Feasibility Evidence Description (FED)

We Are Trojans (WAT) Network

Team 01

Team members	**Roles**
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10/19/2014

Version History

Date	Author	Version	Changes made	Rationale
09/28/14	ML, PP	1.0	• Create initial a FED document from a template, updating the risk assessment section.	• For use VCP package submission of the project.
10/11/14	ML, PP	1.5	• Finish all from section 1 to 5	• For use VCP package submission of the project.
10/19/14	ML, PP	2.0	• Updated all section • Make consistent with ARB and FCR presentation • Some NDI was evaluated.	• Use in next phase (Foundation phase) • To be consistent with ABR presentation

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1. Introduction

1.1 Purpose of the FED Document

This document reports our analysis about the feasibility evidence of the We Are Trojans (WAT) Network project. We use risk assessment to identify and come up with a way to mitigate those risks. We will analyze NDI items and evaluate the risk if whether they fit our project.

1.2 Status of the FED Document

- Complete all section in the document
- Evaluate CMS NDI
- Updated the risk list

2. Process Feasibility

Table 1: Rationales for Selecting NDI/NCS Model

Criteria	Importance	Project Status	Rationales
30 % of NDI/NCS features	3	3	In the We Are Trojans, we will use NDI for the forum component and a core module to manage user's login
Single NDI/NCS	1	1	We may be using more than one NDI.
Unique/ inflexible business process	1	1	The business aspects of the project are very flexible.
Need control over upgrade / maintenance	3	3	The project has to be upgraded in future after the client negotiating with the USC.
Rapid deployment	0	0	Currently we are just building a dummy system. The system initially will not be deployed.
Critical on compatibility	0	0	The system has no compatibility issue. We will built the system and then look for a web hosting for our system.
Internet connection independence	1	1	Internet connection is important, as the application developed is a web-based application.
Need high level of services / performance	2	1	High level of services and performance is important
Need high security	2	2	The system will be used only by USC students
Asynchronous communication	2	2	The system requires asynchronous communication to communicate with the web hosting.
Be accessed from anywhere	3	3	The system is an online community.
Critical on mass schedule constraints	0	0	No, the system is not critical on mass schedule constraints.
Lack of personnel capability	0	0	The group consists of highly competent graduate software engineers and because We Are Trojans!
Require little upfront costs	3	3	The budget for our project is

			$0, as per our client specifications.
Require low total cost of ownership	2	2	Requires no cost of ownership
Not-so-powerful local machines	3	3	We have minimal cost and we also have no infrastructure right now. We will be using free left over 8 year old laptops.

3. Risk Assessment

Table 2: Risk Assessment

Risks	Risk Exposure			Risk Mitigations
	Potential Magnitude	Probability Loss	Risk Exposure	
Undefined Plan to accommodate a crucial system feature: We still have to figure out how to manage the three "WAT" point system.	7	9	63	Consult with the clients to find more details as to how he would like WAT point system to be implemented.
Lack of Involvement by success-critical-stakeholders: Do not understand clearly enough the success-critical Stakeholder positions	5	10	50	Further understanding of needs and system scoping is needed
User Risk: users may not accept to use the system even if all the specification are met by the system	5	10	50	We need to have certain level of discussion with the actual users as to whether they are willing to learn and use the new system we are developing
Architecture/Reuse/Non-Development Item conflict: The COTS/NDI used may be poorly matched. A database system may be needed in order to keep the accounts, logs and forum information.	5	8	40	The team is reviewing the essential features of the possible NDI: - Cost - Familiarity - Scalability - Compatibility - Maturity - Functionality
Human-System integration shortfalls: We do not have human factors expertise and need to come up with the user-friendly interface	5	7	35	Research on the existing apps and see which designs is easily used by users

4. NDI/NCS Feasibility Analysis

4.1 Assessment Approach

We will select an NDI that provide the features needed in our project, such as a forum with like and dislike functionalities, a CMS that allow the development team to specify roles for the users. We will look for the following features to make an appropriate NDI selection:

