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Integration Testbed Specification

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Abstract

This document gives the technical specification for the SOCIETIES testbed provided by the TSSG. It provides a list of hardware nodes on the testbed along with a list of software and tools on these nodes. It gives an approximation of the deployment of the SOCIETIES framework between the network nodes.

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Executive summary

To effectively validate and demonstrate the results of the SOCIETIES project, we need to verify the innovative aspects of the project in a suitable, and state of the art, testbed demonstration facility. Through the involvement of the TSSG, this end validation goal will be implemented and completed in WP7 of the project.

This deliverable will provide you with a detailed description of the SOCIETIES testbed and the technologies and services it can provide.

Deliverable D7.2 will also provide you with a concise guide for all testbed and testing related tools that will be adopted and used within the SOCIETIES testbed. Such tools as Redmine and Jenkins will be used to support the integration, validation and verification process.

List of authors

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Abbreviations

CIS	Community Interaction Space
CRP	Change Request Procedure
CSS	Co-operating Smart Space
DMZ	De Militarized Zone
GUI	Graphical User Interface
IDE	Integrated Development Environment
JRE	Java Runtime Environment
JVM	Java Virtual Machine
OS	Operating System
SDK	Software Development Kit
SN	Social Network
XMPP	Extensible Messaging and Presence Protocol

1 Introduction

This document gives the specifications related to the SOCIETIES testbed supplied by the TSSG. The document outlines the tools and platforms that will be used to develop and build the SOCIETIES prototype. It also documents the configuration of the testbed to support the execution of the integration tests. Finally it outlines the management procedures related to the testbed.

2 Tools and Platforms

This section will give a brief description of the hardware and software technologies that make up the SOCIETIES testbed.

Please Note : The software platforms and versions are the agreed versions at the time of this document being written but over the course of the SOCIETIES project some of these versions will change. We will continue to update this section throughout the SOCIETIES project if and when platforms and versions change.

2.1 Hardware

2.1.1 Node Definition

The following table gives a definition of the nodes that are part of the SOCIETIES platform.

Node Types	Node Definition
Cloud Node	Deployment to a server based device or cloud instance. Runs a server based OS that supports the JVM, such as Ubuntu server.
Rich Client Node	Deployment to a standard OS that supports the JVM. This is deemed rich in the aspect that the processor, memory etc., are greater than a smart device. It can also provide server functions for the light client in the disconnected scenario.
Light Client Node	Deployment to a smart device running a mobile OS. Examples include Android, iOS etc.
Sensor Node	Device running an embedded OS, included for completeness but does not run SOCIETIES services

Table 1 : Node Definition

2.1.2 Hardware Definition

The following table gives a hardware definition of the nodes that are part of the SOCIETIES platform.

Hardware Type	Hardware Definition
Ubuntu Server (Cloud, Build, XMPP etc..)	VMWare : Ram 256MB, Disk 5G.
Laptop (Rich Client)	Standard laptop running Ubuntu or Windows.
Smartphone (Light Client)	An Android smartphone has been suggested. However, no decision on the device at this moment.
Sensors	Current list of suggested devices include RFID tags + readers, Plasma Screens, Speakers, etc. (At the time of writing there are none in the Testbed Design but this will be reviewed as the project progresses).

Table 2 : Hardware Definition

2.2 Software

2.2.1 Software Technologies

The following table gives a list of the technologies and their definition along with their associated website for more details.

