



**The FirstAED global positioning system organizes a first responder team with distinct roles and ensures the possibility for early cardiopulmonary resuscitation and defibrillation**

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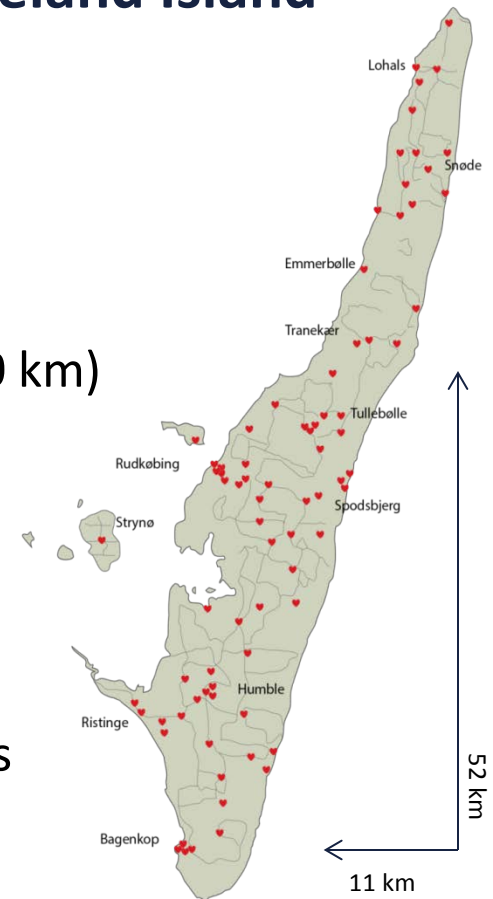
## **Declaration of interest**

- Teaching for MSD and Sanofi Aventis.
- Developed FirstAED GPS technology.

# Background

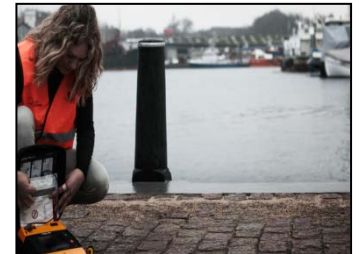
## Cardiac Arrest – the bridge connected Langeland Island

- ~ 13,000 inhabitants
- Long distances to the two nearest hospitals (55 km, 90 km)
- Long ambulance response times (30 %  $\geq$  15 minutes)
- 95 AEDs available around the clock, distance  $<$  2 km.
- 60-80 % of cardiac arrests occur at home
- Lay rescuers response times ( $\geq$  10 minutes)
- Bystander CPR provided by 215 trained first responders

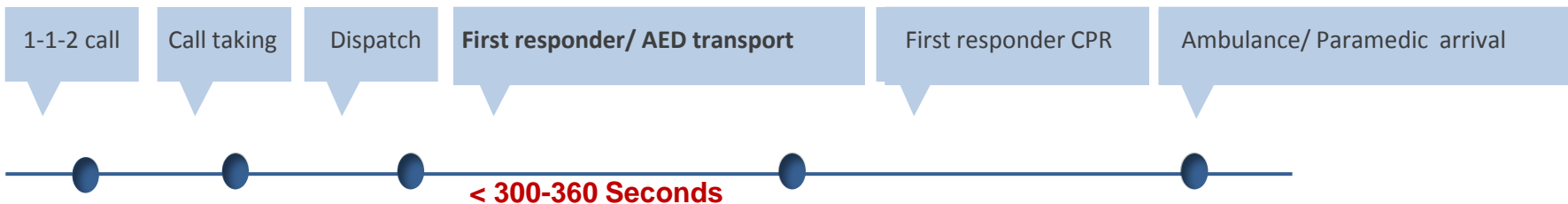


## Purpose – Cardiac Arrest

- GPS tracking of trained volunteer first responders
- At least one of the first responders and the AED need to arrive not just earlier than the traditional ambulance, but within 5-6 minutes of the initial call
- The system establish an emergency team of 3 first responders with distinct roles



