

Space-based Information for Disaster Risk Reduction



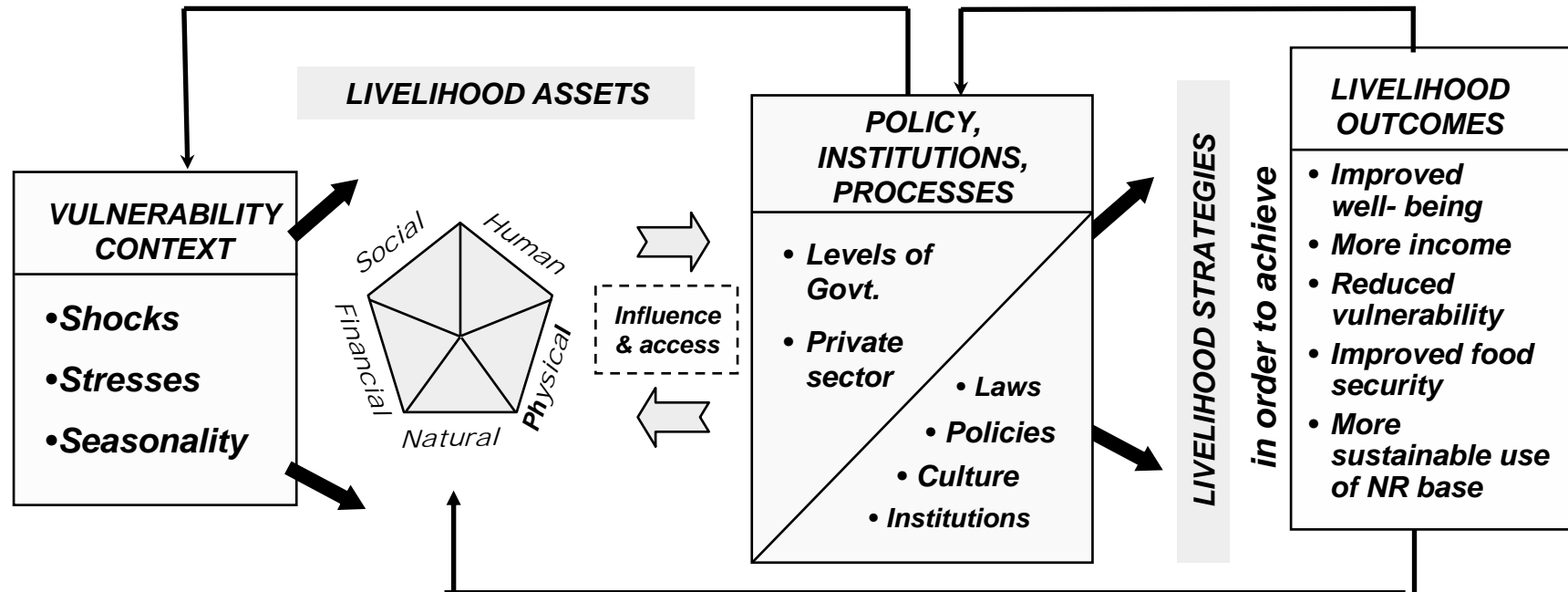
Expert Group Meeting on Building e-Resilience through
ICT and Space Technology

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Applications)*

**UN-ESCAP
Bangkok**

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Resilience building with Sustainable Livelihoods



Poverty

Vulnerability to Shocks
Vulnerability to Climate Change
Sustainable Livelihoods
Resilience to shocks & Stress
Adaptable to Climate Change



ICT could be yet another Livelihood Asset for the Poor. ICT have a role in Livelihood Outcomes too!



