Development of a UN Spatial Data Infrastructure for Transport (UNSDI-T)

UNJLC, September 2007

The UN Joint Logistics Centre is a Humanitarian Common Service

hosted by, and under financial oversight of WFP and mandated by the Inter-Agency Standing Committee (IASC) (ie: not an Agency in itself)
UN Joint Logistics Centre

UNJLC aim is to facilitate and support the coordination of logistics capabilities among co-operating humanitarian partners, as well as complement and support the global and field Logistics Cluster through the provision of Information Management services (prioritization, GIS, infrastructures, commodities tracking, assessments, information sharing through meetings and reporting formats)

- Information Management/GIS arm of the Logistics Cluster
- Mandated by inter-agency steering committee to act as custodians of logistics data standards for the humanitarian community

www.unjlc.org

UNSDI-T

October 2005:
UN Geographic Information Working Group (UNGIWG) asked UNJLC to pilot the development of standards for Transportation datasets as a first step in the creation of a UN Spatial Data Infrastructure

June 2007:
Version 0 released

August 2007:
Version 1 released (www.unjlc.org/mapcenter/unsdi)

September 2007:
Horn of Africa data integration complete. Basic web interface online.
A Spatial Data Infrastructure (SDI) can be defined as an umbrella of policies, standards, terminology and procedures under which organizations and technologies interact to foster more efficient use, management and production of geo-spatial data.

**Terminology**

Clear, agreed definitions for the key attributes of a logistics asset (road, bridge, port, etc)

**UNSDI-T terminology based on input from many partners**

- CILT-UK’s HELP Forum (NGOs)
- NGO Logistics Officers
  - MSF (Fr) Logistics
  - MapAction
- Economic Commission for Africa
  - Transportation Infrastructure Master Plan for Africa
- WHO Logistics
- Global Logs Cluster Team
- WFP Logistics
  - Air Ops
  - LCA Team
  - Ethiopia LCA Database
  - Sea Transport
UNSDI-T version 1.2 contains:

- 9 object classes
  - Airdromes, Bridges, Obstacles, Ports, Railways, Roads, Stations, Warehouse Compounds, Waterways
- 458 attributes for those object classes
- 243 defined values for those attributes

Determined SCOPE of attributes from end-user requirements:

- Quick, meaningful cartographic representation
- Comprehensive reporting on operational status
- Network analysis:
  - Multi-modal routing
  - Contingency planning
  - Pre-positioning optimisation
  - Road rehabilitation/construction optimisation

➤ DISAGGREGATION OF ATTRIBUTES
UNSDI-T: Terminology

Road

Practicability
► Non-motorized
► Motorbike
► Car 4x4
► Truck
► Trailer
► Unspecified

The road supports the passing of all vehicles except trailers; truck is any of various forms of vehicle for carrying goods and materials, consisting of a single self-propelled unit. This category also includes passenger vans and coaches (2.5 - 10 MT). 2wd sedans will not be able to pass.

UNSDI-T: Procedures

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Procedures
Forms and processes for data collection, processing, and management
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**Data Management**
Technology for storing, querying, and displaying the information

Database schema can be deployed in many software applications. Currently available as an ESRI Geodatabase, which is the most common format in use within the humanitarian community.
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Promoting broad involvement in refining and using the SDI

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**UNSDI-T: Advocacy**

- **Conferences and workshops**
  - UN Geographic Information Working Group annual meetings
    - Frascati, March 2007
    - Bankok, November 2007
  - Global Roads Workshop
    - New York, October 2007
  - Inter-agency Information Management Working Group
    - Geneva, July 2007
  - ESRI Annual User Conference
    - San Diego, June 2007
  - HUMLOG
    - Helsinki, May 2007
  - Chartered Institute for Logisticians and Transporters
    - London, April 2007

