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INVITED PAPERS

**GEOSPATIAL APPLICATIONS IN SUPPORT FOR DISASTER
MANAGEMENT AND SUSTAINABLE DEVELOPMENT**

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Emergency Info

A tool for harmonization and standardization of emergency monitoring

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Background

As a result of the Tsunami in December 2004, the DevInfo initiative was challenged to look at ways to improve monitoring of emergency response and ensuring effective linkages to existing data collection and dissemination processes within national authorities. The 17th UN Regional Cartographic Conference for Asia and the Pacific therefore offers a unique opportunity to share the recent experience under the overall conference theme focusing on "the importance of Geographic Information to disaster management and sustainable development in the context of the Millennium Development Goals".

EmergencyInfo is a powerful decision support system, based on DevInfo database technology that can help National Authorities, UN agencies, International NGOs and others to respond more effectively to emergency situations. It combines the advanced data access and presentation features of DevInfo with new data capture technologies. EmergencyInfo helps to bridge information gaps within the first 72 hours of an emergency and provide support for rapid data collection, situation assessment, standard monitoring reports and disaster preparedness.

This paper will focus on the application of DevInfo before and after an emergency by highlighting the importance of standardization and harmonization as well as data preparedness in an effort to provide timely and high quality data under often very difficult circumstances.

DevInfo v5.0 – Promoting data harmonization and standardization

DevInfo is a general purpose database system designed for the collation, dissemination and presentation of human development indicators, specifically to support governments in MDG monitoring and advocate their achievement through evidence-based planning, monitoring and evaluation. The MDG goals and targets are embedded in the system linked to the 48 MDG indicators in a goal monitoring framework. In addition to the MDGs, the system can easily be adapted to include additional user-defined indicators and goal frameworks linked to national priorities such as PRSPs.

DevInfo 5.0 is compliant with three international metadata standards for indicators, data sources and digital maps.
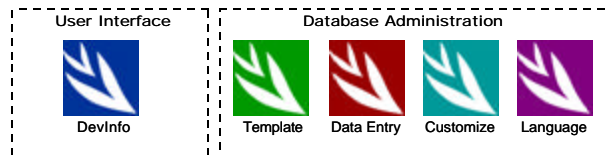
SDMX (ISO 17369:2005) provides three types of statistical metadata standards: standards for data formats, standards for metadata and a registry-based architecture to implement these standards and to exchange data between systems. The SDMX initiative is gaining increasing use as an effective model for improving the data and metadata exchange amongst data producers, users and intermediary organizations. It was endorsed by the Coordinating Committee for Statistical Activities at the 37th UN Statistical Commission (New York, March 2006).

DDI (ISO 1179) is a widely used international standard for metadata on datasets in the social sciences, such as household surveys. The Dublin Core Metadata Initiative (ISO 15836:2003) is for a broader range of statistical data resources, such as publications. DevInfo 5.0 stores source information in DDI/DCMI format. The DevInfo Database Administration module is integrated with the International Household Survey Network.

The UN Geographic Information Working Group recommends ISO 19115:2003 for metadata on digital maps. DevInfo 5.0 stores digital map metadata in this format and uses the dates of the representativity of the maps to link data to maps over time even when sub-national administrative boundaries change.

DevInfo v5.0: The Technology
The DevInfo database system is deployed in five integrated modules, now fully web-enabled. The **User Interface** module allows users to search for data by indicators, time periods and geographic areas. Indicators can be selected by various approaches, including monitoring frameworks for MDGs, Poverty Reduction Strategies, Sector Investment Plans and other national development strategies. The User Interface module creates presentations in tables, graphs and maps and saves these presentations in a gallery.

The **Template** module is used to define the contents of a database: indicators, indicator definitions, geographic areas and digital maps. DevInfo is distributed with an MDG template pre-loaded with the 48 core indicators. This template can be modified with additional indicators to create a country-specific MDG database template while integrating important standards from the global MDG template like indicator definitions and other metadata useful to the database management team at country level. With the use of the Mapping Database, administrators can design base map and subsequent administrative level as per requirements including facility points and other spatial data.

