timesheeting specification document

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PRJ1-SPE1-v1~~.0~~.1 – ~~January 22~~November 16, 2024

Abstract

This is the specification document for the timesheeting project. It describes the requirements for a time management software for personal timesheets.

Revision History

Revision	Date	Author(s)	Description
1.0	22JAN2024	TH	Creation
1.1	16NOV2024	TH	Reformulated the specification after the initial implementation draft. Modified the definitions. Modified reqs R-UHI-020, R-UHI-040, R-UHI-050, R-UEI-050, R-UGL-010, R-DES-040, R-ENI-030, R-ENI-040, R-HIS-010, R-LDC-060, R-ENV-010, R-LOG-040, R-QUA-010. Added reqs R-UHI-060, R-LDC-090, R-LDC-100, R-ACC-060, R-ACC-070, R-ACC-080, R-URE-020, R-LOG-025, R-QUA-025, R-QUA-050, R-REL-070. Removed reqs R-UEI-020, R-UEI-030, R-DES-025, R-STP-010, R-STP-020, R-STP-030, R-ENI-010, R-ENI-020, R-LDC-030, R-LDC-040, R-SAV-040, R-BAK-050, R-DEX-040, R-RWT-070, R-LOG-030, R-DOC-030, R-DOC-040.

Applicable documents

Index	Title	Reference	Revision	Author
AD1	External timesheet format	PRJ1-IRS1	v1~~.0~~.1	Thomas HOULLIER

Document distribution

Every document release is signed with the author's GPG key. A signature file is provided along with the released document.

Contents

Acronyms

CPU Central processing unit
GUI Graphical user interface
SSD Solid-state drive
UI User interface
UTC Coordinated universal time

1 Introduction

We need a software to create, manage and report personal timesheets. We named the corresponding project *timesheeting*.

A timesheet is a table of hours worked on a particular task of a particular project. We need to track this for managing personal time. The timesheets are then exported for reporting the hours to external stakeholders, and for interoperability with other tools.

The software *titra* [1] fills this need rather well. However we want to tailor a tool exactly to our requirements, this is what motivates this project.

The present document starts by providing definitions, and then lists the requirements.

2 Definitions

We define the concepts used within the project.

The software The product answering the present requirements.

User The person using the *software*.

Work unit The elementary real-life description of what the *user* needs to log in the *timesheets*. For instance, this could be a list of *project*, *task*, and *start/stop dates*.

Company The company the *user* works at, for which the *tasks* are accomplished.

Project The project the *user* works on when logging *work units*.

Task The particular element of work being done on a given *project*, according to a project-wise subdivision.

Location The place where a given *work unit* is performed by the *user*.

Hierarchy items The category of items which are either a *project*~~or~~, a *task* or a *location*.

Active hierarchy items The *hierarchy items* which are visible to the *user* when inputting *work units* data into the software.

Inactive hierarchy items The *hierarchy items* which are not available to the *user* when inputting new *work units* data into the software.

Start/Stop dates The dates at which a given *work unit* is started and at which it is stopped, respectively.

Duration The time difference between the *start* and the *stop dates*, in the context of a *work unit*.

~~**Stopwatch** A tool for tracking the *start and stop dates* of a *work unit*.~~

~~**Location** The place where a given *work unit* is performed by the *user*.~~

Entry The data representation of a *work unit*.

Time period A continuous set of dates defined by a beginning date and an end date.

Timesheet A collection of *entries* in a given *time period*.

User interface (UI) screen A self-standing Graphical user interface (GUI) view presented to the *user* by the *software*, for instance a tab.

Save profile A segregated *user* identity for managing save data.

3 Requirements

We list the project requirements.

3.1 UHI – User hierarchy interaction

R-UHI-010 – Adding hierarchy items The software shall allow the user to add hierarchy items.

