

Disaster Relief IoT System

VADA - Blue Bird

Problem

- ▶ There are many IoT systems/devices center in helping people before and during natural disasters. However few systems deal with the aftermath of such events.
- ▶ This project center in helping with the logistics on the aftermath of catastrophic events that large populations. We are going to target 2 main necessities.
 1. Localization of people after catastrophic events.
 2. Administration and logistics of distribution of aid kits/supplies to the affected population.

Localization of people after catastrophic events

- ▶ After earthquake, tornado, etc. people is actively searching for information on the location of their loved ones. Nowadays people make use of cellphone, sms, im (instant messaging) to contact their loved ones. However, many times during the disaster the telecom infra gets destroyed or becomes unavailable because everyone is using it constantly.
- ▶ Also government and agencies need to provide official count numbers (survivors, deceased, hospitalized).

Mexico earthquake: Trapped woman saved by WhatsApp messages as hopes of finding more survivors fade

Posted 23 Sep 2017, 10:17am

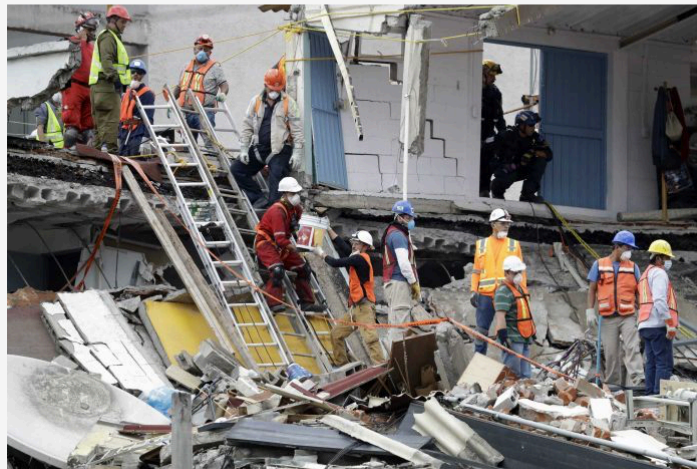


PHOTO: Rescue efforts are continuing across Mexico as hopes begin to fade and exhaustion sets in. (AP: Rebecca Blackwell)

Communication in Puerto Rico paralyzed after mobile networks knocked out by Hurricane Maria

