Improving Crisis Event Management through EO & Citizens’ Voluntary Engagement

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Crisis and Disasters – Numbers (2015)

Number of reported disasters by country:

- Americas: 93
  - United States: 22
  - Chile: 7
- Africa: 56
- Europe: 23
  - Pakistan: 6
  - Bangladesh: 6
- Asia: 152
  - China, P.R.: 26
  - Japan: 7
- Oceania: 22

(1): Natural disasters: Epidemic and insect infestations not included.
Crisis and Disasters – Numbers (2015)

- 346 reported disasters
- 22,773 people dead
- 100 million people affected
- $66.5 billion economic damage
Crisis Management – Acquiring Data/Information

Telephone, fax, social media, e-mail

[slow, manual, prone to errors]
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Add: semi-automatic processes, State of the art technologies (e.g., satellites)
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Near-real time situational awareness picture leading to: 1) smarter resource allocation and response actions, 2) shorter reaction times, 3) lower total costs for relief actions.
QuinJunSAT Approach
The Way of Data & The Tools

Rapid Assessment System
The Way of Data & The Tools

geoBingAn

CrowdTasker

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Emergency Maps Tool
Taiwan Drill Day

• “921 International Disaster Prevention Drill” is an annual set of events across the whole Taiwan, commemorating the devastating earthquake on 21st September, 1999.
• More than 2,000 lives were lost, damaging tens of thousands of buildings and destroying infrastructure.
Taiwan Drill Day

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• More than 2,000 lives were lost, damaging tens of thousands of buildings and destroying infrastructure.
• Include technological advancements for the damage detection / data collection for rapid assessment & creation of a crisis picture:
  - Satellite Technologies (from above)
    - Very high resolution imagery (sub-meter)
  - Crowdsourcing Data (from the ground)
    - Smartphone Apps for crowdtasking (geoBingAn, CrowdTasker)
  - Crisis Mapping
    - Emergency Maps Tool for decision making support
Taiwan Drill Day

- Hsinchu County in Taiwan
- Disaster Prevention and Resilience Center
- Crisis responders & managers, volunteers
Taiwan Drill Day
Taiwan Drill Day

Image of a software interface with options for commands, crisis, and event selection.

Image of a room with people presumably participating in a drill or discussion session.
Taiwan Drill Day
Taiwan Drill Day - Results
Lessons Learned & Future Steps

**Satellite data:**
- Temporal resolution is currently too sparse as they are not meeting the crisis & disaster criteria
  - Much better temporal resolution in near future (daily coverage to multiple images per day) + tasking capabilities -> *integrate it in the pipeline for near-real time view*
- Difficult to apply the same damage detection algorithm to different types of cities/places (e.g., Katmandu vs Taipei) -> *combine with crowdsourcing and state of the art (detection) algorithms*

**Crowdsourcing/crowdtasking:**
- Getting sufficient number of volunteers is critical
- Different types of data can be gathered depending on the disaster (e.g., building height, material, flood water color, smell, etc.) -> *flex the Apps for all crisis event types*
Conclusions

Combination of EO, Crowdsourcing, Volunteers & Crisis Managers give you near-real time situational awareness picture potentially leading to:

- smarter resource allocation and response actions
- shorter reaction times
- lower total costs for relief actions.
Thank you!

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