Lab 1 – RocStar Product Description

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1. Introduction

To be successful in an increasingly connected world, fast and continuous communication and coordination is a must. Processes are becoming more automated as society strives to meet this demand. A lot of what humans used to do is now being done by machines, e.g. food ordering, banking, and customer support. Processes have been hastened due to this automation. Even with this automation, there are still times when human interaction is required. Sometimes the automation itself just seeks to make the human interaction easier when faced with a complicated task.

The benefits of automation do not only apply to businesses, but also to philanthropic efforts. One such philanthropic effort that could benefit from automation is the Roc Solid Foundation. The Roc Solid Foundation is an organization that assists families that have a child diagnosed with cancer. The support they offer is multi-faceted. Roc Solid provides families with ready bags through their “Solid Support” program (Roc Solid Ready Support Program). These bags contain essentials for the family’s hospital stay after their child is diagnosed with cancer. Through their “Play It Forward” program, Roc Solid also builds custom backyard play sets for pediatric cancer patients when they return home (Play It Forward, 2015). If the family does not have a backyard, Roc Solid will do a custom room remodel for the child. Roc Solid’s charitable actions are very important to the welfare and morale of these children. This is why the effort to make the process by which Roc Solid operates a faster and more efficient one is so crucial. Every year, over 15,700 children ranging in age between birth and 19 years old are diagnosed
with cancer in the US, and the average age of diagnosis is just six years old (Roc Solid Foundation Presentation, 2016).

The RocStar application’s goal is to improve upon Roc Solid’s amazing charity work. By automating some of Roc Solid’s communication and coordination flows, RocStar will provide the efficiency and reliability that the Roc Solid Foundation needs. The current process by which Roc Solid operates includes nineteen steps from first contact with the family until project completion, as outlined in Table 1. This table lists a process which could readily be automated for better communication and coordination.

Table 1

<table>
<thead>
<tr>
<th></th>
<th>Current manual process of Roc Solid’s support to a family</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Application from Hospital</td>
</tr>
<tr>
<td>2</td>
<td>Contact Family</td>
</tr>
<tr>
<td>3</td>
<td>Meet/Skype Family</td>
</tr>
<tr>
<td>4</td>
<td>Family Waiver</td>
</tr>
<tr>
<td>5</td>
<td>Child Photo</td>
</tr>
<tr>
<td>6</td>
<td>Family Interview Questions</td>
</tr>
<tr>
<td>7</td>
<td>Pre-Build Report</td>
</tr>
<tr>
<td>8</td>
<td>Send Sponser Packet</td>
</tr>
<tr>
<td>9</td>
<td>Send Volunteer Packet</td>
</tr>
<tr>
<td>10</td>
<td>Sponsor Agreement</td>
</tr>
<tr>
<td>11</td>
<td>Food Sponsor Agreement</td>
</tr>
<tr>
<td>12</td>
<td>Project Info Report</td>
</tr>
<tr>
<td>13</td>
<td>Order Lowes Material</td>
</tr>
<tr>
<td>14</td>
<td>Order Porto John</td>
</tr>
<tr>
<td>15</td>
<td>Order Limo</td>
</tr>
<tr>
<td>16</td>
<td>Confirm Hotel</td>
</tr>
<tr>
<td>17</td>
<td>Confirm Transportation</td>
</tr>
<tr>
<td>18</td>
<td>Order Table/Chairs</td>
</tr>
<tr>
<td>19</td>
<td>Confirm with Family on Activity</td>
</tr>
</tbody>
</table>

Table 1. Current manual process of Roc Solid’s support to a family.
Another aspect of Roc Solid’s current process flow, as illustrated in Figure 1, is their manual entry of vital information into their NeonCRM database, as well as the manual processes to collect said information for the database. Also seen in Figure 1, Roc Solid’s volunteer efforts for “Play It Forward” projects are in need of communication and coordination improvements to bolster overall productivity. With RocStar, some of these processes can be automated. This will allow the Roc Solid Foundation to better focus on their mission of helping these families in need. By automating the process from the very beginning, RocStar seeks to improve the lives of not only Roc Solid employees, but also the hospital worker, project volunteers, families, and most importantly the pediatric cancer patients that use Roc Solid’s services.

Figure 1. Current process flow. This figure illustrates the areas in which automation could be applied to the current process flow to facilitate coordination and communication.
2. RocStar Product Description

RocStar is a web-based application that utilizes wrappers to bring it to the mobile arena. RocStar will be available to both iOS and Android users through the use of said wrappers. Through automation of some of Roc Solid’s processes, the efforts of the staff, hospitals, volunteers, and families will be made simpler and more efficient. The RocStar application will allow users to: digitally fill, sign, and send forms, communicate with the Roc Solid community, and manage tasks for projects. RocStar supports the objective of bringing Roc Solid’s philanthropic efforts to bear fully on their mission by eliminating the time currently consumed by processes that are readily automated.

