Aarhus School of Engineering

System Requirement Specification

SitaWare Civilian
Company: B

Development Team

Name:	Jens Kuhr Jørgensen	**Mail:**	11690@iha.dk
Name:	Thomas Fiil Lyngholm	**Mail:**	11641@iha.dk
Name:	Rasmus Fredensborg Jensen	**Mail:**	11471@iha.dk
Name:	René Arendt Sørensen	**Mail:**	11553@iha.dk
Name:	Kristian Falkesgaard Ørts(Author)	**Mail:**	11537@iha.dk
Name:	Jonas Harder Poulsen	**Mail:**	20104025@iha.dk
Name:	Peter Kristian Mathiesen	**Mail:**	11490@iha.dk

Customer

Name: Miran Hasanagic **Mail:** miran.hasanagic@eng.au.dk

Revision history

Version	Date	Changes
0.1	04-02-2015	Document created.
0.2	06-02-2015	Internal review.
1.0	08-02-2015	Initial draft.
1.1	10-02-2015	Revision after external review.
1.2	11-02-2015	New requirements added.
1.3	12-02-2015	Descriptions added and traceability updated.

Table 1. Revision history.

Glossary and Terms

The following table contains a glossary of abbreviations and technical subject-specifik terms used in this document which require further explanation.

Abbreviation	**Meaning**	**Explanation**
COP	Common Operation Picture	Display/picture of relevant information in operation area.
FR-X	Functional Requirement No. X	
NFR-X	Non-functional Requirement No. X	
N-X	Need No. X	
CONOPS	Concept of Operations	
HQ	Mobile Headquarter	

Table 2. Glossary.

Indholdsfortegnelse

Introduction 1

This document describes the system requirement specification of the initial release of SitaWare Civilian, version 1.0.

1.1 System Overview

In a crisis situation, the SitaWare Civilian allows communication and exchange of information between various users. The following is a list of the relevant users who can improve their level of communication and intelligence during a crisis situation:

- The Fire Department
- The Police Department
- The Search and Rescue Department
- The Emergency Management Agency
- The Health Management Agency
- The Environment Management Agency
- The Marine Environment Management Agency
- Armed Forces

Figure 1.1 depicts the communication between the above mentioned users of the system, and the mobile head quarter (HQ).

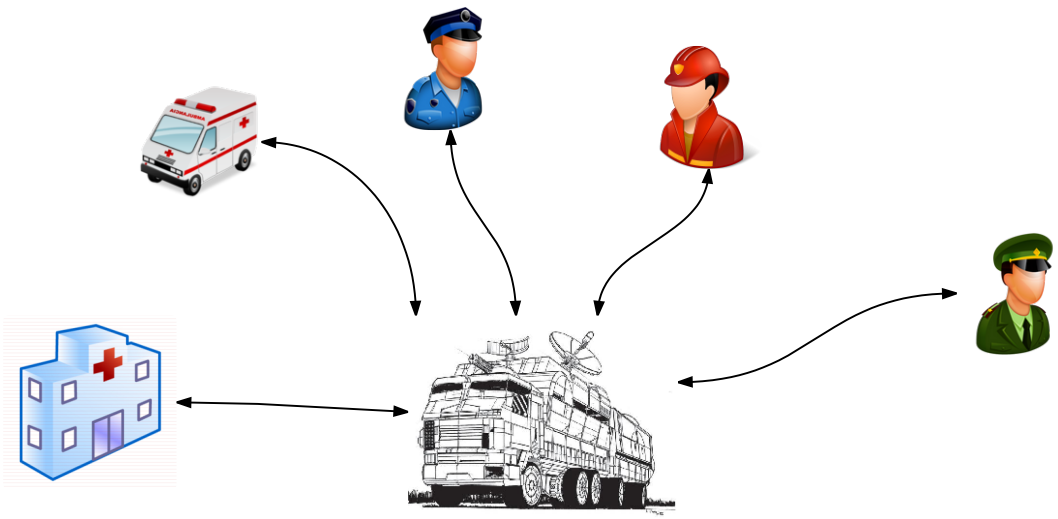

Figure 1.1. System Overview.

1.2 Document overview

The rest of this document will specify the requirements of SitaWare Civilian and can be used when designing and implementing the complete system.

Referenced documents 2

This chapter contains a brief description of the documents referenced to in this document.

2.1 Concept of Operations

Contains a description of problems and top-level operational needs.

Requirements 3

The following chapter lists the requirements created from the needs in the CONOPS(Concept of Operations) document. Each requirement is listed with FR(functional requirement) or NFR(non-functional requirement) and an ID number.

