



Crowd Sourcing Week Seattle Summit, Seattle  
October 5, 2017

**iRescu: Bridging the Crowd and the Cloud to Save Lives in Cardiac Arrest**

Harnessing  
Crowd Sourcing, Geolocation and Big Data for Social Good

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And The iRescu Research Team





6 'word' abstract

- Social good
- Crowdsourcing/Engagement
- Mapping
- Augmented Open Government Data
- Public Health/Safety
- Saving Lives



What do you do when there is a database that you need to save lives and you don't have it and you are told it is too expensive to build and maintain



**>1000**  
deaths  
every day \* ...  
before ever reaching the hospital

\*Heart Disease and Stroke Statistics—2017 Update: A Report From the American Heart Association, Circulation. 2017; January 25, Out of Hospital Cardiac Arrests





SO...  
What is  
**10 times worse**  
than USA annual road deaths  
or annual gun deaths???




**380,000**  
men women and children  
**dying every year**  
in the streets, workplaces,  
playgrounds and homes of our  
communities



Would you be  
OK about  
3 Jumbo Jets crashing  
every day???

7 and a ½ full Yankee Stadiums of  
deaths every year



dying  
from  
**Sudden Cardiac Arrest**



### What is a cardiac arrest?

- Heart stops pumping effectively and if nothing is done you are dead in minutes

the ambulance often just can't be there in time...



### October Sudden Cardiac Arrest Awareness month

#### Sudden Cardiac Arrest (SCA) Awareness

October is Sudden Cardiac Arrest Awareness Month, which represents a critical addition to the Heart Foundation. The only to raise awareness for Sudden Cardiac Arrest (SCA) and help the public become more familiar with what it is, how it affects people, and what can be done to help save lives.

**Think Sudden Cardiac Arrest is a Heart Attack?**

**That's like comparing apples and oranges.**


The faculty's award-winning "Apples and Oranges" campaign used a simple analogy to educate people about the differences between a heart attack and SCA. More than 95 percent of patients are not only underestimate the seriousness of SCA, but also believe SCA is a type of heart attack. The campaign targets heart attack survivors, who are at the highest risk for SCA, and stresses the importance of maintaining a healthy, heart-healthy and training critical care workers, especially first responders.



### USA out of hospital sudden cardiac arrest DEATH rates are HIGH

92 % die - its not like on TV

- Only ~8% survive, basically unchanged in 30 years
- In some places survival is better - 15%
- New York and Detroit's survival the worst < 5%



### The tools to address this effectively exist BUT but they are seldom used




### To save a life.....


immediate bystander action with CPR and Defibrillator (AED) use is required as brain death begins in 3 minutes



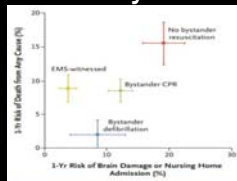
### American Heart Association Chain of Survival



- Immediate **recognition** of cardiac arrest and **activation** of the emergency response system
- Early **CPR** - chest compressions only
- Rapid defibrillation**
- Effective advanced life support
- Integrated post-cardiac arrest care



### Why?




**Figure 4. Absolute Risk of Anoxic Brain Damage or Nursing Home Admission and Death from Any Cause at 3 Years of Follow-up According to EMS-Witnessed and Bystander-Intervention Status.**

Kragholm et al, May 2017

### Three simple things for you to do...

- Call 911
- Do CPR
- Find and use the AED...

*and therein lies the challenge*



What is an  
**AED ?**  
Automated External Defibrillator

**IS DESIGNED FOR LAY PEOPLE TO USE**  
turn it on  
it talks to you,  
and it knows what to do

and...  
**WHERE IS IT ?**




**AED**  
Automated External Defibrillator

**Yes!**  
**IS DESIGNED FOR LAY PEOPLE**  
**TO USE**




**ALL YOU NEED TO DO IS:**


- GRAB ONE (usually off a wall)
- TURN IT ON
- IT TELLS YOU WHAT TO DO

**So... do YOU know where the nearest AED is ???**

22




AEDs could save **80%** of victims but only used in **<2%**



**NO comprehensive geolocated AED database**

- So not only do you not know where the nearest AED is -
- 911 doesn't know either...**
- fewer than 1 in 10 AEDs in the 911 database
- Is no system in place to capture all AEDs & info: validate battery and pad status or importantly - location and accessibility



