

Projeto em Engenharia Informática

Academic Year 2016/2017

Project: Stroke Rehab

M1 – Milestone 1



Group Nr. 09:

| | |
|------------------|----------------|
| João Quintanilha | Mec Nr.: 68065 |
| Bruno Henriques | Mec Nr.: 68314 |
| António Mota | Mec Nr.: 72622 |
| Pedro Coelho | Mec Nr.: 68803 |
| Filipe Macário | Mec Nr.: 64618 |
| Fábio Costa | Mec Nr.: 68767 |

Client Area

- Team presentation

| | | |
|------------------|----------------|-------------------------|
| João Quintanilha | Mec Nr.: 68065 | jpquintanilha@ua.pt |
| Bruno Henriques | Mec Nr.: 68314 | bfhenriques@ua.pt |
| António Mota | Mec Nr.: 72622 | antonio.mota@ua.pt |
| Pedro Coelho | Mec Nr.: 68803 | pedromiguelcoelho@ua.pt |
| Filipe Macário | Mec Nr.: 64618 | filipemacario@ua.pt |
| Fábio Costa | Mec Nr.: 68767 | f.costa999@ua.pt |

- Context

- For our bachelor subject, Informatics Engineering Project, we were given a pool of project themes to choose from and work on. Given the options, our team opted to go for a project that could have a real use and hopefully be helpful. We named our project, Stroke Rehab.
- What's a stroke?
 - A stroke occurs when blood flow to an area of the brain is cut off. It can happen to anyone at any time, and when it does, brain cells are deprived of oxygen and begin to die. Abilities controlled by that area of the brain are lost, such as memory and muscle control.
- How does our platform help?
 - After talking with neuropsychologists, we realized that performing exercises on topics of each patient interests, such as images of relatives and sentences about their favourite subjects can have a better impact on their rehabilitation progress.
- What makes us unique?
 - There are already several platforms which provide post-stroke patients the tools for cognitive rehabilitation. But these use standard day living things that usually don't relate to each patient. In other words, each patient needs a different kind of motivation to exercise, so we offer the neuropsychologist the possibility to adapt each environment to each patient.

- Problem

For Stroke Rehab, we were challenged to develop an online platform/web application that allows neuropsychologists to configure and adapt various exercises/tasks used for cognitive rehabilitation of stroke (Cerebrovascular Accident) patients.

Each patient can receive appropriate tasks according to their health criteria. We will use some templates for the tasks and every patient will have his program of tasks given by the neuropsychologists.

The goal of this platform is to be user-friendly, because in the side of the neuropsychologists they want the platform to be as simple as possible to configure the patients and the tasks, and in the side of the patients, the tasks must be simple and must capture their total vision to maximize their productivity.

- Proposed Solution

- Our platform will consist of two different types of users: Patients and Doctors. Doctors will have an area where they can manage patients, assign/create/adapt tasks, check results and progress of patients. On the other hand, Patients have access only to the doctor assigned tasks.
- Here is the mockup of our project:



Stroke rehab

Bem-vindo/a

Nome de utilizador

Password

Login Registrar

1. Login Area



Stroke rehab

Nome de utilizador

Email

Password

Repetir Password

Voltar Registrar

2. Register Area



Stroke rehab

Pacientes Tarefas

Paulo Cardoso Sair

Search

António Alves 0244

Bernardina Santos 0111

Cecília Albuquerque 0107

Diana Amaral 0100

Bernardina Filomena Santos 0111

Última atividade Tarefa 1

Data Última Atividade 1-1-2017

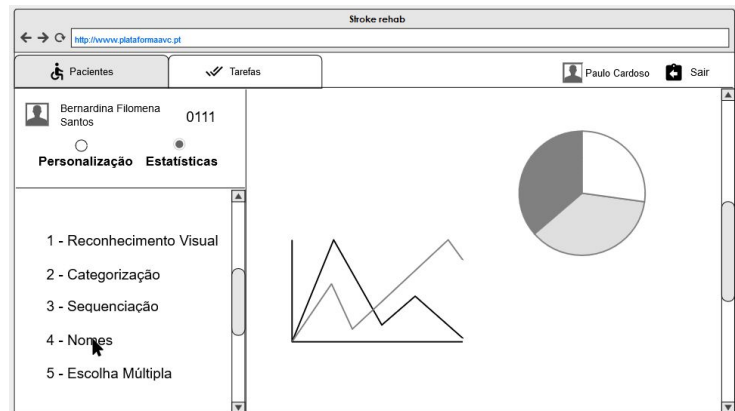
Notas

O estado de saúde da paciente tem melhorado satisfatoriamente.

