System and Software Architecture Description (SSAD)

Improving Thai CDC
Establishing a New Client/Donor/Partner Communications & Project Tracking Tool

Team #: 01

Team Members & Roles

Name	Primary/Secondary Role
Brandon Foster	IIV & V/Quality Focal Point
Ding Li	Life Cycle Planner/Software Architect
Yi Li	Feasibility Analyst/Requirements Engineer
Ino Mantaring	Requirements Engineer/Prototyper
Vishal Punjabi	Operational Concept Engineer/Prototyper
Katelyn Swift-Spong	Manager/Operational Concept Engineer

12/05/2011

Version History

Date	Author	Version	Changes made	Rationale
10/10/2011	Ding Li	1.0	• First version of SSAD, add description about purpose of SSAD and analysis of proposed system	• To analyze proposed system, identify context, artifact and behavior of proposed system.
10/14/2011	Ding Li	1.1	• Updated UML model and fixed errors	• For Draft FCP
10/24/2011	Ding Li	2.0	• Updated UMLs and fixed bugs. Interoperability of NDIs is analyzed	• For Draft DCP
11/21/2011	Ding Li	3.0	• Bugs fixed, UML updated, deployment diagram added	• Prepare for transition
12/05/2011	Ding Li	3.1	• Bugs fixed	• For TRR

Table of Contents

Table of Tables

Table of Figures

1. Introduction

1.1 Purpose of the SSAD

The System and Software Architecture Description (SSAD) describes the architecture of the entire system by analyzing the system's capability, content, artifacts, and behavior. It also explains/illustrates how NCSs/NDIs interact with one another.

1.2 Status of the SSAD

This is the second version of the SSAD document in TRR, version number 3.0. In this version, bugs of version 3.0 are fixed.

2.   System Analysis

2.1 System Analysis Overview

The purpose of the Improving Thai CDC: Client/Donor/Partner Communications and Project Tracking Tool are to unify the contact list of each individual staff in Thai CDC and to provide a tool to monitor projects in Thai CDC. The Client/Donor/Partner Communications and Project Tracking Tool will provide a centralized database to manage contact information including contacts' names, addresses, donations and other information (as deemed fit by Thai CDC). The system will provide methods that add, edit, and delete contacts' information in a centralized cloud-based database. The system will also record information about each internal Thai CDC sponsored project, and it will provide tools to view the information about said projects.

2.1.1 System Context

Figure 1: System Context Diagram
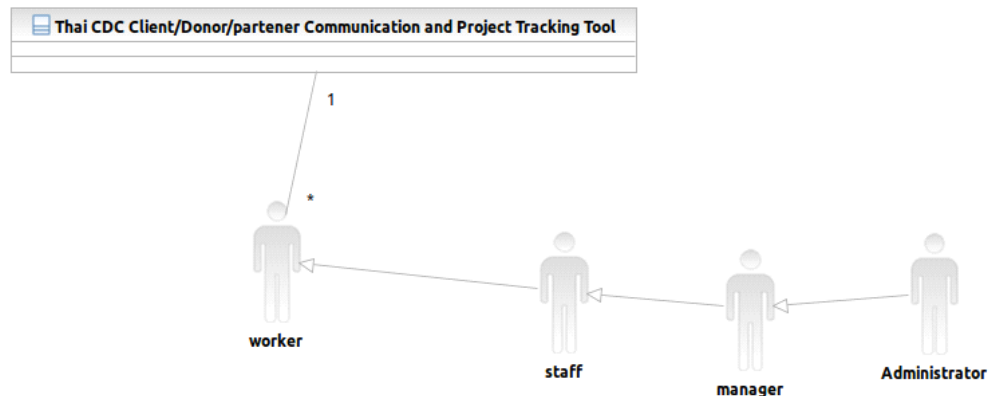
Table 1: Actors Summary

Actor	Description	Responsibilities

Actor	Description	Responsibilities
Staff	Staff of Thai CDC; Staff members are end-workers of the proposed system	Communicate with contacts, add contacts information into Salesforce. Send emails to contacts.
Manager	Managers are special staff, they are leaders of each project, they are in charge of the whole process of each project	Manage process of project
Administrator	Administrator can be an employee in Thai CDC or an outsourced technical professional	Maintain the whole system
Worker (User)	Worker of the proposed system	Work with the system

