Software Requirements Specification

for

Professional Developer’s Tool

Prepared by

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Revision History

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# Introduction

## Purpose

This document designed for the developers that will implement this product (Professional Developer’s Tool). This document describes functional and non-functional requirements of Professional Developer’s Tool.

## Scope

Document describes a web-based project management system named Professional Developer’s Tool that helps to support distributed software development. This product should provide different permissions for different groups of people (developers, managers and stakeholders). It should provide creating/deleting accounts, communication tools for members, possibility of assigning tasks to developers, controlling of the project execution, tracking progress, statistics of developers’ work, developers chart and

## Definitions, Acronyms and Abbreviations

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| Notion | Definition |
| Scrum | Scrum is an iterative and incremental agile software development framework for managing product development. It defines "a flexible, holistic product development strategy where a development team works as a unit to reach a common goal", challenges assumptions of the "traditional, sequential approach" to product development, and enables teams to self-organize by encouraging physical co-location or close online collaboration of all team members, as well as daily face-to-face communication among all team members and disciplines in the project. |
| Backlog | The product backlog is an ordered list of requirements that is maintained for a product. It consists of features, bug fixes, non-functional requirements, etc.—whatever needs to be done in order to successfully deliver a viable product. The product backlog items (PBIs) are ordered by the Product Owner (manager in this work) based on considerations like risk, business value, dependencies, date needed, etc. |
| Sprint log | A prioritized list of tasks to be completed during the sprint. |
| Sprint | Sprint is a time period (typically 1–4 weeks) in which development occurs on a set of backlog items that the team has committed to. |
| SRS | A software requirements specification (SRS) is a description of a software system to be developed, laying out functional and non-functional requirements. (Non-functional requirements impose constraints on the design or implementation such as performance engineering requirements, quality standards, or design constraints.) The specification may include a set of use cases that describe interactions the users will have with the software. |
| DOSE | Distributed and Outsourced Software Engineering is a distributed project in which teams/developers over several places collaborate |
| Authentication | It is the act of confirming the truth of an attribute of a single piece of data (datum) or entity. In contrast with identification which refers to the act of stating or otherwise indicating a claim purportedly attesting to a person or thing's identity, authentication is the process of actually confirming that identity. |

## References

IEEE Recommended Practice for Software Requirements Specifcations (IEEE Std 830-1998). Can be obtained from <https://code.google.com/p/touch-seen/downloads/detail?name=IEEE-STD-830-1998.pdf>

## Overview

SRS organized as follows. General factors that affect the product and its requirements are described in the second part. The third part consists of all requirements and Use-cases.

# Overall Description

## Product perspective

Product is independent and totally self-contained. Product may be used next years for providing DOSE course.

## Product functions

Basic functionality of the product:

* Backlog: a collection of requirements that need to / could be implemented;
* Sprint log: a log that is used as part of a development sprint;
* User management: users need to be able to register with the system; users need to be able to assign users to projects; basic user management (delete account, change personal details);
* Support for different roles (for example developers and ‘master’ – similar to SCRUM master). Functionalities are available depending on user roles;
* User authentication;
* Users can be assigned to tasks;
* Requirements can be assigned with ‘points’ according to their complexity. One can also assign point to tasks. Users who implement the requirements/tasks get the ‘points’ of the implemented requirements;
* Developers chart: all developers are ranked according to the ‘points’ received from the implemented tasks/requirements.

Advanced functionalities:

* A dashboard that summarizes ongoing events of (a) project(s);
* Statistics that show how the project performances, compared to the estimates;
* Team communication tools (group chat);

## User characteristics

Users of the system are groups of people from around the world.

They are three types of the users in the system:

1. Developers - people who implement a product.
2. Managers – people who track the product creation.
3. Stakeholders – people with an interest in a product.

Every user has next characteristics: first name, last name, sex, date of birthday, region (timezone depends on it), list of known languages (English is always necessary). Every developer has information about known programming languages.

## Constraints

1. System should be web-based.
2. The product should be implemented in Eiffel programming language.

## Assumptions and dependencies

The system operates only on the condition that all the necessary equipment for it is in working condition. The system operates only on the condition that between its nodes and the user side there is a communication channel.

