U.Porto Yellow Pages

Capstone Project Final Report

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1 Introduction

1.1 Framework

This report provides an overview of a group project undertaken at University of Porto with the aim of showing the methodology, implementation, findings, and analysis of the project. It will also provide insights into the lessons learned, the project's impact, and potential areas for further exploration.

This project, accompanied by UPdigital/U.Porto, aimed to address a significant problem within the U.Porto community: the lack of a centralized platform that displays all the events (such as seminars and workshops) and services offered by or at U.Porto. The motivation behind this project came from the realization that it can be difficult for individuals to be aware of the number of services available at U.Porto, and there is currently no way to know how many seminars or conferences were held last year.

Our team chose this topic to push ourselves as web developers while also helping the U.Porto community as a whole. Through this project, we focused on creating an easy and accessible platform for the U.Porto community so that there is an easier access to information and promoting awareness of the services and events provided by or within the university. With this platform we aim to enhance the engagement, increase community participation and make sure that everyone benefits from the remarkable opportunities given by U.Porto.

1.2 Objectives and expected results

The main aims of the project were:

- Develop a portal accessible to all users, whether registered or not, that shows all the services and events available at U.Porto.
- Create a system that allows registered users to make requests of an event or to a service. The users should be able to see the list and state of their previous requests.

- Create appropriate forms for each of the services with their specific needs, such as virtual machine requests, website creation, grid access, and others. This will simplify and speed up the request process, making sure that the users only provide the necessary information for the service they want.

We were able to implement these and other requests, shown in section 3.1, in a functional and intuitive way, hoping that this project will contribute to greater accessibility, transparency and efficiency in the divulgation and use of services and events offered by U.Porto.

1.3 Report Structure

The report is structured into several sections, each focusing on different aspects of the project.

In **Introduction** we provide an overview of the report, including the purpose and the objectives of the project.

In **Methodology used and main activities developed** we explain the methodology and approach used to complete the project. We also discuss the stakeholders of the project and the roles of each element in the group. Finally, we provide an overview of the activities performed over the project timeline, including relevant events, like meetings with the client, and the respective deliverables if applicable.

In **Solution Development** we provide a detailed account of the project's development process. We start by discussing the requirements set by the stakeholders, defining their expectations and needs for the project. Next, we go into the architecture adopted for the solution, showing the overall structure, the key component, and how they are connected. We also highlight the specific technologies and tools used on this project. Then, we elaborate on the solutions developed to complete the requirements, providing examples to demonstrate the practical usage of the used solution. Lastly, we elaborate on the validation process used to ensure the quality of the project.

In **Conclusions** we summarize the results achieved and the contributions of each member of the group, the lessons we learned and ways to improve

the project.

2 Methodology used and main activities undertaken

2.1 Methodology used

Iterative development was the approach taken, with sprints lasting 2 weeks and weekly follow-up meetings. For version control and collaboration, we used GitLab[3],for organization, we used Notion[9] and for deliverables we used Google Drive[1].

2.2 Interested parties, roles and responsibilities

2.2.1 Project team

Name	Roles
Daniela Tomás	Full-stack Developer
Diogo Nunes	Project Manager/Back-end Developer
Miguel Tavares	Front-end Developer
Pedro Correia	Back-end Developer

Table 1: Team members

Daniela Tomás Full-stack Developer

As a full-stack developer, Daniela possesses a versatile skill set encompassing both front-end and back-end development. With her proficiency in both Laravel[5] and Bootstrap[4], she played a pivotal role in designing and implementing robust and efficient solutions for the project.

Diogo Nunes Project Manager/Back-end Developer

As the project manager and back-end developer, Diogo takes charge of overseeing the project's progress and coordinating the efforts of the team. He also made significant contributions to the project´s back-end.

Miguel Tavares Front-end Developer

With a focus on front-end development, Miguel brings creativity and expertise in user interface implementation. His skills in HTML, CSS, and JavaScript contribute to creating visually appealing and user-friendly interfaces, enhancing the overall user experience.

Pedro Correia Back-end Developer

As a back-end developer, Pedro's technical prowess and problem-solving abilities are instrumental in building the project's server-side infrastructure.

2.2.2 Stakeholders

Stakeholders are essential to the success of the project as they have a vested interest in its outcomes and are directly impacted by them. Being a UP-digital project, it involved a diverse stakeholder team consisting of multiple individuals. However, Rodolfo Matos served as the stakeholder team's main point of contact and representative.

