

Press information**Inauguration of TherA-Image, imaging technology-assisted treatment platform**

When research, medicine and high tech work together in Rennes

Imagine, in this hybrid operating theatre, surgeons, physicians and engineers surrounded by control screens, using enhanced and roboticised reality systems, enabling interventions that are even more accurate and safe. At the Signal and Image Processing Laboratory (University of Rennes 1 / Inserm), researchers, engineers and doctors at the Rennes CHU Cardio-pneumological Centre have been working together to bring the TherA-Image platform into existence.

They have designed and implemented interventional cardiology and mini-invasive surgery techniques, using image-guidance and computer-assistance through the TherA-Image platform. These procedures are designed to reduce to a minimum the time taken for the intervention and trauma from the operation. This means that the frailest patients will be able to have access to these innovative medical techniques that are designed to improve post-operative and the prognosis thanks to instruments and skills that are unique in Europe

Presentation

TherA-Image is a hybrid operating theatre, used for both patient care and de research in the field of health technology. It is a medico-technical platform located at the interface between the Rennes University Hospital, the University of Rennes 1, INSERM and the medical industry. It is here that computerised approaches are devised and deployed for planning interventions, assistance with operating procedures and assessment of these procedures. TherA-Image possesses state-of-the-art imaging equipment (3D intra-operating observation, enhanced reality, cardiac electrophysiology), operating assistance (endovascular navigation and a catheterisation robot) as well as video broadcasting (to obtain remote expertise, provide training, etc.)



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This combination of equipment and skills in the same operating theatre in Rennes is unique in Europe. It is the result of a convergence of views that originated long ago in the LTSI multidisciplinary teams, that included doctors, researchers and engineers, and a solid partnership has been formed for the long-term, including industry leaders in their own field of interest.

Today, TherA-Image makes it possible to explore new approaches to cardiovascular treatment, in order to:

- Treat cardiac insufficiency, especially through the type of treatment known as cardiac resynchronisation. Patients sometimes present with defects in the synchronisation of the heart ventricles. This means that the chambers of the heart do not all contract at the same time, so the heart no longer works efficiently and the patient becomes out of breath when making the slightest effort. Thanks to the TherA-Image platform, doctors and researchers can optimise the techniques and the implantable devices for electrically stimulating the heart.
- Eliminate the sources of electrical disturbances inside the heart muscle that are the cause of cardiac dysrhythmia. Techniques and intra-corporeal navigation models have been developed for this purpose, as well as diagrams of the electrical current inside the heart muscle. The aim is to identify the sources of electrical disturbance and check that they have been eliminated after treatment, through localised heating of the tissue.
- Promote the development of less invasive surgical techniques. For example, it should become possible to reliably replace heart valves percutaneously (passing through an artery), without having to open up the chest cavity, relying on location and algorithms and guiding the surgical instruments through the body.
- Treating aneurisms (abnormal dilatation of the walls of a blood vessel) and stenoses (shrinking or narrowing of a major blood vessel). Current mini-invasive techniques are becoming increasingly complex, but thanks to TherA-Image, the surgeon can guide his/her instruments through the blood vessels using tools for planning the route (as for GPS) and effective assisted-imaging methods (enhanced reality) to reach the lesion and install a prosthesis at the site in complete safety.



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TherA-Image is an instrument that has caused a major development in medical research and the occupational culture associated therewith, making it possible to design, deploy and assess the surgical interventions of tomorrow, to the benefit of the patient.

Inauguration and financing

The platform was inaugurated on 18 January 2013 by André Fritz, Director-general of the Rennes University Hospital, Thierry Guillaudeux, Vice-president of the university of Rennes 1 representing the chairman, Guy Cathelineau, Thierry Damerval, Deputy Director-general of INSERM, Daniel Delaveau, mayor of Rennes and President of Rennes Métropole, Jean-Louis Tourenne, Chairman of the General Council of Ille-et-Vilaine, Bernard Pouliquen, Vice-chairman of the Regional Council of Brittany representing the Chairman Pierrick Massiot and Gérard Maise, Regional Delegate for Research and Technology representing Michel Cadot, the Prefect of Ille-et-Vilaine and the Brittany Region.

TherA-Image is financed through the State-Region Project Contract 2007-2013 in an amount of €5.2 million and has received support from the European Union (FEDER: €1.7 million), and the State (€2 million), the Brittany Region (€370,000), the General Council of Ille-et-Vilaine (€640,000) and from Rennes Métropole (€526,000).

Photos and Illustrations

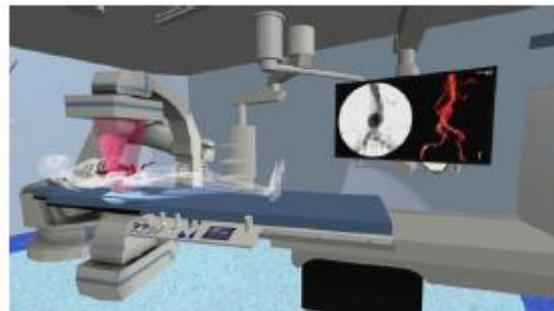
01: Treating cardiac insufficiency through resynchronisation therapy

02: Replacing the thoracic aorta

03: Simplified dynamic 3D modelling of the Théra-Image room.

Photo credits 01 and 02: Rennes University Hospital /L. Després

Photo Credit 03 : LTSI



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