



**LIVING LAB HEALTH AUTONOMY**

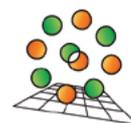
# PLATFORM EXPERIMENT'HAAL

› Home automation › Health › Autonomy › Assistance › Robotics › Embedded systems



**IMT Atlantique**  
Bretagne-Pays de la Loire  
École Mines-Télécom

Label



**FORUM LLSA**

Develop services enabling disabled, frail or elderly people to become less dependent or to strengthen their social ties.

The Experiment'HAAL (Human Ambient Assisted Living) platform was certified by the Forum des Living Labs en Santé et Autonomie in December 2013.

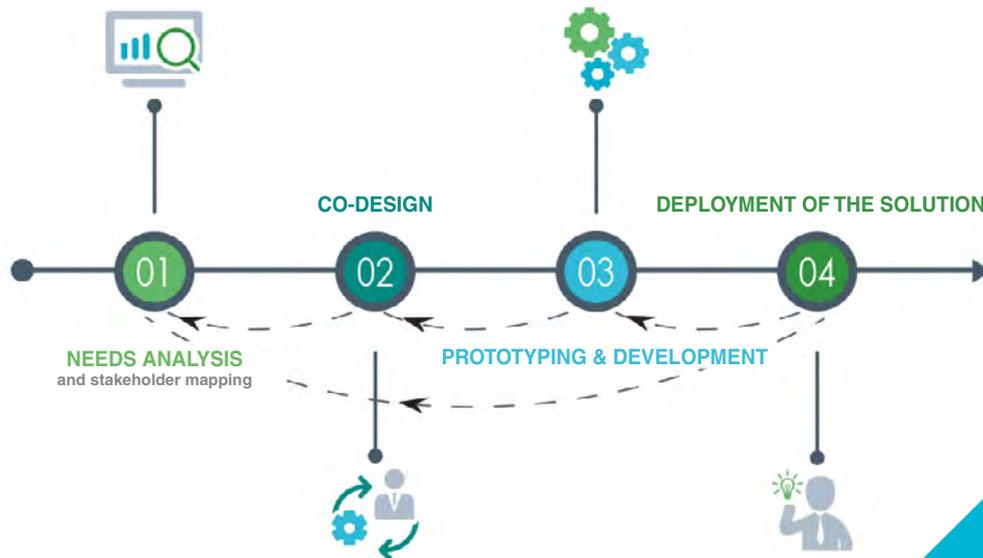
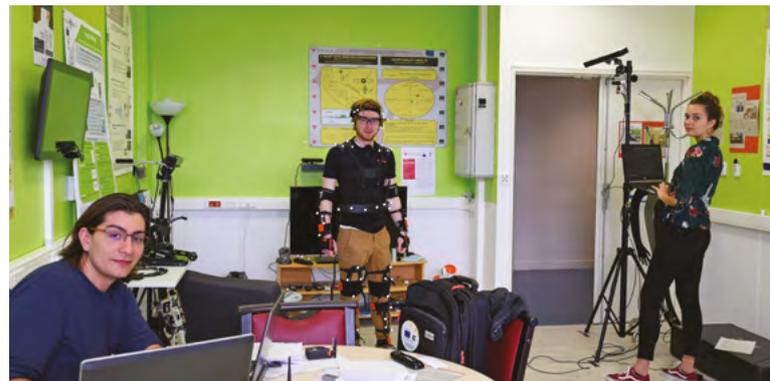
Intended to develop and then host experimental assistance devices for use tests, this platform allows in-situ testing of services developed in research projects before their deployment in real-life situations.

The Living Lab Experiment'Haal is part of the LLSA® Forum, which aims at federating and bringing together different actors involved in the Living Lab approach.

The Experiment'Haal platform is part of the platforms used by the members of the inter-cluster action HAAL (Human Ambient Assisted Living) (CNRS UMR 6285 Lab-STICC).



A smart apartment on the Brest campus



Co-design process for living labs

## Skills

The team is highly competent in software design and development. These skills are used to integrate the required technical functionalities into operational IT equipment. Indeed, the mechanisms designed to meet the needs of a given population are systematically used by people («samples» of the target population) who must experience the service in real life so that sociologists can analyze their uses and validate their social utility. The latter first identify the needs and expectations of the population, then accompany the deployment of the technologies developed and finally, analyse the uses of the deployed services.

## 4 spaces

Experiment'Haal is made up of 4 rooms:

### The apartment

A room representative of a residential habitat including kitchen, bathroom, living room, dining room, hosts furniture, sensors, actuators. Volunteer experimenters are assigned to test the devices and services developed in the various projects.