Cancelar Guardar

Ver Estatísticas Personalizar Tarefas

3. Doctor Area - Main View



Stroke rehab

Pacientes Tarefas

Paulo Cardoso Sair

Bernardina Filomena Santos 0111

Personalização Estatísticas

1 - Reconhecimento Visual

2 - Categorização

3 - Sequenciação

4 - Nomes

5 - Escolha Múltipla

Qual a resposta correta?

A: _____

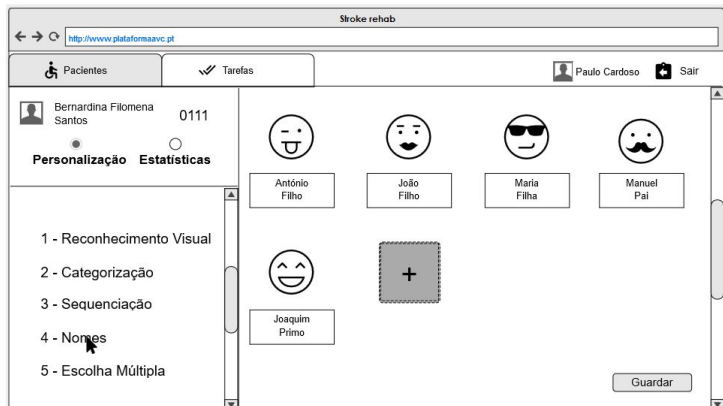
B: _____

C: _____

D: _____

Seguinte

4. Patient Statistics Area



Stroke rehab

Pacientes Tarefas

Paulo Cardoso Sair

Bernardina Filomena Santos 0111

Personalização Estatísticas

1 - Reconhecimento Visual

2 - Categorização

3 - Sequenciação

4 - Nomes

5 - Escolha Múltipla

António Filho

João Filho

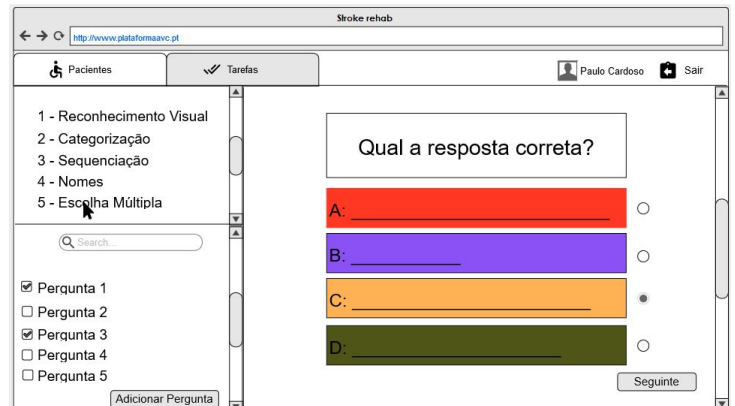
Maria Filha

Manuel Pai

Joaquim Primo

Guardar

5. Template Configuration Area



Stroke rehab

Pacientes Tarefas

Paulo Cardoso Sair

1 - Reconhecimento Visual

2 - Categorização

3 - Sequenciação

4 - Nomes

5 - Escolha Múltipla

Qual a resposta correta?

