

Thematic Session 2 IT Innovations Reconstruction 2.0

Net-centric Crisis Management in Pakistan flood 2010

10 May 2011
Geneva, Switzerland

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GFDRR
Global Facility for Disaster Reduction and Recovery



ISDR



Global Platform
for Disaster Risk Reduction

Contents

- What is needed to manage disasters
- Challenges and crisis cycle
- Net centric-working in disasters
- EAGLE In Pakistan Flood 2010
- EAGLE suite for disaster cycle (reconstruction)

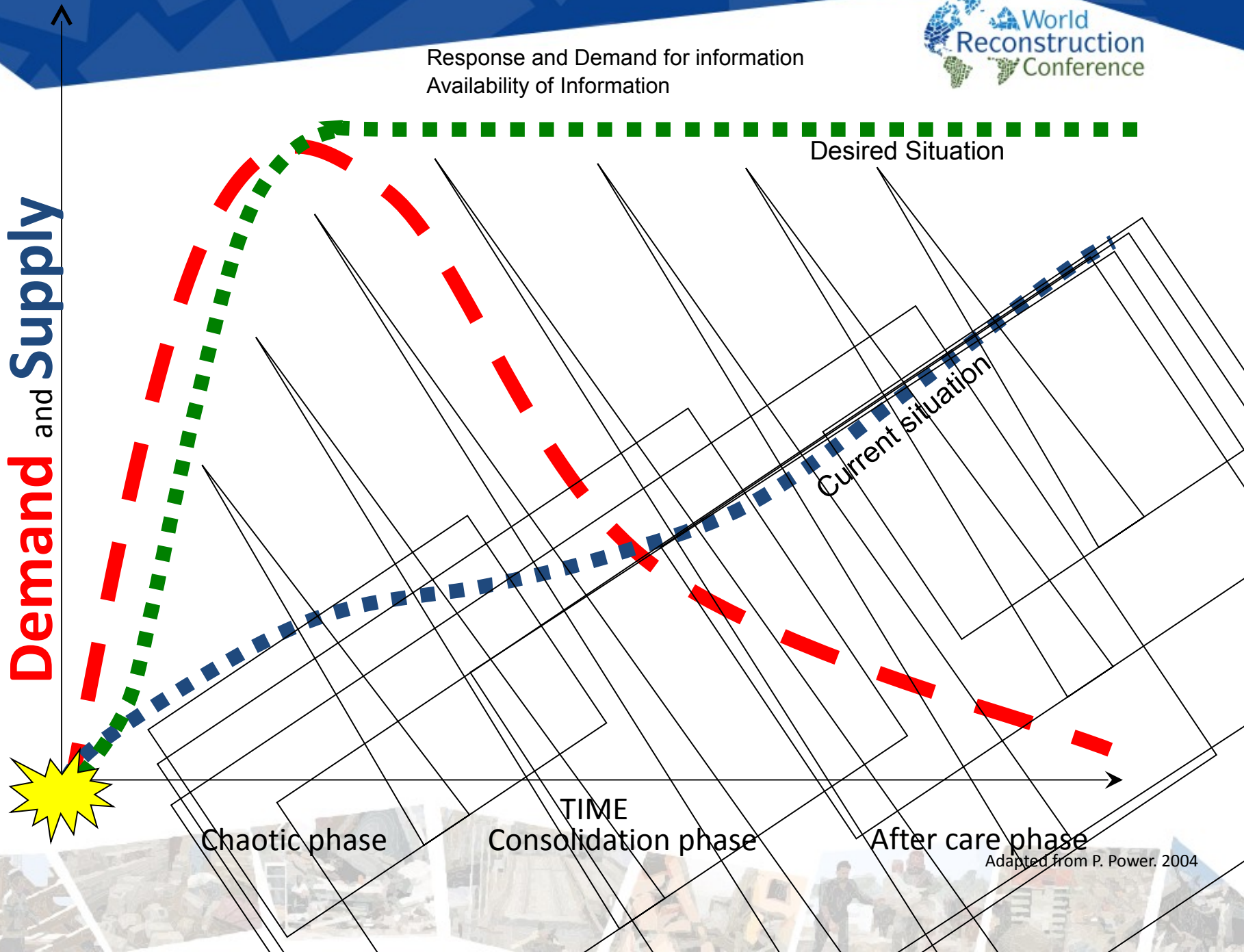


What do you need to manage disasters?

