

Short presentation of an expertise profile for the 5th call Space in FP7

Custer Aero- Space Technologies, Research and
Applications (CASTRA)

www.castra.org

Non-governmental organisation with members from Academia,
Industry and Public domain active in the space sector

BULAGARIA



COSMOS Matchmaking Event
18th March 2011, Sofia, Bulgaria

Draft Call Topics that we are interested in

Space-based applications at the service of European Society (GMES)

➤ *Pre-operational validation of GMES services and products*

- Testing and validating the intelligence-driven and high time-critical scenarios of the CONOPS
 - Tracking vessels on the high seas
 - Punctual monitoring of selected neighbouring third-country ports and coasts
- Testing and validating the low time-critical components of the CONOPS
 - Punctual monitoring of selected neighbouring third-country ports and coasts
 - Situation monitoring of the pre-frontier area at the external land borders

- Support to emergency response management
- Preparing take-up of GMES Sentinel data

➤ *Support to the coordinated provision of observation data*

- Research and development for In-situ component
- Climate Change – GMES service coordination
- Consolidation of user requirements for GMES

Strengthening the foundations of Space science and technology (SSF)

• *Research to support space science and exploration*

- Exploitation of space science and exploration data

➤ *Research to support space transportation and key technologies*

- Key technologies enabling observations in and from space
- Key technologies for in-space activities

Cross-cutting activities

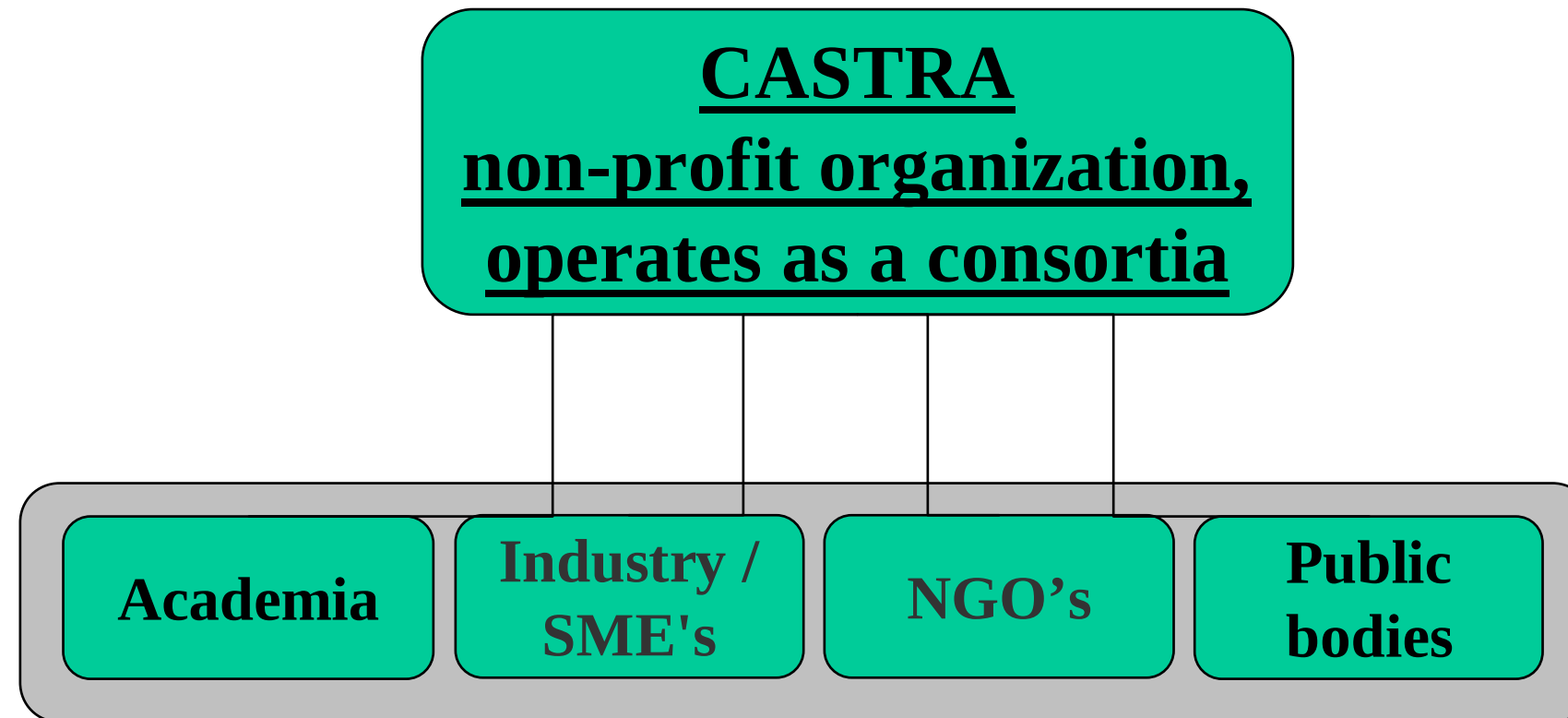
➤ *SME specific research*

- Bringing terrestrial SME research into the space domain

➤ *Studies and events in support of European Space Policy*

- Studies and events in support of European Space Policy
- Research agenda definitions and research activity road-maps
- New emerging research needs - reduction of vulnerability of space infrastructure

