



Software Requirements Specification

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→ Author:

Alexander Drobchenko
LUT, IMPIT 2002 program
<mailto:drobchen@lut.fi>

→ Supervisors:

Jan Voracek
<mailto:Jan.Voracek@lut.fi>

Yana Selioukova
<mailto:Yana.Selioukova@lut.fi>



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Service note: This document is subject to regular revisions and changes. All major revisions are in the table below:

#	Originator	Description	Rationale	Date
	Alexander Drobchenko	Created v0.9.	As required by the project plan	28.10.2002

Note. This is a preliminary version. Final version v1.0 comes after the grading process for this deliverable is over and all the comments by the project supervisors are given.

1. Introduction

1.1 Purpose of this document

{Describes the purpose of the document, and the intended audience}

This document is a part of Individual Project, conducted as a part of PBSWE course taught by Jan Voracek in LUT in 2002. It describes the requirements information for Time Accounting Software (hereafter TAS), developing which is the main goal of the above-mentioned project. It is intended for:

- 1) Internal project use for building the TAS.
- 2) Revision by course supervisors in order to grade the developer.

1.2 Scope of this document

{Describes the scope of the requirements definition effort}

The project is study oriented and a truly simple one. Thus the constraints for the elicitation process are strict:

- 1) The elicitation team is limited to Alexander Drobchenko.
- 2) No direct interviewing of customer representatives is possible.
- 3) All the requirements will be collected from the Project website [1].

1.3 Overview

{Provides a brief overview of the product}

TAS is a software-only system providing means for time management routines of a single person:

- daily recording of time allocation information
- data storage
- data browsing & modification
- report generation

TAS may be used in two ways:

1. providing the end user means to present total time spent for a certain activity to boss/customer/research supervisor.
2. helping the end user in personal time management and self-organization.

1.4 Business Context

{Provides an overview of the business organization sponsoring the development of this product}

This project is developed for studying course inside LUT IMPIT program [2]. It is fully non commercial and its main goal is to get the Developer acquainted with Software Engineering basics. The second goal is to help the Developer in recording his time spent for studying the PBSWE course. The Requirements Documents together with other deliverables have to be presented to the course supervisors in order to pass the course.

2. General Description

2.1 Product Functions

{Describes the general functionality of the product, which will be discussed in more detail below}

The TSA is a system for recording time spent for different projects or activities by a single person. Its basic functionality is to maintain time consumption database and implement data insertion/browsing/modification functions for this database. It also generates obligatory reports:

- Monthly Report
- Time Distribution Diagram
- Cumulative Time Diagram
- Final Report

and optional reports:

- Hourly Activities Report
- Sequence Report
- Daily Average Workload Report
- Hourly Workload Distribution Report

These reports will be described in detail later in this document.

2.2 Similar Systems Information

{Describes the relationship of this product with any other products}

The product is standalone, i.e. it does not come as a part of other products. It is developed in Microsoft Excel ® and requires that Microsoft Excel® is installed on the user's computer.

Similar products are developed by all students of the PBSWE course. Best examples of previous year works can be found in [1].

2.3 User Characteristics

{Describes User's expected expertise with software systems and the application domain}

The TSA does not require any special expertise from the user. User is expected to have only basic skills of PC handling.

2.4 Customer Objectives

{This section describes the set of objectives and requirements for the system from the customer's perspective.}

Customer's viewpoint on objectives and requirements as presented in [3]:

"The time accounting is one of the daily tasks in project oriented commercial software development. Namely, the billing of the customers is often based on the time used for the projects, which means that the time must be recorded somehow. Reporting, of course, can happen in various ways but often hourly reports are given to the customer as an annex to the actual bill."

"It has been decided that the first version will be implemented with MS-Excel 2000 since all the current personnel use it already. Thus there are no extra costs involved in taking the software in use and the needed learning time should be minimal, too. The current operating system is Win2000. It has also been already decided that the whole software must be included in one MS-Excel workbook (xls) file. This way the management of the system should be easier – especially since one company standard is that all the software have a version and date stamp or dialog easily accessible from every application."