# Specific Requirements

This section contains all software requirements both functional and non-functional. A requirement has the following properties:

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| **Requirement ID** | Uniquely identifies requirement |
| **Title** | Gives the requirement a symbolic name |
| **Description** | The definition of the requirement |
| **Priority** | Defines the order in which requirements should be implemented. Priorities are designated (highest to lowest) from 1 to 3. Requirements of priority 1 are mandatory; 2 represents features nice to have, and 3 represents optional features. |
| **Risk** | Specifies the risk of not implementing the requirement. It shows how critical the requirement is to the system as a whole. The following risk levels are defined over the impact of not being implemented correctly.   * Critical (C) It will break the main functionality of the system. The system cannot be used if this requirement is not implemented.   High (H) It will impact the main functionality of the system. Some function of the system could be inaccessible, but the system can be generally used.  Medium (M) It will impact some system features, but not the main functionality. The system can still be used with some limitation.  Low (L) The system can be used without limitation, but with some workarounds. |

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## Functional Requirements

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| **Requirement ID** | FR-1 |
| **Title** | The system should allow user to create and manage its own account |
| **Description** | To use the system user have to log in or register. Logged in users can change profile settings and delete account |
| **Priority** | Mandatory (1) |
| **Risk** | Critical (C) |

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| **Requirement ID** | FR-2 |
| **Title** | The system should allow developer to create and manage a project |
| **Description** | To start project developer have to create it. After creation developer becomes the manager of this project. Also manager can change settings of this project or delete it |
| **Priority** | Mandatory (1) |
| **Risk** | Critical (C) |

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| **Requirement ID** | FR-3 |
| **Title** | The system should allow manager to create and manage a backlog |
| **Description** | After project creation manager have to create backlog. Also, if necessary, manager can edit or delete it |
| **Priority** | Mandatory (1) |
| **Risk** | Critical (C) |

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| **Requirement ID** | FR-4 |
| **Title** | The system should allow manager to create and manage a sprint logs |
| **Description** | After backlog creation manager can create a sprint logs. Also, if necessary, manager can edit or delete it. If sprint is started, then manager cannot edit or delete the backlog |
| **Priority** | Mandatory (1) |
| **Risk** | Critical (C) |

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| **Requirement ID** | FR-5 |
| **Title** | The system should allow developers and manager to see project’s backlog |
| **Description** | Developers, manager of the project must have opportunity to see project’s backlog |
| **Priority** | Mandatory (1) |
| **Risk** | Critical (C) |

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| **Requirement ID** | FR-6 |
| **Title** | The system should allow developers and manager to see project’s sprint logs |
| **Description** | Developers and manager of the project must have opportunity to see project’s sprint logs |
| **Priority** | Mandatory (1) |
| **Risk** | Critical (C) |

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| **Requirement ID** | FR-7 |
| **Title** | The system should allow manager to assign tasks with points to the developers |
| **Description** | Manager can check tasks with different points and assign them to different developers of current project |
| **Priority** | Mandatory (1) |
| **Risk** | Critical (C) |

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| **Requirement ID** | FR-8 |
| **Title** | The system should allow manager to divide sprint log’s PBIs into tasks and manage these tasks |
| **Description** | Manager can create, modify and delete tasks, that then will be assigned to developers |
| **Priority** | Mandatory (1) |
| **Risk** | Critical (C) |

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| **Requirement ID** | FR-9 |
| **Title** | The system should allow manager and developer to see his/her tasks |
| **Description** | Manager/developer can see tasks that were assigned to him/her by himself/manager |
| **Priority** | Mandatory (1) |
| **Risk** | Critical (C) |

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| **Requirement ID** | FR-10 |
| **Title** | The system should allow developers to change the states of tasks |
| **Description** | There are three states for every task: awaiting, ongoing, completed. After creation the state of task automatically becomes “awaiting”. When developer begins to do the assigned task he/she changes task state to “ongoing”. After task completion developer changes task state to “completed” |
| **Priority** | Mandatory (1) |
| **Risk** | Critical (C) |