➤ Structure



Current Members:

Academia:

- Space and Solar Terrestrial Research Institute, BAS
- University of Sofia
- University of Shumen
- Institute of Cryobiology and Food Technologies (ICFT)

Industry/SME's:

- AEGIS Ltd.
- Telesys Ltd.
- Novorell Ltd.
- Lymicomp Design Ltd.
- SimSoft Ltd.
- Antaris trade Service Ltd.
- BEVT JSC
- BMG JSC

NGO's:

- Remote Sensing Application Center (ReSAC)
- Agency for Sustainable Development and Euro-integration—ECOREGIONS (ASDE)

➤ Short history of the CASTRA

Established in October 2010

Main Goals:

- Represent the space sector R&D and business branch in Bulgaria
- Support R&D, Education and Business activities in the space sector to the benefit of society and in support of the activities of its members

➤ Experience with the EU Framework Programme

- Members have experience and past projects with
 - FP6, FP7
 - EU Phare programs
 - EU Structural funds programs
 - Private business development
 - Other R&D and business activities

Global monitoring of environment and security; Geo-informatics

E-Health and telemedicine

Material Science

Electronic products and systems

Hardware and Software systems design and production for space, airborne and in-situ applications

(ask for details at info@castra.org)

Example Projects in ...

Global monitoring of environment and security

National early WARNING SYSTEM Architecture for Natural Disaster prevention and security

Center for Aerospace Monitoring Architecture

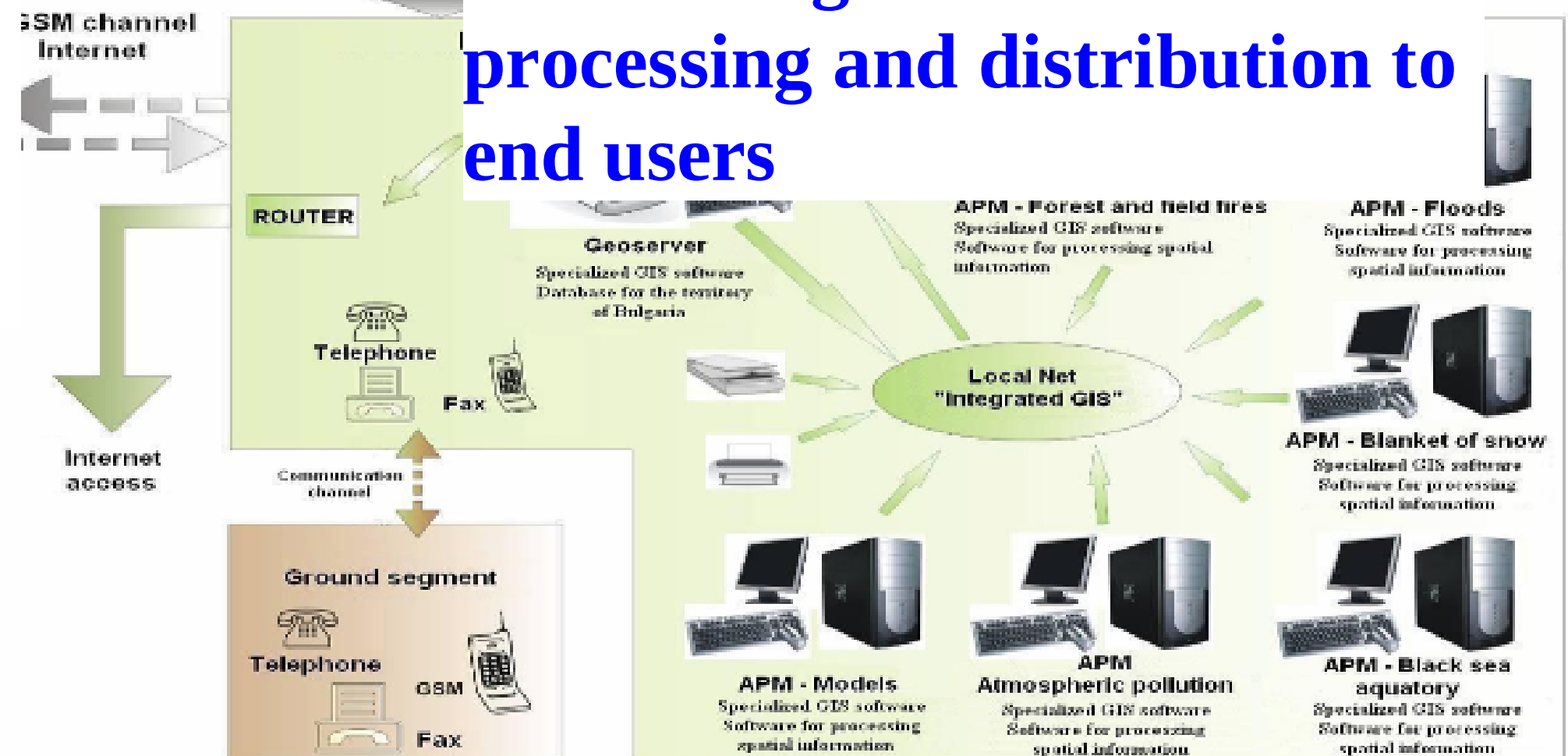
SPACE segment – commercial satellite data or small national satellite and ground stations