Jason Abbruzzese

Mashable • September 22, 2017

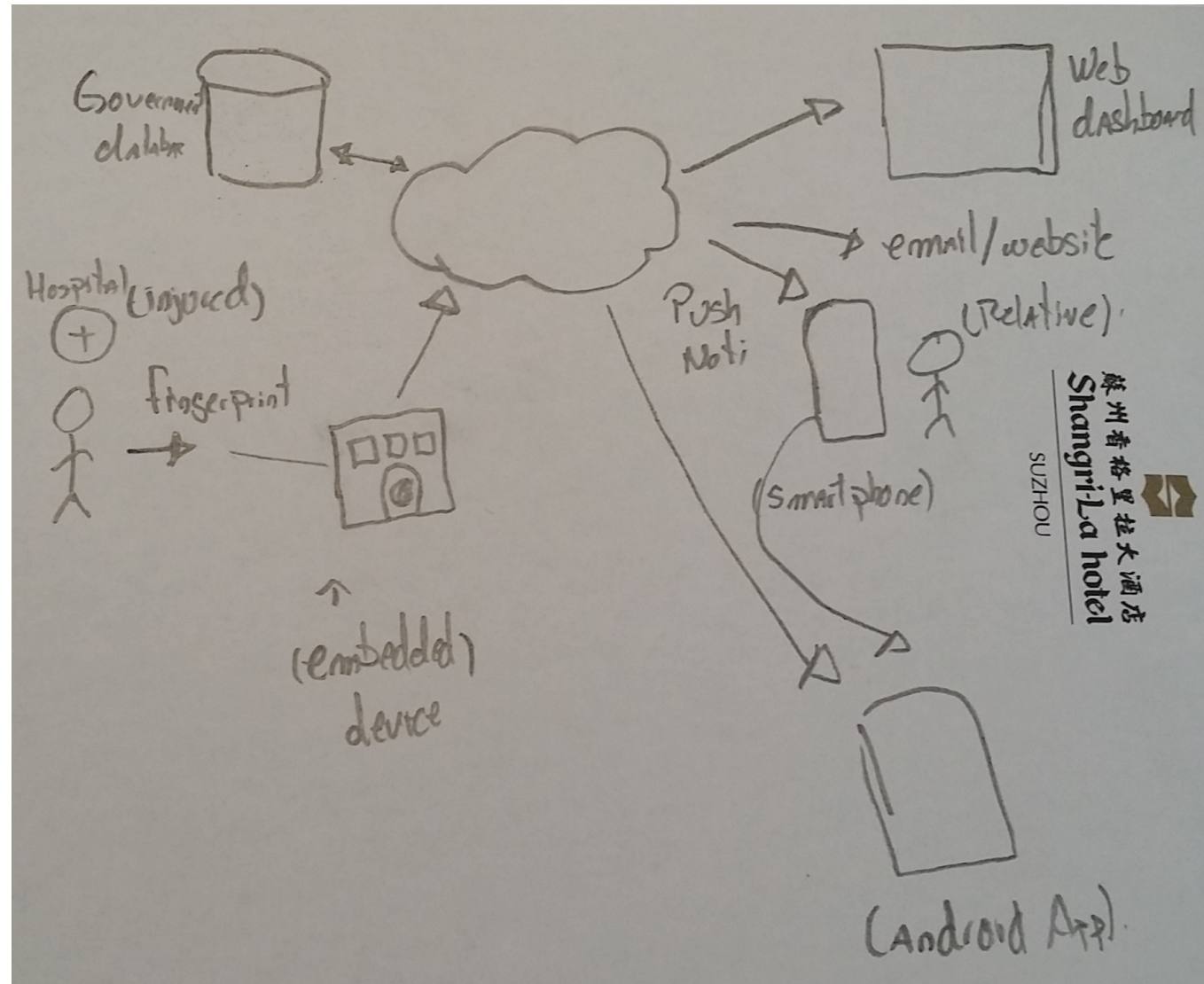


The mobile phone network in Puerto Rico is either mostly unavailable or has entirely failed, according to numerous reports from people trying to get in touch with relatives and loved ones.