- Information
- Resources
- Information
- Communications
- it boils down to Information, Information, etc



Response and Demand for information
Availability of Information



Demand and Supply

Desired Situation

Current situation

TIME

Chaotic phase

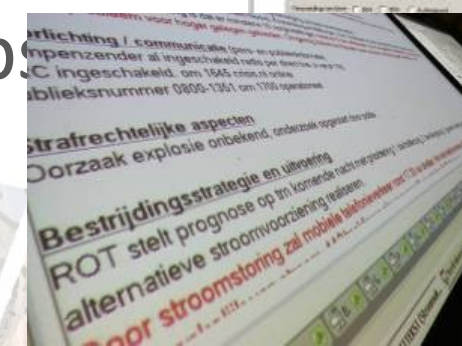
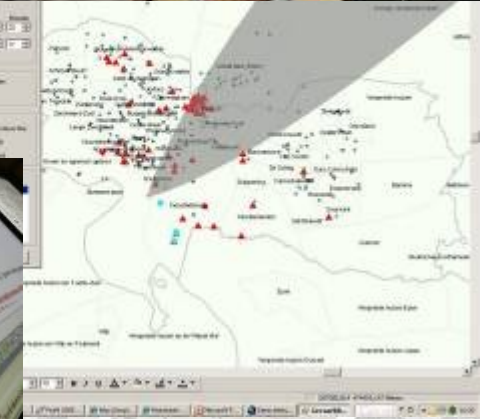
Consolidation phase

After care phase

Adapted from P. Power. 2004

Disaster Information requirements

- All actors must have the same picture (COP)
- Communication must be fast and efficient
- Visualization and communication with maps
- Smart integration of text,



Challenges

- Situational awareness
 - Real-time
 - Common Operating Picture
- Sharing data (Large data flows),
- Data preparation (repository management)

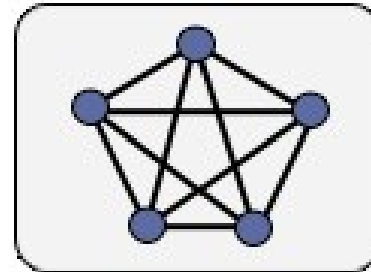


2 Main concepts

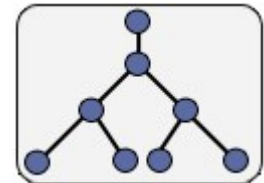
Geo COP



Net-Centric Info Sharing



Vs.

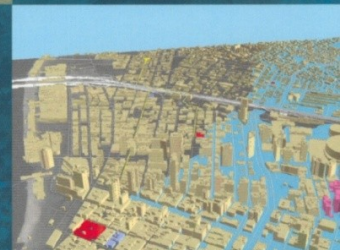
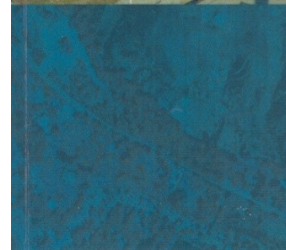


Successful response starts with a map

- Integration of information layers
- Visualization of objects
 - Incidents
 - Resources
- Spatial Analysis
 - Simulation of processes
 - Information for decisions
- Promotes participation and sharing



**SUCCESSFUL
RESPONSE
STARTS
WITH A MAP**



Improving
Geospatial Support
for Disaster
Management

NATIONAL RESEARCH COUNCIL
OF THE NATIONAL ACADEMIES



Net-centric working

- Way of working across organizations
 - Deploying the right capabilities
 - Sharing information as a network (not hierarchy)



- Achieving
 - Faster decision making
 - Less damage, fewer victims



Net-centric architecture

- Peer-2-peer technology
 - Microsoft Groove
 - Data exchange as soon as there is a connection
 - Everyone will have the same information at the same time
 - No hierarchy in information sharing (but source traceable)
 - Very scalable
 - Just invite parties to the workspace

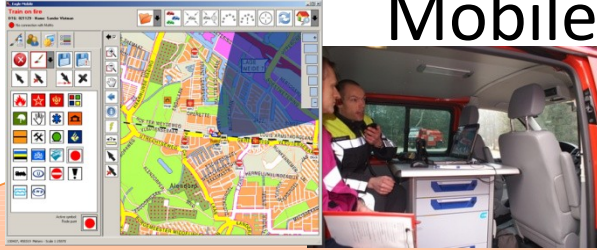


Eagle suite for disaster management

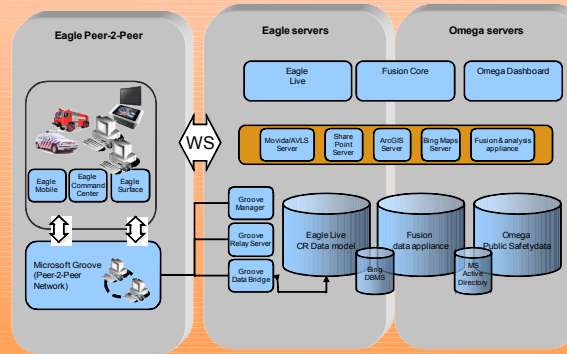
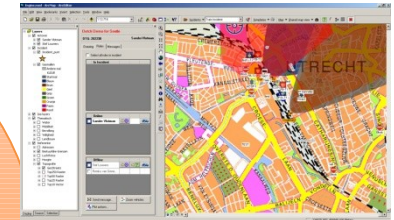
Executive Dashboards



