



**POLITECNICO**  
**MILANO 1863**

**SCUOLA DI INGEGNERIA INDUSTRIALE  
E DELL'INFORMAZIONE**

# Design Document (DD)

**Students & Companies Problem**

**Authors:**

Acquadro Patrizio  
Colosio Giacomo  
Drugman Tito Nicola

**Course:** Software Engineering 2, Computer Science and Engineering

**Professor:** Prof.ssa Elisabetta Di Nitto

**Academic Year:** 2024-25

<b>Deliverable:</b>	DD
<b>Title:</b>	Design document
<b>Authors:</b>	Acquadro Patrizio, Colosio Giacomo, Drugman Tito
<b>Version:</b>	Version 1
<b>Date:</b>	December 25, 2024
<b>Download page:</b>	<a href="#">GitHub Repository</a>
<b>Copyright:</b>	Copyright © 2024, Acquadro Patrizio, Colosio Giacomo, Drugman Tito Nicola – All rights reserved

# Contents

<b>Contents</b>	<b>iii</b>
<b>1 Introduction</b>	<b>1</b>
1.1 Purpose . . . . .	1
1.2 Scope . . . . .	2
1.3 Definitions, Acronyms, Abbreviations . . . . .	3
1.3.1 Definitions . . . . .	3
1.3.2 Acronyms & Abbreviations . . . . .	5
1.4 Revision History . . . . .	5
1.5 Reference Documents . . . . .	5
1.6 Document Structure . . . . .	6
<b>2 Architectural Design</b>	<b>7</b>
2.1 Overview . . . . .	9
2.2 Component View . . . . .	12
2.2.1 Component Diagram . . . . .	13
2.2.2 Composite Structure Diagrams . . . . .	17
2.3 Deployment View . . . . .	23
2.4 Runtime View . . . . .	24
2.5 Component Interfaces . . . . .	25
2.6 Selected Architectural Styles and Patterns . . . . .	26
2.7 Other Design Decisions . . . . .	27
<b>3 User Interface Design</b>	<b>29</b>
3.1 Authentication: Registration and Login . . . . .	30
3.2 Homepage with Settings, Change Language, and Chatbot Assistance . . . . .	38
3.3 Matchmaking . . . . .	45
3.4 Monitoring: Selection Process, Active Stages and Questionnaires . . . . .	47
3.5 Calendar . . . . .	71
3.6 Messaging with Issues and Video-calls . . . . .	76
<b>4 Requirements Traceability</b>	<b>81</b>
<b>5 Implementation, Integration And Test Plan</b>	<b>83</b>
5.1 Overview . . . . .	83
5.2 Implementation Plan . . . . .	84

5.2.1	Features Identification . . . . .	84
5.3	Component Integration and Testing . . . . .	85
5.4	System Testing . . . . .	86
5.5	Additional Specifications on Testing . . . . .	87
<b>6</b>	<b>Effort Spent</b>	<b>89</b>
 <b>Bibliography</b>		 <b>91</b>
<b>A</b>	<b>Appendix A</b>	<b>93</b>
A.1	Grammar . . . . .	93
A.1.1	Examples . . . . .	93
A.1.2	Parsing and Evaluation . . . . .	93
A.2	Disclaimer . . . . .	94
<b>List of Figures</b>		<b>95</b>
<b>List of Tables</b>		<b>97</b>

# 1 | Introduction

## QUESTA LA METTEREI DIVERSA E NELLO SCOPE (GUARDA SOTTO):

As we discussed in the RASD (Requirement Analysis and Specification Document), finding suitable internships remains a challenge for university students, with 60% in the U.S. citing difficulty in locating opportunities as the main barrier [2]. Internship availability has decreased significantly, with only 3,817 positions advertised in October 2024 compared to nearly 5,500 a year earlier [3]. Participation rates are also low, with only 21.5% of U.S. college students and 8.7% of UK students gaining formal work experience, and just 19% at top universities [3].

Platforms like *LinkedIn* provide broad job listings but are not optimized for matching internships to student skills and interests. Additionally, companies often struggle to define projects and requirements, leading to mismatches and dissatisfaction. Despite U.S. students generally reporting high satisfaction with internships, 1 in 4 had negative experiences, highlighting the need for improved clarity and alignment between student expectations and company offerings. COVID-19 has also contributed to a sharp decline in internship rates, previously ranging from 50% to 60% in the U.S., now down to 21.5% [2].

## 1.1. Purpose

The primary objective of this document is to detail the software design and architectural components of the S&C platform. All our design choices will be documented and explained. This document, called *Design Document* (DD), will focus on the design of the system's architecture and user interface design while also providing a general implementation, integration and testing plan. Lastly, this document aims to provide the reader with an unambiguous description of the system's functionalities and constraints to allow the reader to verify if the system meets the expectations.

This document, with the *RASD*, have the general purpose of guiding the developers in the realization of the S&C platform. It is directed to the project manager, developers and testers but it could be useful for future development and maintenance. Please note that in this document there will be several references to the RASD document (to maintain also coherence and consistency), it is recommended to read the RASD document before the DD document.

**JACK VERSION:** The primary objective of this Design Document (DD) is to detail the software design and architectural components of the Students & Companies (S&C) platform, as initially outlined in the Requirement Analysis and Specification Document

(RASD), accessible at this link.

This document serves as a comprehensive guide to the design of the system, focusing on the following aspects:

- **High-Level Architecture:** An overview of the system's structure, emphasizing the relationships between its main components.
- **Component Design:** Detailed descriptions of the individual components that constitute the system.
- **Deployment View:** The mapping of software components onto hardware nodes, ensuring an effective deployment strategy.
- **Intercomponent Communication:** Analysis of the messages exchanged between components and the interfaces they provide.
- **Technological Choices and Patterns:** Justification of the technologies and design patterns employed to meet the system's requirements.
- **User Interface Design:** Specifications for the interfaces that facilitate interaction between users and the system.

In addition to defining the architectural and design aspects, this document includes an implementation, integration, and testing plan to ensure the seamless realization of the platform. Furthermore, it provides an unambiguous description of the system's functionalities and constraints, enabling the verification of whether the platform meets its expected outcomes. The DD is intended for project managers, developers, and testers as a roadmap for implementing the S&C platform. Moreover, it serves as a reference for future development and maintenance activities, promoting consistency and coherence throughout the system's lifecycle. To maintain alignment with the RASD and provide a clear context for the design choices made, this document frequently references the RASD. It is highly recommended to read the RASD prior to this document for a complete understanding of the system's objectives and requirements.

## 1.2. Scope

As we wrote in the *RASD* document, the S&C platform was imagined to be a platform where students could find and apply internships and companies could create new internships and select students. Lastly the university tutor would be able to monitors the internships of the students. To create a positive user experience the platform would need to have a user-friendly interface.

The scope of the platform is to facilitate the matching between students and companies by assessing the student experiences, skills and attitudes (available in his/her CVs) and the projects and terms offered by the companies.

We identified three main categories of actors: students, company tutors and university tutors which will be presented in Section 1.3.1.

## JACK VERSION:

This Design Document (DD) defines the boundaries of the S&C platform, focusing on its purpose and the problems it solves.

The motivation for developing this software arises from the significant challenges associated with the internship process. This need is underscored by compelling data that emphasize the urgency of creating such a platform. University students face considerable obstacles in securing internships, with 60% in the U.S. identifying difficulty in finding opportunities as a major barrier [2]. Moreover, the availability of internships has declined sharply, with only 3,817 positions advertised in October 2024 compared to nearly 5,500 the previous year [3]. Participation rates are also alarmingly low, with just 21.5% of U.S. students and 8.7% of UK students gaining formal work experience during their studies [3]. Existing platforms, such as *LinkedIn*, are not designed to effectively match students with internships that align with their skills and interests. At the same time, companies often struggle to clearly define internship projects, leading to inefficiencies and dissatisfaction on both sides. This situation has been exacerbated by the COVID-19 pandemic, which significantly reduced internship participation rates in the U.S. from a pre-pandemic range of 50%-60% to just 21.5% [2].

As described in the *RASD* document link, the S&C platform enables students to find and apply for internships, companies to create opportunities and select candidates, and university tutors to monitor and support student progress during internships. By matching students' experiences, skills, and attitudes with the projects and terms offered by companies, the S&C platform ensures an efficient and transparent process for all stakeholders.

As further detailed in this document, the S&C platform is built using a **3-tier architecture** to ensure scalability, maintainability, and efficiency. This architecture integrates modern paradigms, client-server communication, and RESTful APIs for seamless integration, creating a platform that enhances the internship experience for students, improves recruitment processes for companies, and ensures academic oversight by universities.

## 1.3. Definitions, Acronyms, Abbreviations

### 1.3.1. Definitions

- **User/actor:** A generic person who use the platform. Can be either a student, company tutor or a professor.
- **Student:** A primary actor representing a user who interacts with the platform to search for internships, submit applications and communicate with other types of users.
- **Company Tutor:** A primary actor representing a user who interacts with the platform to post internships, evaluate candidates and communicate with students and university tutors.
- **University Tutor/Academic Tutor:** A primary actor representing a user who monitors internship progress, evaluates reports and ensures alignment between the

internship and university goals. He also have the ability to communicate with students and company tutors

- **Responsible Tutor:** a company or university tutor who is responsible for creating the profile either for the company or for the university, but not both.
- **Architectural Style:** An architectural style establishes the fundamental building blocks and rules that shape a software architecture. It determines the vocabulary of components and connectors that can be used, as well as the constraints on how they can be combined. Architectural styles also provide guidance for structuring solutions tailored to particular challenges or domains.
- **Client-Server Architecture:** A widely used architectural style in systems requiring distributed access to shared resources. It defines two primary roles:
  - **Client:** Initiates requests and represents users or user interfaces needing resources or services.
  - **Server:** Awaits incoming requests, processes them, and provides responses.

This architecture enables multiple users to interact with shared resources, centralizes resource management, and supports distributed access via a network.

- **Three-Tier Architecture:** A specific extension of the client-server architecture that divides the system into three logical layers:
  - **Presentation Layer:** Also known as the Interface Layer, it manages interactions with the end users or external systems, typically through a graphical user interface (GUI) or an API.
  - **Application Logic Layer:** The core processing layer responsible for executing business logic, coordinating tasks, and acting as a mediator between the presentation and data layers.
  - **Data Layer:** Handles the storage, retrieval, and management of data necessary for the application logic layer to function.

By separating concerns into these distinct layers, the three-tier architecture enhances scalability, maintainability, and reusability. It builds upon the client-server model by introducing additional modularity, where the "server" is often split into the application logic and data management components.

- **Thin Client:** In this configuration, the client only contains a minimal part of the system, often limited to the interface layer. Most of the application logic and data handling are located on the server. This setup is efficient for clients that need only basic interaction capabilities, as the bulk of processing is done server-side.
- **Thick (Fat) Client:** This configuration includes substantial portions of the application logic and possibly even some data on the client side. While it reduces the server's workload, it requires more resources on the client side and increases the complexity of client management.

- **Interface Layer:** The layer responsible for interactions with the external environment, often through a graphical user interface (GUI) or other interface types like programming interfaces or sensors.
- **Application Logic Layer:** Encapsulates the core logic of the application, processing primary operations and coordinating between the interface and data layers.
- **Data Layer:** Manages data storage and retrieval, handling the information processed by the application logic layer.

### 1.3.2. Acronyms & Abbreviations

- **w.r.t.:** with respect to
- **i.e.:** *Id est*, that is
- **e.g.:** *Exempli gratia*, for example
- **CV:** Curriculum Vitae
- **RASD:** Requirements Analysis & Specification Document
- **DD:** Design Document
- **S&C:** Students & Companies
- **LLM:** Large Language Model
- **RAG:** Retrieval Augmented Generation
- **UI:** User Interface
- **API:** Application Programming Interface
- **AI:** Artificial Intelligence
- **NLP:** Natural Language Processing
- **HTTPS:** Hypertext Transfer Protocol Secure
- **UML:** Unified Modeling Language
- **GUI:** Graphical User Interface
- **cmp:** Component

## 1.4. Revision History

## 1.5. Reference Documents

The document is based on the following materials:

- The specification of the RASD and DD assignment of the Software Engineering II course a.a. 2024/2025

- Slides of the course on WeBeep
- Course book created from notes: <https://drive.google.com/drive/u/1/folders/1dH-0IdPxUwhFMTnOr7UGTCkolvEL6g15>
- **IEEE Standard for RASD:** ISO/IEC/IEEE 29148 (Nov 2018). <https://doi.org/10.1109/IEEESTD.2018.8559686>
- **IEEE Standard for DD:** IEEE 1016-2009 (Jun 2009). <https://ieeexplore.ieee.org/document/5167255>
- RASD document <https://github.com/GiacomoColosio02/AcquadroColosioDrugman>

## 1.6. Document Structure

QUESTA LA SCRIVEREI ALLA FINE, GPT RIASSUME BENE I CAPIROLO CHE SCRIVIAMO

- **Section 1: Introduction** Contains the overview of the problem, required functionalities, definitions, goals, acronyms and abbreviations that could be found in this document.
- **Section 2: Architectural Design** Describe the architectural choices, the main components and their interaction as well as deployment and runtime view.
- **Section 3: User Interface Design** Show the user interface design, it also show the possible actions a user could take when using the system. Contains some mockups of the user interface.
- **Section 4: Requirement traceability** Explains how the requirements listed in the RASD are connected to the design choices that were made in this document about the platform design.
- **Section 5: Implementation, integration and test plan** Defines the orders in which the components are implemented and their order of integration aiming to correctly implement the platform.
- **Section 6: Effort Spent** Effort spent by each member on the team for the realization of this document.

# 2 | Architectural Design

## JACK AGGIUNTA: DITEMI CHE VI SEMBRA

This chapter details the architecture of the system, outlining the high-level structure, key components, deployment setup, runtime interactions, and applied architectural styles and patterns. According to Bass et al., "*Software architecture is a set of structures needed to reason about the system.*" Including the software architecture in the Design Document (DD) is essential for several reasons. First, it provides a clear framework to guide system implementation and development. By doing so, it helps identify and resolve potential design issues early in the development process. Moreover, the architecture facilitates communication among stakeholders by offering a shared understanding of the system's organization and behavior. It also ensures maintainability and scalability by structuring the system into well-defined components and relationships. Finally, the architecture serves as a valuable reference for future updates, integrations, and development activities.

The architecture of the S&C platform, like that of any software system, is typically described using three primary components. The first component is the component-and-connector structures, which represent the runtime interactions of the system. These structures capture communication pathways and dependencies among components, highlighting the dynamic behavior of the system during execution. The second component is the module structures, which define the static organization of the system, focusing on code and data units. These structures help developers understand how the system is broken into logical units or modules, aiding implementation, development planning, and maintenance. Lastly, the allocation structures define how software elements are mapped to physical or organizational resources, such as deployment on hardware, file systems, or team assignments.

To analyze these components in detail, the use of UML diagrams is fundamental. UML provides a standardized set of diagrams that enable clear communication among stakeholders and foster a shared understanding of the system. For the component-and-connector structures, component diagrams (Section 2.2.1) are used to illustrate the components and their interactions, while sequence diagrams (Section 2.4.2) are employed to represent the flow of control and communication during execution. For the allocation structures, deployment diagrams (Section 2.3.2) show how components are mapped to hardware environments, providing insights into the system's operational infrastructure.

By leveraging these diagrams, the chapter provides a comprehensive view of the system architecture. This structured approach ensures clarity, maintainability, and alignment with the system's functional and non-functional requirements. It also lays a strong foundation

for both current implementation and future development efforts, ensuring the platform's robustness, scalability, and adaptability to evolving needs.

