Details

Armind comprises three main fields : **signal processing**, **medical** and **computer sciences**.

All are taught in TIS and RICM departments. These subjects have allowed us to find & understand methods like SSVEP, to explain them and to communicate with very different actors.

Programmes

We researched two main programmes to achieve our project :

- OpenVibe : To develop our Brain Computer Interface
- ROS : To manage the robotic arm

ROS

OpenVibe

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THINK TO ACT

ARMIND

Polytech Grenoble

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Context

Customers

The Armind project has two main customers. The first one is represented by the organizers of the DefiH, wich are Sogeti & Lemondeinformatique.fr
They are two computer companies whose mission is to help people with disability.
The second one is our partner the Garches Foundation with continuous-flow needs.

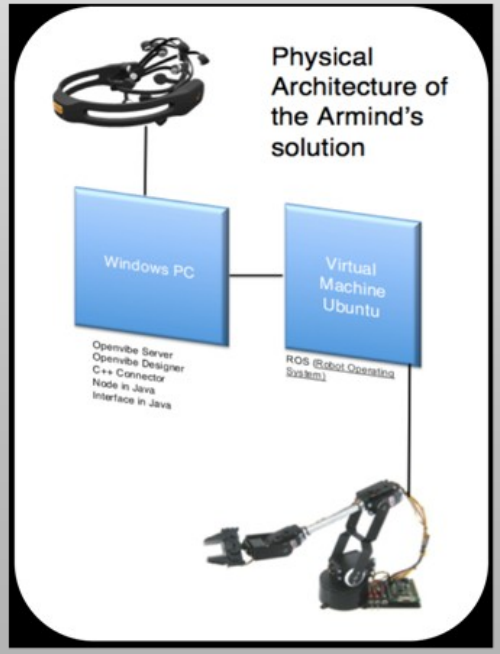
Arminders' position

The Armind team interacts with all the participants. The aim is to provide them with a disability compensation device in a professional context.

Description

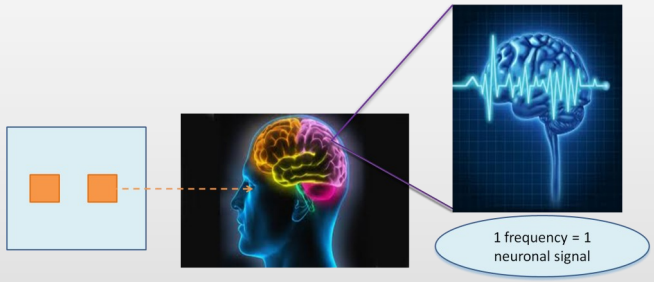
Introduction

Nowadays there are many kinds of handicap. To improve the life of person with a motor disability, it is important to take into consideration this diversity.
The Armind team offers the possibility to access to a job. The proposed solution is to control an automated arm thanks a neuronal headset via a brain control interface. It is a proof-of-concept. This kind of system already exists with invasive electrodes. That is why Armind offers a solution with a simple headset.



Approach

The aim of the project is to perform actions with the arm via the neuronal headset. In order to do so, the method used is called Steady State Visually Evoked Potential. These signals are natural responses to visual stimulation at specific frequencies. This response is detected by the Epoc headset and associated to a control for the robotic arm.



Results

The expected outcome is to perform completed actions by the arm to help tetraplegic people and after that to improve it for more medical applications (Parkinson and other).

Utilisations

For example, the tetraplegic man would be able to take a phone and bring it next to his head. That action is as useful at home as at work. The arm can also be used for handling and other professional activities.

Improvements

The project could be improved by other students over the next few years. It would be possible for example to use it to control a joystick and drive a