



## **D-HEART: THE FIRST HOSPITAL LEVEL ECG FOR SMARTPHONE AND TABLETS, WHICH CAN BE USED BY ANYONE, ANYTIME AND EVERYWHERE.**

*D-Heart is the first electrocardiograph for smartphones and tablets that is simple to use, clinically reliable, portable and affordable. In fact, it allows anyone to perform a hospital-level ECG in total autonomy and send the results to the 24/7 h telecardiology service or to your doctor thanks to the mobile or wifi network.*

D-Heart biomedical start-up was founded in 2015 thanks to the work of Nicolò Briante and Niccolò Maurizi, at the time two young students in the interdisciplinary environment of the Almo Collegio Borromeo of Pavia. Maurizi is a young doctor researcher in cardiology at the University of Florence. When he was sixteen, Maurizi was hit by a myocardial infarction. He decided to become a doctor and transform his problem into an opportunity. Thanks to the help and business expertise of his roommate, Briante, they created D-Heart, the first smartphone ECG device that combines the usability required by the patient and reliability of the ECG wanted by the doctor. D-Heart is based on two fundamental values: simplicity of use for the patient and reliability of data for the doctor, because it ensures the same performance as hospital electrocardiographs, being certified and clinically validated. Furthermore, the device has not only been entirely designed, developed but also produced in Italy.



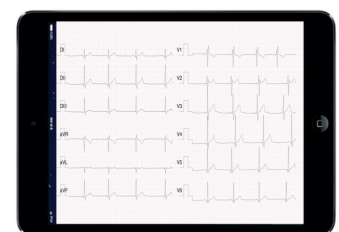
*D-Heart medical device*

### **FOR WHO IS IT?**

For those suffering from heart problems, has undergone a cardiac intervention for which he follows special treatments or simply already has full-blown cardiovascular risk factors (e.g. smoking or hypertension), is an ally to monitor the health of his heart and live more serenely, less hospitalized and in many cases, it can even be a lifesaver.

### **NEWS 2019**

Recently a great goal has been achieved, it is now possible to do with the same device, even a 12 lead ECG, in practice the same ECG that can be done in the hospital with the same completeness. Through the smartphone application, connected to the device, if you register as a patient you can perform an 8-lead electrocardiogram, if instead you register as a health professional, you can register a 12 lead ECG. With this evolution, with a single product, two different use cases can be achieved: being the ideal solution both for the normal patient, who does not have particular medical skills, and for healthcare personnel, a general practitioner, a nurse, a pharmacist, that despite having medical knowledge they can have difficulty using traditional hospital appliances because they are bulky, complex, expensive, or simply because they cannot read and interpret the electrocardiogram. Thanks to our telecardiology service, there is always a cardiologist from the San Raffaele Hospital in Milan who can provide the report 24/7.



*12 lead ECG on a tablet*



The achievements in terms of quality differentiate D-Heart from many other solutions that for ordinary people may seem the same, such as the Apple Watch, Alivecor Kardia, QardioCore which record an electrocardiogram. But the point is not to do an electrocardiogram, but which type of it, because it is one thing doing a single-channel ECG, which allows to diagnose only one pathology called atrial fibrillation, but quite another to do an 8-channel and even 12-channel ECG, which allows to identify any heart problem, both rhythmic and ischemic.

## HOW TO USE IT

D-Heart is simple to use because, thanks to an image-processing algorithm that uses the smartphone's camera, the user is guided in the correct positioning of the electrodes on his chest. It connects to your smartphone or tablet via Bluetooth and the App helps step by step to correctly record an ECG in a few minutes.



*D-Heart suitcase and electrodes*

The patented cable exit system prevents the user from inverting the cables and allows their coiling with a simple movement of the wrist. The ECG can be sent to the 24/7 operational telecardiology service where one of our cardiologists will report the exam in a few minutes. Alternatively, the patient can share his ECG with his trusted doctor. It is portable, weighs less than a smartphone and recharges by contact while it rests in its case. It is affordable because it costs a fifth compared to a professional electrocardiograph.

## GOALS

One of the main goals is to integrate D-Heart into the company's health and welfare policies. On this front we are working with BNP Paribas Cardiff for the Healthy Corners, which will soon be placed within all BNL bank branches in Italy.

Given that the two main causes of death in the world are two heart diseases: heart attack and stroke, we are also working to create new life policies, TCM and Long-Term Care with the D-Heart device and service included in the policy. In this direction we are collaborating with Europ Assistance and Generali, to organize "The Heart Days" in which it offers the opportunity for Generali customers to learn about the product and obtain a free ECG screening with blood pressure measurement and nutrition advice for the cardiovascular prevention. All these initiatives are in a sense an intermediate step to show people that if they can do an ECG with D-Heart in the agency or bank, they can also do it at home in complete autonomy. The next step will be to get to the patient's home, through health and life insurance policies. In the world there are already virtuous cases of this type that demonstrate how the health policies in which the person is encouraged to maintain correct lifestyles, through small daily actions (going to the gym, walking, eating healthy, sleeping regularly), and offering 'rewards' based on the results achieved, such as the discount the following year on the policy, are a winning model. Empowering the person to take care of himself is the only efficient way to reduce any health care costs and to do serious prevention.



## SOCIAL IMPACT

Mobile health (m-Health) technologies are revolutionizing cardiovascular (CV) medicine. However, more than 80% of heart disease related deaths occur in developing countries, that are unable to take advantage of such innovations for healthcare awareness and prevention. With the rise of non-communicable diseases there is an urgent call to promote effective and accessible low- cost prevention campaigns in low-income setting. While high-income countries remain at the forefront of developing the latest mobile technologies used in healthcare, the rate of penetration of such technologies in low-and-middle-income countries has recently exceeded that of their wealthier neighbours. In general, low-and-middle-income countries have major restrictions on their healthcare capacities due to the lack of infrastructures, human resources and logistics. Smartphone technology may overcome several of these limitations by providing an easy and affordable access to accurate diagnostic and monitoring methods. In such setting, widespread availability of accurate ECG screening would represent a major step in the right direction.

With D-Heart we are active worldwide in affordable and operator-oriented cardiovascular screening campaigns, partnering with NGOs, private foundations as well as benefit corporation.

## AWARDS

- **Think for Social;** Fondazione Vodafone (1st place/470 projects)
- **Start Lab;** Unicredit
- **Bio in Italy Investment Forum;** Assobiotec (best presentation)
- **Open-F@b call4ideas;** BNP Paribas (best solution for healthcare insurance 2016)
- **Romano Rancilio Award;** Fondazione Altis (best social italian start-up)
- **Global Social Venture Competition;** Berkley University (Priya Haji Award)
- **Italian Society of Cardiology;** (Best Abstract)
- **Best 100 Italian Start-up;** Startupitalia magazine
- **The future of telemedicine is now;** TEDX
- **Digital Summit;** Ernest & Young (Digital Health)
- **Best insurance tech Solution;** Accenture Report 2017
- **Think Tank on Italian Healthcare;** Forum della Leopolda
- **Red Dot Design Award;** Design Award 2018
- **ADI Design Index;** Innovation and made in Italy 2018 Design Award
- **Forbes Italia;** Briante and Maurizi have been selected among the most influent under 30 in Healthcare 2019;
- **B Heroes;** TV show on Sky Uno 2019 (second place out of 20 finalist start-ups, selected from more than 1,000 participants);
- **Endeavor X;** selected for the scale up program 2019.