3.1 User description

Commander This user operates the system in a commander mode and is a person in charge of the actors in the field. The Commander user is most often located in HQ, but can also be located in the field. (S)he is responsible for sending out commands to actors in the field.

Actor This user operates the system in a default mode and is a person who is deployed in the field. The Actor user is responsible for registering various observations done in the field.

Administrator This user operates the system in an administrator mode and is a person who is capable of maintaining the system.

3.2 Device description

HQ This is the mobile headquarter where commanders most often are located. It provides a full-sized COP.

Hand-held dismounted COP This is a wearable device for the actors in the field. It provides a condensed COP.

3.3 Required states and modes

3.3.1 States

FR-0030 The system shall be initialized in a start-up state.

FR-0040 The system shall have an active state, for when running with non-erroneous behaviour.

FR-0050 The system shall have an error state, for when a system error occurs.

FR-0060 The system shall be deactivated in a shut-down state.

3.3.2 Modes

FR-0070 The system devices shall have a default mode.
FR-0080 The system devices shall have a commander mode.
FR-0090 The system devices shall have an administrator mode.

3.4 Capability requirements

FR-0110 The system shall keep track of the location of all devices.
FR-0115 The system shall be capable of providing all devices with COP-information.
FR-0120 COP-information shall contain information about human population density.
FR-0130 COP-information shall contain topographic information.
FR-0140 COP-information shall contain traffic information.
FR-0150 COP-information shall contain information of infrastructure.
FR-0160 COP-information shall contain information of fresh water locations for fire fighting purposes.
FR-0170 The system shall be capable of providing all devices with observations registered by a user.
FR-0180 The system shall be capable of providing all devices with weather information.
FR-0190 The system shall allow all users to selectively exclude specific COP-information.
FR-0200 The system shall allow all users to view previous events submitted by a user.
FR-0210 The system shall be able to register events using the platforms currently employed by the various users.
FR-0220 The system shall be able to send information to the platforms currently employed.
FR-0230 The system shall be able to distribute messages based on geographic information.
FR-0240 The system shall be able to distribute messages based on role information.
FR-0250 The system shall be able to distribute messages based on group information.
FR-0260 The system shall be able to distribute messages based on identity information.

3.5 System external interface requirements

FR-0270 The devices of the system shall provide a UI.
FR-0280 The UI shall include a GUI.
FR-0290 The UI shall include an audio interface.
FR-0300 The system shall have a connection to a server of COP-information.

3.6 System internal interface requirements

FR-0320 All devices shall be able to communicate with each other.

3.7 System internal data requirements

FR-0330 The system shall store information about previous events.
FR-0340 The system shall store information about all users.

3.8 Safety requirements

FR-0350 The hand-held dismounted COP shall warn the user about dangerous radiation levels.
FR-0352 The hand-held dismounted COP shall warn the user about dangerous temperature levels.
FR-0354 The hand-held dismounted COP shall warn the user about dangerous oxygen levels.

3.9 Security and privacy requirements

FR-0360 The system shall require a login from all users.
FR-0370 All communication shall be encrypted.
FR-0380 All stored data shall be encrypted.

3.10 System environment requirements

FR-0390 The hand-held dismounted COP shall be waterproof.
FR-0400 The hand-held dismounted COP shall be shock resistant.
FR-0410 The hand-held dismounted COP shall be heat resistant.
FR-0420 The hand-held dismounted COP shall be cold resistant.

3.11 System quality factors

FR-0430 Warranty period shall be at least 10 years.
FR-0440 The system shall be open for future updates.
FR-0450 All internal data communication shall be reliable.

3.12 Design and construction constraints

FR-0460 The hand-held dismounted COP shall be wearable.
FR-0470 The hand-held dismounted COP shall be worn so it is easily accessible.

3.13 Personnel-related requirements

FR-0480 All personnel shall be trained in the use of the system before use.

3.14 Non-functional requirements

NFR-0100 When the system is turned on it shall be ready for use within 5 minutes (FR-0030).

NFR-0110 When the system is in error state it shall be shown by a red indicator (FR-0050).

NFR-0120 When turned off the system shall be shut down within 5 minutes (FR-0060).

NFR-0130 The location of a device shall be updated at least every 10 seconds (FR-0110).

NFR-0140 When the system provides COP-information to a device, the information must be available on the device within 10 seconds (FR-0115).

NFR-0150 When a user registers an observation, that information shall be available on all devices within 15 seconds (FR-0170).

