

S.I.L.A

Spear International
Logistics Agency



S.I.L.A

makes shipping freight easier

2014

Kimberly Spear

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Introduction

Spear International Logistics Agency (S.I.L.A) is a start-up company that has been in business for a fiscal year. Since its inception in 2013, S.I.L.A has grown to become an international force in the logistics sector. As its clientele grows, its shipment volume also expand requiring a secured system to track shipments both locally and internationally.

Developing an adequate tracking system will provide S.I.L.A with the necessary tools to negotiate larger contracts with current clients. It will also allow S.I.L.A to recondition its current shipment procedures to include innovative practices that will safeguard all confidential information and increase the clients satisfaction with the services rendered.

Due to the time constraint of this capstone project this feature will only be covered and not displayed on the website

1 - Project Planning

Design, develop, and implement a website and tracking application for future clients and employees:

- The basis of this project is to design, develop, and implement a website that will give future clients enough information to come on-board with our logistics agency.
- In addition to the website, a freight tracking application will be designed to locate and give the status of all freight shipments. A database will be designed and implemented to manage the f.s.r, employee login credentials, and freight shipment details.

1.1 Project Information: (Due to the time constraints of this capstone project the “freight tracking system,” will only be planned and designed but not implemented.

- The objective of this website and tracking application is to advise future clients of S.I.L.A (Spear International Logistics Agency)'s rendered services and grant access for our employees to create new client accounts, enter f.s.r (freight shipment request) and track all freight.
- The intended users of the website will be future clients, and employees of S.I.L.A who will be granted access into the web login portal from the homepage.

1.2 Project Description

- This project involves the design, development, and implementation of a website and tracking application. The website will draw in new clientele by providing a detailed description of freight transport services performed by our company (i.e., plane, truck, boat). It will give accurate pricing preferred by our client.

- The application will be linked to the website to allow employees to work both remotely and from their mobile devices to enter in new clients into S.I.L.A's database, create f.s.r's and track freight shipments. The tracking application will be linked to our company's database to ensure that all information is accurate and up-to-date. Access to the application will be granted to those employees of S.I.L.A who have a valid username and password.

1.3 Advantages

- Freight shipments can easily be tracked using an assigned trackingID.
- Potential clients can get an accurate price for freight shipments before completing a f.s.r.
- Future clients will be more knowledgeable about S.I.L.A and the services we offer.
- Our future clientele and current employees will be able to view the website and application via pc or mobile device that meets MySQL, CSS3, HTML5 PHP requirements, and specifications.

2 - User and Task Analysis

Possible Users/Future Clientele:

- This cluster of users is composed of representatives from manufacturing companies that are interested in importing and exporting on an international level.
- The age range of this cluster is between 18 years to 65 years old.

2.1 Account Representatives:

- This cluster of users is composed of employees of S.I.L.A who deal directly with the representatives of our clients. They create f.s.r and new client accounts. They must have a valid username and password to access our company's web portal.
- The age range of this cluster is between 21 years to 65 years old.

2.2 Primary Issues:

- Technical awareness will vary between users from novice to expert.
- Eliminating perplexities that will hinder the user from completing their task.
- Keeping the website practical for both a novice and expert.

2.3 User tasks:

- Create new client accounts (employee).
- Enter f.s.r (employee).
- Track freight shipments (employee).
- Get price for type of shipment transport (client).
- Update client account (employee).

- Get estimated delivery date (client).

2.4 Limitations:

Only employees with a valid username and password can:

- Create new client accounts.
- Track shipments.

2.5 Clients can:

- Get pricing for the type of shipment transport.
- Contact S.I.L.A.