Throughout the project's lifecycle, Rodolfo Matos played a crucial role in gathering requirements, brainstorming, providing valuable feedback, and facilitating effective communication. Weekly follow-up meetings were instrumental in maintaining regular contact and ensuring alignment between the project team and the stakeholders.

In addition to Rodolfo Matos, it's important to acknowledge the contributions of Gil Silva from the larger stakeholder team. Gil Silva made significant contributions to the project's database design and actively participated in weekly meetings to discuss project milestones and deliverables.

The collaboration between the project team and stakeholders, led by Rodolfo Matos and with the valuable input from Gil Silva, greatly enhanced the project's progress and outcomes.

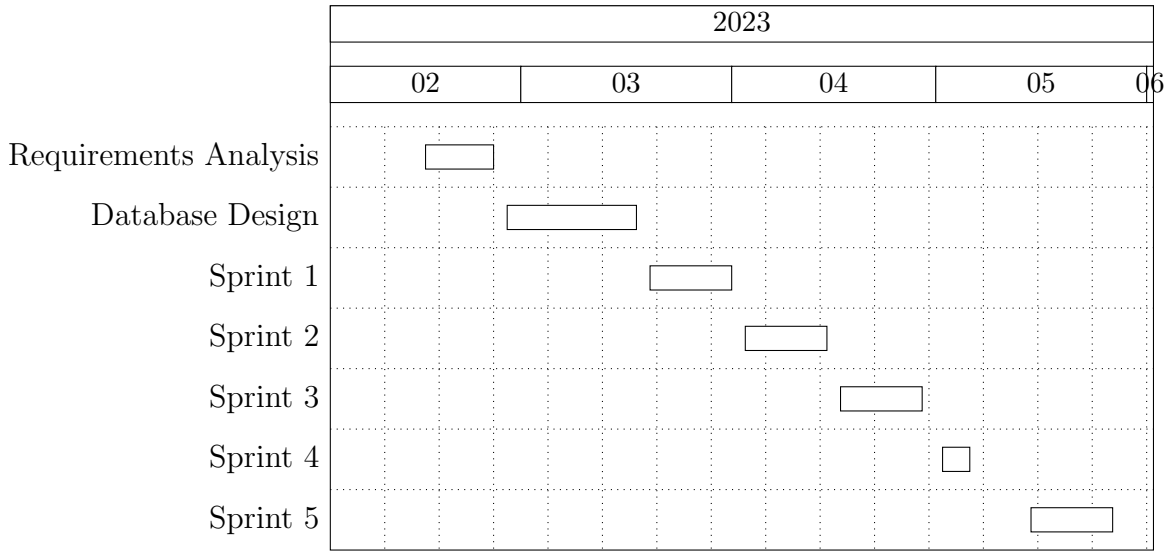


Figure 1: Project Gantt Diagram

2.3 Developed activities

The Gantt diagram[7] of the website development project, which can be found in Figure 1, provides a visual representation of the project's development and includes the project's schedule and important milestones. The project spanned from February 2023 to June 2023, and it involved several important tasks and sprints.

The project began with the "Requirements Analysis" phase, which took place from February 15th to February 24th. During this phase, the project team gathered and analyzed the requirements for the website and defined the set of technologies to be used, ensuring a clear understanding of the project scope. When finalizing this stage the team delivered a document with detailed user stories, sitemap and a wireframe design to be reviewed by the main stakeholder, Rodolfo Matos.

Following the requirements analysis, the "Database Design" phase commenced on February 27th and lasted until March 17th. In this phase, the team focused on designing the database structure and establishing the necessary data models for the website. At the end of this phase the team delivered

components such as database UML and reviewed them alongside the UPdigital´s stakeholder team.

The project then transitioned into a series of sprints, starting with "Sprint 1" from March 20th to March 31st. Each sprint typically lasted for a couple of weeks and included specific development tasks and objectives.

In the first sprint, "Sprint 1", a static version of the website´s main pages were built.

"Sprint 2" took place from April 3rd to April 14th. In this sprint work was done to transfer the website´s page to load dynamic data from the database as well as the creation of additional pages. In this sprint, work was started on the website´s various management features.

This was followed by "Sprint 3" from April 17th to April 28th. This sprint involved iterating on features implemented in the last sprint, as well as new features, such as the support for themes, seasonal or otherwise.