## 2.1. Overview

The S&C platform is designed as a three-tier web-based system that connects, students, company tutors and university tutors. The three tier is the most popular implementation of a multi-tier architecture and consist of *Presentation Layer*, *Application Layer* and *Data Layer*. Thanks to this decomposition each layer can be developed or update independently by a different person and also it have great elasticity since a single layer can be scaled up or now regardless of the other layers.

- **Presentation Layer:** how the system interacts with the user. It is accessible to the user with a GUI.
- **Application Layer:** handle the logic of the platform and provide all the functions available to the user. It receive the requests from the clients and handles them. It also communicate with the Data layer.
- **Data Layer:** store and retried asked data. Does not implement any logic and it is only used for data storage.

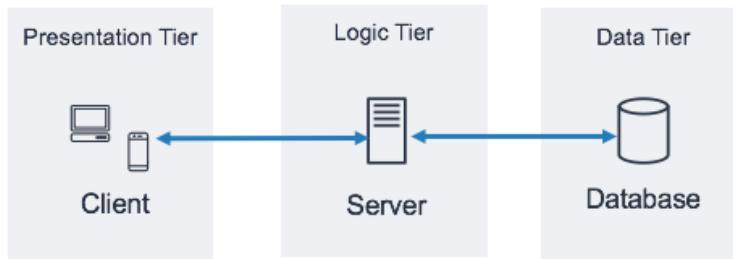


Figure 2.1: Three tier architecture. See [1].

[h]

**JACK VERSIONE: E CON TEORIA PIU APPROFONDITA** The S&C platform will be developed using the client-server paradigm on a three-tiered architecture. The three layers of the application (Presentation, Application, and Data) are divided into clusters of machines (i.e., tiers) that collaborate to provide specific functionalities. Each tier is responsible for one of the three layers, ensuring a clear separation of concerns and improving scalability and maintainability.

The client tier is solely responsible for the Presentation Layer. A **thin-client approach (TITO GUARDA DA TEORIA COSA È E SE QUADRA CON QUELLO CHE HAI MESSO)** has been adopted, considering that the required client-side functionalities are limited. The provided user interfaces (UIs) are designed to display results and allow users to interact with the system by making selections or submitting requests. Specifically, the platform offers different UIs tailored to its users: a web app for company and university tutors to manage internships and monitor progress, and another for students to search for and apply to internships.

The Application tier encapsulates the Application Layer, which handles all aspects of the application logic. It processes requests from the clients, enforces business rules, and coordinates operations between the Presentation and Data Layers. The Application tier is also responsible for sending asynchronous notifications to the Presentation Layer when specific conditions are met, such as updates to internship applications or approvals. Additionally, it performs request validation, filtering out invalid or incomplete submissions.

The Data tier is responsible for the Data Layer, which manages data storage and retrieval. This layer provides structured access to the system's databases, handling operations such as querying, updating, and maintaining data consistency. To enhance performance and support analytical tasks, the system also integrates a Data Warehouse component within the Data tier. This component efficiently handles historical data and aggregates information from operational databases, enabling advanced reporting and analysis capabilities.

By adopting this architecture, the S&C platform ensures flexibility, allowing each tier to be scaled independently based on demand. The thin-client approach minimizes client-side resource requirements while leveraging the server-side Application Layer for robust logic handling. Meanwhile, the Data Layer guarantees secure and efficient management of user and system data, enabling the platform to meet both current and future needs.

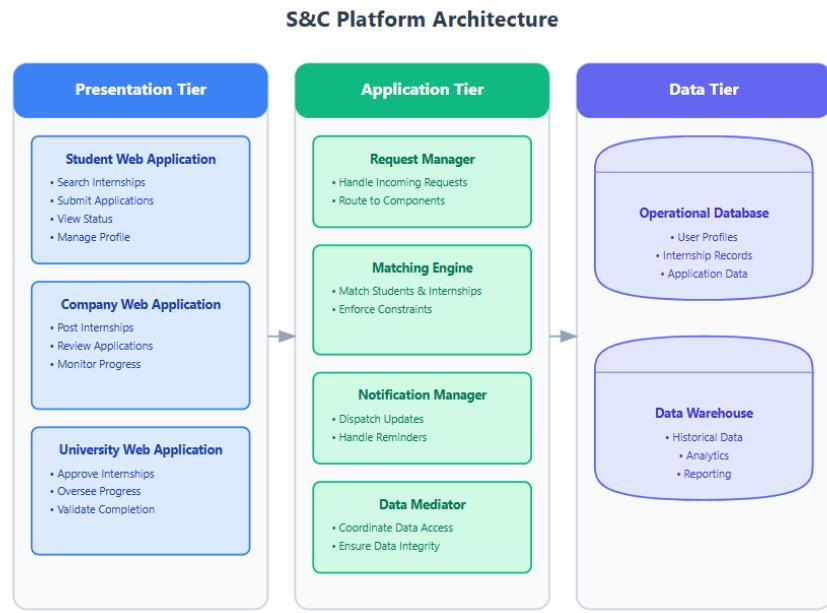


Figure 2.2: Three tier architecture. See [1].

## 2.2. Component View

JACK VERSIONE : Introduzione con approfondimenti alla teoria [HO MESSO REST API QUINDI S

This section focuses on the internal structure of the system and the relationships between its components, providing a detailed analysis of how the system operates and interacts both internally and with external services. The purpose of the Component View is to illustrate the dependencies and interfaces between components, ensuring clarity in the overall system organization and facilitating implementation and maintenance.

The section is organized into two parts. The first part, the Component Diagrams, provides high-level visual representations of the system's key components and their interactions. These diagrams emphasize dependencies and interfaces between components, giving a clear overview of how the system functions. The second part, the Composite Structure Diagrams, delves into greater detail, showing how individual components are composed of smaller subcomponents, if necessary.

At a high level, the system is represented by a component diagram that highlights the primary components and their interactions. The internal system components, referred to as the back-end, include the software modules developed specifically for the platform. External components represent third-party services and APIs integrated to enhance functionality. The primary entry point for users is the web application, which acts as the interface for all stakeholders, including students, company tutors, and university tutors. Interactions initiated through the web application are directed to the Dashboard Manager, a central component responsible for coordinating requests and routing them to appropriate subsystems. For instance, the Dashboard Manager identifies whether a user action requires data retrieval, application logic processing, or external API communication. The Model component acts as the intermediary between the application logic and the database. It handles database operations such as queries and updates, ensuring consistent and secure management of data related to user profiles, internships, and application statuses. Supporting CRUD operations (Create, Read, Update, Delete), the Model is integral to maintaining the integrity of the system's data. This functionality is aligned with RESTful API principles, which utilize standard HTTP methods to perform CRUD operations on server resources. Externally, the system integrates with several APIs to extend its capabilities. The Calendar API allows users to synchronize schedules and appointments with platforms like Google Calendar or Microsoft Outlook. Similarly, the Mail API facilitates account registration and automates notification processes, ensuring timely delivery of essential updates.

To provide a more detailed perspective, composite structure diagrams are used to break down complex components into their subcomponents. For example, the Dashboard Manager can be detailed to show its interaction with modules such as the authentication service, user session management, and notification handling. These diagrams are crucial for understanding the internal organization of major components and their submodules.

### 2.2.1. Component Diagram

In Figure 2.3 it is possible to see the component diagram for the S&C platform. This figure is a high-level view that only show the main components, while the sub-components will be shown later in more detail. For a more clear page we decided to use colors to highlight specific categories of communications between different components:

- **Yellow color:** it is used to highlight communications with the *NotificationManager* component.
- **Light blue color:** it is used to highlight communications with the *Model* component.
- **Purple color:** it is used to highlight the communications with the *CalendarManager* component.

We define here the main external components:

- **WebAPP:** it is the external access point for all users. It allows the communication with the S&C platform thanks to the *Dashboard Interface*. The S&C platform can send notifications to users through the Notification Interface.
- **DBMS:** it is the storage repository for all data (about profiles, internships,...) of the S&C platform. It can communicate with the S&C platform via the DBMS API.
- **Mail Server:** it is responsible for sending registration confirmation email or to recover the user's password. It uses the Mail API interface to communicate with the S&C platform.
- **External Calendar Service:** it is used to connect with the users personal calendars. It uses the Calendar API to communicate with the S&C platform.

We define here the main components inside the S&C platform:

- **Model:** it is a high-level component that represents the data on the server and acts as an interface to the database server. Every component needs to interface with *Model* to access data from the DBMS through the DBMS API.
- **Dashboard Manager:** it is a fundamental component that is in charge of orchestrates all communication between users and the S&C platform. All users interact with the S&C platform through the Dashboard Interface and the *Dashboard Manager* is used to direct all the requests of the users to the appropriate components. It servers as the central hub for all users interactions.
- **Registration Manager:** it is the component that handles the registration of new users. The idea behind is that when a new user want to create an account on the platform, he/she communicates to the *Dashboard Manager* that send the user's request to the *Registration Manager*. This component communicates with the Mail Server to send a confirmation mail to the user, and it also communicate with the *Model* component to add the new data of the user to the DBMS. This component is visible in greater detail in Figure 2.4.

- **Login Manager:** it is the component that is in charge of login users that are registered. When a registered user attempts to log in, the *Dashboard Manager* forwards the request to the *Login Manager*. It communicates to the *Model* through the model interface to retrieve the user's data from the DBMS. The login manager is also used for registered users to recover their password, at such it communicates to the *Mail Server* through the *Mail API* interface. This component is visible in greater detail in Figure 2.11.
- **Profile Manager:** this component serves general purposes and can be used by registered users to visualize a profile, modify its own profile or delete their profile. It can be used for all profiles regardless of their role (student, company tutor or university tutor) and it can be used also for company and university profiles. When a user wants to search a profile, or modify/delete its profile, the *Dashboard Manager* forwards the request to the *Profile Manager*. The *Profile Manager* is connected to the *Model* through the model interface to access all user's data. This component can be seen in greater detail in Figure 2.5.
- **Internship Manager:** this component is used for several tasks related to internships. A company tutor (a particular category of users) can use *Internship Manager* to create or edit an internship, save it as a draft, publish it or improve it with the help of an LLM. To do so he/she uses the *Dashboard Manager* component that communicates to the *Internship Manager* component. Also all registered users can visualize all the internships on the platform with the *Internship Manager* component. This component communicates also with the *Model* to save all the information about an internship in the DBMS and it is visible in greater detail in Figure 2.6.
- **Matchmaking Manager:** this component is used for the matchmaking process. It is used for recommending to students or companies their counterparts and to visualize their profiles (thus this component communicates with *Internship Manager* and *Profile Manager*) also it is used to invite users to the selection process. This component can be seen in greater detail in Figure 2.7.
- **Selection Manager:** this complex component is used for several processes such as evaluating the invitation about an internship, plan meetings, fill up the questionnaires, pick up the university tutor and so on. When a user wants to do either one of these tasks the *Dashboard Manager* forwards the request to the *Selection Manager*. Lastly, this component communicates with multiple components and is discussed in greater detail in Figure 2.8.
- **ActiveStage Manager:** it is the component that handles everything that can be done by users when an internship is active such as completing final evaluation, communications, planning events or reporting a complaint. When a user wants to do either one of these tasks the *Dashboard Manager* forwards the request to the *ActiveStage Manager*. It is connected to several other components and is discussed in greater detail in Figure 2.9.
- **Complaint Manager:** this component is used for user's tasks about complaints such as reporting one or managing one. When a user wants to do so the request of the *Dashboard Manager* is forwarded to the *Complaint Manager* that will handle

this request. It is discussed in greater detail in Figure 2.10.

- **Calendar Manager:** this component allows creation or scheduling of events or meetings. It communicates with *External Calendar Service* through the *Calendar API* to allow users to save events inside the S&C platform also on their personal calendars such as *Google Calendar* or *Apple Calendar*.

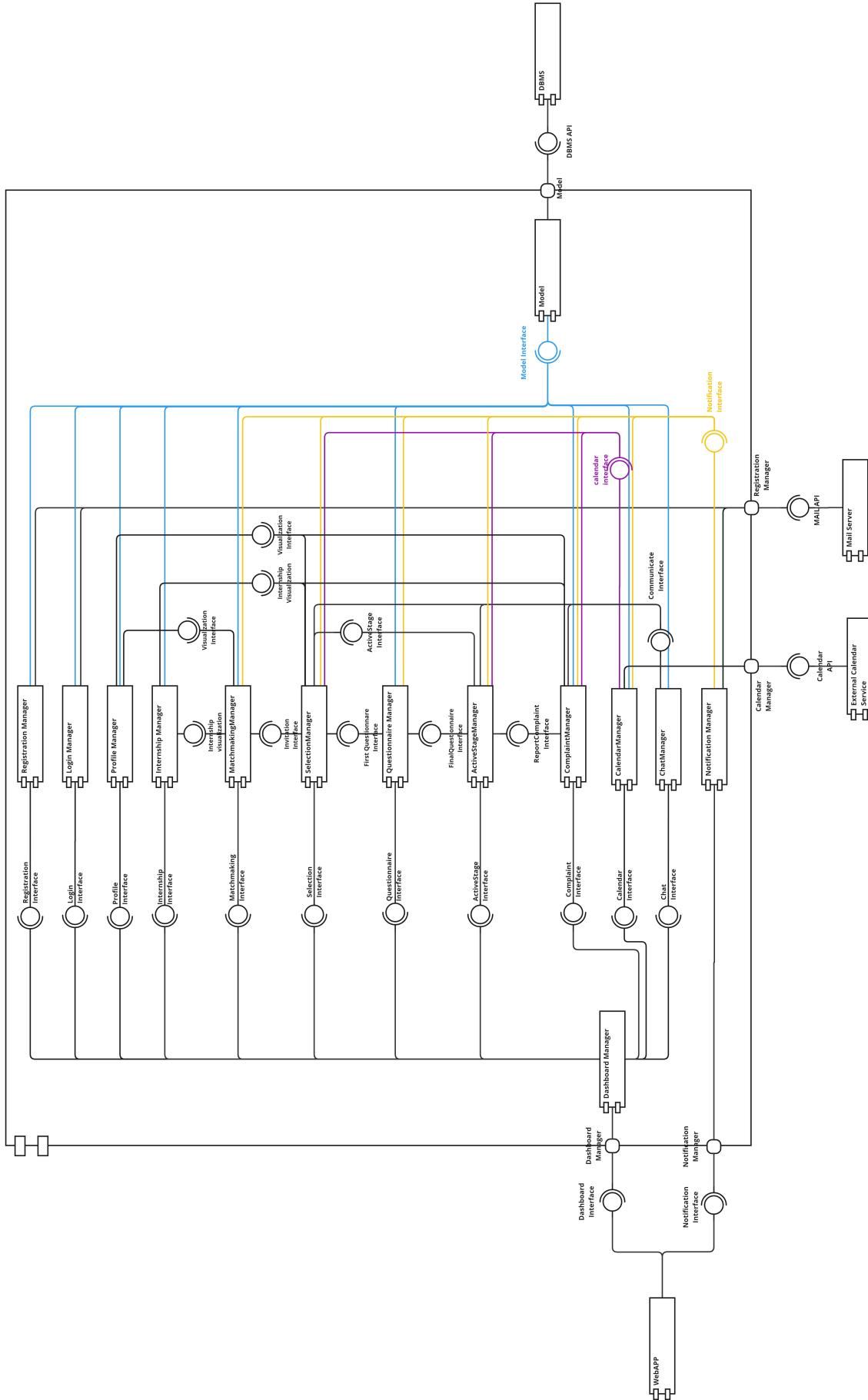


Figure 2.3: UML Component Diagram

## 2.2.2. Composite Structure Diagrams

### Registration Manager

The *Registration Manager* component is composed of five other sub-components that handles several processes. This component communicates with *Model* to add the users information to the DMBS and to check if the domain is already inside or not the database. *Registration Manager* also communicates with (*External*) *Mail Server* through the Mail API for the creation of the institutional profile and for notify students when their university profile becomes available (as discussed in the RASD).

