

Inria



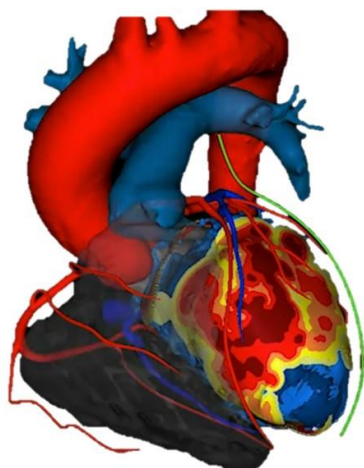
Co-funded by the European Union 

Welcome to the new European project inEurHeart



inEurHeart

inEurHeart is an artificial intelligence and digital twin innovation project aimed at revolutionising catheter ablation, a procedure performed in certain cardiac pathologies.



A new EU project, coordinated by Inria, is funded by the European Institute of Innovation and Technology - EIT Health with €3 million. This project aims to demonstrate the effectiveness of digital tools used in clinical catheter ablation procedures for ventricular tachycardias. To this end, a clinical trial will be conducted in 16 hospitals in Austria, France, Germany, and Switzerland to evaluate the added value of these digital tools.

© image : inHEART

In short

The use of artificial intelligence in combination with a digital twin, which is a reconstruction of the heart, has the potential to revolutionise healthcare. Over the past 20 years, cardiac imaging and modeling have made tremendous progress in becoming inevitable components in curing heart diseases. Now is the perfect time to transfer these academic findings into clinical practice. Digital 3D- models of the heart, generated from CT images of the patient, are a recognized and powerful non-invasive planning tool. The objective of inEurHeart is to conduct a clinical trial, coordinated by [Centre Hospitalier Universitaire of Bordeaux](#), using this technology to evaluate its added value.

- > *inEurHeart is a European and multidisciplinary consortium of 6 partners to demonstrate the effectiveness and cost-effectiveness of digital tools during cardiac interventions.*
- > *EU funding of €3 million through the EIT Health will enable this major collaborative effort.*
- > *The project, coordinated by Inria - French National Institute for Research in Digital Sciences in Sophia Antipolis, France, started the clinical phase on May 17, 2022.*

The challenge

Cardiovascular disease is the leading cause of death in Europe, of which sudden cardiac death (SCD) accounts for a significant proportion. Most patients with ventricular tachycardia (VT) are people who have already endured a myocardial infarction. In addition, patients suffer from recurrent arrhythmias, which lead to a degradation of their quality of life. To minimize the risk of recurring ventricular tachycardia and sudden death, a catheter ablation procedure is performed. This means that the areas responsible for the arrhythmic events are cauterized. Finding these areas normally happens on-site during the intervention, which can only be done by experienced interventional cardiologists and is often time-consuming. To solve these problems and support cardiologists during the ablation procedure, this project aims to enable preoperative identification and cauterization of areas responsible for the arrhythmia, using 3D digital models generated from medical images.

An international consortium.



6 Partners
5 countries
40 Scientists
16 Clinical Centers
112 Patients recruited



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The technological solution

The solution provided by [inHEART](#) allows to identify, on the detailed anatomy of the patient's heart, the ablation targets. It is a reproducible and non-invasive solution to guide cardiologist during the ablation procedure: the imaging allows to detect the targets even in the depths of the myocardium, a practice which considerably reduces the intervention time and the operative risks.

Health economics : A cost-effectiveness analysis of the inHEART technology will be performed by [Erasmus University Rotterdam](#). This is an important study to inform (hospital) decision makers on optimal allocation of scarce healthcare resources. It is expected that inEurHeart will make ablation more affordable for healthcare payers.

Transfer of innovation: Since 2015, the technology, based on R&D created by [IHU Liryx](#) (Inserm/ Univ. Bordeaux) and [Inria](#), has been made available within a university research network (MUSIC network), with multiple collaborating clinical sites uploading images to a secure server receiving 3D models in return. The inHEART product has received CE and FDA regulatory approval.

Inria is the French national research institute for the digital sciences. World-class research and technological innovation are part of its DNA, with the aim of developing and supporting scientific and entrepreneurial projects that create value for France within a European perspective.

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