DETI-MakerLab Application

Diogo Ferreira (76425)
Pedro Martins (76551)

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What is DETI-MakerLab?

DETI MakerLab app is a system designed to **manage a modern and innovative room**.
This room is filled with electronic components and devices, such as Arduinos, Raspberries, 3D printers and a network closet. The space aims at being the room to carry on projects inside DETI.

The DETI MakerLab software will hopefully address all the users needs to develop their projects at MakerLab.

Usability goals

The DETI MakerLab system needs to be:

- **easy to learn and to achieve** maximal performance using it;
- **robust**, giving user feedback about the performed tasks;
- **efficient**, so that, once the user gets **familiar** with it, (s)he can perform tasks faster;
- **easy to remember**, even if the user doesn't use it in a period of time;
- not prompt to **errors**;
- **pleasant** to use.

Platform Characteristics

- **Intuitive** and **simple** (at least that's what our colleagues tell us);
- Based on **pages** inside "static" **Windows**;
- **FAQ** section and **Tooltips;**
- Access to information related to the **projects**, **resources**, **requisitions** and **user profiles**.
- **Error prevention**
  - Shows error messages to the user;
  - If the error occurs in a "form" page, the system will maintain all the fields filled.
- **Two levels of "knowledge" errors**
  - **Common user** (simple messages);
  - **System maintainer** (error reporting).

Typical Tasks

Students & teachers:

- Create user account
- See user profiles
- Manage projects (create and edit)
- Request and deliver electronic resources
- Launch and destroy virtual machines
- Enable Wireless LAN for VM connectivity
- Associate ethernet sockets to projects LAN for VM connectivity

Staff:

- See user profiles
- Add/edit electronic equipments
- Add electronic units
- Create kits of electronic units
- View projects information and requisitions

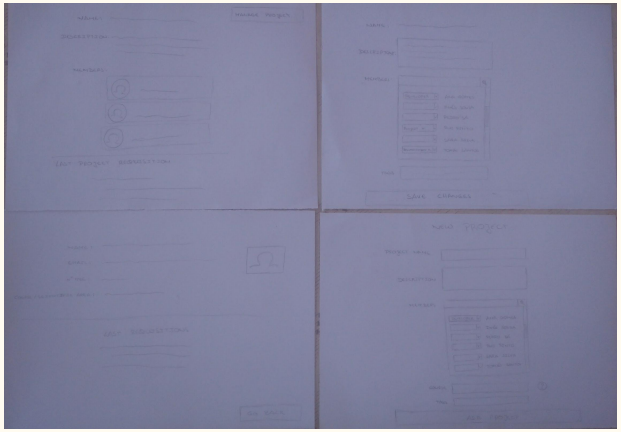
Development Issues

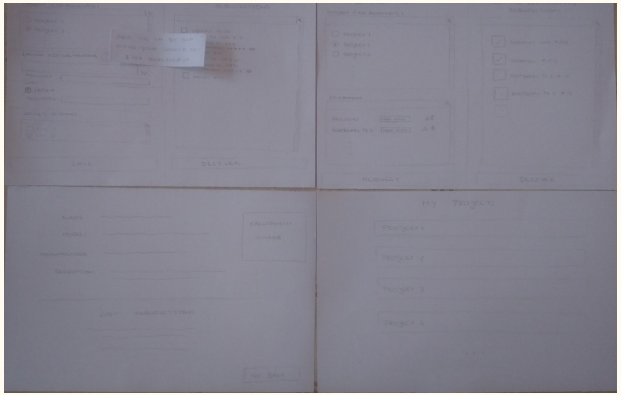
- **WPF is very restricted** in terms of UI primitives;
- **Layout built from scratch:**
  - Only based on **primitive objects** and carefully placement;
  - Introducing a **vertical menu with collapsable submenus** by our own.
- **ListBoxes edition (**Adding TextBoxes and/or ComboBoxes inside of them):
  - Creation of item templates for each one of the ListBoxes;
  - **Design its UI and all the necessary logic** to access its fields (deal with asynchronous tasks, listeners, item containers, etc.).
- And many more...