- **CV Uploader:** it handles the uploading of cv files inside the platform. It checks that the files are of the right size and format. Lastly it "reads" inside the uploaded file and communicate to *Form Handler* to auto-fill all possible fields extracted from the cv.
- **Form Handler:** it is the component that, during the registration phase, allows the user to fill the fields about his/her profile inside the platform. It also checks that the mandatory fields are filled and it communicates to the *Domain Checker* for validation.
- **Domain Checker:** it is used to validate the email domain of the users. It checks if the domain exists or not in the database (at such it communicates with *Model*). If the domain does not exists the *Support Handler* comes into play.
- **Institution Profiler:** it sends the mail to the users for the creation of the company or university profile and allows the responsible tutors to actually create the profile for the company or university.

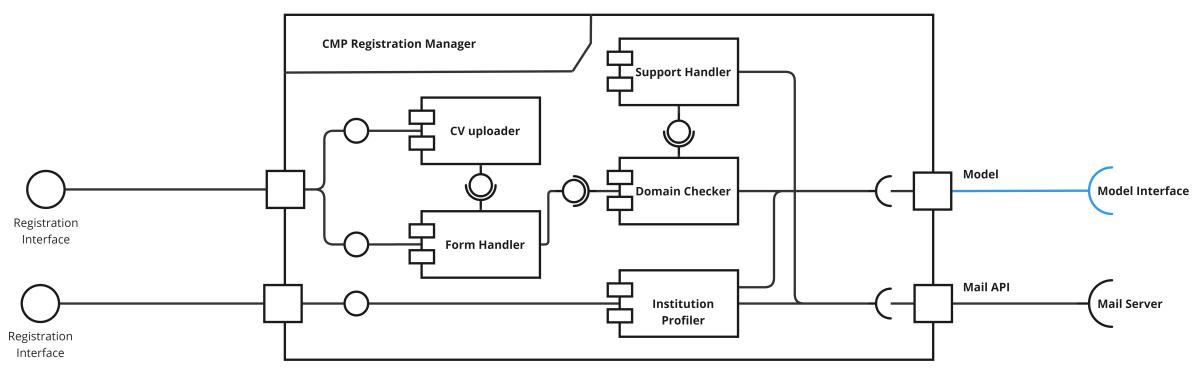


Figure 2.4: UML Component Diagram for *Registration Manager* Component.

### Profile Manager

This component is made up of three distinct sub-components, and all of those sub-components needs to interact with *Model* to read or modify the data saved in the DBMS.

- **Visualize Profile:** allows a (registered) user to search a profile on the S&C platform based on some conditions (filter or keyword). It could be a profile of a student,

company tutor, university tutor or either a company or university profile.

- **Modify Profile:** allows a user to modify his/her profile information, as such this sub-component interacts with *Model*.
- **Delete Profile:** allows a user to delete his/her profile from the platform. As for *Modify Profile*, this component interacts with *Model*. It is outside our scope to discuss here a particular process that happens when a responsible tutor deletes his/her profile, in this case there is a process about moving the "title" of responsible tutor from a user to another user, this process would need to interact with the *Notification Manager* and *Mail Server* to ensure safety.

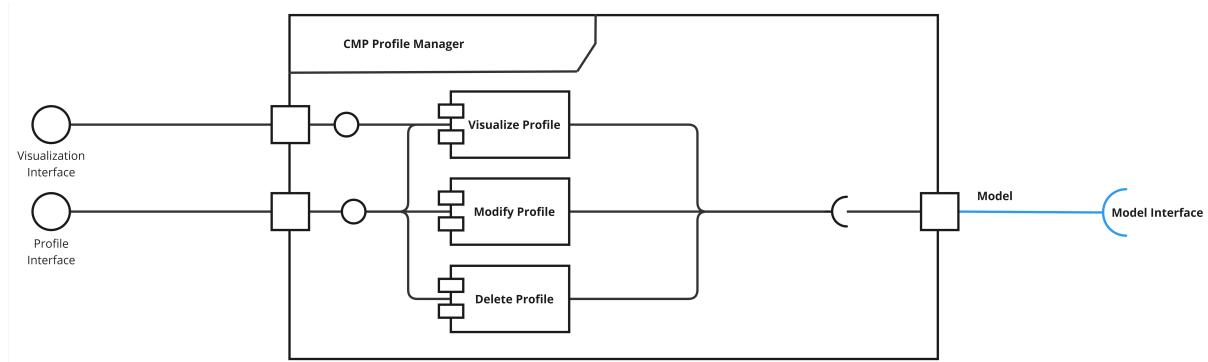


Figure 2.5: UML Component Diagram for *Profile Manager* Component.

## Internship Manager

This particularly complex component is made of six different sub-components.

- **Create/edit Internship:** this is the first step, it allows a category of users (company tutors) to create an internship on the platform or to modify the information of the internship.
- **Draft:** this component allows to save a draft of the internship, it is not needed that all the mandatory fields are completed. It communicates to *Model* to save the draft in the DBMS.
- **Complete Checker:** this component communicates with the two sub-components discussed before and it checks, before publishing an internship, that all the mandatory fields have been correctly filled in.
- **Improve Content:** this sub-component is a powerful tool that can be used to improve the content and description of the internship before publishing it on the platform.
- **Publish Internship:** this sub-component represent the final step and it is used to publish the internship and all its information on the platform to make it visible to all the users.

- **Visualize Internship:** this sub-component allows a user to visualize all the internship information that are available on the platform. As such it communicates with *Model* component.

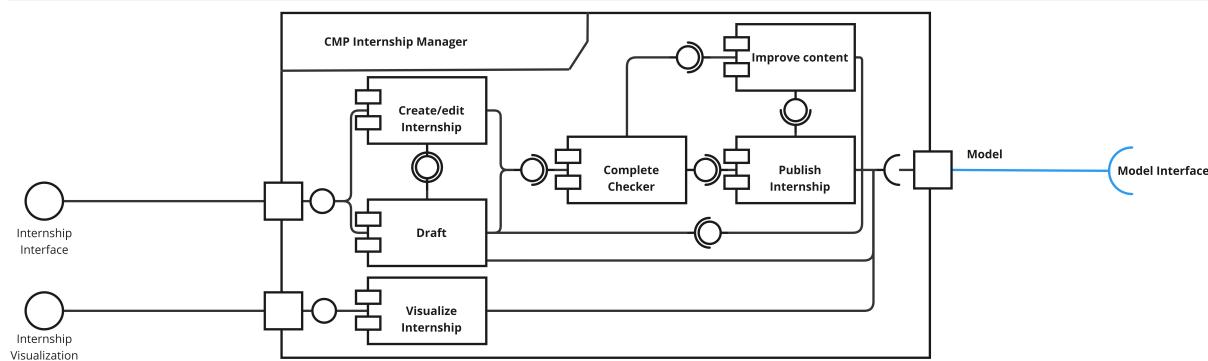


Figure 2.6: UML Component Diagram for *Internship Manager* Component.

## Matchmaking Manager

The *Matchmaking Manager* is made of four sub-components.

- **Recommend:** this component for students show the recommended internships, while for company tutors it shows recommended students. It communicates with *Internship Manager* and *Profile Manager*.
- **Invite:** it is used to invite a user for the selection manager. It also notify the invited user, so it communicates also with *Notification Manager*.
- **Search:** it is used to search the profile of a user, a company/university profile or the internship profile. Depending on the required profile it connects to *Internship Manager* or *Profile Manager* to visualize the specific profile.

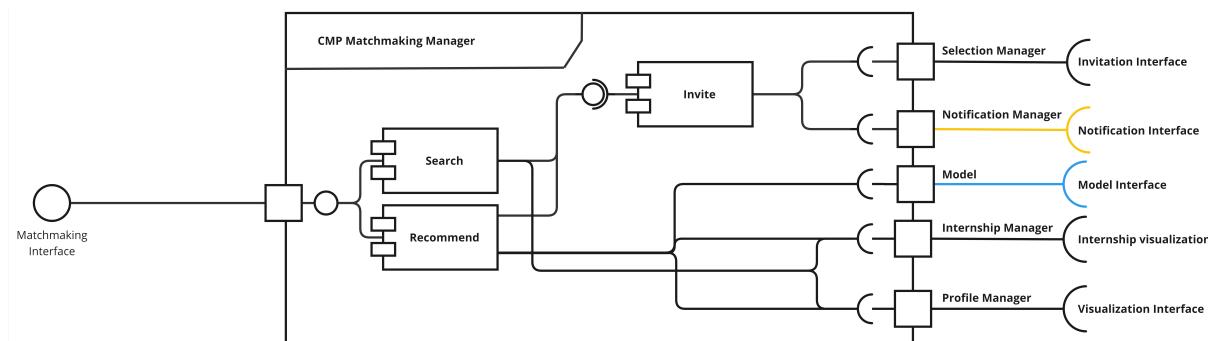


Figure 2.7: UML Component Diagram for *Matchmaking Manager* Component.

## Selection Manager

This is probably the most complex component since is made of seven sub-components and it communicates with many other components. *SelectionManager* focus on the processes

that happens after one users sended an initiation through the *MatchmakingManager*.

- **Evaluate Invitation:** this is the first sub-component inside *Selection Manager*. Inside this sub-component the user who invited another user (either a student that applied for an internship or a company tutor that invited a student) can see if the other user have seen or not the invitation. Inside *Evaluate Invitation* also the invited user can reject or accept the invitation.
- **Meeting Planner:** if the invitation was successful the *Meeting Planner* sub-component is used to plan the meeting and save it in the calendar thanks to *Calendar Interface*.
- **Communicate:** both user can also communicate to discuss further details.
- **Questionnaire:** after the meeting the company tutor use full up the first questionnaire to evaluate student's performance and suitability for the internship.
- **Student Decision:** after the first meeting, this sub-component allows the student to refuse, accept or organize another meeting with the company tutor to further discuss other details related to the internship.
- **Pick University Tutor:** if the student accept to go further in the internship process without rejecting it, this sub-component handles the process of picking a university tutor and communicate to him/her the student proposal. This sub-component checks that the university tutor belongs to the same university of the student and that he/she accept the student's invitation.
- **Final Decision:** this sub-component (as the name explains) is the final one and can make an internship starts or not. The company tutor is asked to finalize the internship, if he/she decides to finalize it all the other applications related to the same internship are interrupted and the process communicates to *ActiveStage Manager* component.

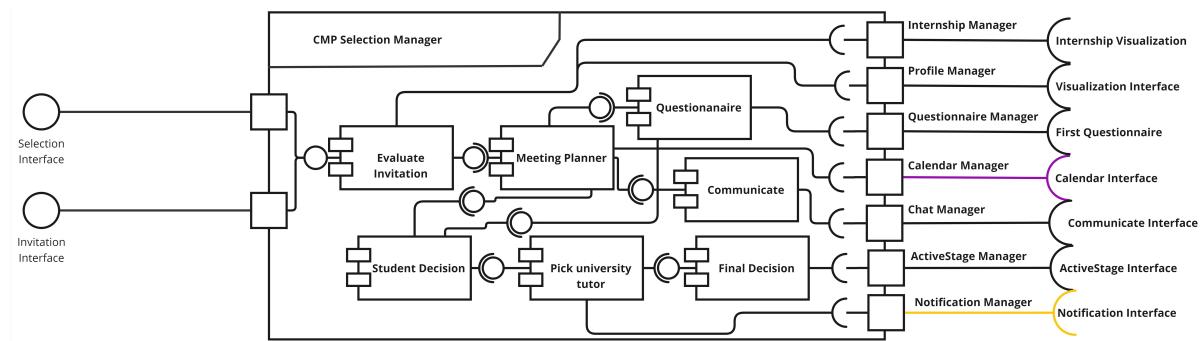


Figure 2.8: UML Component Diagram for *Selection Manager* Component.

## ActiveStage Manager

*ActiveStageManager* is the component that handles everything that can be done by users when an internship is active. It is composed of four different sub-components.

- **Final Evaluation:** it is used for the end of an internship. Each participant (student, company tutor and academic tutor) completes a dedicated questionnaire assessing various aspects of the internship and the other participants.
- **Communicate:** this sub-component allows communication with other users while the internship is ongoing.
- **Events Planner:** it is used to plan events such as meetings. It communicates with *Notification Manager* and *Calendar Manager*
- **Report Complaint:** it is used to report complaint related to the ongoing internship. The complaint than will be handled by another component called *Complain Manager*.

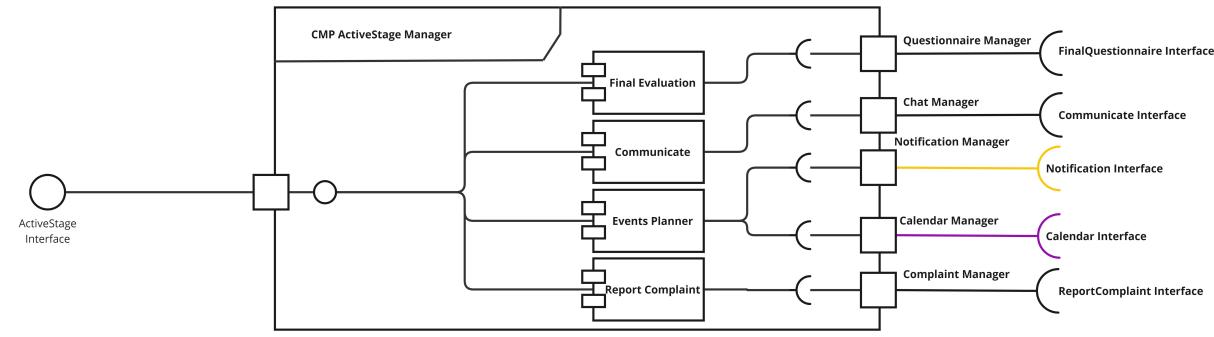


Figure 2.9: UML Component Diagram for *ActiveStage Manager* Component.

## Complaint Manager

This component is in charge of handling all the processes related to complaints. It is made of three different sub-components.

- **Complaint Information:** this sub-component handles the creation of the complaint itself. It handles also the filling process of the user (so that he/she can describe the issue) it also assess the severity of the issue and check that all the mandatory information about the complaint have been inserted. Lastly it save and submit the complaint and so this sub-component interacts with *Model* and *Notification Manager* to notify also the other users of the internship.
- **Manage Complaint:** this sub-component allows a user (university tutor) to manage the complaint. It allows a user to load the saved information about a complaint, suggest actions and communicate. Lastly it can terminate, suspend or resume an internship.
- **Plan Event:** it is the sub-component used for planning events for solving the complaint.

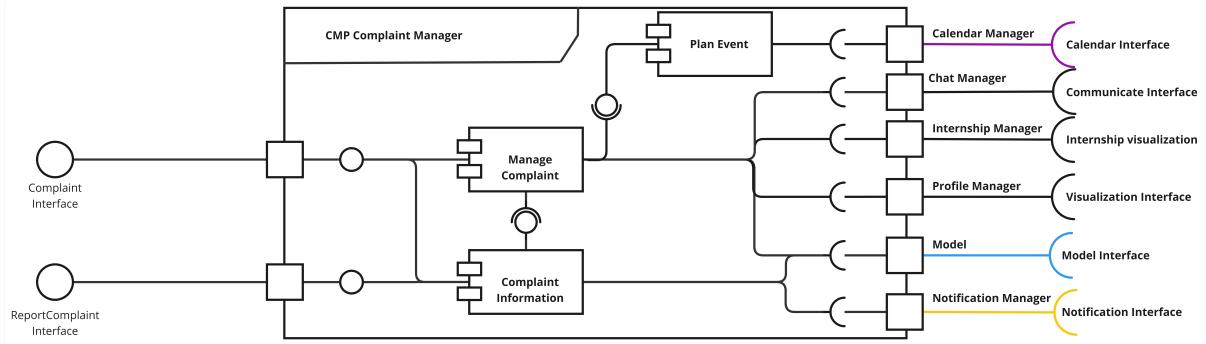


Figure 2.10: UML Component Diagram for *Complaint Manager* Component.