- Cost
- Scalability
- Compatibility
- Maturity
- Functionality
- Familiarity

4.2 Assessment Results

4.2.1 NDI/NCS Candidate Components (Combinations)

Table 3: NDI/NCS Products Listing

NDI/NCS Products	Purposes
CMS (Joomla, Drupal, Wordpress)	Provide general functions for manage content on website
DBMS (MySQL)	For keeping, managing, and retrieving data storage used in the system
Webserver (PHP based)	Infrastructure for our system
JQuery	Provide DOM manipulation methods
CSS framework (ex. bootstrap, foundation)	CSS API to customize user interface on website

4.2.2 Evaluation Criteria

Table 4: Evaluation Criteria – NDI /NCS Attributes

No.	Evaluation Criteria – NDI/NCS attributes	Weight
1	Cost	30
2	Familiarity	20
3	Maturity	15
4	Compatibility	15
5	Functionality	10
6	Scalability	10
	Total	100

Table 5: Evaluation Criteria - NDI/NCS features

No.	NDI/ NCS Features/ Sub features	Weight
1	Forum with basic Like/Dislike system	50
2	Search function	30
3	Authentication	15
4	Online Store	5
	Total	100

4.2.3 Evaluation Results Screen Matrix

Table 6: Evaluation Results of NDI attributes criteria Screen Matrix

No	W	Joomla				AVG	Total	Drupal				AVG	Total
		R1	R2	R3	R4			R1	R2	R3	R4		
1(cost)	30	10	10	10	8	9.5	285	10	10	10	10	10	300
2(familiarity)	20	9	9	8	6	8	160	7	7	6	1	5.25	105

3 (Maturity)	15	10	9	9	5	8.25	123.75	8	7	9	7	7.75	116.25
4 (Compatibility)	15	9	10	8	10	9.25	138.75	9	10	8	8	8.75	131.25
5 (Functionality)	10	8	10	9	10	9.25	925	8	9	8	10	8.75	87.5
6 (Scalability)	10	10	9	9	10	9.5	95	10	9	10	9	9.5	95
Total	100						895						835

Table 7: Evaluation Results of NDI features criteria Screen Matrix

No	W	Joomla				AVG	Total	Drupal				AVG	Total
		R1	R2	R3	R4			R1	R2	R3	R4		
1(Forum with basic Like/Dislike system)	50	8	9	5	5	6.75	337.5	8	8	6	6	7	350
2(Search function)	30	8	8	8	10	8.5	252	8	7	8	7	7.5	225
3 (Authentication)	15	10	10	10	10	10	150	10	9	10	9	9.5	142.5
4 (Online Store)	5	8	9	8	9	8.5	42.5	8	8	9	9	8.5	42.5
Total	100						782						760

4.3 Feasibility Evidence

4.3.1 Level of Service Feasibility

Table 8: Level of Service Satisfiability Evidence

Level of Service Win Condition	Rationale
LOS-1: The system shall not be down more than 24 hours in one month.	Almost all of the web services available right now can achieve this level of service easily. Moreover, our project can have maintenance at night so that it will not cause the system to be down more than 24 hours.

Table 9: Level of Service Implementation Strategy

Level of Service Win Condition	Product Satisfaction
LOS-1: The system shall not be down more than 24 hours in one month.	Product Strategies: Apache, MySQL, Joomla CMS
	Process Strategies: Prototyping, Analysis and evaluate NDI, NCS
	Analysis: We will find a list stable web hosting to use, then the most time consume that can cause the system down in only migration with will depend on migration plan