Technology	Definition	Website
Android SDK	Android Development Kit	http://developer.android.com/sdk/
Apache Web Server	HTTP Web Server	http://httpd.apache.org/
aSmack	XMPP Library for Android	http://code.google.com/p/asmack/
CheckStyle	Java Coding Style Checker Tool	http://checkstyle.sourceforge.net/
Cobertura	Java Code Coverage Tool	http://cobertura.sourceforge.net/
Emma	Android Code Coverage Tool	http://blog.appmakr.com/android-code-coverage/
Fabric	Application Deployment Tool	http://docs.fabfile.org/en/1.2.2/index.html
FindBugs	Static Analysis Tool for Java Code	http://findbugs.sourceforge.net/
Git	Version Control System	http://git-scm.com/
Java JDK	Java Development Kit	http://www.java.com/
Jenkins	Continuous Integration Tool	http://jenkins-ci.org/
JQuery	Javascript Library	http://jquery.com/
JQuery Mobile	JQuery Mobile Framework	http://jquerymobile.com/
JSLint	Javascript Code Checker	http://www.jshint.com/
JUnit	Unit Testing Framework	http://www.junit.org/
Maven	Build Manager	http://maven.apache.org/
Nexus	Maven Repository	http://nexus.sonatype.org/
Openfire	XMPP Server	http://www.igniterealtime.org/projects/openfire/
PhoneGap	HTML5 App Platform	http://www.phonegap.com/
Smack	XMPP Client Library	http://www.igniterealtime.org/projects/smack/
Strophe.js	XMPP Library for Javascript	http://strophe.im/strophejs/
Ubuntu Server OS	Linux OS	http://www.ubuntu.com/
Virgo	Web Server	http://www.eclipse.org/virgo/

Table 3 : Software Technologies

2.2.2 Build Node Environment

The following table gives a list of technologies/platforms and their versions for the SOCIETIES build environment.

Technology	Nodes			Version
	Cloud	Rich	Light	
Android SDK			X	R13
Android Virtual Device			X	2.2
Apache Web Server	X			2.0
aSmack			X	2010.12.11
CheckStyle	X	X	X	5.4
Cobertura	X	X		1.9.4.1
Eclipse IDE	X	X	X	3.7.1
Emma			X	2.1
Fabric	X			1.2.2
FindBugs	X	X	X	1.3.9
Git	X	X	X	1.7.6.4
Java JDK	X	X		6
Jenkins	X	X	X	1.424
JQuery	X	X		1.6.4
JQuery Mobile			X	1.0 Beta 3
JSLint	X	X	X	0.3.0
JUnit			X	3.8.2
JUnit	X	X		4.8.2
Maven	X	X	X	3.0.3
Nexus	X	X	X	1.9.1
PhoneGap			X	1.1
Redmine	X	X	X	1.2.1
Smack	X	X		3.2.1
Strophe.js	X	X	X	1.0.2
Ubuntu Server OS	X			11.04
Virgo	X	X		3.0.1

Table 4 : Build Node Environment

2.2.3 Deployment Node Environment

The following table gives a list of the technologies and versions for the SOCIETIES deployment nodes.

Technology	Nodes			Version
	Cloud	Rich	Light	
Android Platform			X	2.2
Apache Web Server	X			2.0
JRE	X	X		6
Openfire XMPP Server	X			3.7.1
Ubuntu OS	X			11.04
Virgo	X	X		3.0.1

Table 5 : Deployment Node Environment

2.2.4 List of Modules

The following table gives an initial list of components in the SOCIETIES platform and how they are deployed to the physical real nodes in the system.

Platform Services	Platform	Node		
		Cloud	Rich	Light
Service Discovery	Common Platform	X	X	X
Communication Manager	Common Platform	X	X	X
Device Manager	Common Platform	X	X	X
Service Provisioning	Third Party Service Platform	X	X	
Backend Context Management	Participant Server Platform	X		
User Learning & Reasoning Management	Participant Server Platform	X		
User Personalisation Management	Participant Server Platform	X		
CSS Management	Participant Server Platform	X		
Trust Management & Evaluation	Participant Server Platform	X		
Privacy Backend	Participant Server Platform	X		
SN Connector	Participant Server Platform	X		
Community Context Management	Community Platform	X		
Community Learning & Reasoning Management	Community Platform	X		
Community Personalisation Management	Community Platform	X		
Backend CIS Management	Community Platform	X		
CIS Information Management	Community Platform	X		
CIS Recommendation	Community Platform	X		
Domain Authority	Domain Platform	X		
CIS Discovery	Domain Platform	X		
CSS Discovery	Domain Platform	X		
User Agent GUI	Participant Rich Platform		X	