Mobile



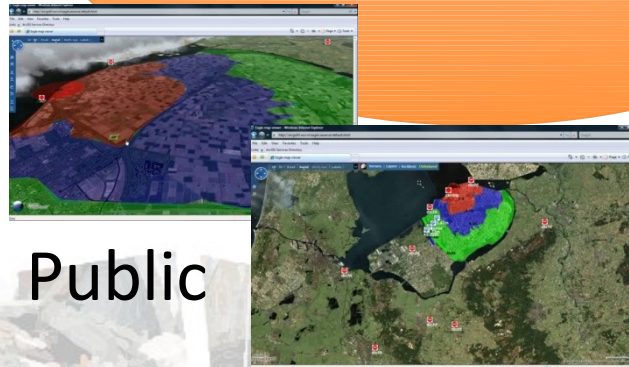
Command Center



Sander Vietnam/Goodan

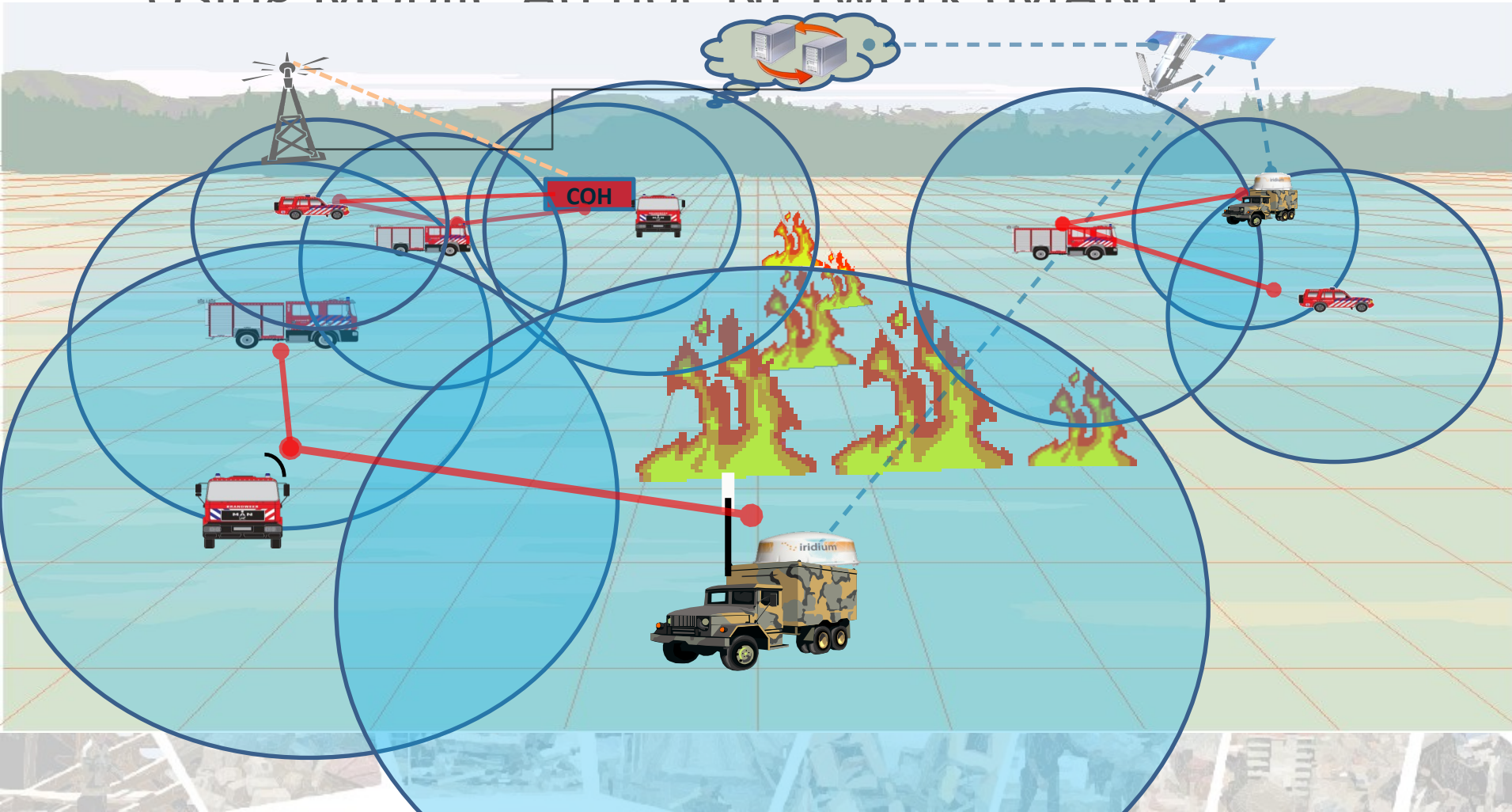
Time	Level	Priority	Message	Location
23:08	Level	High	Message received from...	...
23:07	Level	High	Message received from...	...
23:06	Level	High	Message received from...	...
23:05	Level	High	Message received from...	...
23:04	Level	High	Message received from...	...
23:03	Level	High	Message received from...	...