2.1.2 Artifacts & Information

Figure 2: Artifacts and Information Diagram
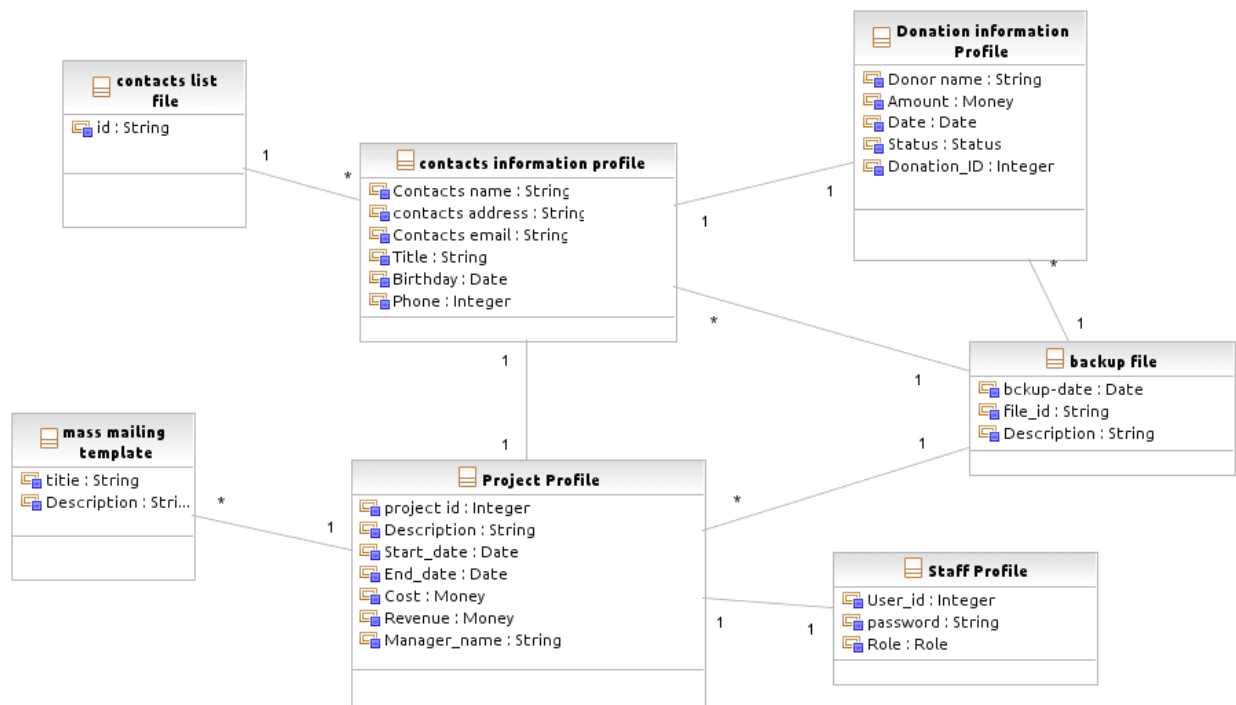
Table 2: Artifacts and Information Summary

Artifact	Purpose
ATF-1:contact information profile	A table in Salesforce which contains information

	about all contacts. The contacts' information is saved in Salesforce
ATF-2: mass mailing template	newsletters or email template files
ATF-3:project profile	A table in Salesforce whichContains all information about all projects in Thai CDC.
ATF-4: contact list file	Contact list file of MS outlook
ATF-5:staff profile	A table in Salesforce which contains information about all workers in proposed system
ATF-6: donation information profile	A Salesforce table to store the donation information
ATF-7:backup file	.csv files that exported from Salesforce, it includes all information in Salesforce

