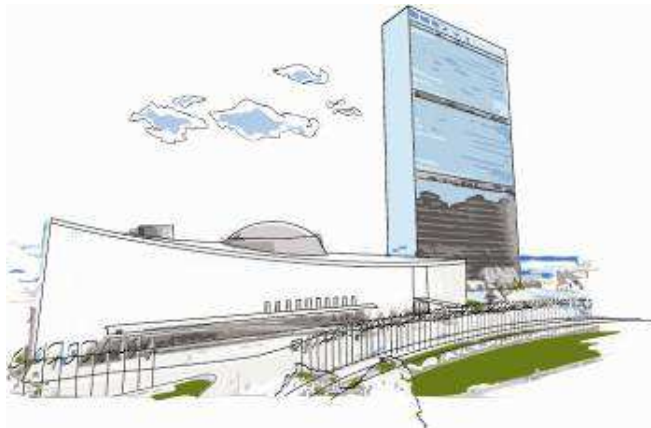




Earth Observations & Telecommunications for Peace & Security

UN Inter-Agency Meeting on Outer Space Activities (UN-SPACE)



14 May 2014

ICTD

**Department of Field Support
United Nations**



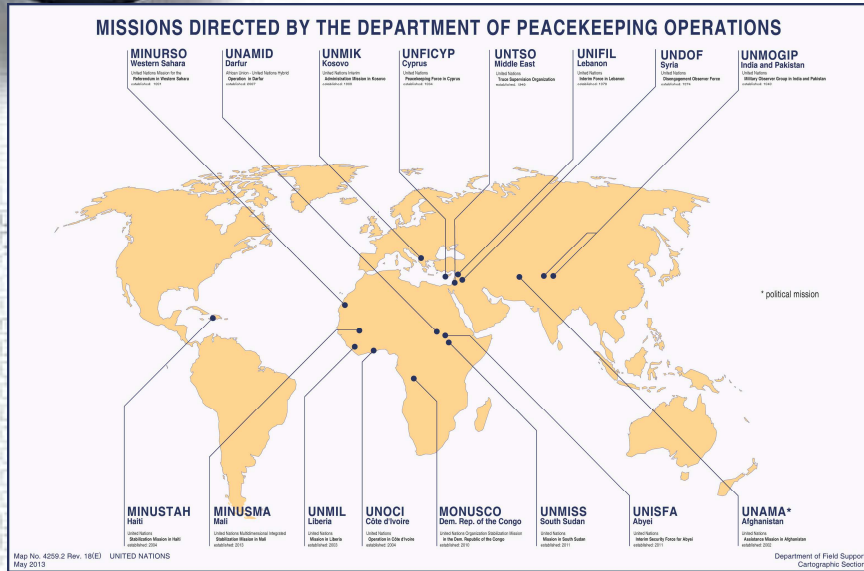
ICTD/DFS



UN Peace Operations



UN Peace Operations



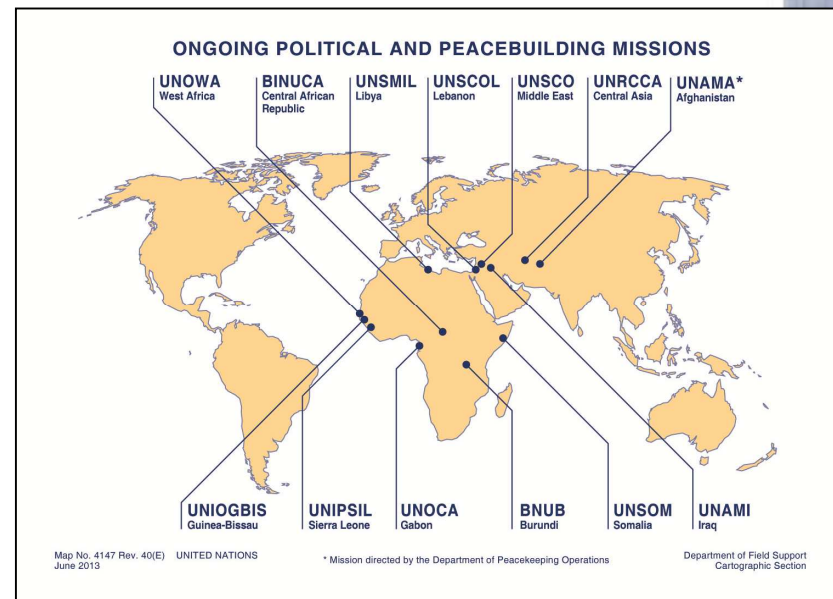
As of January 2014

| Personnel | PKO | PPBM |
|--------------------------|---------|-------|
| • Current operations | 16 | 13 |
| • Uniformed personnel | 90,241 | 456 |
| • International civilian | 5,084 | 1,280 |
| • Local civilian | 11,730 | 2,429 |
| • UN Volunteers | 2,076 | 96 |
| • Total: | 109,247 | 4,261 |

Peacekeeping Budgets

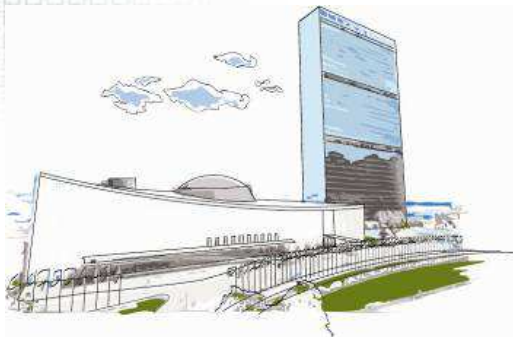
- Jul 2013 - Jun 2014: \$7.2 billions
- Jul 2012 - Jun 2013: \$7.2 billions
- Jul 2011 - Jun 2012: \$7.8 billions

(source: UN fact sheets)





Satellite Telecommunications for UN Peace Operations





Satellite Telecommunications

Satellite Services

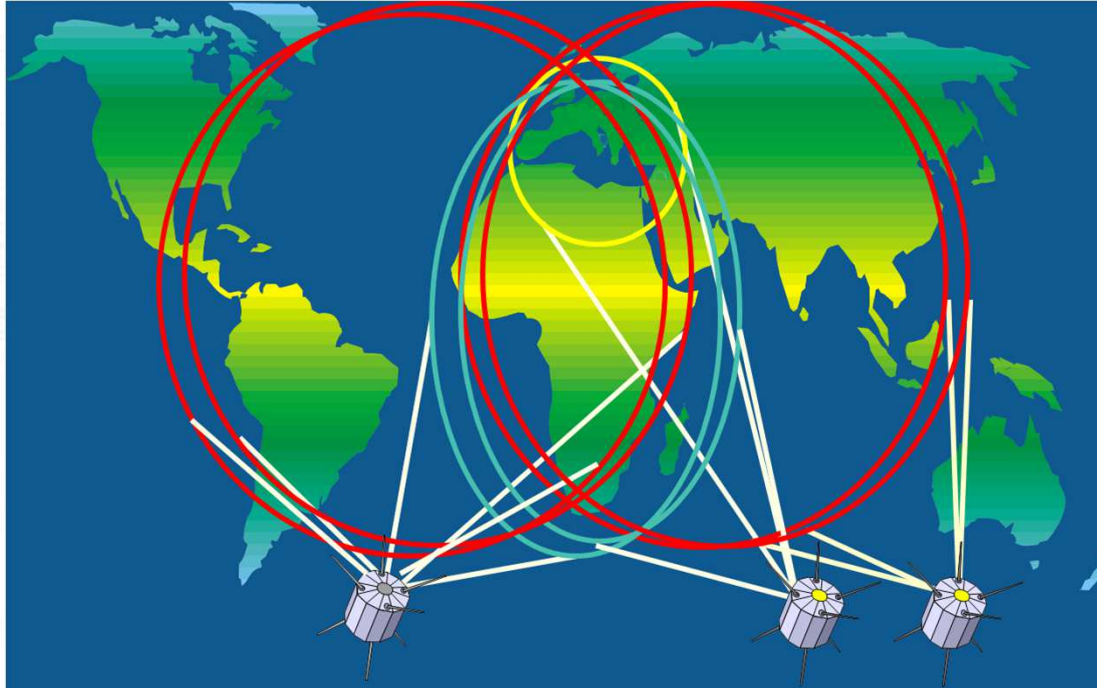
- Transponder Lease: 420 MHZ
- Remote Earth Stations: 260
- Satellite Links: ~450



