



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

Marek Banaszekiewicz, Space Research Centre Polish Academy
of Sciences

research organisation

Poland



COSMOS FP7 Space Information Day
19th July 2011, Riga, Latvia





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
 - 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
 - Monitoring of the pre-frontier land areas
 - GMES Security – Support to EU External Actions
 - 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 – Coordination of Earth observation data validation for re-analysis

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

- ***Studies and events in support of European Space Policy***
 - New emerging research needs - reduction of vulnerability of space infrastructure 2



Presentation of **Space Research Centre PAS**

- One of the leading Polish institutes in fields of physics and astronomy
- Founded in 1977
- Branches: Warsaw, Wrocław (Heliophysics), Borowiec (Astreogeodynamics)
- About 60 space instruments built
- Staff: >180 employees
- Scientists: 39
- Engineers/specialists: 72
- Main fields of activity:
 - Space Physics
 - Spatial Geodesy
 - Remote Sensing
 - Technology
- Plays an important role in shaping the national space policy

Presentation of **Space Research Centre PAS**

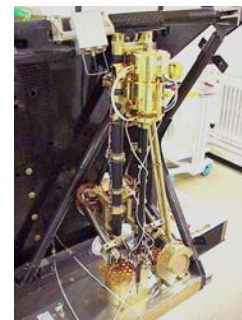
➤ Structure of the organisation

➤ **Science Units:**

- Solar Physics Unit
- Solar System Dynamics and Planetology Group
- Solar Sys. Phys & Astrophis. Group
- Plasma Physics Group
- Planetary Geodesy Department (Physical Geodesy Laboratory, Satellite Geodesy Laboratory, GNSS Laboratory, Astrogeodynamics Observatory Unit)
- Earth Observation Group (including GMES Group)

➤ **Space Technology Units:**

- Space Mechatronics and Robotics Laboratory
- Photonic and Micromechanics Laboratory
- Laboratory of Satellite Applications of FPGA
- Electronic Constructions Laboratory



Presentation of **Space Research Centre PAS**

➤ Experience with the EU Framework Programme, involved in projects:

➤ FP6

- PEARL
- LIMES
- ASTRO+
- TANGO
- BalticTime
- PTF
- Harrison
- Fidelity

➤ FP7

- SOTERIA
- ULISSE
- Geoland2
- G-MOSAIC
- AEROFAST
- GEONetCaB

➤ other projects

The logo for G-mosaic, with 'G-' in a bold, blue, sans-serif font, followed by 'mosaic' in a lighter blue, lowercase, sans-serif font. The letter 'o' is replaced by a small globe icon.The logo for geoland:2, with 'geoland' in a blue, lowercase, sans-serif font, followed by ':2' in a larger, blue, sans-serif font. The logo is set against a light blue rectangular background.



Competencies

- **Space projects** (inter alia: BRITE-PL, BEPI COLOMBO, HERSCHEL, RELEC, OBSTANOVKA, ASIM, TARANIS, IBEX, ROSETTA, Coronas-Photon, Phobos-Grunt, MARS EXPRESS, VENUS EXPRESS)
- **Data acquisition** (the Astrogeodynamical Observatory in Borowiec, the Geodynamic Laboratory in Ksiaz, GNSS Observatory in Warsaw – Galileo, EGNOS, EOS Stadion in Władysławowo)
- **Interpretation and modelling** (solar physics, heliosphere, Ionospheric and magnetospheric physics)
- **Physical and geodetical studies of planets and Earth**
- **Applications** (GMES: LIMES, G-MOSAIC, geoland2, heliogeophysical prediction service)
- **Data exploration and dissemination** (ULISSE)
- **Space Technology Development** (e.g. MUPUS, FPGA DCDC, SPEKTROP, AEROFAST, mole penetrator 'KRET', geological penetrator CHOMIK)



Contact

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- <http://www.cbk.waw.pl/>



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

**GEOSYSTEMS Polska Ltd.
Warsaw, Poland (SME)**



**COSMOS FP7 Space Information Day
19th July 2011, Riga, Latvia**

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*

- 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 – Coordination of Earth observation data validation for re-analysis
- GMES Climate Change – Data archiving and exchange
- Consolidation of user requirements for GMES

Presentation of **GEOSYSTEMS Polska Ltd.**

➤ Short history of the organisation:

GEOSYSTEMS Polska, Ltd. is a remote sensing, photogrammetry and LIS/GIS laboratory and consultancy involved in various types of geographic data processing, spatial analysis and geovisualisation established in 1995 in Warsaw, Poland. The growing demands for up-to-date, highly accurate and reliable spatial information indispensable for planners, developers and decision-makers create good environment for the company development.