Public



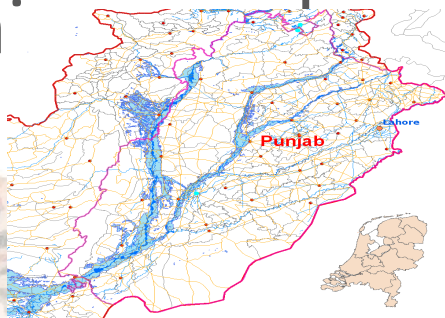
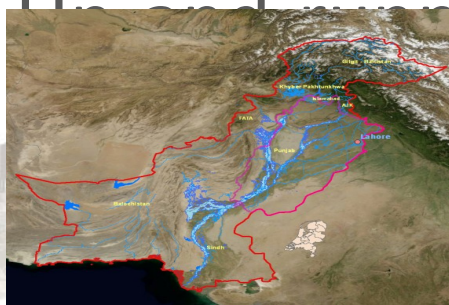
Even in remote areas

- Using Mobile Ad hoc Network (MANET)



Pakistan Flood disaster 2010

- Million's of people directly affected
- 1,5 million dwellings and 5500 schools damaged
- > 200.000 km² flooded area
- Off-the-shelf software, plug & play
- Need for Common Operational Picture
- **Urban planning with**



Layers

- Investigation_Area
- Pakistan Pointsof Interest
- Punjar Data
- Pakistan/PAKISTAN_FLOOD
 - River Guage Inflow Obser
 - Dams
 - WHO Health Facility
 - Other
 - Hospital Type
 - District Headquarters t
 - Tashil Headquarters Hc
 - Miscellaneous Features
 - Transportation
 - Hydrography
 - River Network
 - Water
 - Flood Extent 17AUG
 - Severity
 - Heavy
 - Moderate
 - Intermittent
 - Damage Assessment by Di
 - Demographics
 - Imagery
 - DATA.pk_post_flood
 - DATA.pk_pre_flood
 - Administrative
 - Level 3
 - Level 2
 - Level 1
 - Level 0
- Bing Maps
 - Microsoft Virtual Earth Aer
 - Microsoft Virtual Earth Aer
 - Microsoft Virtual Earth Roa
- ESRI_StreetMap_World_2D

