



Humanitarian FOSS: Sahana Disaster Management System

<http://sahana.lk/>

Ajay Kumar

Sahana FOSS Project: Developer,

Google Summer of Code 2008

ajuonline @ gmail.com

www.ajuonline.net

1st August 2008

***Osmania University, Hyderabad,
India***

mukt.in 2008

Talk Agenda

- **Sahana Introduction**
- **History of Sahana**
- **Problems before Sahana**
- **Technologies Used**
- **Deployment Scenario**
- **Real Life Deployments**
- **Deployment Case Study**
- **My GSoC 2008 Project**
- **How can you contribute?**
- **Q & A**

What is Humanitarian FOSS (H-FOSS)?

- **“... the ‘application’ of ‘Free and Open Source Software’ to support Humanity”**
- **“... to help thy neighbour”**

Historic Trigger: The Asian Tsunami 2004

- **26 December 2004, 0058 GMT**
 - **Magnitude 9** earthquake
 - A force = **23,000** hiroshima atomic bombs
 - Few hours later..
 - Tsunami waves devastate coastal areas of mainly **Indonesia, Sri Lanka, Thailand** and **India**



Historic Trigger: The Asian Tsunami 2004

- **Tuesday, December 28th, 2004.** Efforts started by various organisations in Sri Lanka to write various bits of software to help manage the disaster.
- This bit of the story was repeated in other countries- India, Indonesia, Thailand etc..
- **Wednesday, December 29th, 2004.** Folks meetup again to discuss ways of putting the software all together to make it easier to manage the situation.
- In the 3-4 weeks that followed, many individuals, universities and software companies and Sri Lanka Telecom contributed to what became known as Sahana.

The Sahana Project

- A web based collaboration tool
- addresses the common coordination problems during a disaster
 - finding missing people
 - managing aid
 - managing volunteers
 - tracking camps effectively
- Used By
 - Government groups
 - the civil society (NGOs)
 - the victims themselves.



Problems before Sahana

The trauma caused by waiting to be found or to find the next of kin

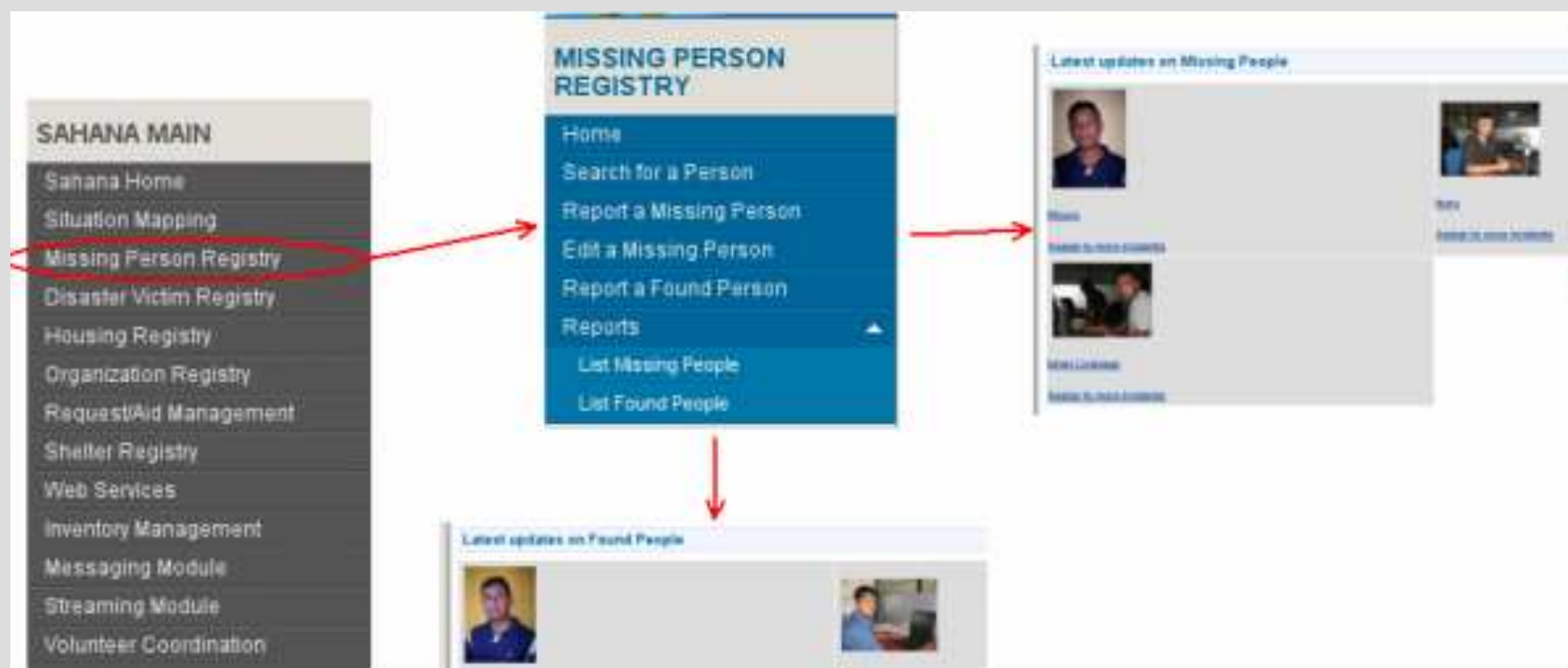
“Please, please help me find my missing parents / child / relative”



