

# CardiLink: delivering lifesaving connectivity when it's needed most

Read on to learn about how CardiLink is providing an IoT platform service that's helping medical device manufacturers identify operational problems and save lives during emergency situations



# Highlights

- Malfunctioning AEDs can go undetected until the moment they are needed most. Connecting these devices helps reduce that risk.
- Connecting AEDs ensures the devices remain compliant with the latest medical regulations.
- Emergency equipment, mainly automated external defibrillators (AEDs), can be monitored and checked remotely, significantly improving quality control, thereby helping to save lives.
- An IoT cloud service platform can notify first aid responders that their assistance is required if an emergency occurs in the surrounding area.
- Connected solutions save time and money, by automating safety checks and cutting down on labour intense on-site operational checks.
- Robust, secure global connectivity provided by Telenor Connexion.

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*Surviving cardiac arrest depends on the reliable operation and administration of AEDs. Telenor Connexion are the backbone of our operation and have been our partner from early scale-up through to today. We selected Telenor Connexion as our global connectivity partner because they had the best performing SIMs and have proved themselves to be trustworthy partners. Their global managed connectivity is reliable and secure which is critical for the successful operation of our services*

Lars Wassermann, Founder and CEO of CardiLink

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## Background

CardiLink is a forerunner in Medtech device monitoring and specialises in providing global medical device manufacturers and owners of Automated External Defibrillators (AEDs) with fleet management capabilities.

CardiLink's cloud IoT service platform provides AED owners and manufacturers with critical insights into device status and location, with alert notifications on the status of the life-saving medical devices. It also ensures devices remain compliant with the latest medical device regulations.

Westbase.IO connect places and assets using a range of solutions based on 4G/5G, IoT and AR glasses. Westbase.IO provide CardiLink with connectivity services and technological knowledge that enable its cloud IoT service platform. Westbase.IO work with Telenor Connexion to provide CardiLink with Managed Connectivity and help securely monitor its fleet of AEDs.

## A global problem

Cardiac arrest is defined as the abrupt loss of heart function in a person who may or may not have been diagnosed with heart disease. It can occur suddenly or amidst other symptoms. Cardiac arrest is lethal and often results in death if lifesaving steps are not taken immediately<sup>1</sup>.

However, cardiac arrest may be reversed if CPR is performed, and a defibrillator administers a shock to the heart and a normal heart rhythm is restored within a few minutes of the cardiac arrest.

An automated external defibrillator (AED) is a device that delivers an electric shock through the chest to the heart. The shock can stop an irregular heartbeat and stimulate a normal rhythm to resume. In the UK there are over 30,000 out-of-hospital cardiac arrests (OHCA) a year where emergency medical services attempt to resuscitate a victim. However, the survival rate is low – just 1 in 10 people in the UK survive an OHCA<sup>2</sup>. In the US, more than 350,000 cardiac arrests occur outside a hospital each year<sup>3</sup>. In Europe, cardiac arrest accounts for around 20% of all deaths annually<sup>4</sup>. Globally, cardiac arrest claims more lives than breast cancer, prostate cancer, influenza, pneumonia, car accidents, HIV, firearms, and house fires combined.

These statistics illustrate how commonplace cardiac arrest is, as well as the need for early detection and rapid response.

## Strict mandates

European and US legislation<sup>5</sup> requirements have been implemented that oblige AED manufacturers to check and document the state of their AED devices throughout its lifecycle, to help ensure they are functioning correctly. The directives not only cover AED hardware and software but include all IT network characteristics and IT security measures, including protection against unauthorised access, for devices that are connected to a network.

## Challenge:

AEDs are often installed in public spaces where large groups gather, such as shopping centres, cinemas, venues and offices. The challenge for manufacturers and AED owners is ensuring reliable operation.

While AEDs are largely unattended devices, they do require regular maintenance. The challenge is that the person who may have been responsible for installing the device, will not be there every day to check and assess its operational state. Nonetheless, the critical nature of the device means it requires monitoring and regular safety checks, even when working correctly.

Unfortunately, various studies claim AEDs do sometimes malfunction, with battery problems accounting for 25% of the failures . On an unconnected device, this might go undetected, until the moment it is needed most. The harsh reality is that AED failures can lead to deaths. Therefore, regular checks are critical and, in many countries, mandatory.

The COVID-19 pandemic further complicates matters. In periods where many facilities are closed, it can be a logistical challenge checking AEDs for faults.