Tsunami 2004



Cyclone, Bangladesh 2007



Japan Tsunami 2011



Bihar Floods , India 2008



Earthquake Sichuan 2008

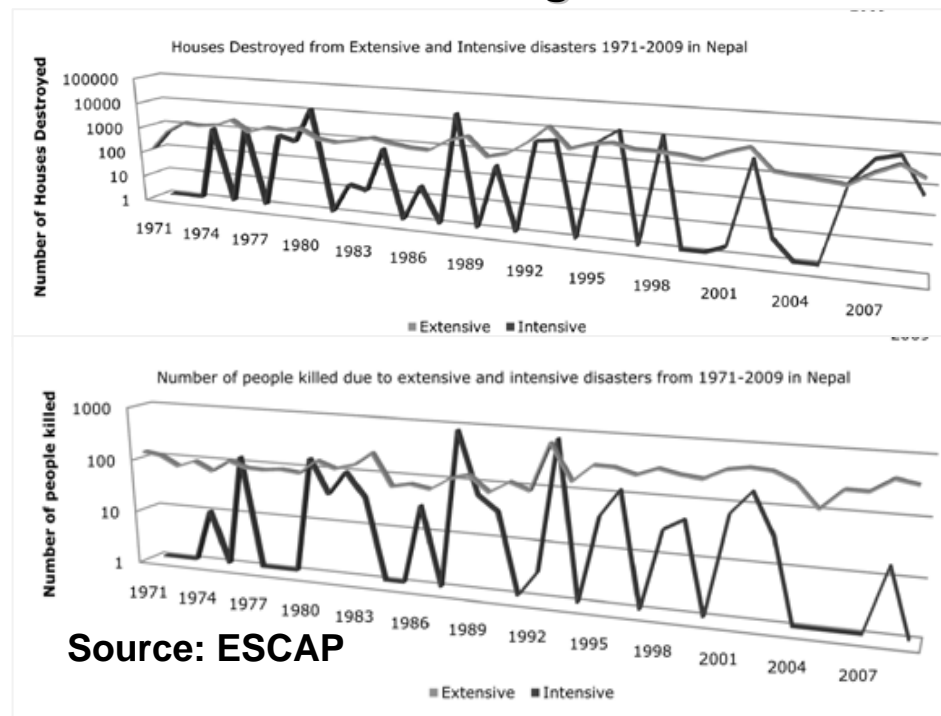


Kobe 1995



Pak Floods 2010

Disasters: Deaths, Miseries and Damages



Earthquake Muzaffargarh 2005



Pak Floods 2010



Thai Floods 2011

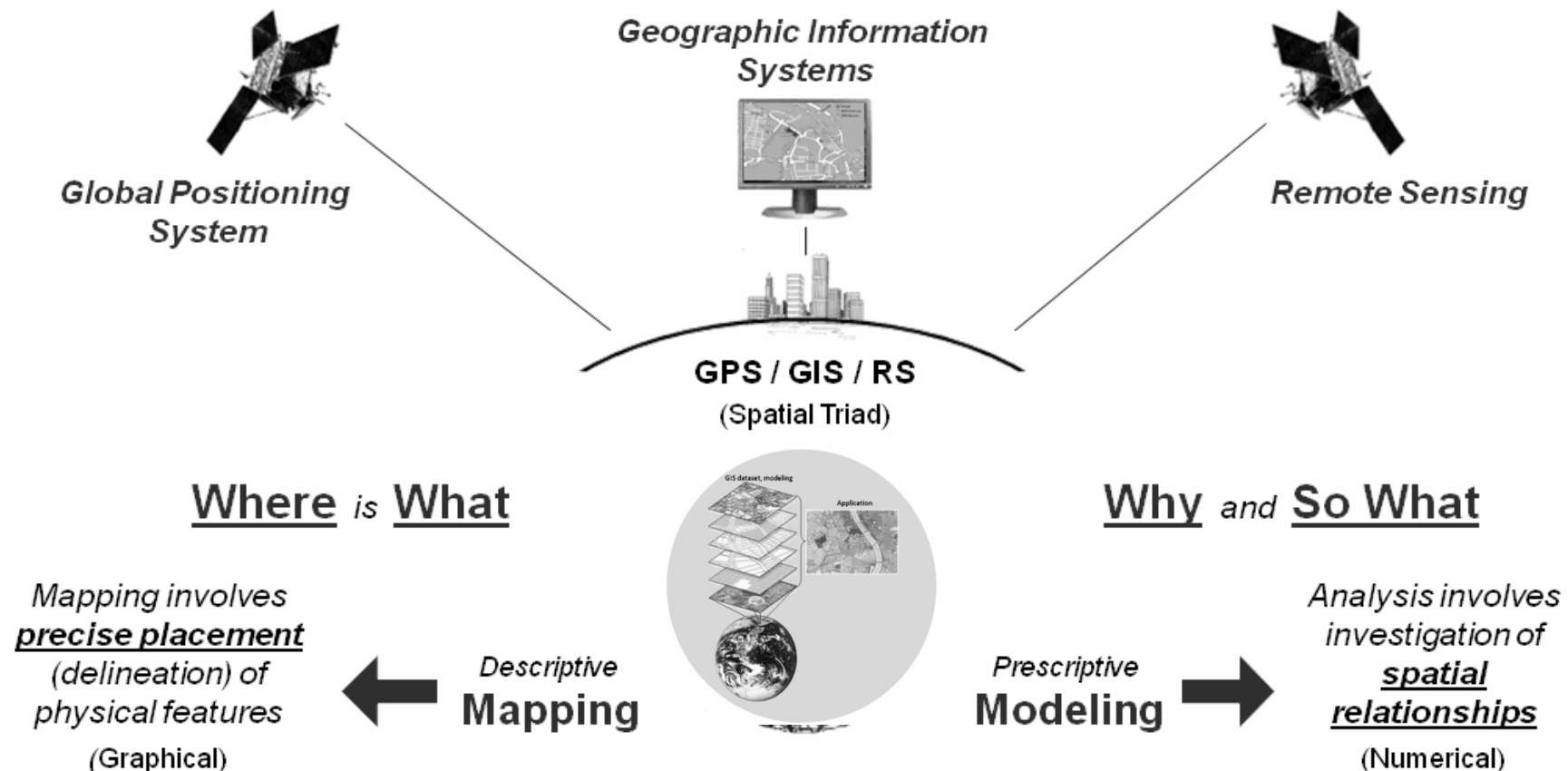
For low capacity countries, the cumulative effect of small scale disasters increases vulnerability

What ICT & Space Technology could do?

Geospatial : a mega technology

(Nanotechnology) **Geotechnology** (Biotechnology)

Geotechnology is one of the three "mega technologies" for the 21st century and promises to forever change how we conceptualize, utilize and visualize spatial information in scientific research, commercial applications and general usage

