

Project - Professional Retail Outlet (PRO)

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Group 2 - Final Product

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# Version

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# Team Name

PluggedIn

# Team Members

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
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# Case Area

Pro Shop

# Project Name

Professional Retail Outlet (PRO)

# Executive Summary

PluggedIn has been contracted to build an inventory management system and web store for the **Cypress Garden Golf Academy** Pro shop. This document will expand on the proposed solution and more closely detail the potential the costs related to this operation. The expressed goal of the project is to build a system that allows students access to golf equipment with more efficiency, overall reducing the management requirements and allowing more ease of access for the students and other customers of golf equipment. The pro shop also isn't just a facility but a tool to show that **CGGA** has some of the most up-to-date technologies, professionals, and equipment in the world.

# Measureable Organizational Value

## Desired Areas of Impact

PluggedIn as a company is focused on making professional, streamlined based web technologies. We at PluggedIn can help **CGGA** by building a website that offers to its users an improved user-experience and a sleek and flowing user interface. The presentation of a website is greatly underappreciated in terms of how much it affects the user. For example, a potential customer will leave a site if it takes longer than 3 seconds to load. (As quoted by Google) This affects the user-experience and the creditability of **CGGA**. Therefore focus on building an improved user experience and providing basic and advanced features increases the value of the project for **CGGA**. In addition to these base requirements the system will also strive to provide functionality that will increase the operational value of the project for the managers of the shop by giving reports and automating inventory management for the store itself. This is overall a part of a strategic impact that pushes to increase the value of the **CGGA** brand. By increasing the academy's presence to the outside world, students, both current and perceptive, will be able to see the impact that a school which offers their students equipment and technologies is a good place to learn at.

## Project IT-Value

The project will improve the IT value of the shop by integrating the inventory management system and the web-based shop so that inventory and purchases will be linked. This will allow simple administration by managers for inventory checking, and replacement. Customers will be able to see what is in stock in real time, order equipment and have it ready for an in person visit or shipped to them via normal shipping practices. They will also be able to check rentable equipment, and their prices. By linking the web store with the item database the shop has incredible ways to expand. Discounts in store could, through the server, be emailed to customers. The shop could link rented equipment to the student database to track equipment per student and more easily allow free rentals, thus over time allowing a future expansion of the project as needed.

## Measuring Metric

While the measurable impact of such a project is difficult to calculate. Its predicted that managers will spend 50% less time managing inventory. The shop will now also be able to handle shipping of golf equipment, which it could not easily do before. Managers of the shop will find the time it takes less time to restock inventory. Purchases will automatically be tracked, pulled up, and be searchable. More time will be left for the managers to manage customer concerns, and stay up to date with the latest golfing trends in equipment. Checkouts will be 25% speedier. Employees need only to scan the item to price check it and add the cost.

## MOV Time Frame

Since the project is split into two systems, the in house and the online presence, the initial in house system will only take an estimated month to setup for integration with the inventory management system. The online presence PRO will take an estimated development of six months until production and an additional six for customer feedback, as well as operational improvements for a total of a yearlong development cycle. This will allow students to benefit from the project as soon as possible and give input to the final website. The initial value of the website, upon announcement and opening, will have a huge spike of web traffic from current students checking out the site with stable increase of the customer base from one month onward; the customer base including people other than students. It is expected that the long term impact is more important however as the shop will affect the credibility and prestige of **CGGA.**

## MOV Summary

PRO is an overall growth to the **CGGA** community. It represents an improved strategic value of providing students access to equipment faster, cheaper, and in a better fashion. The main improvement however will be the efficiency of the pro shop. Check out will be faster as every item will be itemized and stored in a database. This will allow cooperation between the in house system and the website.