Platform Services	Platform	Node		
User Personalisation GUI	Participant Rich Platform		X	
CSS Management GUI	Participant Rich Platform		X	
CIS GUI	Participant Rich Platform		X	
Privacy GUI	Participant Rich Platform		X	
CIS Client	Participant Rich Platform		X	
Privacy Client	Participant Rich Platform		X	
CSS Client	Participant Rich Platform		X	
User Personalisation GUI	Participant Light Platform			X
CIS GUI	Participant Light Platform			X
Privacy GUI	Participant Light Platform			X
User Agent GUI	Participant Light Platform			X
CSS Client	Participant Light Platform			X

Table 6 : List of Modules

3 Testbed Configuration

This is a general overview of the testbed configurations available at the TSSG site. There are two testbed configurations presented here, the non-federated and the federated testbeds. The non-federated will be used for the first trial and then the federated will be used for subsequent trials. The federated testbed is slightly more complex than the non-federated testbed and also the decision on the second XMPP server technology has not been decided yet.

3.1 General Overview

The testbed is provided by the TSSG. TSSG will ensure that the nodes are accessible to the partners. They will do the initial installation of the required software but they will not provide ongoing support for this software. Testbed security and testbed backup procedures are assumed and will be implemented as part of the testbed but will not be outlined here.

3.2 Non-Federated Testbed

The non-federated testbed has one XMPP server in the testbed

Access

- Https access to Build server, Redmine server
- Cloud nodes are accessed via http server and xmpp server
- Client nodes access the testbed via internet using a reverse proxy or similar (https/xmpp)
- The Github repository will hold all the source files and also the deployment jars.
- The build server will check out the software from Github and build the software using Jenkins, the continuous integration tool.
- The Maven Nexus server will hold a local repository of software artifacts required for development
- The XMPP server will provide SOCIETIES communication infrastructure
- Redmine will provide project management tracking and defect tracking for the project.
- An install test server will be used for smoke tests before deployment of the latest builds to the testbed
- The TSSG DMZ is the security firewall for the testbed.