## Login Manager

Login Manager handles the login process for register Users. When a User attempts to log the *Dashboard Manger* forwards the request to the *Login Manager* through the login interface. This component is made of two different sub-components.

- **Login Process:** allows a registered user to log in inside his/her profile. It communicates to the *Model* to check if the password and mail match the data saved in the DBMS.
- **Password Recovery:** handles the process of recovering a forgotten password of the profile of a registered users. It communicates with *Model* to access the data (such as the answer to the security questions selected by the user during the registration phase) and to the *Mail Server* to send to the temporary password to his/her email.

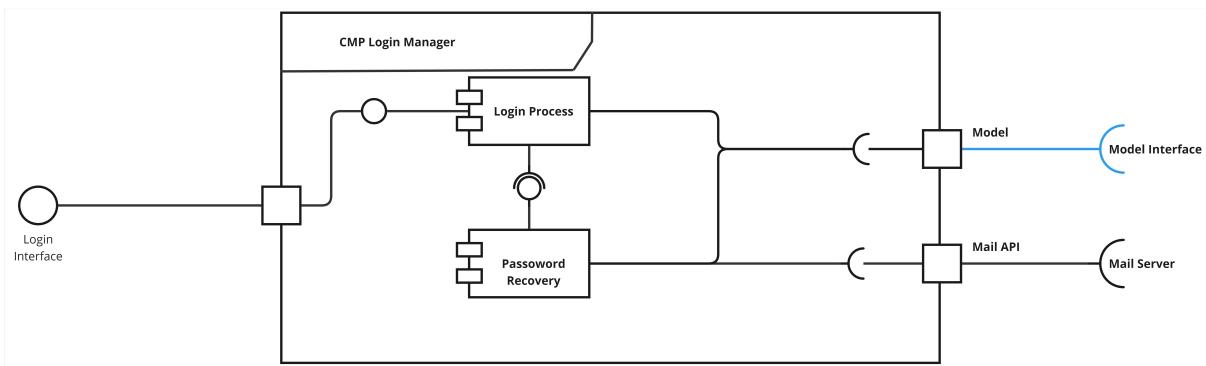


Figure 2.11: UML Component Diagram for *Login Manager* Component.

## 2.3. Deployment View

JACK O TITO: Però volevo aspettare che fosse pronto quello che abbiamo fatto prima di scrivere l'int

## 2.4. Runtime View

JACK : Però volevo aspettare che fosse pronto quello che abbiamo fatto prima di scrivere l'introduzione

## 2.5. Component Interfaces

JACK : Però volevo aspettare che fosse pronto quello che abbiamo fatto prima di scrivere l'introduzione.

## 2.6. Selected Architectural Styles and Patterns

JACK : Però volevo aspettare che fosse pronto quello che abbiamo fatto prima di scrivere l'introduzione

## 2.7. Other Design Decisions

JACK : Però volevo aspettare che fosse pronto quello che abbiamo fatto prima di scrivere l'introduzione.



# 3 | User Interface Design

The purpose of this chapter is to present the user interfaces designed for the system. These interfaces are crucial to provide an intuitive, efficient, and user-friendly experience for all stakeholders involved.

The design of these interfaces has already been extensively detailed in the RASD, so this chapter will not delve into repetitive discussions but will instead provide an organized overview of the interface categories. The interfaces are presented in chronological order of user interaction and grouped by their respective categories.

Indeed the chapter is structured into distinct sections, each corresponding to a specific category of functionality that the interfaces support:

- **Authentication: Registration and Login:** This section outlines the interfaces enabling user authentication, including the processes for registration and login with password recovery.
- **Homepage with Settings, Change Language, and Chatbot Assistance:** This section first introduces the homepage, accessible to all three types of users. From here, users can access customizable settings, language preferences, and chatbot support for guidance through dedicated screens.
- **Matchmaking:** This category focuses on the interfaces dedicated to connecting students and companies through internships, based on system recommendations or predefined criteria, ensuring personalized and efficient matchmaking.
- **Monitoring: Selection Process, Active Stages, and Questionnaires:** The monitoring interfaces include three tabs: Selection Process, guiding users to initiate an internship; Active Stages, tracking ongoing internships; and Questionnaires, gathering feedback from these two previous steps. In this section are also presented all the interfaces accessible from these tabs.
- **Calendar:** The calendar interfaces offer multiple views (daily, weekly, and monthly) and include tools for creating and viewing calendar events. These features are common and accessible to all users, enabling seamless management of events.
- **Messaging with Issues and Video-calls:** This part encompasses communication interfaces, supporting messaging, video calls, and issues reporting.

By categorizing the interfaces in this way, we aim to clarify their roles within the system and how they contribute to achieving the overarching objectives outlined in the RASD.

### 3.1. Authentication: Registration and Login

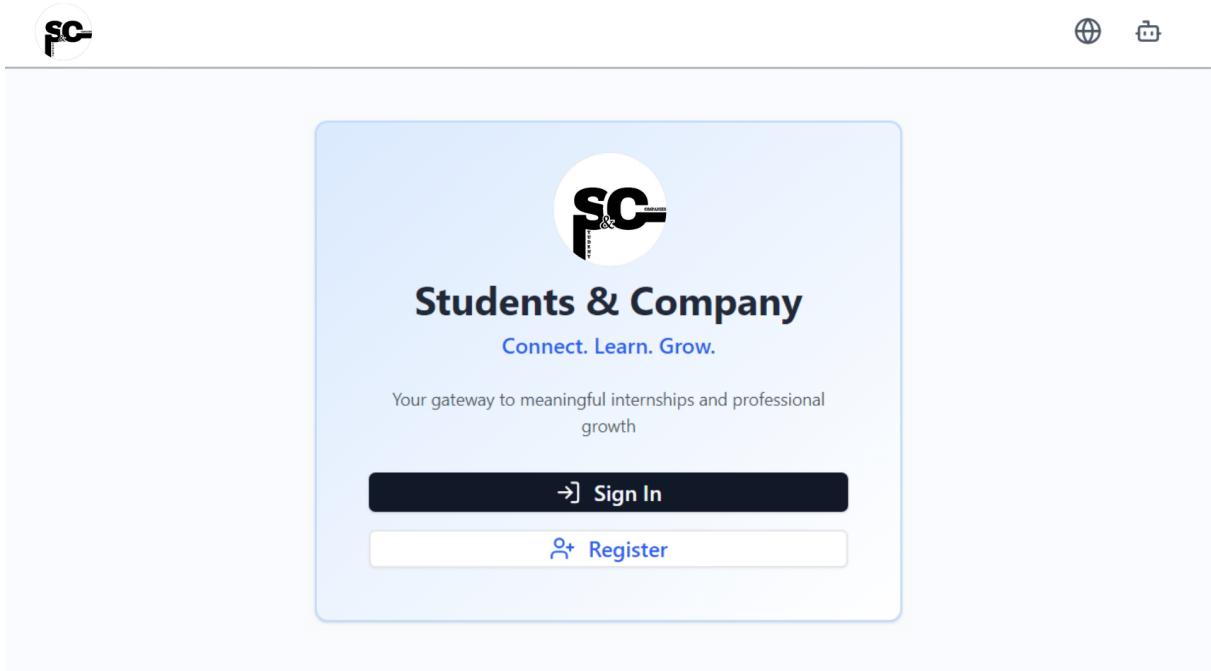


Figure 3.1: Authentication Interface of the Students & Companies platform.

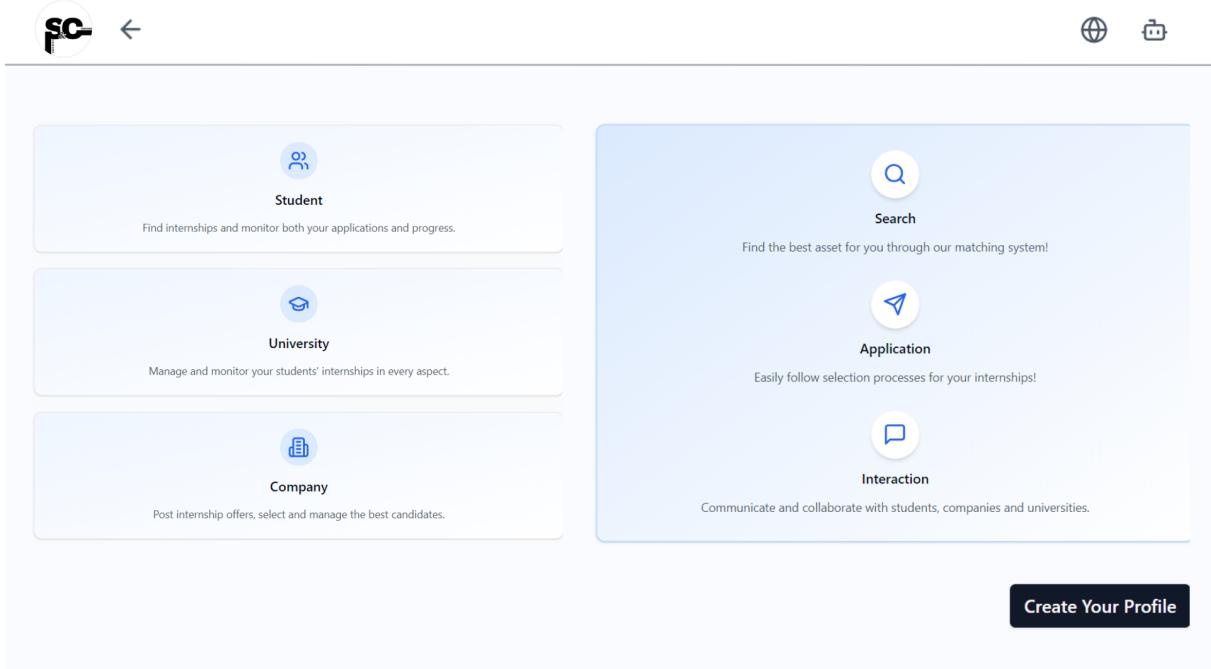


Figure 3.2: Registration - Introduction Interface.



## Upload Your CV

Upload your CV to facilitate profile creation. If you don't have a CV ready, you can proceed with manual registration.



Drag and drop your CV here

or

Browse Files

ⓘ Accepted formats: PDF, DOC, DOCX. Maximum file size: 5MB

Continue with CV

Continue without CV

Figure 3.3: Registration - Upload CV Interface.

The screenshot shows a registration form titled "Create Your Profile" with the sub-instruction "Fill in your profile details".

**Personal Information:**

- First Name: Enter your first name
- Last Name: Enter your last name

**Contact Information:**

- Phone Number: Enter your phone number
- LinkedIn Profile: Enter your LinkedIn URL
- Institutional Email: Enter your institutional email

**Professional Information:**

- Department: Select department
- Role: Select role
- Professional Biography: Describe your professional background and interests
- Certifications & Awards: List your certifications, awards, and recognitions
- Languages: Enter languages (comma separated)

**Security Settings:**

- Security Question: Choose a security question
- Security Answer: Enter your answer
- Password: Enter password
- Confirm Password: Confirm password

I accept the terms and conditions

Improve Content

**Continue**

Figure 3.4: Registration - Personal Profile Creation Interface.

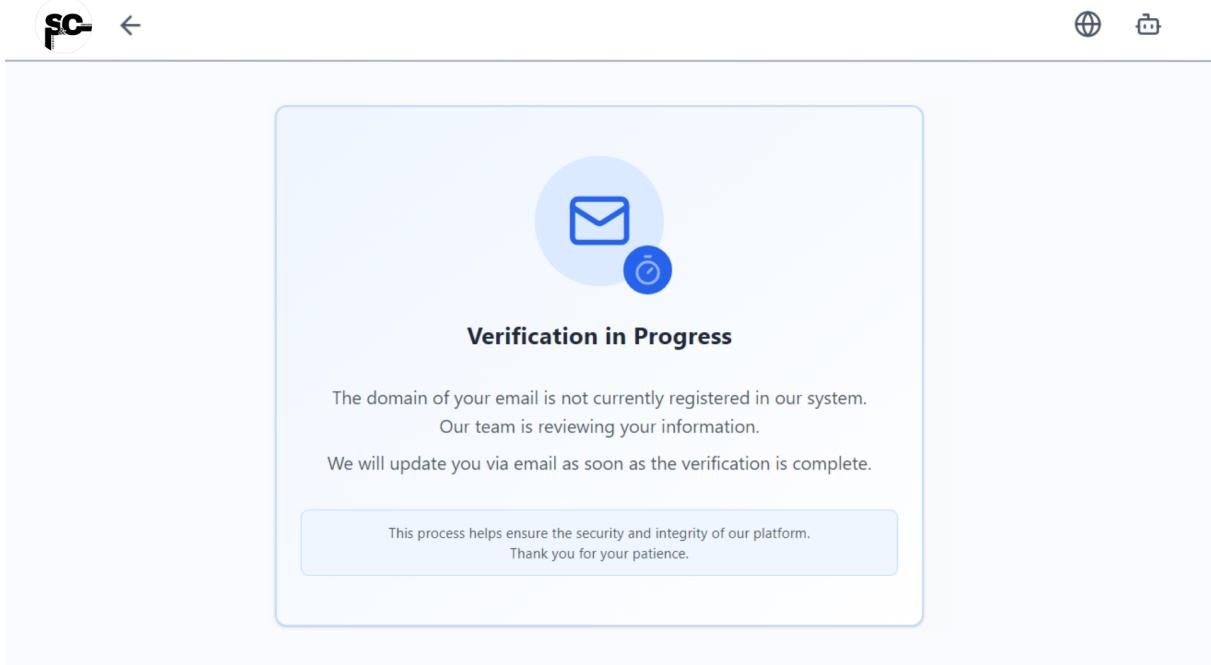


Figure 3.5: Registration - Verification in Progress Interface.

The screenshot shows a registration form for creating an institution profile. At the top, there is a header with a logo, a back arrow, and two small icons. Below the header, the title "Create Institution Profile" is displayed, followed by a sub-instruction "Complete the information below to register your institution".

The form is divided into several sections:

- Basic Information:** Contains a placeholder for a profile picture and a text input field for "Institution Name" with the placeholder "Enter official institution name".
- Contact Information:** Contains fields for "Phone Number" (placeholder "Enter phone number") and "Email" (placeholder "Enter administrative email"), as well as fields for "Website" (placeholder "Enter website URL") and "LinkedIn" (placeholder "Enter LinkedIn URL (optional)").
- Address:** Contains fields for "Street Address" (placeholder "Enter street address"), "City" (placeholder "Enter city"), "ZIP Code" (placeholder "Enter ZIP code"), and "Country" (placeholder "Enter country").
- Institution Details:** Contains dropdowns for "Sector" (placeholder "Select sector") and "Size" (placeholder "Select size"), and a text area for "Description" (placeholder "Describe your institution's mission, specializations, collaborations, etc.").
- Certifications & Awards:** Contains a text area for "List certifications, awards, and recognitions".
- Domain Management:** Contains sections for "Tutor Domains" (text input placeholder "Enter tutor domain (e.g., faculty.university.edu)"), "Add Another Tutor Domain" (button), "Student Domains" (text input placeholder "Enter student domain (e.g., students.university.edu)"), and "Add Another Student Domain" (button).

At the bottom of the form are two buttons: "Improve Content" (with a pencil icon) and a large black "Continue" button.

