Students & Companies

Requirements Analysis and Specification Document

Francesco Ostidich, Matteo Salari, Francesco Rivitti

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Contents

1 Introduction **2**
- 1.1 Purpose . . . 2
  - 1.1.1 Goals . . . 2
- 1.2 Scope . . . 2
  - 1.2.1 Features . . . 2
  - 1.2.2 World phenomena . . . 3
  - 1.2.3 Shared phenomena . . . 3
- 1.3 Definitions, acronyms, abbreviations . . . 4
  - 1.3.1 Definitions . . . 4
  - 1.3.2 Acronyms . . . 4
  - 1.3.3 Abbreviations . . . 4
- 1.4 Revision history . . . 5
- 1.5 Reference documents . . . 5
- 1.6 Document structure . . . 5

2 Overall description **6**
- 2.1 Product perspective . . . 6
  - 2.1.1 Scenarios . . . 6
- 2.2 Product functions . . . 6
  - 2.2.1 Key functions . . . 6
  - 2.2.2 Requirements . . . 6
- 2.3 User characteristics . . . 7
- 2.4 Assumptions, dependencies and constraints . . . 7
  - 2.4.1 Domain assumptions . . . 7

3 Specific requirements **8**
- 3.1 External interface requirements . . . 8
  - 3.1.1 User Interfaces . . . 8
  - 3.1.2 Hardware Interfaces . . . 8
  - 3.1.3 Software Interfaces . . . 8
  - 3.1.4 Communication Interfaces . . . 8
- 3.2 Functional requirements . . . 8
  - 3.2.1 Use cases . . . 8
  - 3.2.2 Mapping . . . 10
- 3.3 Performance requirements . . . 10

3.3.1 Specific requirements 10
3.4 Design constraints 10
3.4.1 Standards compliance 10
3.4.2 Hardware limitations 10
3.4.3 Any other constraint 10
3.5 Software system attributes 10
3.5.1 Reliability 10
3.5.2 Availability 10
3.5.3 Security 10
3.5.4 Maintainability 10
3.5.5 Portability 10

4 Formal analysis using Alloy **11**

5 Effort spent **12**

6 References **13**

1 Introduction

1.1 Purpose

Students&Companies (S&C) is a platform designed to connect university students with companies offering internships. It simplifies the internship searches of students and the projects advertisement for companies.

The platform employs recommendation mechanisms to match students and companies based on experience, skills, and project requirements. S&C also supports the selection process by managing interviews and collecting feedbacks. Additionally, it provides suggestions for improving CVs and project descriptions.

1.1.1 Goals

G1 - Allow registered students to search and enroll for internship opportunities.
G2 - Allow registered companies to advertise internship project opportunities.
G3 - Allow registered universities to monitor their students ongoing internship and manage complaints.
G4 - Support companies in the selection process by providing students with custom-made questionnaires.
G5 - Ease matching by notifying students of relevant internships and companies for suitable candidates.
G6 - Provide suggestions to both parties to refine their submissions.

1.2 Scope

1.2.1 Features

F1 - **Recommendation mechanism**: students and companies are matched based on skills, experience and project requirements, exploiting keyword statistical methods.
F2 - **Internship search**: students actively search and enroll for internships, while also being notified of opportunities that align with their profile.
F3 - **Selection support**: companies are helped in the selection process by setting up interviews, creating custom questionnaires, and finalizing selections.
F4 - **Suggestions system**: suggestions are provided to both parties in order to improve CVs and project descriptions, to enhance match potential.

F5 - Complaint management: universities can monitor internships of their students, handling complaints and addressing issues.

1.2.2 World phenomena

WP1 - A student looks for an internship to which enroll.
WP2 - A company advertises an open internship project.
WP3 - A student candidates himself for an internship.
WP4 - A company asks a matched student to fill a questionnaire.
WP5 - A company accepts a student for its internship project.
WP6 - A student wants to visualize its ongoing internship information.
WP7 - A company wants to visualize its ongoing internships information.
WP8 - A university wants to visualize its student ongoing internship information.
WP9 - A student or a company sends a compaint to the university.
WP10 - A student fills a feedback form when internship ends.