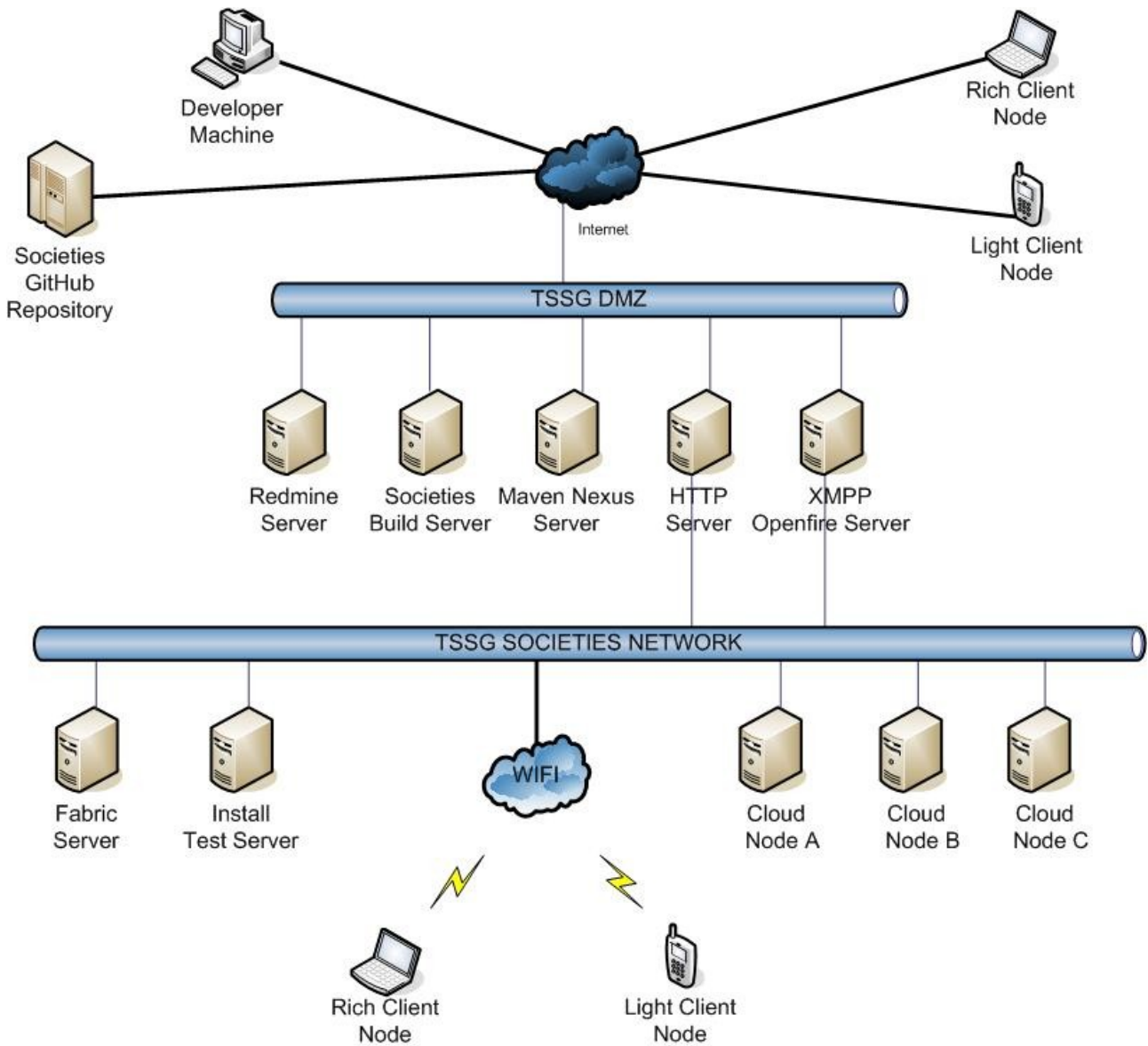


Figure 1 : Non-Federated Testbed

3.3 Federated Testbed

The federated testbed has two XMPP servers in two different subnetworks. This will allow the testing of the federated use case.

Access

- Https access to Build server, Redmine server
- Cloud nodes accessed via http server and xmpp server
- Client nodes access the testbed via internet (https/xmpp)
- The TSSG DMZ is the security firewall for the testbed.

