UNOSAT, Open Data, and the Crowd

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UNOSAT

UNOSAT Focus

- Operational imagery analysis and mapping
- Disasters and relief; Human security and rights; Development and land use planning
- About 35 'activations' per year ranging from single map products to longer reports
- Ultimately concerned with meeting UN and NGO information needs

Open Data

- For infrastructure data we'll use Open Street Map, Google Map Maker, and other sources, sometimes together
- We have no capacity or mandate to really enter into licensing negotiations, especially during emergencies
- Relations with our vendors and data providers are key so we absolutely try to adhere to their requirements
- We respect the open data ethic and advantages but also recognize the utility of commercial resources

Engaging the Crowd

- UNOSATs definition of crowdsourcing ranges from “true” crowdsourcing to collaborative distributed mapping
- First 'big' engagement with the crowd was a distributed image analysis project in May 2008 for Cyclone Nargis
- Daily utilization of basemap data from Google Map Maker and Open Street Map
- Proactive basemap generation
- Free app for taking geotagged photos in disaster situations
- Conversion of ‘generic’ pictures/video to geo-data

Sources of Crowds / Data

- GISCorps – founded in 2003, provides GIS volunteers for a wide variety of non-profit and humanitarian activities.
- Google Map Maker – a project by Google to digitize their considerable imagery via volunteers (available on request)
- Open Street Map - “the free editable map of the world” based on volunteer generated data (freely downloadable)
- Standby Task Force – a volunteer group specifically focused on crises
- Other sources include universities, professional networks, ‘random’ public

Cyclone Nargis

- May 2008, UNOSAT activated
- Engaged GISCorps to provide volunteers for a distributed imagery analysis exercise
- 20 initial volunteers around the world reviewed post-cyclone imagery using Google Earth to identify pagoda's, infrastructure (villages, bridges), damage, and other features
- Significantly hampered by clouds of course but digitized 6,500 features within a week

