

Application of Information and
Communication Technologies
for Disaster Risk reduction –
Gap areas & Issues - Sri Lanka



Dr. Buddhi

Weerasinghe

Management consists of decision-making activities to achieve results. This needs gathering, storing, retrieving, processing, analyzing and transmitting information.

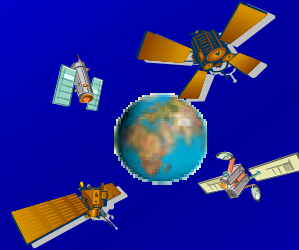
What are ICTs?

ICT4D understanding

umbrella term that includes any communication device or application, encompassing:
radio, television,
cellular phones, computer and network hardware and software,
satellite systems,
as well as the various services and applications associated with them, such as videoconferencing and distance learning.

These are technologies (old & new) for gathering, storing, retrieving, processing, analyzing and transmitting information.
Newer Technologies offer new horizons of data analysis

New Technologies for disasters management



- Remote Sensing Systems
- Geographic Information System
- Global Positioning System
- Warning and Forecasting Systems
- Internet
- Communication Technology

ICTs in Disaster Management

What?

Where?

Why?

How?

The importance of ICTs lie less in the technology itself than in its ability to create greater access to information to facilitate appropriate and timely decisions.

Information per se in Sri Lanka

Many web based Information domains
especially after the Asian tsunami

Some examples

Emergency Information Center of SL

www.emergencyinfo.gov.lk

National Disaster Management Center

www.priu.gov.lk/tsunaminetops

Information for foreign tourists

www.contactsrilanka.org

Many web based Information domains contd.....

Consortium of Humanitarian Agencies (CHA)

Information needs relating to national disasters

www.humanitarian-srilanka.org

FindThem.lk – Search for missing people

LK Domain Registry, Dept of Census & Stat, University of
Moratuwa and LAcNet

www.findthem.lk

Dialog & Sri Lanka Red Cross Society

www.dialog.lk

Many web based Information domains contd.....

Sarvodaya Shramadana Movement

www.sarvodaya.lk

Sewa Lanka Foundation

www.sewalanka.org

Disaster Management Center Activity

The screenshot shows the DesInventar website interface. At the top, there is a navigation menu with links: DesInventar | Home | Region | Login | Logout | Download | Help | About. Below the menu are language selection buttons for English, Español, עברית, and فارسی. A welcome message reads: "Welcome to DesConsultar on-line!!". Below this, a paragraph states: "This querying system will provide you with basic data about the effects of many types of natural disasters occurred in the regions or countries in the following list. Software developed by the DesInventar Project team." A prompt asks the user to "Please select the region database to query:". Below this prompt is a table with three columns: Country/Region, Institution, and Period. The table lists five entries, all under the "Country/Region" column, with the other two columns being empty. At the bottom of the table is a link: "click here to Create a new Region". The footer of the page includes logos for LA RED, DesInventar, UNDP, and APACHE, along with the copyright notice: "© 2002, 2003 La Red".

DesInventar | Home | Region | Login | Logout | Download | Help | About

English Español עברית فارسی

Welcome to DesConsultar on-line!!

This querying system will provide you with basic data about the effects of many types of natural disasters occurred in the regions or countries in the following list.
Software developed by the *DesInventar Project* team.