Display Source Selection

Pakistan Flood

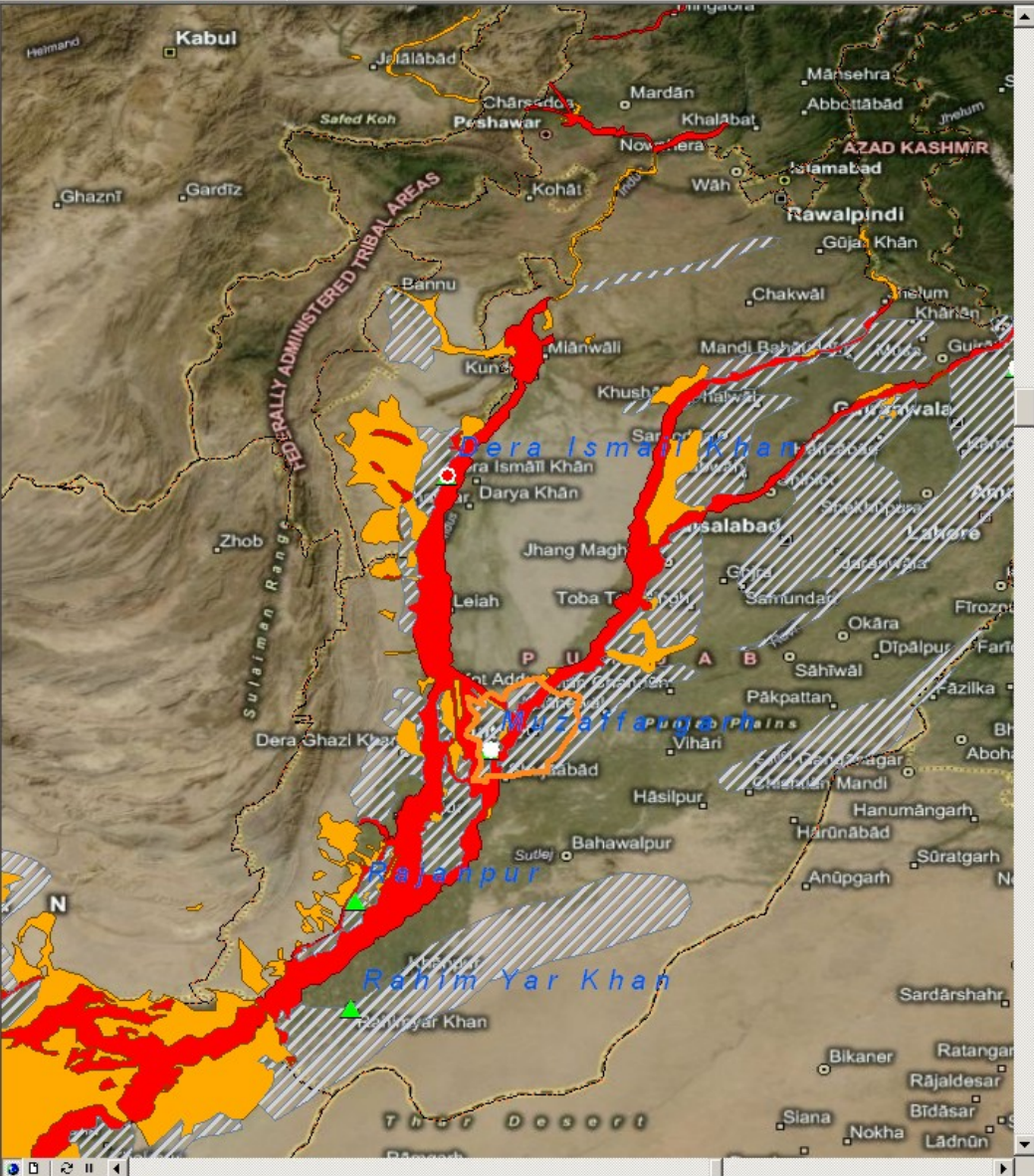
DTG: 271554 Sander Vlotman

Drawing Roles Messages

Type

Point Line Area

View plots Active symbol: Brandincident



- Layers**
- Investigation Area
 - Pakistan Pointsof Interest
 - Punjar Data
 - Pakistan/PAKISTAN_FLOOD
 - River Guage Inflow Ob
 - Dams
 - WHO Health Facility
 - Other
 - Hospital Type
 - District Headquarte
 - Tashil Headquarter:
 - Miscellaneous Features
 - Transportation
 - Bridges
 - Airport
 - Railroad
 - Roads
 - Other
 - Type
 - Primary
 - Secondary
 - Trail
 - Hydrography
 - River Network
 - Water
 - Flood Extent 17AUG
 - Severity
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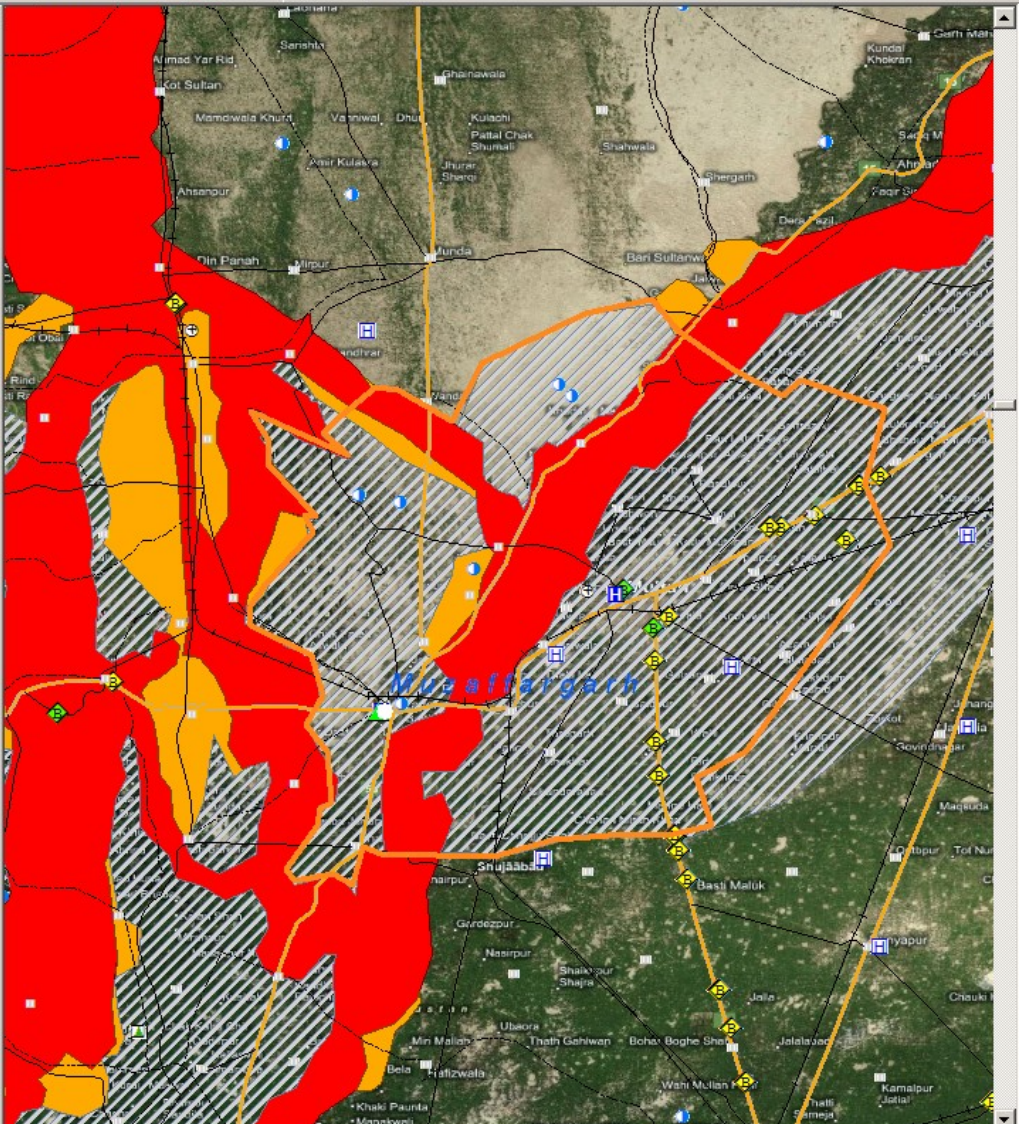
Pakistan Flood

DTG: 271555 Sander Vlotman

Drawing Roles Messages

Type
 Point Line Area

View plots Active symbol: Brandincident



Impact Analysis

Area of interest from map layer: Investigation_Area
Area: 0.000 km2

Number of inhabitants | Analysis report

Analysis report of map layer: Points of Interest

Show all map layers

osm_id	timestamp	name	type	Object ID
617731562	2010-01-21T15:5...	Multan Internatio...	airport	2331
874296161	2010-08-22T18:1...		bank	2627
632370914	2010-02-07T12:4...	Chowk Kumharan...	bus_stop	2347
632379561	2010-02-07T12:5...	Cycle Stop	bus_stop	2351
632382544	2010-02-07T13:5...	General Bus Stand	bus_stop	2353
310691118	2008-11-08T23:3...		fuel	2073
310738280	2008-11-09T07:4...		fuel	2074
310868182	2008-11-09T19:5...		fuel	2075
444356921	2009-07-25T13:4...	Nishtar Medical C...	hospital	2186

Export results | Statistics | Close dialog

Click and right-click row for map selection.

- Heavy
- Moderate
- Intermittent
- Damage Assessment b...
- Demographics
- Imagery
 - DATA.pk_post_floc
 - DATA.pk_pre_floc
- Administrative
 - Level 3
 - Level 2
 - Level 1
 - Level 0
- Bing Maps
 - Microsoft Virtual Earth
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 - Microsoft Virtual Earth