R-UHI-020 – **~~Removing~~ Inactivating hierarchy items** The software shall allow the user to ~~remove~~ move hierarchy items from the active items set to the inactive items set.

R-UHI-030 – **Editing hierarchy items** The software shall allow the user to edit the properties of active hierarchy items.

R-UHI-040 – **~~Restoring deleted~~ Activating hierarchy items** The software shall allow the ~~restoration of previously deleted~~ activation of previously inactivated hierarchy items. The corresponding identification must be the same as before ~~deletion~~inactivation.

R-UHI-050 – **Project ~~removal~~ inactivation effect** The ~~removal~~ inactivation of a project ~~from the active set of projects~~ shall cause the ~~corresponding tasks to be removed.~~

3.2 ~~UEI – User entries interaction~~

~~**R-UEI-010 – Adding entries** The software shall allow the user to add new entries~~tasks belonging to the project to be inactivated.

~~R-UEI-020~~ R-UHI-060 – **~~Adding entries through stopwatch~~Removing hierarchy items** The software shall allow the ~~user to use a stopwatch interface to add new entries. The entry is saved to memory when the stopwatch stops~~removal of hierarchy items which are not used in any entry. The removal of hierarchy items currently used in an entry is disallowed.

3.2 UEI – User entries interaction

~~R-UEI-030~~ R-UEI-010 – **Adding entries~~manually~~** The software shall allow the user to add new entries~~by manually filling its properties~~.

R-UEI-040 – **Removing entries** The software shall allow the user to remove entries.

R-UEI-050 – **Editing entries** The software shall allow the user to edit past entries properties. Note that it is allowed to assign inactive hierarchy items to part entries.

3.3 UGL – User graphical layout

R-UGL-010 – **UI screens breakdown** The software shall present to the user the following UI screens:

- (interaction) Daily entries
- (interaction) Hierarchy items: projects and tasks

- (interaction) Hierarchy items: locations
- (report) Project totals
- (report) Weekly report ~~Export tool~~

3.4 DES – Daily entries screen

R-DES-010 – **Daily entries** The daily entries UI screen shall implement the user interface for adding, editing and removing entries.

R-DES-020 – **Day selection** The daily entries UI screen shall allow the user to select the day for which entries must be interacted with.

~~**R-DES-025 – Day selection format**~~ ~~The day selection for the daily entries screen shall be made through a calendar GUI.~~

R-DES-030 – **Display entries of the day** The daily entries UI screen shall display the list of entries for the currently selected day.

R-DES-040 – **Running daily total** The daily entries UI screen shall display the running duration of time worked on the selected day. This includes ~~any currently running stopwatch for the current day.~~ all entries on a given day.

~~Rationale: The user must be able to assess the total time worked on the current day at a glance.~~

3.5 ~~STP – Stopwatch~~

~~**R-STP-010 – Stopwatch in use**~~ ~~The software shall display to the user an indicator when the stopwatch is running. This indicator must be visible independently of the UI screen the user is in.~~

~~Rationale: We want to avoid a situation where the user forgets to set his stopwatch.~~

~~**R-STP-020 – Running stopwatch time**~~ ~~The daily entries UI screen shall display the current running duration of the stopwatch.~~

~~**R-STP-030 – Stopwatch only on current day**~~ ~~The stopwatch interface shall only add new entries to the current daythe system is in. Ie the stopwatch cannot add entries in the past or in the future.~~

~~Rationale: We want to avoid hard to detect erroneous inputs due to accidentally incorrect manipulation of the stopwatch.~~

3.5 ENI – Entry interaction

~~**R-ENI-010 – Entry metadata prefill**~~ ~~The entry metadata creation and edition interface shall be pre-filled with the metadata from the last added or edited entry.~~

~~**R-ENI-020 – Entry metadata suggestion** The entry metadata creation and edition interface shall be fillable through a short list of suggestions from the latest 5 added or edited entries.~~

R-ENI-030 – Entry metadata hierarchy search The entry metadata fields relevant to hierarchy items shall be fillable through a fuzzy search over the corresponding set of ~~active~~ hierarchy items.

