
users’ roles.

2.2 Major Components (Hardware/Software)

There are only two physical hardware elements to Team Orange’s application solution.
The first is an end user’s mobile device capable of connecting to the Internet. This device should
run iOS or Android. Since Team Orange’s solution will be comprised of HTML5 content, a
desktop or laptop computer will also be an option for accessing the content. These devices will
require an Internet connection during use, as Team Orange’s application requires constant access
to the cloud and database information, since the information is never stored on the users’
devices.
The second piece of hardware required is a server. This can either be housed on the property of the Roc Solid Foundation, or it can be housed at an off-site location funded by a larger organization, such as servers owned by Amazon Web Services. Team Orange’s software requirements are the “cloud,” for access to the information stored on the server; a database, which is also stored on the server, for the indexing and organization of information; and the RocStar application itself. The use of the cloud, in this case, ensures that the information is not stored on the users’ devices, and this ensures that the information is constantly updated. The database is required to house the information of all the volunteers, hospital staff, families, and volunteer coordinators. Lastly, the RocStar application is used for the users to interface with the information being presented to them on their mobile device. This application must intelligently scale to the resolution and screen size of the device the user is running. It is essential for this information to be presented to the user in a timely fashion, and all the information must be kept secure. It is also essential for the server to be reliable, as referral forms are critical pieces of information that should not be lost.

A diagram of the major functional components of RocStar’s software solution can be found in Figure 3. The user interfaces with their mobile device running the RocStar mobile application, whether iOS or Android-based, and the mobile application interacts with the cloud, which access information stored on the server.
The RocStar application prototype will rely on the Old Dominion University Computer Science Department’s Linux servers, and it will run on a virtual machine installed on the Linux server. Team Orange will also require access to ODU’s Apache Web Server and MySQL for the user interface and the simulated database information. PHP, Swift, and Java programming are also required for programming the web, iOS, and Android applications, respectively.
3. Identification of Case Study

Roc Solid Foundation’s current solution for interacting with families, volunteers, and hospital staff is severely overcomplicated and outdated, and it can be greatly improved with the implementation RocStar. Utilizing methods of communication such as fax, in 2017, Roc Solid has fallen behind on up-to-date forms of communication, but RocStar aims to help them move to a digital form of communication that will also help them have workers focus more on helping children. Volunteers also currently suffer decreased productivity because they rely on paper forms and checklists for build projects, rather than a shared, digital form of these items. RocStar will face minimal competition, considering many other solutions do not have direct integration with NeonCRM. VolunteerMark, GiveGab and YourVolunteers provide some of the functionality that RocStar will be implementing, but they do not have NeonCRM integration. Because of the gap in the market for an integrated software solution to help organizations such as RSF, RocStar should have no problem being implemented. Because the application’s foremost intent is to solve problems in communication and coordination, the problems observed by the Roc Solid Foundation should be greatly reduced, or even eliminated, after implementing RocStar. Those that will benefit from using RocStar will be: RSF staff, RSF volunteers, hospital staff, and families of children with cancer. Each user listed will see a tremendous benefit in the overall quality of communication and coordination with RocStar.
4. Product Prototype Description

RocStar will have minimal functionality differences between the prototype and the final application. The main difference in the prototype application and the final product is the inclusion of an additional user in the prototype—a tester—that will be necessary for testing the application during development. The real-world application will serve as a tool for maintaining a database of families, volunteers, hospitals participating with Roc Solid, RSF staff, as well as user-specific functionality for each of these users. With the varying levels of access, the application will have to check the new user’s information at the time of registering for a new account against the database of all hospital staff, volunteers, families, and RSF staff to determine what access level they should be given during account creation. This is a crucial step, since RSF staff will have event creation and management capabilities, while families should not, for example.