Fully Redundant Satellite Hubs in Brindisi, Italy and Valencia, Spain



Satellite Telecommunications



Current Satellite Services:

- Leased Transponders C Band and Ku Band
- Satellite Internet Service providers

Evaluating the following technologies for use:

- X Band
- Ka Band
- Medium Earth Orbit



Satellite Telecommunications



**MDTS
(Mobile Deployable
Telecoms System)**



Deployable Telecoms System



**Trailer Mounted
Satellite Earth Stations**





Satellite Telecommunications

Portable Solutions

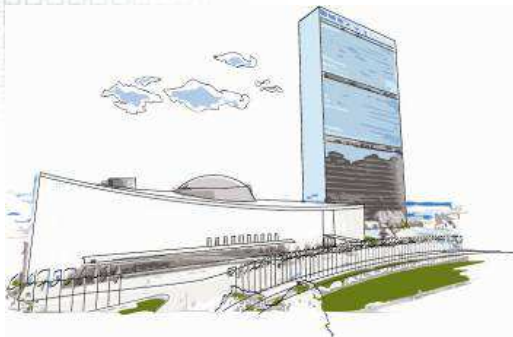
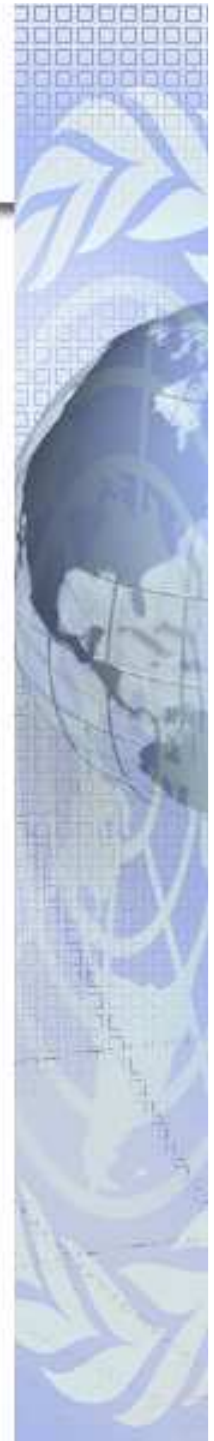


All DFS Supported Missions have portable Satellite phones and Inmarsat terminals for emergency communications with both Voice and Data Capabilities





Geospatial information Requirements for UN Operations





New Phase of GIS in DFS

- **Integration with ICT Division (ICTD)**

- As of July 2013, Cartographic Section has merged with ICTD.
- Expected synergies:
 - . Better access to ICT infrastructure
 - . Leverage existing ICT capacity & opportunity
 - . More GIS-ICT integrated solutions
 - . Resource optimization

- **Consolidation & Centralization**

(Part of 2014/15 Peace Keeping Budget proposal/review)

- Review existing DFS/GIS capacity and operational requirements
- Identify functions for consolidation/centralization and leverage existing GIS Centre in UNLB/GSC
- Streamlining GIS for more services to all UN field operations
- Expand Service Level Agreement (SLA) in providing GIS services to other offices/departments





Geospatial Visualisation

... Communicating Complex Information.

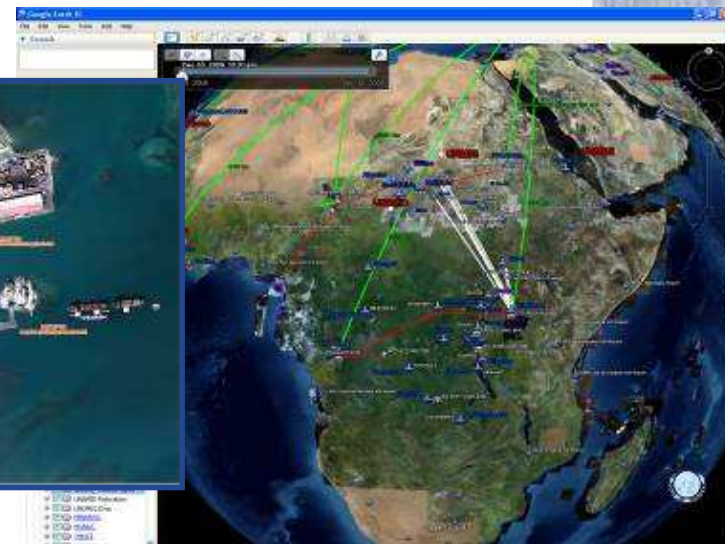
The collage displays three different geospatial visualization tools. The leftmost window is a desktop application with a map showing various layers and a data table with columns for OBJECTID, Incident, Incident ID, Actor, Affected, Affected Name, Injured, Injured Name, Death, Death Name, and Reported On. The middle window shows an aerial view of a city with a red circle highlighting a specific area and the word 'New' written in red. The rightmost window is a web-based interface showing a map of Central African Republic with a list of assets and their details, including Asset Name, Asset ID, and Asset Type.



ICTD/DFS



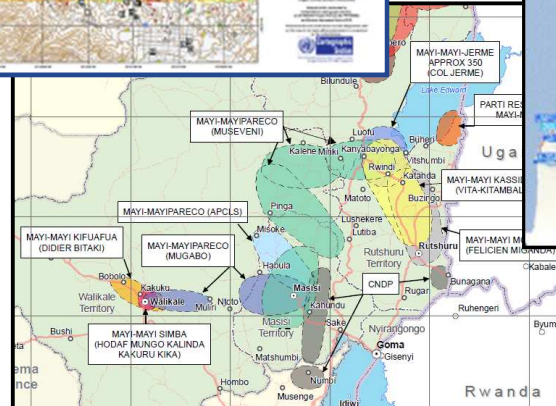
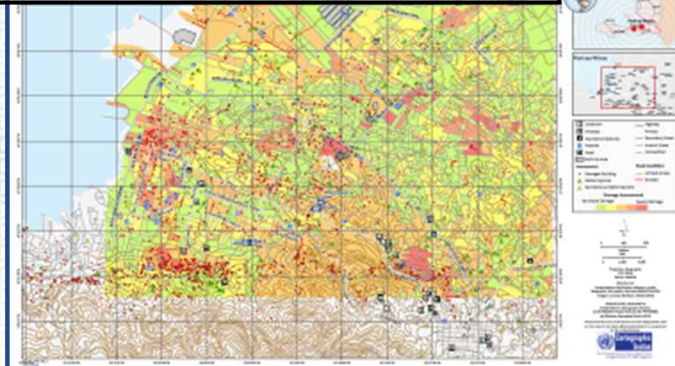
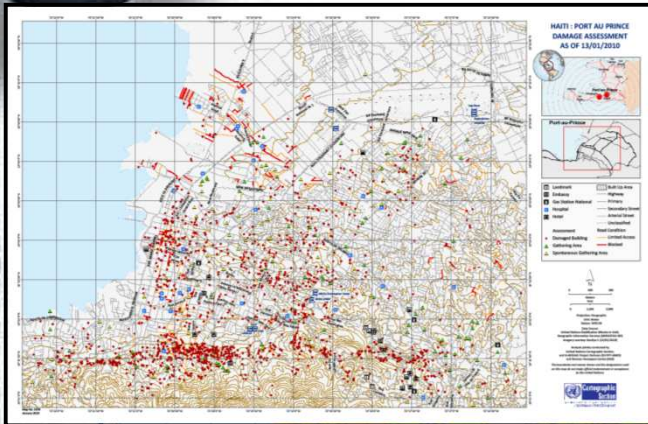
UN-SPACE 2014, New York



