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## Profile of New Sustaining Members

### GEOMETRAL, Técnicas de Medição e Informática, S.A.

**GEOMETRAL, Técnicas de Medição e Informática, S.A.**, established since 1985. Its social purpose is to "render services and consultancy in the ambit of research and management of natural resources, renewable and non renewable and also, the development of activities related to data processing to support inventories, inquiries, and engineering projects. Namely, its observation and control, using for that Spatial and Aerial Remote Sensing, Photogrammetry, Direct Measurement, Calculus and Statistics, as well as importation, representation and commercialization of that kind of services and, also equipments and products with the same purposes."

**GEOMETRAL**, incorporates a highly skilled staff working in the areas of geographical engineering, computer sciences, rural and urban planning, photogrammetry, satellite image processing, remote sensing and common earth sciences.

This combined expertise is the main reason for the company's widely diversified activity and its contributions to the development of modern land management technologies.

**GEOMETRAL's** effort in applying informational technology to cartography, gave a new incentive to the conventional area of activities (mapping and site surveying) and developed new markets for digital cartography: cartographic products for planning or to support decisions,

urban and rural inventories, environmental studies, rural and urban cadastre, facilities mapping.

**GEOMETRAL**, is one of the major cartographic data supplier for Municipalities, Public Works Companies, Urban and Rural Planning Institutions in Portugal.

Besides the main activity of the company, **GEOMETRAL** is also the portuguese representative of Satellite Images (Landsat, ERS-1, MOSS and NOAA) and has agreements for the distribution of software to support Geographical Information Systems.

#### Cooperation agreements

**GEOMETRAL's** concern with research, development and technical capability, was formed in the basis of several Cooperation Agreements with:

- The National Agronomics Station, the Rebelo e Silva Chemical Agricultural Lab and the Forestal Institute, in the ambit of specific projects.
- The National Engineering and Industrial Technology Institute - NEITI and the Investigation and Development Company - IDC that lead to the settlement of the SATCART consortium, responsible for the introduction in Portugal of the high resolution image and satellite processing technology and that has been executing several projects of I&D subsidized by NATO/SFS, JNICT and EU.
- The University of Évora.
- The Earth and Space Science Institute (ESCI), to develop treatment techniques for geophysics information.

- The Cartography and Cadastre Institute of Angola.

#### Managing information

**GEOMETRAL** is a private company settled by public deed on 6th May 1985, on the 9th Notary's Office in Lisbon.

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**GEOMETRAL** has the letter-patent N°15/96 CT given out by the Portuguese Institute of Cartography and Cadastre, published on Diário da República in 21/06/96 and renewed in 3/10/01, for the accomplishment of activities as Topography and Leveling, Aerial Triangulation, Photogrammetric Restitution, Numbering of Cartographic Information, Data Processing, Orthorectification.

**GEOMETRAL** has the letter-patent N.° 14/989 CD given out by the Portuguese Institute of Cartography and Cadastre, for the accomplishment of activities in the domain of the Urban and Rural Cadastre.

**GEOMETRAL** has the Certificate Registration N.° PT 02 51602.0 given out by SGS ICS, since January 2002, that certifies the quality system has been assessed and registered as meeting the requirements of NP EN ISO 9001:2000. The scope of registration is the activities of Cartography, Cadastre and Remote Sensing.

## INFOTERRA GmbH

Launched in January 2001, Infoterra GmbH is a 100% owned subsidiary of EADS Astrium, Europe's leading satellite company, Infoterra GmbH was specifically founded to prepare and conduct the commercial exploitation of TerraSAR-X,

Infoterra GmbH was formed by spinning-off the 'Earth Observation Services' division of the former Astrium GmbH, Germany, and is part of the European Infoterra Group together with Infoterra Ltd. (former National Remote Sensing Centre Ltd. NRSC) in the United Kingdom. Together with the French Spot Image S.A., the Infoterra Group forms EADS Astrium's Earth Observation Services Group.