4.3.2 Capability Feasibility

Table 10: Capability Feasibility Evidence Table

Capability Requirement	Product Satisfaction
CR-1: Start/Edit/Delete a thread: Users are able to start/edit/delete threads	Software/Technology used: Joomla, Joomla plugin, MySQL, Bootstrap, Webserver, JQuery
	Feasibility Evidence: We will analyze and evaluate Joomla plugin that is the most suitable to use with our system. then use the plugin as the base code to modify and adjust to create prototype to show to our clients. Then we will modify this feature based on the feedback of our clients.
	Referred use case diagram: Figure 3 in SAAD file.
CR-2: Calculate the WAT points: The system should	Software/Technology used: Joomla, Joomla plugin, MySQL, Bootstrap, Webserver, JQuery

correctly calculate three types of WAT points.	Feasibility Evidence: Firstly, we will make prototype by come up with algorithms to handle WAT points system. Show the prototype to our client to gain more information about the WAT points then refine the prototype until it satisfied our clients which make need to make some survey to get feedback from real users. then create the WAT point system based on feedback and continue gain more feedback from our client to make sure we are not misunderstand anything.
	Referred use case diagram: Figure 3 in SAAD file.
CR-3: Like/Dislike: Users are able to like or dislike threads and posts	Software/Technology used: Joomla, Joomla plugin, MySQL, Bootstrap, Webserver, JQuery
	Feasibility Evidence: We will analyze and evaluate Joomla plugin that is the most suitable to use with our system. Then use the plugin as the base code to modify and adjust to create prototype to show to our clients. Then we will modify this feature based on the feedback of our clients.
	Referred use case diagram: Figure 3 in SAAD file.
CR-4: Make a post: Users could post on the thread.	Software/Technology used: Joomla, Joomla plugin, MySQL, Bootstrap, Webserver, JQuery
	Feasibility Evidence: We will analyze and evaluate Joomla plugin that is the most suitable to use with our system. Then use the plugin as the base code to modify and adjust to create prototype to show to our clients. Then we will modify this feature based on the feedback of our clients.
	Referred use case diagram: Figure 3 in SAAD file.
CR-5: Redeem the gift card: Users could use the usable points to redeem the gift card	Software/Technology used: Joomla, Joomla plugin, MySQL, Bootstrap, Webserver, JQuery
	Feasibility Evidence: We will analyze and evaluate Joomla plugin that is the most suitable to use with our system. Then use the plugin as the base code to modify and adjust to create prototype. Show the prototype to our clients and real user. Then we will modify this feature based on the feedback of our clients and real user.
	Referred use case diagram: Figure 3 in SAAD file.
CR-6 Automated useless threads/posts deletion: The system is capable of deleting the useless threads/posts	Software/Technology used: Joomla, Joomla plugin, MySQL, Bootstrap, Webserver, JQuery
	Feasibility Evidence: This capability might not fully develop, as we can discuss with our client to show alternate options that can use in our system that is. • Detect high ratio between dislike and like on threads and posts • The threads/posts age is longer than 1 month. • Notify the suspicious threads/posts to the maintainer and let him justify that the threads/post is useless or not
	Referred use case diagram: Figure 3 in SAAD file.

CR-7 Automated notification: The system is able to notify the users the number of likes/dislikes/posts on their threads and posts and recent events.	Software/Technology used: Joomla, Joomla plugin, MySQL, Bootstrap, Webserver, JQuery
	Feasibility Evidence: We will analyze and evaluate Joomla plugin that is the most suitable to use with our system. Then use the plugin as the base code to modify and adjust to create prototype to show to our clients. Then we will modify this feature based on the feedback of our clients.
	Referred use case diagram: Figure 3 in SAAD file.
CR-8 Create/Edit/Delete the event: The maintainer is able to create/edit the event on the event activity board.	Software/Technology used: Joomla, Joomla plugin, MySQL, Bootstrap, Webserver, JQuery
	Feasibility Evidence: We will analyze and evaluate Joomla plugin that is the most suitable to use with our system. Then use the plugin as the base code to modify and adjust to create prototype to show to our clients. Then we will modify this feature based on the feedback of our clients.
	Referred use case diagram: Figure 3 in SAAD file.
CR-9 Categorize the threads	Software/Technology used: Joomla, Joomla plugin, MySQL, Bootstrap, Webserver, JQuery
	Feasibility Evidence: We will analyze and evaluate Joomla plugin that is the most suitable to use with our system. Then use the plugin as the base code to modify and adjust to create prototype to show to our clients. Then we will modify this feature based on the feedback of our clients.
	Referred use case diagram: Figure 3 in SAAD file.