<sup>1</sup> <https://www.heart.org/en/health-topics/cardiac-arrest>

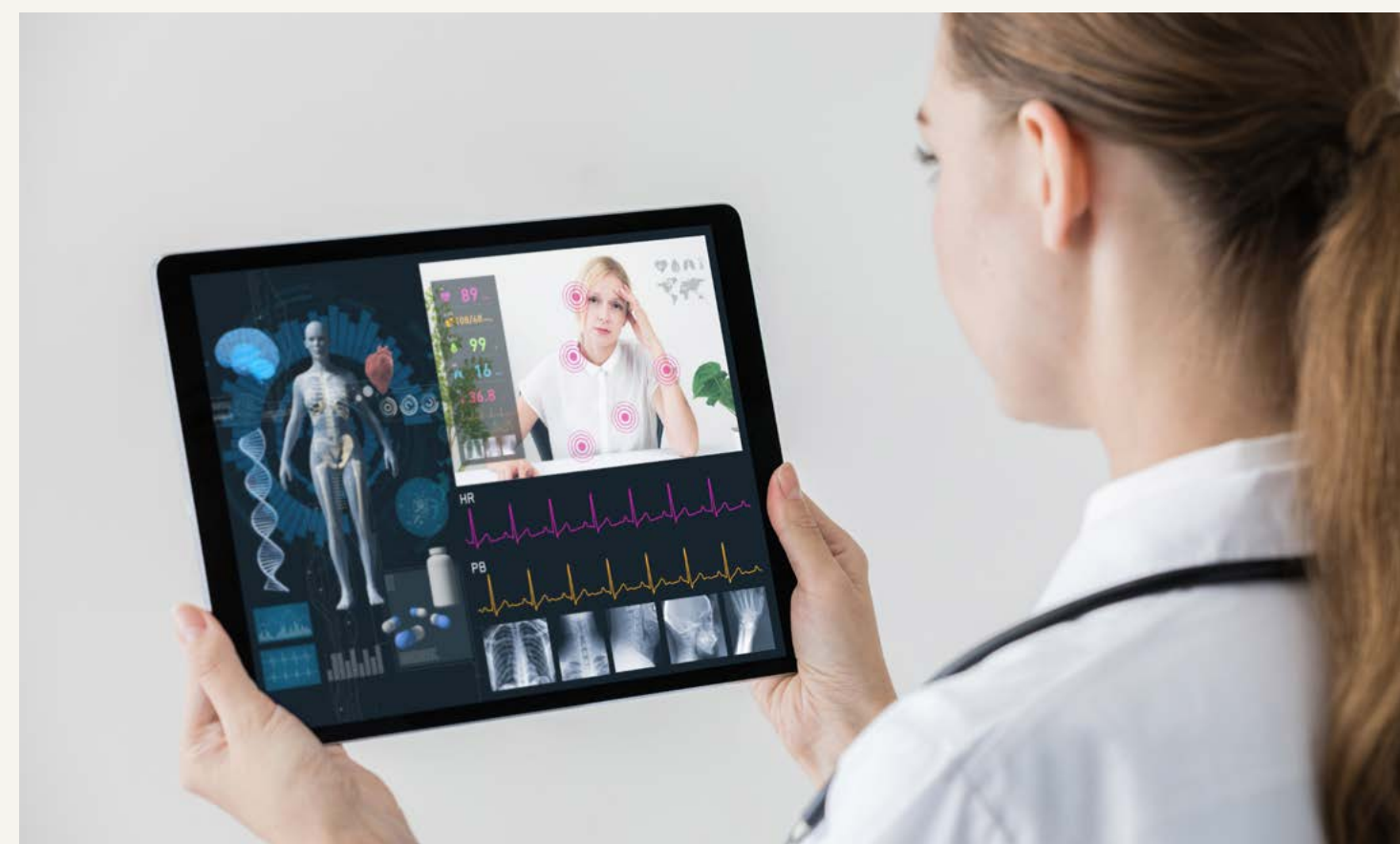
<sup>2</sup> <https://www.bhf.org.uk/what-we-do/policy-and-public-affairs/transforming-healthcare/out-of-hospital-cardiac-arrests>

<sup>3</sup> [https://ahainstructornetwork.americanheart.org/AHA/ECC/CPRAndECC/AboutCPRECC/CPRFactsAndStats/UCM\\_475748\\_CPR-Facts-and-Stats.jsp](https://ahainstructornetwork.americanheart.org/AHA/ECC/CPRAndECC/AboutCPRECC/CPRFactsAndStats/UCM_475748_CPR-Facts-and-Stats.jsp)