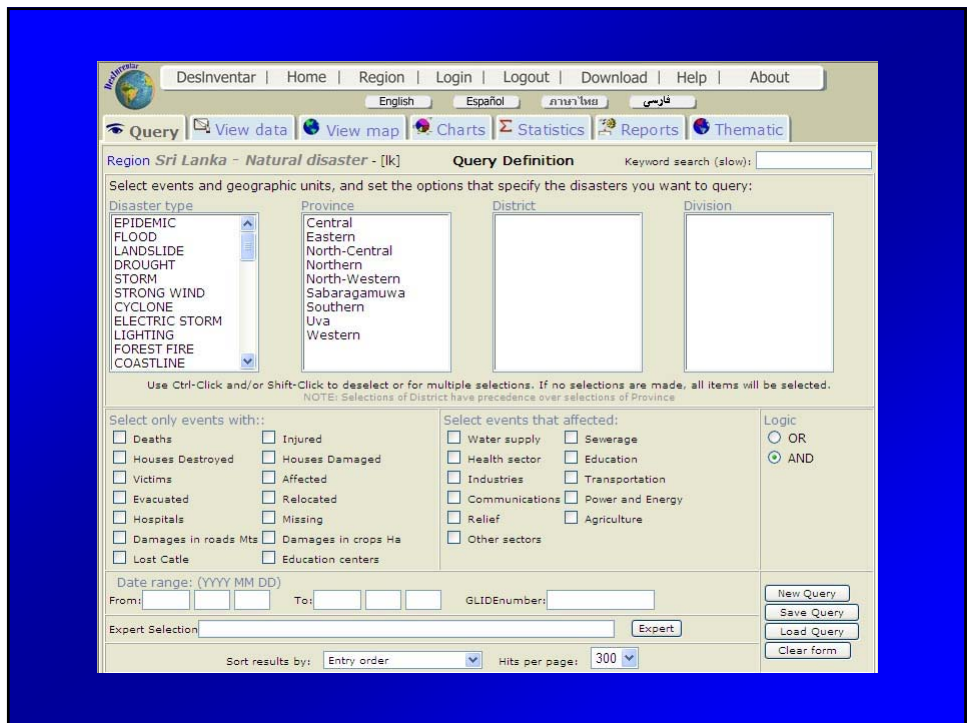
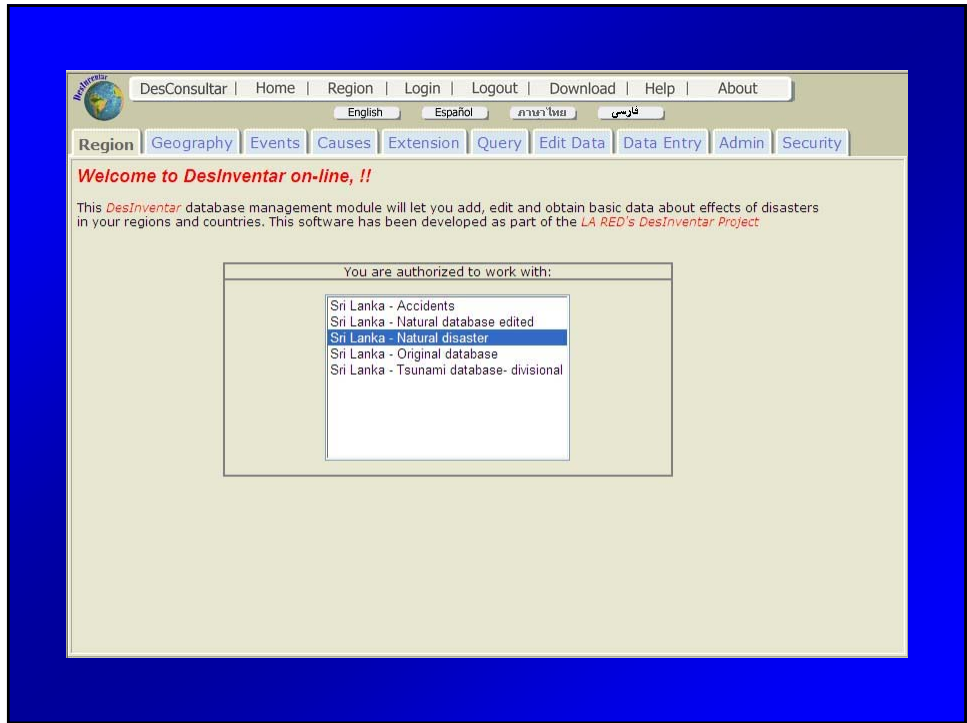
Please select the region database to query:

Country/Region	Institution	Period
Sri Lanka - Accidents		
Sri Lanka - Natural database edited		
Sri Lanka - Natural disaster		
Sri Lanka - Original database		
Sri Lanka - Tsunami database- divisional		

[click here to Create a new Region](#)