Typical current logistics flow

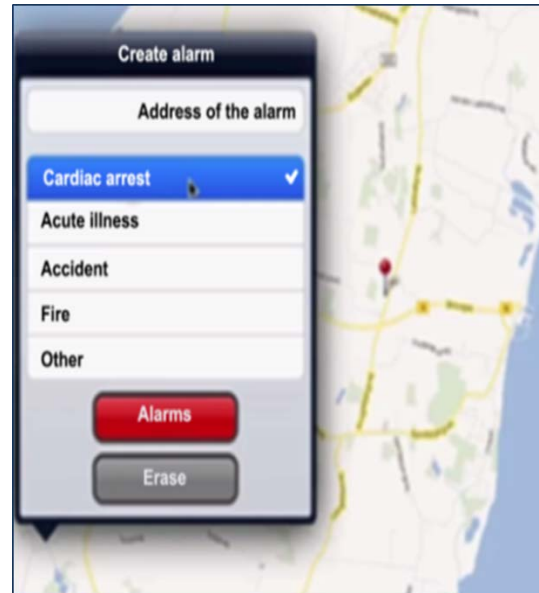


# How does it work?



# First responders involved in all 1-1-2 emergency call

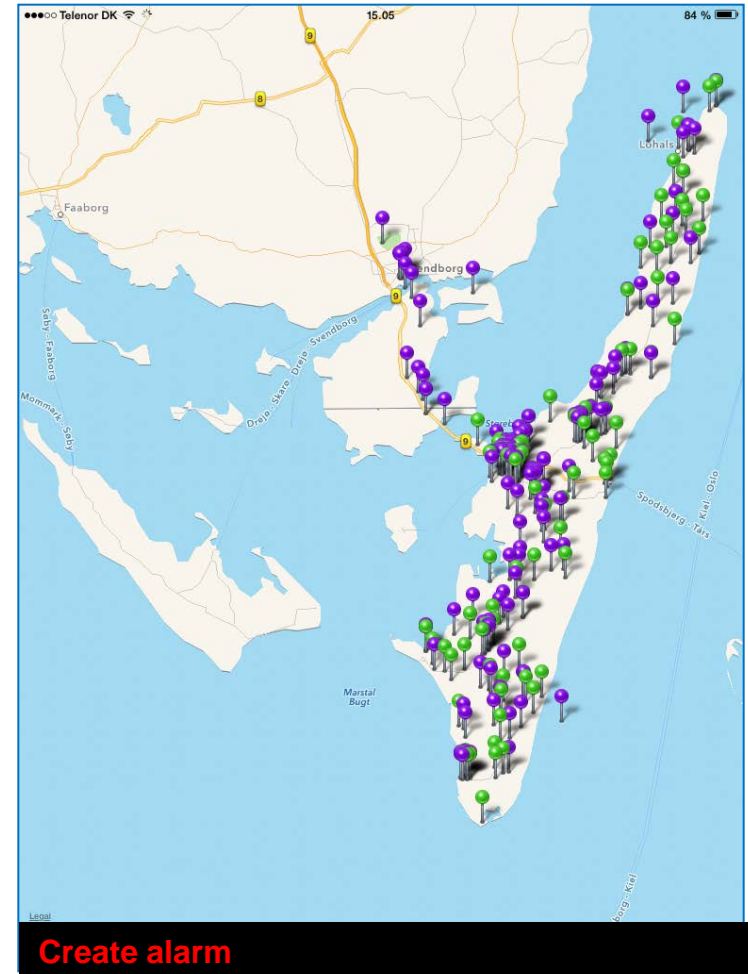
- Cardiac arrest
- Acute illness
- Accident
- Fire/ traffic accident
- Other



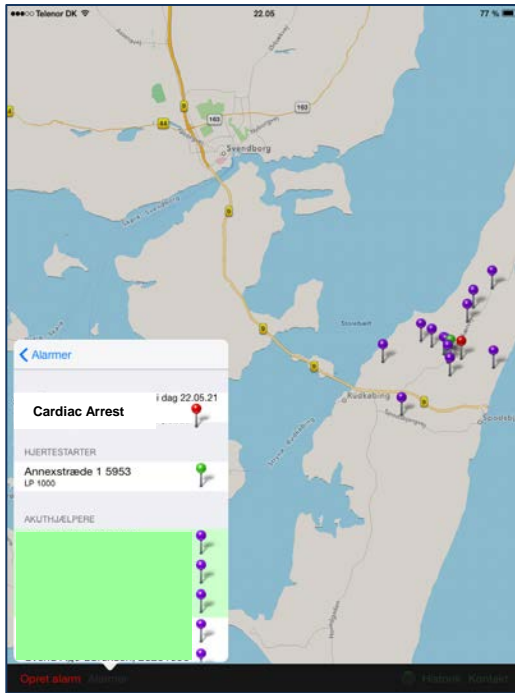
# Action: Emergency call - Cardiac Arrest - 2 weeks ago