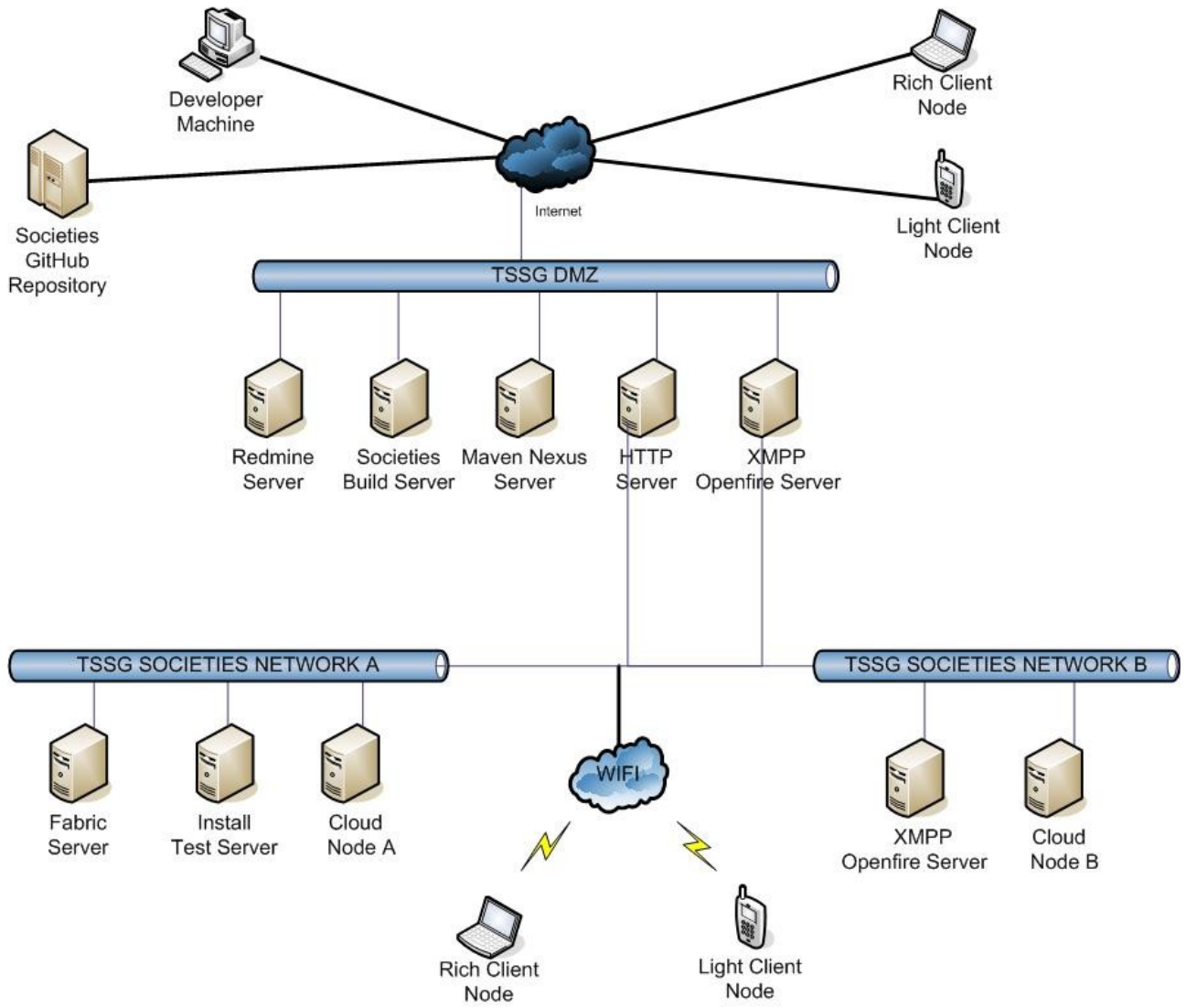


Figure 2 : Federated Testbed

4 Testbed Management

The testbed is provided by the TSSG. The partner will ensure that the nodes are accessible to the partners. They will do the initial installation of the required software but they will not provide ongoing support for this software.

Access accounts will be given to each SOCIETIES partner. It is the responsibility of each partner to ensure that access given is not abused in any way.

Initially concurrent access to the testbed will be allowed, on the assumption that there will not be much overlap on people accessing the system. Once development and testing activities across all partners picks up an access rota will be employed.

The testbed will have all its nodes backed up daily to prevent data loss.

Contact point for reconfiguring hardware/network :

Ger Henderson (TSSG) – ghenderson@tssg.org

In order to request additional hardware requirements or changes to the testbed, follow the Change Request Procedure (CRP) in Appendix B.

Note : The testbed configuration will only be changed in exceptional circumstances. Otherwise you will need to work around the current configurations.

5 Conclusion

This document has given the initial specifications relevant to the testbed that is being provided by the TSSG for the SOCIETIES project. It has also provided information on the software technologies and versions which will be used to build and run the SOCIETIES platform.

The testbed will provide the technologies and services to effectively validate the SOCIETIES project.

6 Appendices

6.1 Appendix A : Using Redmine

This section provides a concise guide for the use of the issue tracking system Redmine [1] in the SOCIETIES project.

