timesheeting specification document

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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	v1.1	Thomas HOULLIER

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Contents

Acronyms

GUI Graphical user interface
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*, 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*.

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 – Inactivating hierarchy items The software shall allow the user to 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 – Activating hierarchy items   The software shall allow the activation of previously inactivated hierarchy items. The corresponding identification must be the same as before inactivation.

R-UHI-050 – Project inactivation effect   The inactivation of a project shall cause the tasks belonging to the project to be inactivated.

R-UHI-060 – Removing hierarchy items   The software shall allow the 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-010 – Adding entries   The software shall allow the user to add new entries.

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

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-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 all entries on a given day.

3.5   ENI – Entry interaction

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 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 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 screens

R-HIS-010 – Hierarchy items   The hierarchy items UI 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 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-050 – Project identification   Projects shall be identified by a unique code.

R-LDC-060 – Project metadata   Projects shall be associated unambiguously to their full name.

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

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

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

R-LDC-100 – Location metadata   Locations shall be associated unambiguously to their 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-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-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-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.

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.

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-025 – Log cleanup period   The software 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 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 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-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.