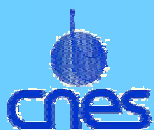




Disaster Emergency Logistic Telemedicine Advanced Satellites System

(DELTAASS)

Telecommunication system overview





DELTA

Disaster Emergency Logistic Telemedicine Advanced Satellite System



DELTASS Components



- In a “safe location”:
 - the Permanent Centre (PC). It is permanently operational and can be activated in case of relevant disaster. Its role is to trigger the whole system, to be the coordination centre during the deployment phase and to manage a first medical data base and a log of all communications. (Located in Toulouse during the DELTASS demonstrations)
 - a Reference Hospital (RH). To be chosen depending on the country and on the disaster type and location. Its role is to be a medical support to the MFH and to host a medical data base, identical to the MFH one. (Located in Berlin during the main DELTASS demonstration)
- On the disaster field (near Toulouse, then near Ulm):
 - several Search And Rescue teams (SAR). They recover the victims, install them on a safe place, fill in a NATO medical form and send the content together with a GPS information to the coordination centre.
 - a First Medical Aid team (FMA). They are equipped with a medical suitcase and can bring a first medical assistance to victims, on request of the coordination centre. The collected medical data and a GPS information are sent to the coordination centre.
 - an Ambulance team. They are equipped with a medical suitcase and transport designated victims to the MFH on coordination centre request. The collected medical data and a GPS information are sent to the coordination centre.
 - a Mobile Field Hospital (MFH). Basically, it is an hospital. Its medical role is supported by the RH on request. It hosts a medical data base and acts as the coordination centre.

DELTASS Deployment Principle

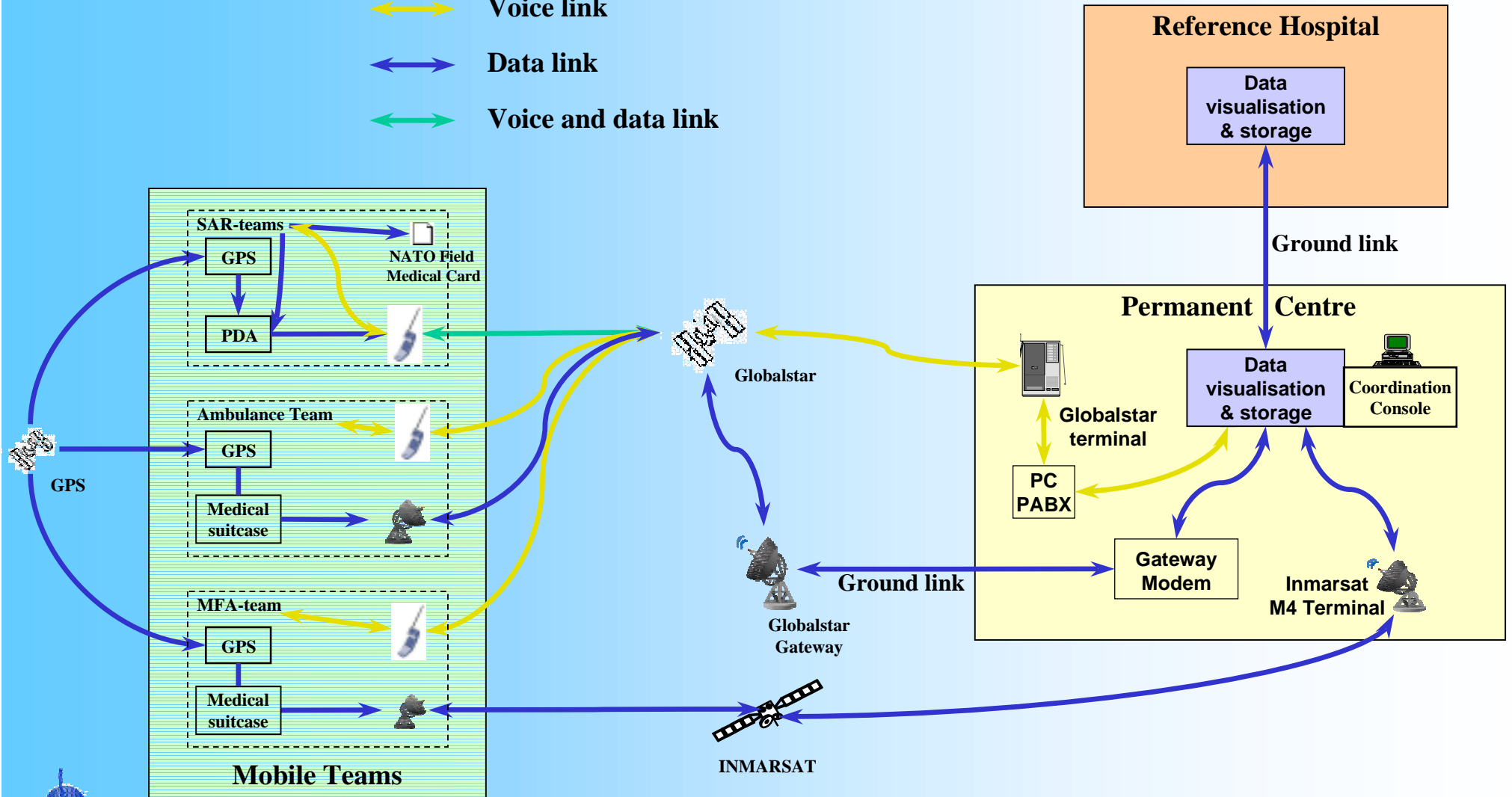
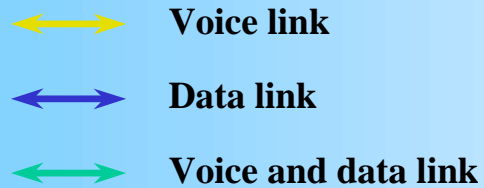