2.1.3 Behavior

Figure 3: Process Diagram
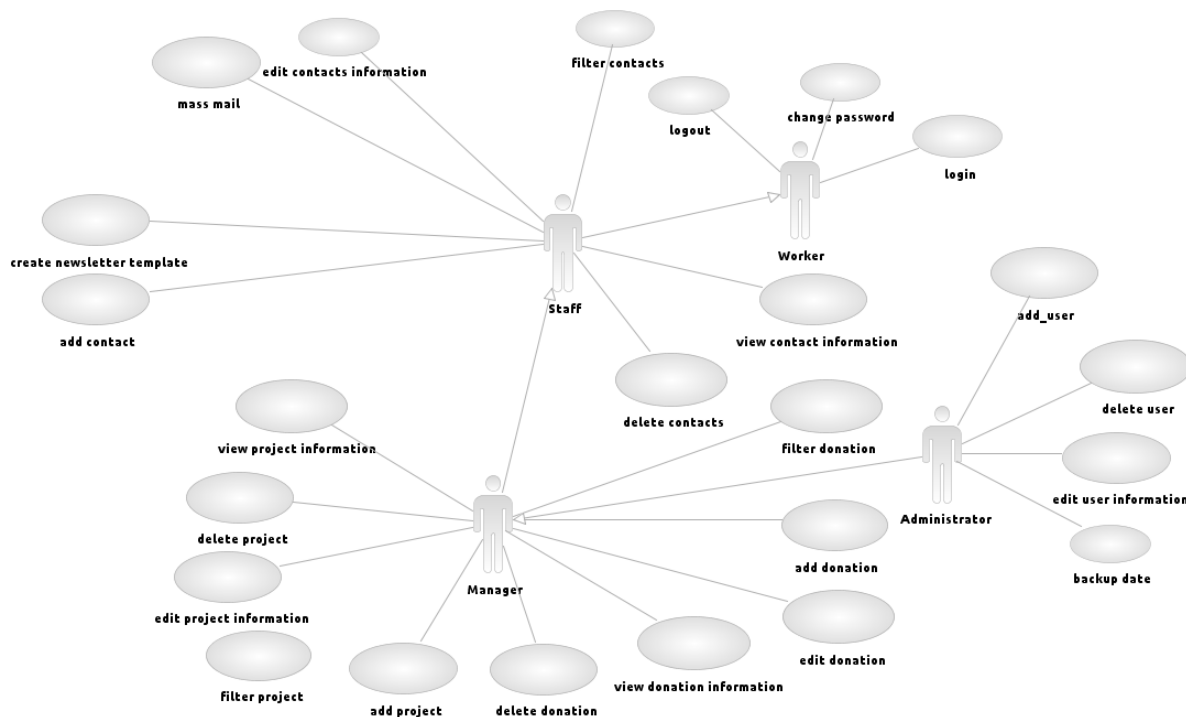
2.1.3.1 Contacts management

2.1.3.1.1 Login

Table 3: Process Description: login

Identifier	UC-1 login
Purpose	Worker log in the system. Check their password and authority
Requirements	WC_987:support at least 10 workers,
Development Risks	None
Pre-conditions	Data initialized in Salesforce
Post-conditions	Worker log into system if he/she type in worker name and password correctly, or he/she will be blocked.

Table 4: Typical Course of Action-login: successfully

Seq#	Actor's Action	System's Response
1	[Worker] type in user name	
2	[Worker] type in password	
3		check username and password
4		Approval worker's request
5		Jump to worker's homepage(worker interface)

Table 5: Alternate Course of Action-login: failed

Seq#	Actor's Action	System's Response
1	[Worker] type in user name	
2	[Worker] type in password	
3		check username and password
4		Find worker name or password is incorrect
5		Block worker's request

2.1.3.1.2 Logout

Table 6: Process Description: logout

Identifier	UC-2 logout
Purpose	Worker log out system

Requirements	WC_987:support at least 10 workers,
Development Risks	None
Pre-conditions	Data initialized in Salesforce, user login as worker
Post-conditions	Worker log out system.

Table 7: Typical Course of Action-logout: successfully

Seq#	Actor's Action	System's Response
1	[Worker] click "logout" button	
2		Worker leave his/her homepage

2.1.3.1.3 Change password

Table 8: Process Description: change password

Identifier	UC-3 change password
Purpose	Worker change his/her password
Requirements	WC_987:support at least 10 users
Development Risks	None
Pre-conditions	Data initialized in Salesforce, user login as worker
Post-conditions	Worker's (staff of Thai CDC) password changed

Table 9: Typical Course of Action-change password: successfully

Seq#	Actor's Action	System's Response
1	[Worker] click "change password" button	
2		Send a link to worker's e-mail box registered in Salesforce
3	[Worker] Click the link	
4		Ask worker type in new password
5	[Worker] Type in new password	
6	[Worker] Re-type new – password	
7		Change worker's password