## Dispatch Center iPad – GPS tracking

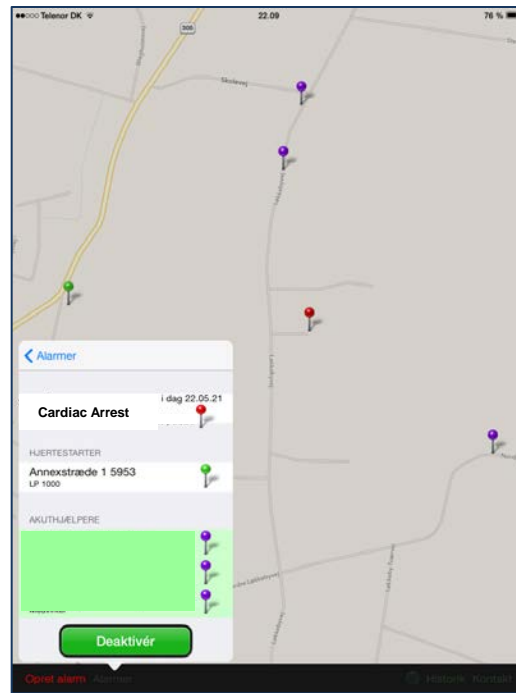
- All first responders  
(n= 215 (purple pushpins))
- AED's  
(n = 95 (green pushpins))
- Emergency Call  
Activate dispatching – GPS Tracking  
(touch red marker)



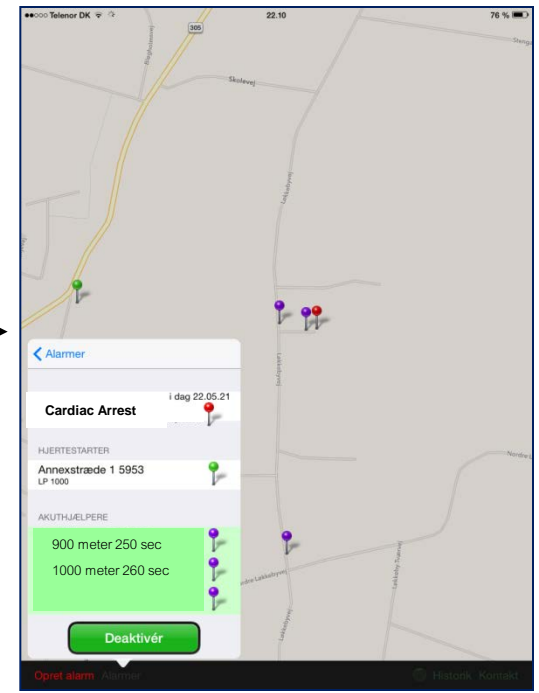
# Emergency Medical Dispatch Centre - Cardiac Arrest