A: _____

B: _____

C: _____

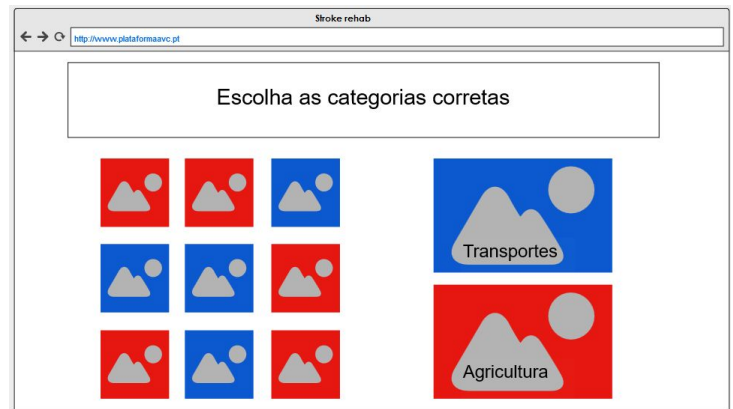
D: _____

Seguinte

6. Template Configuration Area



7. Selection Patient Area



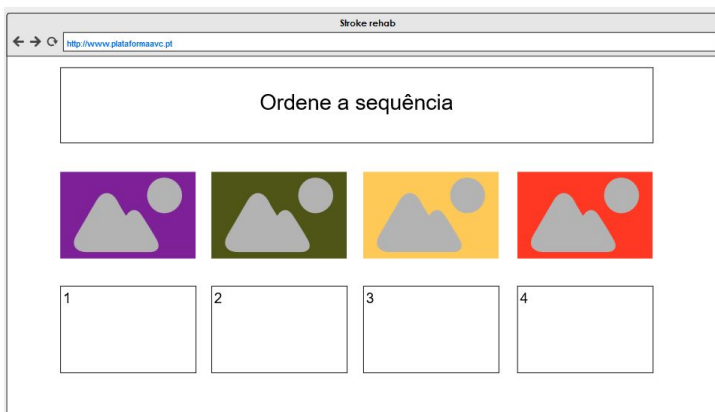
8. Template “Categorize”



9. Template “Related Images”



10. Template “Multiple Choice”



11. Template “Sequence”



12. Template “Name it”

Vision and Scope

Business Requirements

Background

For our bachelor subject, Informatics Engineering Project, we were given a pool of project themes to choose from and work on. Given the options, our team opted to go for a project that could have an impact on the daily life of someone in need and hopefully be helpful. We named our project, Stroke Rehab. As the name self-explains, Stroke Rehab focus on the cognitive rehabilitation of post-stroke patients, helping them overcome all mental disabilities created by the pathology.

The Stroke Rehab will be presented to the public through a web platform. In the platform, the user (doctors) will have informations about the patients, such as personal data and health statistics. They will also have tasks to be configured to the patients.

Business Opportunity

With Stroke Rehab we have a platform that provides cognitive exercises with relatable content for each patient (favourite hobbies/activities, family pictures, etc). This comes to fill a gap that none of the existing platforms do, since they provide standardized tasks/exercises templates that don't capture the patient's attention and fail to motivate.

Stroke Rehab's main goal is to help post-stroke patients and overcome all their mental disabilities created by it and stand out in the market by bringing an unique platform with diverse templates configured for each patient. It is important to underline that in Stroke Rehab, each patient will have statistics of their tasks results and health variations in order to get the neuropsychologists' evaluations.

With a simple and user-friendly design, it is possible, in an efficient way, to consult each patient's statistics and to do tasks for each patient, provided by neuropsychologists.

Business Goals

- Development of a fully functioning prototype, which can be tested with real patients and evaluate areas of improvement to our platform;
- Provide meaningful and well designed tasks/exercises templates, with the possibility of customization from the doctor;
- Provide doctors the access to the task's results and statistics for each patient.

Vision Declaration

Our platform will be designed with ease of use in mind due to the demographic it will be used by (people in some way incapacitated), allowing patients to focus on the tasks.

| | |
|--------------------|---|
| For | Post-stroke patients |
| Who | Anyone who wishes to overcome his mental disabilities created by stroke |
| The | Stroke Rehab |
| Is | User-friendly and innovative |
| That | Configures various tasks and performs statistics for each patient |
| Unlike | Platforms that only provides standardized tasks |
| Our Product | Dynamic and specialized |