2.6 User Information Needs:

- Users need to provide a valid username and password to enter the web portal
- A manager in the sales department can only assign the username, but an associate can change their own password.
- Once inside the web portal to enter in a new client the user will need.
 - o Company name
 - o Billing address
 - o Contact's first name
 - o Contact's last name
 - o Contact's email
 - o Contact's phone number

2.7 User can contact an account representative via:

- Email
- Phone
- Contact Form

3 - System Specifications

3.1 The S.I.L.A website and application will follow all standards of the below requirements:

- The website will be compatible with HTML5, CSS3, PHP and MySQL will be used to link the webpage to our database.
- All of the pages on the site must be linked properly and follow a central design theme.

3.2 The website must be able to run on:

- Mobile device
- PC

3.3 Website will be hosted by “informatics.mercer.edu”

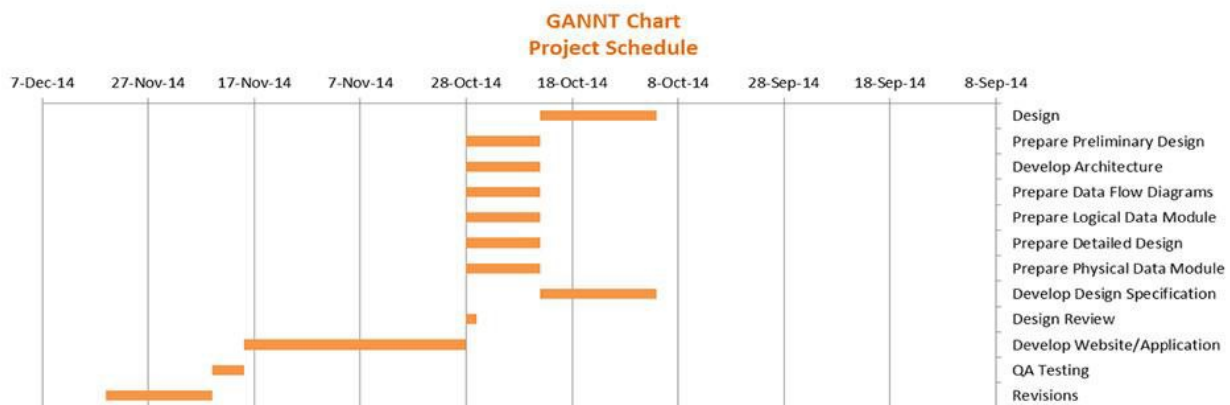
Important Dates:

- November 19th complete the website and prepare it for the usability study.
- December 19th submit final website.

4 - Cost Analysis

Activity Description	Budget Hours	Actual Hours	Variance
<i>Analysis in Hours</i>			
Design	90	55	(35)
Prepare Preliminary Design	40	35	(5)
Develop Architecture	30	35	+5
Prepare Data Flow Diagrams	35	35	0
Prepare Logical Data Module	35	35	0
Prepare Detailed Design	35	35	0
Develop Design Specification	65	55	(10)
Design Review	10	5	(5)
Develop Website/Application	100	105	+5
QA Testing	15	15	0
Revisions	50	50	0
Total	505	460	(45) Hours Under Budget
<i>Analysis in Dollars</i>			
Design	\$652.50	\$398.75	(\$ 253.75)
Prepare Preliminary Design	\$290.00	\$253.75	(\$ 36.25)
Develop Architecture	\$217.50	\$253.75	+\$ 36.25
Prepare Data Flow Diagrams	\$253.75	\$253.75	\$ 0.00
Prepare Logical Data Module	\$245.00	\$253.75	(\$8.75)
Prepare Detailed Design	\$245.00	\$253.75	(\$8.75)
Develop Design Specification	\$471.25	\$398.75	(\$72.50)
Design Review	\$72.50	\$36.25	(\$36.25)
Develop Website/Application	\$725.00	\$761.25	+\$36.25
QA Testing	\$108.75	\$108.75	\$ 0.00
Revisions	\$362.50	\$362.50	\$ 0.00
Total	\$3643.75	\$3335.00	(\$343.75) Under Budget

5 - Timeline



6 - Construction/Development

6.1 Programming

The outside consultant will work hand in hand with the current programmer, DBA and other IT personnel to ensure that all of the business rules and desired features are incorporated with software.