Air segment – unmanned remote controlled aircraft and sensors



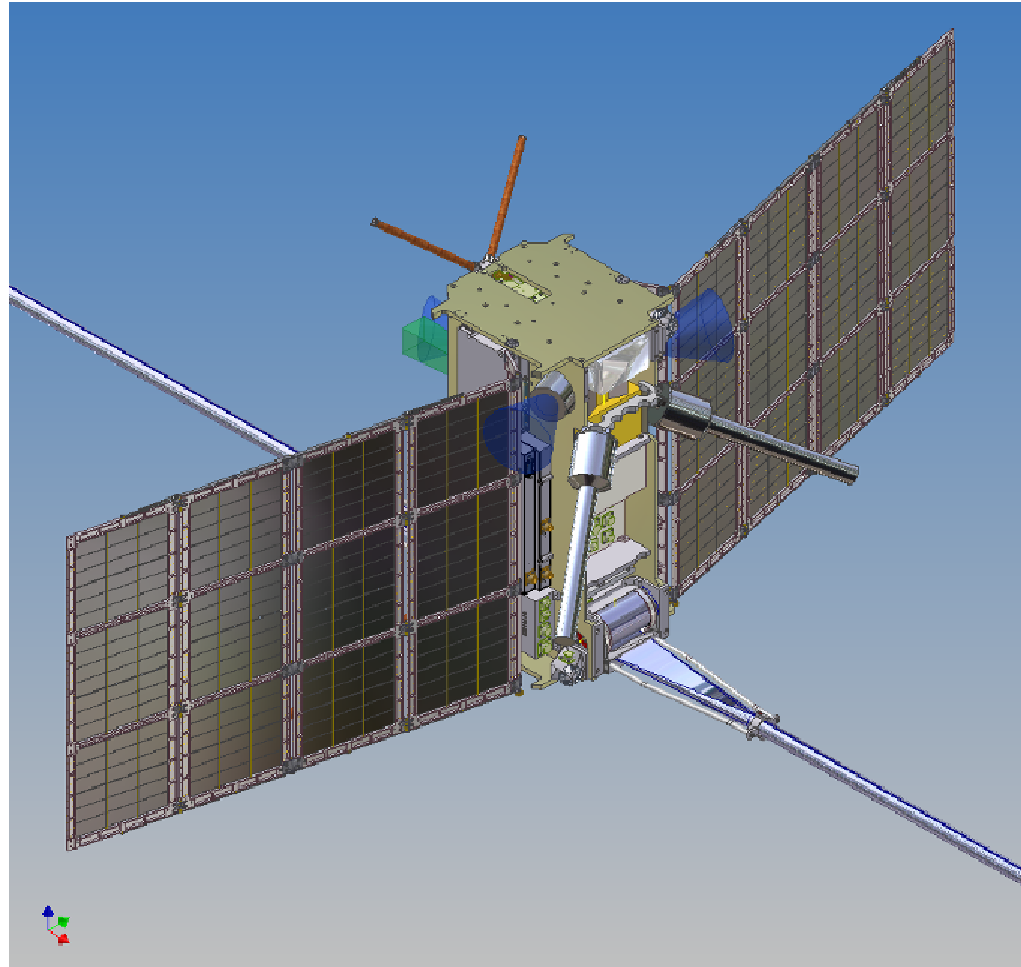
Ground segment – data processing and distribution to end users



Example Projects in ...