20 seconds  
Nearest first responders are called based on actual GPS position



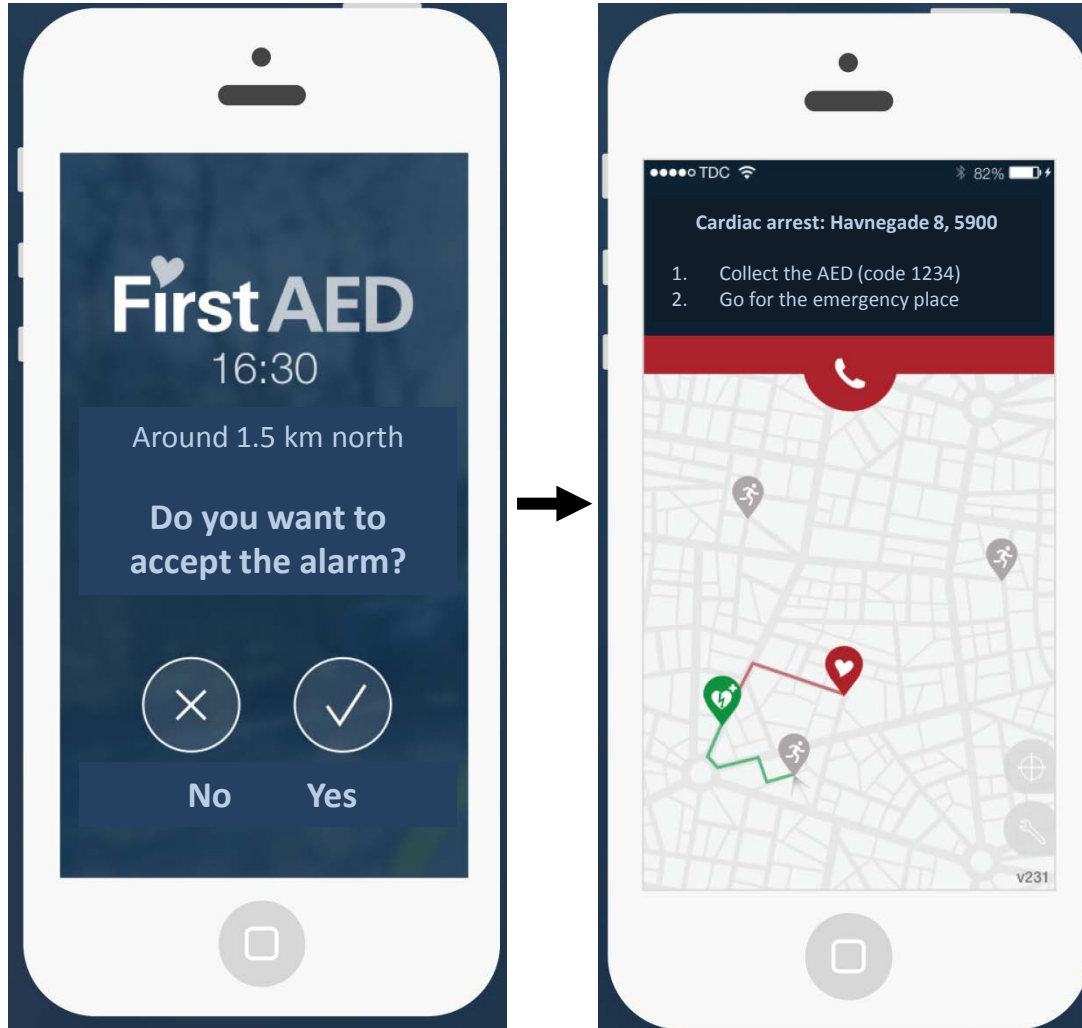
35 seconds  
3 most optimum responders are automatically chosen and assigned roles



275 seconds  
You can see the location and roles of all the first responders  
Arrival times are GPS decided



# First responder telephone: Emergency call - Cardiac Arrest





## Key results of the 24 months : Dispatch categories

Alarm type	Number	Percentage
Acute illness	591	~ 82,3 %
Accident	55	~ 7,7 %
Cardiac Arrest	32	~ 4,4 %
Fire/ traffic accident	25	~ 3,5 %
Others	15	~ 2,1 %
<b>Total</b>	<b>718</b>	

## Results: Response times

<b>Median Response time – Langeland n = 718</b>	<b>Time seconds</b>
First Person On Site	249 sec. [1-1297 sec.]
AED On Site	347 sec. [1-1996 sec.]
Ambulance/paramedic On Site	802 sec. [93-2692 sec.]