Figure 3.6: Registration - Institution Profile Creation Interface.

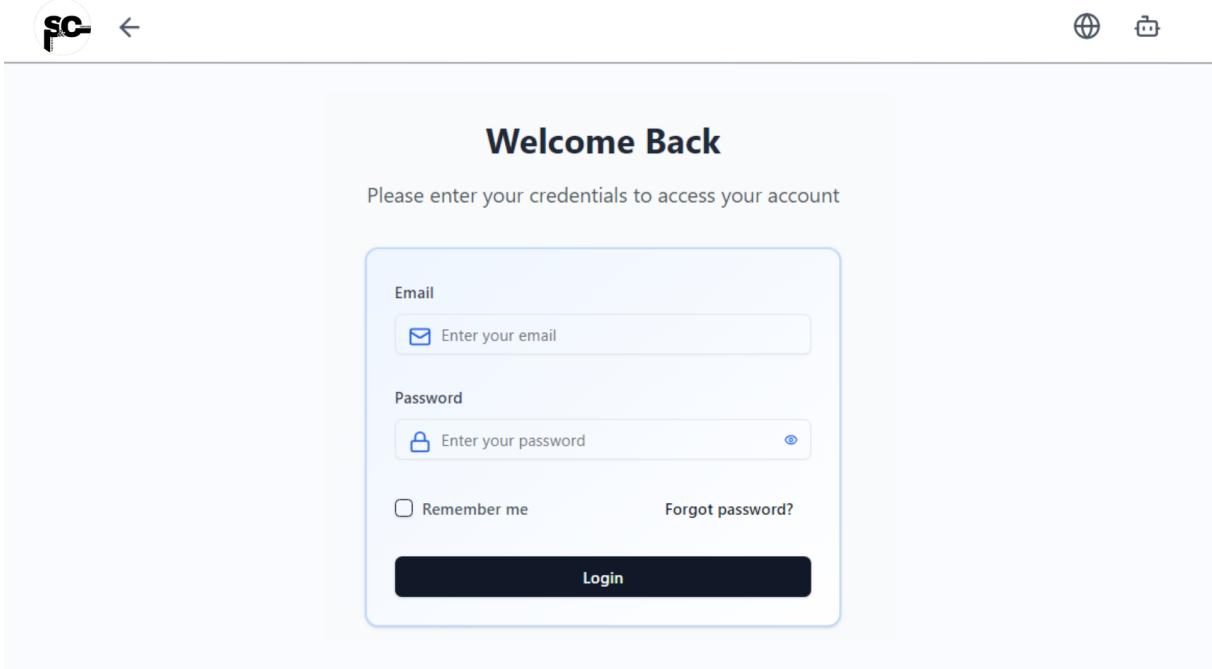


Figure 3.7: Login Interface of the Students & Companies platform.

The screenshot shows a password recovery form on a mobile application. At the top left is a circular profile icon with 'SC' and a back arrow. At the top right are a globe icon and a battery icon. The title 'Password Recovery' is centered at the top. Below it is a subtitle: 'Please enter your email and answer your security question to reset your password'. The form consists of several input fields and sections:

- Email**: A text input field with placeholder 'Enter your email'.
- Security Question**: A section containing a question: 'What was the name of your first pet?' with a help icon.
- Your Answer**: A text input field with placeholder 'Enter your answer'.
- Instructions**: A note: 'Instructions to reset your password will be sent to your email address' with a help icon.

A large black button at the bottom right says 'Send Recovery Instructions'.

Figure 3.8: Login - Password Recovery Interface.

### 3.2. Homepage with Settings, Change Language, and Chatbot Assistance

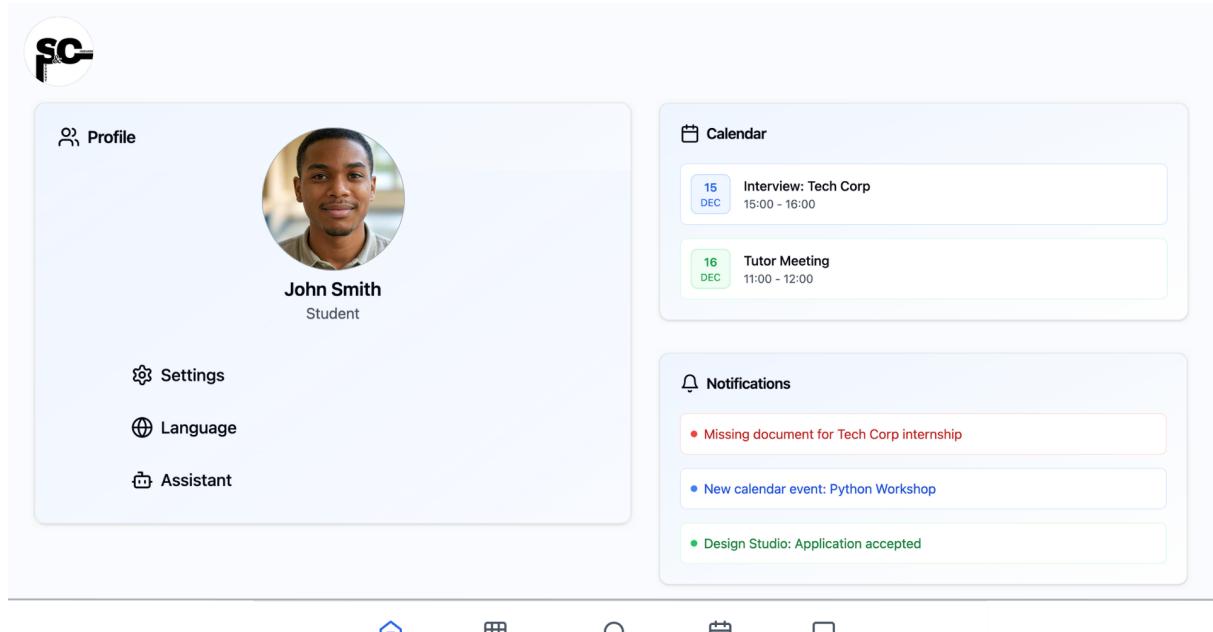


Figure 3.9: Homepage Interface for Students.

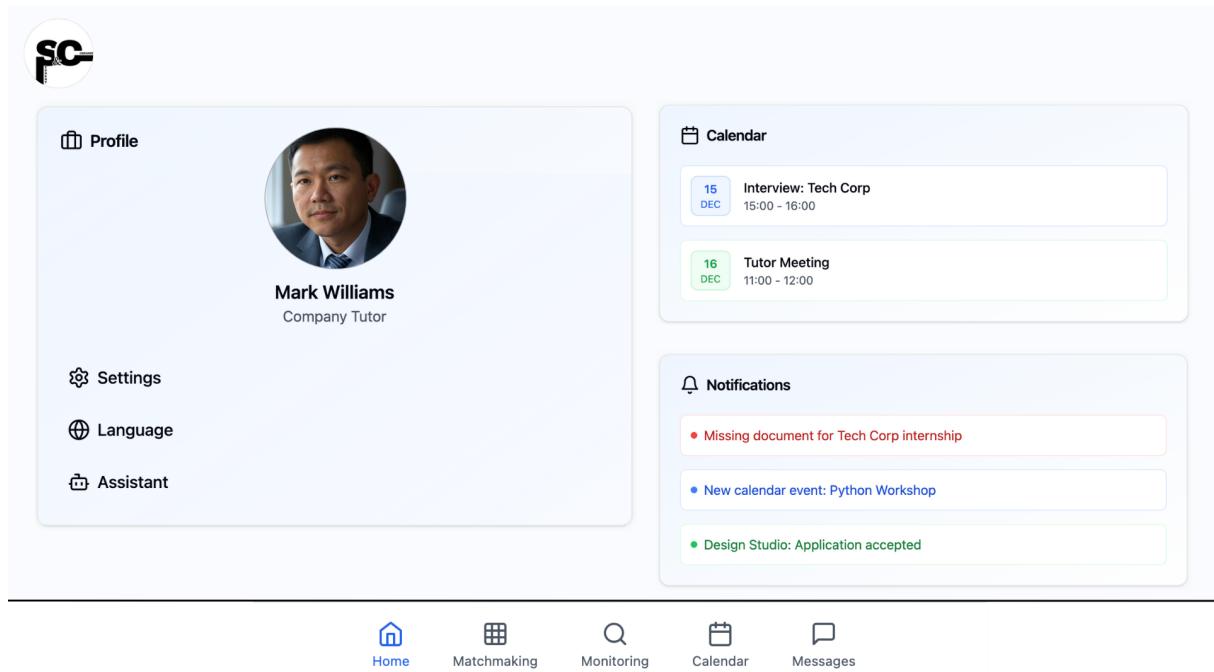


Figure 3.10: Homepage Interface for Company Tutors.

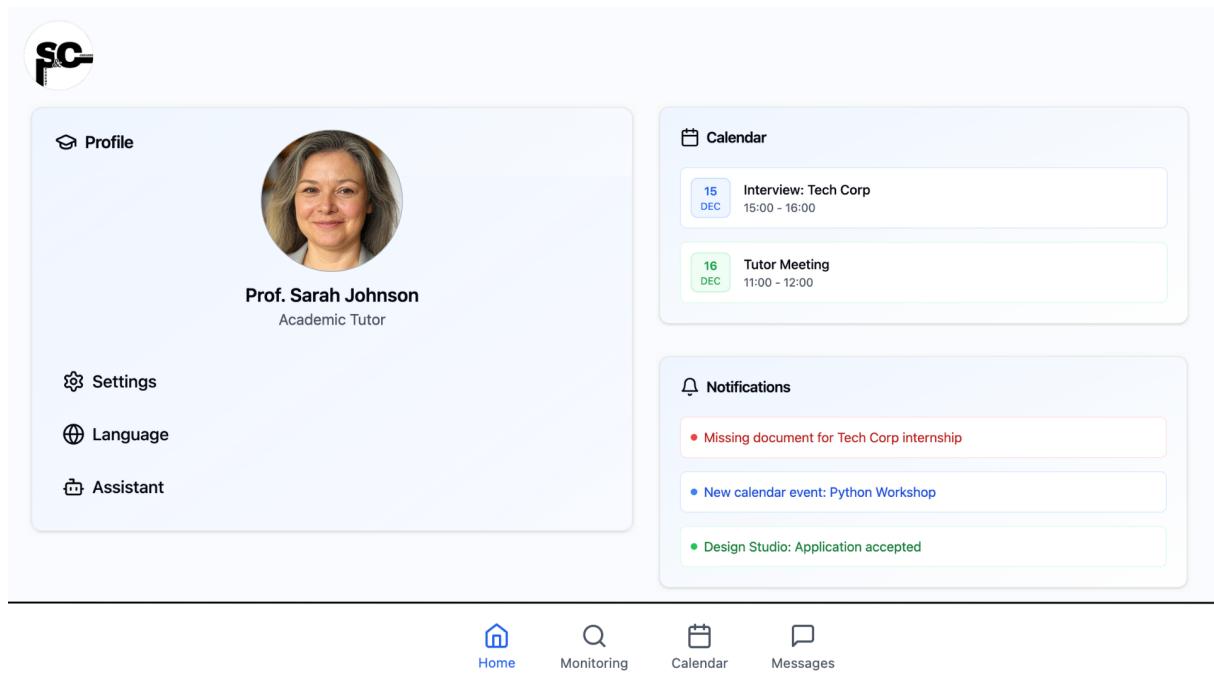


Figure 3.11: Homepage Interface for Academic Tutors.

The screenshot displays the Settings Interface, featuring two main sections: Personal Information and Institution Profile.

**Personal Information**

Manage your profile information visible to other users

**Profile Picture**  
Upload a new profile picture or update the existing one

**First Name** [Input Field]  
**Last Name** [Input Field]

**Administrative Phone** [Input Field]  
**Administrative Email** [Input Field]  
**LinkedIn Profile URL** [Input Field]

**Department** [Input Field]  
**Role** [Input Field]

**Biography**  
Tell us about your career, experiences, and interests...

**Certifications & Awards**  
+ Add New  
Teaching Certificate (2023) [List Item]  
X

**Languages**  
+ Add Language  
\* English X  
\* Italian X

**Institution Profile**

Manage your institution information visible to users

**Institution Logo**  
Upload a new logo or update the existing one

**Official Name**  
Enter institution name [Input Field]

**Administrative Phone** [Input Field]  
**Administrative Email** [Input Field]

Profile Institution Preferences

Figure 3.12: Settings Interface.

The screenshot displays the Settings interface of a platform. At the top, there's a header bar with a back arrow, a save icon, and a delete icon. Below the header, the LinkedIn Profile URL is listed. The main section contains fields for Street Address, City, Postal Code, Country, Operating Sector (University), and Size (Employees/Students) (1-50 employees). A large text area for Description is present, with placeholder text: "Describe your institution's mission, specializations, and collaborations...". Under Certifications & Awards, two entries are shown: ISO 9001 (2023) and Excellence in Education (2022). There are buttons for "+ Add New" and "x" to remove items. The Student Domains section shows student.university.edu with a "+ Add New" button and an "x" button. The Tutor Domains section shows staff.university.edu with a "+ Add New" button and an "x" button. At the bottom, there are tabs for Profile, Institution, and Preferences (which is selected). The System Preferences section allows customizing platform experience, featuring sections for Notifications (New Messages, Internship Updates, Calendar Events) and Theme (Light or Dark mode). Buttons at the bottom include Cancel, Save Changes (highlighted in blue), Transfer Management, Delete Institution, and Delete Account.

LinkedIn Profile URL

Street Address

City

Postal Code

Country

Operating Sector

Size (Employees/Students)

Description

Describe your institution's mission, specializations, and collaborations...

Certifications & Awards

+ Add New

ISO 9001 (2023)

Excellence in Education (2022)

Student Domains

+ Add New

student.university.edu

Tutor Domains

+ Add New

staff.university.edu

Profile Institution Preferences

**System Preferences**

Customize your platform experience

**Notifications**

New Messages

Internship Updates

Calendar Events

**Theme**

Light  Dark

Cancel  Transfer Management Delete Institution Delete Account

Figure 3.13: Settings Interface.

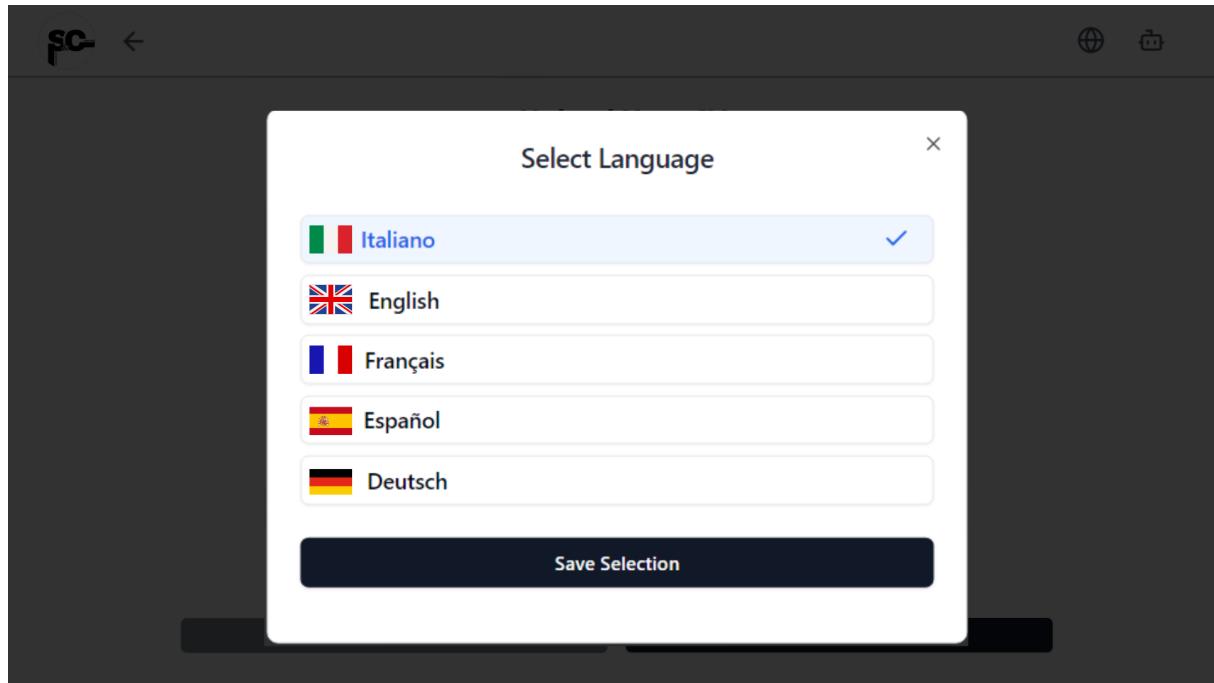


Figure 3.14: Change Language Interface.

