To take up this challenge, which encompasses health, digital, robotics and big data, the Nantes University Hospital relies on its skills, investments and high-performance academic and industrial ecosystem. The NExT Initiative (Nantes Excellency Trajectory) involving the University of Nantes, the Ecole Centrale de Nantes, Inserm and the Nantes University Hospital offers the region a real opportunity to develop innovations combining health and engineering thanks to the interdisciplinary synergies between the institutions.

An innovation accelerator

Under the responsibility of Dr. Benoit Labarthe, the Partnerships and Innovation Department within the DRI manages industrial partnerships and project development, runs the innovation unit and supports the development of health products. Its objectives are to detect research results, identify projects based on the experience and expectations of professionals and patients, accelerate the development of innovations by intensifying partnerships, support clinical validation and deploy medical and economic research projects in order to verify the economic consistency of clinically validated products and enable a decision to be made on their reimbursement. The entire healthcare product development chain is covered: ideation, proof of concept, clinical validation, preparation for market access.

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The project for the future CHU

The Nantes University Hospital also supports start-ups in collaboration with the Atlanpole Biotherapies competitiveness cluster and the Atlanpole incubator. “The objective is to maximise their chances of success thanks to our know-how in terms of clinical research, fund raising and regulation” underlines Dr Riche, head of medical and economic evaluation within the DRI. In 2020, the Nantes University Hospital launched an internal call for tenders to finance innovative health products

in the first phase of commercial distribution and early access to innovative treatments.

A thought-driven avatar to cure disabilities

The team of Dr Vincent Roualdes, neurosurgeon, and brain-computer interface engineer Aurélien Van Langhenhove has joined forces with the École Centrale and the company Onepoint to show that it is possible to pilot a virtual avatar through thought based on brain activity. “This project is the result of a study on phantom pain”, recalls Dr Roualdes. “An EEG was used to detect movement intentions which are transmitted to an avatar in a virtual reality mask.” A technology designed to increase the effectiveness of neurorehabilitation sessions, restore brain plasticity and stimulate sensorimotor areas.

“A pilot clinical study is underway until the end of 2021,” says Dr Roualdes. Called “Ghost”, this trial will validate the proof of concept of the device and extend its application to other lesions of the central nervous system. Algorithms and interface software are currently being developed to eventually lead to an à la carte rehabilitation programme for para- and tetraplegic people, with the support of the Nantes University Hospital’s rehabilitation and neurosurgery department, which is co-financing the project with the APICIL association. “We aim for holistic care” concludes Dr Roualdes, who offers open-source rehabilitation devices for everyday rehabilitation. What remains to be done is to combine the speed of innovation in health care, the slowness of regulations and the proven needs of patients…

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Dr Vincent Roualdes’ team has demonstrated that it is possible to pilot a virtual avatar through thought based on brain activity

Anticipating tomorrow’s medicine

The Nantes University Hospital wishes to test as many innovations as possible before the opening of the new hospital, which will come into being in 2026. This future showcase of technological innovation will be located in the heart of a new university hospital district dedicated to health on the Île de Nantes, near the creation district and the Digital Factory.

The “medtechs” will be used to improve therapeutic and diagnostic care in this experimental area where health, innovation and start-ups will be in synergy. This new ecosystem grouping caregivers, researchers and entrepreneurs will be a real catalyst for innovation and will promote the transfer, creation of value and jobs in the health sector.

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