6.2 Quality Standards for your S.I.L.A

S.I.L.A has a team of Quality Assurance Analyst that will test the application to sure that it has functionality and that it meets all government regulations and specs. If there the QA team recognizes any needed alterations to the application then the SDLC will be iterated until all bugs and quirks have been resolved. The QA team will also test the security, reliability, and testability.

7 - Project Kick- (Implementation)

Prior to the implementation and roll-out of the application a team meeting will occur to ensure that before coding all of the speculations and intended features of the application will be properly executed. After the mandatory meeting a 3-week allotment for coding will begin for the programmers.

Pilot testing will begin to ensure that the employees who will have direct contact with the application will have full understanding of its features and capabilities.

8 - Usability

8.1 Methodology

Sessions

The test proctor e-mailed and recruited participants via LinkedIn.com from the Mercer University group followers. The test proctor contacted group followers via email telling them of the usability test procedures and invited their participation. The participants then responded with a time and date for their assistance with the usability test.

Individually the sessions lasted roughly one hour. Throughout each session the test proctor explicated the test sessions and requested that all participants fill out a short background questionnaire (see Attachment A). Participants read the task scenarios and tried to execute each task.

Afterwards the proctor instructed the participants to rate the interface on a 5-point Likert Scale with measures ranging from "Strongly Disagree" to "Strongly Agree." Post-task scenarios where "subjective measures" are incorporated (see Attachment B):

- Ease of locating information on the homepage.
- Ability to keep track of their location in the website.
- Accuracy of guessing the part of the website that contained the information.

Afterwards the proctor instructed the participants to give an overall rating of the company's website using the 5-point Likert scale ("Strongly Disagree" to "Strongly Agree") for eight subjective measures including:

- Frequency of usage
- Challenging to keep record of position in website
- Understand ability - by what method would it be easy for most users to understand how to use the website

- Information simplification – how fast a participant could locate the information
- Appearance & feel appeal –“ index.html” (homepage) content makes me want to explore the site further
- Website content – site’s content would keep me coming back
- Website arrangement

In addition, the test proctor questioned the participant. Asking the following general website questions:

- Was there anything the participant enjoyed the most?
- Was there anything the participant disliked
- Are there any suggestions for improvements (See Attachment C for the subjective and general questionnaires)

8.2 Participants

The participants all attend Mercer University. Four out of eight participants are employed in the logistics sector for major logistic agencies here in Georgia. Altogether eight participants were scheduled to complete the usability test; four on December 1, 2014 and four more on December 2, 2014, five male and three female.

Role in Logistics Sector

The participants chose their role in the Logistics Sector from a broad list of job roles in a logistics agency.

Role

Operations	Sales	IT	Accounting	Recruiter	* Other Organization
1	2	1	-	-	4

Evaluation Tasks/Scenarios

Usability test participants tried to execute the tasks listed below (see Attachment D for the comprehensive test scenarios and self-directed tasks :

- Locate the different shipment types' information.
- Locate the testimonials information.
- Locate the events information.
- Locate the container sizes information.
- Locate the company address information.
- Locate the achievements information.
- Locate the freight shipment request form.

8.3 Results

Task Completion Success Rate

Each participant executed Task 1 effectively (locate the shipment types). Three of the four (75%) completed Task 6 and Task 5 (locate the achievements), (locate the company address). Exactly half (50%) of participants were able to complete Task 4 (locate container size) and 25% were able to complete Task 2 and Task 3 (locate the testimonials), (locate events). None of the participants was able to execute Task 7, which required them to locate the freight shipment request form..