In the prototype, a very small number of names will be simulated in the database prior to account registration, so the levels of access will be available within the prototype application and the real world application. The prototype will simulate each level of interaction with the application and serve relevant sample data accordingly. The prototype will simulate personal user information. All the information housed on the prototype database will be generic, untrue information for the purpose of simulating the application’s functionality; no private user information will be stored on Old Dominion University’s servers.
4.1 Prototype Architecture

The hardware needed for the RocStar prototype application will be very similar to the required hardware for the final application product. The hardware required for the RocStar application prototype consists of a MySQL database server, access to Old Dominion University’s Apache2 web server, and a virtual machine running on Old Dominion University’s Computer Science servers. Team Orange will be capable of simulating real-world application development on this virtual machine. Push notifications relevant to each type of user will be simulated using the respective development environments for iOS and Android applications. The prototype can be accessed both on campus at ODU, as well as remotely over the Internet.

The software needed for prototyping the RocStar application includes Linux, Apache, MySQL, PHP, Swift and Java for programming the prototype iOS and Android wrapper applications, a database, and the user interface. The prototype will be hosted on Old Dominion University's Computer Science Department’s Linux servers, and it will run on the Apache2 web servers. The MySQL database will store the user information and profiles, as well as other items such as checklists, referral forms, etc. PHP version 7.0 will be used to access the data from the MySQL database and display it in the application. Because of the architecture of the prototype, changes can be made quickly and easily for maintenance and bug fixes. Figure 4 depicts the major functional components of the prototype RocStar application developed in CS 411.

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Figure 4: Prototype major functional component diagram: This diagram depicts the major functional components of the prototype RocStar application.
4.2 Prototype Features and Capabilities

The prototype RocStar application's features and capabilities will closely resemble the features that the final application product will include. The prototype and the final application's features will include: notification algorithms, the ability to create new build projects, the ability to refer new families to RSF, NeonCRM integration, available checklists available to RSF volunteers for build projects, notification reminders, and the ability to create and edit user profiles. The prototype will integrate with RSF's customer relationship management system, NeonCRM, using their available API. The prototype will also interface with a database that stores user information, and it will include a calendar for build projects. Table 2 depicts the features of the prototype versus the features of the real-world product.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Real-world Product</th>
<th>Prototype</th>
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<tbody>
<tr>
<td>Customizable Notifications</td>
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<td>Yes</td>
</tr>
<tr>
<td>Build Project Creation</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Family Referral</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Integration with NeonCRM</td>
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<td>Yes</td>
</tr>
<tr>
<td>Volunteer Checklists</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Multiple user account permissions</td>
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<td>Yes</td>
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<tr>
<td>Push Notifications</td>
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<tr>
<td>Account Creation</td>
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<td>Yes</td>
</tr>
<tr>
<td>Testing User</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 2: Prototype Features and Capabilities vs Real-world product Features and Capabilities:
This table illustrates the features present in the prototype application versus the real-world application.
4.3. Prototype Development Challenges

Because of the nature of the application development process, Team Orange will face some challenges when prototyping the RocStar app. Perhaps the most significant challenge is providing the functionality of integrating the prototype application with NeonCRM. Because of the extensive knowledge needed to program with NeonCRM’s API, it will be difficult to integrate the simulated database with NeonCRM’s information. Also, Team Orange will face challenges because of development deficiencies. Because none of Team Orange’s team members has extensive experience in programming either Android or iOS applications, prototyping will require some adaptive learning. It will also be a challenge to ensure that the web application, which will handle the user interaction for all platforms, maintains a high level of user privacy. It will be necessary to employ industry best practices for data security in the prototype and the real-world application. Testing and deployment will also be concerns for the prototype due to the limited time Team Orange has for the project. One semester is a very limited window to ensure a stable prototype and thorough testing across multiple devices.
Glossary

Apache2 Web Server: Software for hosting the web server

API (Application Programming Interface): A set of rules and specifications that software programs follow to communicate with each other.

CRM (Customer Relationship Management) software: This type of software consolidates customer information and documents into a single database so business users can more easily access and manage it.

CSS (Cascading Style Sheets): Language for formatting content displayed on a web page

Firebase: Modular web-based tools designed for use in building software applications

HIPPA (Health Insurance and Portability Act of 1996): United States Act that provides data security for medical information

HTML (HyperText Markup Language): Language for web development

MySQL: An open-source relational database management system

NeonCRM: CRM software used by Roc Solid Foundation

PHP: Server scripting language

RSF: Roc Solid Foundation
References