The Redmine system for SOCIETIES is available at [2]. Each partner has been assigned credentials for the system. The Redmine system will be used throughout the project for logging issues and bugs

6.1.1 Creating a ticket

1. Login to Redmine and click on your project and create a 'New Issue', see Figure 3 below.

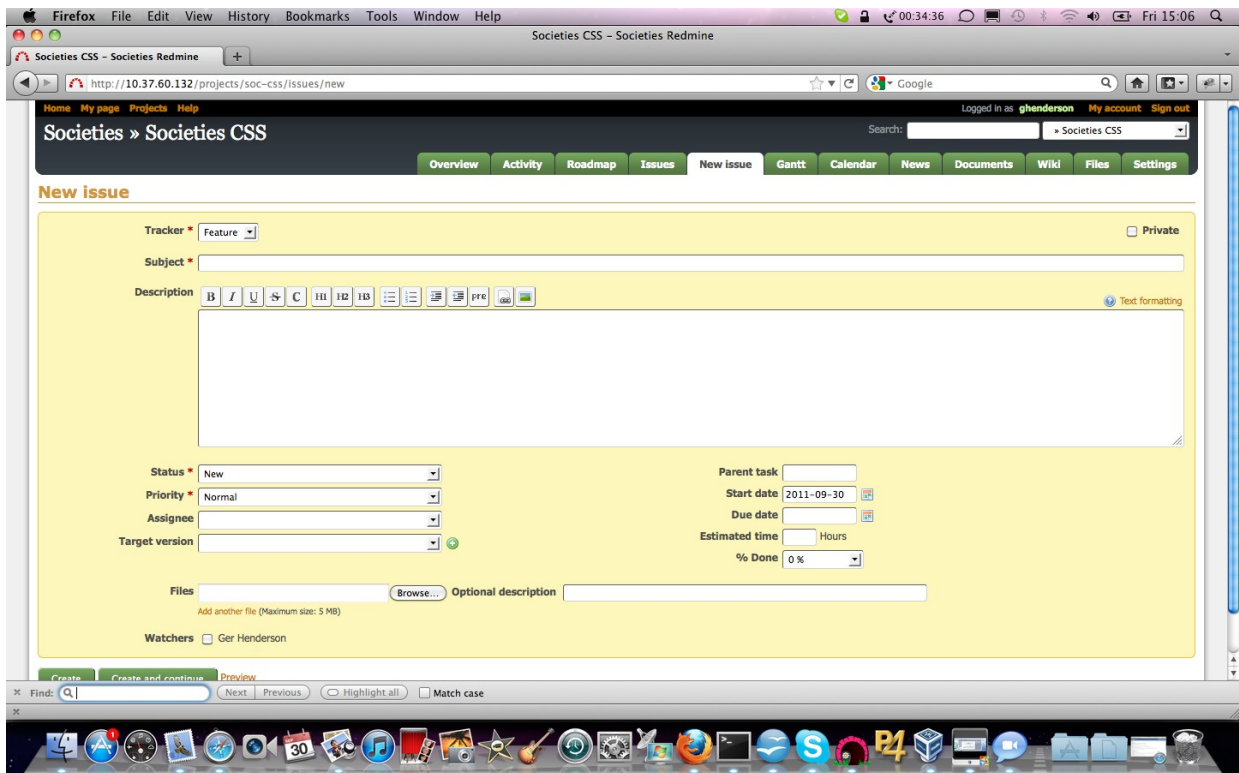


Figure 3 : Redmine Instance

2. Fill in the fields shown above and create new issue/bug.

All tickets are reviewed as part of the current development iteration and will be analysed, resolved or rejected as appropriate.

6.2 Appendix B : Testbed Change Request Procedure

If a partner needs to make a change to the existing hardware or software on the SOCIETIES testbed, a Change Request Procedure (CRP) must be followed to ensure that all partners and the testbed manager are aware of the changes and can investigate and subsequently approve them, as is appropriate.

The CRP should progress as follows:

1. Log onto Redmine and enter the Societies Testbed project
2. Fill in the necessary fields as required
3. Enter the details of the Change Request, including the description of the request, the reason for the request and any supporting arguments/information regarding the request to aid its approval
4. Assign the ticket to Ger Henderson (Ger Henderson will receive an email from Redmine)

5. The ticket will be reviewed as part of the current development iteration and will be analysed, resolved or rejected, as appropriate.

7 References

1. Redmine (www.redmine.org)
2. SOCIETIES Redmine installation (<http://redmine.ict-societies.eu>)