1.2.3 Shared phenomena

Controlled by the machine

SP1 - The system shows some internship advertisement to the student.
SP2 - The system shows some eligible student information to the company.
SP3 - The system notifies companies about students enrollment requests.
SP4 - The system notifies students about companies candidation offers.
SP5 - The system shows the company a panel in which to create a custom questionnaire.
SP6 - The system shows the student the questionnaire to fill.
SP7 - The system assigns the student to an internship project of a company.
SP8 - The system shows the student its ongoing internship information.
SP9 - The system shows the company its ongoing internships information.
SP10 - The system notifies a student or a company with a suggestion.
SP11 - The system notifies the university of a complaint.
SP12 - The system ends the internship of a student.

Controlled by the world

SP13 - A student fills the form with its personal information and uploads its CV.
SP14 - A company fills the form for advertising an internship project.
SP15 - A student sends an enrollment request for an internship project.
SP16 - A company sends an enrollment suggestion to a student.
SP17 - A company creates a custom questionnaire.
SP18 - A company sends a questionnaire to a student.
SP19 - A student fills a questionnaire a company sent.
SP20 - A company accepts a candidate student for its internship project.
SP21 - A student or a company sends a complaint to the university.
SP22 - A university ends the internship of its student.

1.3 Definitions, acronyms, abbreviations

1.3.1 Definitions

- **Internship project**: the description of the skills, technologies and roles the student will be working with during the internship, along with the set of tasks that will be covered
- **Internship advertisement**: the public post created by companies to promote available internships on the platform, aimed at attracting suitable candidates by highlighting its key aspects
- **Internship information**: general data about the (ongoing) internship, including the elapsed and remaining time, the compensation and the description of the project the student is working on
- **Enrollment request**: the submission of a student to indicate interest in a specific internship, initiating the selection process by formally applying
- **Enrollment suggestion**: the recommendation made by the platform to guide students in finding projects that best suit them
- **Custom questionnaire**: the tailored set of questions used by companies during interviews to assess a candidate fit for the internship
- **Candidate student**: a student who has applied for an internship and is currently under consideration by a company, moving forward in the selection process
- **Eligible student**: a student who meets the qualifications for an internship, making them viable candidates for recommendation and application
- **Suitable student**: a student who meets the qualifications for an internship, making them potential candidates to be recommended in the companies feed
- **Complaint**: a report submitted by a student or company to the university, regarding issues during the internship, such as unmet expectations, mistreatments, or procedural problems
- **Feedback form**: a structured form for students to provide feedback on their internship experience, enabling the platform to gather data for analysis, improvements, and recommendations

1.3.2 Acronyms

- **S&C**: Students&Companies

1.3.3 Abbreviations

- **Gn**: n-th goal
- **Fn**: n-th feature
- **WPn**: n-th world phenomena
- **SPn**: n-th shared phenomena
- **Sn**: n-th scenario
- **KFn**: n-th key function
- **Rn**: n-th requirement
- **DAn**: n-th domain assumption
- **UCn**: n-th use case

1.4 Revision history

- **Revised on**: October 28, 2024
- **Version**: 1.0
- **Description**: document initial release

1.5 Reference documents

- **Polimi Software Engineering 2 AY 2024/2025 assignment document**: goal, schedule and rules of the requirement engineering and design project
- **Polimi Software Engineering 2 AY 2024/2025 course slides**: the lecture slides provided during the course

1.6 Document structure

- **Chapter 1**: here is presented the problem statement and an outlining of the system objectives; in the scope subsection, insights into the various world and shared phenomena explain what the system addresses; here are also provided the essential resources for the readers, including definitions and abbreviations, to facilitate a comprehensive understanding of the document.
- **Chapter 2**: a comprehensive overview of the system is offered including insights into user profiles and their primary functions; the domain diagrams illustrate the system components and describe the various scenarios; the key domain assumptions are established, underpinning the system operations.
- **Chapter 3**: system requirements are delineated, encompassing both functional and non-functional aspects; follows the presentation of use case diagrams, illustrating the system interactions accompanied by their descriptions, with the related sequence diagrams; a clear mapping of the requirements is established, for a comprehensive understanding of both system goals and use cases.
- **Chapter 4**: here is given a formal analysis of the system with Alloy.
- **Chapter 5**: here is found an estimation of the effort spent by each group member.
- **Chapter 6**: here is provided a list of the references used in this document.