"Sprint 4" spanned from May 2nd to May 5th,and, as it was a significantly smaller sprint, it only saw some improvements in the management area, most notably, an admin being able to change his read privileges to a regular user temporarily[8].

The final sprint, "Sprint 5," occurred from May 15th to May 26th. During this phase, the team implemented an RSS feed[6] based on data from the website, added basic search functionality and solved pre-existing bugs. During the last meeting, the team handed over the project´s Gitlab repository to Rodolfo Matos.

3 Solution Development

3.1 Requirements

The first task recommended by the proponent before the project's development was the requirements and constraints analysis. This step was essential

not only for us to organize ourselves but also to meet user needs and customer expectations.

The main functional requirements identified were user authentication, browsing, searching, and requests for creating or editing events and services.

Regarding the non-functional requirements, priority was always given to the performance and usability of the system. In terms of performance, the website should be fast and responsive, and in terms of usability, it should be intuitive so that users can easily learn how to use it or apply knowledge learned from browsing previous websites.

The only restriction was that the system should be ready to use by the end of the semester. We were free to choose the technologies that would be applied.

3.2 Architecture and technologies

The technologies used for the back-end were Laravel and PostgreSQL[2], and for the front-end, only Bootstrap. We choose these technologies because we were already familiar with them. This also caused the work to flow faster since we didn't have to learn how to use something new. To store code, we used GitLab, and to store and share other types of files, we used Google Drive, as was agreed with the proponent and the tutor. Just for task organization, we created a Kanban Board in Notion.

Taking into account the requirements collected and in order to have a better view of the system architecture and which technologies best fit the problem, we built four different diagrams: actors diagram (Figure 2), a sitemap (Figure 3), a class diagram (Figure 4), and a wireframe (Table 2). In the database diagram creation phase, we had some difficulties with the conceptual data model, but they were solved with the help of the project advisors. For the rest of the project, we had no major difficulties.

