

## ICT for Disaster Reduction: Regional Cooperation in South Asia

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Disaster Risk Reduction

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Before I start, let me quote -

*“Information can save lives.  
But there are gaps in the  
way we gather and share  
this powerful resource”*

World Disaster Report 2005

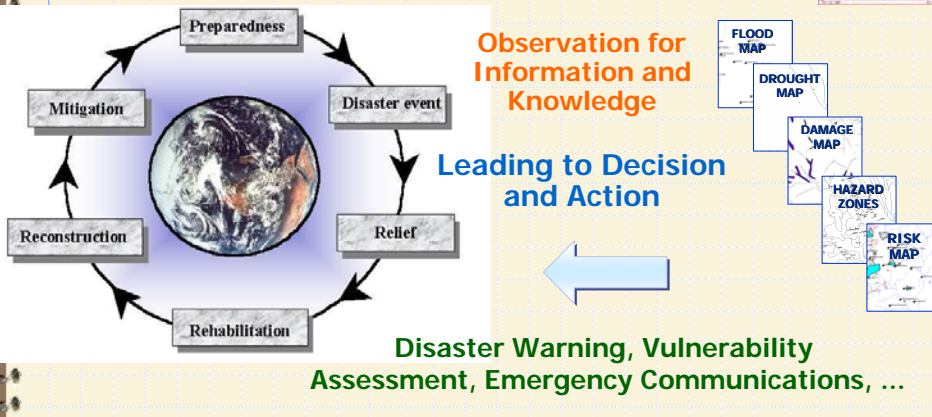
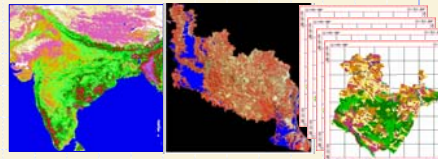
# Organisation of Presentation

- I ICT for Disaster Reduction : Operational Applications
- II ICT based Regional, National and Local Response
- III Operational Needs, National Systems and ICT: Gaps
- IV A Framework for Regional Cooperation in South Asia

## Disaster Reduction - Space enabled Products & Services

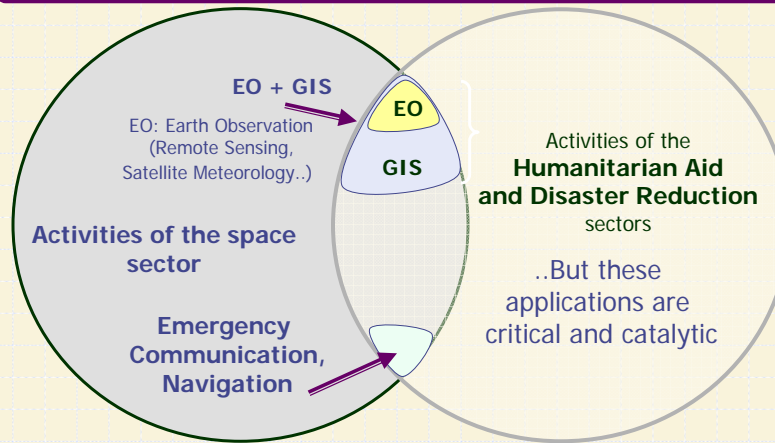


Space for Observation and Connectivity



## Space Segment of ICT in Disaster Reduction

Utilization of space technology applications today represents a **small fraction** of the activities of the **Humanitarian Aid and Disaster Reduction** sectors (Source: ESA 2005).. *Unfortunate!*



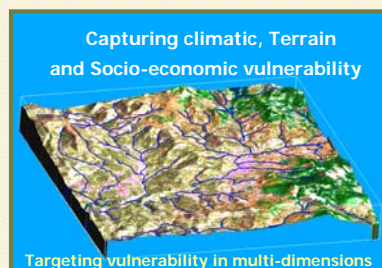
## What difference EO products/services could make ??... 'The niche'