# Project Required Resources

## Human Resources

* Network Engineer (Contracted) - Setup of the shop and server room.
* Database Architect (Contracted) - Setup the database structure.
* Web Designer - Build a sleek and user friendly interface.
* Website Developer - Build the back-end site and functionality.
* Project Manager - Organizes the personal and directs production.
* Senior Web Developer - Project framing and high-level coding.

## Facilities

* Office space for 1 year, able to house all the project members
* Permanent server room for the Pro shop website.

## Technologies

* Workstation computer - As a server terminal.
* 2 Points of Sale - To sell inventory to customers.
* Router - To serve as connection of POSs and server.
* Server - Host database and website.

## Other Costs

* On site employee training
* Transportation and fuel

# Item Cost Estimates

## Human Resources

|  |  |  |  |
| --- | --- | --- | --- |
| Personnel | Work Hours | Hourly Rate | Cost |
| Network Engineer [1] | 80 | $43.5 | $ 3,480 |
| Database Architect [2] | 80 | $50 | $ 4,000 |
| Web Designer [3] | 1,040 | $37.5 | $ 39,000 |
| Web Developer [4] | 2,080 | $ 30 | $ 62,400 |
| Senor Web Developer [5] | 2,080 | $ 50 | $ 104,000 |
| Project Manager [6] | 2,080 | $ 50 | $ 104,400 |
| **Total** |  |  | **$ 316,880** |

## Technological Resources

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Quantity | Price | Cost |
| Point of Sale [7] | 2 | $3000 | $ 6,000 |
| Server [8] | 1 | $1,569 | $ 1,569 |
| Workstation [9] | 1 | $ 488 | $ 488 |
| Router [10] | 1 | $49 | $ 343 |
| **Total** |  |  | **$ 8,400** |

## Facilities

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Duration (months) | Price (per year) | Cost |
| 1000 sq/ft Office Space [11] | 12 | $ 23,230 | $ 23,230 |
| Server room | - | - | - |
| **Total** |  |  | **$ 23,230** |

## Other

|  |  |
| --- | --- |
| Item | Cost |
| Employee Training | $ 1,000 |
| Transportation | $ 2,000 |
| **Total** | **$ 3,000** |

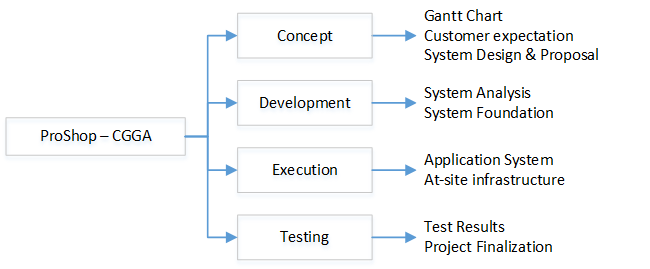
## Total Project Resource Costs

|  |  |
| --- | --- |
| Section | Cost |
| Human Resources | $ 316,880 |
| Technology Resources | $ 8,400 |
| Facility Resources | $ 23,230 |
| Other | $ 3,000 |
| **Total** | **$ 351,510** |