IT Solution

- A centralized online bulletin board of victims
- Be able to record all structured meta data on a victim (inc pictures and biometric data)
- Indexing and Searching of all data
- Finding people through cross-referencing

Missing Person Registry



The People Registry helps track and find missing, deceased, injured and displaced people and families

Coordinating Relief

**Coordinating all aid groups
and helping them to operate
effectively as one**

“ Who is doing what where?! ”

“ How can we balance the
coverage of support to all
affected regions “



IT Solution

- A contact list of orgs and the services they provide
- Reporting to ensure a balanced distribution and coverage of services and relief groups

Sahana Disaster Management System - Mozilla Firefox

File Edit View Go Bookmarks Tools Help shortcuts todo dev core tools groups php

http://cvs.opensource.lk/sahana2/index.php

 **SAHANA**
Disaster Management System

Jump to: [Content](#) | [Module Menu](#)

ORGANIZATION REGISTRY

- Home
- Register
 - Organization
 - Volunteer
- View
 - Organizations
 - Volunteers
- Reports
 - Drill down by Location
 - Organizations by Sector
- Search

SAHANA MAIN

- Sahana Home
- Camps Registry
- Missing Person Registry
- Organization Registry
- Request Management System
- Done

Organization Registration

Fields marked with * are required (entry is compulsory)

* Organization Name :

* Organization Type:

* Services Provided :

Base Location Information

* Country of Origin:

Registration Number :

The Organization Registry helps maintain data (contact, services, region, etc) of organizations groups and volunteers working in the disaster

Matching Donations to Actual Needs

Managing the multitude of requests from the affected region and matching them effectively to the pledges of assistance

“We need x number of tents not clothes!”

“We have medical supply x, how many do you need and where can we send them”

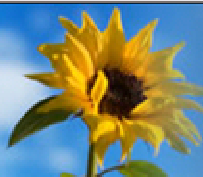
IT Solution

- System to coordinate and effectively “trade” the requests from the field to donations and pledges of support
- Transparency of donation utilization, tracking fulfillment details



Sahana FOSS Disaster Management System - Mozilla Firefox

File Edit View Go Bookmarks Tools Help shortcuts tools Gmail



SAHANA

Disaster Management System

Jump to: [Content](#) | [Module Menu](#)

RMS MODULE ACTIONS

- Home
- Requests
 - New Request
 - List All Requests
 - Search Requests
- Pledges
 - Add Pledges
 - View Pledge
 - List Pledges

SAHANA MAIN

- Sahana Home
- Camps Registry
- GIS Mapping
- Missing Person Registry
- Organization Registry
- Request Management System
- System Administration

Login Done

Request Management System

New Request

Request Date	<input type="text" value="2006-05-06"/>	
Requester Name	<input type="text" value="chamindra"/>	***
Requester Contact	<input type="text" value="07778838322232"/>	***
Requester Address	<input type="text"/>	
Site Name	<input type="text"/>	***
Site District	<input type="text" value="Colombo"/>	***
Site Address	<input type="text"/>	
Comments	<input type="text"/>	

The Request Management System tracks all requests and helps match pledges for support, aid and supplies to fullfilment

Tracking all temporary shelters

Tracking the location of all temporary shelters, camps etc

“No aid is being sent to this village, they have forgotten us as we are off the beaten path”

“Where are all these temporary shelters and camps and shelters located? how do I contact them?”