2.1 Product Features and Capabilities

RocStar will incorporate different levels of user access. The level of access granted to a user will depend on the role performed. Some interaction with the application will be universal among authorized users, such as the ability to donate directly to the Roc Solid Foundation, access the online store, and be able to edit personal profile information. Other functionality will be delegated according to user role. Users designated as volunteers will be able to access a calendar of events to see which projects they would like to attend. Volunteers will have access to a communication board for enabling discussion between volunteers, and also from volunteers to the project leads they are working with. Volunteers will also have the ability to view project execution details, such as play set build instructions.

Users designated as Roc Solid Foundation staff members will have access to applications, forms, and requests from all users. Roc Solid staff users will have the unique ability
to transfer data from the application to their NeonCRM database that holds all of Roc Solid’s records. Some of the data that is transferred will include hospital applications for ready bags and their contact information, current customer information, and records of personnel assisting on projects. Staff users will require access to financial reports for past, present, and future projects to maintain accurate records. Another function imparted by RocStar onto Roc Solid staff members will be to send individual and group notifications to ensure proper coordination and communication as projects are assigned and actioned. Roc Solid staff will be able to communicate with the pediatric cancer patient’s family directly and obtain, through the RocStar application, an electronically fillable waiver from the family allowing Roc Solid to proceed with the “Play It Forward” section of their efforts. The waiver gives Roc Solid the ability to help the family and not be hindered by HIPAA regulations. The electronic submission of this documentation is important in getting the project initiated as quickly as possible.

A very important user of the RocStar application will be the family members of the pediatric cancer patient. The family member will be able to access the family page set up by the Roc Solid staff. On the family page, the user would be able to communicate with other family members signed up through RocStar. Tips, advice, and inspiration for the family will also be provided to the family via the family page. RocStar will ensure that the application incorporates a child-friendly mode so the patients themselves can easily interact with the application.

The team lead user will have access to all of the projects they are assigned to, as well as communication and oversight with all of the volunteers on their project. The team lead will also have access to information on other available volunteers that could help on their project. It is very important that leaders have the ability to effectively communicate and coordinate not only
with their volunteers, but also with their fellow team leaders and Roc Solid staff members. Team leaders will have access to financial report functionality, this will ensure accountability and proper resourcing of their project’s assets.

Hospital staff users will be given access to order ready bags for their facility. This is currently a non-electronic process that has to be faxed or sent via e-mail to the Roc Solid Foundation. Through the RocStar application this form will be automated and Roc Solid will be able to respond to requests for ready bags much more efficiently. This efficiency increase will help to ensure that a ready bag is available when a new patient is in need of the service. Hospital staff also will have access to an electronic referral form. This form is also currently transmitted via fax or e-mail services which is not as efficient as an electronically filled and submitted form. This referral form is Roc Solid’s first direct line of contact with the pediatric cancer patient’s family. The RocStar application will make these communications more convenient, and speed up the process of assisting families that want to partake in Roc Solid’s services.

All of these users will need the support of a complete and efficient electronic application to fulfill their roles in the pediatric cancer patient’s life. From the hospital staff to the volunteers on a child’s project, if proper coordination and communication are not established and maintained a breakdown in services will occur. To advert this, RocStar will implement effective, and timely, coordination and communication efforts to all aspects of the child’s support process.
2.2 Major Functional Components (Hardware/Software)

There will be three hardware components integrating with the RocStar application. The RocStar application itself will need to be accessed on a web enabled device. If the device is mobile, it will be limited to one that operates on either an iOS or Android platform. The RocStar application can also be accessed via a desktop or laptop with Internet access. RocStar will store information on a server, and that information will need to be synced with Roc Solid’s NeonCRM.

There will be five software components integrating with the RocStar application. MySQL, PHP, and Apache will be used to construct the database and server applications. PHP will be utilized for user authentication, user and project management, and testing. Firebase will be used for implementation of the notification systems of the RocStar application. Information access to the server, as well as access to the RocStar application itself, will be implemented through the Cloud. The benefits of RocStar using the Cloud is that it offers more security, document control, collaborative effort, and updates dynamically. Figure 2 illustrates the major functional components of the RocStar application and how they work together to provide a comprehensive user experience.
Figure 2. Major functional component diagram. Illustrates all of the major hardware and software components needed for the RocStar application’s implementation.
3. Identification of Case Study

The Roc Solid Foundation is currently using a manual process to communicate and coordinate many aspects of their workflow. The hospitals that Roc Solid works with fill out paper requests for ready bags and also paper referral forms for families of pediatric cancer patients. These records are then submitted to Roc Solid either via e-mail or fax. After Roc Solid receives the correspondence, they have to scan it into their systems and input it into their NeonCRM database. This process can be greatly improved with the implementation of the RocStar application. Through RocStar, these documents could be uploaded directly to Roc Solid for review and acceptance. This will enable a quicker and more accurate response to hospital requests.

