Requirements document

SQUID

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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 implemeted 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 conserning 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 requiremets. 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

Enter as next AF demagnetization step "0" or empty (default for new projects), meaning no demagnetization, and click "Single step".

Precondition: Open project, 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

Enter as next AF demag step anything greater than zero, and click "Single step".

Precondition: Open project, sample in sample holder.
Postcondition: Sample demagnetized (possibly ruined) and measured, results on screen.

Error condition: The program shall let the user know if something went wrong, and, should the demagnetization field not be coming down, warn user with an alarm sound :)

5.1.3 Do automatic demagnetization-measuring sequence

Enter the AF sequence (see 5.4 for ways to enter it) and click "Measure".

Precondition: Open project, sample in sample holder.
Postcondition: Sample demagnetized according to entered AF sequence (possibly ruined) and measured after each demagnetization, results on screen.
Error condition: The program shall let the user know if something went wrong, and, should the demagnetization field be uncalm, warn user with an alarm sound x)

- Pause automatic measuring sequence

  While measure sequence is running, click "Pause".

  Precondition: Ongoing measure sequence.
  Postcondition: Measure sequence halts after current step is done, results on screen.
  Error condition: Program tells if sequence can’t be paused (and something has gone terribly wrong).

- Abort automatic measuring sequence

  While measure sequence is running or paused, click "Stop immediately".

  Precondition: Ongoing or paused measure sequence.
  Postcondition: Measure sequence halts immediately and program enters "fully manual" mode?
  Error condition: Program tells if sequence can’t be aborted (and something has gone terribly wrong).

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

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6 User interface

Overview of UI described here..

7 Architecture overview

8 Validation

Description of how to validate the set requirements.