Table 10: Alternate Course of Action-change password: failed

Seq#	Actor's Action	System's Response
1	[Worker] click "change password" button	
2		Send a link to worker's e-mail box registered in Salesforce
3	[Worker] Do nothing	
4		Time out

2.1.3.1.4 View contacts information

Table 11: Process Description: view contacts information

Identifier	UC-4 view contacts information
Purpose	Display contacts information in Salesforce to staff
Requirements	WC_197:categorize contacts,WC_959:deal with 4000 contacts
Development Risks	None
Pre-conditions	Data initialized in Salesforce, user login as staff
Post-conditions	Display contacts information to worker

Table 12: Typical Course of Action-view contacts information: success

Seq#	Actor's Action	System's Response
1	[Staff] select a contact	
2	[Staff] click view button	
3		check staff's authority
4		worker's authority approved
5		Display information of selected contact to staff

Table 13: Alternate Course of Action-view contacts information: failed

Seq#	Actor's Action	System's Response
1	[Staff] select a contact	
2	[Staff] click view button	
3		check staff's authority
4		staff's authority refused

2.1.3.1.5 Add contacts

Table 14: Process Description: add contact

Identifier	UC-5 add contacts
Purpose	Add new contacts into Salesforce
Requirements	WC_197:categorize contacts, WC_959:deal with 4000 contacts
Development Risks	None
Pre-conditions	Data initialized in Salesforce, user login as staff
Post-conditions	New contacts added into Salesforce

Table 15: Typical Course of Action-add contact: successful

Seq#	Actor's Action	System's Response
1	[Staff] click "new-contact" button	
2		Display a text filed for input
3	[Staff] type in information of new contacts(contact id and so on)	
4	[Staff]Click submit	
5		check staff's authority
6		staff's authority approved
7		add contacts into Salesforce

Table 16: Alternate Course of Action-add contact: failed

Seq#	Actor's Action	System's Response
1	[Staff] click "new-contact" button	
2		Display a text filed for input
3	[Staff] type in information of new contacts(contact id and so on)	
4	[Staff]click submit	
5		check staff's authority
6		staff's request refused due to lack of authority

2.1.3.1.6 Delete contacts

Table 17: Process Description: delete contacts

Identifier	UC-6 delete contacts
Purpose	Delete contacts from Salesforce
Requirements	WC_959:deal with 4000 contacts, WC_197:categorize contacts,
Development Risks	None
Pre-conditions	Data initialized in Salesforce, user login as staff
Post-conditions	contacts delete from Salesforce

Table 18: Typical Course of Action-delete contacts: successful

Seq#	Actor's Action	System's Response
1	[Staff] click contact's id	
2	[Staff] click "delete" button	
3		Pop a confirm information
4	[Staff] confirm request	
5		check staff's authority
6		staff's authority approved
7		delete contacts from Salesforce

Table 19: Alternate Course of Action-delete contact: failed

Seq#	Actor's Action	System's Response
1	[Staff] click contact's id	
2	[Staff] click "delete" button	
3		Pop a confirm information
4	[Staff] confirm request	
5		check staff's authority
6		staff's authority refused

2.1.3.1.7 Edit contacts information

Table 20: Process Description: edit contacts information

Identifier	UC-7 edit contacts information
Purpose	Edit contacts information in Salesforce
Requirements	WC_959:deal with 4000 contacts, WC_197:categorize contacts,

Development Risks	None
Pre-conditions	Data initialized in Salesforce, user login as staff
Post-conditions	contacts information updated in Salesforce

Table 21: Typical Course of Action-edit contacts information: successful

Seq#	Actor's Action	System's Response
1	[Staff] click contact's id	
2	[Staff] click "edit" button	
3		Display a text field for input
4	[Staff] type in contact's new information	
5		check worker's authority
6		worker's authority approved
7		update contact's information in Salesforce

Table 22: Alternate Course of Action-edit contacts information: failed

Seq#	Actor's Action	System's Response
1	[Staff] click contact's id	
2	[Staff] click "edit" button	
3		Display a text field for input
4	[Staff] type in contact's new information	
5		check worker's authority
6		worker's authority refused