Development of MICRO SATELLITE PLATFORMs

- e.g. BALKANSAT-1 project example

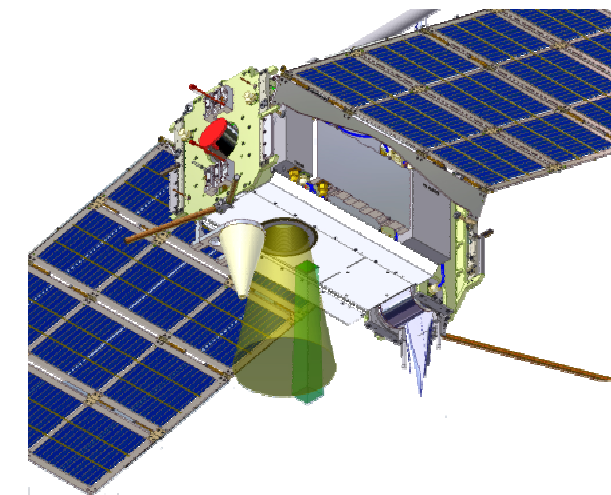


Monitoring of natural and anthropogenic disasters, incidents, and catastrophes;

Ecological monitoring;

Influence of cosmic factors on the Earth and the Earth's atmosphere;

Others



Basic technical characteristics of the micro-satellite BALKANSAT-1

Mass - 50 kg.

Payload mass (custom sensors and instruments) - 19.4 kg.

Service system - 20.2 kg.

Construction and temperature control system - 10.4 kg.

Orbit - circular quasi-polar, solar-synchronous with height ~ 700 km.

Time of active existence - not less than 3 year.

Telemetry – 3-5Mbit/s (8.4GHz)

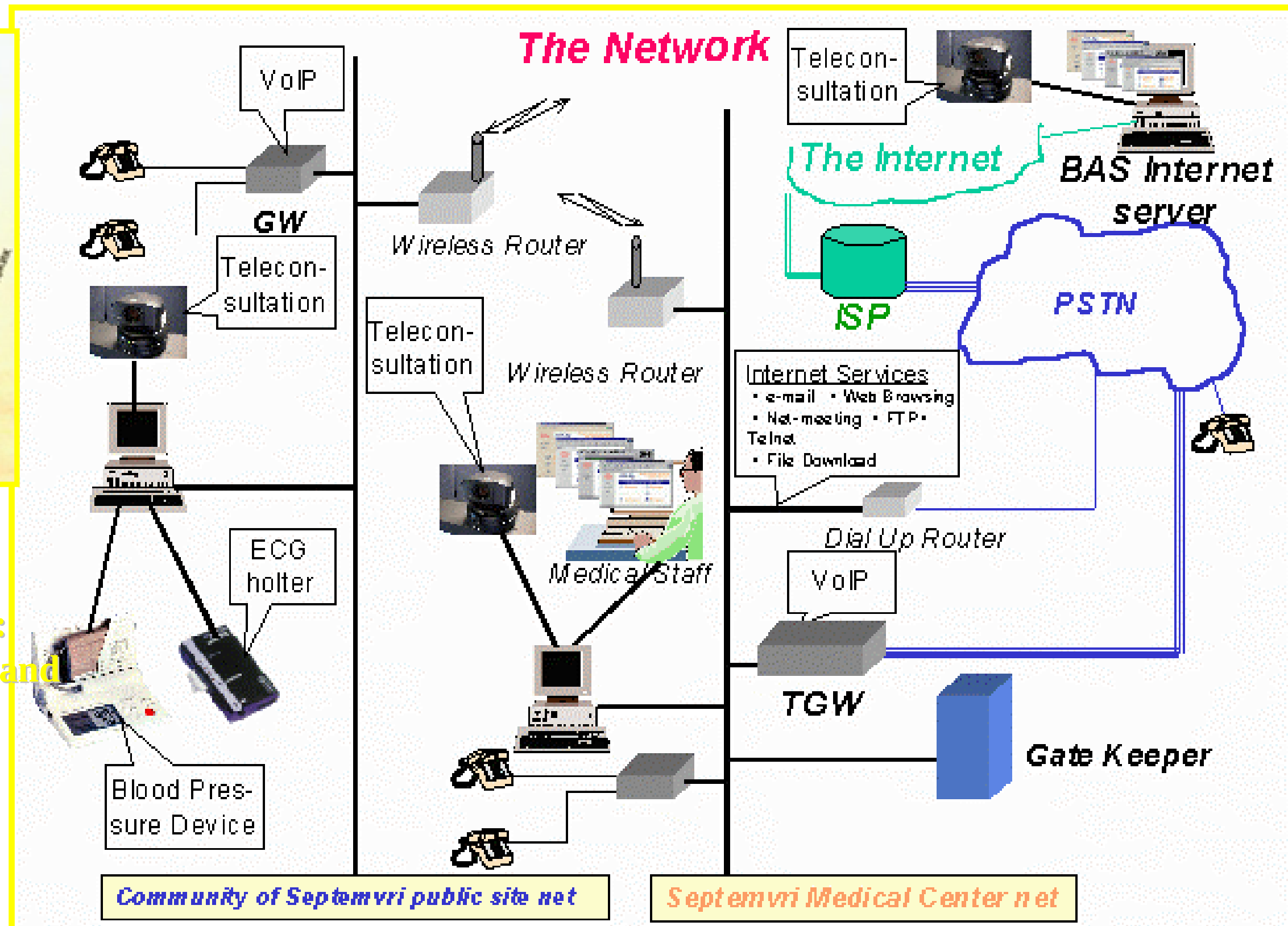
SPACE segment

Example Projects in ...