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| **Requirement ID** | FR-11 |
| **Title** | The system should allow user to see project statistics |
| **Description** | Users can see projects’ statistics that represents percent of their execution with dates when sprint logs were finished |
| **Priority** | Nice to have (2) |
| **Risk** | Medium (M) |

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| **Requirement ID** | FR-12 |
| **Title** | The system should allow user to chat with other users |
| **Description** | Users can communicate with each other. Also it is possible to create group chats. After project creation group chat with all team members except stakeholder automatically appears. If project manager adds new team member, he/she automatically joins to project chat |
| **Priority** | Nice to have (2) |
| **Risk** | Medium (M) |

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| **Requirement ID** | FR-13 |
| **Title** | The system should allow forming chart of developers according to their points |
| **Description** | Developers and managers can see developers’ chart. Chart is formed in order to their developers’ points, that they gained by tasks’ performing. Also it can be possible to use other kinds of order to form chart |
| **Priority** | Nice to have (2) |
| **Risk** | Medium (M) |

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| **Requirement ID** | FR-14 |
| **Title** | The system should allow user to see ongoing events on dashboard |
| **Description** | Users can see dashboard. Dashboard shows ongoing events of the users’ project. If user has more than one project, he sees only one dashboard with ongoing events of every project (it must be clear that every event belongs to its project) |
| **Priority** | Nice to have (2) |
| **Risk** | Medium (M) |

## Non-Functional Requirements

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| **Requirement ID** | NFR-1 |
| **Title** | The system should be fault tolerant (availability) |
| **Description** | The system must be available at most of time (not less than 99% of time) |
| **Priority** | Mandatory (1) |
| **Risk** | Critical (C) |

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| **Requirement ID** | NFR-2 |
| **Title** | The system should provide data integrity |
| **Description** | All information of this system, including databases, software, the executable code components of the system and chat history and all the data should not be lost, also system should have redundant copies |
| **Priority** | Mandatory (1) |
| **Risk** | Critical (C) |

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| **Requirement ID** | NFR-3 |
| **Title** | The system should provide confidentiality |
| **Description** | Access to certain information should be provided only to corresponding authorized users, which have permissions to it. All passwords should be stored in the system in an encrypted form. |
| **Priority** | Mandatory (1) |
| **Risk** | Critical (C) |

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| **Requirement ID** | NFR-4 |
| **Title** | The system should be user friendly |
| **Description** | Interface of the system should be intuitively understandable by the user |
| **Priority** | Nice to have (2) |
| **Risk** | Medium (M) |

## Use Cases

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| --- | --- |
| **Use case ID:** | UC-1 |
| **Title:** | Create an account |
| **Aim:** | To create user’s account |
| **Covered requirements:** | 1 |
| **Primary actor:** | User |
| **Stakeholder interest:** | Project development, opportunity of communication with other users |
| **Level:** | Account |
| **Precondition:** | User needs account |
| **Main success scenario:** | 1. User opens the web-site 2. User enters login and password to register 3. System sends message to user’s e-mail with verification reference 4. User confirms registration using this reference 5. User logs in   **Post condition:**  User is registered and authorized |
| **Alternative scenario:** | 1. User opens the web-site 2. User enters login and password to register 3. System shows the message that login already exists   **Post condition:**  User isn’t registered |

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| **Use case ID:** | UC-2 |
| **Title:** | Log in |
| **Aim:** | To log in |
| **Covered requirements:** | 1 |
| **Primary actor:** | User |
| **Stakeholder interest:** | Project development, opportunity of communication with other users |
| **Level:** | Account |
| **Precondition:** | User has an account |
| **Main success scenario:** | 1. User opens the web-site 2. User enters login 3. User enters password 4. User sends this information to system 5. User logs in   **Post condition:**  User is authorized |
| **Alternative scenario:** | 1. User opens the web-site 2. User enters login 3. User enters password 4. User sends this information to system 5. System shows the message that login or password is incorrect   **Post condition:**  User isn’t authorized |