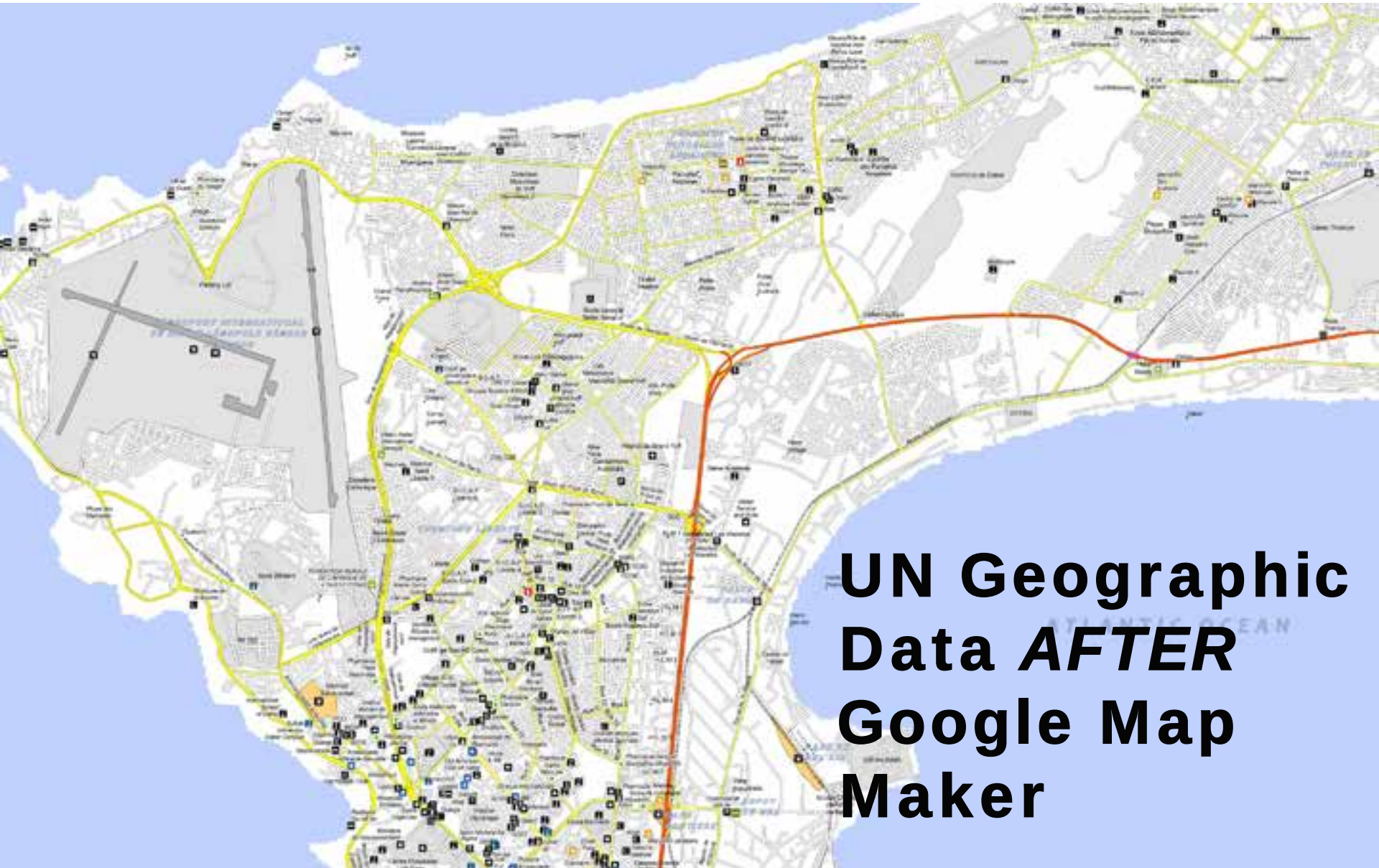
Cyclone Nargis

- Secondary group of 20 volunteers engaged to review pre-cyclone imagery for buildings and pagodas
- Pre-disaster imagery assessment remains a key basis for UNOSAT use of crowdsourcing today
- Lessons learned were extensive:
  - recognize limits of the crowd process
  - Define, document, and train
  - replacing technical challenges with ‘people’ challenges?

