Using ICTs for Effective Disaster Management

CARIBBEAN FORUM 2006

Sunset Jamaica Grande Resort & Spa, Ocho Rios, Jamaica

Sept. 26 - 28, 2006

ICTS IN DISASTER MANAGEMENT;

FUELLING THE CDM PROCESS

CDERA MANDATE

- ◆ **Main function is to make "immediate and coordinated response" to disasters in Participating States (PS)**

- ◆ **To mobilize and coordinate disaster relief from governmental and non-governmental organizations for affected PS**

- ◆ **To promote the establishment, enhancement and maintenance of disaster response capabilities among PS.**

MAIN ACTIVITIES

◆ **Manage Transition to CDM**

◆ **Information Sharing and Management**

◆ **Managing Regional Response Mechanism**

◆ **Mitigation of Disaster Impacts**

◆ **Programme/Project design and implementation**

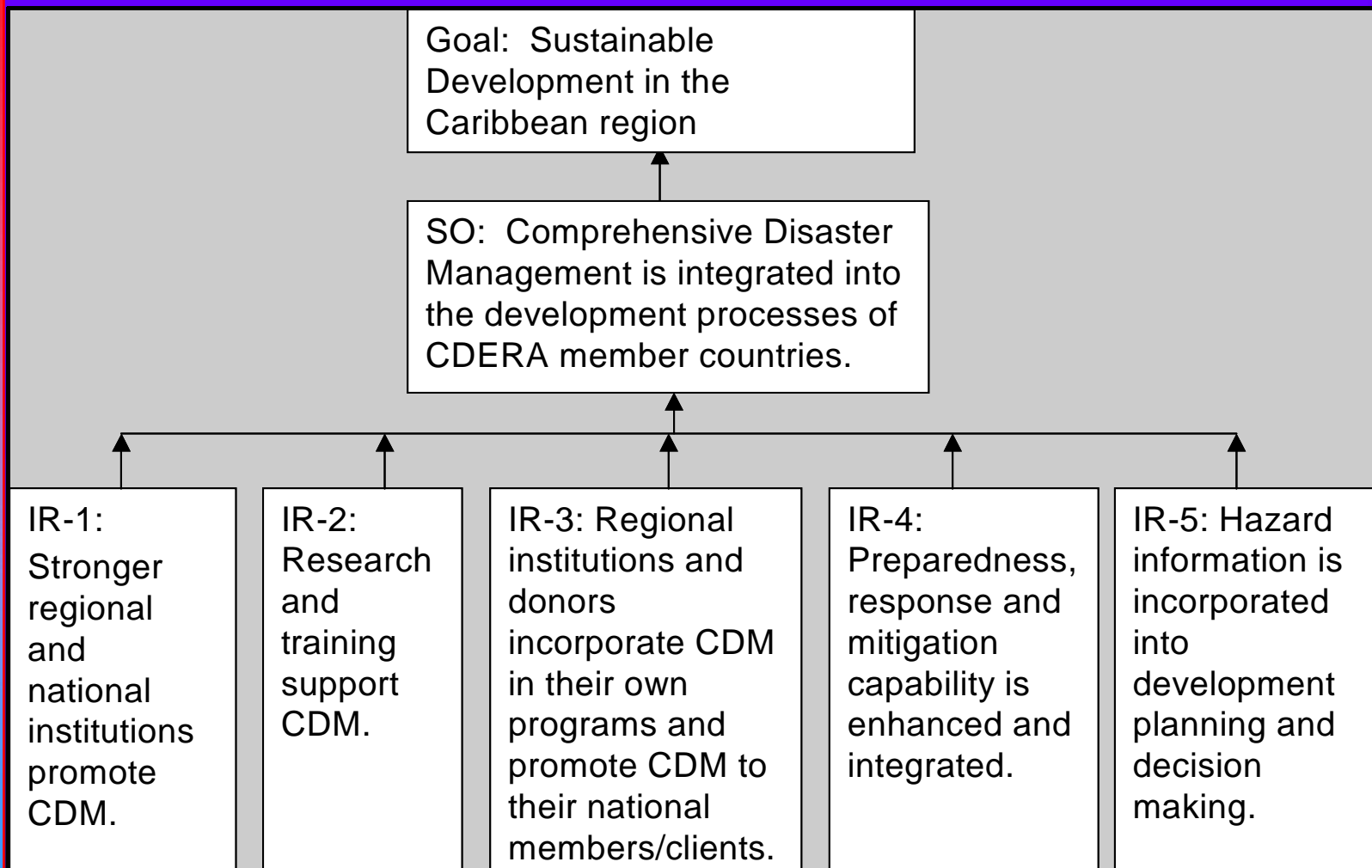# CARIBBEAN CDM STRATEGY

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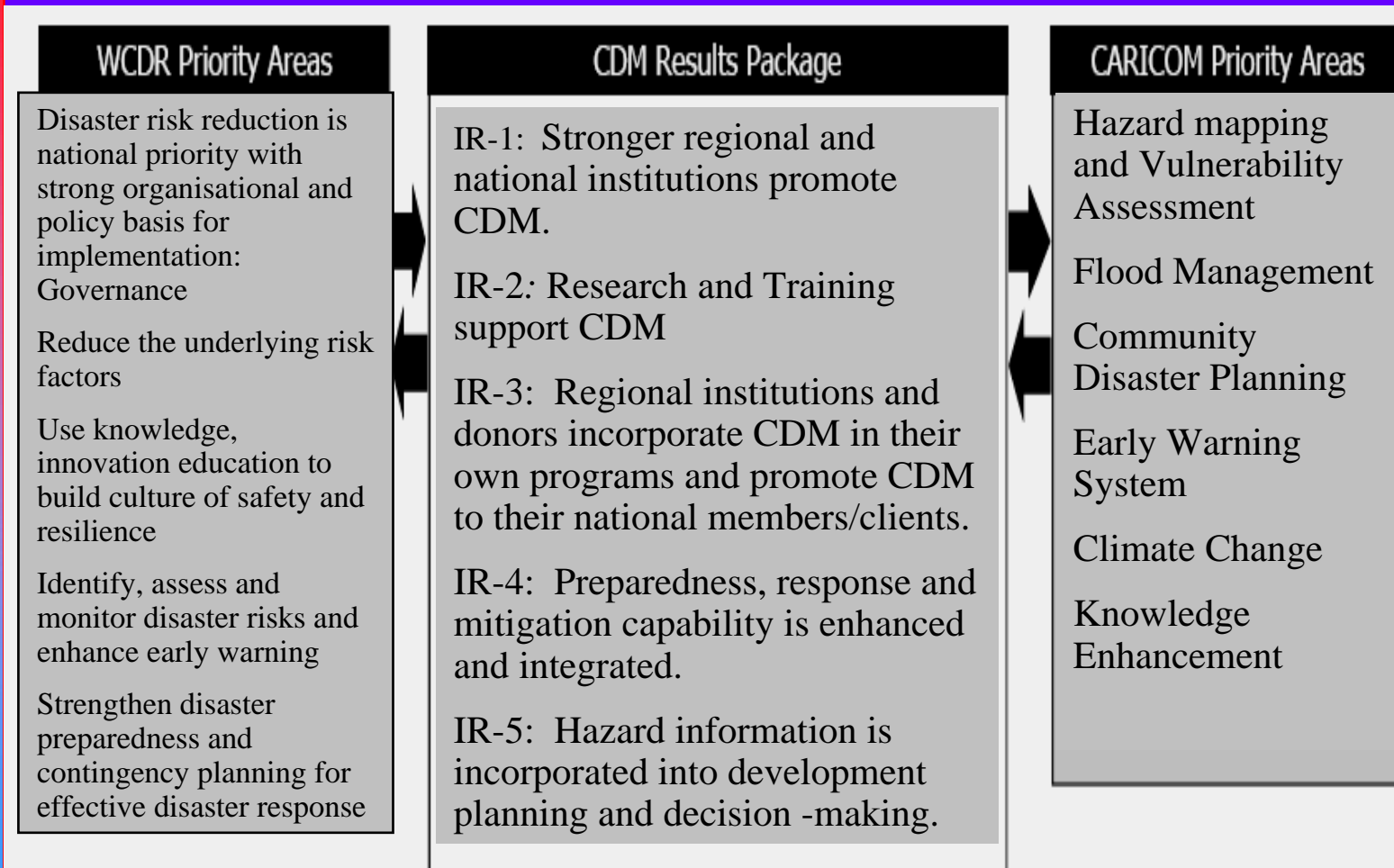Sunset Jamaica Grande Resort & Spa, Ocho Rios, Jamaica

