inEurHeart:
AI, Digital Twin & Clinical Trial
for a Disruption in Catheter Ablation

The burden of chronic structural heart diseases

Chronic structural heart disease

20 million symptomatic patients in the US and EU alone
(3x more asymptomatic patients estimated)

Arrhythmias

Sudden cardiac death (SCD) &
ventricular arrhythmias
20% of human mortality

Atrial fibrillation (AF):
2% of the population

Heart failure

12 million patients in
the US and EU alone

Cardio-embolic stroke

1.5 million / year in the EU
alone with 20 - 40%
of cardiac origin

Heart failure medication

Beta blockers

Left atrial appendage (LAA) closure devices

Anticoagulants

Catheter ablations

Implantable defibrillators (ICDs)

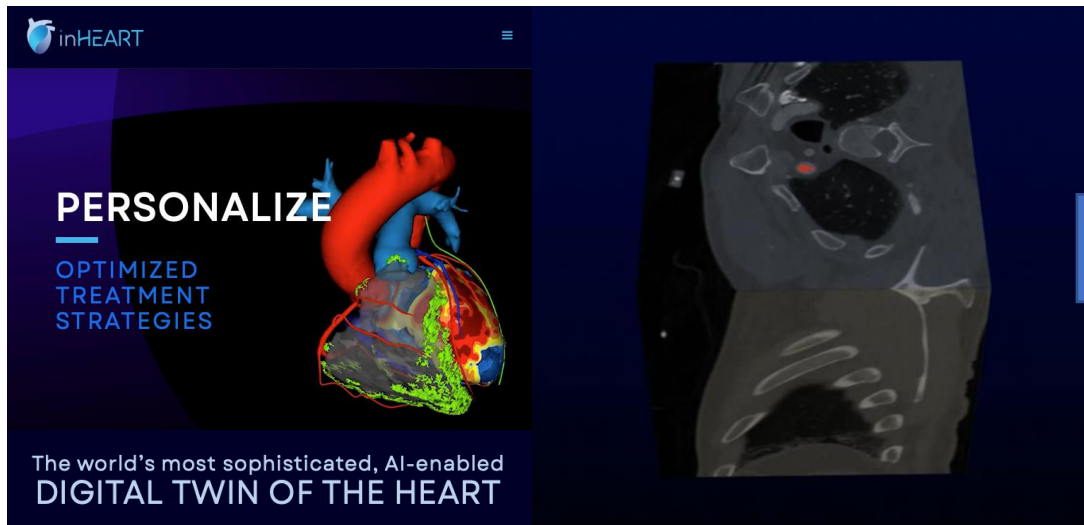Pacemakers (CRTs)
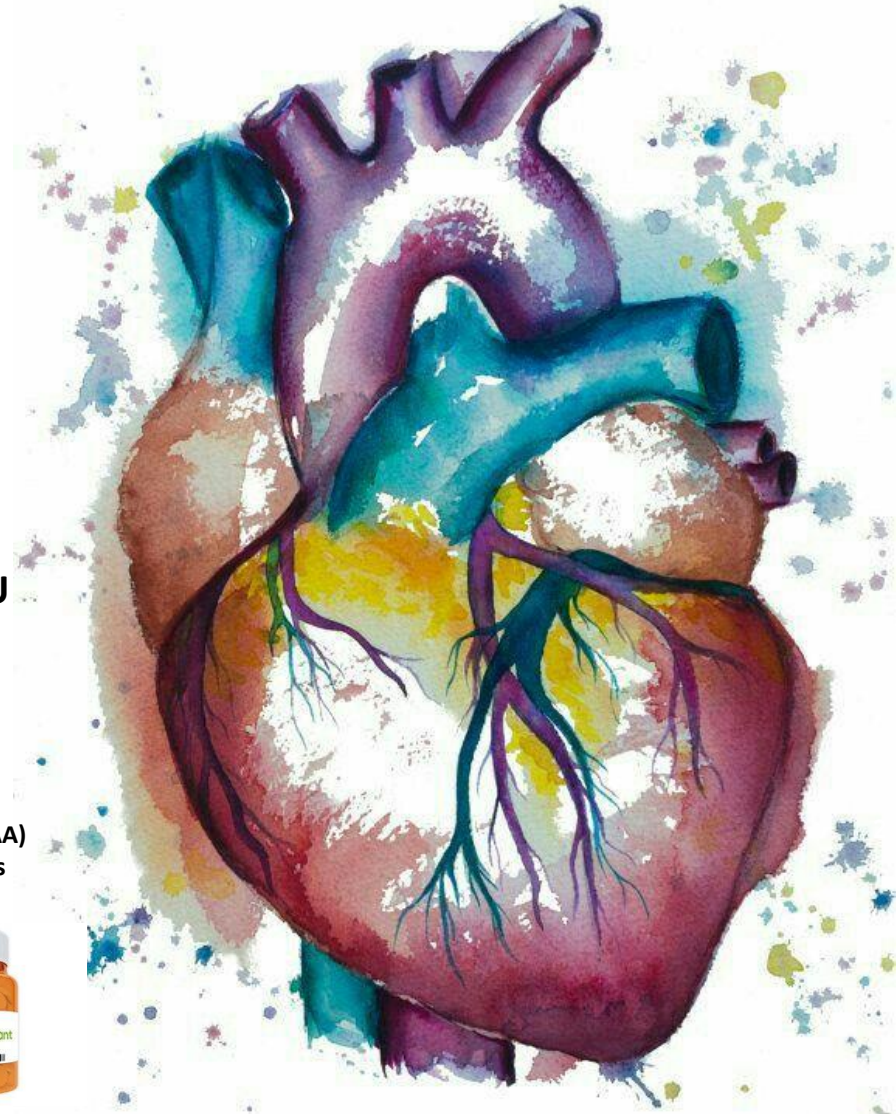
3D Electroanatomical Mapping used for Cardiac catheter ablations
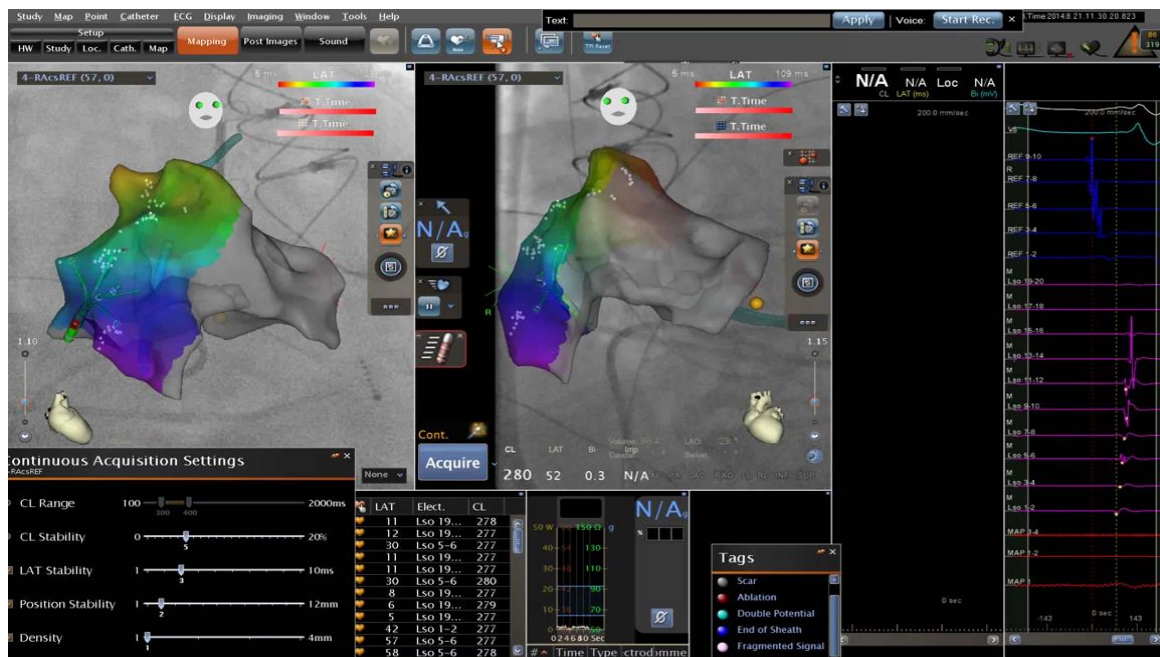
Mapping time: up to 2-3 hours
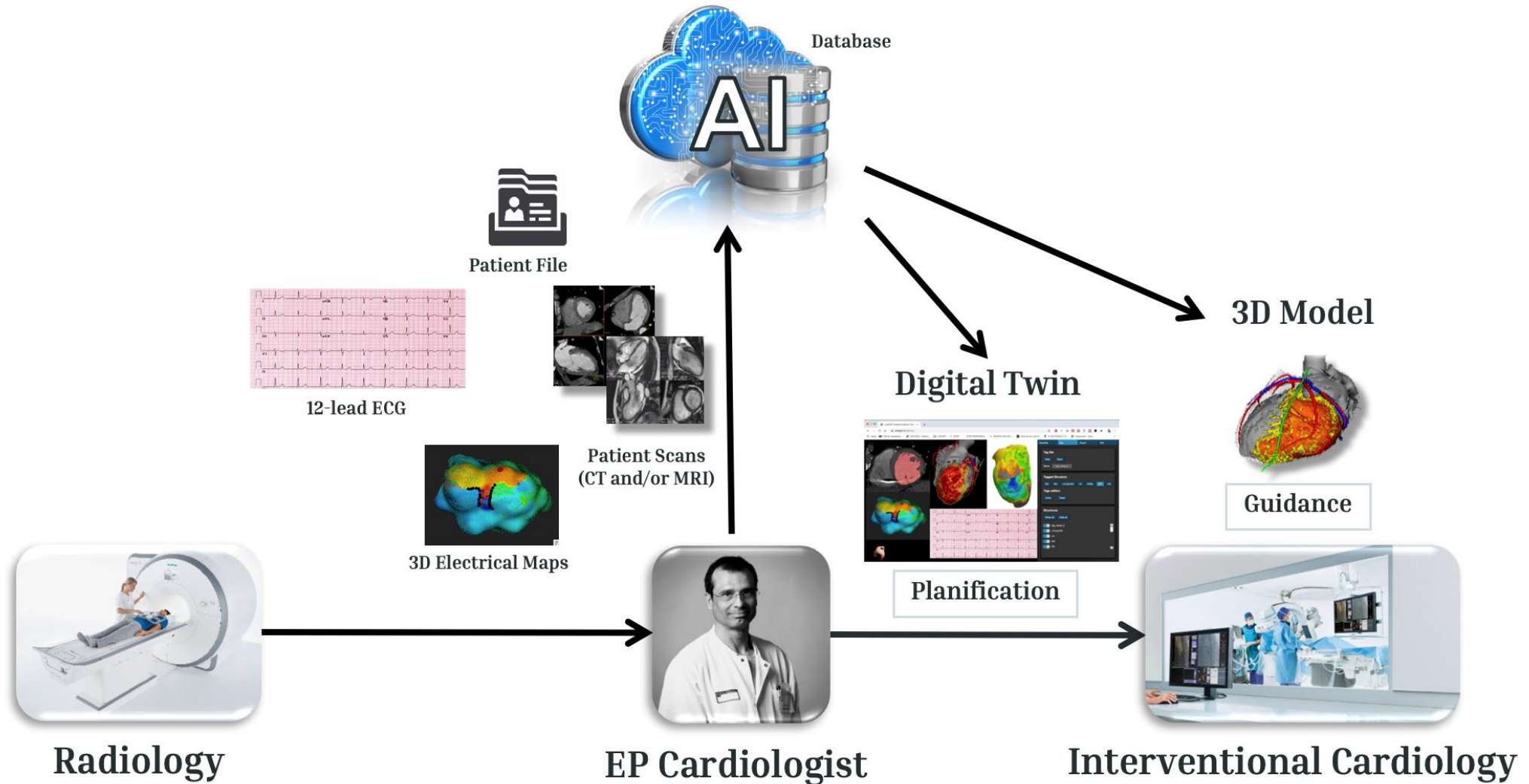**Ablation Therapy < 2h**