R-ENI-040 – Entry metadata hierarchy coherence The entry metadata interface shall forbid the creation or edition of hierarchy items metadata outside of the set of ~~active~~ hierarchy items.

Rationale: We want to avoid the proliferation of different hierarchy items which would be caused by accepting anything in the entry fields.

3.6 HIS – Hierarchy items ~~screen~~screens

R-HIS-010 – Hierarchy items The hierarchy items UI ~~screen~~ screens shall implement the user interactions with hierarchy items.

R-HIS-020 – Hierarchy items display The hierarchy items UI screen shall display the list of ~~active~~ tasks grouped per project.

3.7 GUI – Graphical user interface

R-GUI-010 – Keyboard usage The software shall allow full user interaction through a keyboard interface.

3.8 LDC – Logged data content

R-LDC-010 – Entry identification The entries shall be identified with a unique code.

R-LDC-020 – Entry metadata The entries shall be associated with the following metadata unambiguously,

- a task,
- a start date,
- a stop date,
- a location.

~~R-LDC-030~~ R-LDC-050 – ~~Company~~ Project identification ~~The company~~ Projects shall be identified by a ~~shorthand for its name~~unique code.

~~R-LDC-040~~ R-LDC-060 – ~~Company~~ Project metadata ~~The company~~ Projects shall be associated ~~to its~~ unambiguously to their full name.

~~R-LDC-050~~ R-LDC-070 – ~~Project~~ Task identification ~~Projects~~ Tasks shall be identified by a unique code.

~~R-LDC-060~~ R-LDC-080 – ~~Project~~ Task metadata ~~Projects~~ Tasks shall be associated unambiguously to their,

- full name,
- ~~external reference number~~project.

~~R-LDC-070~~ R-LDC-090 – ~~Task~~ Location identification ~~Tasks~~ Locations shall be identified by a unique code.

~~R-LDC-080~~ R-LDC-100 – ~~Task~~ Location metadata ~~Tasks~~ Locations shall be associated unambiguously to their ~~, full name, project.~~ full name.

3.9 TIM – Time management

R-TIM-010 – Time standard The software shall use Coordinated universal time (UTC) time internally as its datation format.

Rationale: we need to maintain the chronology of events in an interoperable fashion.

R-TIM-020 – Time reference The software datation shall use the system clock as its time reference.

R-TIM-030 – Time zones The software shall display dates using a user-configurable time zone.

R-TIM-040 – Time resolution The dates and durations in the software shall be saved and operated on with a resolution of one second.

3.10 SAV – Save management

R-SAV-010 – Save The software shall provide a mechanism for saving the timesheet data and hierarchy items to the system's persistent memory storage.

R-SAV-020 – Transparent save The saving mechanism shall be transparent to the user, ie there should not be a need for the user to press a button to perform the save operation.

R-SAV-030 – Timesheet save resolution The saving mechanism shall save timesheet data anytime an entry is created, modified or deleted.

R-SAV-031 – Hierarchy items save resolution The saving mechanism shall save the hierarchy items data anytime a hierarchy item is created, modified, deleted or restored.

~~**R-SAV-040 – Save status** The system shall report visually to the user the save status, ie the following states, save in sync with the system's persistent storage, save in progress, save failed.~~

R-SAV-050 – Switch save profile The software shall allow the user to switch between different save profiles.

R-SAV-060 – Starting save profile The software shall start by default with the latest loaded save profile selected.

3.11 BAK – Backup

R-BAK-010 – Backup The software shall provide a backup mechanism to the user.

R-BAK-020 – Backup restore The software shall allow a backup restore mechanism to the user.

R-BAK-030 – Backup completeness The whole data state of the software shall be saved and restored using the backup. Logs are not included in the data state.