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Goal: Sustainable Development in the Caribbean region

SO: Comprehensive Disaster Management is integrated into the development processes of CDERA member countries.

IR-1: Stronger regional and national institutions promote CDM.

IR-2: Research and training support CDM.

IR-3: Regional institutions and donors incorporate CDM in their own programs and promote CDM to their national members/clients.

IR-4: Preparedness, response and mitigation capability is enhanced and integrated.

IR-5: Hazard information is incorporated into development planning and decision making.

DISASTER MANAGEMENT AND THE CARICOM REGIONAL PROGRAMMING FRAMEWORK

CDERA — The Caribbean Disaster Emergency Response Agency — Managing Disasters with Preparedness

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WCDR Priority Areas

Disaster risk reduction is national priority with strong organisational and policy basis for implementation: Governance

Reduce the underlying risk factors

Use knowledge, innovation education to build culture of safety and resilience

Identify, assess and monitor disaster risks and enhance early warning

Strengthen disaster preparedness and contingency planning for effective disaster response

CDM Results Package

IR-1: Stronger regional and national institutions promote CDM.

IR-2: Research and Training support CDM

IR-3: Regional institutions and donors incorporate CDM in their own programs and promote CDM to their national members/clients.

IR-4: Preparedness, response and mitigation capability is enhanced and integrated.

IR-5: Hazard information is incorporated into development planning and decision -making.

CARICOM Priority Areas

Hazard mapping and Vulnerability Assessment

Flood Management

Community Disaster Planning

Early Warning System

Climate Change

Knowledge Enhancement

KEY DIMENSIONS OF DISASTER MANAGEMENT WHERE THE USE OF ICTs IS MAKING A DIFERENCE

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- ◆ ICT for development, poverty reduction, disaster recovery and initiatives to enhance human development
- ◆ Capabilities of meteorological services in the region and the use of information technology in advancing these services.
- ◆ Incorporating technology into disaster preparedness and management operations: Mechanisms for the practical application of scientific and technical solutions.
- ◆ Communications for decision making in disaster management and
- ◆ The transport dimension: a maritime/aviation safety system

CDERA's INFORMATION POLICY

◆ Enhance CDERA's visibility as a leader in the promotion of disaster management.

◆ Promote acceptance and ownership of Comprehensive Disaster Management.

◆ Enhance the Coordinating Unit's capacity to access, collate, analyze and disseminate information on all aspects of disaster management.

◆ Support the institutionalization of disaster management teaching and research in regional universities

HOW ICTs SUPPORT DISASTER MANAGMENT

♦ Developing and maintaining a pool of persons skilled in IT in Disaster Management for the Caribbean;

♦ Integrating and aligning IT use with management processes;

♦ Changing management orientation towards decision-making and increasing the use of ICT to provide information; and

♦ Focussing on ICT applications that most directly support the objectives of CDM and ensuring that the technologies used are suitable

INITIATIVES BEING USED TO IMPLEMENT INFORMATION POLICY

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♦ CDERA Work Programme being implemented by Projects