## Results: Arrival – Number of first responders

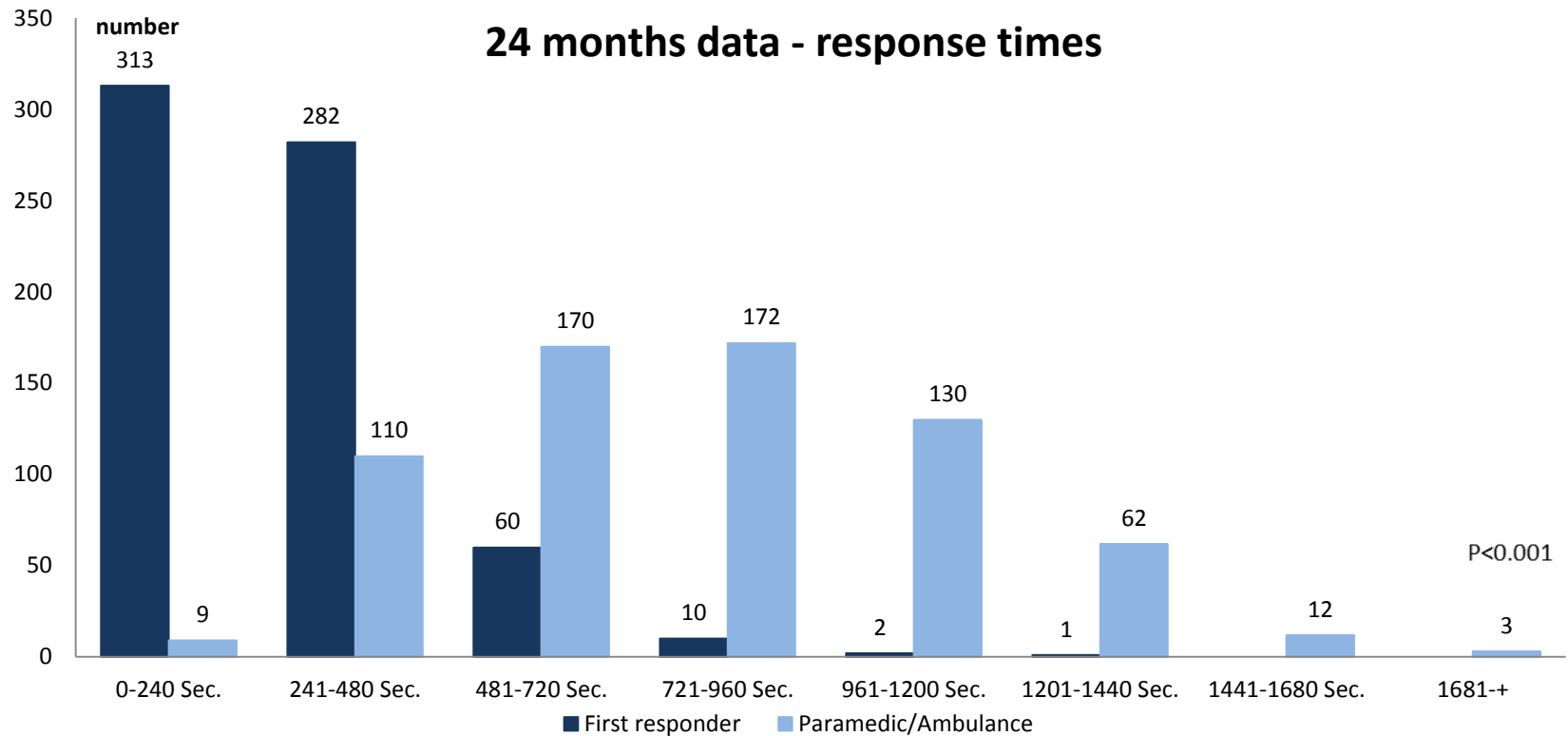
Arrival On Site	Team	
3 first responders	X	89.1 %
2 first responders	X	7.1 %
1 first responders		3.0 %
0 first responders		0,8 %

## Results: AED On Site

AED On Site	n	
Yes	710	98.9 %
No	8	1.1 %



# Response times: First responder versus paramedics/ambulances



## Key results of the first 24 months

- 8 Cardiac arrests
  - 5 survived, 3 survived more than 30 days.
- 8 Respiratory insufficiency
  - 7 survived more than 30 days.
- 29 AMI
  - all survived more than 30 days.
- 3 Hangings
  - 1 survived more than 30 days.
- 2 Divers with decompression sickness (Complete restituted).
- 1 Subarachnoid haemorrhage (Complete restituted).
- 1 Sea rescue (Complete restituted).

## **Conclusion:**

- The FirstAED GPS app technology entails a significant reduction in first responder median response times from more than 10 minutes before to 4 minutes 9 seconds after.
- FirstAED organizes the three first responders in an emergency team with distinct roles.
- FirstAED activate the AED cabinets (unlock, sound & flash light).