"The key functionality for the software is the data insertion, monthly report as an appendix to customer bills, and two graphic presentations of the time used for each project. The first one is a cumulative time during the project lifetime and the other one is a pie chart showing how the time is distributed between different activities. The time accounting software has currently only one interface to other systems, which is an ASCII file for copying the project data to company central project base."

"The future versions of the software could include multiple project handling and shared database for simultaneous users. However, for this first version it is sufficient to handle only a single project by one user to assure timely entry in the markets."

Additionally project reports format is described by the Customer in [5].

This can be summarized to the following:

- The main use case for the software in business applications is generation of the Monthly Report.
- The Project has to be implemented using Microsoft Excel 2000®.
- Key moments in software functionality are: data insertion, Monthly Report, Cumulative Time Diagram and Time Distribution diagram.
- The interface to other systems is ASCII file.
- Current version of software may support only one-project, one-user time accounting. But customer wishes to see multiple-user, multiple-project time accounting, with one shared database for all users in future versions of the product.

2.5 General Constraints

{Lists general constraints placed upon the design team}

Constraint name	Description
Development environment	The project maybe implemented using Microsoft Excel 2000® only.
Deliverables & Dates	All the deliverables and their times for their delivery are explicitly fixed by customer. It imposes fixed time distribution for different parts of project.
Development Team	This is an individual project, so the team size is restricted to one person only.
No Discussion with Customer available	Customer opinion has been once stated in written form and will not be changed. It is impossible to change the requirements together with the customer if some new circumstances appear.

3. Functional Requirements

{Shows, what the system must accomplish}

In this section all the requirements are presented in the same table-like form.

I omitted one row:

Originator: the only member of elicitation team, Alexander Drobchenko

And merged two other rows into a single one:

Customer Satisfaction/Dissatisfaction => Significance, because it is impossible to interview the customer and thus obtain information about Satisfaction/Dissatisfaction balance.

RIN: 1	Name	Data Insertion – Time Spending Information
Description		TAS allows the user to insert the number of hours spent for each activity for every calendar day of the project
Rationale		One of the key functionalities defined by customer
Significance		Crucial
Technical issues		Will be entered on the same worksheet, where the data resides.
Relative effort		3%
Risks		Customer adds
Dependencies on other requirements		Does not directly depend on any other requirements. Implementation depends on requirement #4 <u>Crucial requirement</u> : is necessary for almost all other requirements

RIN: 2	Name	New Table creation
Description		The TAS provides means for creating a new database
Rationale		Users' convenience
Significance		Important
Technical issues		A new excel workbook will be created and saved with a different filename
Relative effort		3-7%
Risks		1. Problems with the file system <u>Remedy</u> : Test thoroughly; Produce different default filenames to avoid confusion 2. User is confused using the TSA for the first time. <u>Remedy</u> : Create an external first project creation wizard.
Dependencies on other requirements		Does not depend on other requirements.

RIN: 3	Name	Monthly Reports generation
Description		TAS generates Monthly report (specified later in this document)
Rationale		One of the main functions of TAS from customer's point of view
Significance		Crucial
Technical issues		The Report will be stored as an ASCII file
Relative effort		5-15%
Risks		Activities
Dependencies on other requirements		Depends on requirement #1.

RIN: 4	Name	Data Insertion – Activity Types
Description		TAS provides the user means for naming his activities on his choice. This feature is only available when creating a new project.
Rationale		The user is free in choosing names for his activities
Significance		Important
Technical issues		There will be a separate form and separate storage place for these Activity Types names.
Relative effort		5-10%
Risks		
Dependencies on other requirements		Depends on requirement #2 Affects implementation of requirement #1