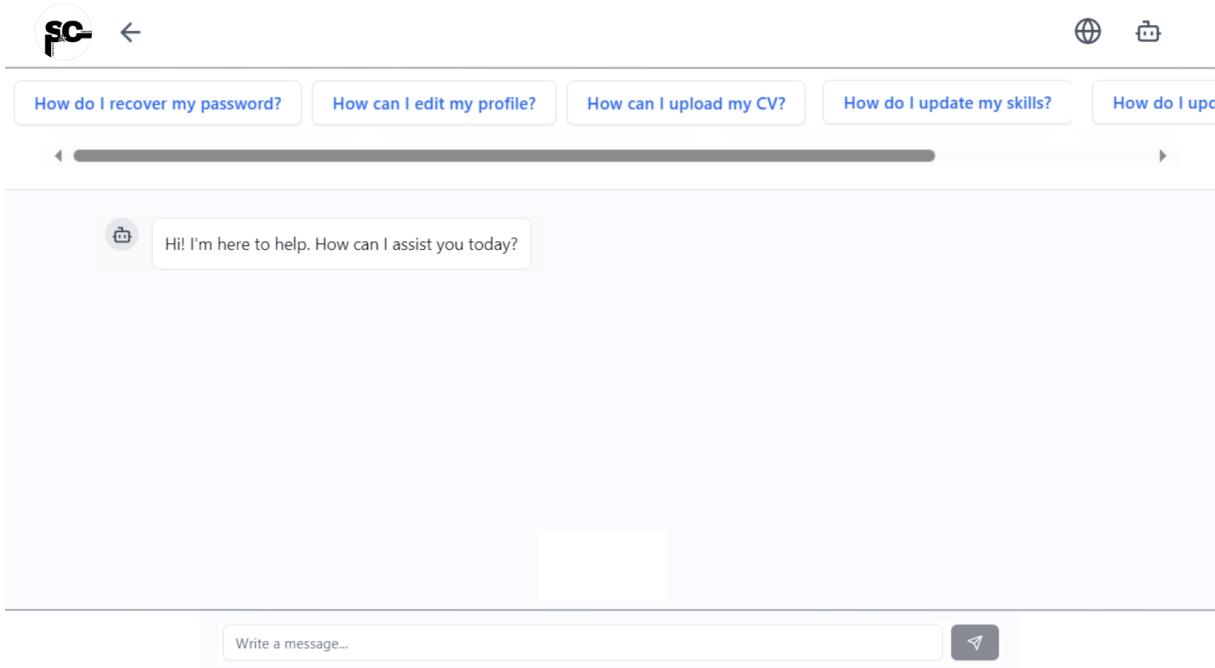


Figure 3.15: Chatbot Assistance Interface.

### 3.3. Matchmaking

The screenshot shows a student's matchmaking interface with three internship opportunities listed:

- Frontend Developer Intern** at Tech Solutions Inc.
  - Match % 95
  - Programming
  - 6 months
  - 1000€/month
  - Milan • Hybrid
- UX Design Intern** at Creative Studio
  - Match % 88
  - Design
  - 3 months
  - 800€/month
  - Rome • In-person
- Data Analysis Intern** at Data Insights Corp
  - Match % 82
  - Finance
  - 4 months
  - No compensation
  - Remote • Online

Below the list are navigation icons: Home, Matchmaking (highlighted), Monitoring, Calendar, and Message.

Figure 3.16: Matchmaking Interface for Students.

The screenshot shows a user interface for a matching service. At the top left is a logo consisting of a stylized 'S' and 'C'. To its right is the word 'Matching'. On the far right are three buttons: 'Clear All' (with an 'X' icon), 'Sort' (with a double arrow icon), and a downward-pointing triangle icon. Below this is a search bar with the placeholder 'Search internships...'. The main content area displays three profile cards, each with a blue header bar containing the name, a green 'Match' button with a percentage, and a 'Contact' button.

Profile	Recommended For	Match (%)
Marco Rossi	Frontend Developer Intern	95%
Laura Bianchi	UX Design Intern	88%
Giuseppe Verdi	Data Analysis Intern	82%

Each profile card includes a brief description, education background, certifications, languages, and a 'Contact' button. Below the profiles is a navigation bar with five items: Home, Matchmaking (which is selected and highlighted in blue), Monitoring, Calendar, and Message.

Figure 3.17: Matchmaking Interface for Company Tutors.

### 3.4. Monitoring: Selection Process, Active Stages and Questionnaires

The screenshot shows a user interface for monitoring selection processes. At the top, there is a logo consisting of 'SC' in a circle and the word 'Monitoring'. Below the logo, there are three tabs: 'Selection Process' (which is underlined), 'Active Stages', and 'Questionnaires'. The main content area displays three sections, each representing a different intern position:

- Frontend Developer Intern**: Company Tutor: John Smith, Tag: Received, Academic Tutor: Michael Brown, Status: Pending, Remove button.
- Backend Developer Intern**: Company Tutor: David Thompson, Tag: Sent, Academic Tutor: Not defined, Status: Pending, Remove button.
- UX Design Intern**: Company Tutor: [redacted], Tag: [redacted], Academic Tutor: [redacted], Status: [redacted], Remove button.

At the bottom of the interface, there is a navigation bar with five items: Home (with house icon), Matchmaking (with grid icon), Monitoring (with magnifying glass icon, currently selected), Calendar (with calendar icon), and Messages (with speech bubble icon).

Figure 3.18: Selection Process Interface for Students.

**Monitoring**

Selection Process   Active Stages   Questionnaires

Draft Stages   Create Stage

**Frontend Developer Intern**

Student	Tag	Academic Tutor	Status	Remove
Alice Johnson	Received	Michael Brown	✉	ⓧ

**Backend Developer Intern**

Student	Tag	Academic Tutor	Status	Remove
Emma Davis	Received	Not defined	✗	ⓧ

**UX Design Intern**

Student	Tag	Academic Tutor	Status	Remove

Home   Matchmaking   **Monitoring**   Calendar   Messages

Figure 3.19: Selection Process Interface for Company Tutors.

The screenshot shows a web-based application interface for managing student internships. At the top left is a logo consisting of a stylized 'S' and 'C'. To its right is the word 'Monitoring'. On the far right is a small downward-pointing triangle icon. Below the header is a navigation bar with three tabs: 'Selection Process' (which is underlined in blue, indicating it is active), 'Active Stages', and 'Questionnaires'. The main content area contains three separate sections, each representing a different internship program:

- Frontend Developer Intern**: This section lists one student, Alice Johnson, who is paired with a company tutor, John Smith. The status is marked as 'Matched' (green checkmark) and 'Accepted' (green checkmark). The deadline is '3 days left'. A 'Remove' button is also present.
- UX Design Intern**: This section lists one student, Robert Wilson, paired with Sarah Parker. The status is marked as 'Matched' (green checkmark) and 'Accepted' (green checkmark). The deadline is '2 days left'. A 'Remove' button is also present.
- Backend Developer Intern**: This section is currently empty, showing only the column headers for Student, Company Tutor, Status, Deadline, and Remove.

At the bottom of the interface are five navigation icons: 'Home' (house icon), 'Matchmaking' (grid icon), 'Monitoring' (magnifying glass icon, highlighted in blue), 'Calendar' (calendar icon), and 'Messages' (speech bubble icon).

Figure 3.20: Selection Process Interface for Academic Tutors.

**SC Monitoring**

[←](#)

**Template Selection (Optional)**

Choose a template

**Internship Title \***

e.g., Junior Backend Developer Intern

**Category \***

Select a category

**Description \***

Describe the internship role and responsibilities...

**Requirements \***

List required skills, qualifications, and experience...

**Duration \***

months

**Compensation \***

e.g., 800 EUR/month + benefits

**Work Mode \***

Select work mode

**Location**

Office address

**Application Deadline \***

gg/mm/aaaa

**Company Tutor \***

Select or enter tutor name

**Required Languages**

+ Add Language

Save as template for future use

[Improve Content](#) [Save Draft](#) [Publish](#)

---

[Home](#)  [Matchmaking](#)  [Monitoring](#)  [Calendar](#)  [Messages](#)

Figure 3.21: Selection Process - Internship Creation Interface for Company Tutors.



## Monitoring

Sort ↗



Internship Title	Last Modified	Status	Category	Actions
Frontend Developer Intern	Mar 20, 2024, 02:30 PM	Ready to Publish	Programming	
UX Research Assistant	Mar 19, 2024, 09:15 AM	Incomplete	Design	
Digital Marketing Specialist	Mar 18, 2024, 04:45 PM	Ready to Publish	Marketing	



Home



Matchmaking



Monitoring



Calendar



Messages

Figure 3.22: Selection Process - Drafts Interface for Company Tutors.



## Monitoring

[Selection Process](#)[Active Stages](#)[Questionnaires](#)

### UX Design Intern

Company Tutor  
Emily Davis

Academic Tutor  
Robert Wilson

Status  
Final Evaluation

Issues  
None

### Backend Developer Intern

Company Tutor  
David Thompson

Academic Tutor  
Michael Brown

Status  
Stage Start

Issues  
None

### Frontend Developer Intern

Company Tutor

Academic Tutor

Status

Issues

Home

Matchmaking

Monitoring

Calendar

Messages

Figure 3.23: Active Stages Interface for Students.

**Monitoring**

Selection Process    **Active Stages**    Questionnaires

**UX Design Intern**

Student	Academic Tutor	Status	Issues
Alice Johnson	Robert Wilson	<span>Final Evaluation</span>	None

**Backend Developer Intern**

Student	Academic Tutor	Status	Issues
Emma Davis	Michael Brown	<span>Stage Start</span>	None

**Frontend Developer Intern**

Student	Academic Tutor	Status	Issues

Home    Matchmaking    **Monitoring**    Calendar    Messages

Figure 3.24: Active Stages Interface for Company Tutors.

The screenshot shows the 'Monitoring' section of the 'Active Stages' interface. At the top, there are tabs for 'Selection Process', 'Active Stages' (which is selected), and 'Questionnaires'. Below the tabs, there are three cards representing different internships:

- UX Design Intern**: Student: Alice Johnson, Company Tutor: John Smith, Status: Scheduled Event: Weekly Review, Issues: Communication.
- Backend Developer Intern**: Student: Robert Wilson, Company Tutor: Sarah Parker, Status: Stage Start, Issues: None.
- Frontend Developer Intern**: Student: [not visible], Company Tutor: [not visible], Status: [not visible], Issues: [not visible].

At the bottom, there are navigation icons: Home (house icon), Matchmaking (grid icon), Monitoring (magnifying glass icon, highlighted in blue), Calendar (calendar icon), and Messages (speech bubble icon).

Figure 3.25: Active Stages Interface for Academic Tutors.



## Monitoring



### Stage Start

September 10, 2024

Stage started after company selection and student approval

### Planned Event: Progress Meeting

December 20, 2024

Next scheduled event

 Current state - Actions in progress

### Last Event

Expected January 2025

Final stage meeting

### Final Evaluation

Expected January 2025

Final assessment and questionnaires

### Stage End

Expected January 2025

Stage completion

### Status Change Information

States change automatically based on user actions in the system. An automatic notification is sent to all involved users when a state change occurs.



Home



Matchmaking



Monitoring



Calendar



Messages

Figure 3.26: Active Stages - States History Interface.



## Issue Management

**Unclear Project Requirements** Technical Skills

👤 Reported by: John Smith ⏰ 2024-03-15

**Description**

Student reports difficulties in understanding technical requirements for the assigned tasks, leading to implementation delays.

**Company Contact** **Student Contact**

📞 Call 💬 Chat 📞 Call 💬 Chat

ⓧ Terminate ⠚⠄ Suspend ▶ Resume

🏠 Home 🔍 Monitoring 📅 Calendar 💬 Messages

Figure 3.27: Active Stages - Issue Management Interface for Academic Tutors.

**SC Monitoring**



**Prof. Robert Anderson**

University of Technology  
Computer Science • Academic Tutor

**Contact Information**

+39 123 456 7890  
m.rossi@university.edu  
[LinkedIn Profile](#)

**Biography**

Professor of Computer Science with 15 years of experience in academic research and teaching. Specialized in Artificial Intelligence and Machine Learning, with a strong focus on mentoring graduate students and leading research projects.

**Certifications & Awards**

Advanced Machine Learning Certification  
Stanford University 2023

Best Paper Award - AI Conference 2023  
International AI Society 2023

**Languages**

Italian (Native) English (C1) French (B2)

**Curriculum Vitae**

[View CV](#)

**Reviews**

★ 5/5 15/01/2024  
Excellent mentor, very knowledgeable and supportive  
by Student

★ 5/5 20/01/2024  
Exceptional teaching methods and deep knowledge of the subject matter. Always available for consultation.  
by Graduate Student

**Home** **Matchmaking** **Monitoring** **Calendar** **Messages**

Figure 3.28: Selection Process/Active Stages - Personal Profile Visualization Interface.

The screenshot displays the SC Monitoring application's interface for viewing an institution's profile. At the top, there is a header with the SC logo and the word "Monitoring". Below the header, the institution's logo is shown, followed by the name "Tech Solutions International" and its industry category, "Information Technology".

The main content area is divided into several sections:

- Contact Information:** This section contains four input fields with icons: a phone icon for "+1 (555) 123-4567", an envelope icon for "admin@techsolutions.com", a globe icon for "www.techsolutions.com", and a LinkedIn icon for "LinkedIn Profile".
- Location:** This section shows the institution's address: "123 Innovation Avenue, Silicon Valley, 94025, United States".
- Institution Size:** This section indicates the number of employees: "500-1000 employees".
- About:** This section provides a brief description of the institution: "Tech Solutions International is a leading provider of innovative software solutions, specializing in enterprise applications and cloud services. With a strong focus on research and development, we collaborate with top universities and have established ourselves as pioneers in AI-driven solutions."
- Achievements:** This section lists three awards:
  - ISO 27001 Information Security Certification** (2024)
  - Best Workplace Innovation Award** (2023)
  - Top 50 Tech Companies Recognition** (2023)

At the bottom of the page, there is a navigation bar with five items: Home, Matchmaking, Monitoring (which is highlighted in blue), Calendar, and Messages.

Figure 3.29: Selection Process/Active Stages - Institution Visualization Interface.