<sup>4</sup> <https://www.erc.edu/projects/escape-net>

<sup>5</sup> <https://eur-lex.europa.eu/eli/reg/2017/745/oj>

<sup>6</sup> <https://www.sca-aware.org/sca-news/report-on-aed-failures-a-reminder-that-maintenance-is-vital>



## Solution:

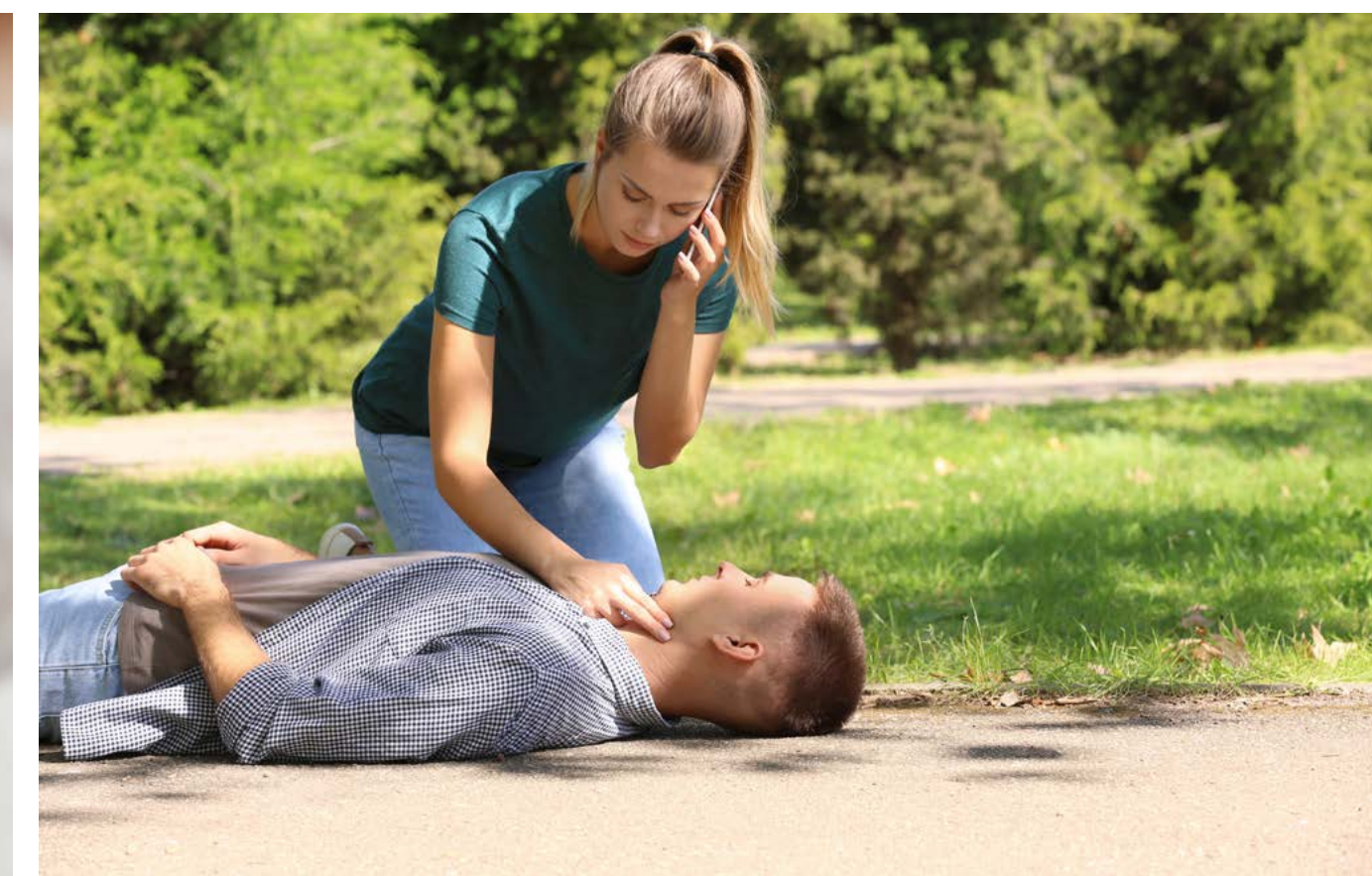
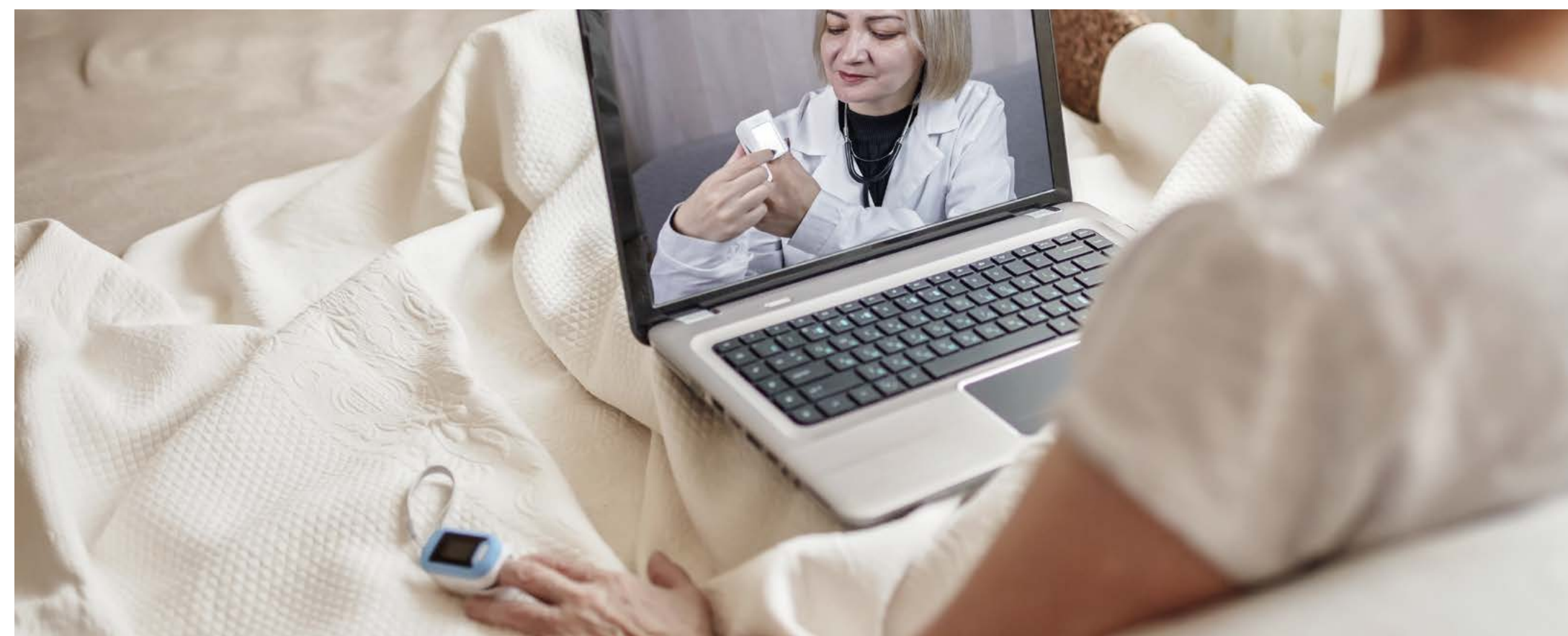
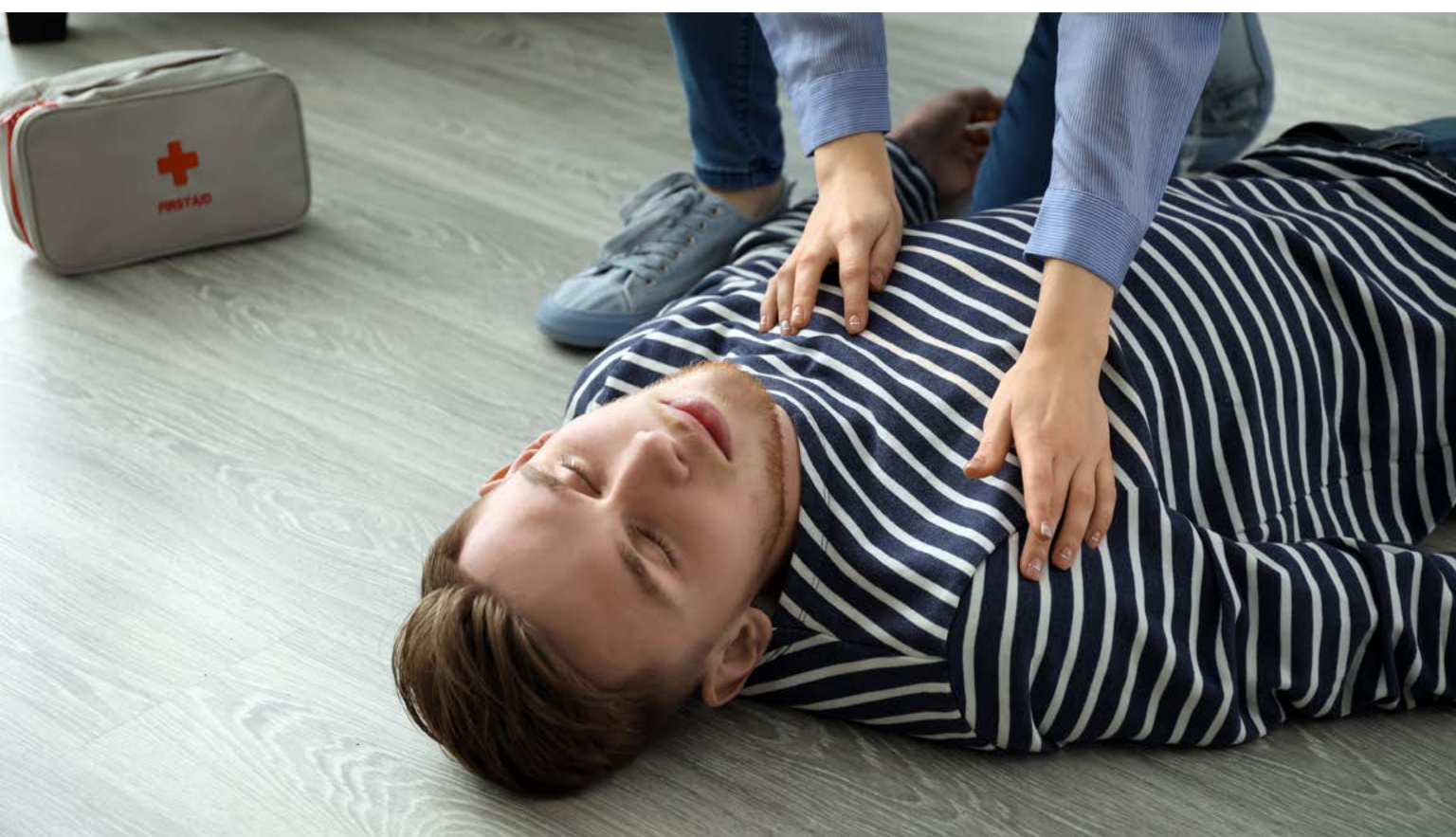
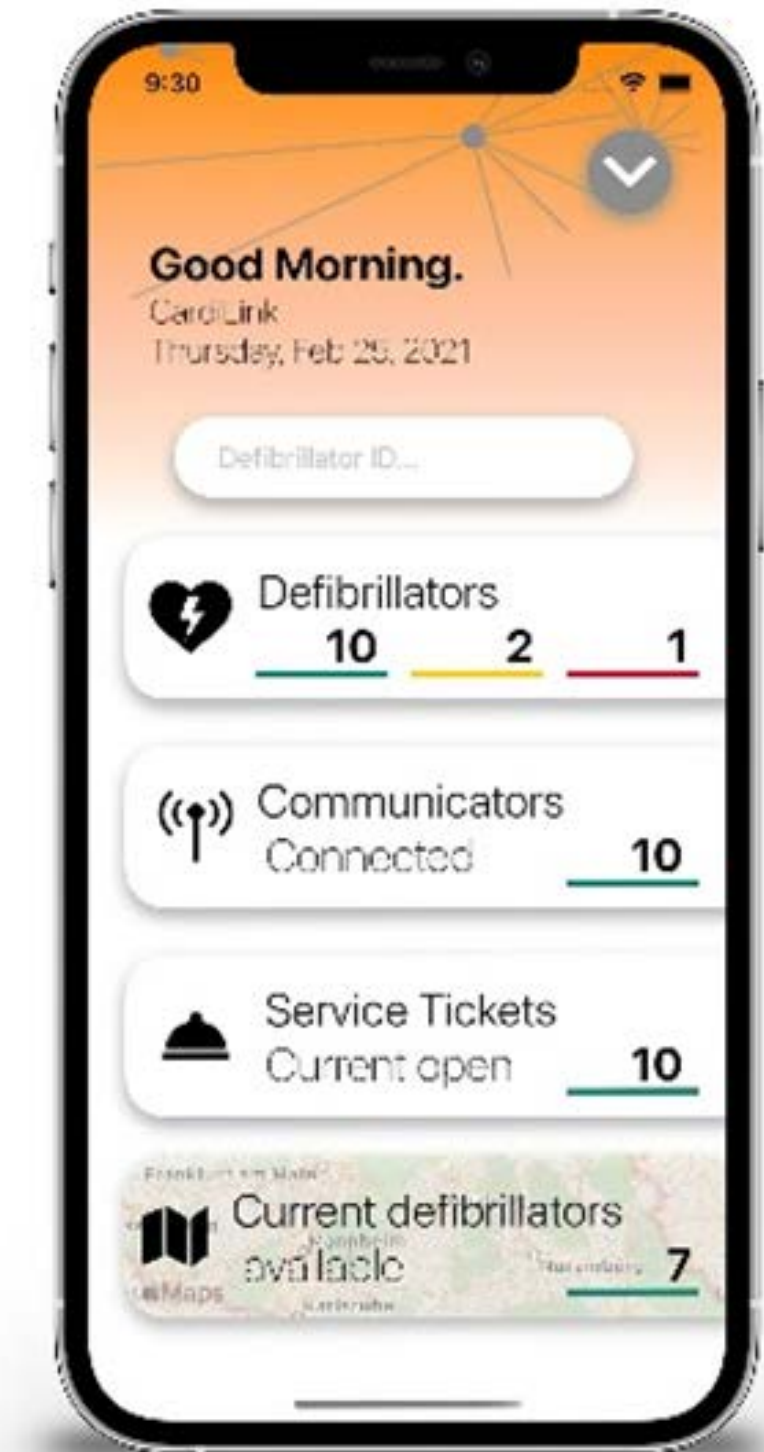
CardiLink's cloud based IoT platform overcomes all these challenges. The service platform is connected through Telenor Connexion's robust and secure global managed connectivity. It simplifies AED fleet monitoring and management through alerts and notifications, ensuring that devices remain operational and ready for use should an emergency occur.

