

# News release

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## European project in cardiology for chronic patients

### The importance of this product and how can it change our life

**Heidelberg, 9<sup>th</sup> of December 2016** - The CAST consortium has reached the first milestone of the project by concluding the System Architecture and Requirements. We have now the over hundred requirements defined as specifications for the wearable hardware shirt, the sensors, the communication devices and the web-platform. Technical development has started with the most basic requirements.

The motivating for the CAST project was clear: cardiovascular disease (CVD) is the main cause of death in Europe, for both man and women of all ages accounting for over 4 million deaths each year. Every year, CVD costs 196 billion euros to European Union economy<sup>1</sup> through both the medical and social care needs, as well as the economic impact of premature retirement and reduced work force. CVDs can be broken down in several pathologies, which can be identified through different arrhythmia profiles. In particular, Atrial Fibrillation (AF) is the most common type of heart arrhythmia, and an important cause of morbidity, both in itself and due to the associated risk for stroke (four to five time higher). This condition is responsible for more than 750,000 hospitalizations and 130,000 deaths each year<sup>2</sup>. As well postoperative atrial fibrillation (POAF) has become the most

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<sup>1</sup> Kestens, M. (2015). *European Cardiovascular Disease Statistics 2012 - EHN - European Heart Network*. [online] Ehnheart.org. Available at: <http://www.ehnheart.org/cvd-statistics.html> [Accessed 22 Jun. 2016].

<sup>2</sup> Cdc.gov, (2015). *Atrial Fibrillation Fact Sheet|Data & Statistics|DHDSP|CDC*. [online] Available at: [http://www.cdc.gov/dhdsp/data\\_statistics/fact\\_sheets/fs\\_atrial\\_fibrillation.htm](http://www.cdc.gov/dhdsp/data_statistics/fact_sheets/fs_atrial_fibrillation.htm) [Accessed 16 Sep. 2015].

common complication following cardiac surgery, with an incidence ranging from 10% to 30% in modern surgery<sup>3</sup>.

Reinforcing this issue is also the World Health Organization (WHO) which recently published the CVD-related statistics<sup>4</sup> and the World Heart Federation (WHF) which launched a new Roadmap to tackle Non-Valvular Atrial Fibrillation. The initiative aims to help prevent AF and to improve its management worldwide<sup>5</sup>. Other AF-focused medical products are being developed, such as a Smartphone-based electrocardiogram that identifies AF episodes and attempts to prevent the increase of the population with this pathology<sup>6</sup>. This worthy to mention development is relevant in its dimension, but the technical approach is insubstantial at best. It is a classical approach with electrodes glued to the skin and a smartphone acting as a holter monitor, just like CardioSecur<sup>7</sup>, AliveCor<sup>8</sup> is also working in this field with an interesting patch, but no patient is going to hold the smartphone with both hands for 24hours to get continuous monitoring. Many more patches are to be found in the market but do not focus on the pertinent issue of medical staff usability, durability and user-friendliness.

**These studies show how imperative it is to actively contribute to tackle Atrial Fibrillation. Undetected AF demands relevant innovations in healthcare and we propose a solution.**

With the CAST system we can keep chronic patients permanently monitored and immediately identify and report cases of Atrial Fibrillation. Characteristics of the system that go beyond the current state of the art include:

- No active or wet electrodes;
- Great usability, comfort and durability;
- No overheads for the patient, just wear the shirt and we'll take care of the rest;
- On-line access to the collected ECG data to authorised personnel;
- Multi-patient support in the same interface;

<sup>3</sup> LaPar, D., Speir, A., Crosby, I., Fonner, E., Brown, M., Rich, J., Quader, M., Kern, J., Kron, I. and Ailawadi, G. (2014). Postoperative Atrial Fibrillation Significantly Increases Mortality, Hospital Readmission, and Hospital Costs. *The Annals of Thoracic Surgery*, 98(2), pp.527-533.

<sup>4</sup> <https://twitter.com/WHO/status/792427739194294275>

<sup>5</sup> <http://www.wallstreet-online.de/nachricht/8966862-world-heart-federation-launches-global-roadmap-to-tackle-atrial-fibrillation-the-most-common-form-of-irregular-heartbeat>

<sup>6</sup> <http://specialty.mims.com/topic/mass-screening-for-atrial-fibrillation-with-smartphone-ecg-in-hong-kong?country=malaysia>

<sup>7</sup> <https://www.cardiosecur.com/en/>

<sup>8</sup> <https://www.alivecor.com/en/>

- Mobility for patient and clinical level support;
- Wireless and near real-time contact with seamless user interface.

In short, we are creating a telemedicine service for an innovative wearable shirt, which provides the cardiologist with an intelligible visualization of up-to-date health information of multiple patients. The CAST Project prepare us for an important role in disease prevention and early detection of CVDs.

The beneficiaries of this product include:

- Patients that require the monitoring of long term, chronic conditions (e.g. atrial fibrillation);
- Patients in rehabilitation following trauma/surgery and ;
- General patients in need of assistive technology.

To this date, the consortium has produced a draft hardware and software system, to match the most basic requirements. The complete system specification has now given us the green light to produce the next level of wearables for cardiology.

In 2017 you can expect more update on our technical development, with use case demonstrations. By the end of 2017 we expect to present a system with 75% of the requirements implemented and ready for demonstration.

Register at our website to obtain the most up to date information and knowledge about our work.

[www.project-cast.eu](http://www.project-cast.eu)



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