Bulgaria-ITU pilot project for e-health implementation in Septemvri region, Bulgaria

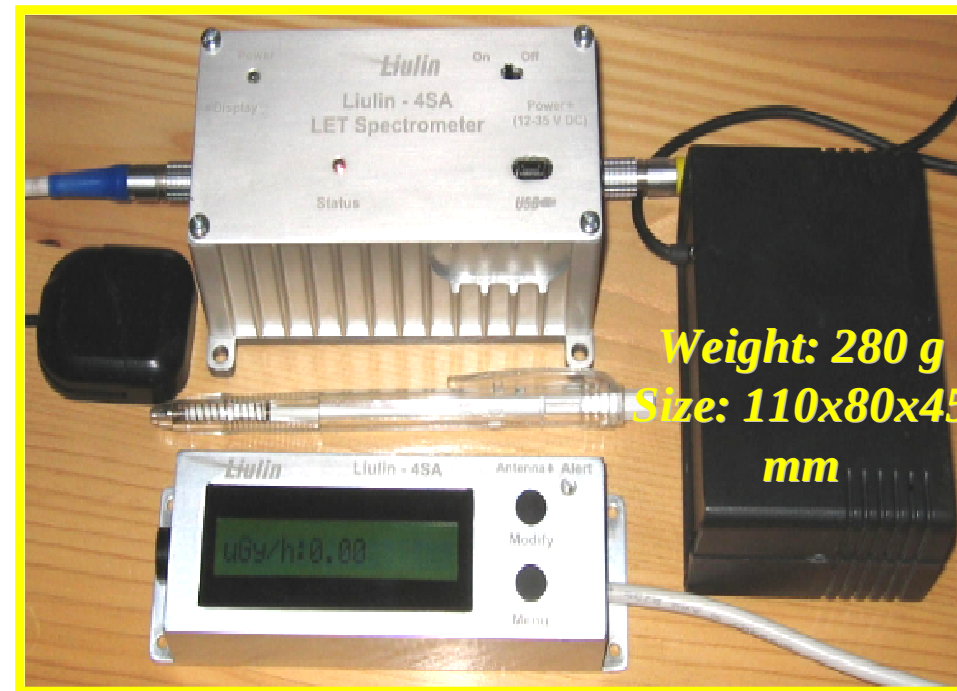
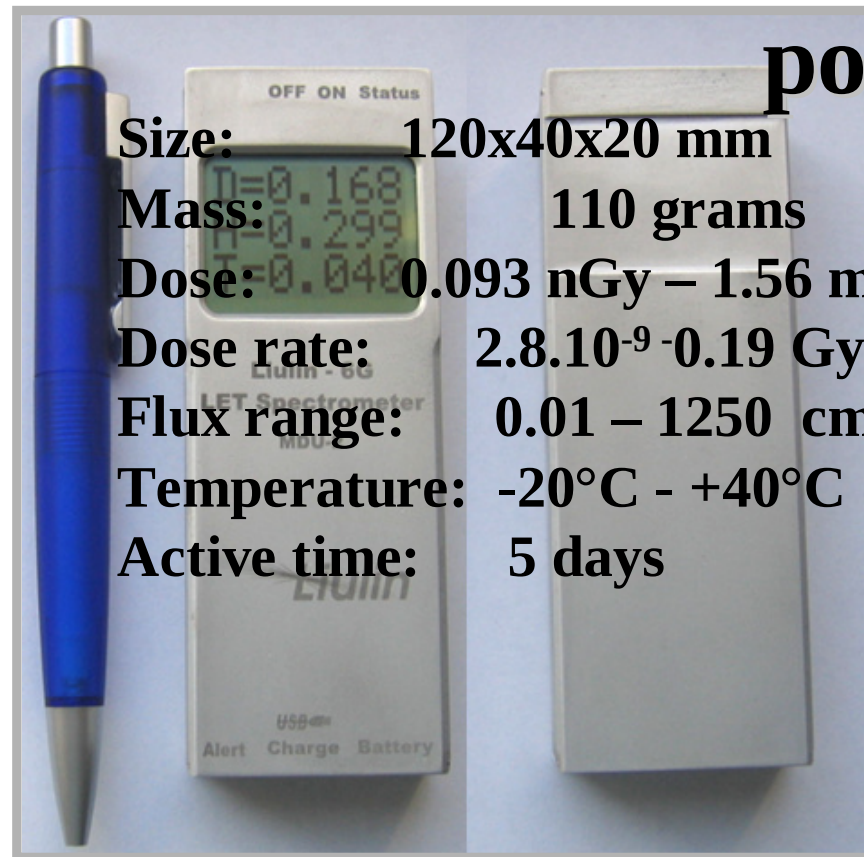


Bulgarian coordinator:
Ministry of Transport and
Communication



Example Projects in ...