inEurHeart

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

Make ablation faster, safer & more efficient

inHEART Technology

- Generate personalised cardiac 3D models to plan and guide interventions

Pr. SACHER Frédéric
MD,PhD

Intra-operative Guidance
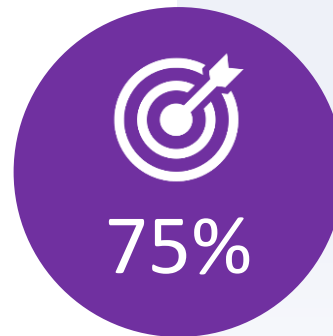
Strong clinical data

- **Pilot study in Bordeaux**
  - > 45 patients with 1-year follow up
  - Average procedure time = 110 min
  - Success rate = 75%

<2h

60% Faster[1]
Procedure time
reduced from 5h to 2h

75%

25% More Effective[1]
Success rate
increased from 60% to 75%

[1]Jais, CT/MRI-guided ventricular tachycardia ablation, EHRA 2021

inEurHeart Clinical study design:

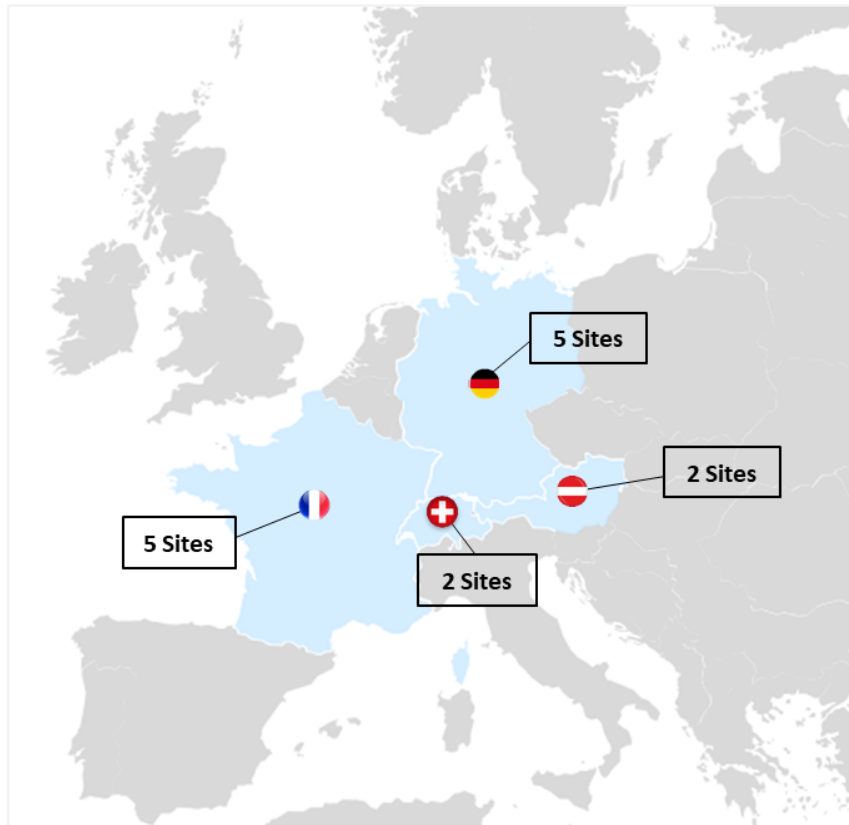European multicentric, prospective, blinded randomized clinical trial, in two parallel group.