The screenshot shows the 'Monitoring' section of a web application. At the top, there's a header with the 'Monitoring' tab selected. Below the header, a job listing for a 'Junior Backend Developer Intern' is displayed. The listing includes details like company ('Tech Solutions Ltd'), location ('Milan, Italy'), duration ('6 months'), compensation ('800 EUR/month'), and work mode ('Hybrid (2 days remote)'). A 'Description' section outlines the role's responsibilities, mentioning Node.js and PostgreSQL. A 'Requirements' section lists skills such as Computer Science, Node.js, REST APIs, Git, database concepts, and problem-solving. The 'Company Tutor' is listed as Marco Bianchi, a Senior Backend Developer. Language requirements show Italian (B2 Required) and English (B2 Required). The 'Application Deadline' is set for August 15, 2024. A prominent 'Apply Now' button is at the bottom. The footer features navigation links for Home, Matchmaking, Monitoring (which is highlighted in blue), Calendar, and Messages.

**Monitoring**

**Junior Backend Developer Intern**

Tech Solutions Ltd • Milan, Italy

**Duration**  
6 months

**Compensation**  
800 EUR/month

**Work Mode**  
Hybrid (2 days remote)

**Description**

Join our backend development team and gain hands-on experience in building scalable web applications. You'll work with modern technologies like Node.js and PostgreSQL, participating in the development of REST APIs and microservices architecture.

**Requirements**

- Computer Science or related field student
- Basic knowledge of Node.js and REST APIs
- Familiarity with Git version control
- Understanding of database concepts
- Good problem-solving skills

**Company Tutor**

Marco Bianchi  
Senior Backend Developer

**Required Languages**

\*A Italian (B2 Required) \*A English (B2 Required)

**Application Deadline**

August 15, 2024

**Apply Now**

**Home** **Matchmaking** **Monitoring** **Calendar** **Messages**

Figure 3.30: Selection Process/Active Stages - Internship Visualization Interface.



## Monitoring

Selection Process   Active Stages   **Questionnaires**

First Meeting Questionnaires   Final Evaluations

Company Tutor	Internship Title	Meeting Date	Questionnaire
John Smith ↗	Web Development Intern ↗	15/03/2024	<a href="#">View Questionnaire</a>
Sarah Wilson ↗	UX Design Intern ↗	14/03/2024	<a href="#">View Questionnaire</a>



Home



Matchmaking



Monitoring



Calendar



Messages

Figure 3.31: First Meeting Questionnaires Interface for Students.



## Monitoring

Selection Process   Active Stages   **Questionnaires**

[First Meeting Questionnaires](#)   [Final Evaluations](#)

Student Name	Internship Title	Meeting Date	Questionnaire
Alice Johnson	Web Development Intern	15/03/2024	<a href="#">View Questionnaire</a>
Bob Smith	UX Design Intern	14/03/2024	<a href="#">View Questionnaire</a>



Home



Matchmaking



Monitoring



Calendar



Messages

Figure 3.32: First Meeting Questionnaires Interface for Company Tutors.



## Monitoring



### ✓ First Meeting Evaluation

- Complete the following questionnaire to evaluate the candidate. All responses will be kept confidential and used exclusively for the selection process.

General impression of the student

Poor

Fair

Good

Excellent

Did the student show interest and motivation for the role?

Poor

Fair

Good

Excellent

Would you recommend this student for the internship?

Poor

Fair

Good

Excellent



Figure 3.33: First Meeting Questionnaire Creation Interface.



## Monitoring



Was the student clear in communicating their experience and skills?

Poor

Fair

Good

Excellent

Did the student understand the internship requirements?

Poor

Fair

Good

Excellent

What are the student's key strengths?

Enter your observations here...

What areas need improvement?

Enter your observations here...

How suitable is the student for this role?

1 - Not at all

2 - Slightly

3 - Moderately

4 - Very much

5 - Perfectly

Save Evaluation



Home



Matchmaking



Monitoring



Calendar



Messages

Figure 3.34: First Meeting Questionnaire Creation Interface.



## Monitoring



### Student Evaluation Results

First meeting evaluation results for the student's internship application.

General impression of the student

Excellent

Was the student clear in communicating their experience and skills?

Good

Did the student understand the internship requirements?

Excellent

Did the student show interest and motivation for the role?

Excellent

Would you recommend this student for the internship?

Good

How suitable is the student for this role?

4 - Very much

Student's key strengths

Strong technical background in relevant technologies. Shows great enthusiasm for learning and adapting to new challenges. Excellent problem-solving approach demonstrated during the discussion.

Areas needing improvement

Could benefit from more practical experience in team projects.  
Communication skills are good but could be more concise.



Home



Matchmaking



Monitoring



Calendar



Messages

Figure 3.35: First Meeting Questionnaire Visualization Interface.



## Monitoring

[Selection Process](#)[Active Stages](#)[Questionnaires](#)[First Meeting Questionnaires](#)[Final Evaluations](#)

### Final Evaluations

Internship	Period	Student Evaluation	Company Tutor Evaluation	Academic Tutor Evaluation
Web Development Internship ↗	Jan-Mar 2024	<a href="#">View Evaluation</a>	<a href="#">View Evaluation</a>	<a href="#">View Evaluation</a>
UX Design Internship ↗	Feb-Apr 2024	<a href="#">View Evaluation</a>	<a href="#">View Evaluation</a>	Pending

### Reviews Received

**John Smith**

Company Tutor



Shows great initiative and technical aptitude. Quickly adapted to our development workflow and contributed valuable code to the project.

[Web Development Internship ↗](#)**Sarah Wilson**

Company Tutor



Demonstrated strong understanding of UX principles and user research methods. Consistently delivered high-quality design solutions.

[UX Design Internship ↗](#)**Dr. Michael Brown**

Academic Tutor



Excellent integration of academic knowledge with practical skills. The student has shown remarkable



Home



Matchmaking



Monitoring



Calendar



Messages

Figure 3.36: Final Evaluations Interface for Students.



## Monitoring

[Selection Process](#)[Active Stages](#)[Questionnaires](#)[First Meeting Questionnaires](#)[Final Evaluations](#)

### Final Evaluations

Internship	Period	Student Evaluation	Company Tutor Evaluation	Academic Tutor Evaluation
Web Development Internship	Jan-Mar 2024	<a href="#">View Evaluation</a>	<a href="#">View Evaluation</a>	<a href="#">View Evaluation</a>
UX Design Internship	Feb-Apr 2024	<a href="#">View Evaluation</a>	<a href="#">View Evaluation</a>	Pending

### Reviews Received

**Alice Johnson**

Student



Mr. Smith has been an excellent mentor throughout my internship. His guidance and support have been invaluable for my professional growth.

[Web Development Internship](#)**Bob Smith**

Student



Dr. Wilson provided great mentorship and industry insights. Her feedback was always constructive and helped me improve my skills.

[UX Design Internship](#)**Dr. Michael Brown**

Academic Tutor



Excellent collaboration with the company tutor. The mentorship provided was perfectly aligned with our academic goals.

[Web Development Internship](#)

Home



Matchmaking



Monitoring



Calendar



Messages

Figure 3.37: Final Evaluations Interface for Company Tutors.

**Final Evaluations**

Internship	Period	Student Evaluation	Company Tutor Evaluation	Academic Tutor Evaluation
Web Development Internship	Jan-Mar 2024	<a href="#">View Evaluation</a>	<a href="#">View Evaluation</a>	<a href="#">View Evaluation</a>
UX Design Internship	Feb-Apr 2024	<a href="#">View Evaluation</a>	<a href="#">View Evaluation</a>	Pending

**Reviews Received**

**Alice Johnson** ★★★★★  
Student  
Dr. Brown has been extremely helpful in connecting academic concepts with practical work. His guidance helped me understand the theoretical foundations of my tasks.  
[Web Development Internship](#)

**Bob Smith** ★★★★☆  
Student  
Regular feedback sessions with Dr. Brown were very insightful. He helped me understand how academic principles apply to real-world UX challenges.  
[UX Design Internship](#)

**John Smith** ★★★★★  
Company Tutor  
Excellent collaboration with Dr. Brown. His academic oversight ensured the internship aligned well with the student's educational goals.  
[Web Development Internship](#)

**Sarah Wilson** ★★★★★  
Company Tutor  
Dr. Brown provided valuable academic perspective and maintained great communication throughout the internship period.  
[UX Design Internship](#)

**Home** **Matchmaking** **Monitoring** **Calendar** **Messages**

Figure 3.38: Final Evaluations Interface for Academic Tutors.



## Monitoring



### ⌚ Final Stage Evaluation

Internship Title  
**Web Development Intern**

Company Tutor  
**John Smith**

Student  
**Alice Johnson**

Duration  
**Jan 15, 2024 - Apr 15, 2024**

ⓘ Your responses to this questionnaire will be private and visible only to the parties involved in the internship.

How would you rate the support received from your company tutor during the internship?

1 - Very Poor

2 - Poor

3 - Fair

4 - Good

5 - Very Good

6 - Excellent

Were your objectives and responsibilities clearly defined?

1 - Very Poor

2 - Poor

3 - Fair

4 - Good

5 - Very Good

6 - Excellent



Home



Matchmaking



Monitoring



Calendar



Messages

Figure 3.39: Final Evaluation Creation Interface.



## Monitoring



Has the internship contributed to your professional growth?

1 - Very Poor

2 - Poor

3 - Fair

4 - Good

5 - Very Good

6 - Excellent

Which aspects of the internship did you enjoy the most?

Share your positive experiences...

Do you have any suggestions for improving the internship?

Share your suggestions for improvement...

- ⓘ This review will be visible on the user's profile. Please ensure your feedback accurately reflects your experience.

Rate your overall experience



Write a review for your company tutor

Share your thoughts about their competencies, behavior, and qualities...

Submit Final Evaluation



Home



Matchmaking



Monitoring



Calendar



Messages

Figure 3.40: Final Evaluation Creation Interface.

## SC Monitoring

←

### ⌚ Final Evaluation Results

Internship Title  
**Web Development Intern**

Company Tutor  
**John Smith**

Student  
**Alice Johnson**

Duration  
**Jan 15, 2024 - Apr 15, 2024**

How would you rate the support received from your company tutor during the internship?

**5 - Very Good**

Were your objectives and responsibilities clearly defined?

**6 - Excellent**

Has the internship contributed to your professional growth?

**5 - Very Good**

Which aspects of the internship did you enjoy the most?

The hands-on experience with modern web development technologies was invaluable. The team was very welcoming and I had the opportunity to work on real projects. The regular feedback sessions with my tutor were particularly helpful in understanding my progress and areas for improvement.

Do you have any suggestions for improving the internship?

It would be beneficial to have more structured documentation about the initial setup process. Perhaps a welcome package for new interns with all the necessary information would streamline the onboarding process.

### Company Tutor Review



John has been an exceptional mentor throughout my internship. His expertise and patience in guiding me through complex technical challenges helped me grow significantly as a developer. He consistently provided constructive feedback and was always available when I needed support. His approach to mentoring fostered both my technical skills and professional development.

Home

Matchmaking

Monitoring

Calendar

Messages

Figure 3.41: Final Evaluation Visualization Interface.

### 3.5. Calendar

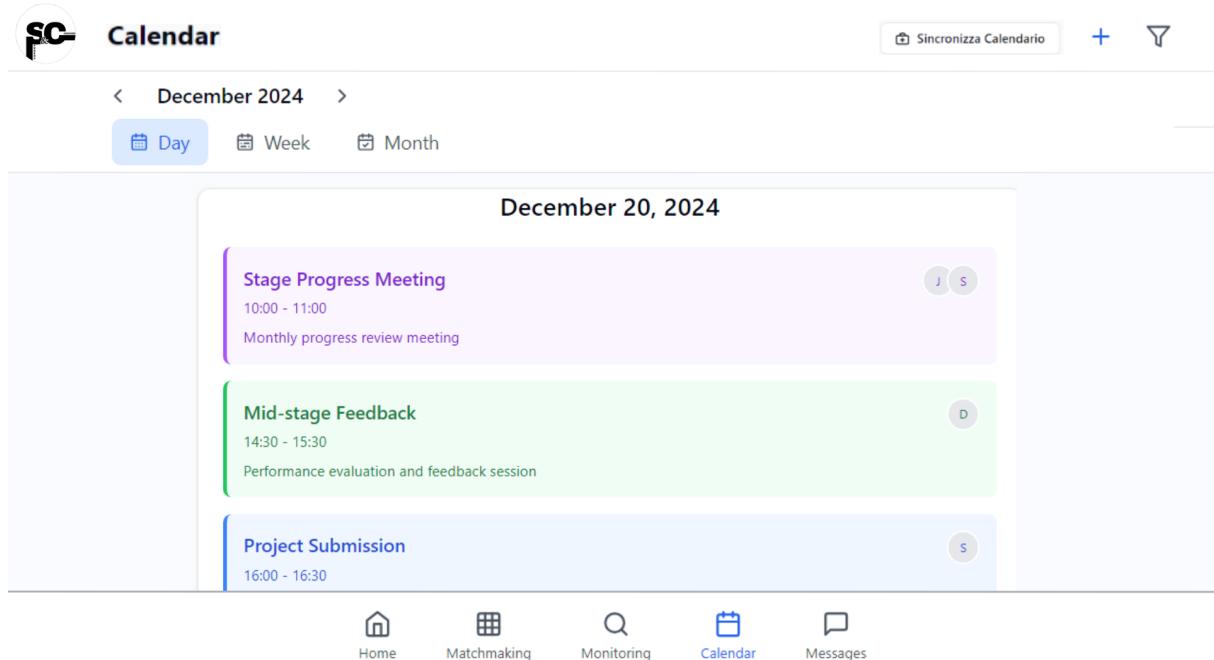


Figure 3.42: Calendar in "Day" Visualization Interfaces.

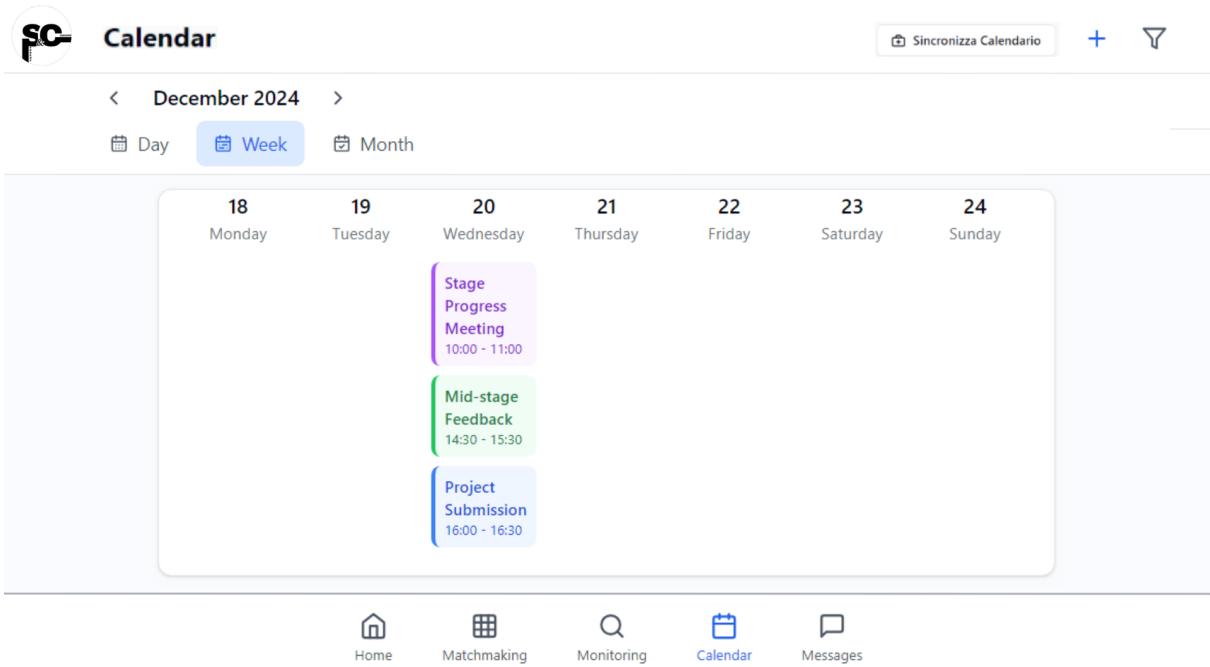


Figure 3.43: Calendar in "Week" Visualization Interface.

