ASIGN
Mobile Crowd-sourcing Application for In-Situ Validation and Rapid Availability of Space Observations

Dr. Harald Skinnemoen
Managing Director & Founder
AnsuR Technologies, NORWAY

Contact: harald@ansur.no
Web: www.ansur.no
AnsuR Technologies of Norway

- Founded 2005 by Dr. Harald Skinnemoen
  - International communications specialist
  - AnsuR on Deloitte Fast500 list
  - Fully owned by founders / employees
- Visual Situational awareness
  - Innovation Award Winner with ASIGN
  - Difficult channels, unstable, unknown capacity,
  - Surveillance, emergency, disaster, security

Centrally Located at Fornebu near Oslo

www.ansur.no  Communication - Inspiration - Advice

© AnsuR Proprietary
Three Steps for Situation Management

1. Observe
   - Send Client
   - Field Observations
     - Photo
     - Video
     - UAV
     - Sensors
     - Report
     - Position
     - Time

2. Decide
   - Server & Integration
   - Control Center
     - Assessments
     - Maps / GIS
     - Satellite images
     - Expertise
     - Processing
     - Decisions

3. Act
   - Receive Client
   - Photos
   - Video
   - Maps
   - Text
   - Feedback

Observation – Action 1 minute worldwide
Situational Awareness (SA)

What happens
- Best possible images
  - Photo / video

Where it happens
- Geo-reference
  - Maps / satellite images

When it happens
- Rapid input / output
  - Fast decisions / actions

Decisions Based on SA
Lead to actions
Resolve Situation

Our Disaster Recovery Plan Goes Something Like This...
HELP! HELP!
Common Operational Picture

- Shared, single identical display of relevant operational information
- Position and tracking of people
- Geo-referenced observations, photos, video
- Position and status of important infrastructure

- Facilitates collaborative planning
- Helps all involved to achieve situational awareness

- Can be achieved by secure online Web map portal
- Need real-time visual input from relevant situation
Already a Long ASIGN History

- Development started 2006
- UN presentation 2007
- Triplex participation 2008
  - Also larger exercise in WISECOM (Germany)
- GEO-ASIGN with UNOSAT / ESA 2009
- GEO-PICTURES 2010-2012.
  - Application 2008 define “all-in-one mobile disaster assessment unit”
- Mobile / handheld since first Android
  - iPhone version ready now.
New event: Rapid Mapping

In-Situ Validation Essential

Request for new MAP

Disaster Situation

Field Photos & Crowdsourcing

Direct Field Input (photos, video, reports)

Delivery to Field User

Head of Unit

Production Order, specs, Deadline etc

Technical Staff

Production according to standards

Quality control by producer

OK

Quality control by Head of Unit

OK
The ASIGN SW

SMARTPHONE APPS
- PROFESSIONAL
  - Android
- CROWDSOURCING
  - Android
  - iPhone

APP FAMILIES VIA SERVER

PC PROGRAM
- STANDARD
  - Windows
  - Linux
  - Mac
- EMBEDDED
  - Linux

API for 3rd PARTY MODULES

CORE SERVER SW
- DATABASE
- WEB INTERFACE
- COMMUNICATION
- GIS & EO INTEGRATION

API for 3rd PARTY SOLUTIONS
User Concept for ASIGN

INCIDENT ➔ ASIGN SENDER ➔ ASIGN SERVER ➔ MOBILE RECEIVER ➔ PC RECEIVER ➔ GIS / MAPPING
Digital Camera, Eye-Fi & Android or PC
ASIGN Android / Smartphone

- ASIGN Trigger
- Take Photo
- View Photos
- Send Text Message
- Eye-Fi Mode
- Preferences

- Geotagged Text Message
  - Provider: Wi-Fi/3G network
  - Location: 51.89428°
  - Time: 2017-02-14 12:15:41
  - Accuracy: 60.9 m

- Example message text:
  
- Preferences
  - Camera
    - Camera auto-focus
    - On-screen shutter button
  - Location
    - Display format
    - Force GPS location
  - Preview Image
    - Automatic transfer
    - ASIGN server
  - Contact interval

- Send | Cancel

- Image of a person in the wilderness
Quality of Experience

Optimum Performance Theoretically Attainable (OPTA)

Shannon Information Theory

Rate Distortion theory,

Maximum Available Useful Information (MAUI)

General usefulness. Duplications.


Beyond source and channel coding

Holistic optimization

Information management
Overview and details
SkagEx 2011 Police / Rescue
Only Ships in Full Resolution
Video Clip - Use Storyboard

- Large files in HD
  - Can not send
- Do storyboard
  - Transfer as photo
- Use slider - Select Video segment
  - FPS,
  - Quality
  - Resolution
  - Segment
- Get desired video clip as needed
Crowdsourcing UN / EMSC

GEO-PICTURES: Crowd-sourcing application available to improve field assessment

10-12 May 2011, Bergen, Norway. During the 2011 GDACS Stakeholder meeting, a crowd-sourcing application for geo-tagged photos was released to the early responders community.