•The Required Solution

- A System that tracks temporary shelters/camps setup after the disaster with GPS coordinates, contact info, services in the shelter, etc
- Statistics on the distribution of victims in the region

Sahana Disaster Management System - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://localhost/~nazgul/sahana-phase2/www/i Go getelementsname

Zope jBoss Plone CMS EYE wordpress-sahana Drupal UserHome sahana-opensource

SAHANA

Disaster Management System

Jump to: [Content](#) | [Module Menu](#)

CAMPS REGISTRY MENU

- Home
- Search
- Add Camp
- Reports
- View All Camps
- View By Location
- Edit Camp

SAHANA MAIN

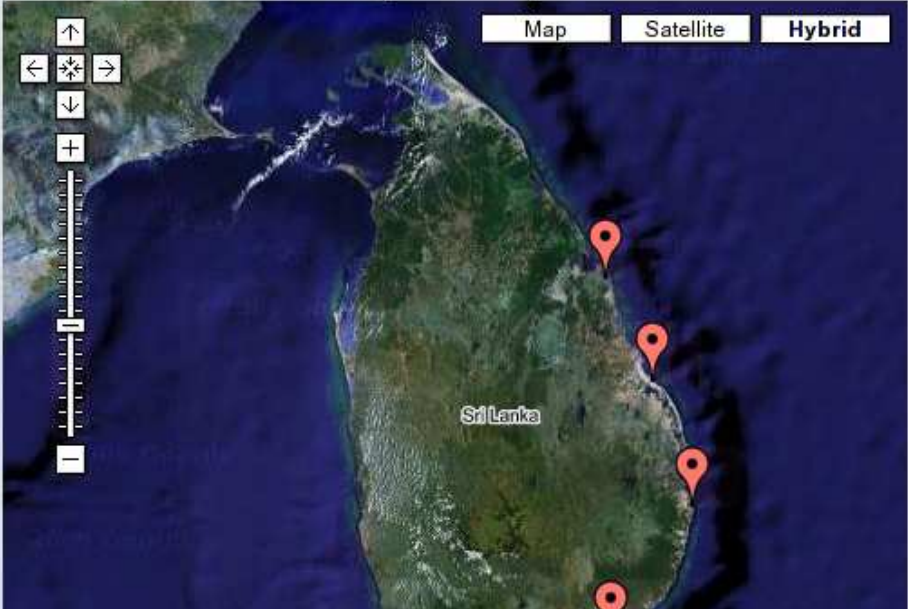
- Sahana Home
- People Registry
- Missing Person Registry
- Organization Registry
- Camp Management System
- Camps Registry
- Request Management System
- GIS Mapping
- System Administration

Key: Fields marked with * are required (entry is compulsory)

