

ASTARTE

Assessment, Strategy And Risk Reduction for Tsunamis in Europe

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Deliverable 10.35

Smart phone application (second release)

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Dissemination Level¹	
PU Public	X
PP Restricted to other programme participants (including the Commission Services)	
RE Restricted to a group specified by the consortium (including the Commission Services)	
CO Confidential, only for members of the consortium (including the Commission Services)	

¹ Please mark with X the dissemination level of the deliverable (check DoW if any questions arise)

EXECUTIVE SUMMARY

This deliverable is a software system, denominated FIND (Finding Inaccessible people in Natural Disasters), and composed by two interactive components and two subsystems that are automatically integrated. The first component, FIND-Me, is a smartphone application targeted at the general public. It is responsible for sensing people's smartphone activity and continuously and inconspicuously gathering location and aliveness indicators. This information is disseminated on a best-effort basis through a peer-to-peer network of people's devices. The emergent network that is created requires no infrastructure, relying solely in availability of neighboring devices, and human movement. This ad hoc opportunistic network is designated FIND-Platform and constitutes one of the non-interactive subsystems. It is available to download at the Google Play Store² and it is a prerequisite for the other apps. FIND-Me is also available for download at Google Play Store³ and should be installed only after the platform.

The second interactive component, FIND-Pro⁴, is a web application which allows authoritative rescuers to access the server's data, enabling them direct their actions based on local knowledge which they otherwise wouldn't have access to. The data kept in the server is valuable for immediate tactical response but also enables post hoc in depth studies of victims' behavior and volunteers provided data. FIND-Pro also comprehends an alert application that enables remote activation of FIND-Platform and Find-Me for all the registered applications within a specific geographic area. This component is only accessible upon request. Instructions for its use are available at the same Web site.

² Find Platform: <https://play.google.com/store/apps/details?id=ul.fcul.lasige.find>

³ Find Me: <https://play.google.com/store/apps/details?id=find.lasige.ul.findvictim>

⁴ Find Pro: <http://accessible-serv.lasige.di.fc.ul.pt/~find>

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Status	version 2.0		final <input type="checkbox"/>	
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Dissemination level	public <input checked="" type="checkbox"/> consortium <input type="checkbox"/>			

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Abstract (for dissemination)	<p>FIND (Finding Inaccessible people in Natural Disasters) is a system that comprehends several components. The first runs on people's smartphones and is responsible for sensing, and inconspicuously and continuously gathering location and aliveness indicators. This information is disseminated on a best-effort basis through a peer-to-peer network of people's devices. The emergent network requires no infrastructure, relying solely in availability of neighbouring devices, and human movement. At specific points it actively searches for any available infrastructured network. Upon success it uploads data to a server, which functions as a central repository, managing the data collected from all victims' smartphones and all volunteers' tablets. The last component is a web application which allows authoritative rescuers to access the server's data, enabling them direct their actions based on local knowledge which they otherwise wouldn't have access to. FIND is accessible at http://accessible-serv.lasige.di.fc.ul.pt/~find</p>
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ASTARTE FIND Platform Rethymno Simulation

During the 2016 ASTARTE - PEARL - TANDEM joint summer school we performed a test on the FIND (Finding Inaccessible people in Natural Disasters) platform developed in the ASTARTE's project ubiquitous framework for natural disasters. The platform transmits auto-generated and user-generated messages without a network infrastructure. Auto-generated messages contain data collected from the available device sensors (e.g. location, luminosity, movement, screen touches). Users could rely on the application to post messages, send photos and voice recordings through the network.

We presented the FIND platform at the faculty on the fifth of June and sent out an email to all available participants to download and install the FIND platform applications. On the sixth of June we performed a two hour simulation from 12:00 to 14:00 during the field trip to Rethymno. During the simulation participants devices became part of the FIND established network, automatically transmitting sensor data, while also enabling users to send photos and post messages.

Simulation process details

The following four sections report the several steps on the installation and use of FIND

Installation & Registration (1)

We had a total of 16 devices registered to participate in Rethymno simulation. The installation and registration was completed by the participants without need for assistance. The process is fairly simple, as it should, and the registration is done during the installation process. It basically informs the FIND server that the platform and FindMe app were installed in a device, so that it can be automatically triggered in the event of an alert.

Launching a Simulated Alert (2)

At 8:00, local time, on the sixth of June we sent out an alert notifying participants that a (simulated) tsunami would hit Crete at 12:00. The enlarged time interval between alert and event was chosen for operational reasons: there was a large probability that participants would have some Wi-Fi access around 8am; the reception of the alert notification required internet connection since it used Goggle Cloud services. In a real scenario the alert could be issued also over other insfructured network, for example SMS. All of the registered devices received the alert notification between 8:00 and 8:40 and scheduled the FIND platform to start at 12:00.

Simulation (3)

During the two hour period, from 12:00 to 14:00, participants moved from the Rethymno Fire Department to the Rethymno port area by bus. Afterwards they travelled by foot to the Port Authority where the simulation came to an end.