♦ Needs informed by Biennial Audit and Country Consultations
  – CADM – JICA
  – CHAMP – CIDA
  – UNSAR – UNTFHS/Japan
  – Information Management – EU
  – TEWS – USAID/OFDA
  – Regional Public Goods – IDB
  – CDM Review - CIDA

Pipeline Projects

Initiatives Cont'd

- ◆ Regional Emergency Communications Plan
- ◆ Suite of Web based services
- ◆ E-Alert Messaging System
- ◆ Regional Coordination Centre

THE IMPORTANCE OF ICTS IN DISASTER MANAGEMENT

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♦ To catalyze the process of preparedness, response and mitigation.

♦ Providing access to vital information during all phases of the disaster cycle to citizens.

♦ Decision support systems for planning and policy making.

♦ To build a network of disaster management practitioners and people through communication networks.

INFORMATION SYSTEMS FRAMEWORK FOR DISASTER MANAGEMENT

Disaster Management integrated into Development Planning

Facilitating

elements

Planning & Policy decision for disaster preparedness & mitigation

1. Hazard mapping & Vulnerability Assessment
2. Database of disaster history for trend & pattern analysis
3. Database of disaster management plan.
4. Awareness & training materials
5. Inventory of legal, administrative and institutional framework

Quick emergency response & recovery

1. Human & material response resources database
2. Database of Infrastructure, lifelines & critical facilities.
3. Database of trained human resources.
4. Demographic information
5. GIS based information system

Knowledge base for disaster management

Role of Disaster Information Systems in Various Phases of Disaster Management

◆ Risk & vulnerability identification

– A database of past disasters effects to determine the risks in particular geographic location.
– Zoning of hazards using GIS.
– Validating the disaster history database with hazard maps and other external data for accuracy in risk assessment.

◆ Preparedness for response & recovery

– Database of existing skilled human & material resources for emergency response.
– Database on human resources trained on various aspects of disaster management.
– Develop preparedness plans based on risk, available skill & resources.
– Converting Disaster Management plans into electronic documents for easy accessibility and easy updating.

◆ Mitigation strategies and policies

– Mitigation strategies, policies and legislation based on statistical facts & figures from various databases.
– Development of a virtual knowledge net for creation of a network of institutions, developmental organizations and Government dept. for information sharing and preserving the research efforts.