112 patients

14 Clinical sites

4 countries

5 Sites

5 Sites

2 Sites

2 Sites

France:
- ✓ **Bordeaux University Hospital (Pr. Frédéric Sacher)**
- ✓ Toulouse University Hospital (Pr. Philippe Maury)
- ✓ Clermont-Ferrand University Hospital (Dr. Grégoire Massoullié)
- ✓ Paris University Hospital (Dr. Xavier Waintraub)
- ✓ Limoges University Hospital (Dr. Benoît Guy-Moyat)

Germany:
- ✓ **Rhön-Klinikum AG, Bad Neustadt (Pr. Thomas Deneke)**
- ✓ Evangelisches Krankenhaus Düsseldorf (Pr. Christian Meyer)
- ✓ Technical University of Munich (TUM) (Pr. Isabel Deisenhofer)
- ✓ Asklepios Kliniken Hamburg GmbH (Pr. Stephan Willems)
- ✓ Universitäres Herzzentrum Lübeck (Pr. Roland Tilz)

Austria:
- ✓ **Medical University of Graz (Pr. Daniel Scherr)**
- ✓ Ordensklinikum Linz GmbH (Pr.Dr. Helmut Pürerfellner)

Switzerland:
- ✓ **Inselspital Bern (Pr. Tobias Reichlin)**
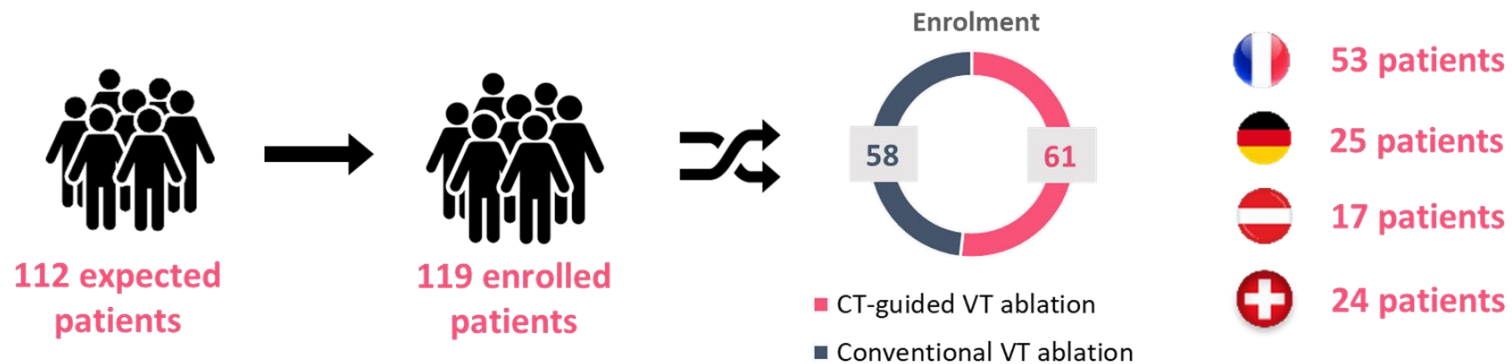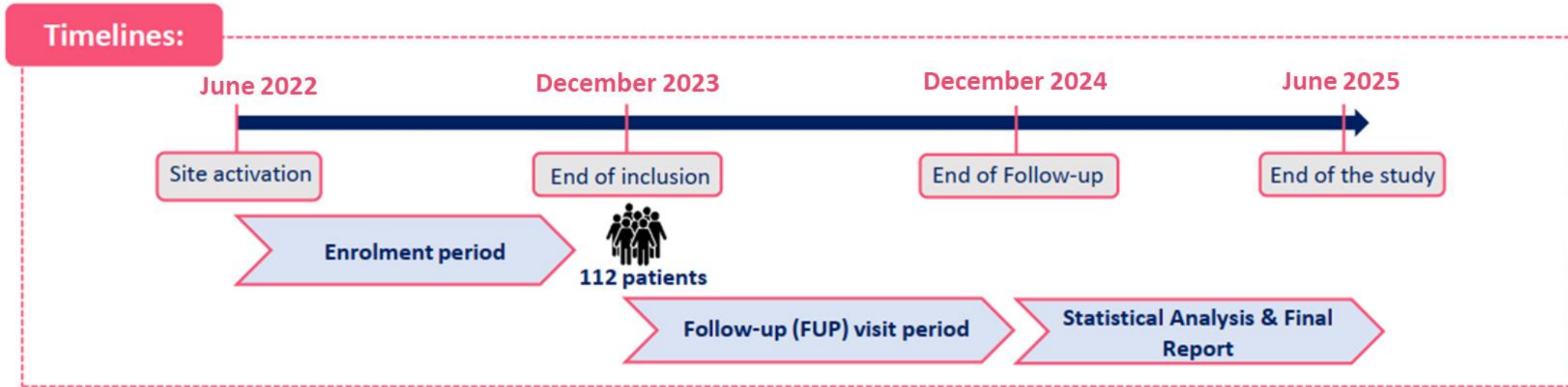- ✓ Vaudois University Hospital, Lausanne (Dr. Mathieu Le Bloa)