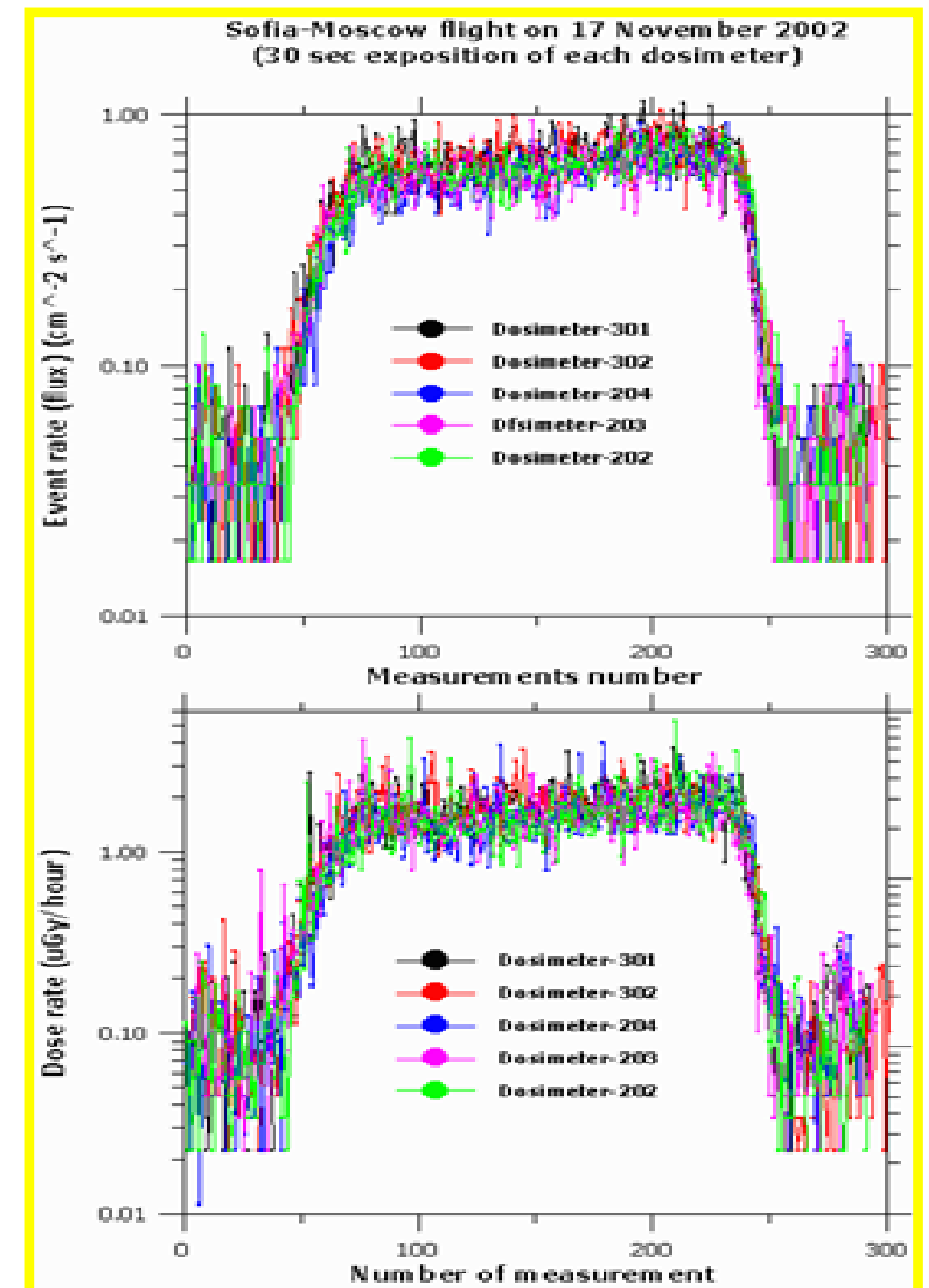
Liulin Series personal dose-meters for radiation dose monitoring - in space experiments and in situ -e.g. in and around Nuclear facilities, medical applications, environment pollution monitoring, R&D works