2.1.3.1.8 Mass mail

Table 23: Process Description: mass mail

Identifier	UC-8 mass mail
Purpose	Send emails to large number of contacts
Requirements	WC_201 Integrate mass-mailing with Microsoft Outlook WC_205 System has mass-mailing capability
Development Risks	None
Pre-conditions	Data initialized in Salesforce, user login as staff
Post-conditions	Emails send to contacts

Table 24: Typical Course of Action-mass mailing: successful

Seq#	Actor's Action	System's Response
1	[Staff] click mass mailing tab	
2		Display contacts list, format list
3	[Staff] select contacts	
4	[Staff] select format and input email content	
5	[Staff] click "send" button	
6		send emails to contacts

2.1.3.1.9 Create newsletter format

Table 25: Process Description: create newsletter format

Identifier	UC-9 create newsletter format
Purpose	Create format for mass mailing
Requirements	WC_200 At least five template in system, WC_205 System has mass-mailing capability
Development Risks	None
Pre-conditions	Data initialized in Salesforce, user login as staff
Post-conditions	Template stored in system

Table 26: Typical Course of Action- create newsletter format: successful

Seq#	Actor's Action	System's Response
1	[Staff] click new format button	
2		Display a new format input box
3	[Staff] type in template	
4	[Staff] click submit	
5		Store template

2.1.3.1.10 Add project

Table 27: Process Description: add project

Identifier	UC-10 add project
Purpose	Manager add a project in Salesforce
Requirements	WC_198 system should have project tracking ability with all fields required by clients

Development Risks	None
Pre-conditions	Data initialized in Salesforce, user login as manager
Post-conditions	Project added into Salesforce

Table 28: Typical Course of Action-add project: successful

Seq#	Actor's Action	System's Response
1	[Manager] click "add project" button	
2		Display a text field
3	[Manager] type in project information	
4	[Manager] click "submit" button	
5		Check the authority of manager
6		Manager authority approval
7		add new project into Salesforce

Table 29: Alternate Course of Action-add project: failed

Seq#	Actor's Action	System's Response
1	[Manager] click "add project "button	
2		Display a text input field
3	[Manager] type in project information	
4	[Manager] click "submit" button	
5		Check the authority of manager
6		Manager authority refused
7		Refuse manager's request

2.1.3.1.11 Delete project

Table 30: Process Description: delete project

Identifier	UC-11 delete project
Purpose	Manager delete a project from Salesforce
Requirements	WC_198 system should have project tracking ability with all fields required by clients
Development Risks	None

Pre-conditions	Data initialized in Salesforce, user login as manager, user is on project page
Post-conditions	Project deleted form Salesforce

Table 31: Typical Course of Action-delete project: successful

Seq#	Actor's Action	System's Response
1	[Manager] select a project	
2	[Manager] click "delete" button	
3		Pop a confirm information
4	[Manager] confirm	
5		Check the authority of manager
6		Manager authority approval
7		delete project from Salesforce

Table 32: Alternate Course of Action-delete project: failed

Seq#	Actor's Action	System's Response
1	[Manager] select a project	
2	[Manager] click "delete" button	
3		Pop a confirm information
4	[Manager] confirm	
5		Check the authority of manager
6		Authority refused
7		Refuse request

2.1.3.1.12 View project information

Table 33: Process Description: view project information

Identifier	UC-12 view project information
Purpose	Manager track projects' information in Salesforce
Requirements	WC_198 system should have project tracking ability with all fields required by clients
Development Risks	None
Pre-conditions	Data initialized in Salesforce, user login as manager
Post-conditions	Project information displayed to manager

Table 34: Typical Course of Action-view project information: successful

Seq#	Actor's Action	System's Response
3	[Manager] select a project	
4	[Manager] click "view project" button	
6		Check the authority of manager
7		Manager authority approved
9		display information of the project

Table 35: Alternate Course of Action-view project information: failed

Seq#	Actor's Action	System's Response
1	[Manager] select a project	
2	[Manager] click "view project" button	
3		Check the authority of manager
4		Manager authority refused

2.1.3.1.13 Edit project information

Table 36: Process Description: edit project information

Identifier	UC-13 edit project information
Purpose	Manager edit projects' information in Salesforce
Requirements	WC_198 system should have project tracking ability with all fields required by clients
Development Risks	None
Pre-conditions	Data initialized in Salesforce, user login as manager
Post-conditions	Project information updated form Salesforce