Vulnerability Map without RS/GIS Components



*Static Information  
Mostly analogue and non-interactive*

Vulnerability Map with RS/GIS Inputs



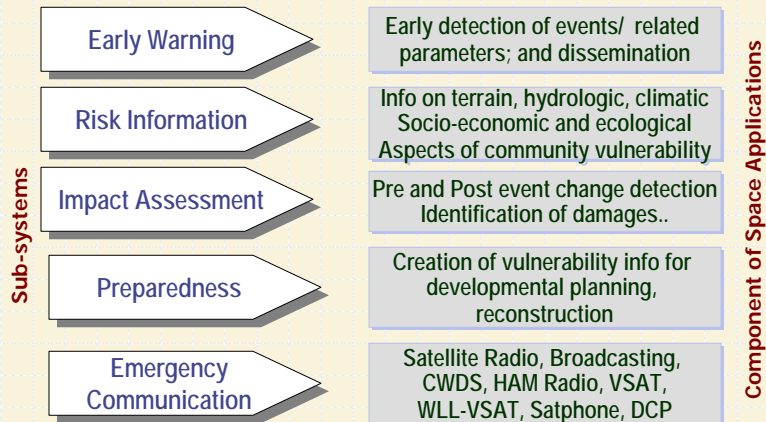
Targeting vulnerability in multi-dimensions

Dynamic Info (with cause and effect relationship)  
Real Perspective Visualization .

**Status of Operationalization: Very Limited**  
**Major Constrains: Institutional Strengthening and Capacity Building**

## Operationally Demonstrated Role of Space Technology in Disaster Reduction

Considerable investment made globally in space technology and applications, Enhanced operational outreach in the newer paradigms of risk reduction



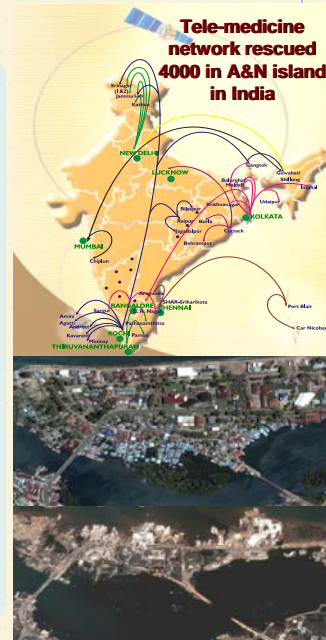
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## Regional Response: Indian Ocean Tsunami

Space technology application based response

- ICST based solutions to support quick recovery and vulnerability reduction
- High-resolution commercial imagery helped to map/ guide relief / rehabilitation teams and assesses the damage ....;
- Satellite observation of ocean altitude and dynamics to develop scientific understanding about Tsunami
- Satellite based communication links transmitted information among rescue and rehabilitation teams;
- Led nearly 60 nations to launch Global Earth Observation System of Systems (GEOSS) with focus on disaster management



## National Response - Bhuj Earthquake

January 26, 2001 (Mag. 7.7)

### Emergency Response:

- Communication link established between Bhuj & Gandhinagar using SNG terminal - for relief/ rescue operations
- Aerial photography of affected towns by NRSA - Data used by Govt. of Gujarat in relief & rehabilitation activities
- Damage assessment using pre & post earthquake data (aerial & satellite)
- Geological/ tectonic/ liquefaction/ changes in landform - related studies carried out studied using IRS data

### Towards Rebuilding of Khchchh:

- Aerial photos & Satellite data used in rehabilitation related studies



## Local Response

### Village knowledge centres (VKCs) for fishing communities in India

- Use of satellite imagery for weather forecasting to reduce the dangers of fishing
- Dissemination of information to community through VSAT
- Active role by women in the community: In fact they operate the computers

<http://www.nemoc.navy.mil/Library/Metoc/Indian+Ocean/Bay+of+Bengal/Mo dels/Swaps/Sig+Wav+Ht+and+Dir+Series/index.html>

**Every evening as he sits sipping tea at a nearby stall, Pannerselvan can listen and decide whether it is safe to go fishing the next day**

*"When the computer says that there will be a storm," he says, "there has always been a storm. We all believe in it"*

**Regional Cooperation to harmonize Regional, National and Local Response**

Source: Prof. MS Swaminathan, MSSRF, Chennai, India 2006



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## To What Extent ICT has been put to use..