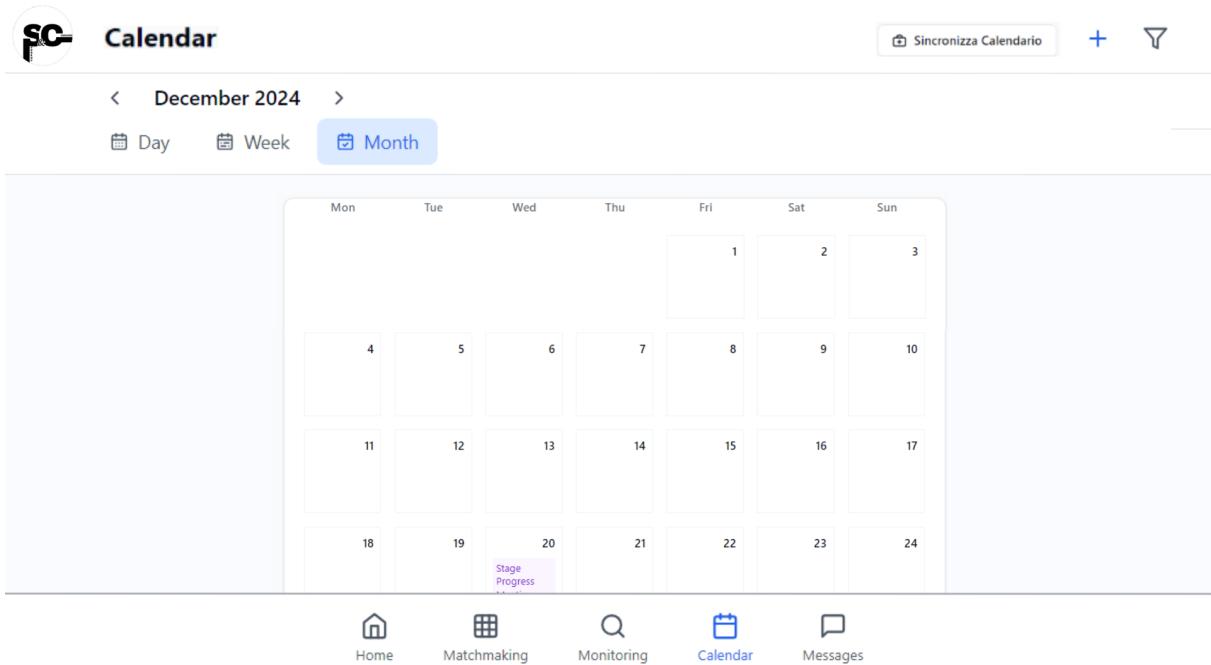


Figure 3.44: Calendar in "Month" Visualization Interface.



## Calendar



### Create New Event

#### Event Title

#### Date

#### Time

#### Category

#### Participants

John Smith  Sarah Johnson

#### Description

#### Virtual Meeting



#### Location

#### Home Notification



#### Last Event

This will trigger the final evaluation process



Home



Matchmaking



Monitoring



Calendar



Messages

Figure 3.45: Calendar - Event Creation Interface.



## Calendar



### Stage Progress Meeting

Meeting

⌚ December 20, 2024

10:00 - 11:00

▢ Virtual Meeting

[Join Meeting](#)

[Open Chat](#)

- Monthly progress review meeting to discuss the advancement of the frontend development internship project. We will review the completed tasks, address any challenges, and plan the next sprint objectives.

⌚ This is marked as the last event of the stage

#### 👤 Participants

John Smith

Company Tutor

✓ Present

Sarah Johnson

Academic Tutor

✓ Present

David Thompson

Student

⌚ Waiting

Emily Wilson

Administrator

✗ Not Present

[Confirm Attendance](#)

[Edit Event](#)



Home



Matchmaking



Monitoring



Calendar



Messages

Figure 3.46: Calendar - Event Visualization Interface.

### 3.6. Messaging with Issues and Video-calls

The screenshot shows a messaging interface with the following details:

- Header:** SC Messages, Report Issue button, + button, and a search icon.
- Filter Buttons:** Students, Companies, Universities.
- Messages:**
  - James Wilson:** Technical Skills, 10:30 AM
  - Tech Company Ltd.:** Internship Program Discussion, 2:00 PM  
HR Team, Student Affairs, 3 Students
  - Sarah Johnson:** Documentation update for the new semester, 9:15 AM
- Bottom Navigation:** Home, Matchmaking, Monitoring, Calendar, Messages (highlighted).

Figure 3.47: Messaging Interface.



## Report Issue



### Issue Details

Issue Title \*

Enter a clear and concise title

Category \*



#### Communication

Issues related to misunderstandings, lack of clarity, or communication difficulties between parties



#### Technical Skills

Difficulties encountered due to lack of technical skills or inability to solve specific technical problems



#### Time Management

Issues related to missed deadlines, delays, or difficulties in meeting established timelines



#### Interpersonal Problems

Conflicts or friction between participants, personal relationship difficulties that affect collaboration effectiveness



#### Other

For any other category not listed above

Detailed Description \*

Describe the issue in detail, including specific examples and context

Minimum 50 characters

0 characters

Save and Submit



Home



Matchmaking



Monitoring



Calendar



Messages

Figure 3.48: Messaging - Report Issue Interface for Students and Company Tutors.

The screenshot shows a messaging interface with the following details:

- Header:** SC Messages, James Wilson, a red notification circle with a white exclamation mark, and a refresh icon.
- Section Header:** **⚠ Technical Skills Platform Issue**
- Text:** Student reported difficulties with the technical skills assessment platform. Unable to submit completed assignments due to unresponsive submission button.
- Text:** Category: Technical Skills In Progress
- Message 1:** System, 09:00 AM, **Issue created: Technical Skills Platform Issue**
- Message 2:** James Wilson, 09:15 AM, I'm unable to submit my completed assignments through the platform. The submit button appears to be unresponsive.
- Message 3:** Dr. Sarah Parker, 09:30 AM, Thank you for reporting this. I'll check with the technical team. Could you please provide your browser version and operating system?
- Input Field:** Type a message...
- Buttons:** Microphone, Send (blue arrow), and a small circular icon with a dot.
- Bottom Navigation:** Home (house icon), Matchmaking (grid icon), Monitoring (magnifying glass icon), Calendar (calendar icon), and Messages (speech bubble icon).

Figure 3.49: Messaging - Issue Chat Interface.

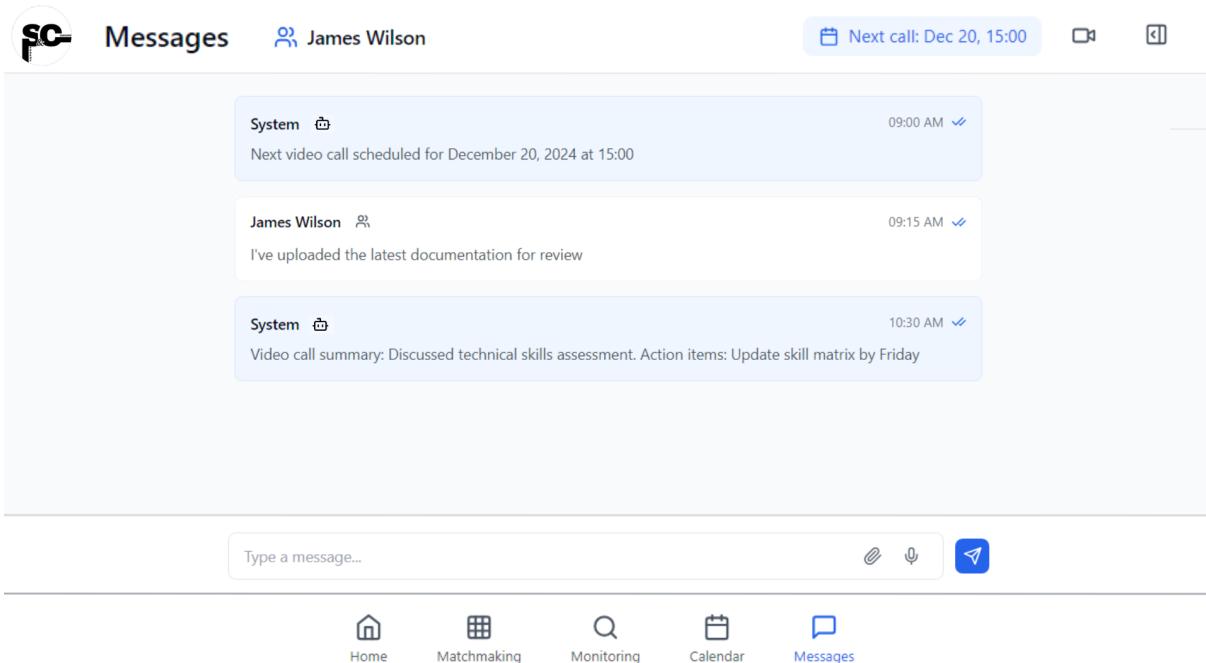


Figure 3.50: Messaging - Video-call Chat Interface.



## Create a New Chat



### Chat Participants

Search users by name, role, or category...

#### Suggested Users



**John Smith**

Company Tutor • Tech Corp

Add



**Dr. Sarah Wilson**

Academic Tutor • University

Add



**Alice Johnson**

Student • Computer Science

Add

#### Who can add participants?

- Only the creator  
 All members

### Chat Details

#### Chat Name \*

Enter chat name

#### Description (Optional)

Add a brief description...

Cancel

Create Chat



Home



Matchmaking



Monitoring



Calendar



Messages

Figure 3.51: Messaging - Chat Creation Interface.

# 4 | Requirements Traceability



# 5 | Implementation, Integration And Test Plan

## 5.1. Overview

## **5.2. Implementation Plan**

### **5.2.1. Features Identification**

### **5.3. Component Integration and Testing**

## 5.4. System Testing

## 5.5. Additional Specifications on Testing



# 6 | Effort Spent

In this section you will include information about the number of hours each group member has worked for this document.

**Acquadro Patrizio**

chapter	Effort (In hours)
1	5.5
2	25
3	37.5
4	4

**Colosio Giacomo**

chapter	Effort (In hours)
1	5
2	26.5
3	35.5
4	4

**Drugman Tito Nicola**

chapter	Effort (In hours)
1	7.5
2	17.5
3	19
4	27



## Bibliography

- [1] Three-tier architecture overview, 2024. URL <https://docs.aws.amazon.com/whitepapers/latest/serverless-multi-tier-architectures-api-gateway-lambda/three-tier-architecture-overview.html>.
- [2] U. o. W.-M. Center for research on College-Workforce Transitions (CCWT). National survey of college internships (nsci) 2021 report, 2021. URL [https://ccwt.wisc.edu/wp-content/uploads/2022/04/CCWT\\_NSCI-2021-Report.pdf](https://ccwt.wisc.edu/wp-content/uploads/2022/04/CCWT_NSCI-2021-Report.pdf).
- [3] T. T. Jane Hamilton. Tougher than ever to secure place on sought after internships, 2024. URL <https://www.thetimes.com/article/tougher-than-ever-to-secure-place-on-sought-after-internships-8rrfj30rm>.



# A | Appendix A

## A.1. Grammar

### A.1.1. Examples

### A.1.2. Parsing and Evaluation

## A.2. Disclaimer

# List of Figures

2.1	Three tier architecture. See [1]. . . . .	9
2.2	Three tier architecture. See [1]. . . . .	11
2.3	UML Component Diagram . . . . .	16
2.4	UML Component Diagram for <i>Registration Manager</i> Component. . . . .	17
2.5	UML Component Diagram for <i>Profile Manager</i> Component. . . . .	18
2.6	UML Component Diagram for <i>Internship Manager</i> Component. . . . .	19
2.7	UML Component Diagram for <i>Matchmaking Manager</i> Component. . . . .	19
2.8	UML Component Diagram for <i>Selection Manager</i> Component. . . . .	20
2.9	UML Component Diagram for <i>ActiveStage Manager</i> Component. . . . .	21
2.10	UML Component Diagram for <i>Complaint Manager</i> Component. . . . .	22
2.11	UML Component Diagram for <i>Login Manager</i> Component. . . . .	22
3.1	Authentication Interface of the Students & Companies platform. . . . .	30
3.2	Registration - Introduction Interface. . . . .	31
3.3	Registration - Upload CV Interface. . . . .	32
3.4	Registration - Personal Profile Creation Interface. . . . .	33
3.5	Registration - Verification in Progress Interface. . . . .	34
3.6	Registration - Institution Profile Creation Interface. . . . .	35
3.7	Login Interface of the Students & Companies platform. . . . .	36
3.8	Login - Password Recovery Interface. . . . .	37
3.9	Homepage Interface for Students. . . . .	38
3.10	Homepage Interface for Company Tutors. . . . .	39
3.11	Homepage Interface for Academic Tutors. . . . .	40
3.12	Settings Interface. . . . .	41
3.13	Settings Interface. . . . .	42
3.14	Change Language Interface. . . . .	43
3.15	Chatbot Assistance Interface. . . . .	44
3.16	Matchmaking Interface for Students. . . . .	45
3.17	Matchmaking Interface for Company Tutors. . . . .	46
3.18	Selection Process Interface for Students. . . . .	47
3.19	Selection Process Interface for Company Tutors. . . . .	48
3.20	Selection Process Interface for Academic Tutors. . . . .	49
3.21	Selection Process - Internship Creation Interface for Company Tutors. . . . .	50
3.22	Selection Process - Drafts Interface for Company Tutors. . . . .	51
3.23	Active Stages Interface for Students. . . . .	52
3.24	Active Stages Interface for Company Tutors. . . . .	53
3.25	Active Stages Interface for Academic Tutors. . . . .	54

3.26 Active Stages - States History Interface. . . . .	55
3.27 Active Stages - Issue Management Interface for Academic Tutors. . . . .	56
3.28 Selection Process/Active Stages - Personal Profile Visualization Interface. .	57
3.29 Selection Process/Active Stages - Institution Visualization Interface. . . . .	58
3.30 Selection Process/Active Stages - Internship Visualization Interface. . . . .	59
3.31 First Meeting Questionnaires Interface for Students. . . . .	60
3.32 First Meeting Questionnaires Interface for Company Tutors. . . . .	61
3.33 First Meeting Questionnaire Creation Interface. . . . .	62
3.34 First Meeting Questionnaire Creation Interface. . . . .	63
3.35 First Meeting Questionnaire Visualization Interface. . . . .	64
3.36 Final Evaluations Interface for Students. . . . .	65
3.37 Final Evaluations Interface for Company Tutors. . . . .	66
3.38 Final Evaluations Interface for Academic Tutors. . . . .	67
3.39 Final Evaluation Creation Interface. . . . .	68
3.40 Final Evaluation Creation Interface. . . . .	69
3.41 Final Evaluation Visualization Interface. . . . .	70
3.42 Calendar in "Day" Visualization Interfaces. . . . .	71
3.43 Calendar in "Week" Visualization Interface. . . . .	72
3.44 Calendar in "Month" Visualization Interface. . . . .	73
3.45 Calendar - Event Creation Interface. . . . .	74
3.46 Calendar - Event Visualization Interface. . . . .	75
3.47 Messaging Interface. . . . .	76
3.48 Messaging - Report Issue Interface for Students and Company Tutors. . . .	77
3.49 Messaging - Issue Chat Interface. . . . .	78
3.50 Messaging - Video-call Chat Interface. . . . .	79
3.51 Messaging - Chat Creation Interface. . . . .	80

## List of Tables