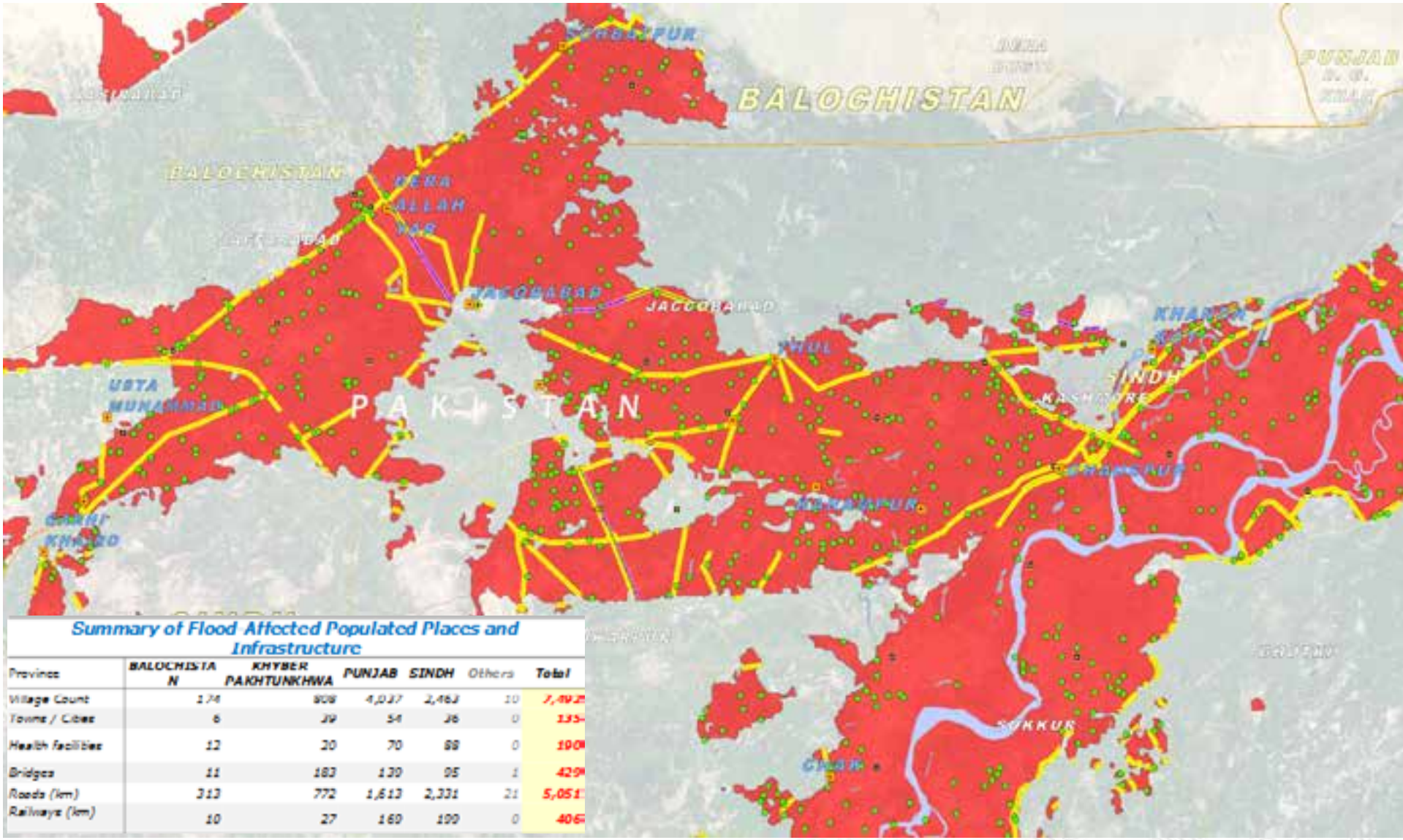
Basemap Generation

Dakar, Senegal: UN Geographic Data *BEFORE* Google Map Maker

Basemap Generation



Google Map Maker and flood damage analysis



Summary of Flood Affected Populated Places and Infrastructure

Province	BALOCHISTAN	KHYBER PAKHTUNKHWA	PUNJAB	SINDH	Others	Total
Village Count	174	908	4,037	2,463	10	7,492
Towns / Cities	6	39	54	36	0	135
Health facilities	12	20	70	88	0	190
Bridges	11	183	130	95	1	429
Roads (km)	313	772	1,613	2,331	21	5,051
Railways (km)	10	27	169	199	0	405