A composite aggregate ICTforHD index.



- Considerable diversity across countries;
- Aggregate index for 9 SE and S Asian countries ranging from 0.76 (Malaysia) to 0.16 (Viet Nam)

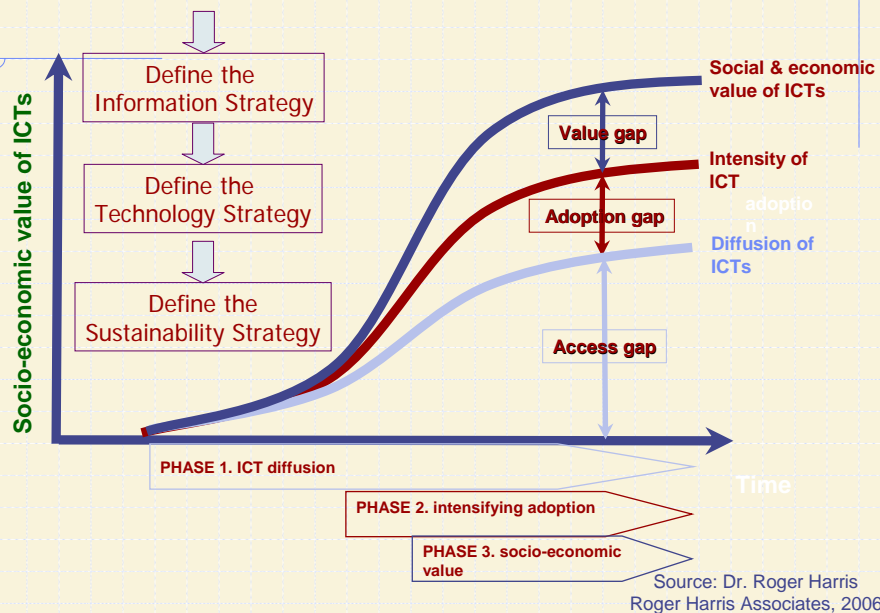


Challenges...

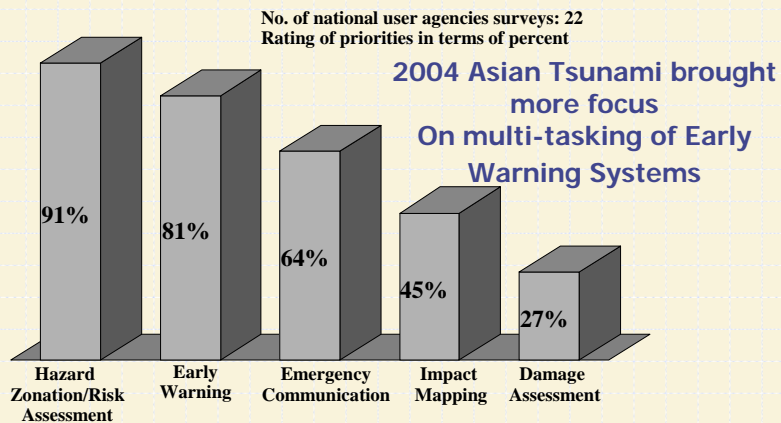
- Need to have overarching strategy of how ICTs can be diffused, replicated and scaled up.
- Need for strategic applications, not just pilot projects and ad-hoc ICT4D initiatives.