3.2.1 Actors

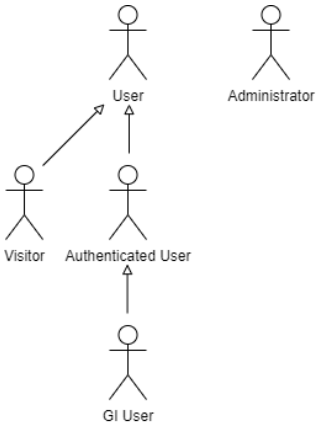


Figure 2: Actors Diagram

3.2.2 Sitemap

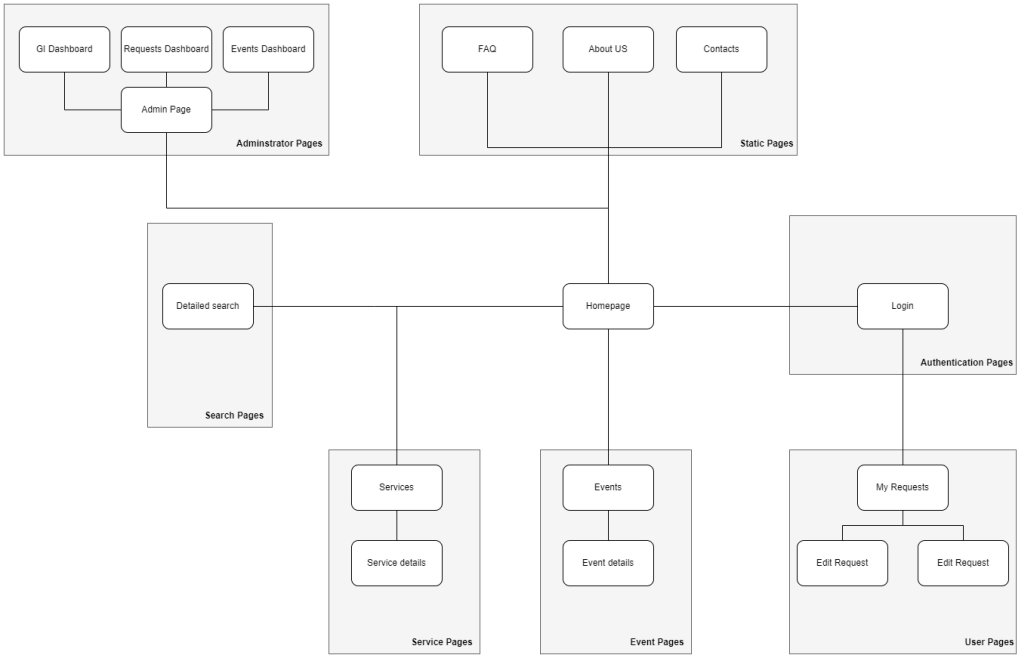


Figure 3: Sitemap

3.2.3 Conceptual Data Model

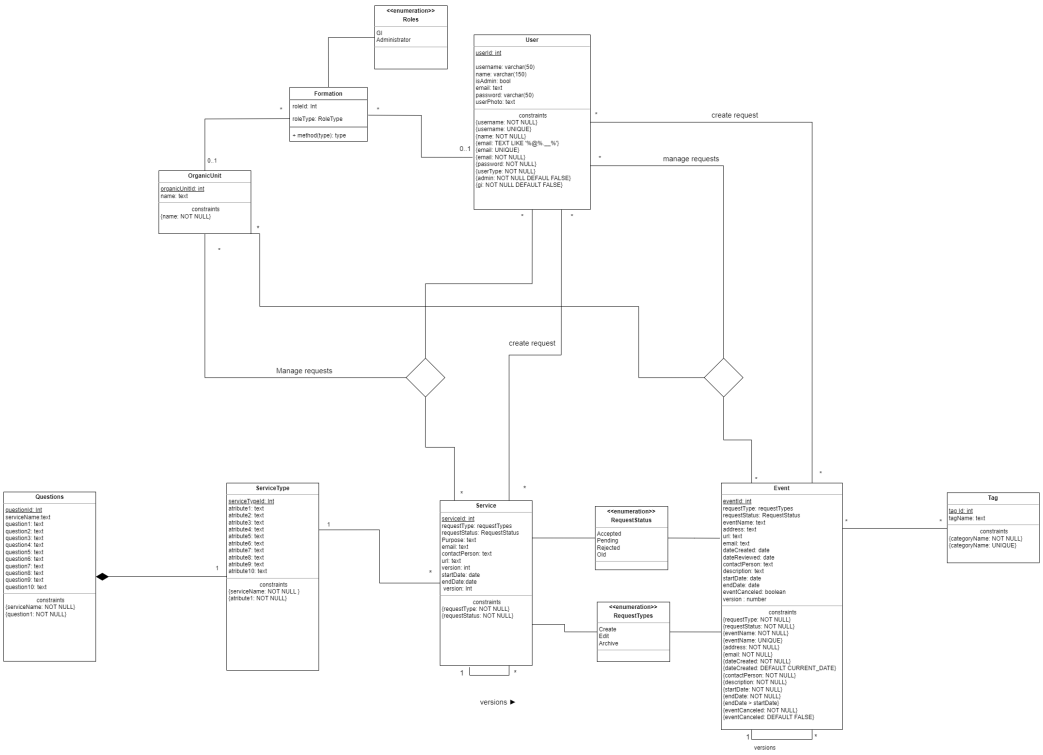


Figure 4: Class diagram

3.2.4 Wireframe

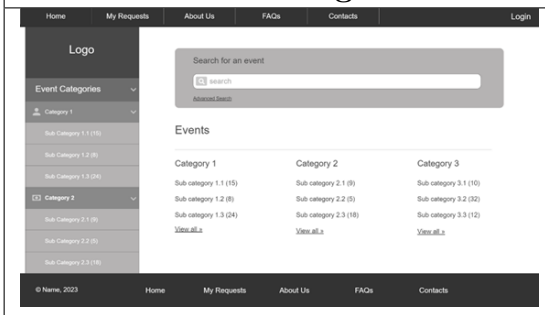
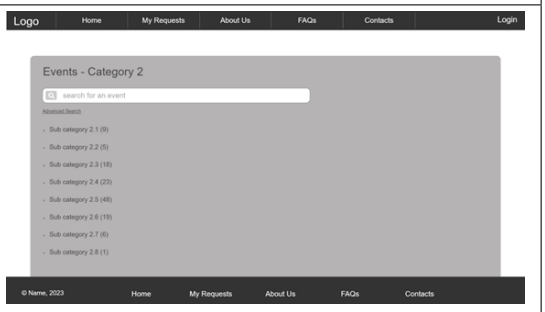
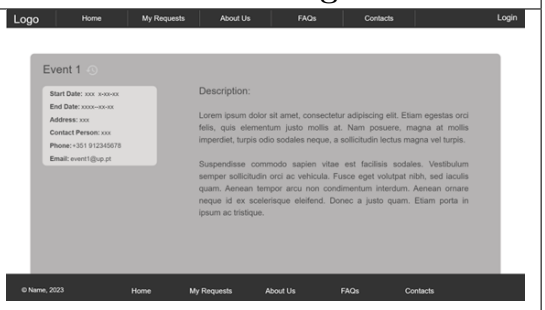
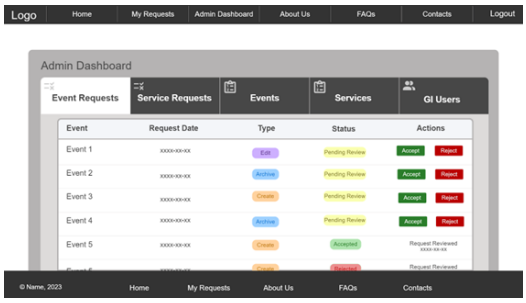
Home Page	Event Categories
	