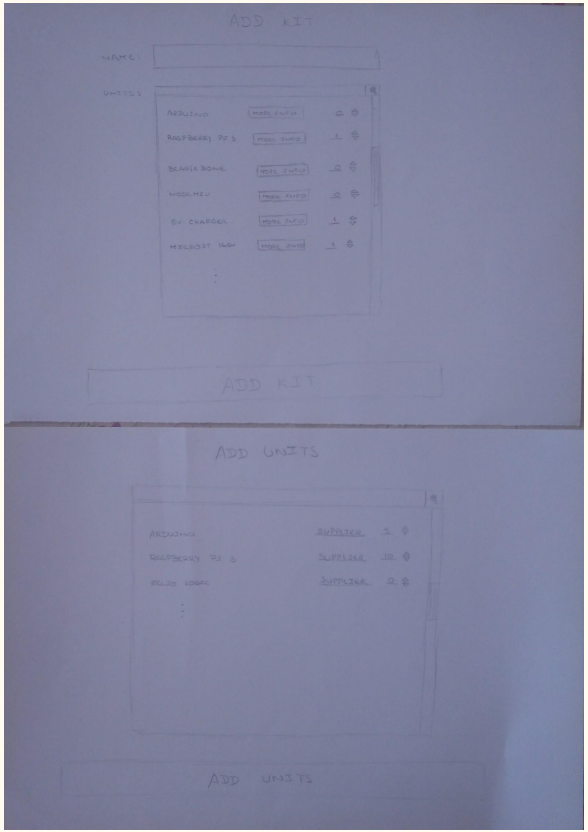
Compromises & Simplifications

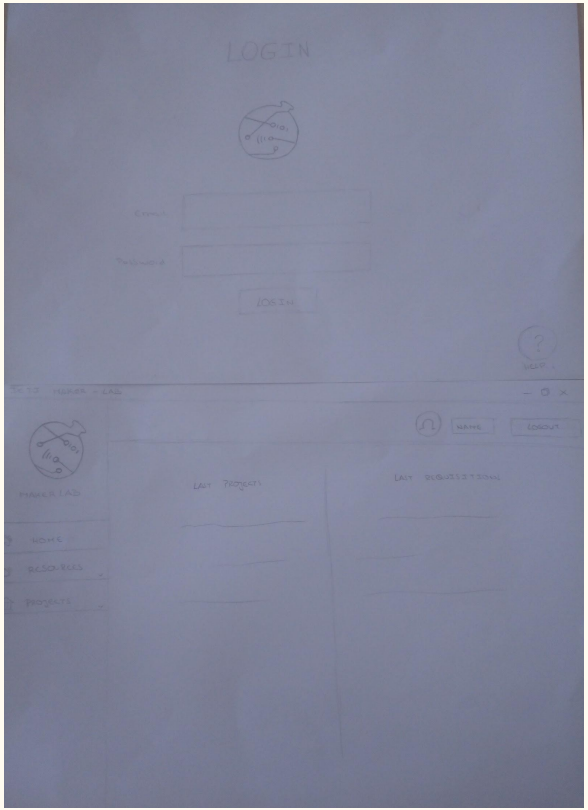
- **No connection to UA IDP;**
- **Manual signup;**
- **Network section** of the platform **is just an interface** - no backend logic.

How we've began (paper prototype)









Usability Tests

Paper Prototype

Positive feedback:

- Intuitive and simple;
- Pleasant to use.

Negative feedback:

- Lack of “Going back” buttons;
- Adding kits suggestions;
- Somewhat confusing Networking section.

Initial prototype

Positive feedback:

- Intuitive and simple;
- Pleasant to use;
- Good looking.

Negative feedback:

- Some minor visual bugs (color correction, misplaced items).

How it turned out...

In conclusion...

Tasks

1. Create equipment
2. Add units to this equipment
3. Create a kit with this equipment
4. See equipment and kit page
5. Logout
6. Create new user account
7. Create new project
8. Request kit and equipment units and delivery one of them
9. Create VM
10. Create WLAN and request 2 sockets
11. Deliver VM and one of the sockets
12. See project and user page and theirs requisitions
13. See FAQ