(Source: APDIP, UNDP 2005)

## Challenges of Technology Diffusion ..

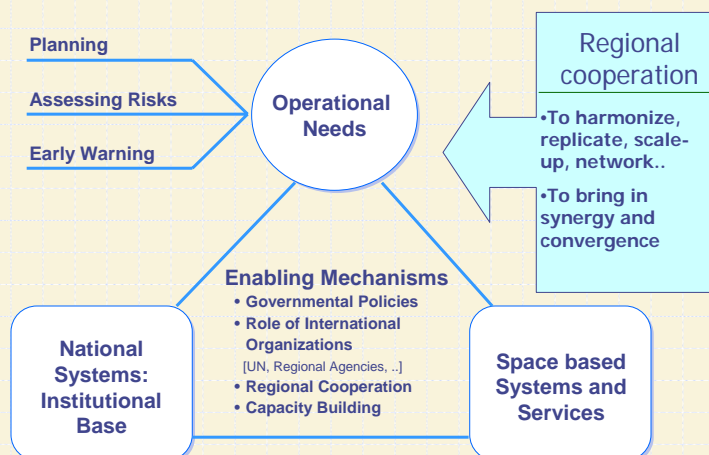


## Defining Information and Technology Strategy: Requirements of Space Enabled Products/ Services for Disaster Reduction in Asia and the Pacific



Source: STAS/ICSTD/UNESCAP 2004

## Defining Sustainability Strategy: Addressing Access, Adoption and Value Gaps



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## Existing Frameworks for Addressing Access to EO Products

-  International Charter Space & Major Disasters (CHARTER)
-  Global Monitoring for Environment & Security (GMES)
-  Integrated Global Observation Strategy (IGOS)

### Access to EO Products:

- EO data given to relief agencies but ...
- Need for operational services to provide end-to-end services and not only satellite imagery

On the anvil...

-  **Global Earth Observing System of Systems (GEOSS)**
-  **Sentinel Asia initiative**

## A Summary on Opportunities and Pitfalls

Enabling Mechanism	Access to EO products	Participation of stakeholders	Capacity building	Spirit of cooperation	Linkages
'Charter'	Yes (during response)	No	No	Yes	Yes (to Relief Agency)
UNOSAT	Yes	No	No	Yes	Yes (to Relief Agency)
NOAA Initiative	Yes	No	No	Yes	-do-

**Provides Access, doesn't address adoption and value gaps**

**Lacks participation of stakeholders, capacity building and strong lineages to the end users..**

## Regional Strategic Framework :

**Encouraging Access, Adoption and Value**

### The Key Characteristics

◆ **Generating Political Will :**

Where does the political will come from?

- From popular demand
- By empowering the communities (Community based disaster reduction..)

◆ **Flexibility:**

To address wide range of social and cultural settings  
To be seen as ' living' framework accommodating the advances in technologies, concepts and thoughts..

◆ **Ability to encourage ownership**

To be accepted and owned by all stakeholders..

**The Challenge is to create an approach that strikes a balance between the scientifically sound, the diplomatically acceptable and politically relevant.**

## Regional Strategic Framework: Challenges

•To Harmonize

Regional Cooperation for  
public good/ collective  
benefit (Disaster reduction)



Asymmetric distribution  
of costs and benefits



Geopolitical  
Relations



Access, Adoption &  
Value Gap  
to EO products/ services



## Two-tier Structure for ICT based Disaster Risk Reduction: A Concept

National Focal Points  
representing all member  
countries

**High-level Intergovernmental  
Committee (HIC):**

- Policy, Directions..
- Projectisation of Activities
- Capacity Building..

**Operating Principles**

- Shared Responsibility
- Education and Training Network
- Operational Linkages & Synergy
- Participatory Approach

**Regional Action Plans**

TG3 (EC..)  
TG2 (EWS)  
Thematic  
Group- TG1  
(Hazard  
Mapping)

To be represented by Domain  
Experts from the respective  
member countries



## Before I close...

**Foreword by Sir Arthur C. Clarke:**

*Mine was the first household in Sri Lanka to have a working television set two years before my adopted country commenced terrestrial transmissions in 1979. The Indian Space Research Organisation (ISRO) gifted a 5-metre dish antenna that enabled me to receive signals from communications satellites ...*

*Today, television rules how Sri Lankan work, dine and socialise. And when an important cricket match is being broadcast live, I have to look hard to find any signs of life on the streets of Colombo.....*

(Source: APDIP, UNDP 2005)

**Power of ICT and seed of Cooperation - Could this happen in disaster reduction as well..**

**Thanks..**