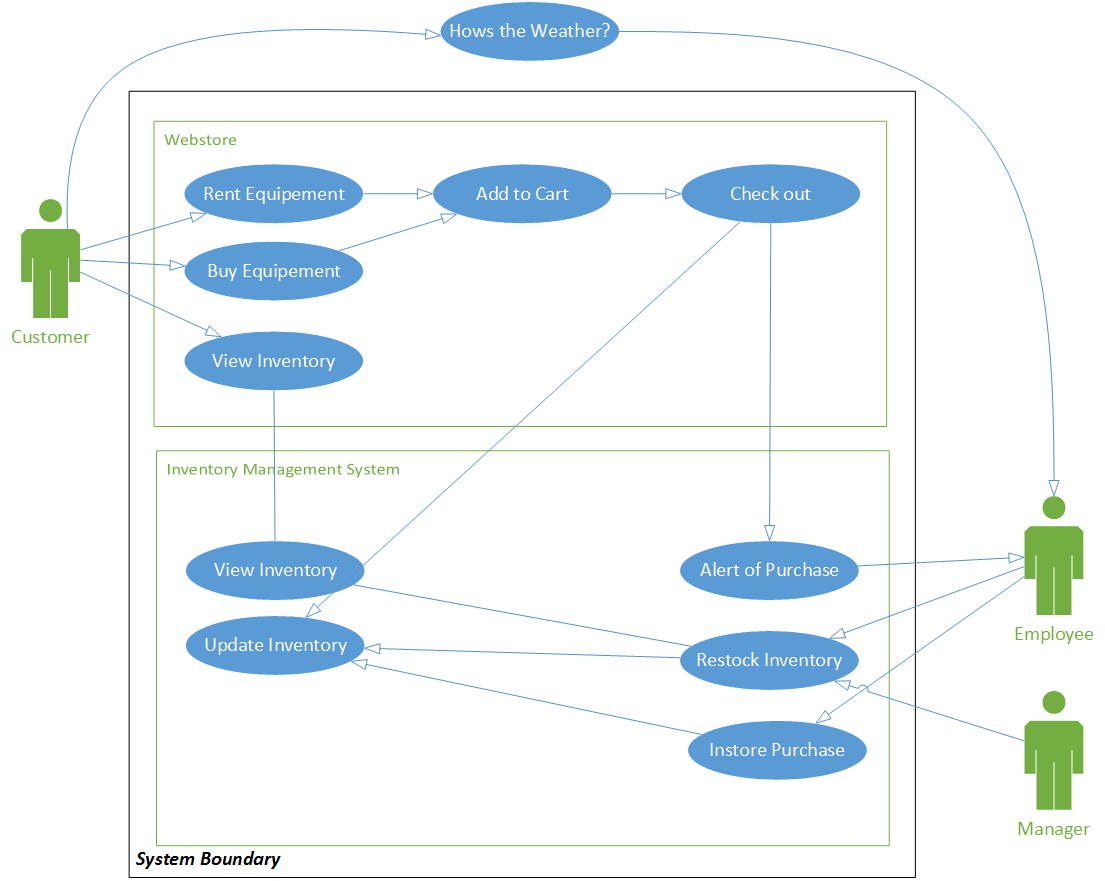
## References

|  |  |
| --- | --- |
| [1] | http://www.indeed.com/salary/Network-Engineer.html - 91k a year ~ $43.5 hr |
| [2] | http://www.indeed.com/salary/Database-Architect.html - 102k a year ~ $50 hr |
| [3] | http://www1.salary.com/Web-Designer-salary.html - 63k a year ~ $30 hr |
| [4] | http://www.indeed.com/salary/Web-Developer.html - 63k a year ~ $30 hr |
| [5] | http://www.indeed.com/salary/Web-Developer.html - 88k a year ~ $42 hr |
| [6] | http://www1.salary.com/IT-Project-Manager-II-salary.html - 87k a year ~ $42hr |
| [7] | http://www.barcodesinc.com/hp/part-d3h27ua-aba.htm + cash drawer, and receipt printer |
| [8] | http://www.dell.com/us/business/p/poweredge-t620/fs |
| [9] | http://configure.us.dell.com/dellstore/config.aspx?oc=smi3045w8s503a&model\_id=inspiron-3045-aio&c=us&l=en&s=bsd&cs=04 |
| [10] | http://www.newegg.com/Product/Product.aspx?Item=N82E16833124154&cm\_re=router\_switch-\_-33-124-154-\_-Product |
| [11] | http://www.entrepreneur.com/article/227319 |

# Deliverable Structure Chart



# Use Case Diagram



# Scope Change Process

When submitting a scope change request, the request must have all stakeholders approval before edits can be made. Please try and include as much Information as possible to illustrate the changes being made, and the intentions of the changes. Also include the intended benefits of the changes, as well as if the changes are strict or can be modified for additional benefits. Set the indicated priority of the request so that requests can be addressed in proper order.