LA RED DesInventar UNDP APACHE

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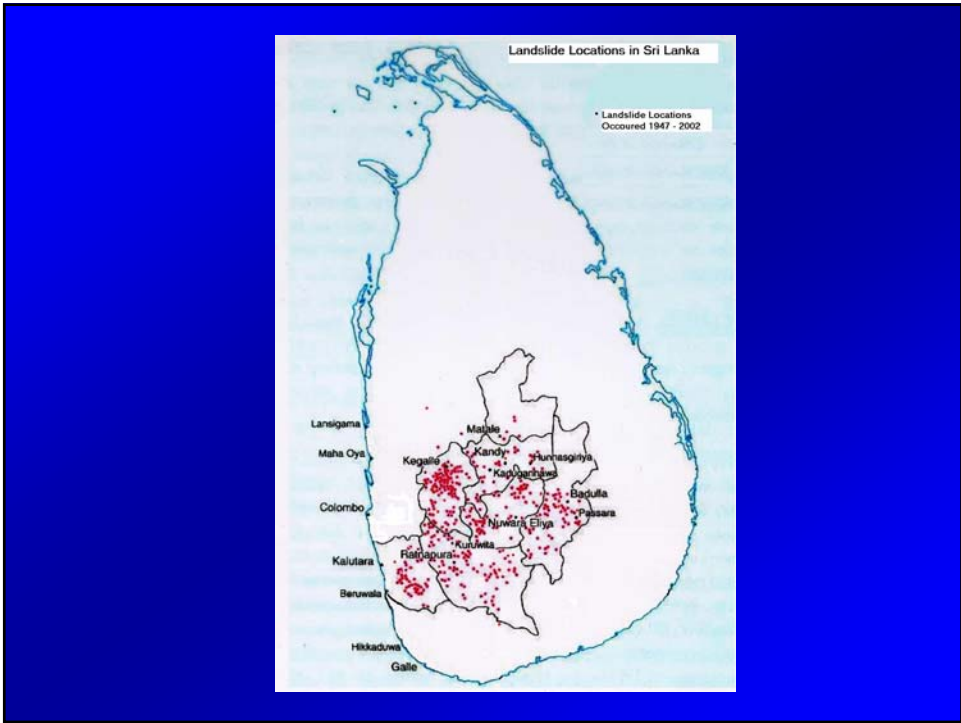
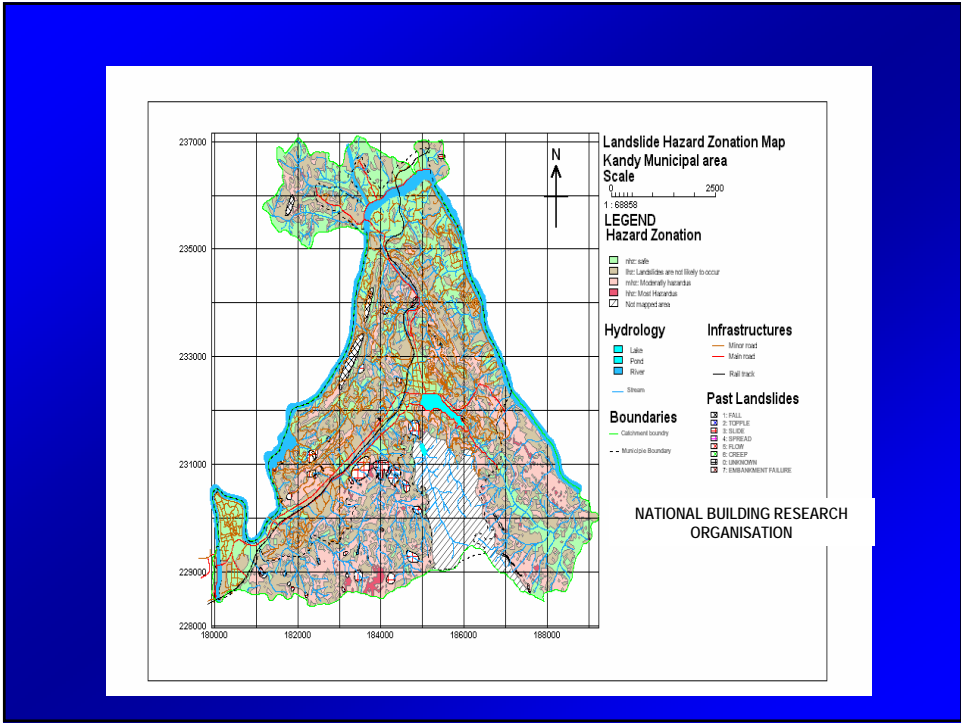
English Español বাংলা ভাষা العربية