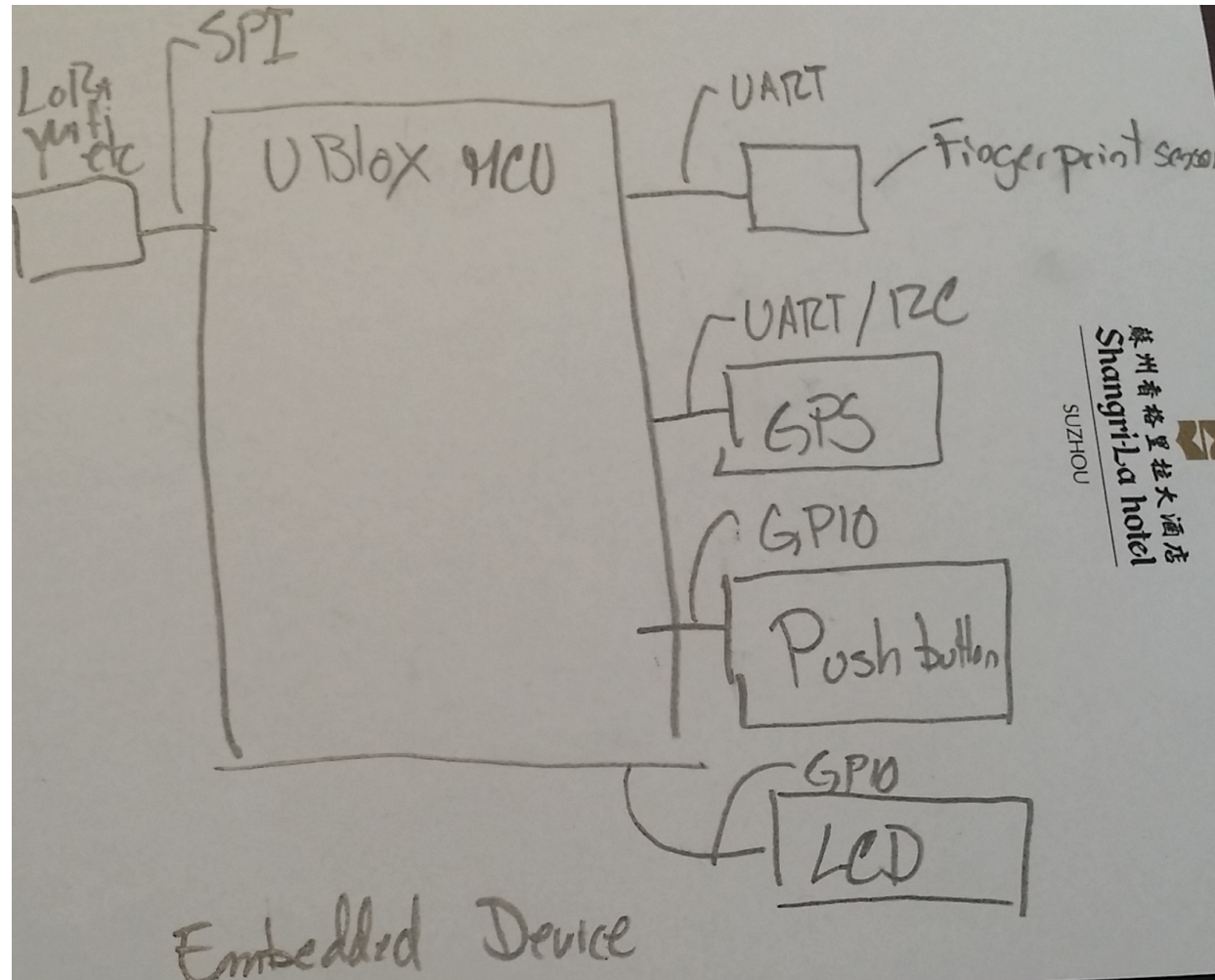
Our solution

- ▶ Embedded system with fingerprint sensor.
- ▶ After disaster, deceased, injured and survivors can be scanned on location, hospital or smartphone.
- ▶ Once scanned the status of the person is selected. This information is sent to cloud.
- ▶ Personal information is pulled from government database.
- ▶ The person can be then added to corresponding list (deceased, injured, survivor).
- ▶ Relatives can get notification on their smartphone, website, official list. This way people can know where their relatives are and their current situation. Government also can have real-time status of the magnitude of the disaster.

Block diagram



Embedded device



Logistic distribution of aid/supply kits

- ▶ After disaster supplies are distributed to affected people, however many times some people get several kits while others don't get any. This is because it is difficult to control the distribution.
- ▶ Using our finger print system we can have a real-time system that keeps track of the distributed packages. To receive a package person must scan the finger print which will record that he received help. This way same person cant receive more packages than intended.
- ▶ Government can also keep track of where and to whom the aid is being distributed and be able to administrate the aid program better

To do

► Embedded device

- Development of physical prototype
- I/O interface
- UART, I2C comms.
- Interface with cloud

► Backend

- Nodejs interface between device, cloud, and frontend
- Fingerprint image processing
- Databases arch.
- Notification (push, etc.)

► Frontend

- Dashboards
- Mobile websites
- Geo-localization map.
- Email messages

► Android APP

- Push notifications
- Interface
- Self update