## Scope Change Log

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| # | Date of Req | Requester | Priority | Progress | Description |
| 1 | 06/07/2014 | A. Eisler | High | Clarify | This is a sample scope change request description:  The scope the project needs to include bananas(?) somewhere in the document for scale. |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

## Scope Change Request Form

|  |  |  |  |
| --- | --- | --- | --- |
| Date: |  | | |
| Requester: |  | | |
| Priority: |  | | |
| Project: | CGGA PRO | | |
| Area: |  | | |
| Description: | | | |
|  | | | |
| Expected Benefit: | | | |
|  | | | |
| Expected Costs: | | | |
|  | | | |
| Signatures: | | | Approved Date: |
|  | |  |  |
|  | |  |  |
|  | |  |  |
|  | |  |  |
|  | |  |  |

# Project Phases

|  |  |  |
| --- | --- | --- |
| **Project Phase** | **Development Phase** | **Deliverable** |
| Initialize |  | Business Case |
| Project Plan |  | Project Charter  Project Plan |
| Execution | *Analysis* | System Proposal |
| *Design* | System Design  System Foundation |
| *Construction* | Execution & Development |
| *Testing* | Test Plan  Testing Phase |
| *Support* | Documentation |
| Project Close |  | Project Report |
| Evaluation |  | Project Evaluation |

# 

# Milestones

## Initialize

* Business Case Delivered

## Project Charter

* Project Charter Delivered

## Execution

* Design of website for approval delivered
* Network infrastructure laid
* Website online, & inventory system working
* System completion

## Close

* Acceptance of completion

## Evaluation

* Evaluation of the project completion, and lessons learn
* Finalize documentation for future inquiries & storing documentation

# Phase Tasks

## Initialize

* Produce and Deliver: Business Case

## Project Charter

* Produce and Deliver: Project Charter

## Execution

Analysis

* Produce and Deliver: Website Strategic Plan
  + Decide tools of the website
  + Decided key features
  + Research possible existing solutions
* Produce and Deliver: System Proposal
  + Analyze network, and website needs
  + Estimate network requirements

Design

* Produce and Deliver: Website Design
  + Layout entire website for design approval
  + Design database requirements, and implementation
  + Server side Architecture, and programming frameworks

Construction

* Lay Network infrastructure and wire Store, and servers
* Website development, implementation of design considerations

Testing

* Website online, & inventory system working
* UI testing, and user feed back

Support

* Continued system revision
* Finalization of documentation, and deliverables
* Training of personal to operate system, and creation of training material

## Close

* Final Project Report
* Acceptance of completion
* Completion of Project

## Evaluation

* Project Evaluation
* Estimate future needs of system.

# Resource Assignments

|  |  |
| --- | --- |
| Network Engineer | Responsible for implementing, maintaining, supporting, developing and designing the server network within the CGGA pro shop. He will setup both the POS systems, the server and database within the store, and ensure their proper function. |
| Database Architect | Responsible for designing and implementing the database system, focus will be given the ensure that the system is properly indexed, and that the database is running as fast as possible for website. |
| Web Designer | Create the look, layout and features of the website. Undertakes both graphic design and computer programming to implement features of the site. After the site has been designed the Designer position will be limited to as needed basis, and further design improvement, as well as documentation on possible future expansions, and site design guides. |
| Web Developer | After the completion of the website interface, it is the job of the webdeveloper to write both the frontend implementations of the interfaces so that they operate as per the design documentation. |
| Senor Web Developer | The senor developer's responsible for ensuring best practices, for product longevity. Tasked with laying the foundation of the systems architecture and overall programming management. Oversees the web developer and designer to focus productivity more effectively, and ensures tasks are completed on time, and to the best of the ability of the team members. |
| Project Manager | Oversees the project as a whole, focused on ensuring that each step of the project is completed on time, as well as within the budget of the project. Deals with an problems that may threaten the project. Oversees that all personnel are able to complete their tasks. Some technical familiarity with each part of the system to allow, critical design decisions. |