Each device that is connected to the service platform pays a monthly subscription fee to CardiLink, meaning its service can be tailored for enterprises of differing sizes and locations.

The service platform captures, stores, and analyses the data of each connected AED (thereby ensuring it is compliant with The Medical Device Regulation).

CardiLink's solution can alert service personnel, provide schedules for maintenance or inspection, and inform security, for example, if an AED is triggered or leaves a designated area. In addition, the solution can notify first aid responders, if an emergency occurs nearby their location, and request their help.

CardiLink's vision for resilient remote monitoring of AEDs, is not just about secure data transmission, the bigger picture is to use the data efficiently to create automated notifications to the whole AED ownership chain from manufacturer to end-owner. This effectively eliminates the manual monitoring of AEDs and thus the biggest point of failure – human error.



## Results:

Currently, CardiLink have installed bases in more than twenty countries across Europe, Latin America, and Asia. Several medical device manufacturers have signed agreements and recently customers are asking to onboard even more devices to its platform, such as fire extinguishers and first aid kits.

CardiLink has also provided its service to several Heart Safe Cities projects around the globe. (The overall objective of the initiative is to increase the number of effectively managed out-of-hospital cardiac arrest incidents and save people's lives).

Its service is enabling medical device manufacturers to transition their business model from solely selling products to offering

Service Level Agreement (SLA) driven solutions. So far, this is proving popular with B2B and B2G customers alike.

CardiLink's solution helps ensure connected AED devices remain compliant with this mandatory legislation in many regions, including the US and EU.

In addition, CardiLink are going one step further and offering an "as-a-service" model which significantly reduces the requirements placed on manufacturers when producing new devices. It also offers them a convenient way to upgrade and connect units already in operation.





Connecting things. It's all about people.

#### **ABOUT TELENOR CONNEXION**

Telenor Connexion is the specialised IoT company within the Telenor Group, one of the world's major mobile operators. Building on more than 20 years of experience, Telenor Connexion provides global IoT connectivity and cloud services to enterprises with large fleets of connected devices as well as third-party service providers. With headquarters and tech centre located in Sweden, the company has regional sales representation in the UK, US, Germany, Italy, South Africa, Singapore, South Korea, China, Malaysia, and Japan.



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