The DELTASS system is deployed in two sequences :

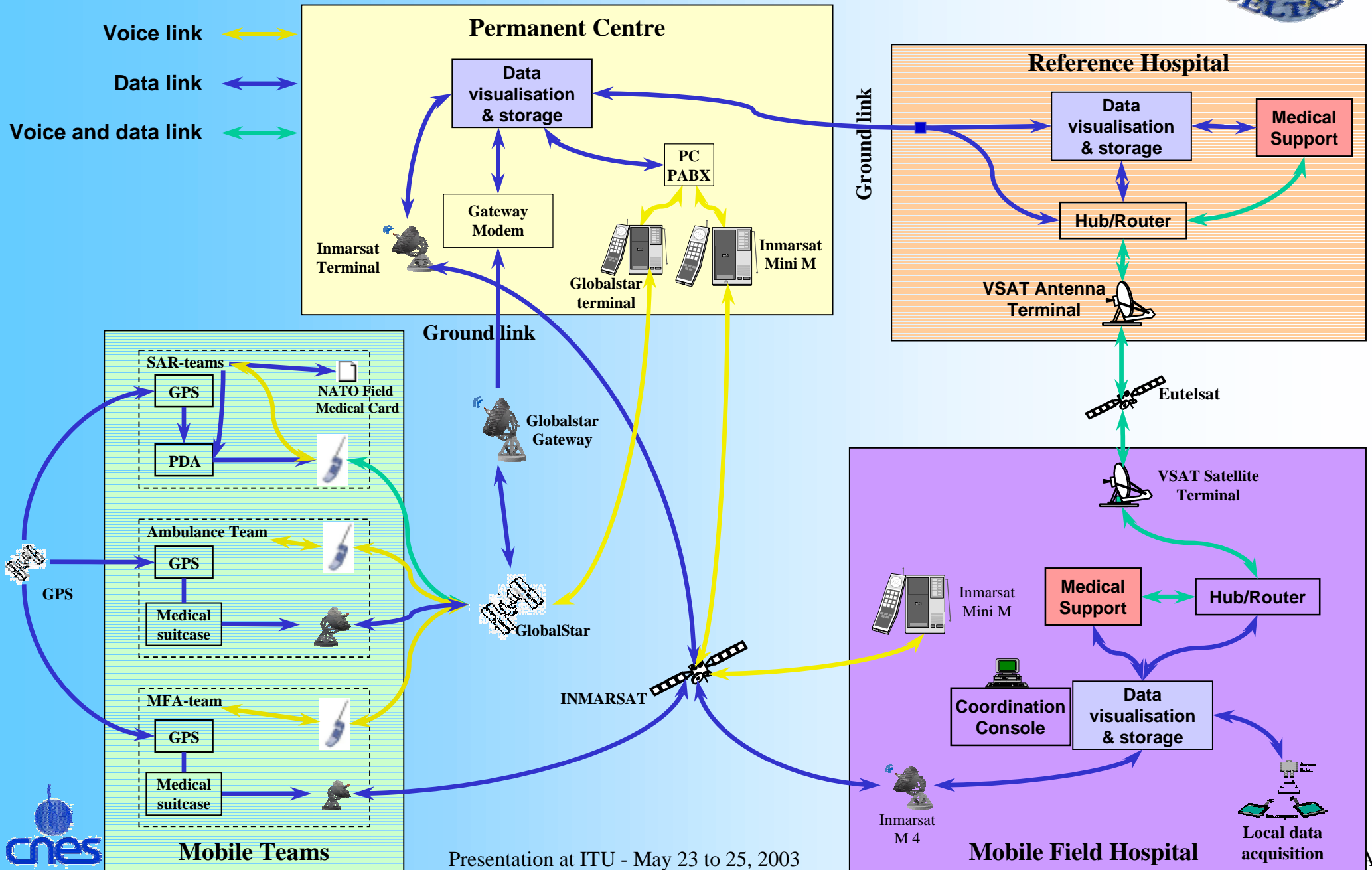
- the early deployment stage:
 - SAR teams, First Medical Aid team and ambulance team are deployed on the disaster site;
 - the PC acts as coordination centre;
 - Globalstar is used for voice and data communication;
 - Inmarsat is used from FMA, but Globalstar could have been used as well;
 - the PC sends medical information to the RH through a commercial ground link.