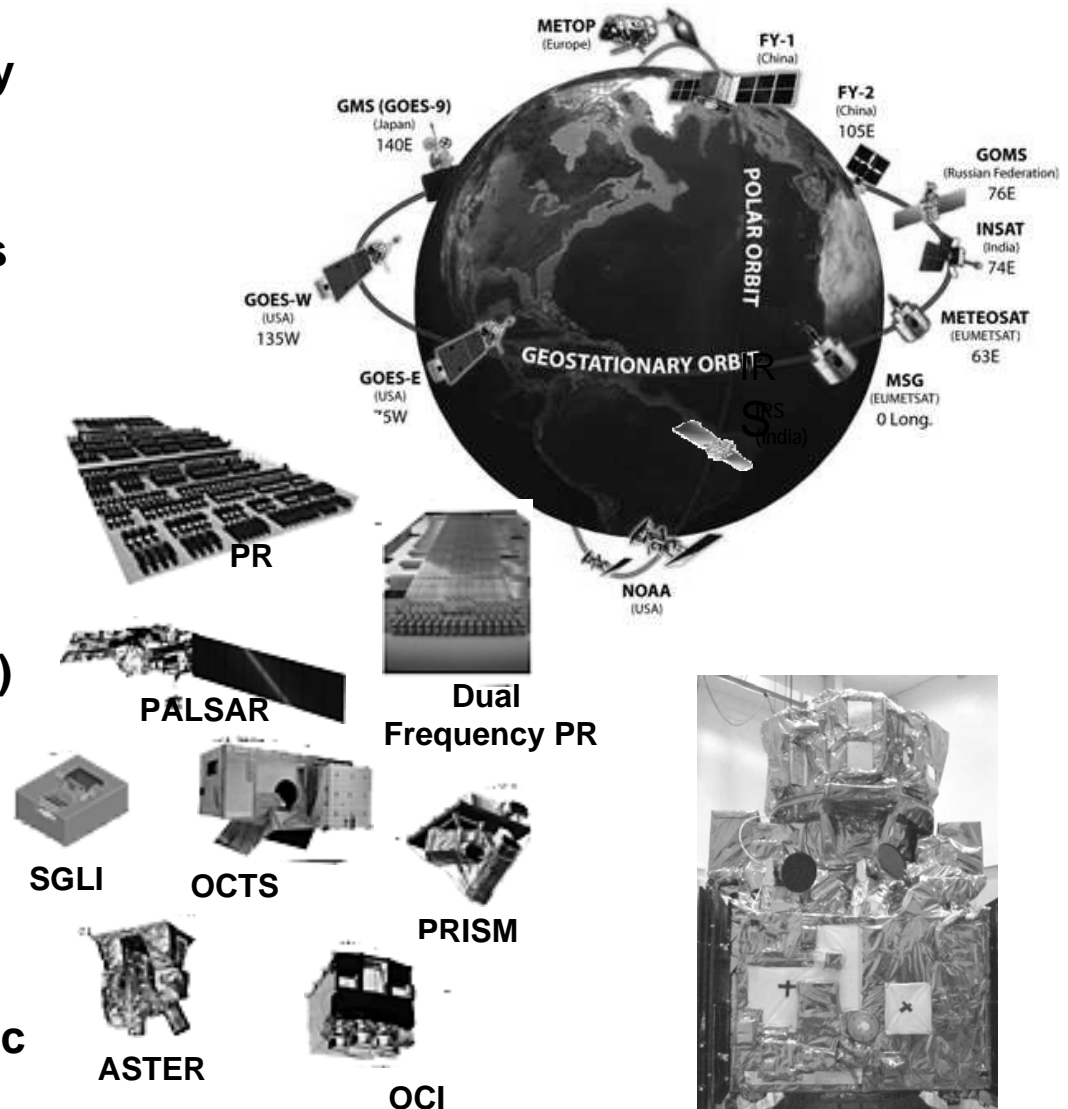


Source: Joseph K Ber

Space observations

Spans across EM Spectrum

- Atmospheric chemistry instruments
- Atmospheric temperature & humidity sounders
- Cloud Profilers & Rain Radars
- Earth Radiation Budget Radiometers
- High resolution optical imagers
- Imaging multi-spectral radiometers (vis/IR)
- Imaging multi-spectral radiometers (passive microwave)
- Imaging microwave radars
- LIDARs (Backscatter; DIAL; Doppler)
- Multiple direction/ polarisation instruments
- Ocean colour instruments
- Radar altimeters
- Scatterometers
- Gravity, magnetic field & geodynamic instruments



Transgressing from Qualitative to Quantitative

Emerging Capabilities

Technology reaching Individuals

× Next Generation FSS

Higher frequency – Ka band; On board processing; Greater power
more flexible spot beams

× Next Generation MSS

- Moving to “broader band”
- Smaller lighter user terminals
- Dynamic allocation of spot beams
- Hybrid networks (Satellite plus cellular)

× Next Generation Earth Observation

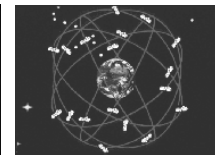
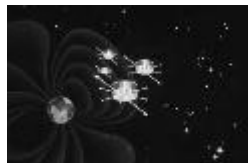
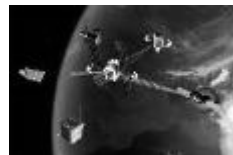
- Ultra-high resolution (sub-meter), multi-spectral and multi-parametric SAR
- Thematic Constellations, Satellites, Autonomous Missions
- Precision Product, Tailorized Services
- Advanced atmospheric sounders, radiometers, profilers, Precipitation
- Formal and sensor-web