ICT Tools

- Monitoring Systems

- Satellite imagery

Mitch 1998
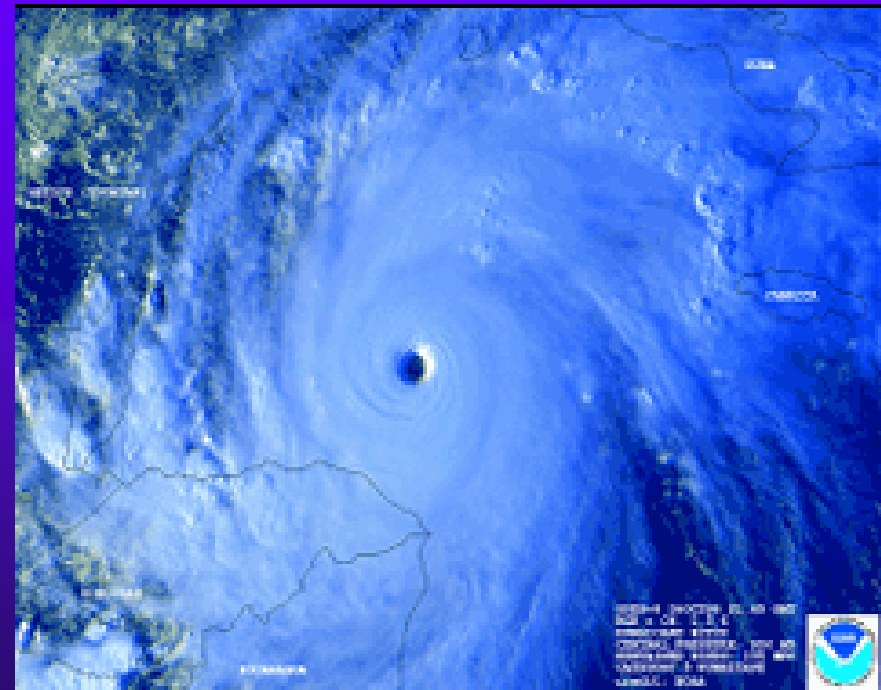
ICT Tools

- Early Warning Systems
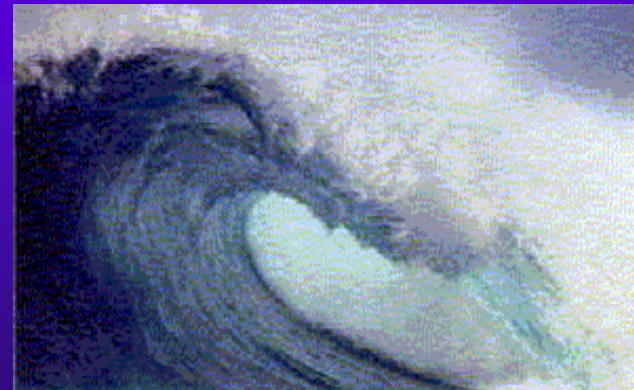
ICT Tools

◆ **Modeling**

– Climate Change & sea-level rise

– Storm surge
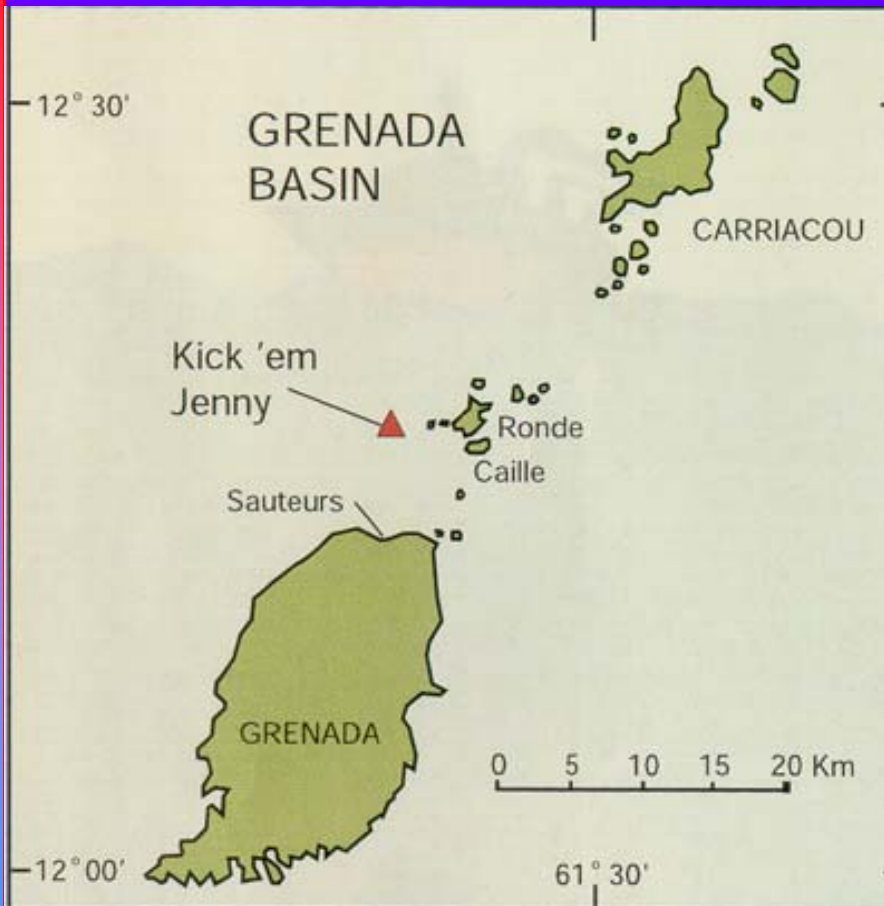
◆ **Geographical Information Systems (GIS)**

GIS Applications

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♦ **Planning/Prevention**
  – hazard mapping
  – identification of critical resources or infrastructure at risk
  – development planning
  – Decision-making: What are acceptable levels of risk?