- the full deployment stage:
 - the MFH is deployed and acts as coordination centre;
 - medical support is available in the RH;
 - RH and MFH are linked through a high rate VSAT Eutelsat channel for medical data, voice, teleconference, teleconsultation and advanced remote medical activities;
 - PC and MFH are linked through an Inmarsat M4 64 kb/s and voice channels;
 - no change for communication links used by the mobile teams (they shall not be disturbed in their duty by the modification of configuration).

Communications during the Deployment Phase



Communications in the fully deployed configuration



Presentation at ITU - May 23 to 25, 2003



Summary of the observed results



About the chosen systems:

- for the “really mobile” teams, a system such as Globalstar or Iridium shall be used (no preferential direction) rather than a system based on geosynchronous satellite(s). Globalstar chosen due to said better availability at time of choice and also to higher available data rate.
- for the high data rate, any available commercial system could be used. Eutelsat chosen due to Industry preference.
- For transportable system (FMA) statically utilised, both Globalstar and Inmarsat M4 were used.

Some results:

- Voice transmission: no anomaly reported.
- Low rate data transmission: some connection problems with the handsets (SAR teams) were reported. No problem with embarked equipment (in the ambulance).
- FMA: Inmarsat M4 OK, same type of connection problem with the Globalstar handset.
- High rate data transmission: not defined prioritisation of transmissions led to uneven information reception in the MFH coming from the mobile teams through PC and RH, sometimes got jammed by the medical data exchange between MFH and RH.

Some recommendations (1)



Wording:

- Analysis, definition and design of the Data Transmission system

Rationale:

- During the demonstration, problems occurred during the integration of the data transmission. The use of different existing and proprietary communication systems might induce specific problems (e.g. path through firewall). Despite a “two by two” check, hidden consequences could be detected only when all data transmission components were integrated in their final configuration.
- The data transmission system used by each potential actor of the overall system (PC, RH, ...) shall be either defined or adapted to have the capacity to work in various configurations in order to be integrated with various distant contacts.
- This integration is of utmost importance in such a system which shall work with different sites.

Some recommendations (2)



Wording:

- Adaptation of the use of satellite communication in an operational scenario: means to be secured and optimised.

Rationale:

- Some “Disaster channels” should be defined and secured in order to be available when needed.
- Availability of communication systems to be used should be carefully checked periodically. This is valid for the satellite system itself and also for the derived facilities (hand-set units, links for data, ...).
- Careful definition and adaptation of the bandwidth between the Reference Hospital and the Mobile Field Hospital: sharing of costly satellite resources and prioritisation of the various information channels on the same link.

Some recommendations (3)



Wording:

- definition and standardisation of operational procedures to use such a system

Rationale:

- in order to ease and make systematic its use. Such a system can be used under various circumstances, in various locations and under several environments.
A harmonisation of its use is mandatory to avoid any misunderstanding during its operation.
- periodical training of potential user shall be a must.

Final recommendation:

- pay a visit on the project website <http://telecom.esa.int/telecom/www/object/index.cfm?fobjectid=750>
- you will find additional information and useful links.

THANK YOU