NFR-0160 When the system provides weather information to a device, this information must be available on the device within 10 seconds (FR-0180).

NFR-0170 Dangerous radiation levels are defined by measurements above 0.25 Sievert.

NFR-0180 Dangerous temperature levels are defined by temperatures below -40 °C and above 70 °C (FR-0352).

NFR-0190 Dangerous oxygen levels are defined by oxygen levels below 10 % of the atmosphere (FR-0354).

NFR-0200 The probability of data loss shall not exceed 1/1000 (FR-0450).

NFR.0210 The weight of the hand-held dismounted COP shall not exceed 1 kg (FR-0460).

Quality provisions 4

The following chapter describes how each requirement is qualified. The chapter consists of two tables, one describing the different qualification methods and another describing how each of the requirements is qualified.

Qualification Method	**Description**
Demonstration	Qualification of the requirement is done by demonstration of the system.
Test	Qualification of the requirement is verified by a test.
Analysis	Qualification of the requirement is verified through analysis.
Inspection	Qualification of the requirement is done by an inspection.
Contract	Qualification of the requirement is verified through a contract.

Table 4.1. Description of quality methods.

System requirement	Qualification method
FR-0110	Test
FR-0120	Demonstration
FR-0130	Demonstration
FR-0140	Demonstration
FR-0150	Demonstration
FR-0160	Demonstration
FR-0170	Demonstration
FR-0180	Demonstration
FR-0190	Demonstration
FR-0200	Demonstration, Test
FR-0210	Demonstration, Test
FR-0220	Demonstration, Test
FR-0230	Demonstration, Test
FR-0240	Demonstration, Test
FR-0250	Demonstration, Test
FR-0260	Demonstration, Test
FR-0270	Contract

Table 4.2. Requirements matched to a quality method.

Requirements traceability 5

This chapter traces the requirements to the user needs.

5.1 Traceability matrix

The traceability matrix ensures that all requirements fulfill a need. If a requirement does not fulfill a need, then it is redundant, or a new need has to be created.

Project name:	SitaWare Civilian	**Business area:**		Civilian Crises Management					
Project manager:	René Arendt Sørensen	**Business Analyst lead:**		Rasmus Fredensborg Jensen					
QA lead	Peter Kristian Mathiesen	**Target implementation date:**							
Req. id.	Catagory of functional activity	Requirement description	Use case reference	Design document reference	Code or module reference	Test case reference	User acceptance validation	Comments	
FR-0030	???	States							
FR-0040	???	States							
FR-0050	???	States							
FR-0060	???	States							
FR-0070	???	Modes							
FR-0080	???	Modes							
FR-0090	???	Modes							
FR-0110	N-030	Capability							
FR-0115	???	Capability							
FR-0120	N-020	Capability							
FR-0130	N-020	Capability							
FR-0140	N-020	Capability							
FR-0150	N-020	Capability							
FR-0160	N-020	Capability							
FR-0170	N-010	Capability							
FR-0180	N-020	Capability							
FR-0190	N-020	Capability							
FR-0200	N-020	Capability							
FR-0210	N-020	Capability							
FR-0220	N-010	Capability							
FR-0230	N-020	Capability							
FR-0240	N-020	Capability							
FR-0250	N-020	Capability							

Table 5.1. Requirement traceability matrix.

Project name:	SitaWare Civilian	**Business area:**	Civilian Crises Management
Project manager:	René Arendt Sørensen	**Business Analyst lead:**	Rasmus Fredensborg Jensen
QA lead	Peter Kristian Mathiesen	**Target implementation date:**	

Req. id.	Catagory of functional activity	Requirement description	Use case reference	Design document reference	Code or module reference	Test case reference	User acceptance validation	Comments
FR-0260	N-020	Capability						
FR-0270	???	External interface						
FR-0280	???	External interface						
FR-0290	???	External interface						
FR-0300	???	External interface						
FR-0320	???	Internal interface						
FR-0330	???	Data interface						
FR-0340	???	Data interface						
FR-0350	???	Safety						
FR-0352	???	Safety						
FR-0354	???	Safety						
FR-0360	???	Security						
FR-0370	???	Security						
FR-0380	???	Security						
FR-0390	???	Environment						
FR-0400	???	Environment						
FR-0410	???	Environment						
FR-0420	???	Environment						
FR-0430	N-040	Quality						
FR-0440	???	Quality						
FR-0450	???	Quality						
FR-0460	???	Design constraints						
FR-0470	???	Design constraints						
FR-0480	???	Personnel-related						

Table 5.2. Requirement traceability matrix.