ENGINEERING COLLEGE OF AARHUS

SPRING 2014

CHARCOT FOOT PREVENTION SYSTEM
ARCHITECTURE

This document is made in the bachelors project "Charcot foot prevention system". The project is provided by DELTA and adjusted by the group.

The document "Architecture" describes the overall architecture of the entire system implemented in the project.

Projectnr:	14030	Supervisor:	PKI@iha.dk
Provider:	Delta	Co-supervisor:	*None*
Student 1:	Studienr: 10734	First name: Johnny	Second name: Kristensen
Student 2:	Studienr: 20093625	First name: Nicolai	Second name: Glud

February 4, 2014

Contents

Introduction 1

1.1 Version history

Version	Description	Author	Date
0.1	Inital draft	JK	29/01/2014

1.2 Purpose

The purpose of the document "architecture" is to thoroughly describe the architecture of the entire system.

1.3 Scope

The design and architecture described in this document is made to break down the system into smaller blocks with simple interfaces. The document is based upon the requirements established in the requirement specification.

1.4 References

- Project description.
- Requirement specification.

1.5 Glossary & abbreviations

Term/abbreviation	Definition

Architecture background 2

2.1 Solution summary

The project solution offers a dedicated system which is able to accommodate the problem described in the project description. The system should also support extensions of the system. This could be pressure sensors, humidity sensors and more. Therefore this document offers a generic architecture able to support various extensions of the system. The solution consists of a central data unit which can communicate with all sensors in the system. The sensors have an address-range so the central unit are able to automatically detect all sensors and types connected to the system.

2.2 Architectural goals

The goal of the architecture is to make a structured overview of all aspects of the solution. It should consider all problems in the design of the overall system and present a simple and effective solution to these.

2.3 Constraints

The system isn't able to be connected to sensors already in the market. This is due to the fact that this solution offers its own communication protocol.

2.4 Considerations

Structural view 3

3.1 Introduction

This chapter describes the structural architecture of the system in a top down approach. The blocks are derived from previous documentation.

3.2 System overview

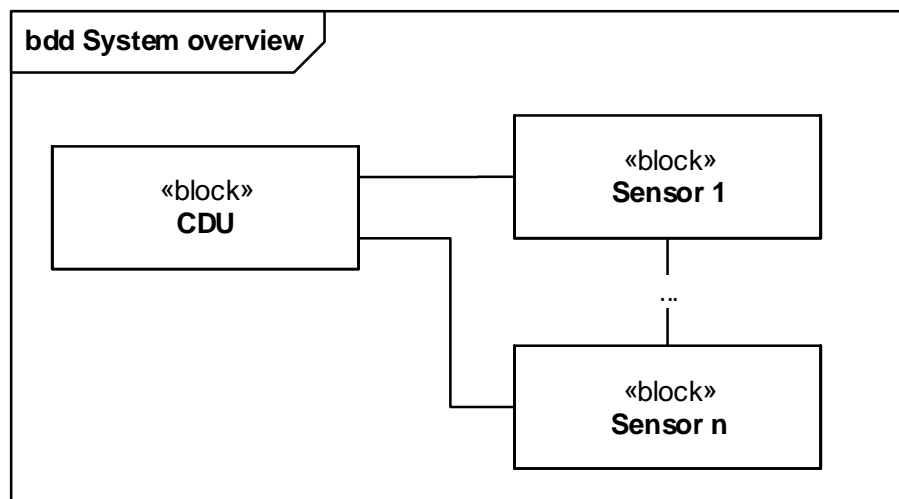The system consist of a central data unit and n number of sensors.

Figure 3.1. System block definition diagram

3.2.1 Block responsibility

CDU

The CDU contacts each sensor to collect the data values. This is then stored for later extraction.

Sensor n

The sensor measures a physical or biometric parameter such as temperature, movement, humidity etc.

3.3 Detailed block overview

Below are detailed figures for each block in the system.

The blocks in the figures are conceptual blocks and most of the consist of both software and hardware.

All blocks are essential to full fill the functionality and requirements of the system.
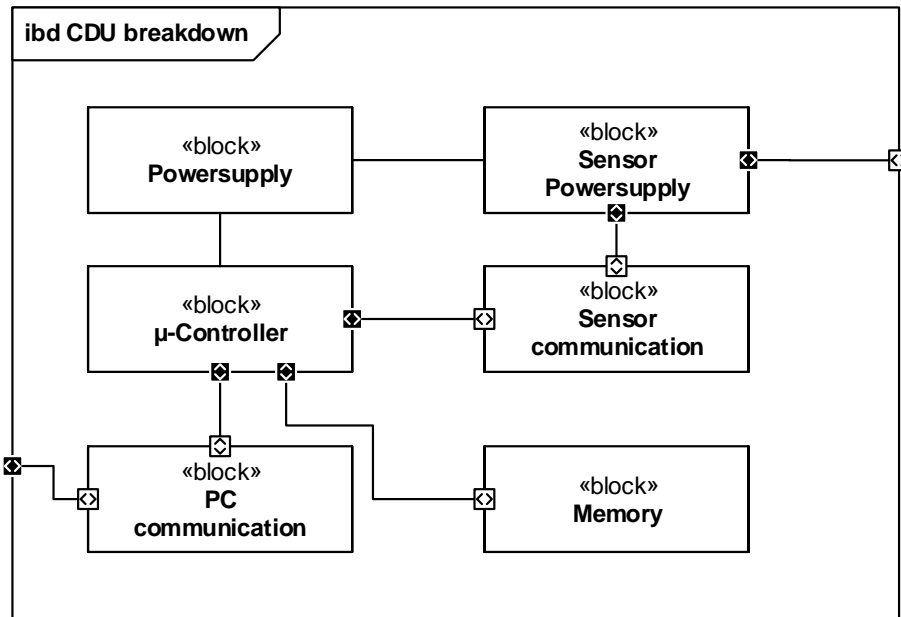
3.3.1 CDU

Figure 3.2. Internal Block Diagram of the CDU

3.3.2 Sensor n

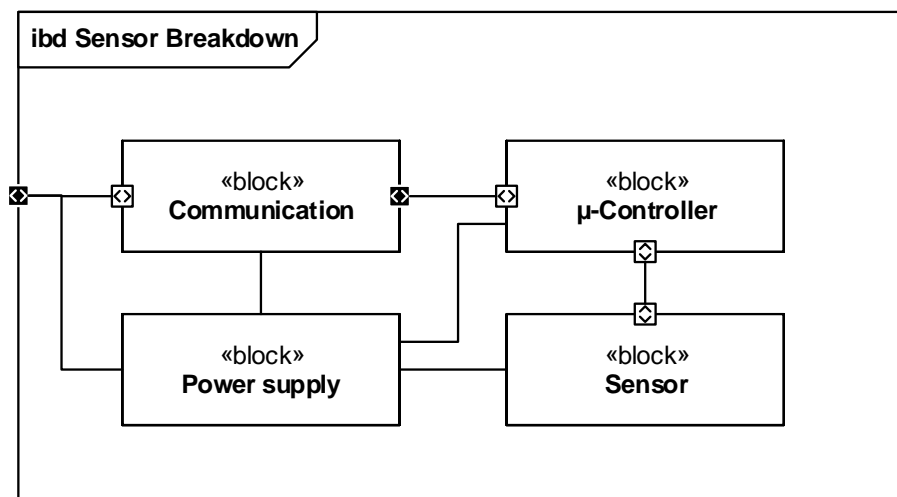**Figure 3.3.** Internal Block Diagram of the sensor

Behavorial view 4

Physical view 5

Application view 6