# Gantt Chart

# C:\Users\Dessert\Desktop\Project.PNG

# IT Quality Management Plan

## Team Philosophy

We here at PluggedIn take pride in the quality of services we provide to our customers. Rigorous levels of testing and scrutiny are applied to work, before the customer ever sees it's. Much of their comes from our test first attitude. Our systems are easily "pluggin", to automated testing suites which in turn helps us maintain sophisticated systems without the problem of regression, or bug introduction. We program once, test forever.

## Quality Based Metric

|  |  |  |
| --- | --- | --- |
| **Process** | Availability | Time it takes to get equipment. |
| Human Defect | Time lost to human error. |
| Defect Backlog | Number of defects waiting for fix. |
| Fix Response Time | Average time it takes to b fixed. |
|  |  |  |
| **Product** | Life Defect Rate | Amount of time before the system needs update. |
| Usability Measure | Amount of people that found training and product useful. |
| Defect Density | The number of defects per line of code or function points. |
| Customer Found Defects | The number of defects found by the customer. |
|  |  |  |
| **Project** | Schedule Defect | How much time over schedule the project is. |
| Cost Defect | Amount of money over cost the project is. |
| Turnover | The loss of team knowledge from transitory members. |
| Training Hours | The number of training hours per project team member. |

## Verification Activities

* Review of the project requirement documents verse the product, to ensure that product matches the requirements
* Database review for efficiency and correctness
* High level overview of the product verse the business requirement to ensure that the business requirements are met.
* Project reports to the client to demonstrate progress of the project verses the immediate concerns of the process.
* Management review to confirm progress, and adjust the focus of the team, to properly align with current needs.

## Validation Activities

* The project will take a test driven approach, writing tests to match the page requirements, and programming to match those tests.
* These unit tests will be complied into a master set, to be run daily to ensure system correctness and prevent code regression.
* During the system review, UI tests will be written to automate system testing, and automatically find bugs.
* An acceptance test will have the customer run through the system, and test for satisfaction, and correctness.
* Performance testing across the site for system latency, and discovering and fixing slow pages.
* Vulnerability testing across site for security issues and known exploits.

## Summary Reports

### Original Project Summary Report

|  |  |  |  |
| --- | --- | --- | --- |
| **Dates** |  |  |  |
| Start: | 5/12/2014 | Finish: | 7/23/2014 |
| Baseline Start: | N/A | Baseline Finish: | N/A |
| Actual Start: | 5/12/2014 | Actual Finish: | N/A |
| Start Variance: | 0 days | Finish Variance: | 0 days |
|  |  |  |  |
| **Duration** | (days) |  | (days) |
| Scheduled: | 72 | Remaining: | 11 |
| Baseline: | 0 | Actual: | 61 |
| Variance: | 72 | Completed: | 84 % |
|  |  |  |  |
| **Work** | (hours) |  | (hours) |
| Scheduled: | 192 | Remaining: | 44 |
| Baseline: | 0 | Actual: | 148 |
| Variance: | 448 | Completed: | 77 % |
|  |  |  |  |
| **Cost** |  |  |  |
| Scheduled: | $ 28,396 | Remaining: | $ 4,625 |
| Baseline: | $ 26,992 | Actual: | $ 5,625 |
| Variance: | $ 1,404 |  |  |
|  |  |  |  |
| **Task Status** |  | **Resource Status** |  |
| Tasks not yet started: | 12 | Work Resources: | 4 |
| Tasks in progress: | 6 | Overallocated Resources: | 1 |
| Tasks Complete: | 20 | Material Resources: | 0 |
| *Total Tasks:* | *38* | *Total Resources:* | *5* |