× Next Generation Satellite Navigation

- User based services
- Augmented Aviation services

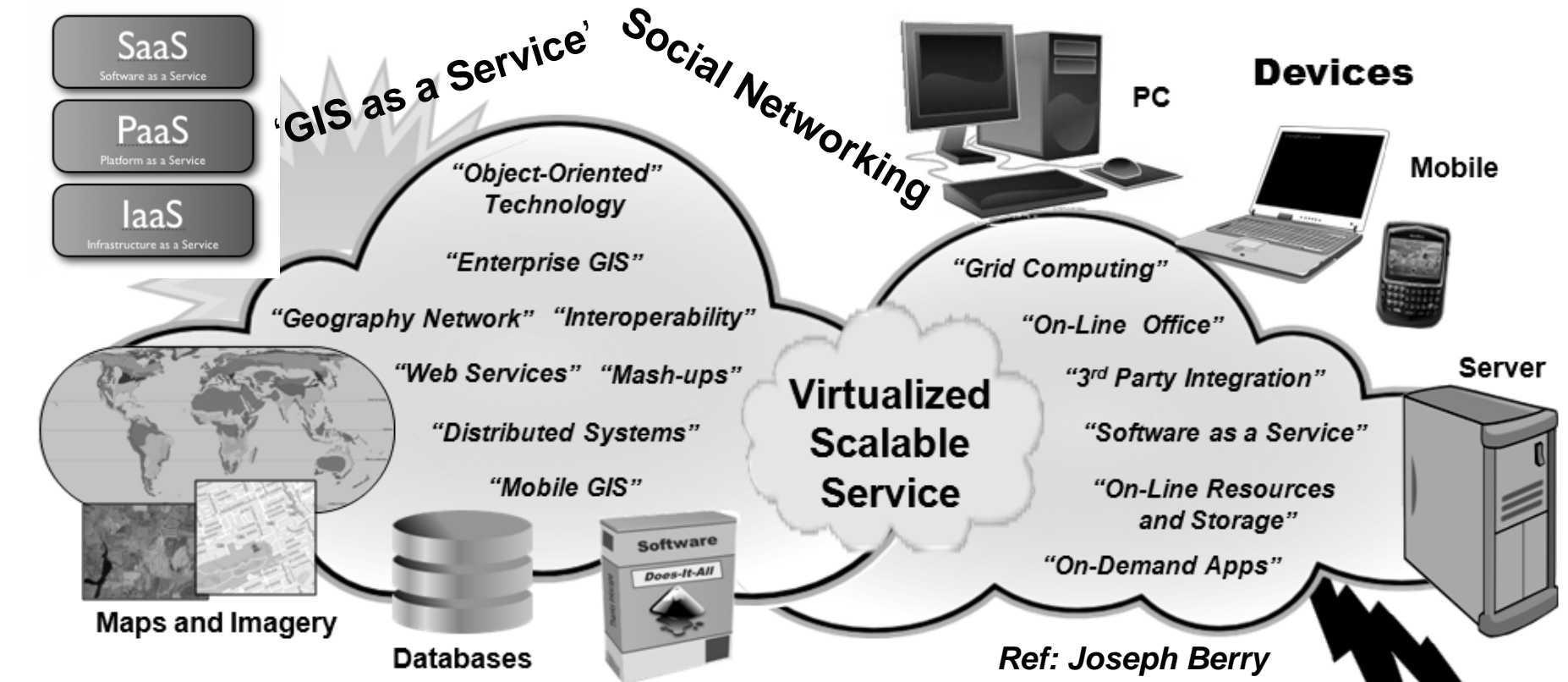
Last Mile to Last Foot Connectivity

Augmented with
Web 2.0; Social Networking
; Smart phones ; Cloud
Computing; and Crowd
Sourcing...



Cloud Computing & Crowd Sourcing

Neo-Geography and beyond!