R-BAK-040 – Backup conciseness The backup archive shall consist of a single file.

~~**R-BAK-050 – Backup timestamp** The backup archive shall be timestamped with the date at which the backup was made.~~

R-BAK-060 – Backup naming The backup mechanism shall allow the user to choose a custom name for the archive.

R-BAK-070 – Backup location The backup mechanism shall allow the user to choose the location of the archive on the system's directory tree.

3.12 DEX – Data export

R-DEX-010 – Timesheet export The software shall allow the user to export timesheet data in an interoperable format compliant with [AD1].

R-DEX-020 – Export naming The timesheet export process shall allow the user to name the export file.

R-DEX-030 – Export location The timesheet export process shall allow the user to select the location of the export file on the system's directory tree.

~~**R-DEX-040 – Export tool screen** The export tool UI screen shall implement the user interface for the data export operation.~~

R-DEX-050 – Export time period The export tool shall allow the user to select the time period to consider for the timesheet export.

3.13 ACC – Accessibility

R-ACC-010 – Single user The software shall allow operation by a single user on a single system.

R-ACC-020 – Synchronization across systems The software documentation shall explain a process for the user to keep save profiles data in sync across systems. Note we assume the reliance upon external data exchange mechanisms outside of the software's technical scope.

R-ACC-030 – Company segregation The software shall keep the save profiles data segregated by company. In effect, this means a given save profile is uniquely associated with a company.

R-ACC-040 – Data confidentiality The software interface and save profile data shall remain local to the system.

R-ACC-050 – Offline operation The software shall allow offline (no internet connection) operation for all of its features. This excludes the build system.

R-ACC-060 – Interface language The software interface shall be in english.

R-ACC-070 – Documentation language The software documentation shall be in english.

R-ACC-080 – Code language The software codebase shall be written with names and comments in english.

3.14 ENV – Environment

R-ENV-010 – Target hardware The software shall run on a low-end desktop computer or laptop. ~~The representative system to consider is a desktop computer with an Athlon 3000G Central processing unit (CPU) and a entry-level Solid-state drive (SSD).~~

R-ENV-020 – Target OS The software shall run on GNU/Linux.

R-ENV-030 – Target OS version The software shall run on the current version of Gentoo Linux.

R-ENV-040 – Target graphical environment The software shall run on the Wayland compositor Hyprland [2].

3.15 PER – Performance

R-PER-010 – Memory footprint The peak memory footprint of the software shall be less than 100 MB. The amount of memory to consider is the *resident set size*.

3.16 URE – User reports

R-URE-010 – Durations display format In the reports, the durations shall be displayed with a selectable format, either,

- minutes,
- or hours,
- or days.

R-URE-020 – Day duration definition The software shall provide a way for the user to define the duration of a day.

3.17 RPT – Report: Project totals

R-RPT-010 – Project totals The project totals UI screen shall display the total durations of time worked on projects within a user-specified time period.

R-RPT-020 – Project totals time period The project totals UI shall allow the user to select the time period of interest via the selection of a beginning day and an end day. The beginning and end days are included in the time period.

3.18 RWT – Report: Weekly totals

R-RWT-010 – Weekly report The weekly report UI screen shall display the task-wise daily total durations of time worked, grouped per project.

R-RWT-020 – Weekly report daily totals The weekly report shall display the total duration worked per day, including all tasks in the sum.

R-RWT-030 – Weekly report weekly totals The weekly report shall display the total weekly work duration, including all tasks in the sum.

R-RWT-040 – Weekly report running week The weekly report shall be generated even in the case of the current, unfinished week.

R-RWT-050 – Weekly report week selection The weekly report UI shall allow the user to select the week the report is generated for.

~~**R-RWT-070 – Weekly report timesheet export**~~ ~~The weekly report UI shall allow the user to export the timesheet data in a format compliant with AD1.~~

3.19 LOG – Logging

R-LOG-010 – User data interaction logging The software shall log all user interactions which modify the timesheet data or the hierarchy items data.