**How do you find where that AED is..?**





From **10/11/17 News**  
**Doctors unable to find defibrillator at JFK**  
Thursday, October 12, 2017




**Albert Einstein**

**"Insanity: doing the same thing over and over again and expecting different results"**



**.....Because the systems engineering linking all the parts needs immediate focus and attention**



## Systems Engineering failure...

so am going to tell you a story that explains what we are trying to do




## Who was at the Macy's parade?? or watched it on TV, PC, iPad, smart phone




### On 39<sup>th</sup> St and 6<sup>th</sup> Ave...

- In front of ~1 million people & 10 million on TV
- Husband & wife clowns blowing up balloons
- Suddenly husband drops to ground with cardiac arrest
- Wife began CPR immediately
- Police were there right away
- No one knew where was the nearest AED....




### On 39<sup>th</sup> St and 6<sup>th</sup> Ave...

- No one knew where the nearest AED was...





### By the time EMS reached him it was too late...




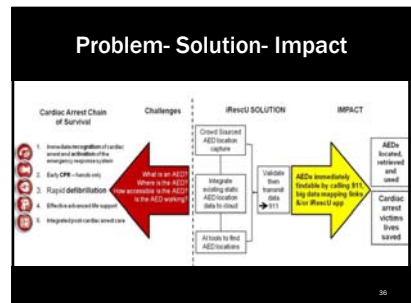

[http://www.nj.com/news/index.ssf/2012/11/clown\\_dies\\_after\\_going\\_into\\_ca.html](http://www.nj.com/news/index.ssf/2012/11/clown_dies_after_going_into_ca.html)

### Clown dies after going into cardiac arrest at Macy's Thanksgiving Day Parade

### He died right there...

- In the heart of the biggest and most high tech city in the nation
- In front of 1 million people live & 10 million on TV
- And with numerous AEDs within a few yards BUT
- NO real time interactive databases to let anyone know where those life saving AEDs were

### What is iRescu??

A disruptive solution to address preventable deaths from out of hospital sudden cardiac arrest

iRescu is designed to be:


- Sustainable - Scalable - Translatable

Use readily available tools & methods:


- Crowdsourcing - Gamification - Mobile - Social media - Novel data entry tools

Leverage:



- Existing infrastructure and big data Open government data - Globalization -



## This is not just an App – it is an amplification system




### AED data capture, validation and deployment is multimodal and multi-interface

### Data Dissemination

- API feed to 911
- Big data mapping
- Local data to Apps



### Yes..., Add "AED"


Google places  
ATMs ?  
Bars?  
Coffee?

Yes..., please



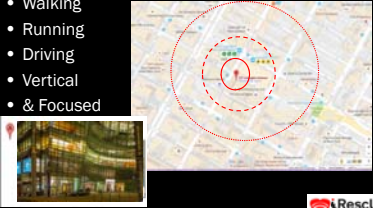


### Accuracy is very important

- Location – a number of feet
- Peripherals- good batteries and pads
- Accessibility – locked buildings/doors



### Data Granularity

- Walking
- Running
- Driving
- Vertical
- & Focused

### Data capture


## 3 Tools

to make it happen

- An App – Android and Apple
- A web form – Waiting for you online
- A tweetbot - to be released this week

### iRescu App v1.1

add an AED location you have found  
android and ios App stores



for the Android/ios App iRescuApp



ADD an AED!  
Google Play Store and Apple App Store

Direct Web form – no App



**iRescu Web form**  
(no APP necessary)  
**How: With a smartphone.**

1. Scan the QR code
2. Fill in the simple form
3. Upload a photo

Or just email info



You want the AED upload web form  
– NOW –  
*no App needed*  
scan this QR, you might just save a life



ADD an AED!  
[www.iRescu.info/AEDupload.htm](http://www.iRescu.info/AEDupload.htm)

Clothing becomes a data entry tool



And – being launched today iRescu  
**@AEDfound**  
twitterbot

so you can tweet the location of an  
AED you have found

( no need for an App or even a web form)

**Adele and Bob Harper?**



Adele dedicates song to fan who had...



'Biggest Loser' trainer Bob Harper on...