Table 37: Typical Course of Action-edit project information: successful

Seq#	Actor's Action	System's Response
2	[Manager] select a project	
4	[Manager] click "edit project" button	
5		Display a text field for input
6	[Manager] type in project information	
7	[Manager] click "submit" button	
8		Check the authority of manager

		Manager authority approvaled
9		
10		update project information

Table 38: Alternate Course of Action-edit project information: failed

Seq#	Actor's Action	System's Response
1	[Manager] select a project	
2	[Manager] click "edit project" button	
3		Display a text field for input
4	[Manager] type in project information	
5	[Manager] click "submit" button	
6		Check the authority of manager
7		Manager authority refused

2.1.3.1.14   View donation information

Table 39: view donation information

Identifier	UC-14 view donation information
Purpose	Manager search information of donations
Requirements	WC_960 Implement a system that has fundraising abilities
Development Risks	None
Pre-conditions	Data initialized in Salesforce, user login as manager, user is on donation page
Post-conditions	Display donation information.

Table 40: Typical Course of Action- view donation information: successfully

Seq#	Actor's Action	System's Response
1	[Manager] select a donation	
2		Check manager's authority
3		Approval manager's request
4		Display donation information

Table 41: Alternate Course of Action- view donation information: failed

Seq#	Actor's Action	System's Response
1	[Manager] select a donation	
2		Check manager's authority
3		refuse manager's request

2.1.3.1.15　　Add donation

Table 42: Process Description: add donation

Identifier	UC-15 add donation
Purpose	Manager add a donation into Salesforce
Requirements	WC_960　　　　　Implement a system that has fundraising abilities
Development Risks	None
Pre-conditions	Data initialized in Salesforce, user login as manager
Post-conditions	Donation added into Salesforce

Table 43: Typical Course of Action- add donation: successfully

Seq#	Actor's Action	System's Response
1	[manager] click add tab	
2		Display a text field for input
3	[manager] type in donation information	
4	[manager] Click submit button	
5		Check manager's authority
6		Approval manager's request
7		Add donation to Salesforce

Table 44: Alternate Course of Action- add donation: failed

Seq#	Actor's Action	System's Response
1	[manager] click add tab	
2		Display a text field for input
3	[manager] type in donation information	
4	[manager] Click submit button	
5		Check manager's authority
6		refuse manager's request

2.1.3.1.16 Add user

Table 45: Process Description: add user

Identifier	UC-16 add user
Purpose	Add new user into Salesforce
Requirements	WC_987 maintain at least 10 users
Development Risks	None
Pre-conditions	Data initialized in Salesforce, user login as administrator
Post-conditions	New user added into Salesforce

Table 46: Typical Course of Action-add user: successful

Seq#	Actor's Action	System's Response
1	[Administrator] click user tab in his/her homepage	
		Display user list
3	[Administrator] click "new-user" button	
		Display a text field for input
4	[Administrator] type in information of new user(user id, password, email address and so on)	
	[Administrator]click submit	
5		add contacts into Salesforce

2.1.3.1.17 Delete user

Table 47: Process Description: delete user

Identifier	UC-17 delete worker
Purpose	Delete a worker from Salesforce
Requirements	WC_987 maintain at least 10 workers
Development Risks	None
Pre-conditions	Data initialized in Salesforce, user login as administrator
Post-conditions	Worker deleted from Salesforce

Table 48: Typical Course of Action-add worker: successful

Seq#	Actor's Action	System's Response
1	[Administrator] click user tab in his/her homepage	
2		Display user list
3	[Administrator] click a user's id	
4	[Administrator] click "delete button"	
5		Pop a confirm information
6	[Administrator] confirm	
7		delete worker from Salesforce

2.1.3.1.18 Edit user information

Table 49: Process Description: edit user information

Identifier	UC-18 edit user information
Purpose	Edit Data in Salesforce
Requirements	WC_987 maintain at least 10 users
Development Risks	None
Pre-conditions	Data initialized in Salesforce, user login as administrator
Post-conditions	Data updated in Salesforce

Table 50: Typical Course of Action-edit Data: successful

Seq#	Actor's Action	System's Response
1	[Administrator] click user tab in his/her homepage	
2		Display user list
3	[Administrator] click user's id	
4	[Administrator] click "edit" button	
5		Display a text field for input
6	[Administrator] type in user's new information	
7	[Administrator]click submit	
8		Check administrator's authority
9		Approval authority