### Revised Project Summary Report

|  |  |  |  |
| --- | --- | --- | --- |
| **Dates** |  |  |  |
| Start: | 5/12/2014 | Finish: | 7/16/2014 |
| Baseline Start: | N/A | Baseline Finish: | N/A |
| Actual Start: | 5/12/2014 | Actual Finish: | N/A |
| Start Variance: | 0 days | Finish Variance: | 0 days |
|  |  |  |  |
| **Duration** | (days) |  | (days) |
| Scheduled: | 65 | Remaining: | 4 |
| Baseline: | 0 | Actual: | 61 |
| Variance: | 65 | Completed: | 93 % |
|  |  |  |  |
| **Work** | (hours) |  | (hours) |
| Scheduled: | 172 | Remaining: | 44 |
| Baseline: | 0 | Actual: | 128 |
| Variance: | 448 | Completed: | 74 % |
|  |  |  |  |
| **Cost** |  |  |  |
| Scheduled: | $ 22,716 | **Remaining:** | **-$ 1,054** |
| Baseline: | $ 22,716 | Actual: | $ 0 |
| Variance: | $ 0 |  |  |
|  |  |  |  |
| **Task Status** |  | **Resource Status** |  |
| Tasks not yet started: | 12 | Work Resources: | 4 |
| Tasks in progress: | 6 | Overallocated Resources: | 1 |
| Tasks Complete: | 20 | Material Resources: | 0 |
| *Total Tasks:* | *38* | *Total Resources:* | *5* |

### Assessment

In order to reduce the budget costs of the project major project tasks had to be narrowed or scraped. Testing and the quality assurance being among them, as the project is in its late state these are the only deliverables which can be change so drastically. The project's costs and budgets were calculated precisely, and this budget cut could jeopardize the entire investment. Leading to a possible outcome of a failure to deliver the project itself, and at the very least leave the final product incomplete for delivery. Reducing the project at such a late date can have such expected adverse affects. However we will strive to make up for these short comings, is yet to be seen. It is suggested that the project should only be cut by 17% which will narrowly leaving us with enough funds to deliver.

The time for the budget was easy to coop, once the entire assurance of quality was scraped. This will leave us just enough time to finish the project and get it out the door.

## Project Risk Analysis & Management Plan

### Conceptualize and Initialize

**Risk: Unknown Error** - Hidden bugs and untested parts of the product might prove un-functional.

* Occurs any time in the execution phase of the project
* It is largely unknown and unavoidable, only testing and time can root these problems out.
* It adversely affects the process, and the people involved leading to problems with the product and the overall system.
* It directly affects the MOV of the project, which focus is to provide a quality service to its customers.

During the execution phase, attention must be given to ensure that all systems of the product are easy to test, and flow well with the rest of the project. The ability of the site to deliver its service in fashion that is correct and easy to understand.

**Risk: Completion of Project** - the lack of funding, and time given to complete this project seriously jeopardizes the success of the project.

* The risk is an unknown-unknown meaning the project could potentially having this problem if serious issues occur.
* This is an internal and external risk, the project is dependent on the team, however the reduction in funding has enabled this stress on the project.
* This will require the team to focus on the tasks, and frugal management of project resources.
* Quality of the project will be diminished.

Any unforeseen problems, or delays could cause the project o fail/go past its deadline or budget. Hardware malfunctions, changing personal or injury, and technical challenges all can lead to this unfortunate out come. The team will have to pull through, and complete the project best as possible without the support of additional time, or budget.

**Risk: Scope Creep** - Adding additional changes to the project.

* This can occur at any time in the project.
* It is an unknown risk as it is unexpected.
* The risk in internal to the project, caused by organization.
* The project manager, and the team must help manage this risk.
* The risk adversely affects the process and the MOV by having to make changes

The project and team, need to write and set the system up to be as adaptable as possible. This will allow these scope changes to be more easily implemented, and give the system a longevity over the course of its lifetime. That being said, attention must be given to ensure that additional requirements to the project are not added, as the team is already in a difficult position to complete the project as it is.