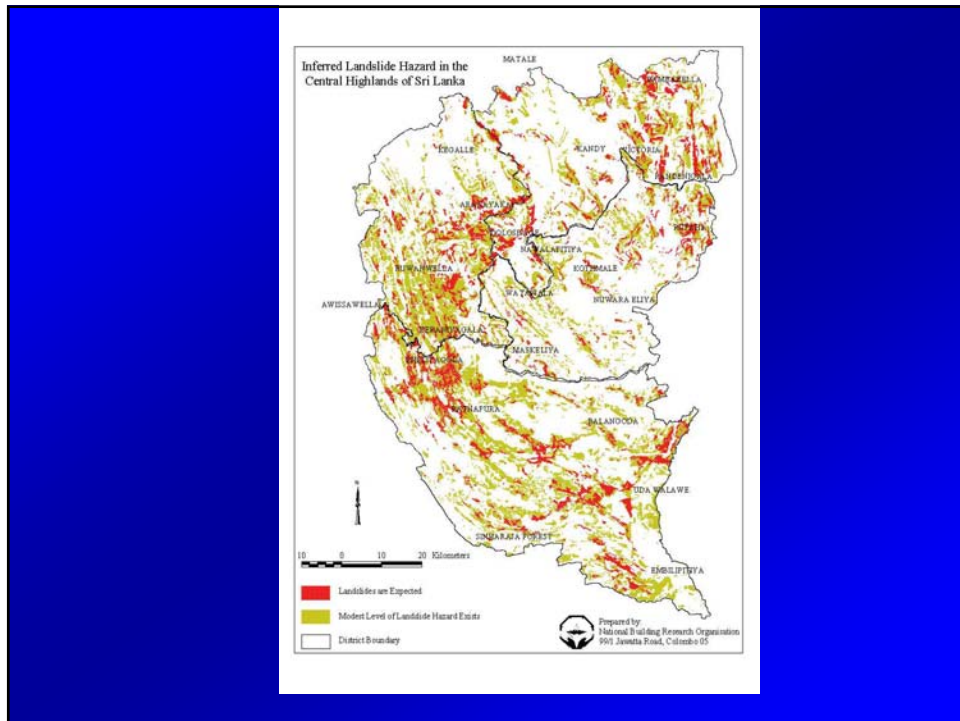
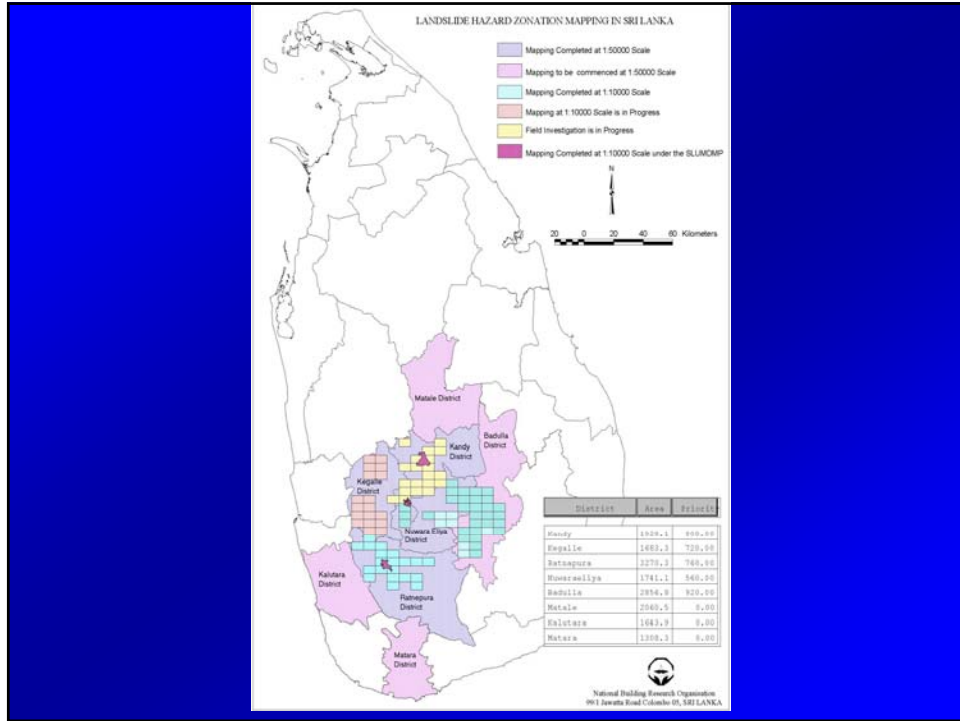
Query View data View map Charts Statistics Reports Thematic

Region Sri Lanka - Natural disaster - [lk] Data: Query Results Results: 5981 hits, 20 Pages : 1 2 3 4 5 6 7 8 9 10 11 12