RIN: 5	Name	Project Screen Occupation
Description		TAS must fit into 1152*864 screen area (minus Windows taskbar e.t.c.)
Rationale		To avoid extensive scrolling
Significance		Moderate
Technical issues		Simply comply
Relative effort		1-2% or 10% (10% if implementing fully scalable GUI)
Risks		1.End user's screen resolution is less than the above specified one. Remedy: Make TAS GUI scalable and provide control for adjusting it to different screen resolutions. 2.The whole of the TAS GUI does not fit even into the screen size specified. Remedy: Put some of the control buttons into separate toolboxes. Use Popup windows for presenting some of the information.
Dependencies with other requirements		More like a constraint than a requirement: has to be checked after all the other requirements are

	implemented, but does not directly depend on any of them.
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RIN: 6	Name	Cumulative Time Diagram
Description		TAS creates Cumulative Time Diagram report. Cumulative Time Diagram is a simple linear diagram showing hours spent for certain activity/project itself for every date.
Rationale		It is one of the Customer's requirements and a useful tool in monitoring project evolution.
Significance		Moderate
Technical issues		The Report will be shown in a separate window
Relative effort		5-15%
Risks		
Dependencies with other requirements		Depends on Requirement #1

RIN: 7	Name	Time Distribution Diagram
Description		TAS creates the Time Distribution Diagram report. Time distribution is a circular diagram, showing all activities' portions in the whole time spent for the project.
Rationale		It is one of the Customer's requirements and a useful in analyzing general project qualities.
Significance		Moderate
Technical issues		The Report will be shown in a separate window
Relative effort		5-15%
Risks		
Dependencies with other requirements		Depends on Requirement #1

RIN: 8	Name	Final Report
Description		TAS creates Final report according to specification given in [5].
Rationale		It is one of the Customer's requirements and a required for final project delivery both in business and educational environment.
Significance		Important
Technical issues		The Report will be saved as an ASCII file, according to [5]
Relative effort		5-10%
Risks		
Dependencies with other requirements		Depends on Requirement #1

4. Interface Requirements

{This section describes how the software interfaces with other software products or users for input or output}

4.1 User Interfaces

{Describes how this product interfaces with the user}

4.1.1 GUI

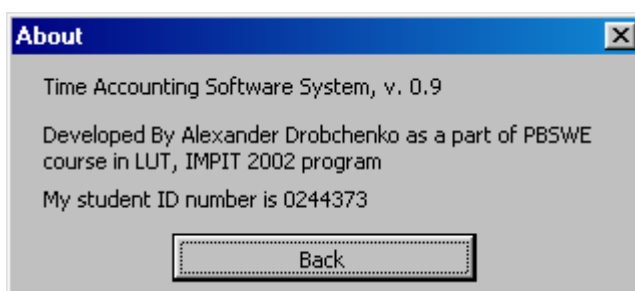
{Describes the graphical user interface}

The GUI of this project must be consistent and intuitively understandable. It contains Controls on the Main TSA worksheet and several dialogs. The dialogs are:

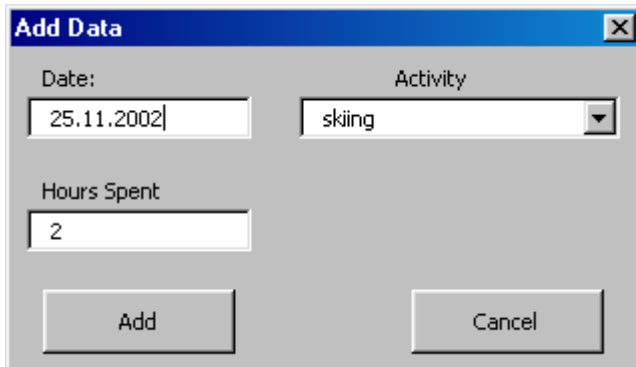
- Add Data dialog – serves for major data insertion
- Create New Project dialog – creates new project and saves it in a different workbook
- Add New Activity dialog – serves for activity definition in Create New Project dialog
- Confirm Delete dialog – serves for confirming Deleting of various items
- Create Report dialog – serves for all creation
- Save as dialog – serves for filename picking for saving the reports and new projects
- Mapping Definition dialog – serves for defining mapping between user's activities and final report activities

Sample dialogs are presented below:

The "About" window:

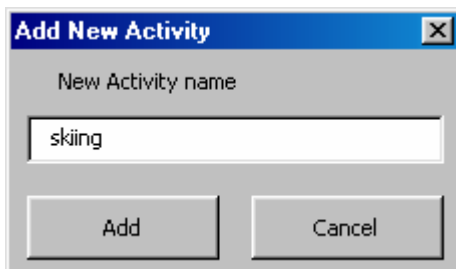


Add Data dialog:



The 'Add Data' dialog box has a blue title bar with the text 'Add Data' and a close button. It contains three input fields: 'Date' with the value '25.11.2002', 'Activity' with a dropdown menu showing 'skiing', and 'Hours Spent' with the value '2'. At the bottom, there are two buttons: 'Add' and 'Cancel'.