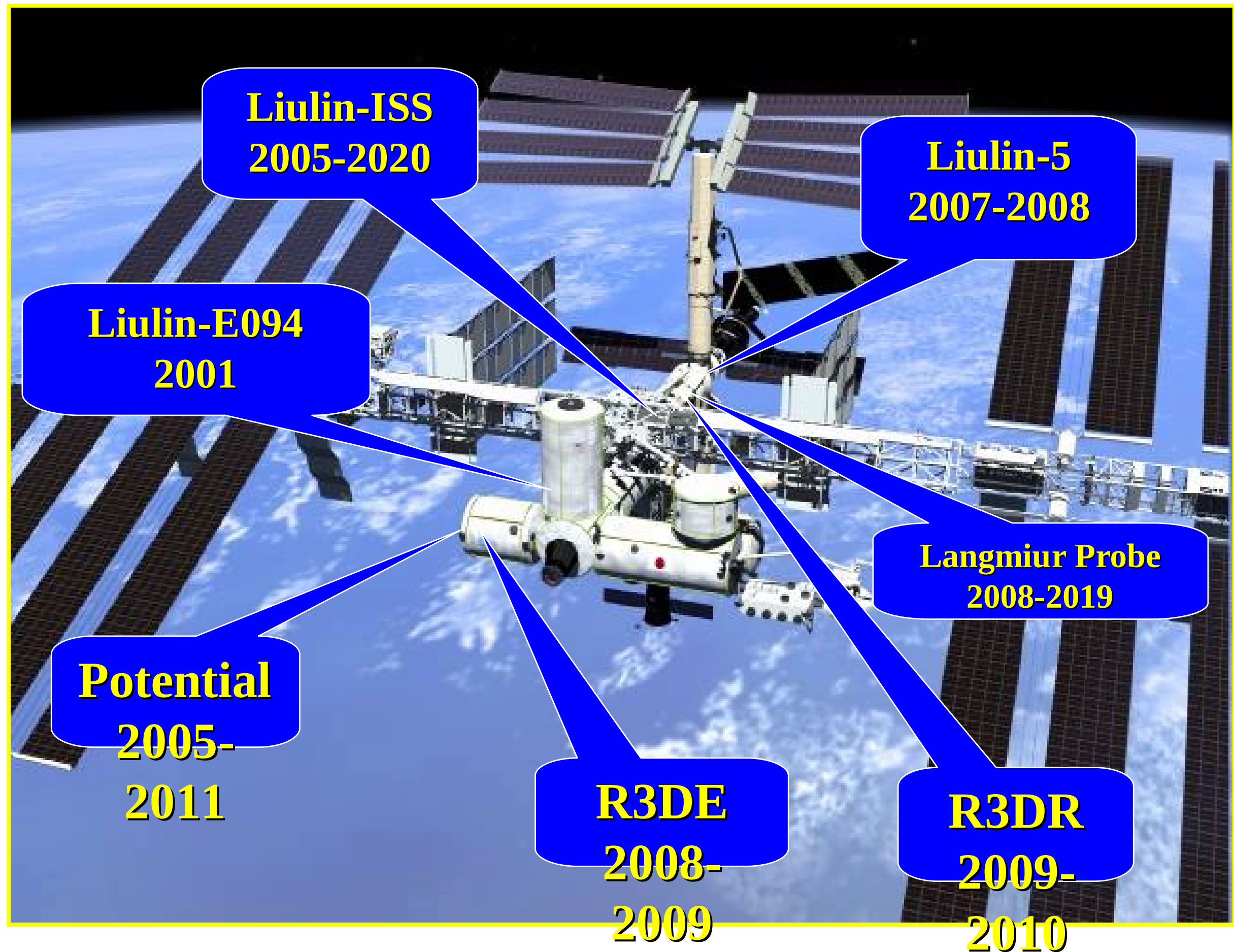
First row: Absorbed dose ($\mu\text{Gy/h}$)
Second row: Calculated apparent $H^*(10)$ ($\mu\text{Sv/h}$)
Third row: Accumulated since the beginning of the measurements absorbed dose (μGy)

Spectrometer with GPS receiver and display for monitoring of the space radiation doses by aircraft pilots