Page 12

Geospatial Analysis

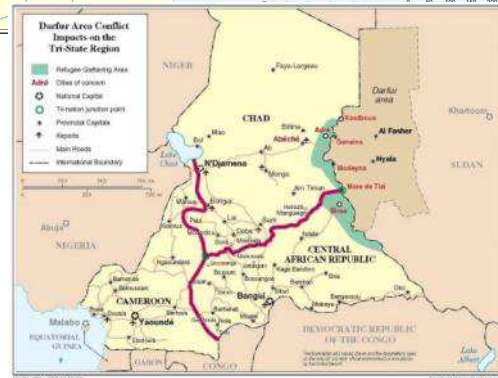
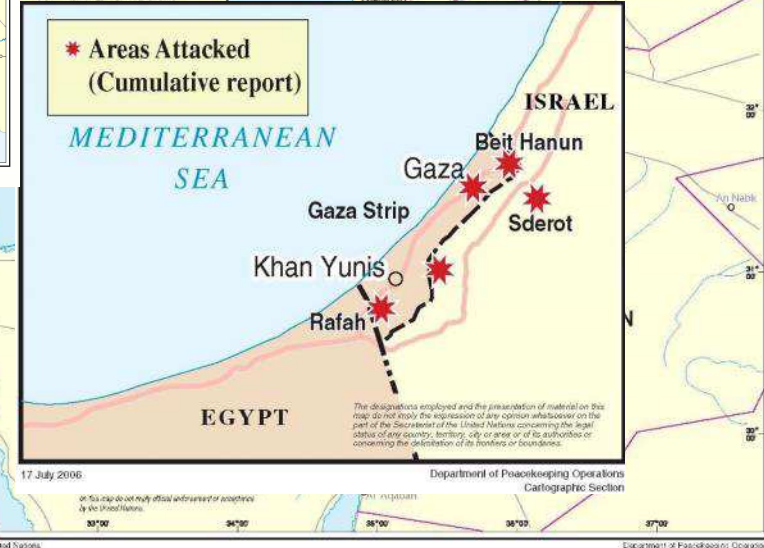
*Analyzing Relationships,
Patterns, Processes ...
... Helping
Understand Complex Situations
and Make Decisions*





Security Council Support

- Provide Geo-information during the daily Council's consultations & meetings
- Provide Geo-information & analysis to the Council's Panels of Experts

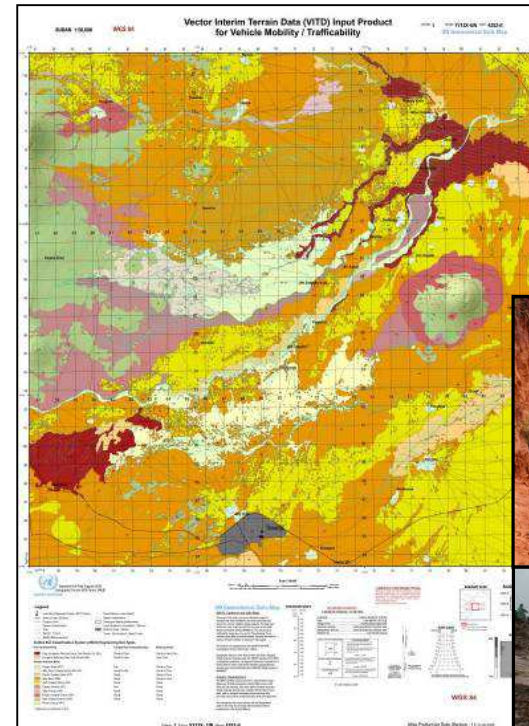
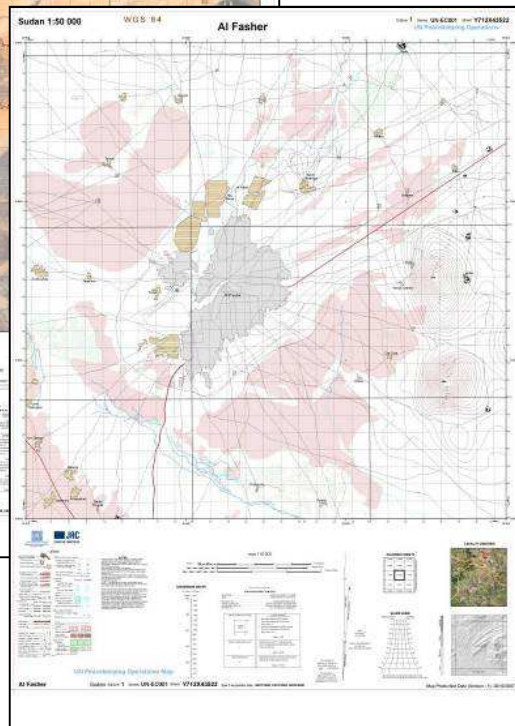
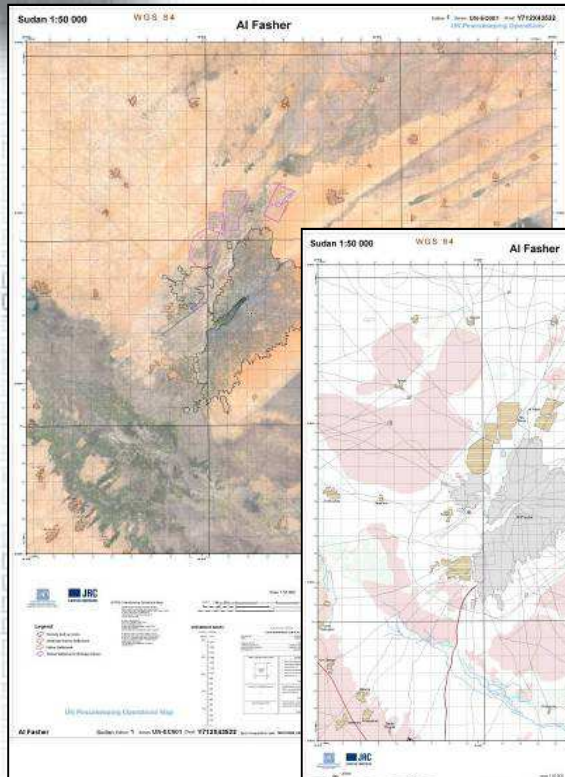
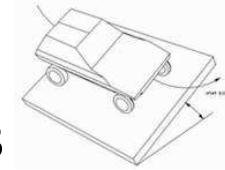