10		update worker's information in Salesforce

2.1.3.1.19 Edit donation

Table 51: Process Description: edit donation

Identifier	UC-19 edit donation
Purpose	edit donation information in Salesforce
Requirements	WC_960 Implement a system that has fundraising abilities
Development Risks	None
Pre-conditions	Data initialized in Salesforce, user login as manager,
Post-conditions	donation information updated in Salesforce

Table 52: Typical Course of Action-edit donation: successful

Seq#	Actor's Action	System's Response
1	[manager] click donation id	
2	[manager] click "edit" button	
3		Display a text field for input
4	[manager] type in new information of donation	
5	[manager] click on submit	
6		Check manager's authority
7		Manager's authority approved
8		update donation information in Salesforce

Table 53: Alternate Course of Action- edit donation: failed

Seq#	Actor's Action	System's Response
1	[manager] click donation id	
2	[manager] click "edit" button	
3		Display a text field for input
4	[manager] type in new information of donation	
5	[manager] click on submit	
6		Check manager's authority
7		Manager's authority refused

2.1.3.1.20 Delete donation

Table 54: Process Description: delete donation

Identifier	UC-20 delete donation
Purpose	delete donation information in Salesforce
Requirements	WC_960 Implement a system that has fundraising abilities
Development Risks	None
Pre-conditions	Data initialized in Salesforce, user login as manager
Post-conditions	donation information deleted from Salesforce

Table 55: Typical Course of Action- delete donation: successful

Seq#	Actor's Action	System's Response
1	[manager] click donation id	
2	[manager] click "delete" button	
3		Pop a confirm information
4	[manager] confirm	
5		Check manager's authority
6		Manager's authority approved
7		Delete donation in Salesforce

Table 56: Alternate Course of Action- delete donation: failed

Seq#	Actor's Action	System's Response
1	[manager] click donation id	
2	[manager] click "delete" button	
3		Pop a confirm information
4	[manager] confirm	
5		Check manager's authority
6		Manager's authority refused

2.1.3.1.21 Back up data

Table 57: Process Description: back up data

Identifier	UC-21 back up data
Purpose	Edit Data in Salesforce
Requirements	WC_213: ability of exporting data
Development Risks	None

Pre-conditions	data initialized in Salesforce, user login as administrator
Post-conditions	Data exported from Salesforce

Table 58: Typical Course of Action- back up data: successful

Seq#	Actor's Action	System's Response
1	[Administrator] click setup tab in his/her homepage	
2		Display setup page
3	[Administrator] click backup button	
4		Start backing up data
5		Send a link for downloading to administrator through email
6	[Administrator] click the link in email and download backup files	

2.1.3.1.22 Filter donation

Table 59: Process Description: filter donation

Identifier	UC-22 filter donation
Purpose	delete donation information in Salesforce
Requirements	WC_960 Implement a system that has fundraising abilities
Development Risks	None
Pre-conditions	Data initialized in Salesforce, user login as manager
Post-conditions	donation information displayed to manager

Table 60: Typical Course of Action- filter donation: successful

Seq#	Actor's Action	System's Response
1	[manager] input filter conditions	
2	[manager] click "filter" button	
3		Check manager's authority
4		Manager's authority approved
5		Display donations which meet filter conditions

Table 61: Alternate Course of Action- filter donation: failed

Seq#	Actor's Action	System's Response
1	[manager] input filter conditions	

2	[manager] click "filter" button	
3		Check manager's authority
4		Manager's authority refused

2.1.3.1.23 Filter project

Table 62: Process Description: filter project

Identifier	UC-23 filter project
Purpose	delete donation information in Salesforce
Requirements	WC_198 system should have project tracking ability with all fields required by clients
Development Risks	None
Pre-conditions	Data initialized in Salesforce, user login as manager
Post-conditions	project information displayed to manager

Table 63: Typical Course of Action- delete donation: successful

Seq#	Actor's Action	System's Response
1	[manager] input filter conditions	
2	[manager] click "filter" button	
3		Check manager's authority
4		Manager's authority approved
5		Display projects which meet filter conditions

Table 64: Alternate Course of Action- delete donation: failed

Seq#	Actor's Action	System's Response
1	[manager] input filter conditions	
2	[manager] click "filter" button	
3		Check manager's authority
4		Manager's authority refused