- **Mailing list, website and publications**
  - unsdi-t@unjlc.org
  - www.unjlc.org/mapcenter/unsdi
  - Global Spatial Data Infrastructure newsletter (May 2007)
UNSDI-T is already being adopted

► FAO Somalia – road mapping project
► CartONG (Uganda) – road mapping project
► OCHA – transport components of global humanitarian base layers project
► CILT (UK) – aligning their work on humanitarian logistics standards with UNSDI-T
► Logistics Cluster/UNJLC operations
► ECA/TIMP – developing an Africa-wide transport database using the UNSDI-T standard

Three levels of training programs

► 1-day GPS data collection workshop (Field and HQ)
  ► Logistics Information Management principles
  ► GPS theory and practice
  ► Use of UNSDI-T data collection forms
► 3 to 4-day introductory GIS training for logisticians (HQ)
  ► Logistics Information Management principles
  ► GPS training and UNSDI-T data collection
  ► Introduction to GIS data manipulation and mapping
► 3-day UNJLC GIS SOPs for GIS Stand-by Partner staff (HQ)
  ► Training the trainers
  ► Management of UNSDI-T SOPs
  ► Coordinating data collection projects
  ► UNJLC standard GIS products
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**UNSDI-T**

- Web-based Tools
- GPS-based Tools
- Analysis
- Maps
- Reports
Query: Horn of Africa ports > 3,000,000 tons global traffic handled per year

Port Sudan
Port Authority: Sea Ports Corporation
Advisory Chart Number: 3452
Global Traffic handled/yr: 3,704,867 t
Length overall turning circle: 275m
Air Draught: 11.1m
Has Road Access: Yes
Has Rail Access: Yes
Working hours: 24 h
Container Handling Capacity (TEU/yr): unknown
Handling Equipment Description:
2 Container Cranes, 4 RTG's, 35 Quay Cranes
Storage Aspects Description:
27 Warehouses tot. area 56,023 m²

Djibouti
Port Authority: Port of Djibouti
Advisory Chart Number: 3452
Global Traffic handled/yr: 5,867,482 t
Length overall turning circle: 400m
Air Draught: 10m
Has Road Access: Yes
Has Rail Access: Yes
Working hours: 24 h
Container Handling Capacity (TEU/yr): 22
Handling Equipment Description:
2 Container Cranes 35t, 2 Post Panamax 55t, 6 RTG's 40t, 4 Reach Stackers 35t, 11 Forklifts 2-5.4t
Storage Aspects Description:
Sea Port: Covered area 22,280 m², open area 9,800 m², yard storage 5,720 m². Djibouti Dry Port: Total Area 48,840, Container storage 16,000 TEU, vehicle storage area 32,000 m², Warehouse 8,860 m²

Mombasa
Port Authority: Kenya Ports Authority
Advisory Chart Number: 868
Global Traffic handled/yr: 12,926,001 t
Length overall turning circle: 230m
Air Draught: 19m
Has Road Access: Yes
Has Rail Access: Yes
Working hours: 24 h
Container Handling Capacity (TEU/yr): unknown
Handling Equipment Description:
53 Trav. Cranes 3-20t, 26 F Inc. Cranes 1-15t, 43 Mop, Cranes 5-40t, 3 Forklift Trucks 4t, 15 Mop. Containers 40t, 2 Rail Containers 40t, 7 Bollardcranes 40t, 3 prime movers, 2 belt conveyers for bulk-cods
Storage Aspects Description:
13 main quay transit sheds with total area 10,548 m², 7 back-port transit sheds total area 4,900 m², 1 molasses tank of 19,000, container stacking and handling area 20,500 m²
UNSDI-T: Derived output

UNSDI-T Next Steps

► Finalisation of derived output products (Locate-allocate analysis, online webmapping and reporting)
► Development of data entry tool
► Continued data entry of in-house logs data
► Compile feedback and lessons-learned from UNSDI-T field deployment
► Join forces with Global Roads Conference attendees!