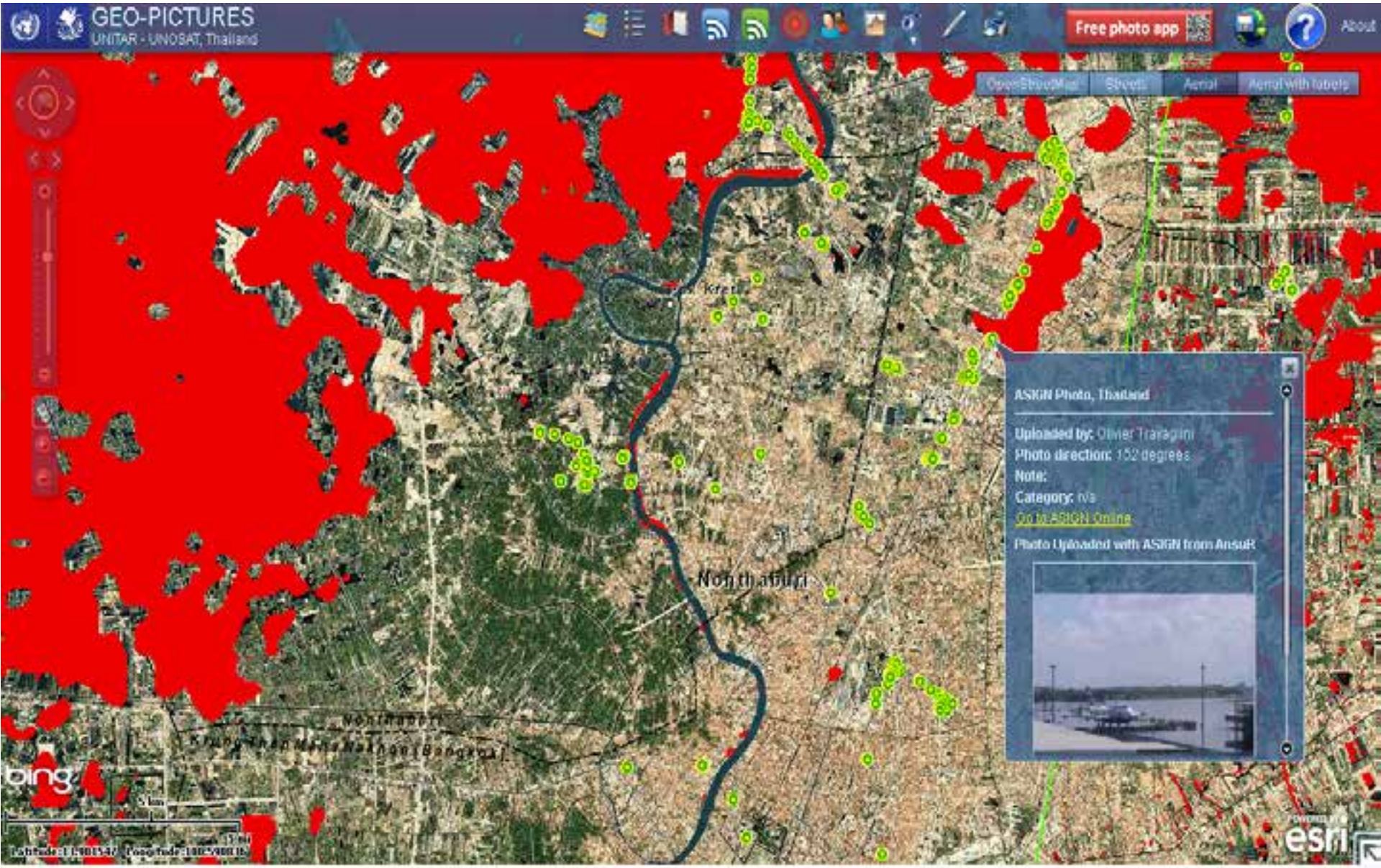
Kyrgyzstan Ethnic Conflict

- UNOSAT initially provided ongoing analysis of conflict and affected areas, then relief support
- UNOSAT extended its imagery license for DigitalGlobe scenes to OSM (one time)
- OSM digitized roads and building footprints to facilitate relief work by Red Cross especially
- Led to an agreement with Spot Image for UNOSAT to extend its license to OSM when Space Charter activated