Display | Source | Selection

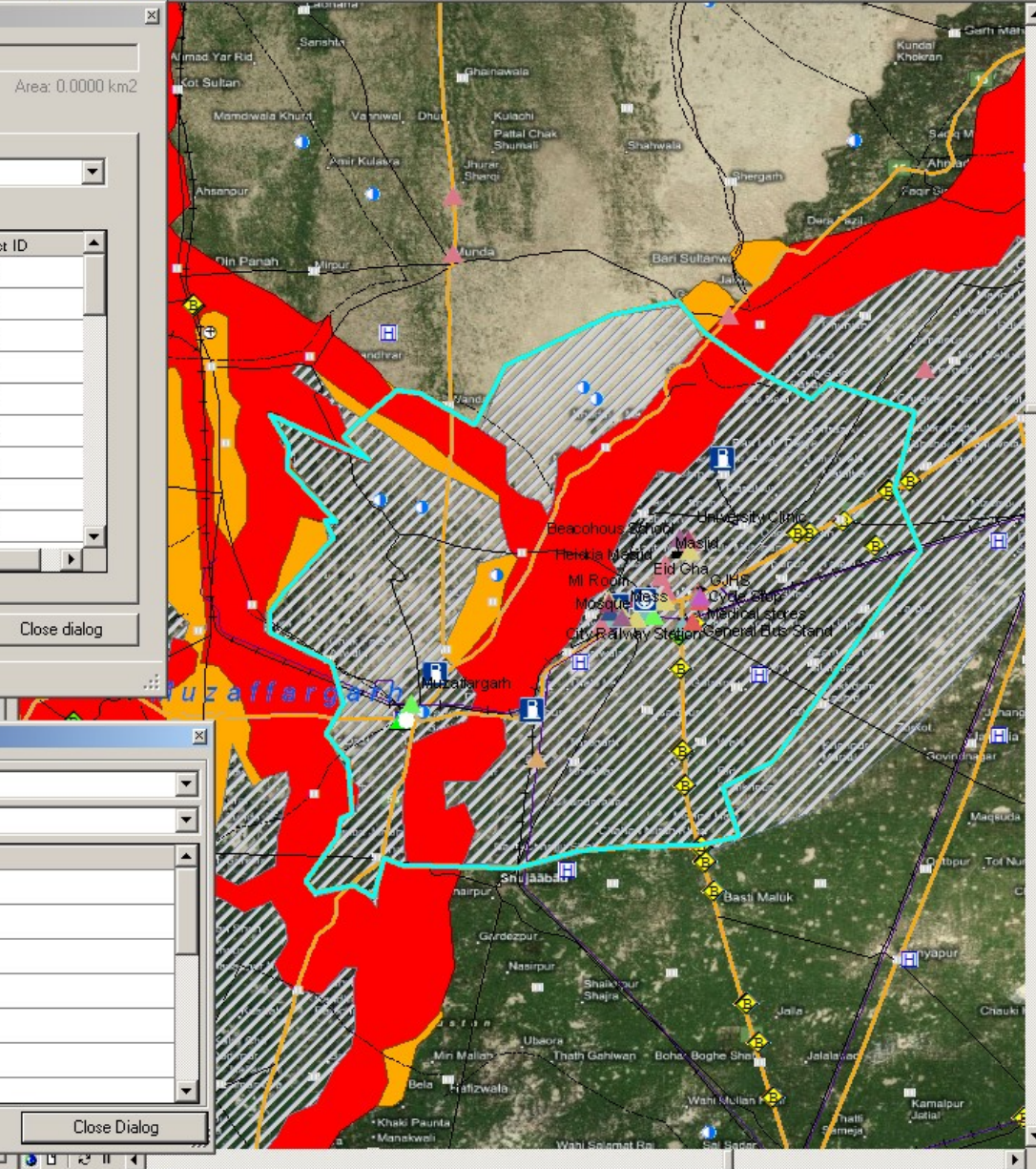
Calculate statistics

Group column: type

Aggregate column: [None]

type	Total
airport	1
bank	1
bus_stop	3
fuel	3
hospital	3
level_crossing	1
mini_roundabout	4

Close Dialog



Investigation_Area

Points of Interest

id	timestamp	name
731562	2010-01-21T15:...	Multan
296161	2010-08-22T18:1...	
7870914	2010-02-07T12:4...	Chowk
7879561	2010-02-07T12:5...	Cycle
382544	2010-02-07T13:5...	Gener
91118	2008-11-08T23:3...	
38280	2008-11-09T07:4...	
68182	2008-11-09T19:5...	
856921	2009-07-25T13:4...	Nishta

