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KEYNOTE ADDRESS
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TOPIC: USING ICT FOR EFFECTIVE DISASTER
MANAGEMENT IN THE CARIBBEAN

Salutations: -

I wish to extend to you all, the warmest of greetings. It is indeed my great pleasure to join you here today at this important forum, focusing on "Using ICT for Effective Disaster Management". This, is an excellent opportunity for government, business and public sector leaders, entrepreneurs, IT professionals, academicians and students to come together to share experiences, achievements, and ideas.

Let me commend the Commonwealth Telecommunications Organisation (CTO), the International Telecommunications Union (ITU), and all those who have made possible the staging of this important event. This forum is of immense significance not only for disaster management stakeholders, but for all of us living in the Caribbean. It is opportune, therefore, that I have been asked to present to you my thoughts on "Using ICT for Effective Disaster Management in the Caribbean".

Historically, we in the Caribbean Region have been subject to a wide range of natural hazards, including hurricanes, flooding and

landslides, earthquakes, volcanic activity, and in recent times, we have been becoming increasingly aware of the potential threat of tsunamis.

The Caribbean region, comprising the entire collection of islands and countries from Guyana to Belize, remains one of the most vulnerable areas in the world to tropical cyclonic events.

Each year, we are threatened by significant loss of life, serious property damage and social disruption as a result of natural disasters. Disasters, natural and man-made, have cost the region billions of dollars in damage, with an attendant negative impact on our economic health and development. Even more devastating is the human suffering and dislocation which prevails after the disasters have occurred.

Recent climatic events in the Caribbean have highlighted the inadequacy of regional and national disaster preparedness. Post-event assessments and studies have revealed a lack of relevant and actionable early warning information is a major shortcoming, along with ways to deliver a persuasive message to potential victims.

Accurate and timely data on storm development and progress tend to be predicated on the derivation of reliable and appropriate primary event monitoring data.

Early warning policies and procedures are predicated on anecdotal and presumptive assumptions about target communities, and their

interpretation of such communications and consequent decision-making.

A number of deficits and issues have been identified in the regional disaster management environment:

- Regional / national disaster management policies and procedures are incomplete, (currently being reviewed and developed).

- To date, there has been no objective investigation into the relevance of disaster early warning communication, nor the more fundamental issues of how target communities receive, process and take action on such communications. Such an investigation is critical to the formulation of regional policies and practices.

- The flow of early warning information from meteorological sources to the target audiences has been minimally assisted by ICTs.

- The current early warning bulletins issued by these services lack a geographical context, and are often unsupported by other available sources. While the need for such "value-added" early warning information is fully recognized, regional and national agencies appear unable to fully engage the widest range of data sources, or to apply state-of-art modelling software to the useful interpretation of such data.

- Several parallel initiatives involving the application of ICT in disaster management are being undertaken. Consequently, the potential exists for collaboration and integration with many of these programs at this time[1] as well as their funding agencies.

Based on assessments of the IVAN hurricane disaster (September 2004) and EMILY (2005) three significant findings have emerged.

1. Communications: the OECS assessment findings revealed that (the lack of) communications was one of the four significant weaknesses of the regional disaster management framework. Both intra-agency communications as well as public information were identified as requiring improvement.

2. Community Focus: The importance of the community in the context of regional disaster preparedness has been strongly emphasized by the director of CDERA[2]. The responsibilities of community residents to provide for their own safety and livelihood being the key issue.

3. Media Broadcasting: In some countries, Grenada being the country most affected, the mechanisms for informing the public are inadequate.

In terms of disaster recovery and preparedness, there is a high degree of exposure and there is a lot to be done in a short period of time.

Our experiences today indicate that not many of our organisations can confidently speak to having basic information backed up in a manner that allows them to recover in the event of a disaster.

The regional disaster management agency (CDERA) acknowledges these shortcomings and is presently piloting a community-focused Information Initiative to determine possible improvements.

In the US, a major thrust is the joint FEMA, NSF and NAS initiative, which has undertaken a thorough investigation of the use of ICT in natural disaster management with specific reference to early warning communications and disaster response.

The tragic event of 26th December 2004 - the devastation caused by the Indian Ocean tsunami has also moved the world to come together to learn from this experience and to exchange views on what role ICTs can play in mitigating disasters. Indeed, it exposed the lack of a global approach to respond to disasters of such natures.

As a result, many nations and sub-regions are beginning to establish collaborative arrangements to share information on early warning systems that are ICT based.

A number of studies have identified several areas where ICTs should have been more fully engaged in the Caribbean. These included:

- Event monitoring sources –
    - Doppler weather radar, ocean buoys, dropsonde readings
- Data interpretation –
    - Wind field, Rainfall, Storm surge and flood representation
- Data modeling
    - Application of GIS layers (elevation, topology, geography, population, vegetation, infrastructure, etc) to interpreted event data,
- Early warning information dissemination
    - Websites, streamed A-V commentary, Cell-phone SMS / broadcasting, Amateur Radio networks, Discussion forums, etc.
- Distribution of relevant DM survey results and findings
    - Electronic (web accessible) on-line database
    - On-line progress reports / chronology of policy development.

In balance therefore, significant and obvious shortcomings exist in the current mechanisms that address planning, mitigation, monitoring, response and recovery. Of these areas of focus, monitoring and response represent particularly weak areas of institutional capacity.

The absence of region-specific websites, a secondary weather service sector and relevant publications attest to this weakness.