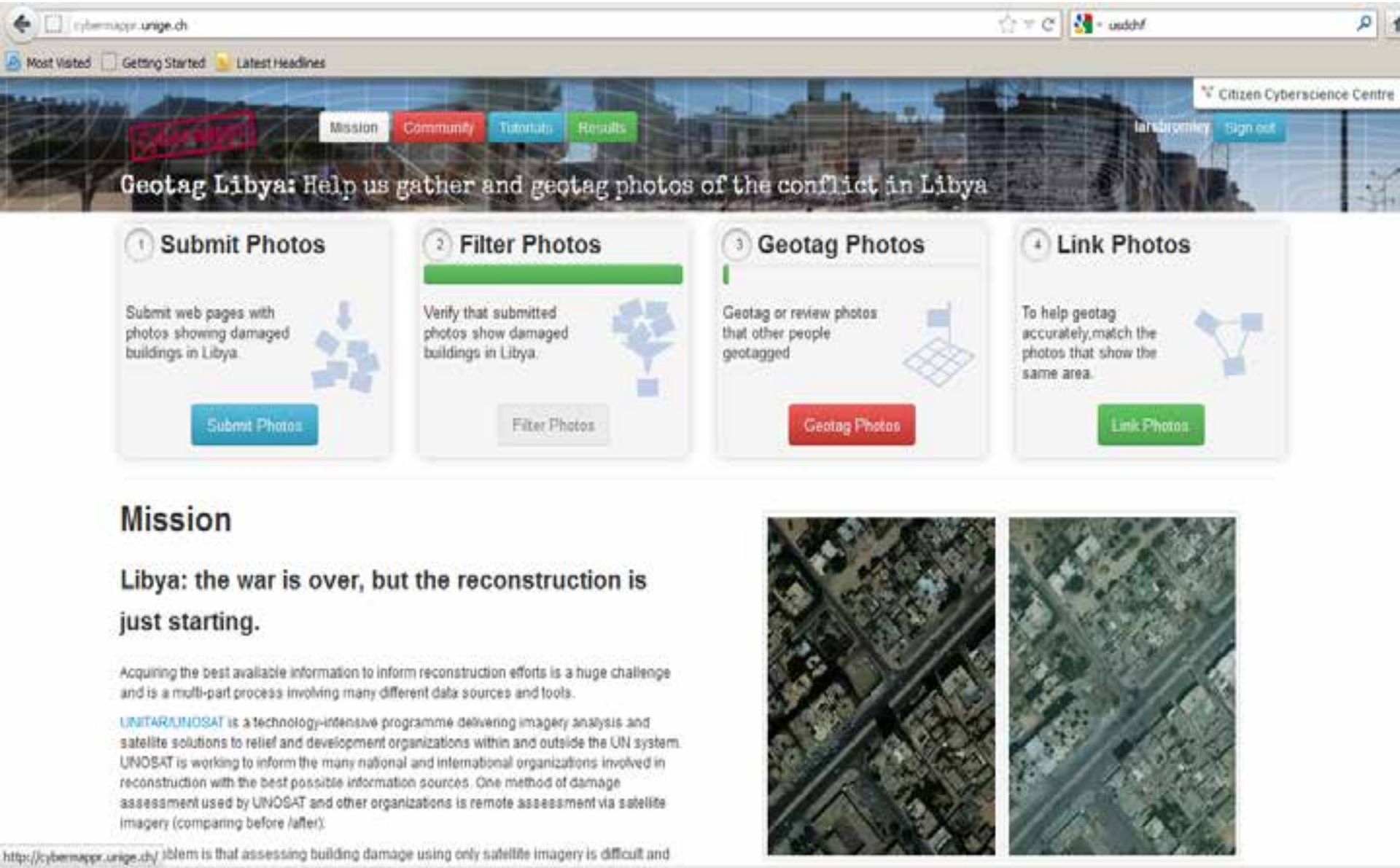
Proactive Basemap Generation

- Pre-emptive basemap generation possible by calling on volunteer communities
- UNOSAT and Google partnered on this in 2011 concerning Sudan and the referendum process
- In its first two weeks the effort digitized almost 10,000 km of roads, thousands of other features
- Create useful data for a new country
- Initiate an advocacy activity by directly involving people
- Much of the OSM operating procedure involves these principals as well