Events	**Event Page**
	
Admin Dashboard	**Advanced Search**
	

Table 2: Wireframe

3.3 Developed solution

Upon opening the site, the user is offered a search bar and a selection of top categories for both events and services. Also in the footer the user has access to a few info pages, as well as access to the RSS feed.

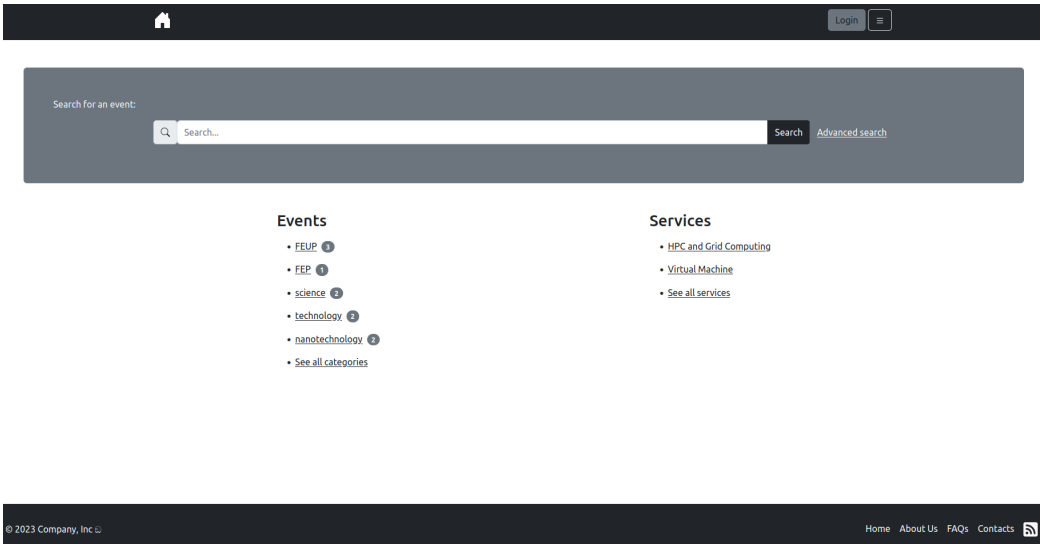


Figure 5: Main Page

When clicking on one of the available categories, say FEUP, the user is presented with all of the listed events for that particular faculty. He also gets a back button for ease of navigation.