By considering the context in which a storm-related event unfolds from threat through to onset, and considering the ways that decisions are being made based on available information, significant improvements are necessary. In early warning, information and response processes can be made relatively easily, and with minimal investment.

The time is, therefore, opportune to integrate appropriate policies into the public discussion, which will ensure that Information and Communication Technologies could be used effectively to aid in disaster management.

Communications and information flows during the early warning and response phases of onset, are critical determinants of quality of decision-making.

Recently, several regional interventions have been announced in the areas of monitoring, mitigating, and recovery from the effects of hurricanes. More recently, because of the obvious relationship that storm-damage has on the public and private sector infrastructure, and developmental capacity, disaster management has emerged as one of the priority focuses of regional governments and international agencies.

A positive development, therefore, is that our vulnerability to catastrophic events has led the region to undertake the long journey away from an ad hoc response, towards institutional

preparedness and, more recently, to disaster prevention and mitigation. In fact, there have been previous attempts to establish national and regional disaster management entities in the Caribbean. These include:

- The Pan-Caribbean Disaster Preparedness Project (PCDPP) executed in 1981-91, which recorded a number of important accomplishments, including the creation of central government disaster management organizations in several countries.

- The Enhancing Disaster Preparedness in the Caribbean project, which was conceived as a three-year project and commenced in March 1, 1999.

- The Caribbean Disaster Emergency Response Agency (CDERA), a regional inter-governmental agency established in September 1991 by an Agreement of the Conference of Heads of Government of CARICOM to be responsible for disaster management.

CDERA, now our primary regional disaster response institution, together with its affiliated national emergency agencies have been significantly strengthened and equipped to respond more effectively to natural disasters. The public and private sector have also become more informed, and better able to engage with the process of planning and policy-making in disaster management.

However, we need to:

- Create an effective process for the development of early warning information using ICTs and media broadcast technologies.
- Develop a publicly accessible website containing real-time disaster monitoring information
- Implement a regional database of survey results and findings for selected disaster events to support the project's engagement with policy-makers.

In the present era of electronic communication, the Internet provides a useful platform for disaster mitigation communications. Launching of a well-defined web site, for example, can provide a new and potentially revolutionary option for the rapid, automatic, and global dissemination of disaster information.

A number of individuals and groups, including several national meteorological services, have been experimenting with the Internet for real-time dissemination of weather observation, forecasts, satellite and other data. In the most critical phase of natural disasters, electronic communication have provided the most effective and, in some instances, the only means of communication with the outside world.

The technological revolution, of which ICT is an integral part, is transforming Caribbean society in a profound way and, if harnessed and directed properly, ICT can improve regional disaster management.

Advancement in Information Technology in the form of Internet, GIS, Remote Sensing, satellite communication, etc. can help a great deal in planning and implementation of hazards reduction measures.

- GIS can improve the quality and power of analysis of natural hazards assessments, guide development activities and assist planners in the selection of mitigation measures and in the implementation of emergency preparedness and response action.

- Remote Sensing, on the other hand, as a tool can effectively contribute towards identification of hazardous areas, monitor the planet for its changes on a real time basis and give early warning to many impending disasters.

- Communication satellites have become vital for providing emergency communication and timely relief measures. Integration of space technology inputs into natural disaster monitoring and mitigation mechanisms is critical for hazard reduction.

- Today, mobile phones should also be used as a disaster management tool. Researchers are in fact developing a system that will make all mobile phones in a disaster area emit an alarm tone to help locate their owner. For example, a

beeping handset could guide rescue workers to people trapped inside a collapsed building.

- Satellite Phone/ short wave transmitter/ VHF portable unit (or similar technologies could also be used. In the event of a failure of the land-based telephone service, this facility could then be used to re-establish communications with the national response agency, and to support tasks such as enforcement of curfews, search and rescue, etc.

- Use of pre-programmed hand-held data gathering devices, whereby fast damage assessment and shelter resource inventories can be provided to central national co-ordinating agencies.

- Another application of ICTs arises from the need to understand more fully the physics of structural/building response to wind forces. The ability to fully "instrument" a building that will be subject to such forces, and to record stresses and deformations in response to meteorological (ie wind forces) parameters will enable "in-the-field" acquisition of valuable data to support research on improving building design and building codes.

- We also need to identify specific ICTs that might be temporarily deployed prior to onset to community shelter managers / community leaders, and first responders. Including ruggedized WiFi / WiMax / LDMS wireless

communications devices, mobile / satellite phones, laptops/ PDA's, etc.

- These additional ICTs could be used for both the early warning communications phase, and in the response phase (i.e. search and rescue and health / safety and security situations).

These examples represent some possible applications of the currently available technologies

It is, therefore, vital that we in the Caribbean seriously consider the important role of ICT in the prediction and management of disasters.

We, in the Caribbean must see ICT playing a key role in strengthening our national economies, changing the way we live, how commerce is conducted, and very importantly, how we respond to disasters.

This process is nowhere more evident than in the difficult, challenging, interesting, sobering field of disaster management.

Natural hazards and disasters have, and will continue to have, a significant impact on our social and economic infrastructure and the environment. We are left each year with the unwanted and unpredictable problems of disasters, in addition to efforts to solve our economic problems. This sets off a vicious cycle in which

funds earmarked for development activities often have to be diverted to providing humanitarian relief, cleanup and rebuilding following natural disasters.

Disaster preparedness should, therefore, be seen as a part of our daily lives. In spite of the encouraging developments, much remains to be done.

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