ASIGN Application for Android



Cybermappr: crowdsourced geotagging of visual media



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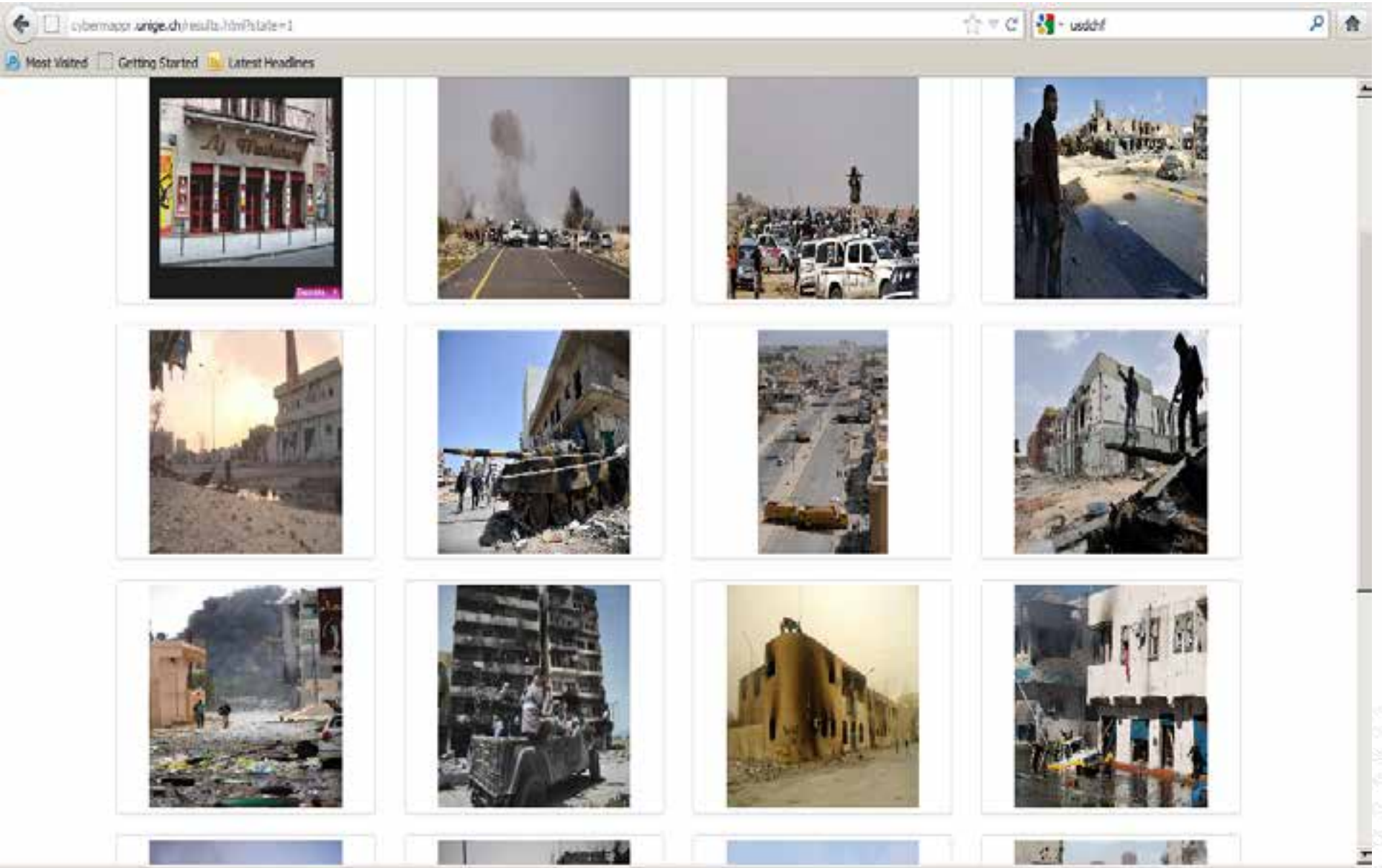