Accuracy concerns pertaining to Crowd Sourcing and security concerns of Cloud Computing are largely disappearing !

‘Big Data’ and ‘Liquid Data’ and ‘Data Mining’ and ‘GIS as a Service’ on the Cloud are current buzz words!



...a spatially consistent and interactive participatory device in every pocket

https://www.yunbaogao.cn/report/index/report?reportId=5_7277

预览已结束，完整报告链接和二维码如下：

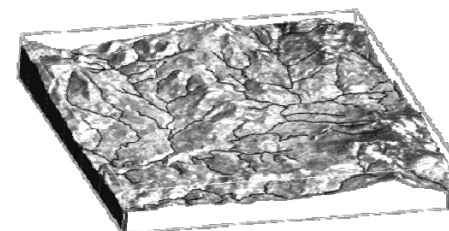


Spatial in Disaster Cycle

Vulnerability Map

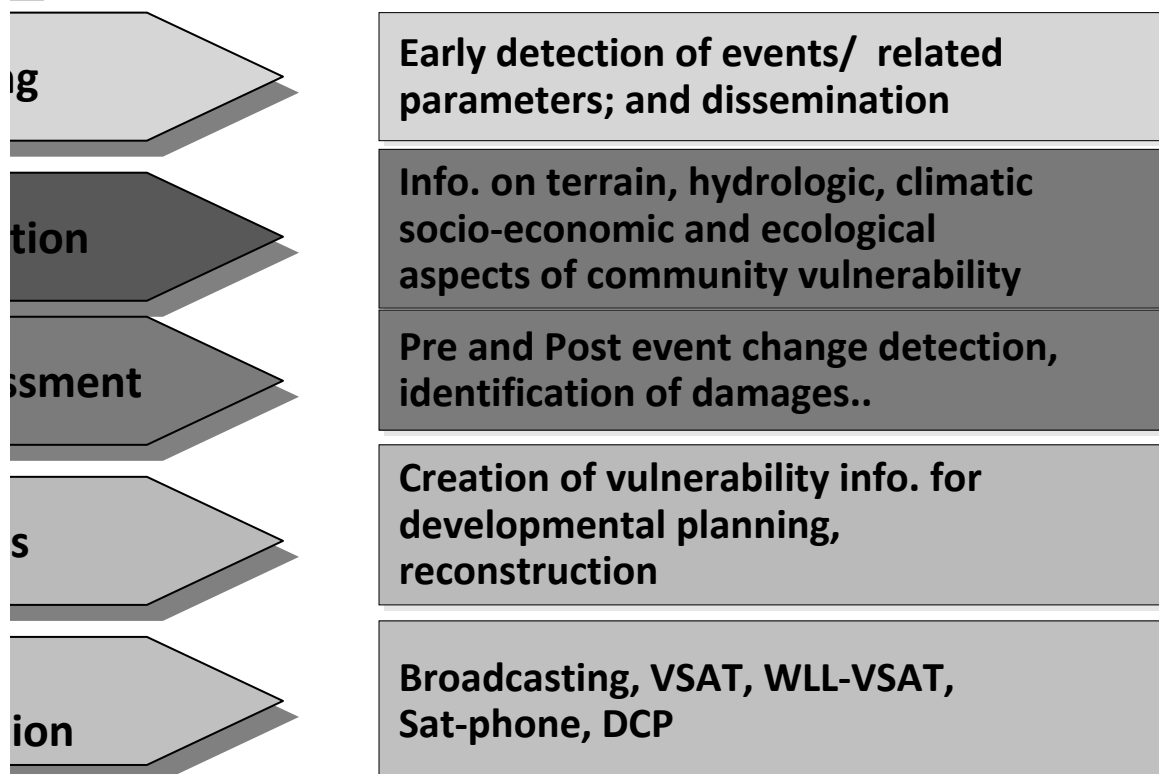


Without RS/GIS; Static



With RS/GIS; Real Perspective Visualization

(Source: UNOSAT 2004)



Components of Space Applications