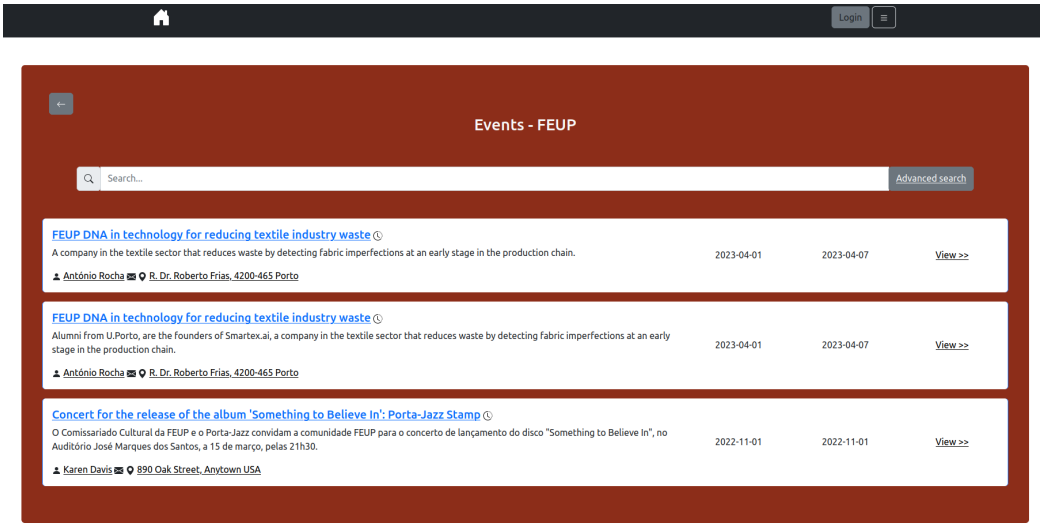


Figure 6: Category Page

After clicking on an event the user can see more detailed info about the event such as a description, image and all the tags related to the event. The user can also click on any of the tags to continue browsing for similar events.

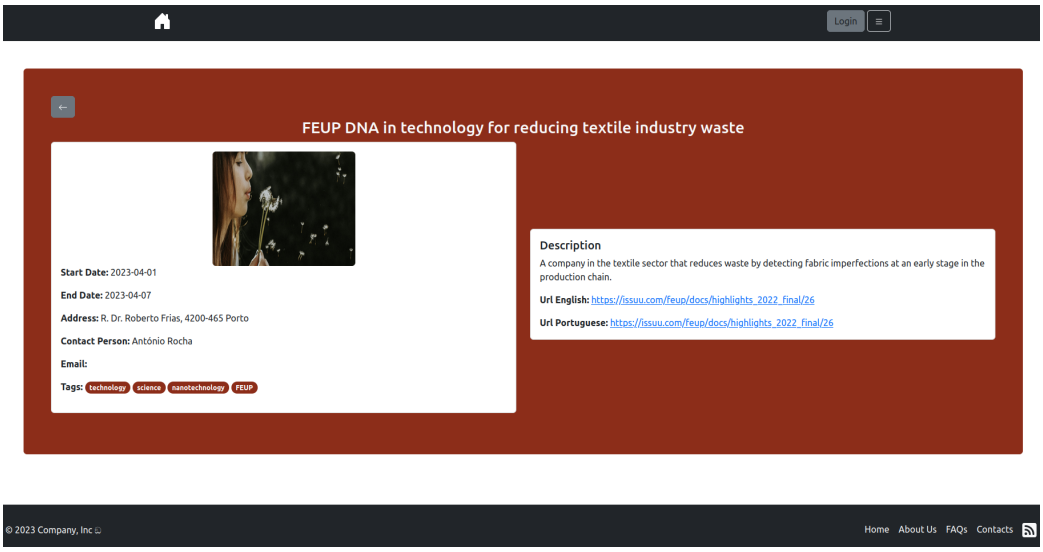


Figure 7: Event Page

Likewise, if a user were to click on one of the services he can read a description about what the service entails, and ,if logged in, can submit a request to access such service.