GEOSYSTEMS Polska, Ltd. is a sister company of GEOSYSTEMS GmbH, Munich, Germany. From the very beginning it acted as an official distributor of ERDAS Inc. image processing, eCognition and Laserdata LIS software and an authorised distributor of wide portfolio of satellite imageries offered by EADS Astrium Ltd. and Euromap GmbH.

Good ideas, dedication, hard work, a lot of effort and luck made it possible to develop a successful company for over 16 years on the Polish and international spatial information market. Its core business remains unchanged and concerns operational geographic imaging, geodata generation, applied geographic modelling, delivering services and products for e.g. the biggest Polish telecoms, environmental and agricultural institutions.

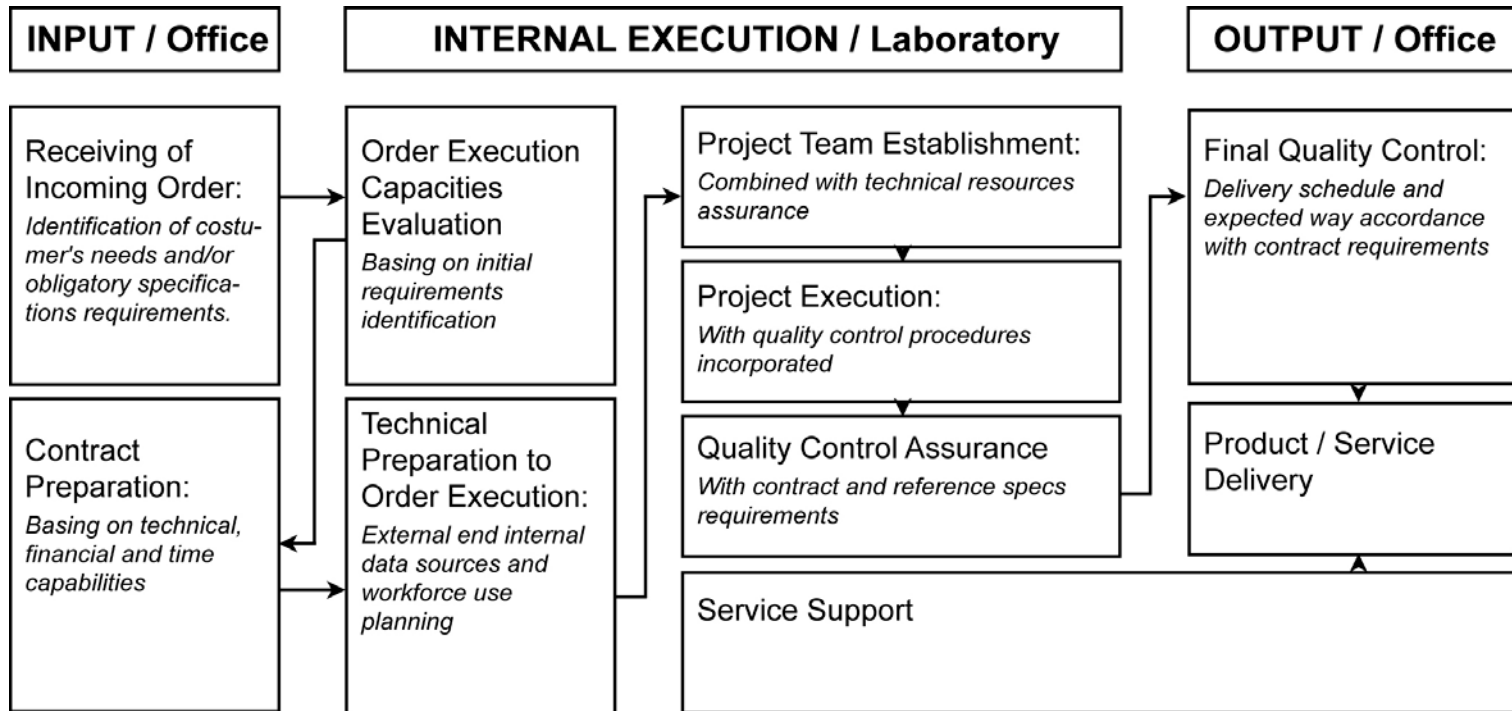
Since 1995 it carried out several international and domestic R&D but mainly production-oriented projects mainly in the scope of:

- Land cover/use mapping
- DTM & DEM generation
- Wide scope of vector data production (for car navigation)
- Evaluation of optical satellite data
- Evaluation of microwave satellite data



Presentation of **GEOSYSTEMS Polska Ltd.**

➤ Structure of the organisation



Presentation of **GEOSYSTEMS Polska Ltd.**

- Experience with the EU Framework Programme – none. But the company on the other hand is experienced in **cooperation with ESA** in PECS supported activities:

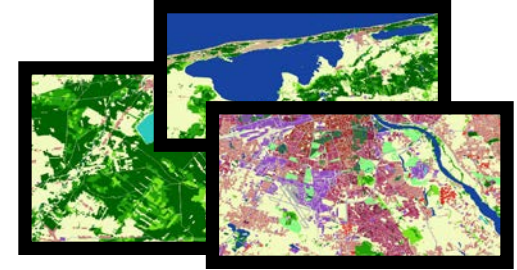
GSE Forest Monitoring – Global Monitoring for Environmental Security Service Element Forest Monitoring - **Forest Monitoring Inputs for National Greenhouse Gas (GHG) Reporting - Polish Service Case 2009/2010**. In the initial phase project conducted as a within GAF AG Munich, Germany. Works which covered entire Polish territory were focused on the particular products elaboration such as: **Satellite Orthomosaics, Forest Maps and Change Maps between 1990** (base year for Kyoto Protocol) **and 2006**. Using additionally in-situ information investigators were able to assess **National and Regional Volume, Biomass and Carbon Statistics** and its changes between the years covered by monitoring. Basing on the set of map products an OGC/INSPIRE compliant web sever were established.



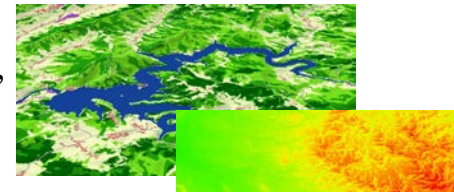
Presentation of **GEOSYSTEMS Polska Ltd.**

➤ Main products – **Spatial data for Poland**

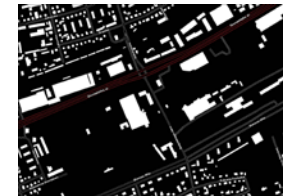
Raster data (e.g. for Land Cover: resolution 5 and 20 m on the basis of IRS- P6 Resourcesat, airfotos, in-situ measurements, image acquisition 2006-2011, method object classification, thematic minuteness 24 classes),



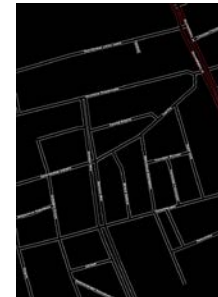
DTM (data sources topographical maps and photogrammetric survey, resolution 20 and 5 m, elevation accuracy 1,5-12 m, geometrical accuracy 10-15m)



3D- Data (data source: IRS- P6 Resourcesat, airfotos, acquisition 2003-2010, vector format, elevation accuracy 1-2m, scale 1: 5000 to 1:25 000, method laser scanning and spectroscopic analysis)



Vector data (e.g. for car navigation system: data sources in situ measurements, airfotos and satellite data, acquisition 2011 planimetric accuracy 0,5- 1 m, scale 1: 5 000 and 1: 20 000, method laser scanning and spectroscopic analysis)