Area Map

Enter Camp Location. Click on Map where camp exists

Map Satellite Hybrid



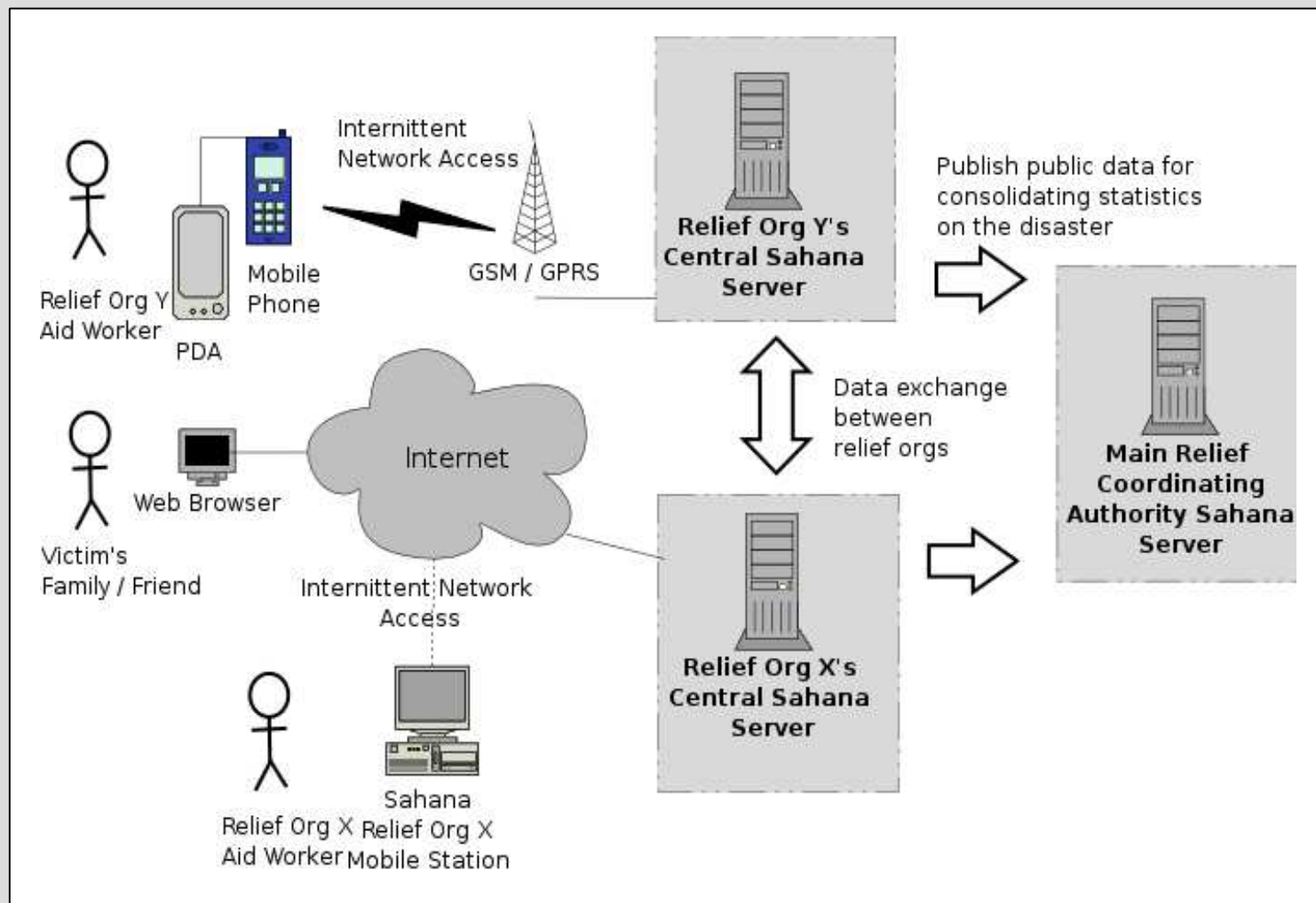
POWERED BY Google

The Camp Registry helps track data on all temporary shelters setup following the Disaster

Other Modules

- **Other modules**
 - Inventory Management System / Catalog System
 - Child protection (Terre des Hommes)
 - Volunteer Management
 - Land Mark registry
 - WIKI Maps
 - CAPs Client (templating)
 - Data synchronizing/ Data importing
- **“Plug and play” module architecture**

Deployment Vision



Sahana Deployment

- **CNO, for Tsunami in Sri Lanka – 2005**
 - Officially deployed and track 26,000 families
- **NADRA, for Asian Quake in Pakistan – 2005**
 - Officially deployed and integrated to NADRA (Pakistan Government) to track all victims
- **For Landslide disaster in Philippines– 2005**
 - Officially deployment to track all victims,orgs,camps by Government

Sahana Deployment

- **Pre-deployment in Sarvodaya, Sri Lanka**
 - Customization for Sahana requirements
- **Pre-deployed independently in Australia**
- **Currently being deployed in Indonesia**
 - ACS, uRemote, Indonesian Teams

Recent/Ongoing Sahana Deployment

- **1 in China Deployment - IBM has a dedicated team working around the clock to configure Sahana for the Chengdu local government**
- **40008 families were tracked**
- **42 families have been reunited through Sahana so far**
- **2 instances - Myanmar Cyclone - Myanmar 2008- Currently working in progress to deploy and localize into Burmese.**

Why is FOSS a good Alternative?