**Adele and Cardiac Arrest**

<http://metro.co.uk/2017/03/11/adele-stops-sydney-concert-as-fan-suffers-cardiac-arrest-6503085/>



Adele dedicates song to fan who had cardiac arrest during her show

<http://www.itv.com/news/2017-03-12/adele-dedicates-song-to-fan-who-had-cardiac-arrest-during-her-show/>

**30 million twitter followers to help map AED locations**

**Bob Harper and Cardiac Arrest**



**People like finding things**


- High tech and low
  - Geocaching
  - Scavenger hunts
  - 4 square/Pinterest
  - Google places
  - Pokemon go





**Sort of like Pokemon Go**

**Pokémon Go might be the fastest-growing unintentional health app**



**Crowd and Cloud**

<http://crowdandcloud.org/>



**Innovation**


- Novel data entry tools
- Social media gamification
- Life cycle engagement
- Lean foot print
- Integration with existing tech, public health and societal infrastructure
- Creative sustainable, scalable, translatable business model
- **iRescu is one small step for mHealth and social media – one giant leap for public health!**

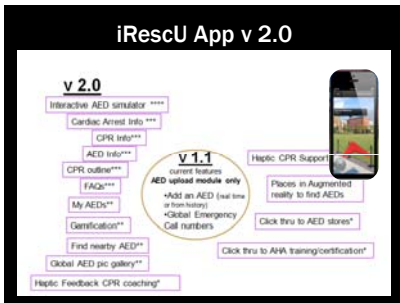



**Next Phase for iRescu Platform v 2.0**

**What iRescu v2.0 is designed to do**

- Calls 911
- Multiplatform, Multi-interface, Configurable
- Scalable Sustainable Translatable
- Integrates with 911 & PAD data and emergency services resources
- Closed loop - Two way system immediate automatic updates
- Leverages social media to enhance bystander CPR/AED awareness/use
- Supports crowd sourcing to add to the AED database
- Manages AED location, accessibility, functionality and consumables
- Disseminates to other API platforms
- App features
  - Training Mode: Trains in CPR/Teaches what an AED is
  - Emergency Mode: Coaches in CPR/Helps bystander find accessible close by AED location
  - Capacity to capture AED geolocation and CPR data
  - Interfaces with AED consumable alerts





- ### iRescu Key elements
- Scalable
  - Translatable
  - Sustainable
- 

### Recognition

June 2016  
iRescu is selected to be in the NYEDC SBIR Impact Program

March 2014  
American Heart Association  
iRescu INNOVATION AWARD

March 2014  
Invited to The White House  
by the Chief Technology Officer,  
Todd Park, based on merit of  
iRescu

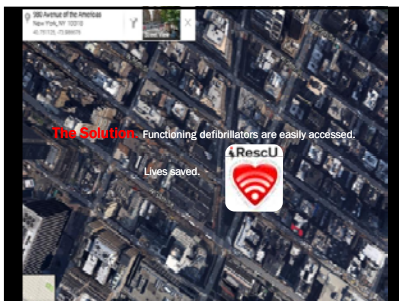


By just taking a photo of an AED with a phone or camera you could potentially be saving a life.

Because that AED could be found and used in an emergency and be the reason someone is still alive today.

- ### iRescu is aimed at
- addressing the AHA 2020 Impact Goal of a substantial reduction in cardiac deaths by at least 20%
  - iRescu has the potential to double that value with a goal to address preventable deaths by 2020 with 400/ lives saved/day - 142,400/year!
- 

- ### Conclusion
- This IS a systems engineering issue
  - Established approaches have failed
  - Solutions lie in disruptively addressing the gaps in effectiveness
  - Its not so hard
  - Engaging the community
  - Crowdsourcing and gamification
  - It is a MAPPING project
  - We have new tech tools
  - The cloud and Big Data are core
  - Embracing Innovation is key
- 



### Questions?

Talmud Sanhedrin 4:5:  
וכל המקיים נפש אחת - מעלה עליו הכתוב כאילו קיים עולם מלא

**“to save a single life,  
is as if to save a whole world”**



Questions?



The badge is circular with a scalloped edge. The outer ring contains the text "OPEN INNOVATION CHALLENGE". Inside the ring, there are logos for "American Heart Association" and "American Stroke Association". The center of the badge says "HEALTH SCIENCES INNOVATION ASSESSMENT" and "WINNER". A ribbon at the bottom of the badge says "2014".



Your handout from today's presentation

<http://www.iRescu.info/CSWSeattleSummit.pdf>