4.3.3 Evolutionary Feasibility

Table 11: Evolutionary Feasibility Evidence

Evolutionary Win Condition	Rationale
ER-1: Data Integration	The clients will negotiate with the USC to integrate the system with USC system/database. Therefore, the team may need to integrate the WAT system with the USC system.

5. Business Case Analysis

Benefits are added to the program model:

<table>
<tr><td colspan="4">Assumptions
• USC students need a central platform to connect, share, and like information with each other
• Reward point system will work as the important incentives for users to join the network</td></tr>
<tr><td>Stakeholders</td><td>Initiatives</td><td>Value Propositions</td><td>Beneficiaries</td></tr>
<tr><td>• Developers
• Maintainers
• Clients
• Gift/Book stores</td><td>• Develop the system
• Monitor the system
• Advertize the system to USC community
• Partner with schools
• Negotiate deals with on-campus bookstore/gift store</td><td>• Increase camaraderie between Trojans
• One-stop shop to answer any USC related queries
• Increase communications between students across schools</td><td>• USC students
• USC alumni
• USC faculties</td></tr>
<tr><td colspan="2">Cost
• Development costs
• Maintenance costs
• Advertising/Marketing costs
• Web server, Web hosting, Domain name</td><td colspan="2">Benefits
• The number of active users in “WAT” network increases.</td></tr>
</table>

5.1 Market Trend and Product Line Analysis

Table 12: Market Trend and Product Line Analysis

	Joomla
Market Trend	Joomla is one of the most widely used CMS systems in the market, even though it's popularity has decreased the last five years.
Product Line	There are many plug-ins available to integrate with Joomla

5.2 Cost Analysis

5.2.1 Personnel Costs

Table 13: Personnel Costs

Activities	Time Spent (Hours)
Development Period (24 weeks)	
Valuation and Foundations Phases: Time Invested (CSCI577a, 12 weeks)	
Client and team: Meeting via email, phone, and other channels [3 hrs/week * 12 weeks * 2 people]	72
winwin sessions [2 winwin session * 1 hours * 2 people]	4
Architecture review boards [1.5 hours * 2 session * 2 people]	6
Development and Operation Phases: Time Invested (CSCI577b, 12 weeks)	
Client: Meeting via email, phone, and other channels [3 hrs/week * 12 weeks * 2 people]	72
Architecture Review Boards and Core Capability Drive-through session [1.5 hours * 2 session * 2 people]	6
Deployment of system in operation phase and training - Installation & Deployment [5 hrs * 2 times *2 people] - Training & Support [5 hrs * 2 times * 2 people]	40
Total	200

5.2.2 Hardware and Software Costs

Table 14: Hardware and Software Costs

Type	Cost of COTS
Ownership cost	0
Maintenance cost	0
Hardware	0
Total	0

5.3 Benefit Analysis

The benefits of the project are

- **Increase camaraderie between Trojans**
- **One-stop shop to answer any USC related queries**
- **Increase communication between students across school**

Table 15: Benefits of We Are Trojans (WAT) System

Current activities & resources used	% Reduce	Time Saved (Hours/Year)
Total		

5.4 ROI Analysis

Table 17: ROI Analysis Table

Year	Cost	Benefit (Effort Saved)	Cumulative Cost	Cumulative Benefit	ROI
2014	194	0	0	0	-1
2015	0	Unknown	0	Unknown	

6. Conclusion and Recommendations

Currently, we have evaluated Joomla and Drupal as our NDI. This conclusion was drawn by doing a comparative evaluation between Joomla and Drupal based on the following criteria:

- Cost
- Functionality
- Compatibility
- Functionality
- Scalability
- Familiarity

Drupal and Joomla were selected as NDI for comparative study as these CMS provide the following features:

- Forum with basic Like/Dislike system
- Search Functionality
- Authentication
- Online Store