Presentation of **GEOSYSTEMS Polska Ltd.**

➤ Main products - **AutoMapa®**

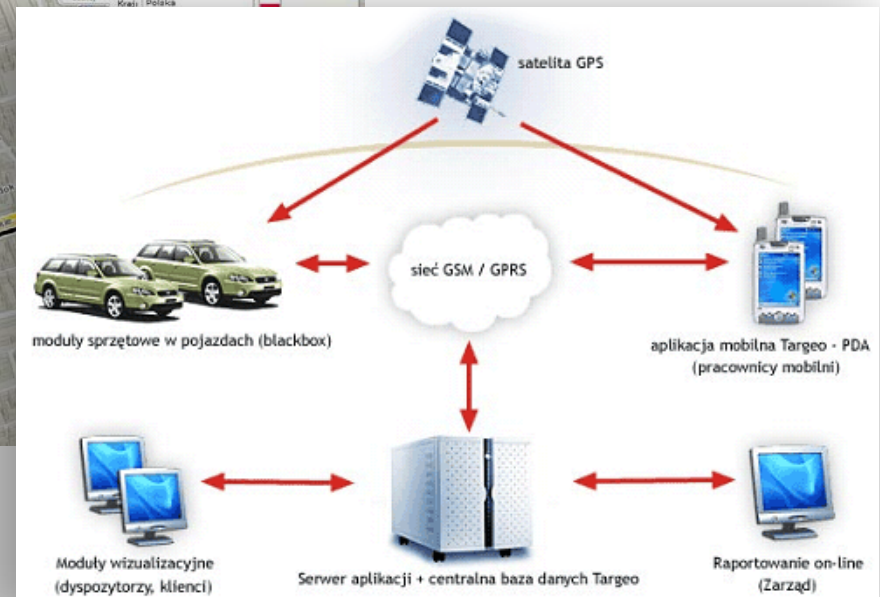
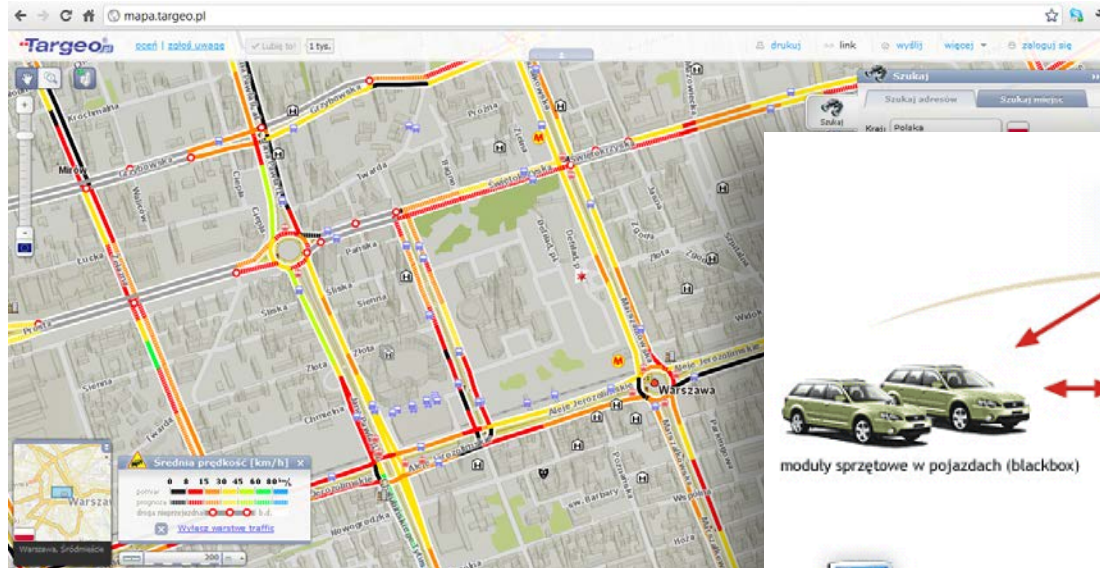
The company is the co-producer of leading solution on Polish market of car navigation systems (30% of market and over 270 000 users). Author's software (automapa.pl) developed by cooperating company – Aqurat, Ltd., connected with GEOSYSTEMS Polska author's comprehensive data base created a precise and reliable tool for many popular and professional applications. Great number of [AutoMapa®](#) users creates a community supporting the development of both data and software via dedicated web portals. The system provides also traffic information.



Presentation of **GEOSYSTEMS Polska Ltd.**

➤ Main products - **Targeo®**

In cooperation with other external entity – Indigo, Ltd. basing on the same data set and mapping technology, there was also possible to develop map web portal [Targeo®](#) and GPS/GPSR based monitoring system. In both cases traffic information is also available.



Competencies

➤ International:

- **GSE Forest Monitoring** – Global Monitoring for Environmental Security Service Element Forest Monitoring - **Forest Monitoring Inputs for National Greenhouse Gas (GHG) Reporting - Polish Service Case 2009/2010** within PECS projects (project management, cooperation with a German Consortium GAF AG Munich and ESA, data preparation, generation and analysis, cooperation with private companies and scientific research institutes), generation of orthomosaics, forest thematic maps and Land Use / Land Cover Change Map as well as National and Regional Volume, Biomass and Carbon Statistics, web map service OGC/Inspire compliant,
- **PHARE Mera Land Degradation Mapping** (project management, data processing, spatial analysis), National Focal Point: Institute of Geodesy and Cartography), processing with ERDAS Imagine Software,

➤ National:

- **Wireless networks** planning using 3D terrain models (production of land use maps, DEMs and DTMS, orthophotomaps for all telecommunication users in Poland,
- Cooperation with Forest Research Institute Forest Fire Protection Department (cooperation e.o. with European Forest Fire Information System) for generation of **Forest Fire Danger Maps** (dataset, data preparation and analysis, generation of thematic maps),



Support of National Committee for Flood Protection and National Water Management Authority (application of remote sensing data and GIS on flood monitoring: data visualization and analysis), preparation of **flood hazard and risk map for Dunajec Watershed in Poland (EU Flood Directive)** for HDI PLC insurance company.