### The engine room

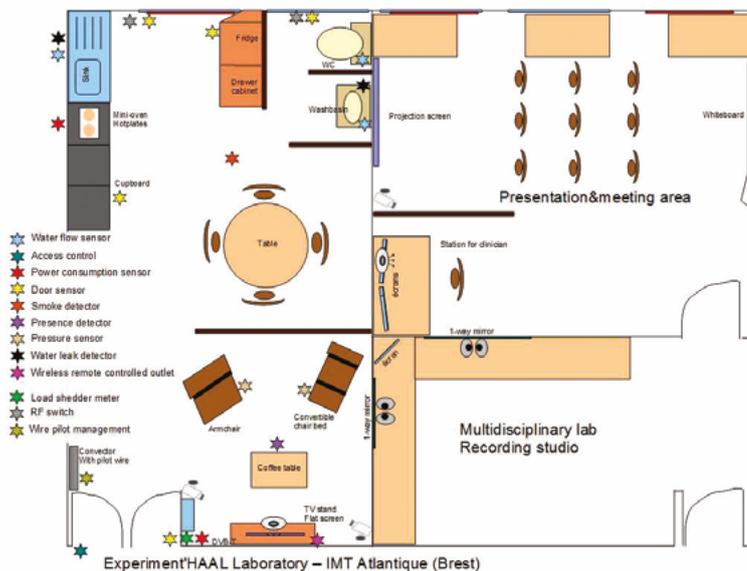
A 15 m<sup>2</sup> room, the technical room, which hosts servers, workstations. As part of their projects, IMT Atlantique students are required to work in this room.

### The control room

This 24 m<sup>2</sup> room is dedicated to user tests. For example, in the context of interactive television projects, the one-way mirror is particularly well suited to user tests in conjunction with ergonomists and sociologists. Particular care is taken to study and improve the ergonomics of the interfaces used by dependent people; to do this, researchers have set up an infrastructure for measuring and capturing interactivity between users and devices.

### The robotics room

This 34 m<sup>2</sup> room is used for work on several types of robots. The work in progress concerns functional rehabilitation with the help of robots, intelligent tutoring systems through human-robot interaction, strategic and interactive learning of complex movements.



Plan of Experiment'haal

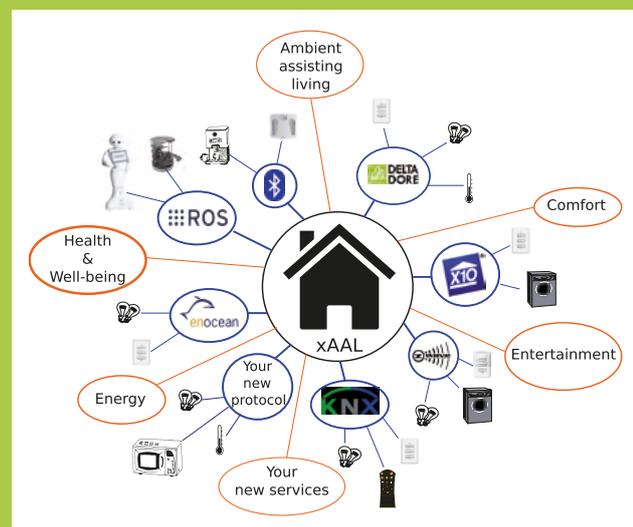


# What we offer

## Equipment high performance at your service

The Experiment'HAAL Living Lab hosts a number of services and equipment that can be made available to partners in collaborative projects. It is also used by industrial, academic or institutional partners for experiments and observations of habitability and acceptability.

- › **Companion robots (Pepper, Poppy, NAO, RB1 Robotnik, etc.).**
- › **Sensitive floor (SensFloor)**
  - for fall detection
  - for setting up high level scenarios
- › **Motion capture systems (Optitrack, xSENS, Kinect)**
- › **Interactive television**
- › **Connected furniture, smart lock, intercom, video conferencing system, connected blind**
- › **Cameras (3D, infrared, remote controllable, etc.)**
  - sensors & actuators interconnected via the xAAL protocols



# Projects

## A few examples of developments

### > VITAAL

The VITAAL project (Overcoming Isolation through ICTs to Ambient Assisted Living) is financed by the State-Region Brittany 2015-2020 plan contract. The objective is to fight against isolation through the use of new technologies, with health and well-being for a better quality of life as a research focus.

### > KERAAL

The objective of the KERAAL project (ECHORD++ programme (European Coordination Hub for Open Robotics Development)) is to design a humanoid robot capable of assisting patients in a personalised manner in functional rehabilitation activities. The project is led by a multidisciplinary team: IMT Atlantique, CHRU de Brest (functional rehabilitation service) and the company Génération Robot (Bordeaux).

### > AMUSAAL

AMUSAAL is a project co-funded by the Brittany region. Its objective is the development of a method for the automatic analysis of complex human movements by breaking down the recorded movements into a succession of simple unitary movements.

> The team contributes to the **Maintien@Domicile** Chaire (French research consortium), a project jointly conducted by ENSIBS and IMT Atlantique, in partnership with the Kerpape rehabilitation centre (Ploemeur).



## Discover the platforms



**IMT Atlantique**  
Bretagne-Pays de la Loire  
École Mines-Télécom

**Campus de Brest**  
Technopôle Brest-Iroise  
CS 83818  
29238 Brest cedex 03  
France  
[www.imt-atlantique.fr](http://www.imt-atlantique.fr)

UNION EUROPÉENNE  
UNANIEZH EUROPA



**L'Europe s'engage  
en Bretagne** / Avec le Fonds européen  
de développement régional

Contact:  
**André Thépaut, Christophe Lohr**  
[experiment-haal@imt-atlantique.fr](mailto:experiment-haal@imt-atlantique.fr)  
02 29 00 14 37

*The press is talking about it*



**Le Télégramme**

*«Robots to help elderly or dependent people in their daily lives. Science fiction? No, not science fiction at all. Because these applications are the subject of a vast research program conducted in Brest...  
| 20/10/2018 |*