

# **Requirements document**

SQUID

Helsinki 21st February 2005  
Software Engineering Project  
UNIVERSITY OF HELSINKI  
Department of Computer Science

**Course**

581260 Software Engineering Project (6 cr)

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**Change Log**

Version	Date	Modifications
0.1	9.2.2005	First version (Aki Sysmäläinen)

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# **1 Introduction**

This document describes client requirements and system requirements for a SQUID magnetometer program that will be designed and implemented as a software engineering student project at University of Helsinki at the Computer Science Department. The client is the Department of Geophysics.

This document serves as a contract between client and us..

Expected readership of this document here..

## **1.1 Glossary**

Technical terms here..

# **2 Overview**

A brief overview of the problem domain..

# **3 User requirements definition**

Goals of the software set by client..

## **3.1 Requirements**

Requirements by client..

## **3.2 Restrictions**

Restrictions set by client..

# **4 System requirements specification**

Specific explanation of the functions to be implemented

## **4.1 Functional requirements**

## **4.2 Non-functional requirements**

Requirements concerning the quality and performance of the software..

### **4.2.1 Environment**

### **4.2.2 Maintainability**

### **4.2.3 Etc.**

### **4.2.4 Etc.**

## **4.3 External interfaces**

Interface to existing software and use of it described here..

## **4.4 System restrictions**

# **5 Use cases**

Describes planned use cases for the program. Derived from user interface prototype and requirements. All use cases are made by "the user" in program main screen, unless otherwise noted.

## **5.1 Measuring**

### **5.1.1 Do single step measuring without demagnetization**

With any open project, insert as next step "0" or empty (default for new projects), meaning no demagnetization, and click "Single step".

Precondition: Sample in sample holder.

Postcondition: Sample measured, results on screen.

Error condition: The program shall let the user know if something went wrong.

### **5.1.2 Do single step measuring with demagnetization**

### **5.1.3 Do automatic demagnetization-measuring sequence**

- Pause automatic measuring sequence

- Cancel automatic measuring sequence

#### **5.1.4 Do thellier measuring**

#### **5.1.5 Do thermal measuring**

#### **5.1.6 Measure magnetometer ground noise**

#### **5.1.7 Measure empty sample holder noise**

#### **5.1.8 Fully manual measuring**

- Move sample handler to desired position
- Rotate sample handler to desired angle
- Measure in current position
- Demagnetize in current position

## **5.2 File formats**

**5.2.1 Automatically save all measurement cycles in project (.dat?) file**

**5.2.2 Save standard sample measurement results in .std file**

**5.2.3 Export (thellier) results into .tdt file**

**5.2.4 Export single measurement details into .srm file**

**5.2.5 Print measurement results**

**5.2.6 Print graph sheet (with 7 different graphs; described elsewhere)**

## **5.3 Functionality**

**5.3.1 Create new project (.dat file?)**

**5.3.2 Load project (.dat file?)**

**5.3.3 Append measurement results to project (.dat file?)**

**5.3.4 Panic abort operation instantly**

## **5.4 AF sequences**

*As in automatic demagnetization-measuring sequences, or Alternating Field sequences*

**5.4.1 Insert AF sequence with start-step-stop values**

**5.4.2 Load AF sequence**

**5.4.3 Save AF sequence**

**5.4.4 Edit AF sequence on-the-fly**

**5.4.5 Edit stored AF sequences**

**5.4.6 Rename stored AF sequence**

**5.4.7 Delete stored AF sequence**

# **6 User interface**

Overview of UI described here..



## **7 Architecture overview**

## **8 Validation**

Description of how to validate the set requirements.