Task Completion Rates

Participant	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7
1	√	-	-	√	√	√	-
2	√	-	-	√	√	√	-
3	√	-	-	-	√	√	-
4	√	√	√	-	-	-	-
5	√	√	√	-	√	√	-
6	√	-	-	√	√	√	-
7	√	-	-	√	√	√	-
8	√	-	-	-	-	-	-
Success	8	2	2	4	7	7	0
Completion Rates	100%	25%	25%	50%	75%	75%	0%

√ = December 1st Test Results

√ = December 2nd Test Results

Task Ratings

Upon the completion of each task, the test proctor instructed the participants to rate the simplicity or complication of executing the task for three factors:

- It was effortless to locate this page from the homepage on the website.
- It was easy to keep track my location while executing each task.
- It was not difficult to guess where the location of the information requested for each task.

The 5-point Likert scale varied from one being "Strongly disagree" to five being "Strongly agree." The "Agree" ratings stood for agree and the "Strongly agree" ratings were calculated and resulted in a mean agreement rating of >2.4 believed that as users the information requested was not difficult to locate and guess its whereabouts within the website.

Ease in Finding Information

All of the participants rated "Locate the different shipment types' information," as being the easiest task (mean agreement rating = 4.4). 75% of the participants agreed that "Locate the company address information," and "Locate the achievements information," were an easy task to execute, (mean agreement rating

= 3.2). 50% of the participants agreed that "Locate the container sizes information," was easy to locate on the website (mean agreement rating = 2.6).

25% thought it was easy to "Locate the testimonials information," (mean agreement

rating = 1.6). 25% of the participants also agreed that “Locate the events information” was an easy task to execute (mean agreement rating = 1.5).

Keeping Track of Location in Site

All of the participants rated “Locate the different shipment types’ information,” as being the easiest to keep track of their location in the website as they executed the task (mean agreement rating = 4.2). 75% of the participants agreed that “Locate the company address information,” and “Locate the achievements information,” as being easy to keep track of their location in the website as they executed the task, (mean agreement rating = 3.5). 50% of the participants agreed, “Locate the container sizes information,” as being easy to keep track of their location in the website as they executed the task (mean agreement rating = 2.5). 25% of the participants rated “Locate the testimonials information,” as being easy to keep track of their location in the website as they executed the task (mean agreement rating = 1.8). 25% of the participants also agreed that “Locate the events information” as being easy to keep track of their location in the website as they executed the task (mean agreement rating = 1.2).

Predicting Information Section

All of the participants rated “Locate the different shipment types’ information,” as being the easiest to guess the location of the information on the website (mean agreement rating = 3.8). 75% of the participants agreed that “Locate the company address information,” and “Locate the achievements information,” as being the easiest to guess the location of the information on the website, (mean agreement rating = 3.8). 50% of the participants agreed, “Locate the container sizes information,” as being the easiest to guess the location of the information on the website (mean agreement rating = 2.2). 25% of the participants rated “Locate the testimonials information,” as being the easiest to guess the location of the information on the website (mean agreement rating = 1.2). 25% of the participants also agreed that “Locate the events information” as being the easiest to guess the location of the information on the website (mean agreement rating = 1.3).

Mean Task Ratings & Percent Agree

Task	Ease – Finding Info	Location in Site	Predict Section	Overall
1 – Locate the different shipment types	4.4 (100%)	3.8 (100%)	3.8 (100%)	4.0
2 – Locate the testimonials	1.5 (25%)	1.8 (25%)	1.2 (25%)	1.5
3 – Locate the events information	1.5 (25%)	1.2 (25%)	1.3 (25%)	1.3
4 – Locate the container sizes	2.6 (50%)	2.5 (50%)	2.2 (50%)	2.4
5 – Locate the company address	3.2 (75%)	3.5 (75%)	3.8 (75%)	3.5
6 – Locate the achievements	3.2 (75%)	3.5 (75%)	3.8 (75%)	3.5
7 – Locate the freight shipment request form	0 (0%)	0 (0%)	0 (0%)	0

**Percent Agree (%) = Agree & Strongly Agree Responses combined*

Time on Task

Each participant held a stopwatch to the camera and pressed start when started a task and then they held the stopwatch to the camera and pressed stop when they have fully executed a task. The test proctors logged all of start, stop times, to calculate the time spent on each task. Some tasks were naturally more challenging to complete than others, which is reflected by the average time on task.