Intended Role in a Consortium

- **a partner role** in a Consortium cooping with the Work Programmes e.g. climate change or environmental hazards (emergency management),
- **Work package SPACE:** our task depends of the project (flexible),
- **End Users:** both commercial companies, private clients and public authorities as e.g. Ministry of the Environment e.o. Department of Climate Change and Atmosphere Protection Department of Forestry, General Directorate of the Environmental Protection e.g. Forest Research Institute
- **Cooperation with:** national and international entrepreneurs as well as scientific research institutes.

Contact details

➤ Contact Persons:

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www.geosystems.pl

➤ Relevant links / references

www.automapa.pl

www.targeo.pl

<http://www.geosystems.pl/gsefm/>

➤ Thank you for your attention!

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

Institute of Geodesy and Cartography

The Department of Remote Sensing

Research Centre

Poland, Warsaw



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Draft Call Topics that we are interested in (1)

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 - Climate Change – GMES service coordination –
Coordination of Earth observation data validation for re-analysis
 - GMES Climate Change – Data archiving and exchange
 - Consolidation of user requirements for GMES Cross-cutting activities

Draft Call Topics that we are interested in (2)

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

➤ ***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 roadmaps for a European Research framework programme (workshop activities)

➤ New emerging research needs - reduction of vulnerability of space infrastructure

Presentation of **the Institute of Geodesy and Cartography**

- The Institute of Geodesy and Cartography consists of five departments:
 - Remote Sensing
 - Spatial Information Systems
 - Photogrammetry
 - Cartography
 - Geodesy

Presentation of the Institute of Geodesy and Cartography (2)

Short history:

- founded in 1945,
- has a legal status, acting on the basis of regulations concerning research institutions
- the Institute works for different ministries, governmental and self-governmental authorities, domestic and foreign scientific institutions and takes part in many domestic and international research projects.

Presentation of the Institute of Geodesy and Cartography (3)

→ Experience with the EU Framework Programme:

→ **6th EU Framework Programme:**

→ **PACINE** – „Remote sensing methods for environmental assessment of Eurasian peatlands and associated ecosystems under climate change”

1.01.2007 – 31.12.2008

→ **Geoland** - “GMES products & services, integrating EO monitoring capacities, to support the implementation of European directives and policies related to ” land cover and vegetation.”

1.01.2004 – 31.12.2006

Project coordinator - Infoterra GmbH, Germany

Presentation of the Institute of Geodesy and Cartography (4)

→ Experience with the EU Framework Programme:

→ **7th EU Framework Programme:**

→ **Geoland 2** - towards operational GMES Land Monitoring Core Service

1.09.2008 – 31.10.2012

Project coordinator: Astrium, Germany

→ **CEUBIOM** – „Classification of European Biomass Potential for Bioenergy Using Terrestrial and Earth Observations”

1.03.2008 – 30.11.2010

Project coordinator: Geonardo Environmental Technologies Ltd, Hungary

Presentation of **the Institute of Geodesy and Cartography** **(6)**

→ Experience with the EU Framework Programme:

→ **7th EU Framework Programme:**

→ **MONINA** – Multi-scale Service for Monitoring NATURA 2000
Habitats of European Community Interest

1.12.2010 – 30.11.2013

Project coordinator: Centre for Geoinformatics, Austria

• **GIONET** - GMES Initial Operations – Network for Earth Observation
Research Training

1.01.2011 – 30.09.2014

Project coordinator: University of Leicester

Competencies

- **The Department of Remote Sensing focuces on assessment of satellite data in following disciplines:**
 - Climate Change
 - Land use and land cover changes
 - Wetlands
 - Bioenergy
 - Environmental hazards:
 - Droughts
 - Floods
 - Forest fires
 - Agriculture:
 - Forecasting of yield
 - Drought detection and monitoring
 - Crop condition assessment and crop recognition

Contact:

Institute of Geodesy and Cartography

Katarzyna Dąbrowska-Zielińska

Head of the Department of Remote Sensing

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Website: www.igik.edu.pl