Conventional Ventricular
Tachycardia (VT)
ablation procedure

VS

Image-guided VT ablation
procedure
(From cardiac CT scan images)

Timelines of the clinical project:

Timelines:

June 2022	December 2023	December 2024	June 2025
Site activation	End of inclusion	End of Follow-up	End of the study

Enrolment period

112 patients

Follow-up (FUP) visit period

Statistical Analysis & Final Report

112 expected patients → 119 enrolled patients

Enrolment

58 — 61

- CT-guided VT ablation
- Conventional VT ablation

🇫🇷 53 patients

🇩🇪 25 patients

🇦🇹 17 patients

🇨🇭 24 patients

Abstract expected on February 2025 and publication of final results on May/June 2025

Cost-effectiveness study alongside clinical trial

To answer the question: **Is image-guided ablation more effective than conventional ablation, and if so, how much more and at what cost?**

Comparing effects and costs

Image-guided ablation

 Health outcome A

 Costs A

Conventional ablation

 Health outcome B

 Costs B

Effects are health outcomes such as:
- *Overall survival*
- *Quality adjusted life years*
- *Events*

A health economic model is built to extrapolate our trial data:

- The disease pathway is created to form the model structure
- Trial data is used to inform the model
- Health outcomes and costs can now be calculated over a lifetime

> *Conducted by our team at*
> *Erasmus University Rotterdam*

Maureen Rutten-van Mölken, Prof
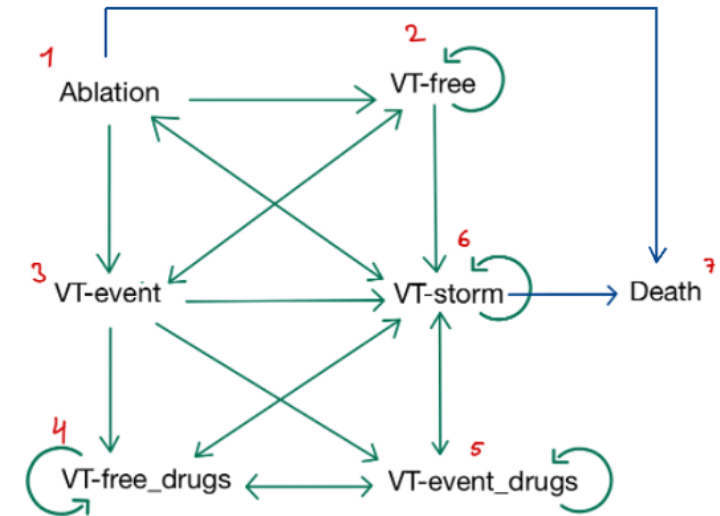Full professor of Economic Evaluation of Innovations for Health

Lucas Goossens, dr
Associate professor of HTA/
Vice-dean of Education

Sanna Azzouz, MSc
PhD candidate
MSc Health Economics, Policy & Law

Making **ablation therapy** accessible to **most patients**

Simple

Standardised

Effective

Scalable