Aarhus School of Engineering

Detailed Design Description

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Revision history

Version	Date	Changes
1.0	12-02-2015	Document created.

Table 1. Revision history.

Glossary and Terms

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

Abbreviation	**Meaning**	**Explanation**
COP	Common Operational Picture	Display/picture of relevant information in operation area.
HQ	Head Quarter	Location where the most important functions of an organization are coordinated.
GPS	Global Positioning System	
GSM	Global System for Mobile Communication	
bdd	Block definition diagram	
ibd	Internal block diagram	

Table 2. Glossary.

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Introduction 1

This document contains a preliminary design description. It seeks to close the gap between the requirements and the design phase, by clarifying the high-level design concept, which will implement the requirements in the System Requirements Specification.

Referenced Documents 2

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

Version	Document name	Description
1.3	System Requirement Specification	The System Requirement Specification(SRS) contains all of the requirements that the system has to fulfil.

Table 2.1. Referenced Documents.

System-wide Design Decisions 3

In this chapter, the decision for the system-wide detailed design is made.

3.1 Parts Decisions

The HQ shall be a stationary post mounted in a mobile vehicle. The COP shall be implemented on a PC. The user interaction is supposed to be a mix between use of mouse, keyboard and touch screen. It must be possible to give all commands from here. The PC must have a wireless internet connection. To process data the PC must have a processor.

The Dismounted COP shall be mounted on the wrist of the user. Therefor the Dismounted COP must be within dimensions of 13x6x1 cm. It must be shock-, water- and heat resistant. The Dismounted COP must have a touch screen which can be used with or without gloves. Furthermore the Dismounted COP must be able to alert the users about radiation, low oxygen levels and dangerous temperatures.

A Server shall be used to distribute data between users. It must contain a database for storage of relevant information. The server must also be able to communicate with other SitaWare solutions.

For reference purposes the decisions are listed below:

SDD-0100 The COP shall be implemented on a PC.
SDD-0110 The PC shall have a Touch screen, to display relevant information and to make user interaction easy.
SDD-0120 The PC shall have a mouse, to make user interaction easy.
SDD-0130 The PC shall have a keyboard, to make user interaction easy.
SDD-0140 The PC shall have a GPS, to get the location of the HQ.
SDD-0150 The PC shall have a Telecommunication module, to access the internet.
SDD-0160 The PC shall have a speaker, to enable audio communication.
SDD-0170 The PC shall have a microphone, to enable audio communication.
SDD-0180 The PC shall have a processor, to process data.
SDD-0200 The system shall have a Dismounted COP.
SDD-0210 The Dismounted COP shall have a GPS, to get the location of the Dismounted COP.

SDD-0220 The Dismounted COP shall have a Micro Controller, to process data.

SDD-0230 The Dismounted COP shall have a Telecommunication module, to access the internet.

SDD-0240 The Dismounted COP shall have a Touch screen, to display relevant information and to make user interaction easy.

SDD-0250 The Dismounted COP shall have a speaker, to enable audio communication.

SDD-0260 The Dismounted COP shall have a microphone, to enable audio communication.

SDD-0270 The Dismounted COP shall have a battery, to be mobile.

SDD-0280 The Dismounted COP shall have a Radiation sensor to alert the user about radiation.

SDD-0290 The Dismounted COP shall have an Oxygen sensor to alert the user about low oxygen levels.

SDD-0299 The Dismounted COP shall have a Temperature sensor to alert the user about dangerous temperatures.

SDD-0300 The system shall have a Server to distribute data.

SDD-0310 The Server shall have a Database to store information.

System Architectural Design 4

4.1 System Components

This chapter seeks to identify the system components. It provides a block definition diagram (bdd) of the system, where the system components are determined along with the static relationship between them. The block definition diagram is shown in figure 4.1:

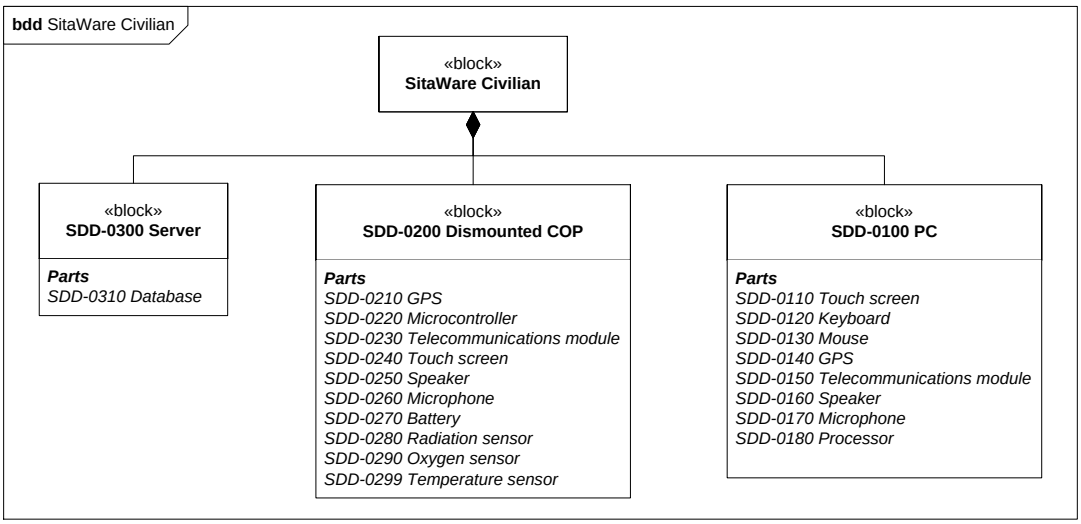

Figure 4.1. Block diagram of the system.