UN Field Operations

Mapping/Geo-Databases & Trafficability

Field movement challenges





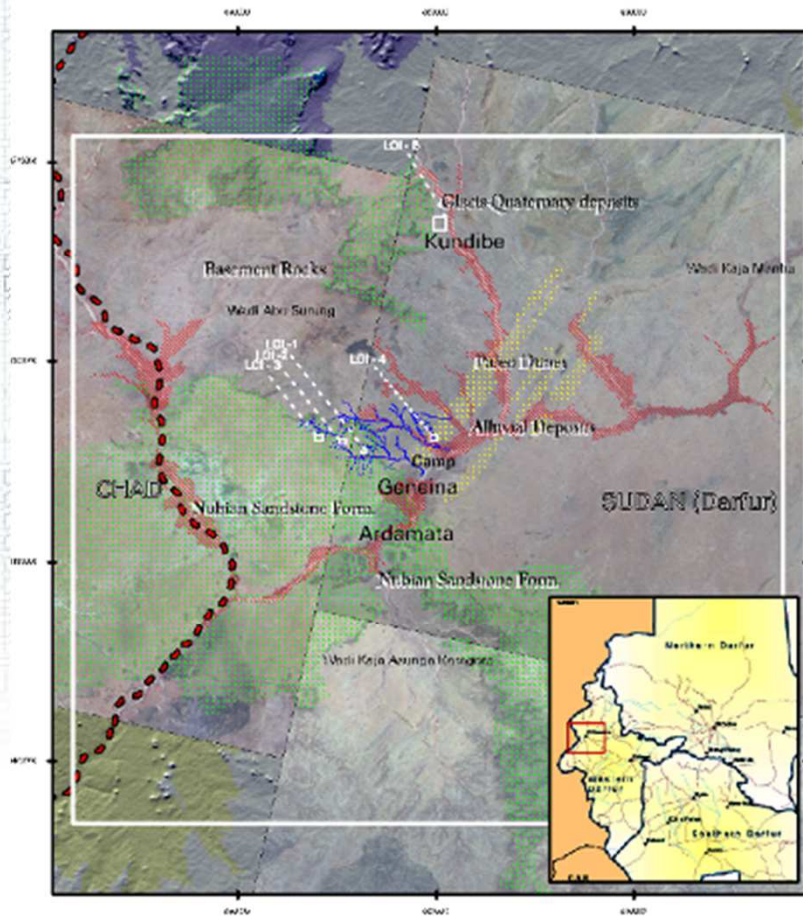
UN Field Operations

Underground Water Exploration in Darfur

GROUNDWATER STUDY: SELECTION OF LOI's FOR SURVEYS & DRILLING

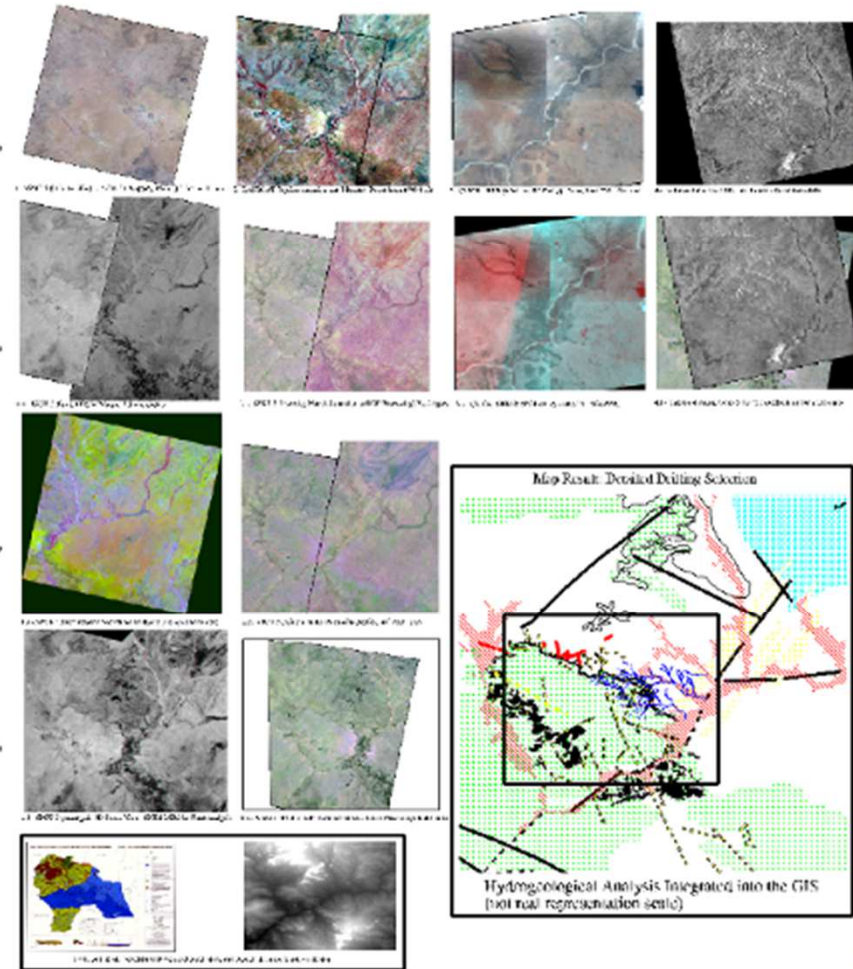
DISSEMINATION OF THE RESULTS OF THE STUDY TO THE FIELD OPERATIONS IN DARFUR
 UN-SPIDER/GEW/2007/01

AL -GENEINA, Darfur (SUDAN): AREA OVERVIEW



Spot-5 Satellite data and preliminary geological analysis
 LOI's (Locations of Interest) for groundwater drilling

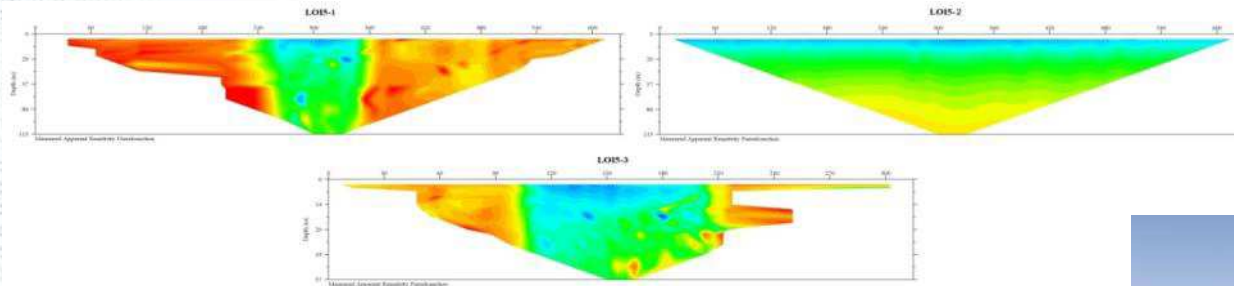
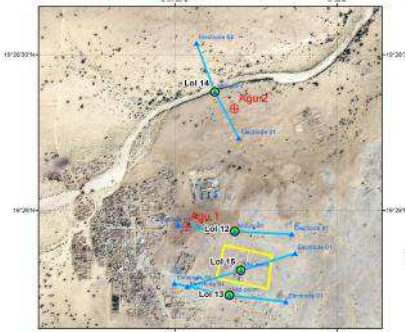
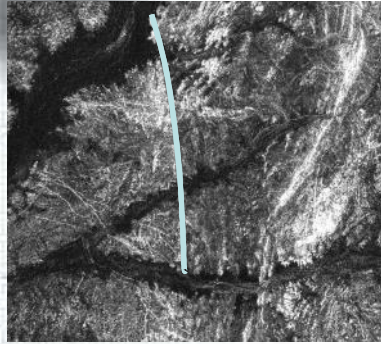
GIS and SATELLITE DATA : Data Sources and Processing Workflows