Developed under the EC funded GEO-PICTURES project by UNOSAT, this Android app automatically geo-locates (tags) photos, shares it with others through a web-server and allows them to be uploaded in real-time. This tool has successfully been used in Haiti, Pakistan and Nigeria, among others.

Using any Android phone, simply point the barcode-scanner to the screen and the app will automatically detect the location and upload the photo. This can be done at no cost to acquire geo-tagged photos and share with others.

EMSC is experimenting with an application called RICHTER (Rapid geo-Images for Collaborative Herb - Targeting Earthquake Response) for Android mobile phones that allow eyewitnesses to quickly and freely share their pictures of resulting damage with the EMSC (see examples on the right). The goal is to quickly characterize the impact of an earthquake and provide an early warning system.

Using RICHTER is very easy. Simply start the RICHTER app and take a picture of the earthquake damage or effects. RICHTER will then automatically geo-reference the photo you take. Geo-reference data can be via built-in GPS when you are outside, or via the mobile networks directly, even when you are inside. Location is automatically determined, it will be embedded with exact time and location of the picture. You only have to press one button to send both the picture and geo-referencing data (time and position) to the EMSC. After validation, the collected pictures are then published on the EMSC website.

The purpose of RICHTER is to compress the pictures to use less than 30 KB of data, as transfer will be fast, not overloading networks and low cost. However, sometimes photos contain information where we would wish to study it in the best quality. We may therefore request the full size image in these certain cases. This process is currently automatic and transparent for you, but you will be notified by SMS if this is requested.

For more information, see www.ansur.no

Content © AnsuR Proprietary
Time-stamped Geo-referenced Reliable Crowdsourcing

UN-ASIGN From AnsuR
Send your GEO-PICTURES and help United Nations manage disasters

Create Report
Image, message...
Image Gallery
View & manage images
Preferences
Status

Available on the App Store
Help & Support

AISIGN
Crowd-sourcing Application
Take Photo
View Photos
Send Geotagged Text Message
Preferences

www.ansur.no
Communication – Inspiration - Advice
© AnsuR Proprietary
Crowdsourcing Use & Issues

Use Situations
- Large areas
- Low cost
- Long durations
- Sudden events

Data Issues
- Reliability
- Consistency
- Verifiability
- Harvesting

Complement Professional Assessments
Thai Flood Crowdsourcing & UN
Integration of ArcGIS with ASIGN

• Use standard GeoRSS feeds
  – to view or download geotagged photos, audio and video clips.

• Or use the ASIGN Widget
  – to enable management capabilities such as:
    • Zooming in on regions of photos,
    • requesting HQ video or audio clips.

• Or develop your own Web map
  – using only the parts of the ASIGN API that you need.
Example: Thailand floods
London Paralympics 2012
WHO

Youth Olympic Games 2012
Austria
Tests Online Web Maps
Dynamic Assessment Templates

- Mobile assessment template
  - For situation in question
  - Create from the server
- Allocate to given mission
  - Simple crowdsourcing
  - Advanced professional
- Associate images
  - Geo-tag when sending
Live Field User Tracking
Integrated Sensor Option

Add sensor data
- Several sensors possible

Priorities:
- Sensors can trigger photos
- Photos can trigger sensors

Use case examples:
- gas, chemical, biological, ...

Use case examples:
- Gas monitoring
- Chemical detection
- Biological hazards

www.ansur.no
Synchronized in-situ /space observations

Real time monitoring
- Photo available instantly
- Radar image within hour
ASIGN UAV Mobile Phone

Remote Android sends photos live using ASIGN
Sending out to smartphone

- Send a link with information
  - Initial photo
  - Regions
  - Link to map
- Click to view in Google Maps
  - Navigate
- No installation needed
  - To work with all phones
Some Crowdsourcing Initiatives

- United Nations
- EU Civil Protection
- EMSC
- Govt of Norway
- Govt of Austria
- Govt of Indonesia
- Govt of Philippines
- Govt of Zambia
- Govt of Brazil
- Govt of Thailand
Market Analysis

- Global Market
  - Worth billions USD
- Unique position
  - Disruptive technology
- Market Capture via
  - Resellers
  - UN PPP
  - Direct Sales

- Law Enforcement
  - Security
  - Safety
  - Surveillance

- Governmental
  - Disaster, emergency,
  - Homeland security
  - military

- Humanitarian
  - United Nations
  - Civil Protection
  - NGOs

- Private B2B
  - Insurance,
  - photo journalism
  - Remote inspection
THANK YOU!