R-LOG-020 – Log file location The software logs shall be saved on the system's persistent memory.

~~**R-LOG-030**~~ **R-LOG-025 – Log ~~depth~~cleanup period** The software ~~logs shall have a depth of at least one week. Ie the log is kept in persistent memory for at least one week~~shall provide a way for the user to define a maximal log age above which log entries are to be deleted.

R-LOG-040 – Log cleanup The software log entries older than ~~1 month~~ the maximal age shall be deleted.

R-LOG-050 – Log cleanup schedule The software log cleanup shall apply at every software start.

R-LOG-060 – Log readability The software log shall be stored in plain text format readable by the *less* program.

R-LOG-070 – Log accessibility The software log shall be readable by the user even in case the software fails to start entirely.

3.20 QUA – Quality

R-QUA-010 – Version report The software shall display its version number to the user upon ~~GUI~~ query.

R-QUA-020 – Save data validation The software shall provide a mechanism for testing the soundness of the save data upon loading it.

R-QUA-025 – Save data action In case the software detects a save data unsoundness, it shall terminate with an error message indicating the type of error.

R-QUA-030 – Release signature Every released product, either software or documentation shall be signed with the supplier's GPG key.

R-QUA-040 – Single repository For the whole project lifecycle, the software and associated documentation shall be stored in a single version-controlled repository.

R-QUA-050 – Bug tracker information The software shall indicate to the user where to report bugs and issues.

3.21 TES – Testing

R-TES-010 – Automated build test The software build system shall include an automated build test, reporting whether the build is successful in the target environment. The target environment for building is the same as the target environment for the software.

3.22 DOC – Documentation

R-DOC-010 – Development documentation The software documentation shall include a developer code documentation (eg. Doxygen).

R-DOC-020 – User manual The software documentation shall include a user manual (eg. troff man page).

~~**R-DOC-030 – Keyboard cheatsheet** The software documentation shall include a cheatsheet of the keyboard commands.~~

~~**R-DOC-040 – Keyboard cheatsheet conciseness** The keyboard cheatsheet shall be at most two pages long.~~

R-DOC-050 – Software build instructions The software documentation shall include the instructions for building the software from source.

R-DOC-060 – Documentation build instructions The software documentation shall include the instructions for building the documentation artifacts.

R-DOC-070 – Matrix of conformity A conformity matrix with respect to the present specification document shall be produced and released along with every major software release.

R-DOC-080 – Architecture and design document The software documentation shall include a document describing the architecture and design choices.

3.23 REL – Release

R-REL-010 – Software version format The software version shall include a major version and a minor version.

R-REL-020 – Release notes The software documentation shall include release notes.

R-REL-030 – Release notes granularity The release notes shall apply to individual minor software versions.

R-REL-040 – Release notes publication The release notes shall be updated and released at least for every minor version of the software.

R-REL-050 – Documentation release The full up-to-date software documentation shall be released along with every major software version release.

R-REL-060 – Build dependencies The software build dependencies shall be automatically downloaded or included by the build system.

R-REL-070 – Release format The software shall be released in the form of source code, ready for build.

3.24 DEP – Deployment

R-DEP-010 – Installation script The software shall provide an installation script.

R-DEP-020 – Uninstallation script The software shall provide an uninstallation script.

3.25 LIC – Licensing

R-LIC-010 – Source code license The software license for the source code shall be a permissive open-source license.

R-LIC-020 – Documentation license The software documentation shall be licensed under license at most as restrictive as the CC-BY license.

References

[1] kromit GmbH. *titra*. URL: https://github.com/kromitgmbh/titra Visited on 20 January 2024.

[2] Hyprland development team. *Hyprland*. URL: https://github.com/hyprwm/Hyprland Visited on 21 January 2024.