All communications and coordination of “Play It Forward” project efforts are done via phone and/or e-mail. This form of communication can hinder the timely passing of information. If a person on the volunteer team does not check their e-mail, they may miss an opportunity to help. If a team leader cannot find enough volunteers, progress is delayed. If a Roc Solid staff member cannot effectively communicate the need for a new project, or if the project needs to change due to the needs of a patient as they undergo treatment, the project could be halted, resulting in time and money lost. RocStar will enable this communication to happen effectively with a notification system, calendar of events, communication boards, and volunteer assignment, scheduling, and coordination abilities.

Roc Solid currently does not have a place for the families they support to meet with each other and gain the support of their community. RocStar will develop a “Family Page” that
will enable these families to communicate with their loved ones, gain inspiration, share their struggles, and invite more of their family to participate in their lives. This is an important aspect of the RocStar application as it gives hope to the families that are going through this difficult time, and also facilitates their development of a needed support network.

4. RocStar Prototype Product Description

The RocStar prototype will have most of the functionality of the real-world application. The RocStar prototype will have a functional database enabling integration with Roc Solid’s NeonCRM. RocStar’s prototype will integrate user control levels to ensure that permissions are given to only the personnel that should have access to a specified level of functionality. RocStar will have an active notification system run through Firebase to alert users of new and upcoming projects, calendar events, and scheduling changes.

All ranges of user access will be simulated, i.e. Roc Solid staff, team leader, family, and hospital users. Testing will be performed to ensure that the correct permissions are assigned for each level of user. Testing will utilize “fake data” to ensure there is not a risk to personal information. Access to the various levels of functionality will be simulated on a small scale as compared to the many users that will be incorporated in a full-release version.

The user group “tester” will be incorporated into the RocStar prototype, but will not be included in the final real-world application. This user role is simply to ensure that the system is properly functioning in the development phase of RocStar’s production. The tester user role will be instrumental in displaying the functionality of the RocStar application in the prototype development phase, but its usefulness would not transfer to the final product.
4.1 Prototype Architecture (Hardware/Software)

The hardware for the RocStar prototype will be hosted on an Old Dominion Virtual Machine. It will incorporate Old Dominion’s Apache2 web server, and a MySQL database server. These will allow storage of data and integration with Roc Solid’s NeonCRM.

Software tools for the RocStar prototype will consist of Linux, MySQL, Apache, PHP, Firebase, Swift, and Java. Linux will be used for interfacing with Old Dominion University’s virtual machine. MySQL will be utilized for the database services of the web server. Apache will allow RocStar to store information on the web server. PHP will assist in database development, user authentication, user and project management, NeonCRM integration, and testing of the prototype. Firebase will be used for the notification system of the RocStar application prototype. Swift will be used to create the wrapper for RocStar to run on iOS systems, and Java will be employed to create the wrapper for Android users of RocStar. Figure 3 illustrates the major functional components as they will exist during the prototype phase of RocStar’s development.
Figure 3. Prototype major functional component diagram. This illustrates the major functional components as they will exist during prototype development.
4.2 Prototype Features and Capabilities

The RocStar prototype will incorporate a lot of the capabilities of the release version of the RocStar application. The prototype will allow users to create and manage a personal user profile. These profiles will be filled with generic user datum for functionality display purposes. RocStar’s prototype will include the functionality of separate levels of user access to ensure proper control of the application’s capabilities. The application will incorporate a notification system to inform Roc Solid personnel and volunteers of various events. It will allow the Roc Solid staff to schedule “Play It Forward” events, and permit team leaders to access and implement those events. A functional, fillable electronic referral form will be available to the hospital staff user. The capability of the RocStar application to interface with Roc Solid’s NeonCRM will also be included in the prototype release. Table 2 outlines the prototype functionality as compared to the final real-world release of the RocStar application.
Table 2

Real-world product vs. prototype

<table>
<thead>
<tr>
<th>Feature</th>
<th>Real-World Product</th>
<th>Prototype</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notification System</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>NeonCRM Integration</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Create a User Account</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Set User Account Permissions</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Fillable Hospital Referral Form</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Family Page</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Discussion Boards</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Tester User Group</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 2. Real-world product vs. prototype

4.3 Prototype Development Challenges

A large challenge will be accomplishing complete prototype functionality within the window of one semester. The integration of NeonCRM with the RocStar application will definitely be a challenge. NeonCRM is a rather large application with an extensive API. Figuring out how to best employ the capabilities of NeonCRM with the prototype will take some significant effort and time.

A general challenge is expanding the knowledge base of the team members as far as implementation of secondary services to the prototype is concerned. At Old Dominion University, classes in PHP, HTML, and MySQL are not covered during the course of a regular
Computer Science degree program. The learning curve of incorporating these programs into a working prototype will be a challenge.
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 (Hyper Text 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