The task that took the longest to execute was Task 7 where the participants were instructed to “Locate the customer feedback,” (mean = 430 seconds). However, the times of execution varied from 30 seconds to 530 seconds (more than 8 minutes) although majority of the times are less than 300 seconds (less than 5 minutes).

Time on Task

	P1	P2	P3	P4	P5	P6	P7	P8	Avg. TOT*
Task 1	78	70	65	65	85	100	63	96	77.75
Task 2	100	350	70	100	109	56	380	380	193.13
Task 3	100	465	465	350	200	100	150	150	247.5
Task 4	190	60	50	160	170	60	235	235	145
Task 5	100	125	30	70	80	45	115	115	85
Task 6	146	110	120	465	130	175	325	325	224.5
Task 7									
Avg. TOT	102	168.57	114.29	172.86	110.57	76.57	181.14	185.86	138.98

Errors

The test proctor captured the number of errors participants made while trying to complete the task scenarios.

Summary of Data

The table below displays a summary of the test data. Low completion rates, satisfaction ratings, high errors, and time on tasks are highlighted in red.

For example:

Summary of Completion, Errors, Time on Task, Mean Satisfaction

Task	Task Completion	Errors	Time on Task	Satisfaction*
1	8	2	77.75	4.0
2	2	6	193.13	1.5
3	2	6	247.50	1.3
4	4	4	145	2.4
5	6	3	85	3.5
6	6	14	224.5	3.5
7	0	8		

* Satisfaction = Mean combined rating across three post-task measures: ease of finding the information, ability to keep track of location in website, and the accuracy of predicting the location of the information on the website.

Overall Metrics

Overall Ratings

After task session completion, participants rated the site for eight overall measures. These measures include:

- Ease of use
- Frequency of use
- Difficulty of keeping track of where they were in the site
- How quickly most people would learn to use the site

- Getting information quickly
- Homepage's content facilitates exploration
- Relevancy of site content
- Site organization

Post-Task Overall Questionnaire

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean Rating	Percent Agree
Thought Website was easy to use		1	1	6		3.6	75%
Would use this website frequently			2	4	2	4.0	80%
It was difficult to keep track of where I was in the website while executing tasks	3	1		4		2.1	50%
Thought most people would learn to use website quickly			4	4		3.5	50%
Can get information quickly		4		4		3.0	50%
The homepage was inviting, and it made me want to see more of the website		1	5	1	1	3.6	20%
Site's content would keep me coming back			2	6		4.2	80%
Website is well organized			5		3	4.0	62%

**Percent Agree (%) = Agree & Strongly Agree Responses combined*

4.6.2 Likes, Dislikes, Participant Recommendations

Upon completion of the tasks, participants provided feedback for what they liked most and least about the website, and recommendations for improving the website.

Liked Most

The following comments capture what the participants liked most:

"Good website design."

"Loved the slider at the top of the webpage on the home screen."

"Colors followed a central theme."

Liked Least

The following comments capture what the participants liked the least:

"Did not like the way each page was labelled on the menu bar, it was a little misleading."

"Did not like the fact that the contact-us page did not work."

8.4 Recommendations

Locate the customer feedback information (Task 7) and (Self-directed task)

Task 7 required participant to locate the freight shipment request form.