The **Data Entry** module is used to enter data through a database template. The template controls the contents of the data being entered. After selection of an indicator and geographic areas from the template, the data source, time periods and data values are entered into the database. Data can be copied and pasted from electronic spreadsheets. The Data Entry module provides utilities for uploading existing databases through industry-standard database technology.
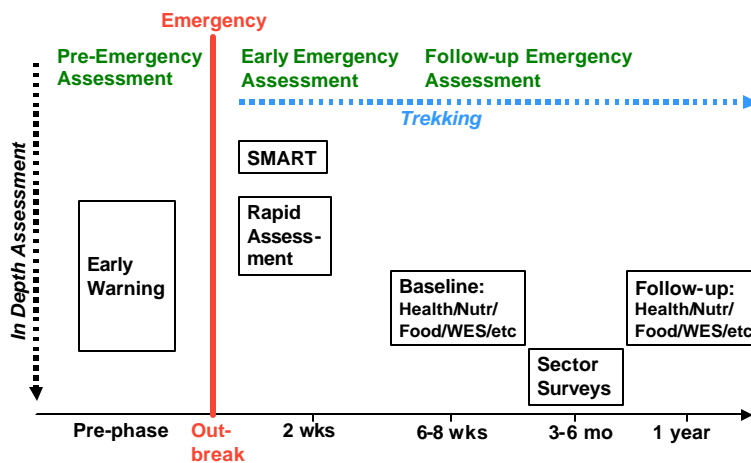
The **Customize** module allows the DevInfo database system to be adapted to user-specified branding to meet specific requirements of government partners. This module changes the 'skin' of the User Interface module by changing the product name, home page images, logos, color scheme, default language and other aspects of the system which can be user-defined. Many countries have used DevInfo technology to produce national databases for MDG monitoring. DevInfo is available in the six official UN languages. Support for other languages is provided through the **Language** module.

Emergency Monitoring using DevInfo Technology

Recent developments of DevInfo technology has resulted in a specialized version of DevInfo called EmergencyInfo which has been designed to support emergency response teams in effectively using data for decision-making under often very difficult and very challenging circumstances. Based on the UNICEF Emergency Handbook, rapid assessment formats have been designed by sector and are currently being tested in India, Sri Lanka and Maldives. Theses minimum standards for rapid assessment can be

uploaded to PDAs and customized at the outbreak of an emergency. It is expected that these standard rapid assessment format will effectively support the initial assessment in an emergency and the phases following the outbreak of the emergency. Emergency Info introduces the use of hand held computers—PDAs—to quickly capture data from multiple affected areas and multiple sources on the scope of an emergency. This facilitates the conversion of raw numbers into meaningful and ready-to-use information. The data is captured in XML format on PDA memory sticks and can be transferred by plugging the PDA into a desktop computer or by sending the data by e-mail.

Figure 1. Assessment in Emergencies

From standard rapid assessment formats (by cluster/sector) data is simply imported from the PDA into a DevInfo database and then ready for use with all the powerful data access features of DevInfo 5.0 to search for data by indicators, sources, areas and time periods to assess the needs of the affected population. Present the information through effective tables, graphs and maps from the data view.

With a few clicks, you can create a situation report (SITREP) using the table wizard and save the report format for reuse. The advanced features of the map wizard combine map themes to better allocate resources. The system can generate a time series of maps to effectively monitor progress the response to a disaster.

The system can be used to store presentation outputs in the gallery and disseminate information over a local network, or convert it into online web gallery to share information over the internet to a wider audience.

The new buffer feature can be used to make a rough estimate of the number of persons in an affected area or at risk of being affected. This feature can be used to create a buffer along roads, coastlines or around the epicenter of an affected area to help design effective disaster response plans.

Emergency Preparedness in National Statistical Systems

DevInfo implementation with national authorities offers an opportunity for the UN system to effectively support national partners in consolidating key statistics on human development. Recent emergencies across the region have emphasized the importance of emergency preparedness in the statistical system. DevInfo offers a common repository various stakeholders in emergency response and monitoring and can effectively link to key national authorities, National Disaster Management Authorities and National Statistical Offices, in a joint effort to strengthen emergency preparedness in the national statistical system with a wide outreach to development practitioners and emergency response teams in search of data for vital decision-making.

By using DevInfo implementation for MDG monitoring as entry point to such support, UN Country Teams can maximize impact on statistical emergency preparedness its efforts around strategic national partnerships closely aligned with national priorities in emergency preparedness.

Transition to MDG based Information Management

DevInfo 5.0 provides features that make the transition from emergency to development smooth and offers all relevant linkages to support of MDG based information management.

Since DevInfo is a cost-effective solution for addressing the MDG monitoring requirements at national level, UN Country Teams can continue support to monitoring human development by continuing their support to national authorities of a system that is available at no cost to all Member States and UN agencies. The technology is distributed royalty-free. The product branding and packaging have been designed for broad ownership without any reference to UNICEF, the UN or the software developer.