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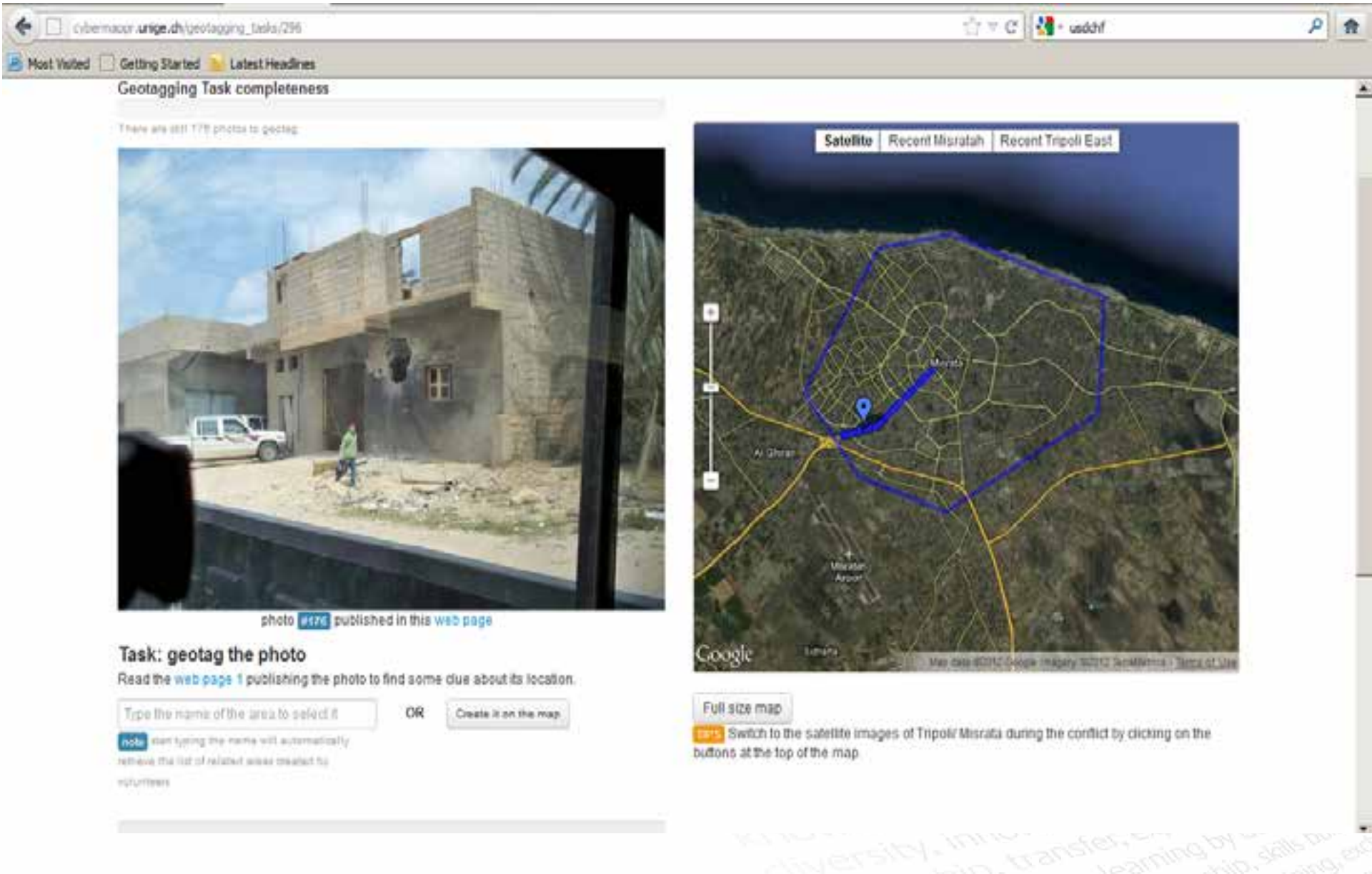

