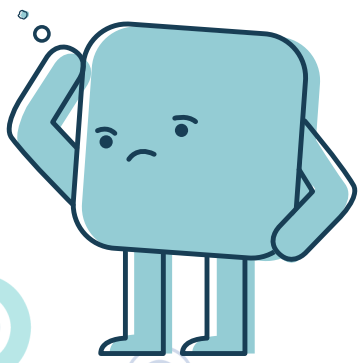


Mapping and ablation of cardiac arrhythmias

Atrial fibrillation (AF) is the most common sustained cardiac arrhythmia in adults. Most treatments are aiming to reduce the complications of this disease. Catheter ablation has shown more effective than drugs, but it is an invasive treatment associated with a small but still significant risk of complications and with suboptimal results (precise AF mechanism and best mapping approach are still poorly defined). In addition, it is mostly performed by manual operation of catheters, which requires a significant amount of dexterity and experience. Remote magnetic navigation (RMN) and the use of soft magnetic catheters have reduced major complications by 72%, improved short term & long-term efficacy by 6-8%, and lowered radiation exposure for the patient by 36%. The next milestone is to demonstrate that RMN can also shorten the duration of the procedure, allowing the electrophysiologist to operate more patients per day, and reduce the number of non-treated patients due to the lack of specialists.



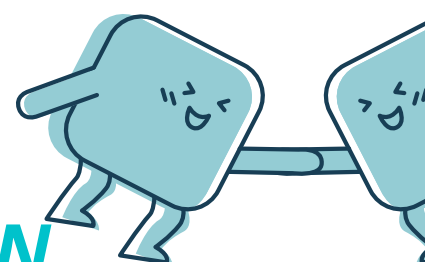
PROBLEMS



- Data fragmentation and lack of interoperability: device manufacturers and different mapping software vendors use different data, which requires a huge preparatory and translation process before data can be used (and retrieved)
- The ablation procedure (mapping process) needs to be more precise: at present, it is essentially unguided, consisting in inserting a catheter in the heart followed by manual search of the diseased area
- The procedure still causes injury to the cardiac tissue.

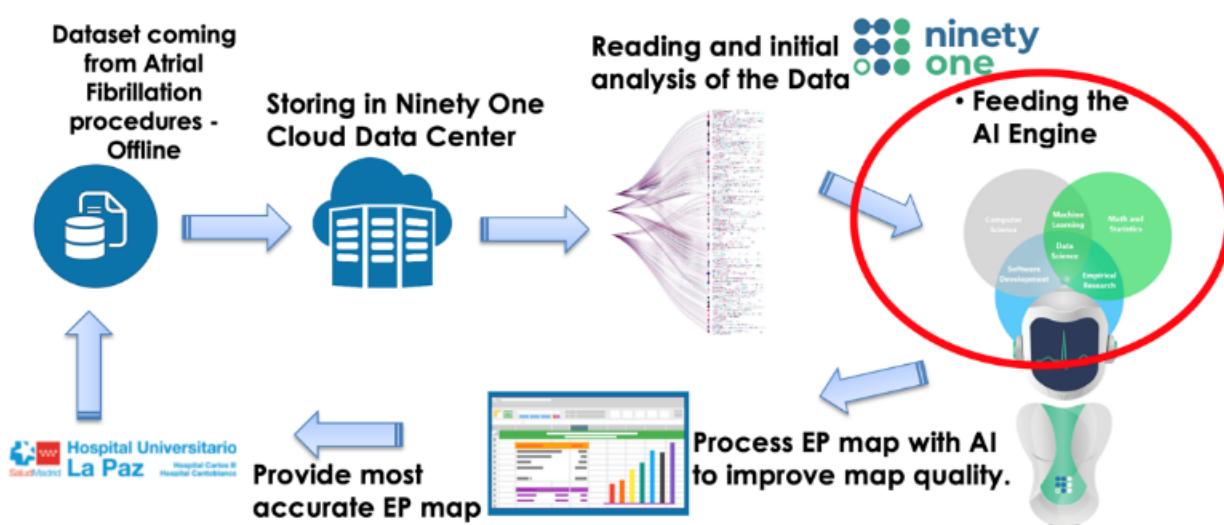
OBJECTIVES

- Develop mapping and AI solutions that can be applied to remote navigation control of robots. One of the core issues that needs to be solved for reaching this goal is to integrate data sets across different models and device types from various companies that record ECG signals or have developed tools to map the electrical activity of the heart,
- Contribute to the standardization of all medical data recorded in the Electrophysiology (EP) lab.



THE SOLUTION

The solution is based on mathematical modelling and AI methods. Specifically, the current focus is on 3 main features:



- Machine Learning-based data translation utility, which helps to increase interoperability between different medical facilities and device manufacturers across various medical services.
- AI-based data mapping and correlation utility which helps to speed up the creation of an EP map based on real-time cardiac mapping data and to reveal correlations between the medical pathology and different factors such as diet and lifestyle
- 3D-5D Cardiac vector map, which supports the remote navigation robot and enables semi and fully automated guidance.

VALUE PROPOSITION

Make data easier to access, use, store and be understood by machines and people through a standardized data access model. The final goal is to create a standard for EP cardiac data to be used by any electrophysiologist.

MARKET

Healthcare: Hospitals

Industry: Companies producing devices, Companies specialized in mapping interested in increasing the accuracy of their applications

BENEFICIARIES

Electrophysiologists

SOLUTION PROVIDERS

Main solution

provider:

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