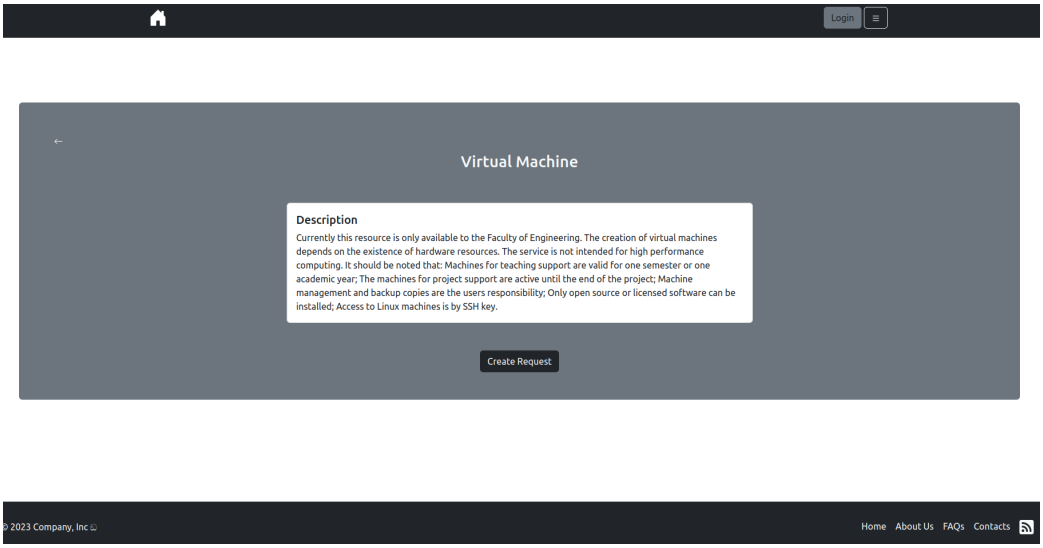


Figure 8: Service Page

Moving on to authenticated users, at this point in the project´s life cycle there is a basic login system, which in the future will be upgraded to use UP´s federated authentication, which will be implemented by UPdigital´s team.

By clicking on his profile picture, the user can access his "My requests" page where he can see any requests he submitted either in the events or services.

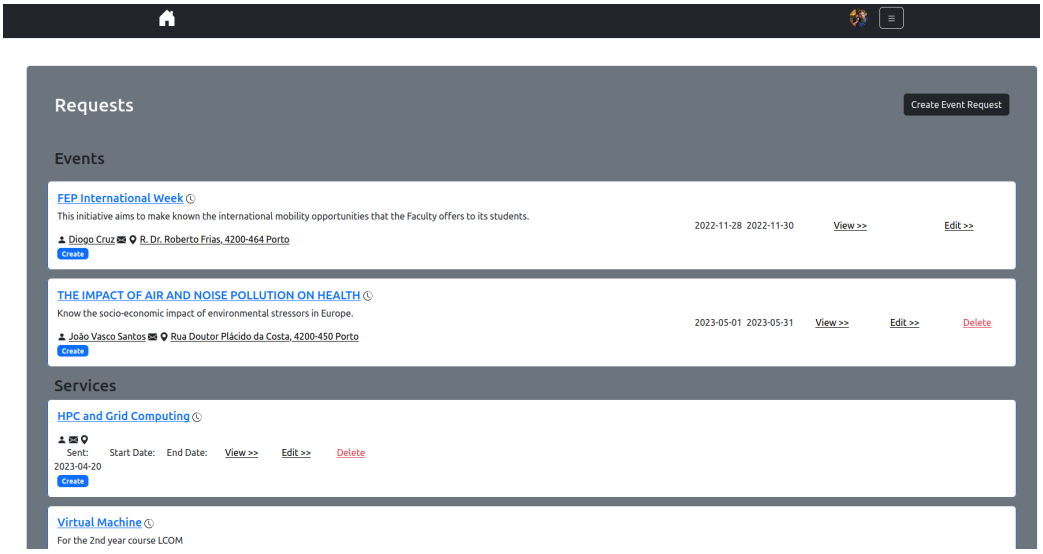


Figure 9: Requests Page

Here the users has an overview of his requests, can view, edit or delete them and can create new event requests that if approved by an administrator, will be made available for all the academic community to see.

Moving on to users with higher privileges, of which there are 2 existing levels, GIs (gestor de informação) which can accept event requests for 1 or more organic units, or administrators which can accept requests for all organic units and promote users to the GI level.

Show in figure 10 is the dashboard administrators and GI´s have at their disposal for accepting or rejecting events.