Products and Similar Projects

| Similar Projects | Advantages | Disadvantages |
|--------------------|---|--|
| NEP-UM | <ul style="list-style-type: none">- Focuses on cognitive rehabilitation, such as memory, focus, language and executive functions;- Assignment of sessions and specific tasks for the patients and monitoring of patient's performance. | <ul style="list-style-type: none">- Doesn't focus on cognitive training. |
| Metrisquare | <ul style="list-style-type: none">- Focuses on cognitive training;- Allows the creation of different tasks using standardized templates. | <ul style="list-style-type: none">- Doesn't focus on cognitive rehabilitation. |

Business Detail

Stakeholder Profiles

We have two kinds of stakeholder profiles affected by our business activity:

| Stakeholder | Main Tasks |
|-------------|--|
| Doctors | <ul style="list-style-type: none">- Improved work productivity;- Reduced rework and waste of time;- Cost savings;- Automation of previously manual tasks;- Ability to perform entirely new tasks;- Improved usability compared to current products. |
| Patients | <ul style="list-style-type: none">- Improved productivity;- Automation of previously manual tasks;- Ability to perform entirely new tasks;- Improved usability compared to current products;- Chance to practice with relatable content. |

Business Processes

Doctor:

1. A registration will be needed in order to use the platform. For this, the doctor must provide the following information of each patient:
 - Full name;
 - Username;
 - E-mail;
 - Password;
2. After registration, a window will appear with the info and details of the patient, like health infos and the last task done, for example;
3. Following, the doctor can choose template of the task for the patient;
4. The doctor can also see the statistics of the patient, like tasks done and variations of his health care;
5. The doctor can organize tasks for various users and schedule tasks for each of them.

Business Risks

- Short schedule for completion of the project;
- Stakeholders acceptance. Patients may not enjoy working on the platform and/or doctors may not feel that our platform is a fitting replacement to their current practices.

Business Dependencies and Other Considerations

- We will offer task templates, but we assume doctors will expend time to make them relatable for each patient, since we believe that is one of the strong points of our platform;
- The platform should be accessible 24/7.

Limitations and Scope

Stroke Rehab will mainly develop templates for tasks to be configured by neuropsychologists to facilitate the usage of the platform. The goal is to help post-stroke patients who want to overcome their mental disabilities created by it. The features that are required to implement this are in the section beneath, in this document.