2.1.3.1.24 Filter contacts

Table 65: Process Description: filter contacts

Identifier	UC-24 filter contacts
Purpose	delete donation information in Salesforce
Requirements	WC_974 filter contacts

Development Risks	None
Pre-conditions	Data initialized in Salesforce, user login as manager
Post-conditions	contact information displayed to staff

Table 66: Typical Course of Action- delete donation: successful

Seq#	Actor's Action	System's Response
1	[staff]　input filter conditions	
2	[staff]　click "filter" button	
3		Check manager's authority
4		Manager's authority approved
5		Display contacts which meet filter conditions

Table 67: Alternate Course of Action- delete donation: failed

Seq#	Actor's Action	System's Response
1	[staff]　input filter conditions	
2	[staff]　click "filter" button	
3		Check manager's authority
4		Manager's authority refused

3. NDI/NCS Interoperability Analysis
3.1 Introduction

Our project is a single NDI project. All of our functionalities are provided by Salesforce. All components such as Contacts Management Component,   Mass Mailing Component and Project Tracking component are already connected with each others. So, it is needless to discuss the interoperability of these components.

3.2 COTS / GOTS / ROTS / Open Source / NCS

Table 68: NDI Products Listing

NDI/NCS Products	Purposes
Salesforce	Platform to provide all functionality in project

3.3 Connectors

We do not have any connectors because we have only one NCS

3.4 Legacy System

In this project, the system needs to import the data form MS Access, which is in .csv format.
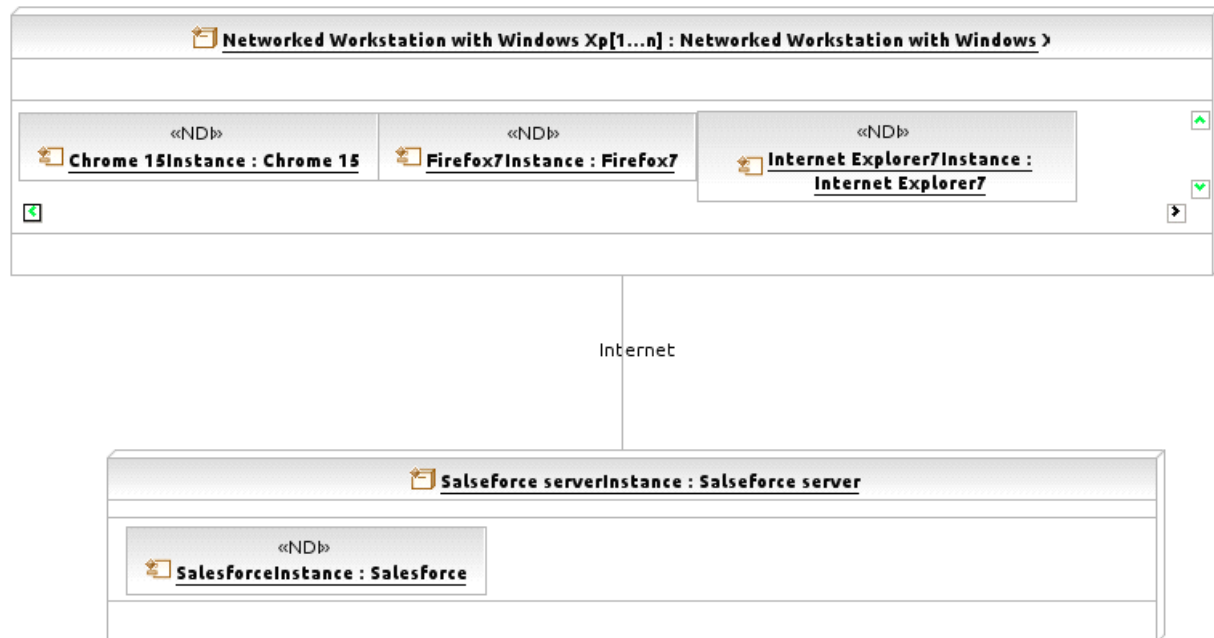
3.5 System Structure

Figure 4: Deployment Diagram

3.5.1.1 Evaluation Summary

Table 69: NCS Evaluation

NDI	Usages	Comments
Salesforce	To provide all functionalities	It is the only NCS we used in our project