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| **Use case ID:** | UC-3 |
| **Title:** | Manage account |
| **Aim:** | To manage user’s account |
| **Covered requirements:** | 1 |
| **Primary actor:** | User |
| **Stakeholder interest:** | Project development, opportunity of communication with other users |
| **Level:** | Account |
| **Precondition:** | User has an account |
| **Main success scenario:** | 1. User logs in 2. User modifies account settings 3. User saves modified account settings   **Post condition:**  User’s account settings are changed |

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| --- | --- |
| **Use case ID:** | UC-4 |
| **Title:** | Delete account |
| **Aim:** | To delete user’s account |
| **Covered requirements:** | 1 |
| **Primary actor:** | User |
| **Stakeholder interest:** | Project development, opportunity of communication with other users |
| **Level:** | Account |
| **Precondition:** | User has account |
| **Main success scenario:** | 1. User logs in 2. User deletes account 3. User fills the form why does he deletes his/her account 4. Information about user’s projects, position in developers chart dissapears   **Post condition:**  User deleted his/her account |

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| **Use case ID:** | UC-5 |
| **Title:** | Create project |
| **Aim:** | To create project |
| **Covered requirements:** | 2 |
| **Primary actor:** | Developer that becomes manager |
| **Stakeholder interest:** | Project creation |
| **Level:** | Project |
| **Precondition:** | Developer is registered and authorized |
| **Main success scenario:** | 1. Developer creates new project and becomes its manager 2. Manager adds project’s brief description 3. Manager adds developers to project   **Post condition:**  The project is created |

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| --- | --- |
| **Use case ID:** | UC-6 |
| **Title:** | Manage project |
| **Aim:** | To manage project |
| **Covered requirements:** | 2 |
| **Primary actor:** | Manager |
| **Stakeholder interest:** | Project managing |
| **Level:** | Project |
| **Precondition:** | Manager is authorized |
| **Main success scenario:** | 1. Manager opens list of his projects 2. Manager deletes and adds developers to project 3. Manager changes project’s brief description   **Post condition:**  The project is changed |

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| **Use case ID:** | UC-7 |
| **Title:** | Close the project |
| **Aim:** | To close project |
| **Covered requirements:** | 2 |
| **Primary actor:** | Manager |
| **Stakeholder interest:** | Project closing |
| **Level:** | Project |
| **Precondition:** | Manager created a project |
| **Main success scenario:** | 1. Manager logs in 2. Manager closes the project 3. Project’s developers get a message that they’ve become free   **Post condition:**  The project is closed |

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| --- | --- |
| **Use case ID:** | UC-8 |
| **Title:** | Create backlogs, sprint logs and tasks |
| **Aim:** | To create backlog, sprint logs and tasks |
| **Covered requirements:** | 3, 4, 8 |
| **Primary actor:** | Manager |
| **Stakeholder interest:** | Project realization |
| **Level:** | Project |
| **Precondition:** | 1. Manager is authorized 2. Project is created |
| **Main success scenario:** | 1. Manager opens list of his projects 2. Manager chooses one of the projects where he is manager 3. Manager creates project’s backlog (set of PBIs) 4. Manager divides backlog into sprint logs (every sprint log consists of one or several PBIs) 5. Manager divides every sprint log’s PBIs into tasks that have to be assigned to developers   **Post condition:**  Backlog, sprint logs and tasks are created |

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| **Use case ID:** | UC-9 |
| **Title:** | Manage backlogs, sprint logs and tasks |
| **Aim:** | To manage backlog, sprint logs and tasks |
| **Covered requirements:** | 3, 4, 8 |
| **Primary actor:** | Manager |
| **Stakeholder interest:** | Project realization |
| **Level:** | Project |
| **Precondition:** | 1. Manager is authorized 2. Project is created |
| **Main success scenario:** | 1. Manager opens list of his projects 2. Manager chooses one of the projects where he is manager 3. Manager changes project’s backlog, sprint logs and tasks   **Post condition:**  Backlog, sprint logs and tasks are changed |