UN Field Operations

Underground Water Exploration in Mali



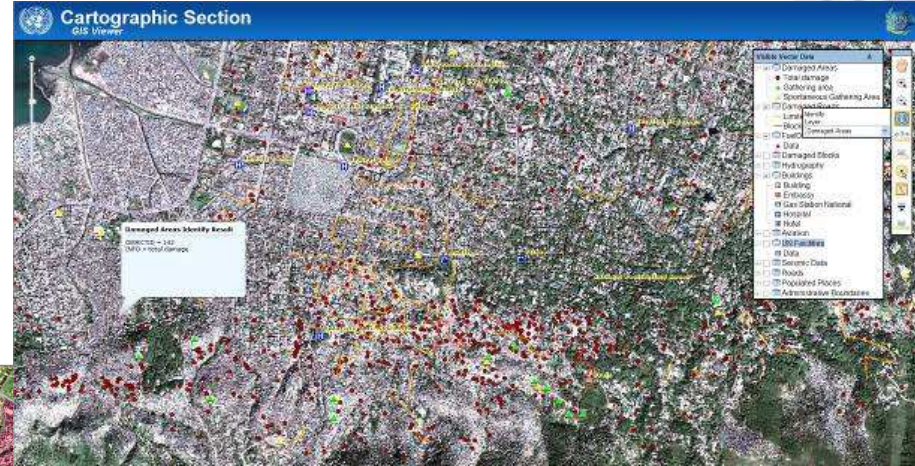
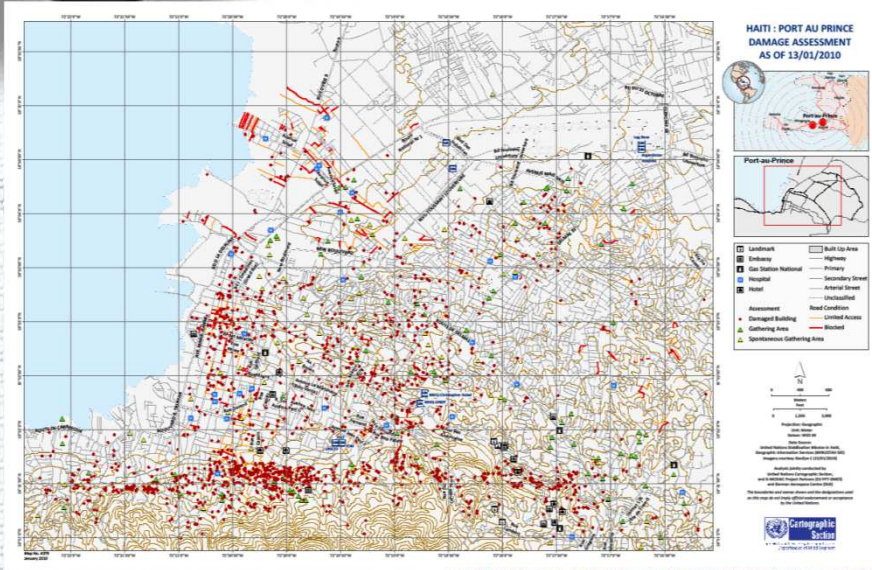
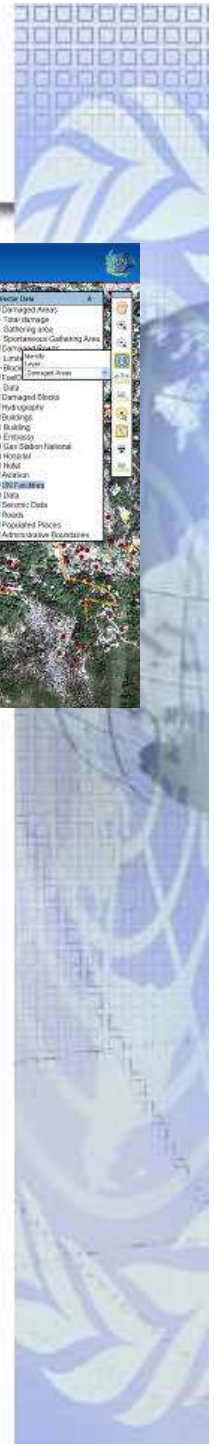
- High success rate using modern geospatial technology
- Water found in 6 towns (Tombouctou, Gao, Kidal, Almoustarat, Aguelhoc, Tessalit)





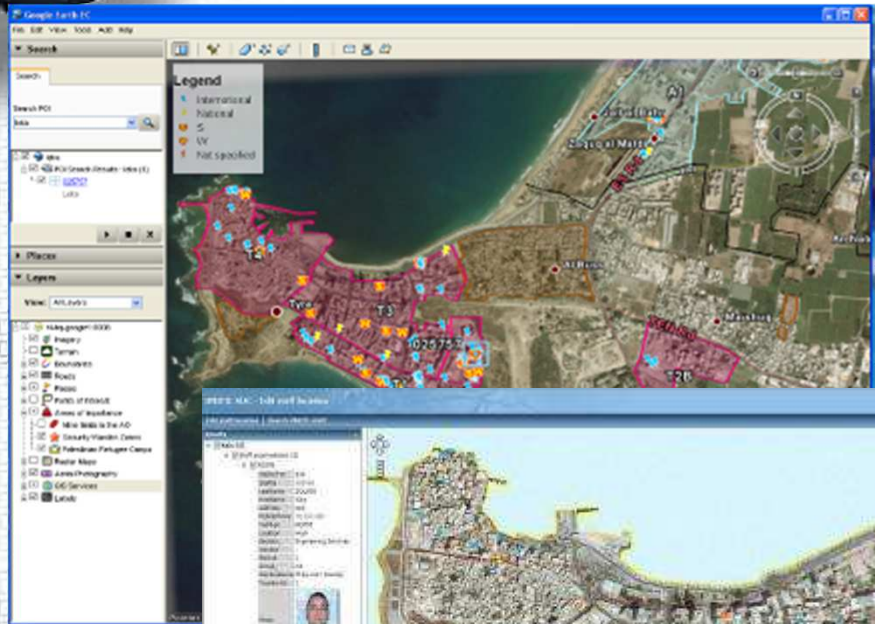
UN Field Operations

Geo Analysis for Damage Assessment in Haiti



UN Field Operations

Web-mapping for Security Warden (UNIFIL)



| Address | Guesthouse ID | Mobile | Call Sign | Location | Section | Warden/Recruit/Blood | Warden Name | Type | Photo | Emergency | GlobalID |
|---|---------------|----------|-----------|----------|----------------|----------------------|---------------|------|---|-----------|--|
| 13st Wazir Akbar Khan, next to UNHCR Guesthouse | NA | 70082734 | HQ 41 | Kabul | SRSG Political | * | Zulfiqar Bhat | I |  | | {E6684A3C-E5B9-4C6B-A9A0-384EF092E71} |
| 13st Wazir Akbar Khan, next to UNHCR Guesthouse | NA | 70009384 | HQ 213 | Kabul | Field Support | Amir | Zulfiqar Bhat | I |  | | {7663B5EA-425E-4B17-B0A8-B3A2F99A5A} |
| | | | | | | | Zulfiqar Bhat | I |  | | {E6C2545B-A5B4-42CF-A36E-B3448B697E44} |
| | | | | | | | Zulfiqar Bhat | I |  | | {2F1F9D70-59B1-4C32-8534-0DC9F2D3DCB} |
| | | | | | | | Zulfiqar Bhat | I |  | | {E655989C-4661-4930-BCE6-22CC4DE7CF67} |



International Boundaries

- Border demarcation

- . EEBC (Eritrea-Ethiopia)
- . CNMC (Cameroon-Nigeria)
- . IKBMP (Iraq-Kuwait)
- . Blue Line (Lebanon-Israel)
- . Green Line (Cyprus)