The diagram consists of system-blocks along with parts associated to each block. The system-blocks are depicted as two-compartment blocks with the name of the block in the first compartment, and sub parts in the second compartment. In the next section, a short description of each system-block is given.

4.1.1 Component description

- **PC:** This block constitutes the machine in the head quarter (HQ) on which the COP-software will be executed. It also has a GPS module, so that the location of the HQ is always known. The PC has a telecommunication module, in order to be able to communicate with the rest of the system.

- **Server:** The server will facilitate communication between the other blocks. In addition, it will store user information along with logs locally in an internal database.
- **Dismounted COP:** This block constitutes the machine on which the condensed COP-software will be executed. The dismounted COP will be used by the dismounted users in the field. It has a GPS module, so that the location of the dismounted users is always known. Furthermore it has a telecommunication module so that it will be able to communicate with the rest of the system.

4.2 Concept of Execution

4.3 Interface Design

This section seeks to describe the interface characteristics of the system components. It provides an internal block diagram (bdd) of the system, where the interfaces of the system components are identified, as long as the external interfaces of the system. The internal block diagram of the overall system is shown in figure 4.2:

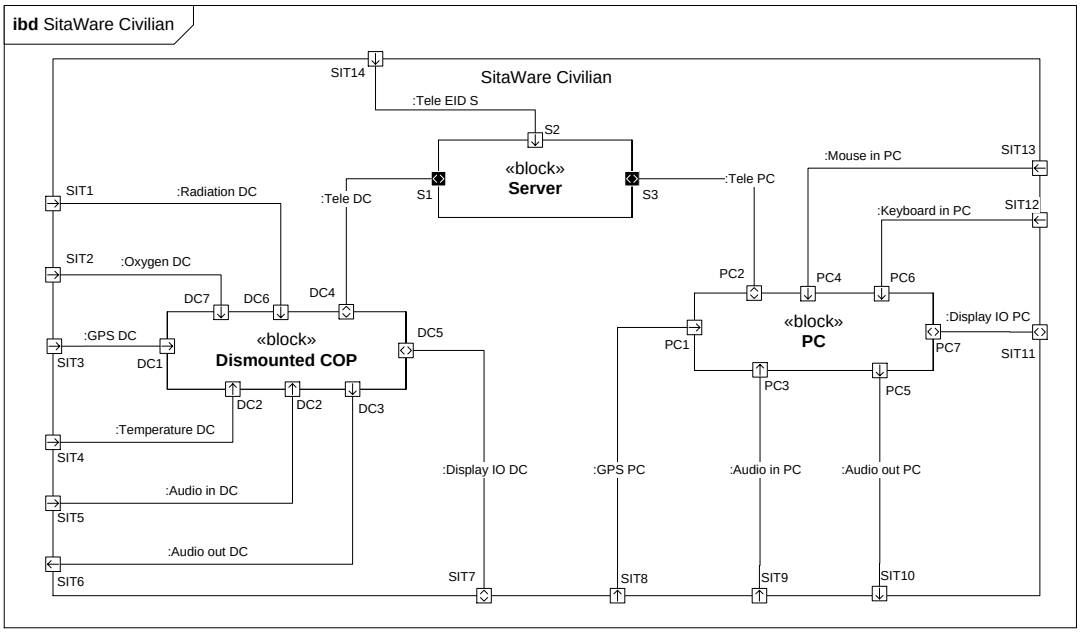

Figure 4.2. Internal block diagram of the system.

4.3.1 PC

In this section the internal interfaces of the PC to be used in this system are specified in greater detail. All the sub parts of the PC are connected to the processor which manages all logic operations and functions, while the telecommunication module enables the PC to communicate with the remaining system components. It is not within the scope of this project to develop the PC itself, however the COP is to be executed on the PC. Therefore

the interfaces of the PC are identified, to ensure that the PC - and thereby the COP - can communicate with the rest of the system. The internal block diagram of the PC is shown in figure 4.3:

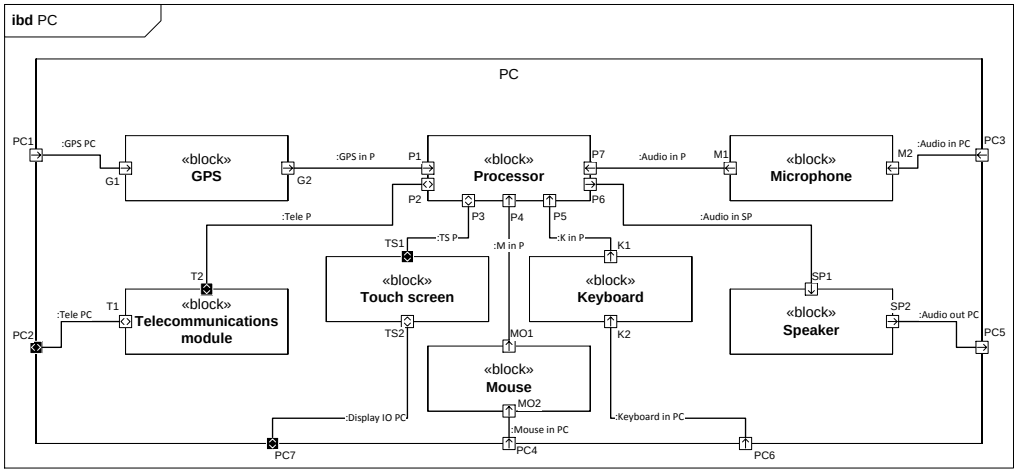

Figure 4.3. Internal block diagram of the PC.

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