Change	Justification	Severity
Add a users/operations manual for the web portal	Participants across both tests rated the ease of locating the freight shipment request form 1 (out of 5).	High

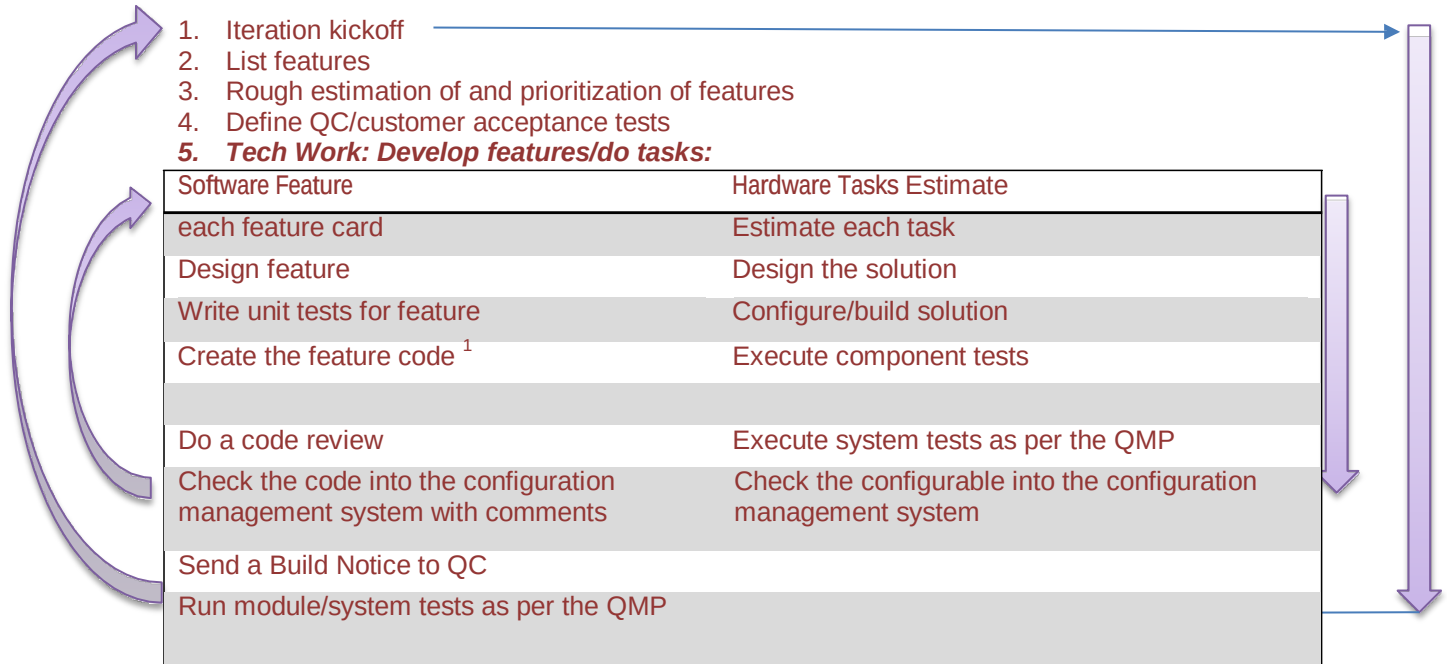
8.5 Conclusion

Majority of the participants found that S.I.L.A.com was an innovative website. They enjoyed the design and layout of the website. There were a couple of issues with the schematics of the website, which will be corrected immediately. All in all the test went as expected. Moreover, its findings are valid and stable. The implementation of the recommendation along with other improvements will be completed to ensure a user-centric website that full-fill's its core purpose.

9 - Maintenance

Continuous development of S.I.L.A.com will take place every two years when an outside consultant will review all of our documents and make the necessary changes to the application as our clientele increase and as our company expands.

Agile flavored, the arrows indicate that these are executed in repetitive loops.



10 - Conclusion

For the efficient performance of S.I.L.A.com and our employee portal, a variety of QA Tests and annual training sessions to hire new employees, on how to properly operate the system; will ensure that the quality of work over time will not alter.

As stated in the Usability test of S.I.L.A.com, there are improvements that must be completed to the contact form and the freight shipment request form on S.I.L.A.com. A debugging process is currently being executed to address the issue of not populating the database. The expected end date for the debugging process will be in approximately four days from its commencement on 12/12/2014.