- Technical assistance

- . AU Border Programme
- . N-S Sudan Border demarcation

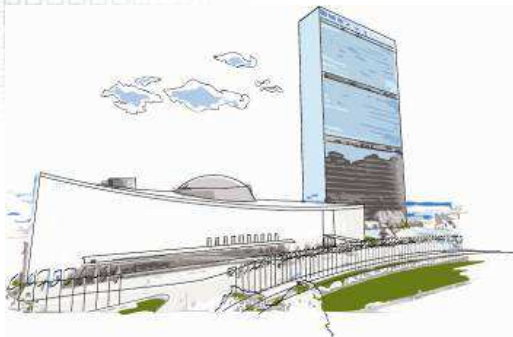
- Capacity building

- . Boundary Information System
- . Cooperation with major players





Challenges to effectively support UN Operations





Challenges

- **Critical shortfall of Map & Geo-data for**
 - Relevant briefing to support the Security Council decision making process
 - Effective mission planning
 - Supporting UN field operations
 - . No base map
 - . Outdated and/or inappropriate scale
 - . Digitization of paper maps required
 - . Ad-hoc solutions not satisfactory
- **Observations**
 - Needs further cooperation/collaboration with Member States on base map productions (i.e., MGCP)
 - Geospatial technology underutilized due to lack of appropriate Geo-data

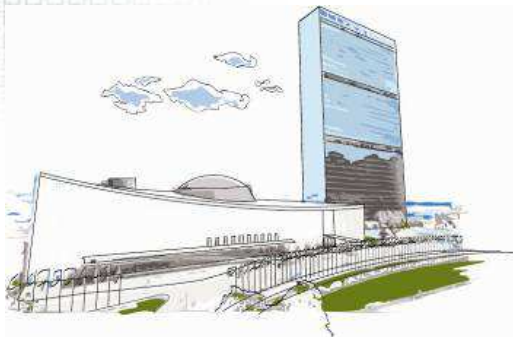
Challenges

Gap analysis

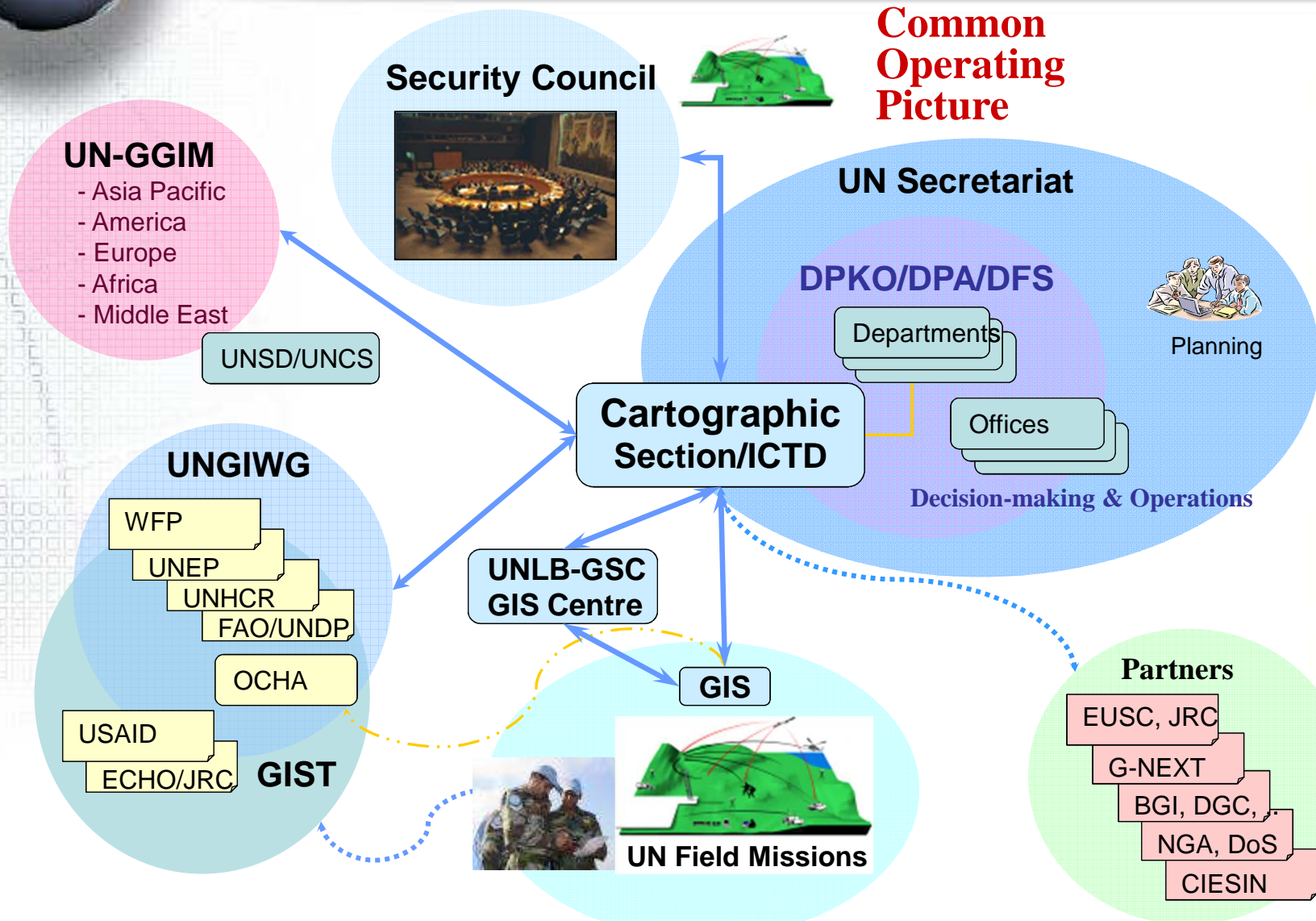
| Requirement | Map scale | Data Availability | | | |
|-------------------------|------------------------|--|----------------------------|----------------------|--------------------------|
| | | Paper maps | Vector data | Digital elevation | Satellite imagery |
| Overview Strategic plan | 1:1,000,000 | ONC available - outdated | Vmap-0 avail, outdated | DEM/DTED-0 available | LandSat NaturalVue |
| Strategic & operational | 1:500,000 | TPC & Russian maps – outdated | Not available. | DEM/DTED-1 available | |
| Operational | 1:200,000 1:250,000 | JOG & Russian maps - outdated. | Vmap-1 partially available | DEM 30-90 meter | SRTM, SPOT, etc |
| Tactical | 1:100,000 | US & Russian maps partially avail, outdated. | Vmap-2 Not available | | |
| MilObs/CivPol | 1:50,000 | Not existence. | MGCP data Not available | Not available | EROS, etc |
| City & Street | 1:20,000 | Not existence. | | | QuickBird IKONOS, etc |