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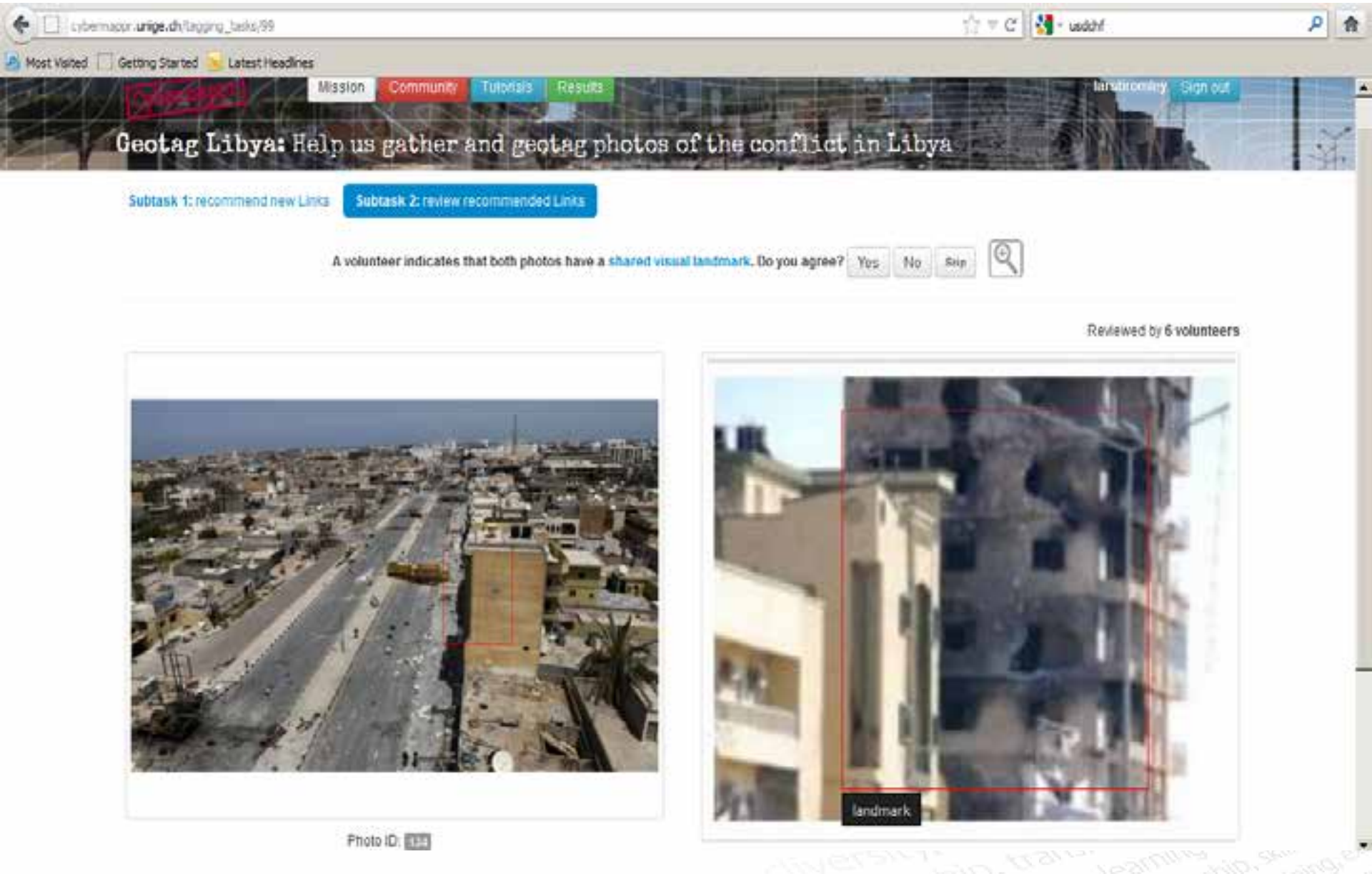

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