IMPACT-ANALYSIS-RESULTS					
Area	km2	Number of inhabitants	Total		
	0		Not calculated		
osm_id	timestamp	name	type	Object ID	
251146100	2010-08-22T23:27:49Z		level_crossing	1423	
307616505	2008-11-08T23:42:20Z		mini_roundabout	2045	
310472964	2009-07-20T11:11:03Z		place_of_worship	2071	
310691118	2008-11-08T23:38:03Z		fuel	2073	
310738280	2008-11-09T07:43:40Z		fuel	2074	
310868182	2008-11-09T19:51:26Z		fuel	2075	
310963450	2010-03-03T08:43:07Z		mini_roundabout	2077	
310963453	2009-12-11T17:17:29Z		mini_roundabout	2078	
444356918	2010-03-17T12:08:15Z	Eid Gha	place_of_worship	2185	
444356921	2009-07-25T13:45:02Z	Nishtar Medical College	hospital	2186	
444357811	2009-07-20T11:11:04Z	University Clinic	hospital	2187	
538176021	2009-10-22T08:20:49Z	Heidria Masjid	place_of_worship	2293	
538176022	2009-10-22T08:20:49Z	Beachous School	school	2294	
538176023	2009-10-22T08:20:50Z	Masjid	place_of_worship	2295	
538176026	2009-10-22T08:20:50Z	Jamia Sahib uz Zaman	place_of_worship	2296	
539142566	2009-12-11T17:17:24Z		mini_roundabout	2297	
603101022	2010-01-02T15:41:30Z		restaurant	2323	
617731559	2010-01-21T16:08:30Z	City Railway Station	station	2330	
617731562	2010-01-21T15:57:41Z	Multan International Airport	airport	2331	
617735649	2010-02-25T16:13:30Z	Multan Railway Station Cantt	station	2332	
632370914	2010-02-07T12:41:00Z	Chowk Kumharanwala	bus_stop	2347	
632371589	2010-02-08T13:19:03Z	GJHS	school	2348	
632376109	2010-02-08T13:19:35Z	Girls High School	school	2349	
632378517	2010-02-07T13:53:46Z	Medical stores	pharmacy	2350	
632379561	2010-02-07T12:57:28Z	Cycle Stop	bus_stop	2351	
632381743	2010-02-07T13:53:46Z	New Multan Post Office	post_box	2352	
632382544	2010-02-07T13:53:46Z	General Bus Stand	bus_stop	2353	
652439416	2010-02-24T11:47:17Z		parking	2358	

Calculate s

Group column

Aggregate c

hospital	3
level_crossing	1
mini_roundabout	4

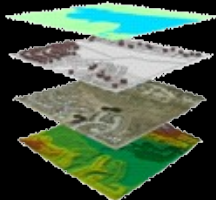
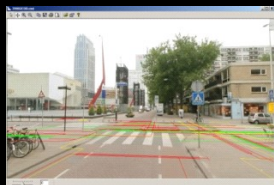
Close Dialog



GIS Capabilities

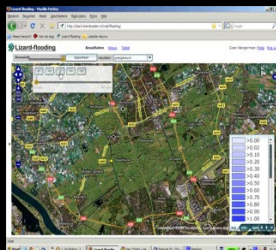
Asset Management

Collect, manage and exchange reliable data



Analysis & Planning

Transform data to information to implement and make decisions



Mobile

Collect and utilize information outside in work processes



Sharing & collaboration

Disseminate and integrate knowledge as needed

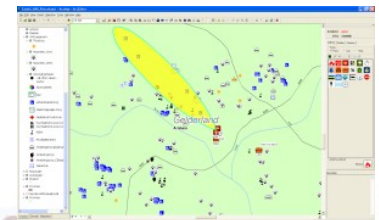
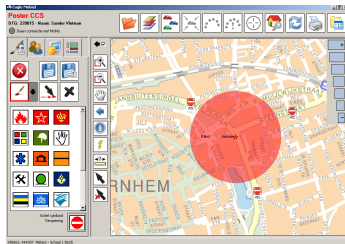
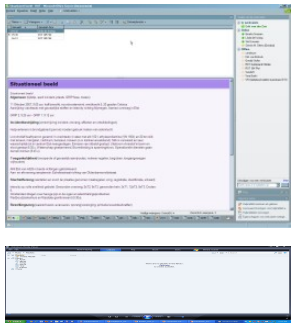
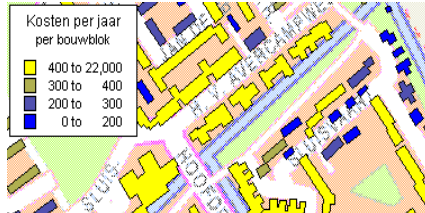


Crowd sourcing

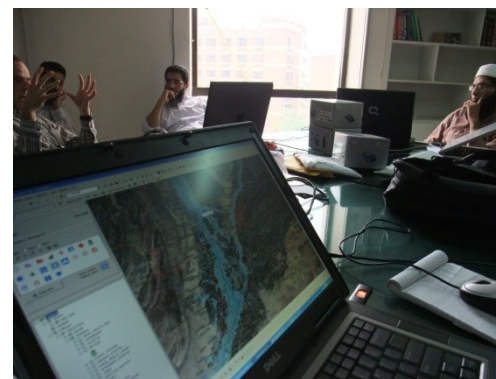
Contributions from the community via integrated technologies



Part of Safety chain



Building local capacity



THANK YOU !