Serial (Click for details)	Event	Province	District	Division	Date	Location	Co
10581	STRUCTURE	Western	Colombo	Moratuwa	2000/11/10	Upper Indibedda	An old couple and their grand daughter parapet wall of 15 feet high collapsed o
10599	ANIMAL ATTACK	Central	Matale		2004/06/21	Sigiriya, Madawala Ulpatha, Galawela, Adilagala, Walliwala	Wild elephants are reported to be on th Galewela and Adilagala area. Also, Sigiriya Walliwala. This situation was difficult to area to other area when driven by village ways so wild elephants roam into village
10604	BIOLOGICAL	Sabaragamuwa	Ratnapura		2004/04/09	Ratnapura district	A fungal disease caused by the species plantations in Ratnapura district. Falling symptoms. Because of this disease yield
10605	BIOLOGICAL	Sabaragamuwa	Kegalle		2004/04/09	Kegalle district	A fungal disease caused by the species plantations in Kegalle district. Falling of symptoms. Because of this disease yield
10606	BIOLOGICAL	Western	Kalutara		2004/04/09	Kalutara district	A fungal disease caused by the species plantations in Kalutara district. Falling of symptoms. Because of this disease yield
10614	DROUGHT	Uva	Moneragala	Thanamalvila	2004/01/14	Thanamalvila	About 5000 paddy and chena cultivating division have experienced severe hardship in two consecutive seasons by the severe which supplied water to around 5000 Ac shortage of water Kurakkan, Maize, Cowpea other food crops in chena have been also become a problem because tube w
10615	DROUGHT	North-Central	Anuradhapura	Nachchadoowa	2004/01/14	Nachchadoowa	Around 16,505 people in 3301 families v around 250 families were suffering from
10617	DROUGHT	Southern	Hambantota	Thissamaharama	2004/04/23	Thissamaharama	Water level in the Mahaweli river has re people in 6130 families in Mahaweli area; severe drinking water scarcity. (DN 200 million rupees for 14,567 people in Ham
10618	STRUCTURE	Western	Kalutara	Beruwala	2004/08/01	Mahagoda	Huge boulder fell on the body of a man's house. Privailing drought badly affected Moner

Hazard /Risk Mapping





and towards a vulnerability Atlas
for Sri Lanka
a DMC initiative on the road

Disaster Forecasting

Forecasting Responsibility

- ✓ Irrigation Dept.(flood)
- ✓ Met Dept. (flood, cyclone)
- ✓ NBRO (landslides)
- ✓ Health (epidemics)
- ✓ Geological Survey & Mines Bureau,
(E'quakes, Tsunami)



Disaster Forecasting Droughts

International Water Management
Institute (IWMI) initiative

KBS-Lanka

Using Remote Sensing (RS) and
GIS

Funding support from
Unilever Srilanka Limited



Disaster Forecasting Droughts

KBS-Lanka

- Near-real-time basis
- First on the Ruhunu Bench Mark Basins (Walawe, Kirindi, Menik)
- Prototype by mid 2006
- Later Prototype on National scale by mid 2007



Disaster Forecasting Droughts

KBS-Lanka – Key Components

1. Drought Monitoring System (DMS-Lanka)

Using Remote Sensing Data from
MODIS sensor and historical
AVHRR sensor



Disaster Forecasting Droughts

KBS-Lanka – Key Components

2. Crop Monitoring and Water Productivity Patterns (CMS-Lanka)

cropped areas & crop type using
satellite imagery with seasonal and
annual crop assessments



Disaster Forecasting Droughts

KBS-Lanka – Key Components

3. Baseline conditions (BC-Lanka)

Using baseline datasets on soil
type, land use, drainage, road
network, hydro-met data, etc.

Disaster Forecasting Floods



Irrigation Department Model for
Kelani River flood warning
Manual water level gauges
Based on historical data and
probabilistic forecasting

Disaster Forecasting Floods



NBRO Initiative
For a dynamic Flood Simulation
Model using satellite imagery,
automatic rain gauges etc.
In its early stages

Disaster Forecasting Landslides



DMC/UNDP/NBRO Initiative

For a dynamic landslide simulation model using automatic rain gauges for data transmission through satellite.

Pilot project in Ratnapura in its early stages.

