

Robust and Resilient Communication



Overall Goal

The main goal is to create an ad-hoc networking infrastructure that provides networking services on an incident site. The so called BRIDGE Mesh network allows other systems to exchange data locally or send them to other networks such as the Internet. The HelpBeacons application allows people to use their smart phones to advertise their need for help.

Main Functionality

Robust and Resilient Communication comprises several components:

1. *Wireless Mesh routers that form an ad-hoc network (called the BRIDGE Mesh) to provide a networking infrastructure for other systems on the scene (e.g., eTriage)*
2. *The HelpBeacons application that allows people to call for help using an Android smart phone*
3. *The HelpBeacons Seeker application that is used by first responders to collect SOS messages*

The wireless mesh routers form an ad-hoc networking infrastructure that can be used by other concept cases to exchange data. All routers provide wireless access points to allow other devices (such as smart phones, notebooks or the eTriage bracelets) to join the network. Some routers provide gateways to other networks such as the Internet and bridge different wireless technologies.

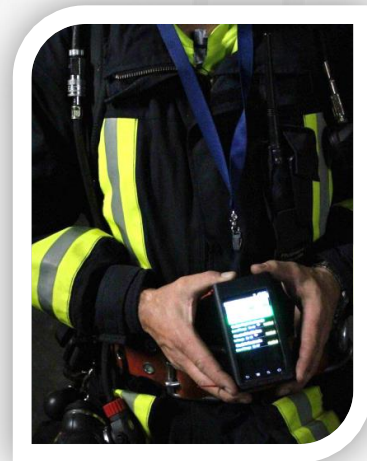
The HelpBeacons System provides a way for people to call for help using their Android smart phones. The HelpBeacons system uses the Wi-Fi wireless technology to advertise short help messages. First responders that use a HelpBeacons Seeker application can collect beacons in their vicinity and locate victims.

Push S.O.S.
My Phone ID
358150043380618
Advertised
I'm stuck inside bus (id: 22)
Connection Count
2
Socket Client (Phone ID, Time)
355031040793594, 2013-03-20T12:00:58Z

The HelpBeacons app

Technically, the idea is implemented by encoding short messages inside the name of the Wi-Fi access point created by the victim's smart phone. Any device in range can see these messages using its Wi-Fi interface.

The HelpBeacons Seeker application has been designed in a way that it does not need any user intervention to collect HelpBeacons and send them to the BRIDGE Mesh. This allows the first responder to fully focus on his/her tasks. Optionally, the first responder can be notified via acoustic signals or vibration when a new HelpBeacon has been found.



Front officer with HelpBeacons Seeker device

Collected HelpBeacons are sent by the seeker device to the BRIDGE mesh that provides connection to other BRIDGE systems such as the BRIDGE Master. Thus, the Master can visualize information about HelpBeacons, such as the help message itself or the time the help message was received by the seeker. If the GPS position of the victim and/or the seeker is available, the Master can visualize the location of HelpBeacons on a map.

Integration with Other Concept Cases

The information that is collected by the HelpBeacons Seeker application is sent to the BRIDGE Mesh network where a dedicated service first stores the received data locally. The data is then transferred via the BRIDGE middleware to other interested parties. Thus, the BRIDGE Master can access and visualize the help beacons.

Features Visible in Demo III

The following will be shown during the Demo:

- *BRIDGE Mesh: Wireless mesh routers application will be deployed. that provide the networking infrastructure for the eTriage bracelets and the HelpBeacons.*
- *Several smart phones will run the HelpBeacons application to simulate the dynamics of having injured that call for help in different positions.*
- *One smart phone running the HelpBeacons Seeker application will collect the help messages and forward them via the BRIDGE Mesh*
- *Collected HelpBeacons will be visualized on the BRIDGE Master.*

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