- **Many countries cannot afford or do not invest**
 - Budgeting for a disaster that may or may not happen
 - Not a commercially lucrative product domain
- **Such software should be a **global public good****
 - Shared global ownership through the FOSS model
- **World IT community are keen **volunteers****
 - “Good will” opportunity to alleviate suffering using IT

Why is FOSS a good Alternative?

- **No restrictions** to deploy and modify
 - No royalties, license costs, etc
- **Open system => Transparent** and trustworthy
- **Better acceptance** than “foreign” *proprietary* systems
- **Rapid integration** requirements requires source
 - L10N and integration with existing ICT resources

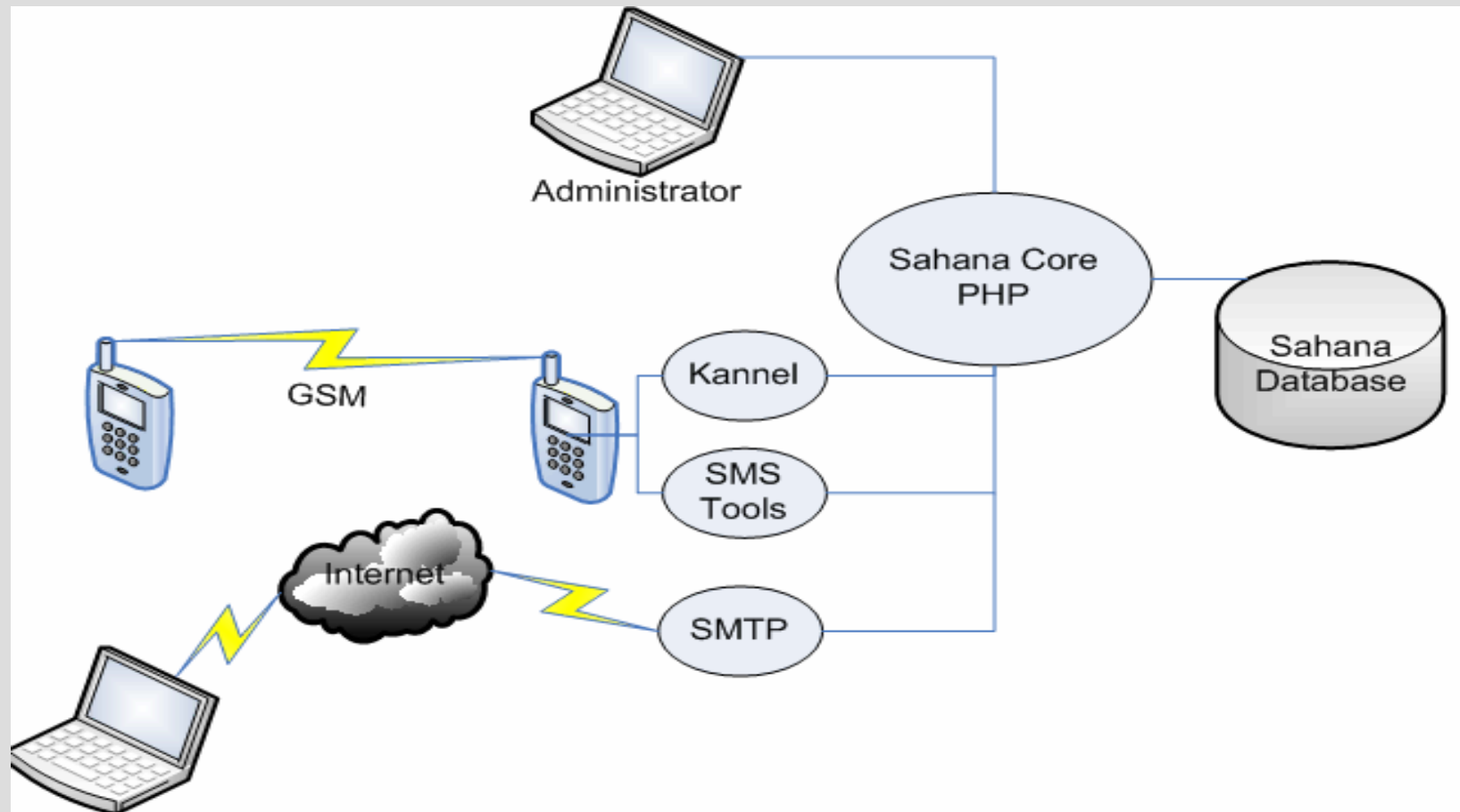