Real Radiation Dose Data from a commercial jet plane



SSRI hardware on the International Space Station

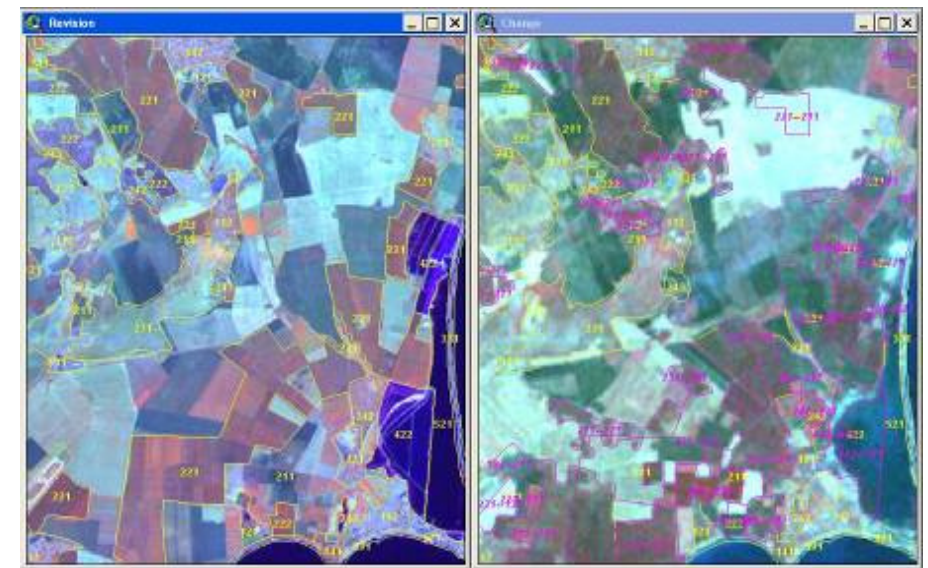
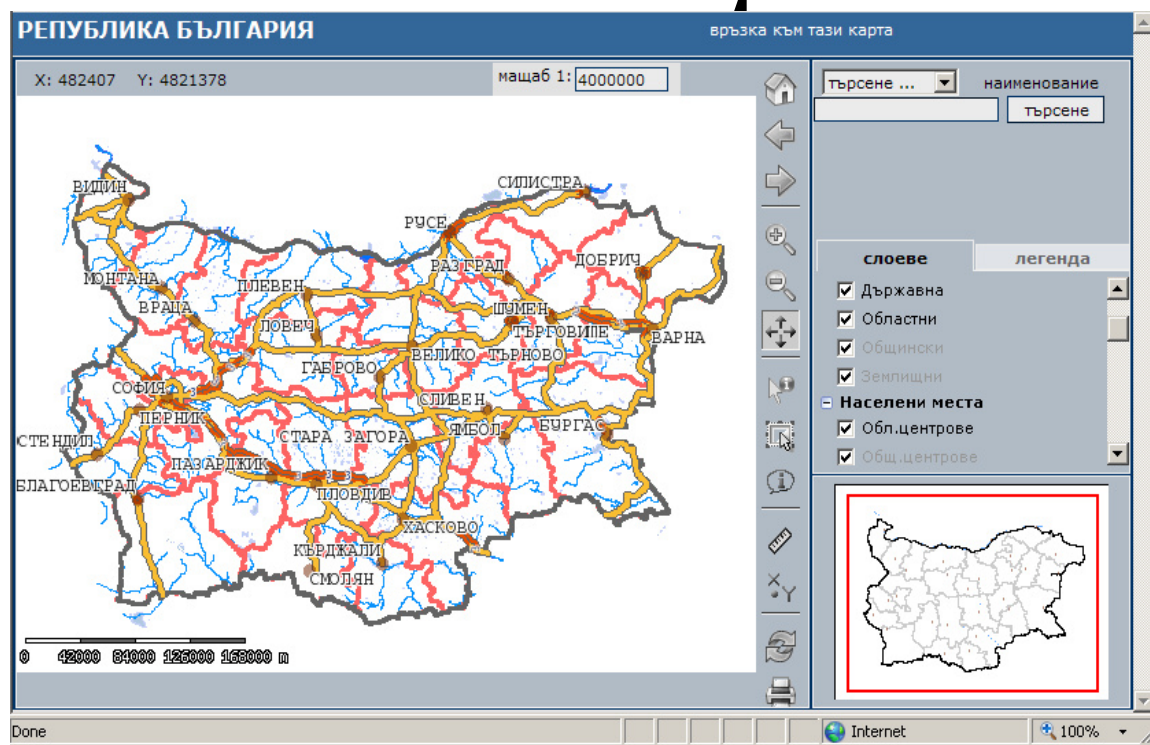


Example Projects in ...

GEO-INFORMATICS : example Web based GIS for Bulgaria

**Interactive
visualization,
search, printing,
dynamic
content**

**environmental pollution monitoring
desertification studies
phenological cycles
LU/LC assessment
soils/minerals identification
disaster management**



**Layers: administrative data, transport,
topography, hydrography, raster topomaps,
CLC2000, NATURA 2000 etc.**

Intended Role in a Consortium

- partner
 - Work package leader (based on the required specific expertise)
 - End user / market access

Contact and further information

➤ Address data of the person to contact
info@castra.org

➤ Relevant links / references
www.castra.org

http://castra.hubavo.com/wp-content/uploads/2011/02/Bulgaria_space_status_jan2011.pdf