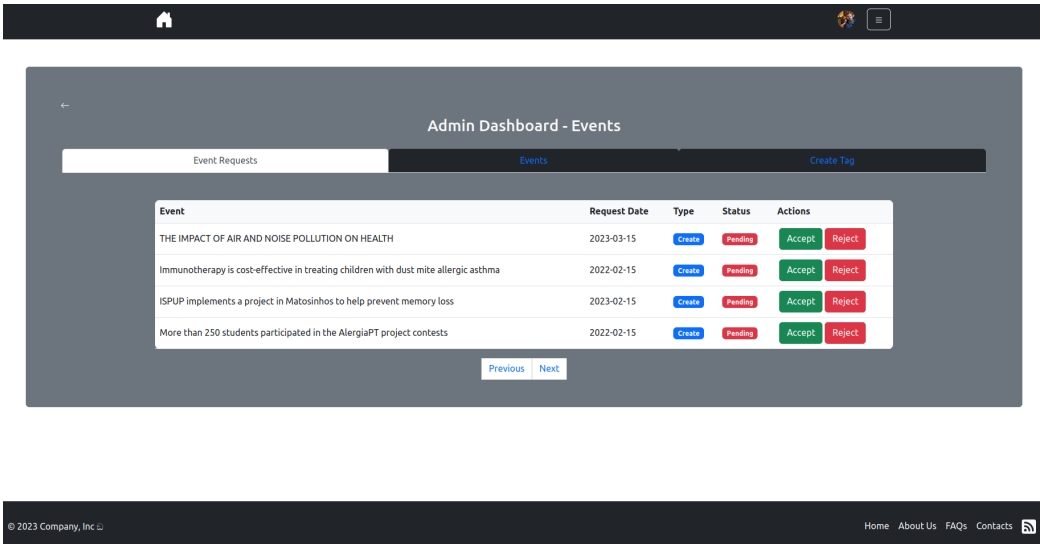


Figure 10: Admin Dashboard Page

And the dashboard where an admin can assign GI privileges to users.

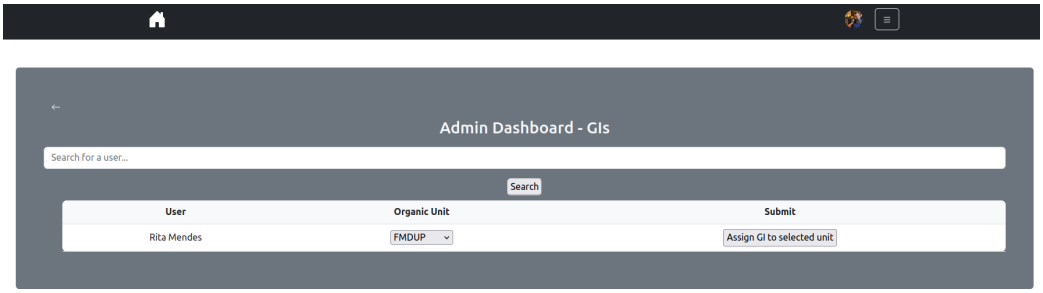


Figure 11: Admin GI Dashboard Page

3.4 Validation

Throughout the development of the project, we tested each functionality of the website and showed the results to the project proponent and tutor, who would give us feedback and suggestions. In the end, they were very satisfied with the solution developed.

4 Conclusions

4.1 Results

In the end, we were successful in doing most of the set requirements. The developed platform successfully provides a comprehensive view of services and events within the U.Porto community. Users can easily access information on various services and stay informed about upcoming events.

The regular meetings with the stakeholders proved to be a source of valuable and timely feedback, helping us ensure that the work done on the website was on par with what they wanted.

As was stated before, **Daniela Tomás** was a full-stack developer, contributing where needed, **Diogo Nunes** made sure that everyone knew what they should be doing each week while also contributing to the back-end, **Miguel Tavares**, with his skills, made it possible to have a user friendly interface, and **Pedro Correia** was able to bring develop the server-side of the platform. In percentage terms, everyone did 25% of the work done.

Overall, the achieved results demonstrate a successful implementation of the project, meeting most of the defined requirements set by the stakeholders.

4.2 Lessons learned

With this project we gained valuable insights and lessons that have contributed to our professional growth. We recognized the importance of clear and open communication with the stakeholders. By interacting with them, we received insightful criticism which affected the decision-making of the project, ensuring that the project objectives were well-defined and understood.

Having weekly meetings with the stakeholders made it so we had to manage our time efficiently. We learned the importance of setting realistic deadlines, making us prioritize some tasks over others and keeping a proactive attitude to make sure that tasks are finished on time. Those meetings also required us to be adaptable and flexible in our approach because of the new ideas that came forth while we were showing what we had made. The meetings were also a great way to receive feedback on our work and gave us various suggestions on ways to improve it.

With these lessons, along with what we already learned in other curricular units, we aim to apply these experiences in our future projects, enhancing

our abilities and ensuring improvement in our work.

4.3 Future work

Although we accomplished a lot in this project, there still are opportunities for future work and improvements.

Future work includes addressing the requirements that we couldn't complete, like being able to see the past versions of an event.

Additionally, optimizing the database, especially on the services part, since it was done half haphazardly and populate it with the remaining services available, and providing user support channels could contribute to the platform success.

References

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