Department of Meteorology now
has the capacity for
multi-hazard forecasting through
its links to regional and global
forecasting systems

Warning Dissemination

Last-Mile Hazard Information Dissemination System

Action Research on the use of ICTs in
disaster dissemination

A collaboration between LIRNE *asia*,
Sarvodaya, Vanguard Foundation, Gordon
Gow from the London School of
Economics and TVEAP.

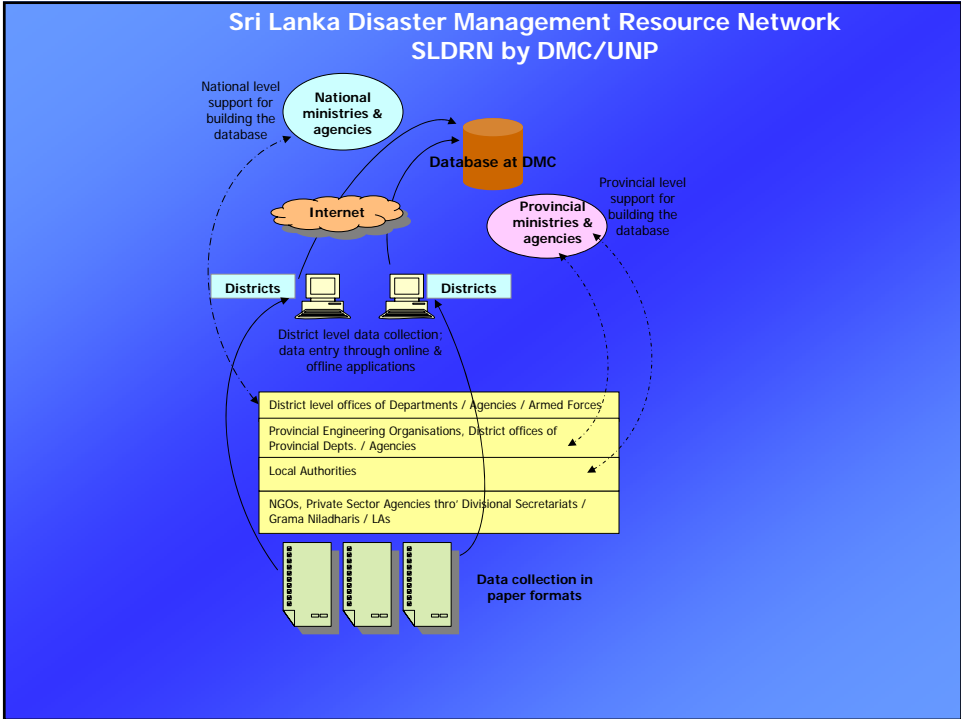
Two communication components.

- ICT component from hub of Sarvodaya to the village
- Local alerting to the village residents

ICTs identified

- *Fixed Telephone*
- *Mobile Telephones-Cell Broadcasting*
- *VSAT-Internet delivered web/e-mail bulletins*
- *Addressable Satellite Radio*
- *Amateur Ham Radio*

Post-Disaster Phase



Web based tool with instant access throughout Sri Lanka.

Decentralized inventory management

Authorized data collection and entry and updating in the hands of District authorities

Allows for planning and decision making on mobilization of equipments, human resources and critical supplies.

User friendly interface for ease of data entry & database maintenance.

Database with multiple query options

CADREP –

Capacity Development for Recovery

World Bank sponsored project

Implemented by UNDP-Sri Lanka

DAD – Donor Assistance Database for monitoring DM activities on-line (by name or sector) at the Presidential Secretariat

Gaps & Issues

Gaps and Issues

- Too many playing fields
- Compartmentalized approach
- Lack of a national plan for data acquisition (now in place by DMC)
- Lack of a common platform for integration of datasets
- Lack of a **DMIS**

Concept of a National Data Center

Collaboration of

- University of Maryland,
- School of Information Studies,
Moratuwa University,
- University of Colombo School of
Computing

Concept of a National Data Center

Uses Sahana

An open source disaster
information management system

On going.....

A common platform for database integration

World Bank sponsored project
Implemented by UNDP-Sri Lanka

CADREP –
Capacity Development for Recovery

Building a National Data Center at
the Presidential Secretariat

CADREP –

- Exploring the feasibility of
integrating existing databases

Splitting Hair

Information Management System
Vs
Management Information System

Regional cooperation for increased ICT application

- Increase access to satellite imagery
- Promote distance learning access to experts, experiences and lessons learnt
- Common platform for data exchange

Way forward?

Towards a
Disaster Management Information
System
DMIS????