GIS Applications

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- **Mitigation - identification of needs**
- **Preparedness**
  - resource allocation - evacuation routing, shelter allocation ...
- **Response**
  - Emergency services dispatch and routing
  - Search and Rescue
- **Recovery/rebuilding - damage assessment**

Benefits of ICT's to Disaster Management

- **Enhanced communication - E-mail, fax**
- **Public awareness and education - internet web-site, information databases**
- **Maximize use of limited resources**
- **Informed decision-making**
- **Cost savings - lives, infrastructure, time**

SOME CONSTRAINTS

♦ Data/Information are available, but…
  – Hard to find and from multiple sources
  – Multiple formats
  – Difficult to integrate
♦ Tools are available, but…
  – Hard to find and from multiple sources
  – Multiple formats
  – Difficult to ingest data

THE CHALLENGES

◆ Disparate "systems" and "information sources" need to be integrated

◆ Challenging to use and interpret

◆ Collaboration and coordination can be challenging particularly in a time of crisis - information needs to be shared among agencies (local/regional, planning, etc)

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♦ IT infrastructure / Platforms are inconsistent - solution needs to accommodate all levels of capability.

♦ Policies and procedures at different levels of government and internationally are (necessarily) different - Some may not be in place to enable information sharing and full utilization of ICTs.

ISSUES FOR CONSIDERATION

◆ Compatibility Issues
  – Data Format, Measurement Units, …
  – Different Vendor Products, Versioning, …
  – Ethernet, Token Ring, …

◆ Organizational
  – Sensitive Data Definition Varies
  – Security Issues / Accessing Shared Data
  – Capacity Differs From Country to Country
  – Bandwidth Cost is High
  – Systems, Data, Models Expertise Limited

Way forward for Governments??

- **Commitment to the use of ICTs**

- **Support for initiatives related to use of ICT's**

- **Building capacity in relevant Government departments including National Disaster Offices**

INTEGRATED DECISION MAKING TO ACHIEVE DISASTER RESK REDUCTION

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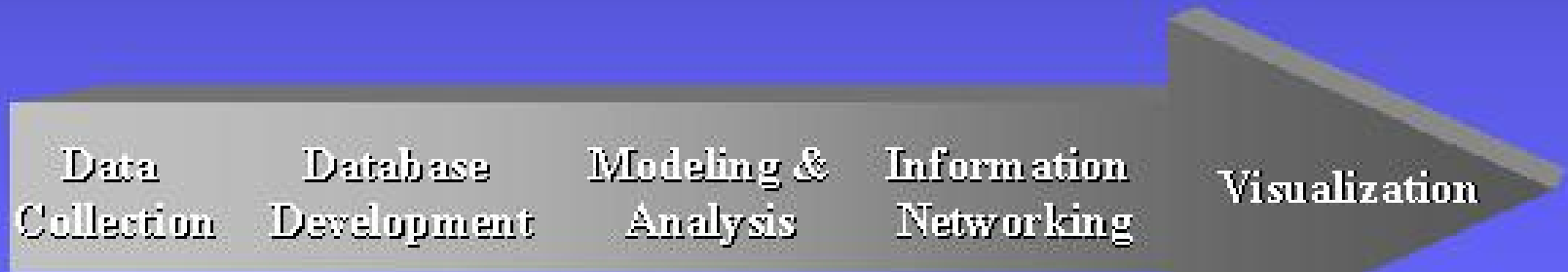
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The direction in which the disaster management community is going that will leverage technological advances and lead to sustainable development

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THANK YOU

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