## Proposal Evaluation

The CGGA ProShop employees will be equipped with their own personal mobile device. This will allow the employee easy access to the site, inventory, and communication services all in one package. There are currently several possible devices in the market which can service this role, among them: the IPad, Android Tablet, and Windows Surface.

* **Telcordia** is a leading global provider of telecommunications devices and software. They provide IP, wireline, wireless, and cable solutions, and deliver eliminative strategy of providing flexible, standards-based solutions that optimize complex network and business support systems.
* **BelAir Communications** is the leader in multimode small cell wireless systems for mobile devices. They provide a lead service in control management systems to build scalable high performance wireless networks.
* **inCode**, a division of the Ericsson, is a premier professional services firm providing strategic business solutions, and premier mobile technologies.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Product Selection | | **Telcordia** | **BelAir** | **inCode** |
| Criteria | Weight | IPad (mini) | Android Tablet (Nexus7) | Windows Surface |
| Investment | 20% | 10 % | **13 %** | 10 % |
| Objective | 20% | 20 % | 20 % | 20 % |
| Location | 10% | 4 % | **10 %** | 8 % |
| Maintenance | 15% | **12 %** | 9 % | 10.5 % |
| Development | 10% | 7 % | 8 % | 8 % |
| Durability | 10% | **9 %** | 7 % | 6 % |
| Past Satisfaction | 15% | 13.5 % | **13.5 %** | 12 % |
| Total: 100% | **Scores:** | **75.5 %** | **80.5 %** | **74.5 %** |

## Criteria Breakdown

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | **Telcordia** | **BelAir** | **InCode** |
| Criteria |  | IPad (mini) | Android Tablet (Nexus7) | Windows Surface |
| **Investment** | Estimate: | $399 at 2+ years | $229 at 1.5+ years | $299 at 1.5+ years |
| Weight: 20% | Rating: | 5 (of 10) .00501 | 6.5 (of 10).00655 | .00501 |
|  | Score: | 10% | **13%** | 10% |
|  |  |  |  |  |
| **Objective** | Estimate: | Full support | Full support | Full support |
| Weight: 20% | Rating: | 10 (of 10) | 10 (of 10) | 10 (of 10) |
|  | Score: | 20% | 20% | 20% |
|  |  |  |  |  |
| **Location** | Estimate: | NJ, USA | **Local Offices** | Jacksonville Offices |
| Weight: 10% | Rating: | 4 (of 10) | 10 (of 10) | 8 (of 10) |
|  | Score: | 4% | **10%** | 8% |
|  |  |  |  |  |
| **Maintenance** | Estimate: | Many Vendors | Small Market Share | Corporate Repair |
| Weight: 15% | Rating: | 8 (of 10) | 6 (of 10) | 7(of 10) |
|  | Score: | **12%** | 9% | 10.5% |
|  |  |  |  |  |
| **Development** | Estimate: | Objective C | Java, and Dev Kits | Native Apps, Metro |
| Weight: 10% | Rating: | 7 (of 10) | 8 (of 10) | 8 (of 10) |
|  | Score: | 7% | **8%** | **8%** |
|  |  |  |  |  |
| **Durability** | Estimate: | Indestructible | Cheap plastic & Wear | Poor Design & Wear |
| Weight: 10% | Rating: | 9 (of 10) | 7 (of 10) | 6 (of 10) |
|  | Score: | **9%** | 7% | 6% |
|  |  |  |  |  |
| **Past Satisfaction** | Estimate: | 1000 reviews | **500 reviews** | 100 reviews |
| Weight: 15% | Rating: | 9 (of 10) | 9 (of 10) | 8 (of 10) |
|  | Score: | 13.5% | **13.5%** | 12% |
|  |  |  |  |  |
| Total: 100% | **Scores:** | **75.5%** | **80.5%** | **74.5%** |