New Activity dialog:



The 'Add New Activity' dialog box has a blue title bar with the text 'Add New Activity' and a close button. It contains one text input field labeled 'New Activity name' with the value 'skiing'. At the bottom, there are two buttons: 'Add' and 'Cancel'.

4.1.2 CLI

Not present.

4.1.3 API

Not present.

4.2 Hardware Interfaces

Provided by Microsoft Excel ® and Microsoft Windows ®.

4.3 Communications Interfaces

None present.

4.4 Software Interfaces

Customer has explicitly stated that the only interface of TAS with other systems is ASCII files. Format of these ASCII files was in Customer's set of requirements.

IIN 1. Data Interchange File Format

5. Performance Requirements

{Specifies speed and memory requirements}

This application is neither time nor memory crucial. The only requirement is that TAS is a realtime system, so any operations must not take longer than 2 seconds.

6. Other non-functional attributes

This section is usually devoted to describing such questions as Security, Reliability, Maintainability, Portability, Reusability and so on. All these qualities are directly inherited by the project from Microsoft Excel ®.

The only other non-functional requirement is that the whole TSA product is a single Microsoft Excel Workbook.

7. Operational Scenarios

Operational scenarios will be described as a simple form of use cases.

1. Data insertion.

Initial state: the main worksheet is open

User-driven operations:

User operation	System Response
Press "Add Data" button	"Add Data" dialog Appears
Fill in Date, choose activity, fill in number of hour for that activity	"Add Data" dialog shows the Data provided by the user
Press "Add" button	"Add Data" dialog closes and information is updated in Main Worksheet

2. Report Generation

Initial state: the main worksheet is open

User-driven operations:

User operation	System Response
Press "Create Report" button	"Create Report" dialog Appears
Chooses "Monthly" report and fill in starting date	Dialog reflects user input
Press "Generate" button	Save as Dialog appears
Chooses "April.txt"	Monthly report for a Month, starting with the date specified is saved in "April.txt"

8. Appendices

I. Abbreviations:

API: Applied Programming Interface.

CLI: Command Line Interface.

GUI: Graphic User Interface – a set of pictures, that users sees (and sometimes clicks, too!) during the execution of the application. Those "texty" programs are such a bore!

IIN: Interface Identification Number – a unique number, assigned to each interface.

LUT: Lappeenranta University of Technology. – the place where I am currently studying
website: <http://www.lut.fi/english/index.htm>

PBSWE: Project Based Software Engineering.

SWE: Software Engineering

TAS: Time accounting software – the product under concern in this document

RIN: Requirements Identification Number – a unique number assigned to each requirement

II. References.

[1] Project Based Software Engineering - Individual Project home
http://www.it.lut.fi/kurssit/02-03/010752000/ind_project.html

[2] International Master's Program in Information Technology
http://www.it.lut.fi/international_education/index.html

[3] Project Based Software Engineering – Time Accounting Software overview
<http://www.it.lut.fi/kurssit/02-03/010752000/overview.html>

[4] Volere Requirements Specification Template
<http://atlsysguild.com/GuildSite/Robs/Template.html>

[5] Clarification about the project reports.
<http://www.it.lut.fi/kurssit/02-03/010752000/reports.html>

III. Acknowledgements

1. This document is based on the template created by
Prof. Philip Johnson from University of Hawaii (johnson@hawaii.edu)

<http://www2.ics.hawaii.edu/~johnson/413/lectures/5.2.html>

2. As usual, in this section of a SWE document, I praise Roger S. Pressman and his great book on SWE.

3. Thanks to all the past year students, whose websites were used to get examples of Requirements Documents for individual projects. They were of great help.

4. And of course thanks to our supervisors for maintaining consistent and informative project pages.

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