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| --- | --- |
| **Use case ID:** | UC-10 |
| **Title:** | Backlogs, sprint logs and tasks review |
| **Aim:** | To show backlogs, sprint logs and tasks to developers and managers |
| **Covered requirements:** | 5, 6, 9 |
| **Primary actor:** | Developer, Manager |
| **Stakeholder interest:** | Project realization |
| **Level:** | Project |
| **Precondition:** | 1. Developer/manager is authorized 2. Developer/manager is a member of at least one project 3. Backlog, sprint logs and tasks are created |
| **Main success scenario:** | 1. Developer/manager goes to list of his/her projects 2. Developer/manager chooses one of them 3. Developer/manager sees backlog of chosen project 4. Developer/manager expands chosen backlog’s sprint log 5. Developer/manager sees sprint log’s PBIs 6. Developer/manager expands chosen sprint log’s PBI 7. Developer/manager sees his/her tasks   **Post condition:**  Backlog, sprint logs, PBIs and tasks are shown |
| **Alternative scenario:** | 1. Developer/manager goes to list of his/her projects 2. Developer/manager doesn’t see the backlogs, sprint logs, PBIs and tasks   **Post condition:**  Backlog, sprint logs and tasks aren’t shown |

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| **Use case ID:** | UC-11 |
| **Title:** | Assign tasks |
| **Aim:** | Manager assigns tasks with points to the developers |
| **Covered requirements:** | 7 |
| **Primary actor:** | Manager |
| **Stakeholder interest:** | Manager wants to assign task to the developers to start project implementation |
| **Level:** | Task |
| **Precondition:** | 1. Manager is authorized 2. Project exists 3. Project has at least one task |
| **Main success scenario:** | 1. Manager opens project 2. Manager opens project’s backlog 3. Manager opens one of backlogs sprint logs 4. Manager opens one of sprint log’s PBI 5. Manager chooses one of PBI’s tasks 6. Manager assigns the task to a developer or to himself   **Post condition:**  Task is assigned to developer |

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| **Use case ID:** | UC-12 |
| **Title:** | Change task states |
| **Aim:** | To change task states |
| **Covered requirements:** | 10 |
| **Primary actor:** | Developer |
| **Stakeholder interest:** | Developer wants to show the state of his/her task |
| **Level:** | Project |
| **Precondition:** | Developer has a task |
| **Main success scenario:** | 1. Developer begins to do his task and changes this task‘s state to “ongoing” 2. Developer finishes his task and changes task’s state to “completed” 3. Progress of the project changes in statistics 4. Manager gets notification that task has been done   **Post condition:**  Task’s state is changed |

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| **Use case ID:** | UC-13 |
| **Title:** | Developers chart |
| **Aim:** | The system should allow forming chart of developers |
| **Covered requirements:** | 13 |
| **Primary actor:** | Developer, Manager |
| **Stakeholder interest:** | Ranking developers by their points |
| **Level:** | Project |
| **Precondition:** | Developer/manager is authorized |
| **Main success scenario:** | 1. Developer/manager opens chart 2. Developer/manager chooses criteria of ranking 3. System forms list of developers according to chosen criteria (points and etc) |

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| **Use case ID:** | UC-14 |
| **Title:** | Project’s progress |
| **Aim:** | To show ongoing tasks on dashboard and project statistics |
| **Covered requirements:** | 11, 14 |
| **Primary actor:** | User (with project) |
| **Stakeholder interest:** | User wants to see project’s progress |
| **Level:** | Project |
| **Precondition:** | User is authorized and has a project |
| **Main success scenario:** | 1. User opens project 2. User sees ongoing tasks on dashboard 3. User chooses parameters that he wants to analyze in project’s statistics 4. User gets project’s statistics |

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| **Use case ID:** | UC-15 |
| **Title:** | Chat |
| **Aim:** | To organize communication between users |
| **Covered requirements:** | 12 |
| **Primary actor:** | User |
| **Stakeholder interest:** | Users need to discuss projects |
| **Level:** | Chat |
| **Precondition:** | User is authorized |
| **Main success scenario:** | 1. User goes to a chat screen 2. User chooses another user to chat with him/her or creates chat for a group of users 3. User enters a message 4. User sends a message 5. Other members/another member of chat receive/receives this message   **Post condition:**  Message is registered in chat |