2 Overall description

2.1 Product perspective

2.1.1 Scenarios

S1 - Signing up and logging in
S2 - Filling in personal information
S3 - Uploading the CV
S4 - Creating an internship project advertisement
S5 - Notifying the availability of an internship
S6 - Selecting an internship project
S7 - Creating a custom questionnaire
S8 - Filling a questionnaire
S9 - Starting a new internship
S10 - Viewing internship information
S11 - Sending a complaint
S12 - Ending an internship

2.2 Product functions

2.2.1 Key functions

KF1 - Internship project advertisements
KF2 - CV upload
KF3 - Interviews via custom questionnaires
KF4 - Complaints management
KF5 - Recommendation system
KF6 - Suggestion system

2.2.2 Requirements

R1 - The system must allow an unregistered student to sign up.
R2 - The system must allow an unregistered company to sign up.
R3 - The system must allow an unregistered university to sign up.
R4 - The system must allow a registered user to log in.
R5 - The system must allow a registered user to fill in and edit its personal information.

R6 - The system must allow a registered student to upload its CV.
R7 - The system must allow a registered company to post an internship project.
R8 - The system must allow a registered student to visualize a list of open internship projects.
R9 - The system must allow a registered company to visualize a list of eligible students.
R10 - The system must allow a registered student to make and enrollment request to an internship project.
R11 - The system must allow a registered company to build custom made questionnaires.
R12 - The system must allow a registered company to send questionnaires to students.
R13 - The system must allow a registered student to fill in the questionnaire.
R14 - The system must allow a registered company to accept students enrollment requests.
R15 - The system must allow a registered student to see their ongoing internship information.
R16 - The system must allow a registered company to see their ongoing internships information.
R17 - The system must allow a registered university to see their students' ongoing internship information.
R18 - The system must allow a registered student to send complaints to the university.
R19 - The system must allow a registered company to send complaints to the university.
R20 - The system must allow a registered university to visualize complaints it received.
R21 - The system must allow a registered university to end an ongoing internship of its student.

2.3 User characteristics

2.4 Assumptions, dependencies and constraints

2.4.1 Domain assumptions

DA1 - The user must have a working internet connection.
DA2 - The user must have provided valid personal information.
DA3 - The student must be registered to a university.
DA4 - The university must have provided an organization mail to the student.

3 Specific requirements

3.1 External interface requirements

3.1.1 User Interfaces

3.1.2 Hardware Interfaces

3.1.3 Software Interfaces

3.1.4 Communication Interfaces

3.2 Functional requirements

3.2.1 Use cases

StudentSignsUp

Actor	Student, Students&Companies, EmailService
Entry condition	The student is not already registered
Event flow	1. The student opens the sign up page 2. The platform shows the sign up page 3. The student fills in the required informations and clicks the sign up button 4. The platform checks that the information provided is valid 5. The platform sends an email through the email service to verify the student account 6. The student verifies the account 7. The platform registers the new student account 8. The platform shows the student profile page
Exit condition	IO
Exceptions	IO

CompanySignsUp

UserLogsIn

StudentUploadsCV

CompanyCreatesAdvertisement

StudentVisualizesAdvertisements

CompanyVisualizesCandidates

CompanyCreatesQuestionnaire

StudentFillsQuestionnaire

CompanyAcceptsStudentEnrollment

StudentVisualizesInternshipInformation

CompanyVisualizesInternshipsInformation

StudentSendsComplaint

CompanySendsComplaint

UniversityVisualizesComplaints

UniversityEndsInternship

InternshipExpires

StudentFillsFeedbackForm

3.2.2 Mapping

3.3 Performance requirements

3.3.1 Specific requirements

3.4 Design constraints

3.4.1 Standards compliance

3.4.2 Hardware limitations

3.4.3 Any other constraint

3.5 Software system attributes

3.5.1 Reliability

3.5.2 Availability

3.5.3 Security

3.5.4 Maintainability

3.5.5 Portability

4 Formal analysis using Alloy

5 Effort spent

Unit	Member	Hours
Setup	Ostidich	4
Introduction	Ostidich, Rivitti	2

6 References