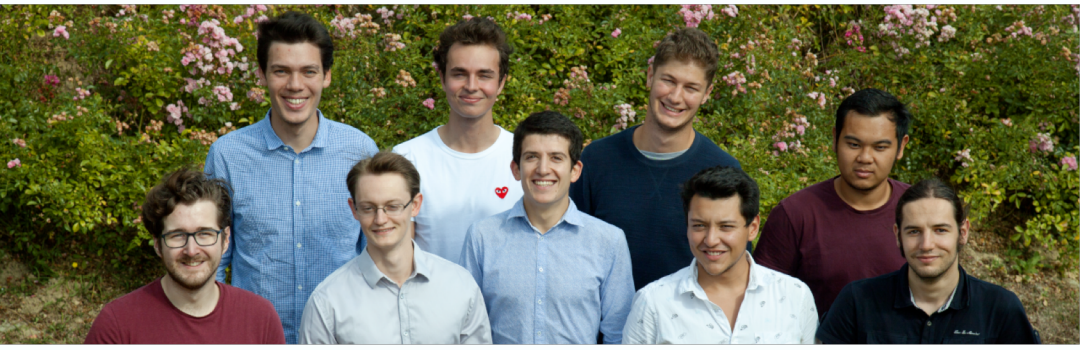
# SmartHealth Project: a connected home for health

Press kit



**A group of nine Centrale Nantes engineering students has been working on a connected home for healthcare project since 1 September 2018, continuing work started two years earlier within the framework of a partnership between Centrale Nantes and Nantes University Hospital.**

## Addressing new challenges in healthcare

In undertaking a healthcare project with Nantes University Hospital, the students who make up the project team are confronted with today's challenges in healthcare; with a healthcare system that is seeking solutions to different issues: patient monitoring, connected homes, secure medical data, high hospitalization costs, remote monitoring systems.

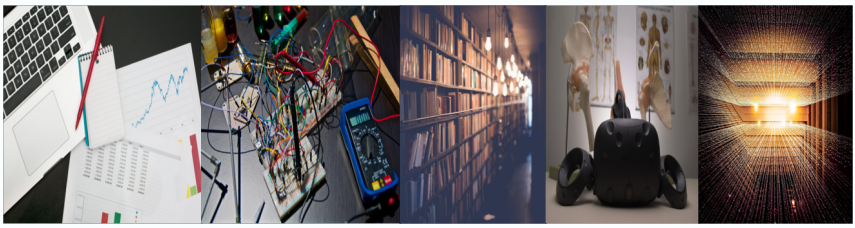
## Innovative teaching

'Connected Home for Healthcare' is a second- and third-year project-based specialisation at Centrale Nantes. Its format is original in that students do not follow regular classes as in most specialisations. The emphasis is on professional training with students working independently, and in a team, on an 8-month project. They are supervised by two members of school faculty, Emilie Poirson and Morgan Magnin as well as by two representatives of Nantes University Hospital, Thomas Lechevallier and Geoffrey Desvaux. The students choose themselves the courses they wish to follow in accordance with project needs. This professional exposure allows students to develop strong skills: teamwork, autonomy, organization and the ability to respect deadlines.

*The project option is an innovative form of teaching in both form and substance. The students take an active role in their training as they compose their own combination of courses, according to the needs of the project. Through addressing a professional problem with the benefit of educational coaching, they develop both knowledge and skills, and are evaluated on these two aspects. This work, which encompasses all engineering dimensions, sets them apart from other candidates when applying for internships for example.*

**Emilie Poirson, Head of the Engineering Programme at Centrale Nantes and of the Connected Home for Healthcare Specialisation**

## Diverse and comprehensive deliverables



### Experimentation in real conditions

One of the key aspects of the work undertaken in the project is live experimentation. After having obtained a significant number of connected objects from our partners, Garmin, Altran and iHealth, we fitted out the apartments of two of the project team's members for one month in order to monitor their health data. There were different objectives behind this approach: to obtain real health data from a connected individual, such as glucose level or quality of sleep, but also to gather user feedback. Since our project focuses on benefits for the patient, we asked our volunteers to fully adhere to the instructions for use and to keep a logbook detailing their experience. We will thus be able, as a result of this testing in real conditions, to validate or not the model as a whole.

### Digital simulator

The term 'digital simulator' covers everything related to the collection and exploitation of data from connected objects. We are developing algorithms that can cross-correlate different data, and draw conclusions. One of the objectives going forward could be to create artificial intelligence which can recognize the characteristic patterns of development in a patient's vital signs.

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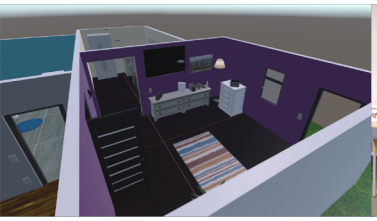
## Digital model

It is difficult for patients to imagine themselves in their future connected homes. In order to facilitate this process, we designed a 3D virtual reality model. By modelling the patient's environment, we can offer him/her a pre-visit which will allow him/her to decide on the layout and position of connected objects, with the help of an operator.



## Business model

The SmartHealth project aims to function in startup mode. That's why we have thought about the economic viability of the project. As we seek to find solutions to real problems, we have undertaken an in-depth analysis of the healthcare sector. As the economic model of the French healthcare system is reaching its limits, we are exploring alternative solutions.

## A White Paper on ethical considerations

Connecting patients' homes raises questions about the ethics involved. The issues are numerous and complex, from data collection, confidentiality and processing to the quality of patient monitoring. Throughout the project we have met various people, researchers, doctors and teachers, who helped us to delve deeper into the ethical aspects of our project. A white paper presents the work undertaken this year, but also invites further reflection.

## Press Contacts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## WEB links

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