Support Framework and Capacity Building



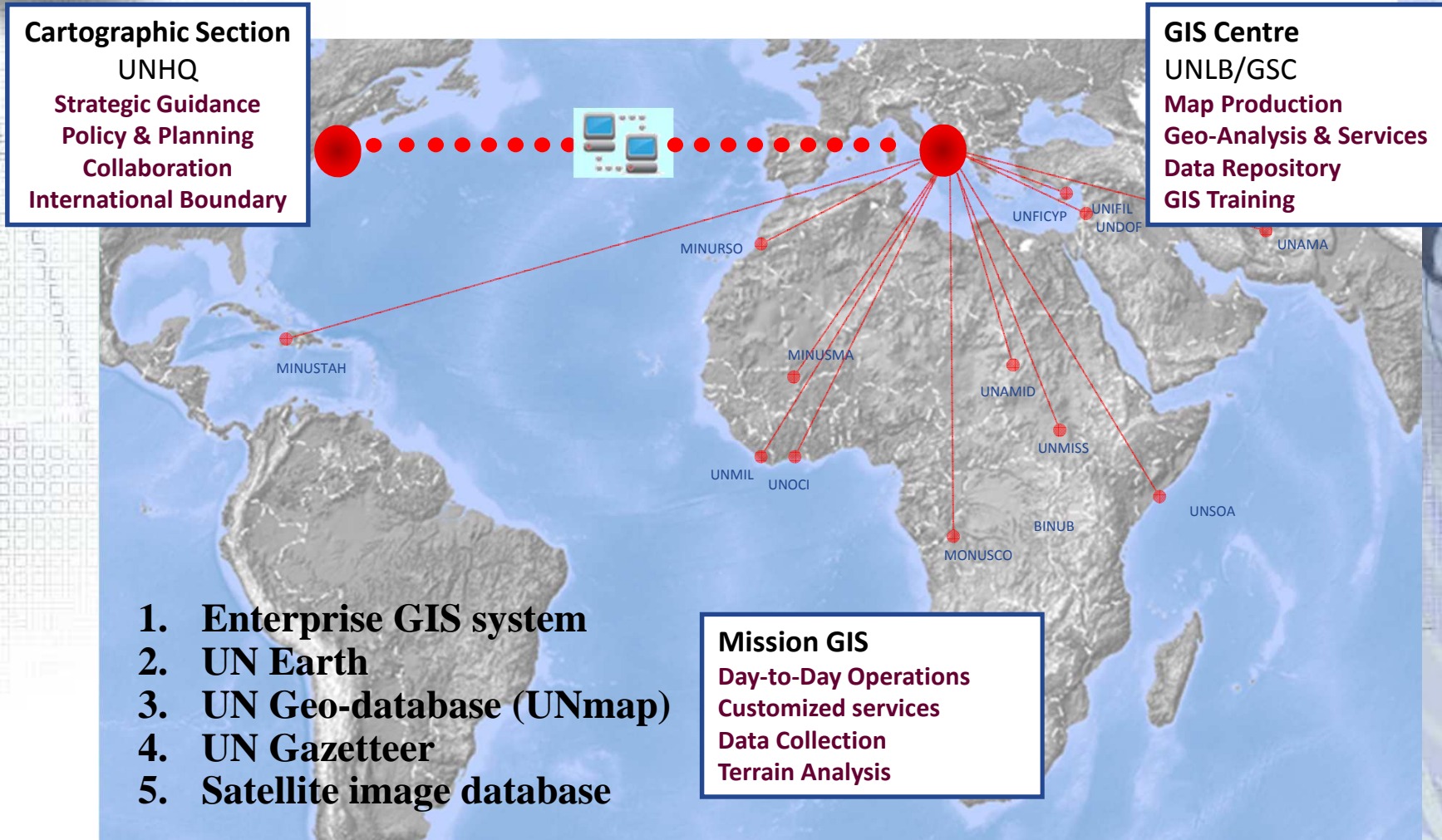
GIS Operational Concept



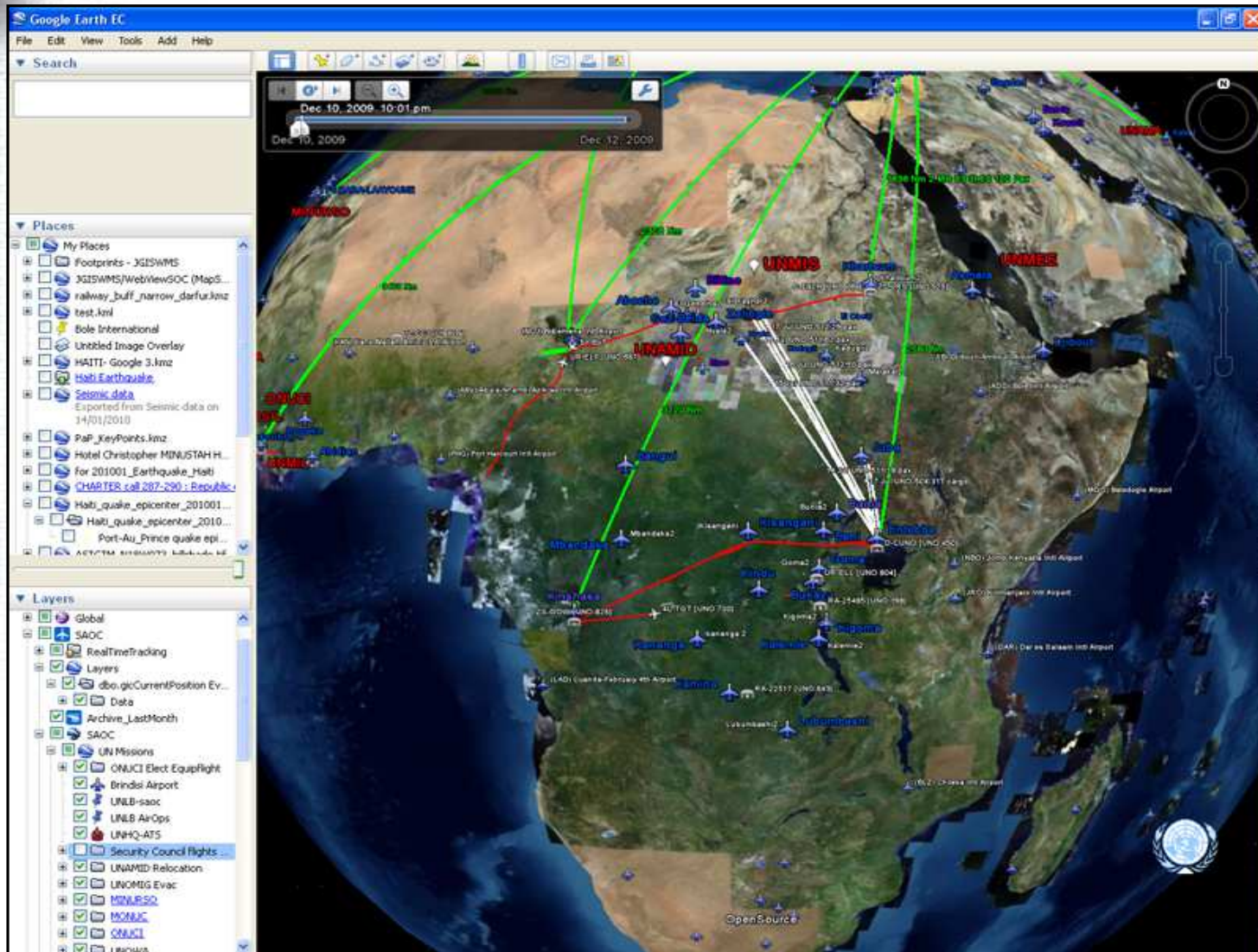


Global GIS infrastructure

3-tier: UNHQ–UNLB/GSC–Missions



UN Earth





Collaboration & Partnership

- **Member States (France, Germany, Italy, Netherlands, Romania, Spain, UK, USA, etc.)**
- **UN Global Geospatial Information Management (UN-GGIM)**
- **African Union (AU)**
- **European Union (EU)**
- **EU Satellite Centre (EUSC)**
- **EC Joint Research Center (JRC)**
- **Multinational Geospatial Co-production Program (MGCP)**
- **GMES/Copernicus projects (G-MOSAIC, G-NEXT)**
- **NATO**
- **UN secretariat & agencies (UNGIWG), including UNITAR/UNOSAT**
- **International professional organizations (ICA, DGIWG, OGC, WWHGD, etc.)**
- **Academia & Research Institutes (CIESIN, IBRU, ITC, etc.)**