Technologies

- **LAMP**
- **PHP, Perl**
- **L10N**
- **GIS Mapping ,Situation Awareness Maps**
- **AJAX**
- **Biometrics integration**
- **Bar code scanning**
- **Messaging: XMPP using Jabber**
- **Accessibility**
 - Major browsers, PDAs (XHTML/CSS/AJAX)
 - J2ME version

Technologies

- **LiveCD, LiveUSB versions**
- **load balancing ,clustering**
- **Data import, Data synchronization**
- **Optimizations: e.g Inventory**
- **Reporting: PDF,CALC,spread sheets**
- **Bio-surveillance**
- **QA Automated Testing**
- **Connector Tech/Legal/Social framework**
 - Automate information flows
 - Emergency data exchange standards

Sahana Messaging Module



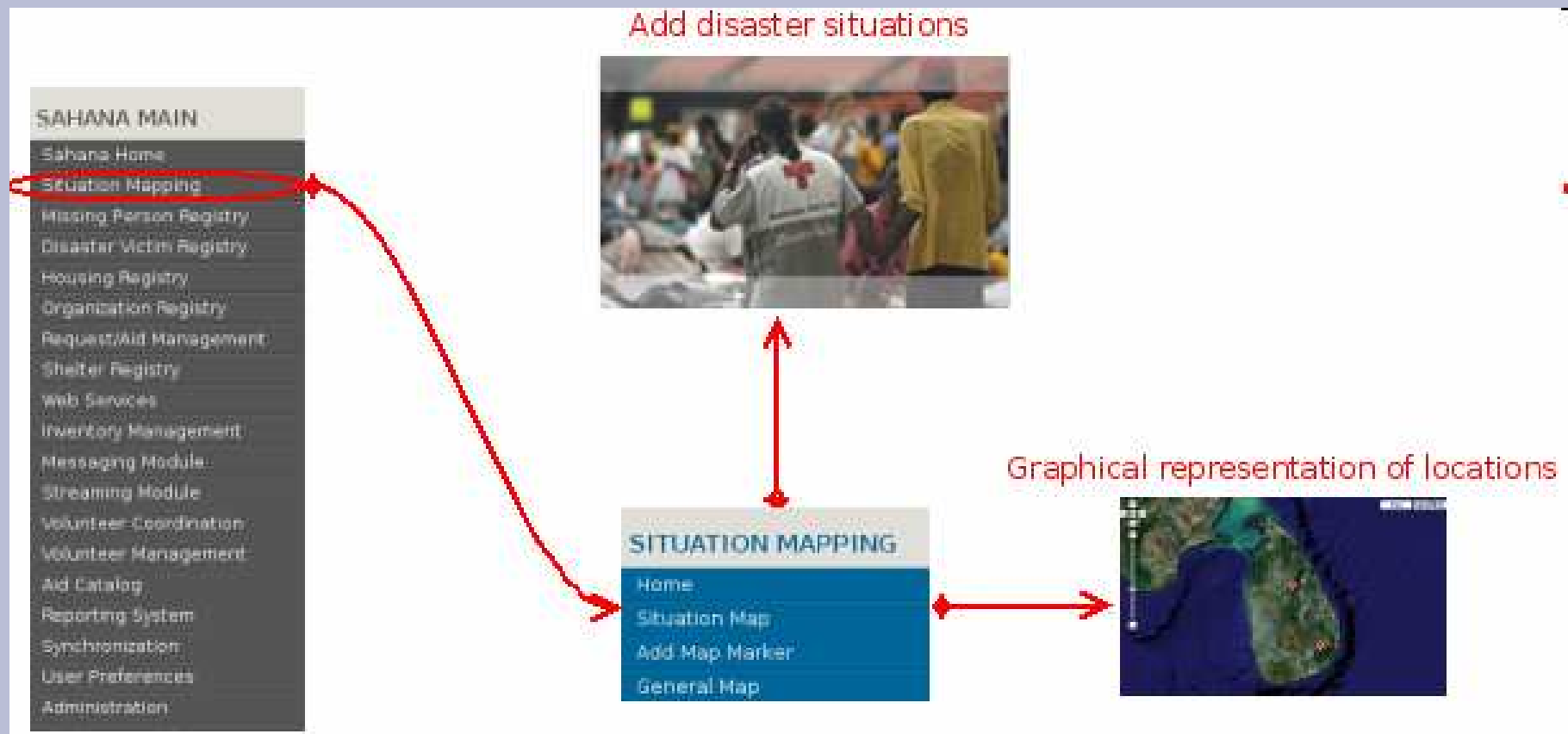
Why SMS?