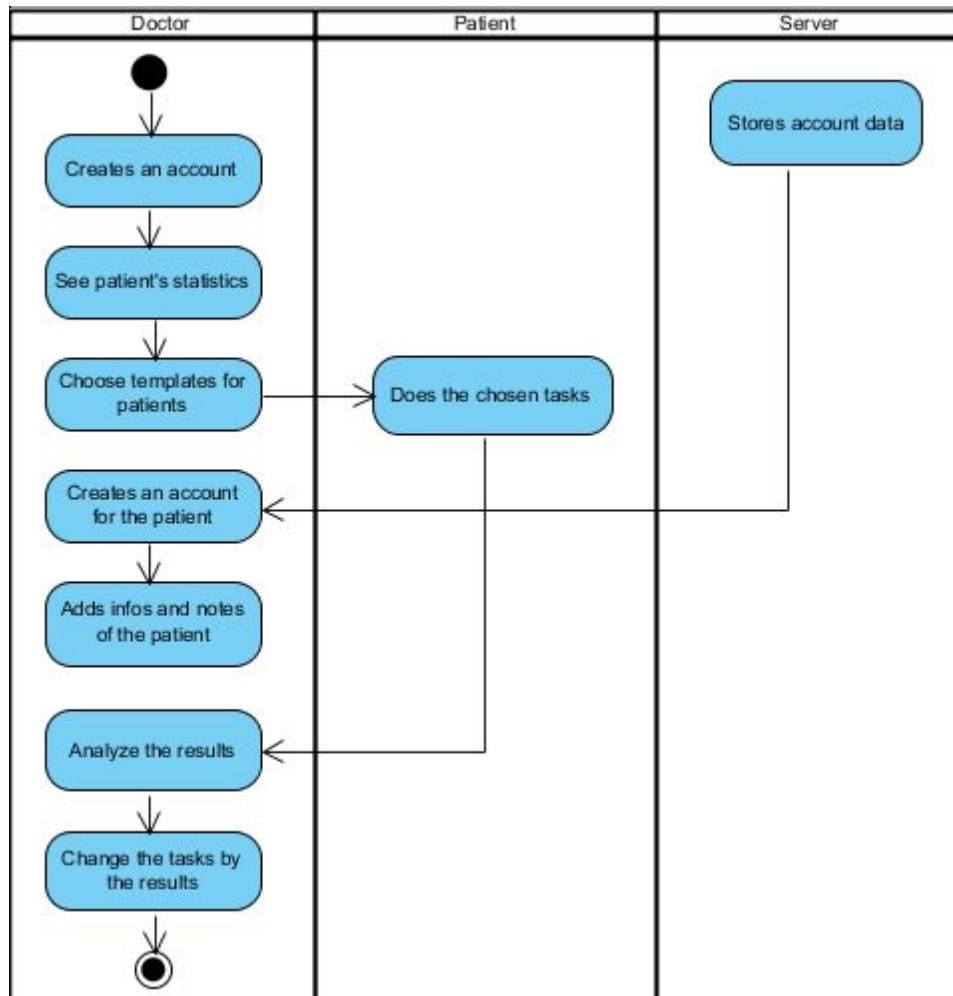
Needs and Features

- Customization (doctors can customize tasks);
- Versatility (tasks can be adapted);
- Monitoring (doctors can monitor patients progress and task results);
- Practicality (patients can do tasks at home);
- Relatability (patients will have tasks with relatable content).

Global System Architecture

In order to access to the web platform, the user needs to have a computer, a tablet a mobile device connected to the internet and a browser with HTML5 compatibility. The website is hosted in a server which contains a database where it will store most information required for account management.

UML Diagram



Gantt Diagram

| Gantt project | | | |
|---------------|---|----------------|-------------|
| | Nome | Data de início | Data de fim |
| ☐ | • Definition and organization of the Project | 15-02-2017 | 01-03-2017 |
| • | Meeting up with Prof. Paulo Dias (Mentor) and gather all information possible | 15-02-2017 | 22-02-2017 |
| • | Choosing the platforms and languages being used | 23-02-2017 | 01-03-2017 |
| • | Selection of the main templates for the project tasks | 23-02-2017 | 01-03-2017 |
| • | Setup of Wiki's Code UA and Website for the project | 23-02-2017 | 01-03-2017 |
| ☐ | • Implementation and coding the project | 02-03-2017 | 29-03-2017 |
| ☐ | • Backend Development | 02-03-2017 | 15-03-2017 |
| • | UI Platform, authentication and databases | 02-03-2017 | 08-03-2017 |
| • | Platform configuration for users | 09-03-2017 | 15-03-2017 |
| ☐ | • Frontend Development | 02-03-2017 | 15-03-2017 |
| • | Design and development of the templates | 02-03-2017 | 15-03-2017 |
| • | Design of the user friendly platform | 02-03-2017 | 15-03-2017 |
| • | Adding new implementations in the platform | 16-03-2017 | 22-03-2017 |
| • | Verification (and possible correction) of the project development | 23-03-2017 | 29-03-2017 |
| ☐ | • Testing the project | 30-03-2017 | 12-04-2017 |
| • | Creation of usability tests and analyse the results | 30-03-2017 | 05-04-2017 |
| • | Meeting up with Rovisco Pais's Neuropsychologist and testing the project | 06-04-2017 | 12-04-2017 |
| • | Visualization of the project and total verification | 13-04-2017 | 19-04-2017 |
| ☐ | • Funding | 20-04-2017 | 03-05-2017 |
| • | Getting money | 20-04-2017 | 26-04-2017 |
| • | Dealing with budgets and resources | 27-04-2017 | 03-05-2017 |
| ☐ | • Final project | 04-05-2017 | 06-06-2017 |
| • | Verification (and possible correction) of all project modules | 04-05-2017 | 17-05-2017 |
| • | Analyse all the results from the beggining | 18-05-2017 | 30-05-2017 |
| • | Creation of a video demonstrating all steps | 31-05-2017 | 06-06-2017 |