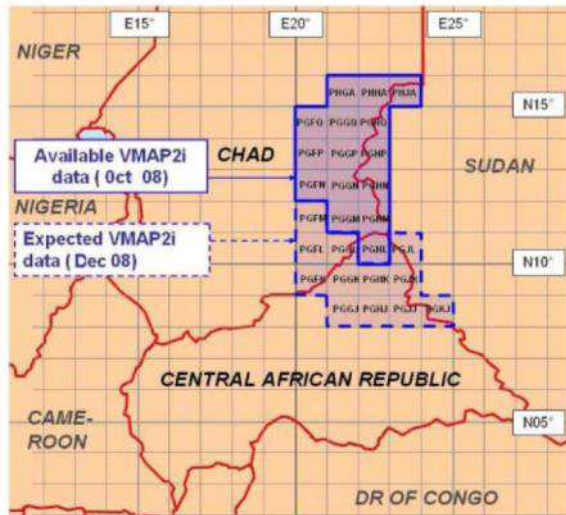




Strategic Partnerships

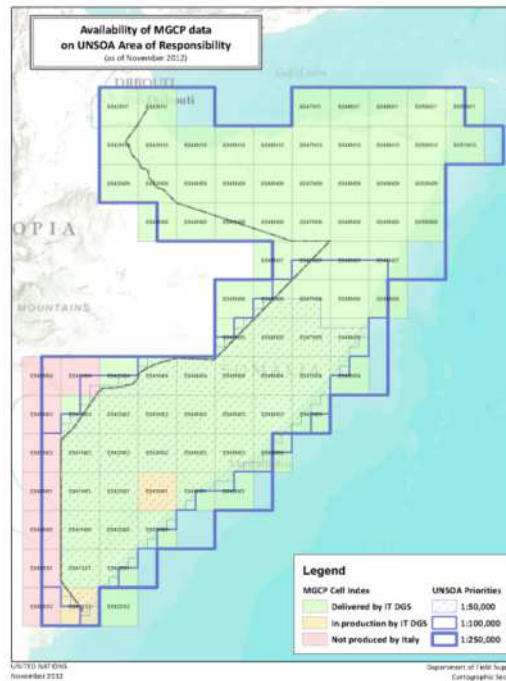
Member States

France for MINURCAT (2008)



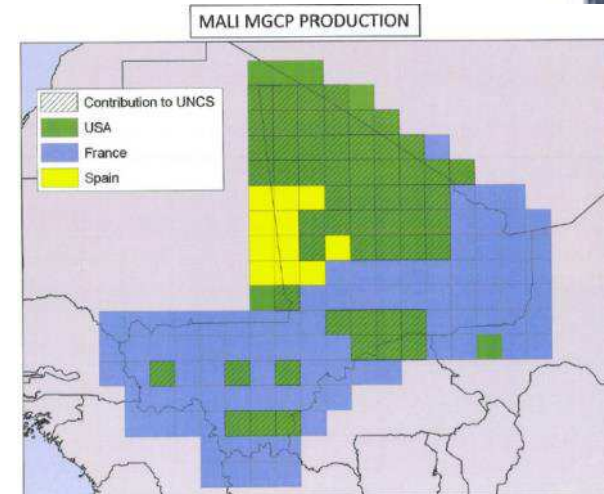
27 cells – 432 maps @ 1:50,000

Italy for UNSOA (2012)



78 cells – 312 maps @ 1:100,000

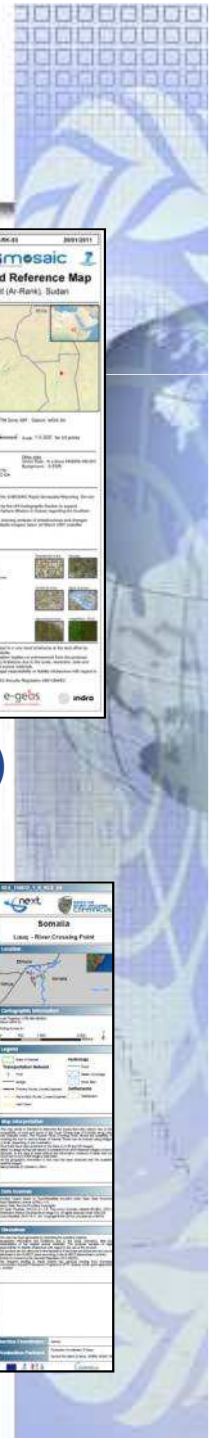
France, Spain, USA for MINUSMA (2013-14)



136 cells – 544 maps @ 1:100,000

Strategic Partnerships

European Union



Significant changes are observed at the probable storage facility. On the image dated 25 Oct 2013, one new Soft-Skinned vehicle, probably a large van or a truck is parked in the entrance area, next to a large trailer truck previously observed (Inset 1). No other vehicle activity is observed on the image. However, a lot of unidentified material is noted in front of the tunnel entrances further up the road (Inset 2 and Inset 3). The nature of this material is unknown, but on the images it consists of multiple, circular, dark-toned objects with an approximate diameter of 2 m (see detail). There are no roadblocks or any sign of observation in the facility or its close vicinity.
 (R Comment: Images have been rotated to provide a better perspective.

Location 23 Presidential Palace of Abidjan

Force: None

Location: Plateau

Lat/Long: N05°19'07.71", W004°01'21.75"

This is the Presidential Palace of Abidjan. It is located in the south-western part of the Plateau district, in the neighbourhood of the port of Base Marine Haute Mer (described in this report as Location 12). Presidential palace covers an area of 14 hectares approx.

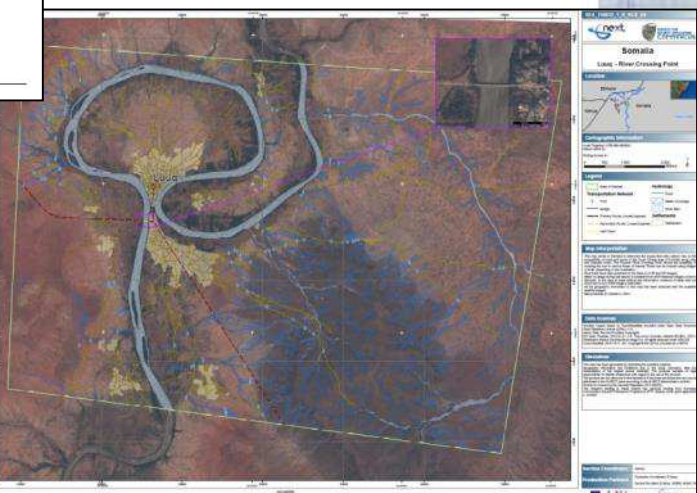
Ancillary sources of information [8th of April, Reuters: <http://www.reuters.com/article/2011/04/08/ivory-coast-4IUSTRE73014220110408?pageNumber=1>, BBC: <http://www.bbc.co.uk/news/world-africa-13008263>] claim that Mr. Laurent Gbagbo is remaining there.



G-MOSAIC (2009 - 2011)
G-NEXT (start April 2013)



The facility is located at 22 km NE of Demarcus, in an industrial area and covers approximately 14 ha. It is walled and has a single entrance. On 24 Aug 2013, the access was protected by earth revetments and a probable vehicle check point. Numerous other roadblocks and VCPs have also been observed in the surroundings. The facility consists of several probable fabrication/processing buildings connected to storage tanks and a probable large storage building. One of the tanks seems to be damaged. Spills or burnt traces are noted in the southern part of the site. Three probable vents have been observed, indicating possible underground storage. On 24 Aug 2013, no significant vehicle activity has been observed.



EU Satellite Centre
 (2005 - cont.)



Vision: Geo-enabled UN Operations

- **UN Initiatives**
 - Global financial constraint “do more with less”
 - Integration with ICT
 - Unmanned Aerial Vehicles (UAV)
 - Enterprise Resource Program (ERP) - Umoja
 - International Public Sector Accounting Standards (IPSAS)
 - UN Global Geospatial Information Management (GGIM)
- **Trends in Operational demand (user-driven)**
 - Complexity, Dynamic and Variability of UN operations demand:
 - . Real or near-real time response of spatial analysis
 - . Temporal geo-visualisation and geo-intelligence
 - Real-time information and tracking
- **Trends in Technology (technology-driven)**
 - Advanced data collection (UAVs, VHRSI, 3D LiDAR, RFID, etc.)
 - Publicly available data, Crowd sourcing data
 - Mobile technology

Thank you