- **Basic technology which works in case of high network congestion**
- **The SMS goes through on low signal**
- **Low cost alternative for communication**
- ***Any* mobile phone has the capability of sending/receiving an SMS.**

SMS Communication to Sahana Core

- Admin can login to the Sahana Web App by sending an SMS
- Volunteers can report information as they have it or even access the central information server

Ideal Usages of the SMS



Real time Situation Map



Ideal Usage of the SMS

- **Can act as an Emergency Public IVR**
- **A Public Sahana Number is broadcasted**
- **People send SMS and access information about their near & dear ones**
- **Mass Real time alerts can be sent via the SAME system**
- **Can be used for pre-disaster preparedness**

Sahana Recognition

- **Humanitarian**
 - [Software 2006, CA USA](#) Good Samaritan Award
 - One of top 3 Finalists in it's category in the [Stockholm Challenge 2006](#)
 - [BBC Documentary](#) “Code Breakers” showcases the Sahana project
- **FOSS**
 - New Free Software Foundation ([FSF](#)) award for “Social Benefit” inspired by Sahana
 - Sourceforge [Project of the Month](#) - June 2006
 - User Award from [Redhat Summit](#)

Sponsors

- **Main Sponsors**
 - **Lanka Software Foundation, Sri Lanka (SIDA)**
 - **NSF, USA**
 - **IBM Crisis Responce Team (USA)**
 - **Independant Humanitarian-ICT, DM, EM consultants (Australia, New Zealand, UK, USA)**
 - **Google**

Interested.. Join Us!

- **As a FOSS project everyone is welcome to contribute :-)**
 - Development
 - Domain Expertise
 - Quality Assurance
 - Donations
 - Trained Users
 - Advocacy
 - Deployments
 - Moral Support
 - HUGE COMMUNITY

Resources Available

- To get you started:
- Wiki

Sahana WIKIs

- [Documentation WIKI](#) - New User Documentation and Help
- [Development WIKI](#) - Conventions, Guides and HOWTOs for the Sahana developer
- [Requirements WIKI](#) - Capturing pending requirements for Sahana modules
- [Deployments WIKI](#) - Capturing best practices for deploying Sahana
- [Localization, Translation WIKI](#) - Capturing techniques for localizing and translating Sahana for a new country, region or group
- [Policy and PMC WIKI](#) - Policy on the Governance of Sahana
- [Research and Publications WIKI](#) - Sahana Research and publications
- [Sahana people and teams](#)
- [Sahana GSoC Ideas](#)
- [Sahana Training Program](#)

Resources Available

- **Project Page:**
<http://sourceforge.net/projects/sahana>
- **Mailing Lists**
- – **Humanitarian-ICT**
- – **Sahana-Maindev@lists.sourceforge.net**
- – **Sahana-User@lists.sourceforge.net**
- **IRC**
- – **#sahana on Freenode**
- **HUGS**
- – **humanitarian user groups**
- **www.sahana.lk ←**

Thank You

***Any Questions
or Feedback?***

***Feel free to shoot an email to the
developer or user mailing lists!***

Credits

- **This presentation contains extracts from past presentations made by the Sahana team**
- **Link:**
<http://wiki.sahana.lk/doku.php?id=research:presentations>