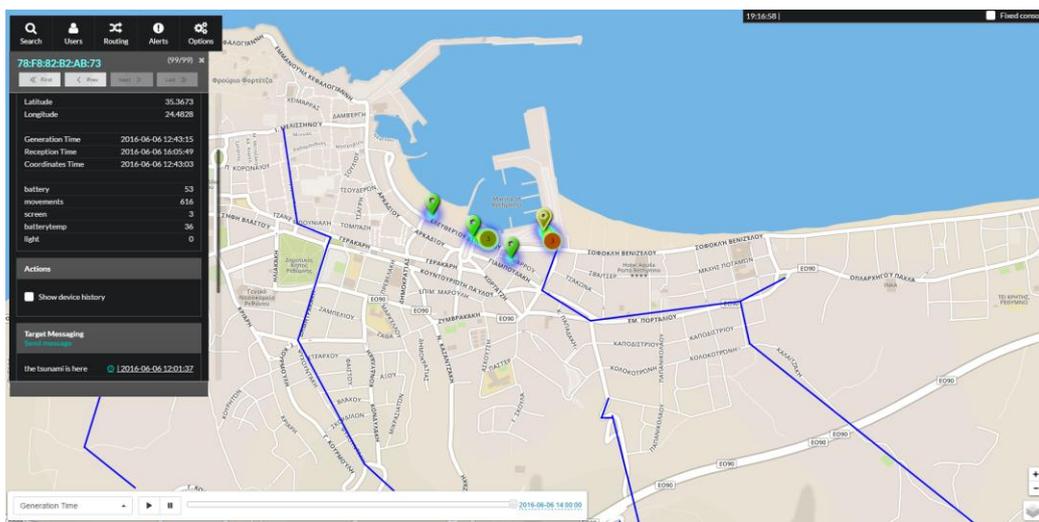
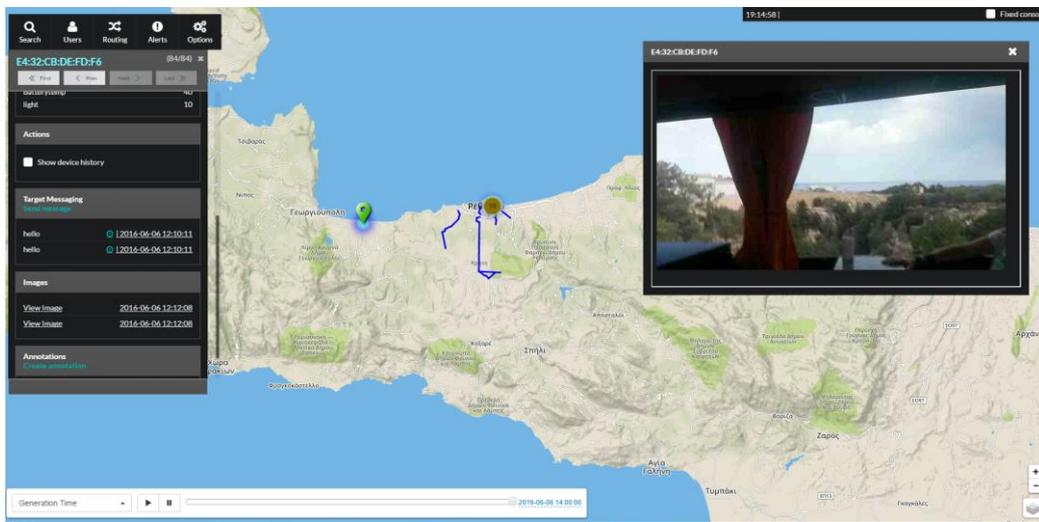
Using the FIND application participants were able to post messages to a message board and take pictures. During the two hour period we observed the local communications and the devices were correctly storing and sending information through the FIND established network. All devices except one had no internet connection during the two hour period and were only able to communicate locally. That exceptional device was able to connect and transmit data to the command centre during the simulation period. It transmitted its own generated data and data from devices to which he had been connected.

Terminating the simulation (4)

The simulation stopped at 14:00 in each device as scheduled. In most devices, since there was no available Wi-Fi connection, it triggered a dormant service that tries to synchronize all data when a viable Wi-Fi connection is detected. Until the end of the day only 5 of the 16 devices synchronized their data, meaning that either no infrastructured network was found, or the platform of forced to stop before a network was found. Nevertheless, these 5 devices contained and synchronized data portraying 12 of the devices. So that only 4 were unaccounted for.

Data Gathered

We gathered a total of 935 auto-generated messages, 4 message posts and 2 photos from 12 devices. One of the devices was not able to acquire location and as such its data is not geo-located. The screen shot below show two moments of the simulation as perceived in the command centre application.



For one possible visualization of the data gathered please check the video at the following URL:
<https://www.youtube.com/watch?v=S8CM8xof8nQ>.