## Criteria Weight Justifications

### Investment

Android tablet is by far the cheapest tablet to purchase, making it the leader in this category. So much so that you can almost buy two Androids per one apple product. The lifespan's of the iPad's however are considered better lending itself to the higher quality of parts include in the machines. They are estimated to last for two years and more, while the nexus 7 and the surface compare similarly to only last an estimated year and half and more. Regarding this the return on the invest is still better for the nexus, as it lives almost as long, and is cheap enough to replace, should it die sooner. Rating is calculated based on the formula: (years of life)/(cost); The higher the number the better the investment is.

### Alignment with Objective Justification

The final product of the project will be a web application, therefore the tablets themselves must be able to support the use of web browsing. Since all of the tablets themselves support the use of web browsing, this is not a problem. In addition, the tablets also come with the newest web browsers, allowing us to use some of the newer features of the modern web.

### Location Justification

Location of the supplier is a concern as the supplier may need to make onsite adjustments. The closer their offices are also makes shipping cheaper should we have to send the devices to them, and is a factor in the consideration of which technology to use.

### Maintainability Justification

iPad by far has the best maintainability. The reason behind this, is that the iPad is a the most popular tablet in the world. There are repair shops for apple products in every major city and the iPad itself will rarely break, given to the robust nature of apple products. Android device's on other hand suffer from a fragmented market, repairs to the devices most likely cannot be accomplished locally, and the maintenance of the system is rendered onto the user, for the most part. Windows surfaces, must be shipped back to the supplier for repairs, and the system is largely haunted by same problems of the native OS. However it is maintainable by the same tools you might use to manage a desktop fleet of computers.

### Time to Develop Justification

Apple iPad has been around for more years, and the process for development largely documented, and streamed lined. Android on the other hand offers better suites and language improvements over the apple, allowing development without the device itself, and generally a larger control over the system. Surface development is arguably the easiest, however the freedom in development requires a higher programming discipline and knowledge, the metro applications are proprietary of Microsoft, and can only be installed through the store. Native applications run naturally on the tablet as well, which opens the possibility of legacy system not tried to the use of a certain tablet OS, but rather the windows Operating system.

### Durability Justification

iPad's are the most durable tablet, being built by some of the best materials, and parts. This however of course increases their price, but allows them to age incredibly well. Android tablets are built cheaply, instead of a metal case of an apple are often plastic cased, they have a softer glass screen, which allows easier scratching, and the screens more easily shatter as well. Windows machines suffer from the same problems of the android machines, leaving the iPad to boast the most durable casing.

### Past Customer Satisfaction Justification

Telcordia by far has the most customer reviews and highest seeming satisfaction, they seem to be a professional company, and are committed to doing a good job and getting the job done. The high number of positive reviews suggest highly satisfied customers. BelAir has about half the reviews that Telcordia has, however they seem to be on par with Telcordia's satisfaction. InCode seems to run less business than the other two, and costumers complained that some jobs were done in incorrectly, but that they were fixed and delivered... eventually. For the most part the costumers seem satisfied.

# Lesson Learned

The project was generally successful based on scope time and goals. The scope of the website, was somewhat diminished because we ran out of time near the deadline. This mostly has to do with the inexperience with the team with the newer technologies of angular, node, and mongodb. These technologies were a boon and a bain, as we were able to get more done with less, but overall we got less done. We were unable to complete the full inventory management system in the short time of a month. However with extended time the team would be able to complete the project, with the paced we set. The project thus reflected in this view can be determined as successful. In terms of management, better time management, an earlier beginning, better disciple, and motivation could have seen this project completed in full. Overall the choice to migrate to an unknown all JavaScript based system paid off, and allowed us to complete the project quickly once learned. The problem was that no one knew how to program in these frameworks before beginning, sometime might be invested into training our personnel before beginning a new project.