Today, Infoterra GmbH's staff of 25 serves and supports both, public and private customers with geo-information on cartography, land use / land cover, and forestry as well as - with a focus on GMES (Global Monitoring for Environment and Security) and thematic mapping services. Following the multi mission concept and based on a wide network of scientists, service providers, and end-users, Infoterra GmbH continuously develops new and ambitious processing procedures as well as products with improved information content,

Through creation of the InfoTerra/TerraSAR initiative in the late 90's, the Infoterra GmbH team has established the foundation for the market-derived business development approach for innovative commercial Earth observation. In 2004, Infoterra GmbH has started marketing the exclusive commercial exploitation of TerraSAR-X.

Infoterra GmbH supports the European GMES programme, which was initiated jointly by the European Space Agency (ESA) and the European Commission (EC), Infoterra understands this initiative as a major opportunity to provide operational geo-information

Infoterra is ISO9001:2000 and ISO 14001 certified and guarantees that all work is completed according to internationally accepted quality and environmental standards. Infoterra GmbH is a founding member of GEOkomm, a federation of the geo-information industry in Berlin/Brandenburg and is also represented in the German Association of Geo-Information Industries (Deutscher Dachverband der GeoInformationswirtschaft 'DDGI'). Using these platforms, Infoterra GmbH is able to support the definition of industrial standards.



## METU, Department of Geodetic and Geographic Information Technologies

Geodetic and Geographic Information Technologies (GGIT), which was established in 1998, is an interdisciplinary program leading to MS and PhD. The main purpose of the program is to provide graduate education and pursue research in Geographic Information Science (GIS), Remote Sensing (RS) and Space Geodesy (SG). The program is designed to meet the growing demands for skilled manpower at graduate level particularly in areas of digital mapping, satellite techniques, remote sensing techniques, spatial analysis, and Global Positioning Systems (GPS). The program emphasizes theoretical as well as applied multi-

disciplinary research. GGIT applications in integrated mapping; land use and resource planning; city planning; automated mapping; facility management; geological mapping; as well as integration of GIS with GPS and RS are emphasized.

Besides the graduate education, it is also aimed to gather researchers as well as practitioners, knowledge engineers and domain experts from allied disciplines from academia and industry who are working on various research fields of remote sensing, geographic information systems, spatial/spatio-temporal data mining, discuss recent developments, share hard-learned experiences, and shed light on future development of the related areas by organizing workshops, seminars, and taking parts in the related projects.

## INTA SPACETURK

INTA SPACETURK is founded by Cukurova Group and Uydusan SA and is the leading commercial producer of high-resolution satellite imagery and distributor of geographic information products and application services in Eurasia region. Our multi-source and multi-capable identity assures the best service to wide range of commercial, civil and government clients.

INTA SPACETURK executes the imaging rights of Space Imaging's Ikonos satellite in Eurasia. The imaging area is the communication cone of 4,600 km diameter, having the Regional Operations Center in Ankara, Turkey. Ikonos is the first commercial 82-centimeter resolution imagery satellite launched in 1999. Products derived from Ikonos satellite are among the most sophisticated geographic information products commercially available in terms of clarity, resolution, spatial accuracy and content

The Company also performs imaging with SPOT 5 satellite. The 5-meter resolution SPOT-5 has an outstanding collection capability and oversampling methods enable users for 2.5-meter resolution. Products obtained from SPOT 5 satellite provide our customers imagery with high collection capabilities and reasonable resolutions at very affordable prices.

In addition to the outstanding quality of our products, Inta SpaceTurk is committed to fulfill its customers' requirements relating to application projects. Our production and project application groups, located in Golbasi Regional Operations Center and Bilkent University Technopark Site, serve the most customer-oriented, prompt and workable solutions.

On the other hand, INTA Spaceturk's year 2006 strategies include investment in large scale (1:1000 – 1:5000) digital photogrammetric map production by aerial photographs.

## PROJECT APPLICATIONS

Today most of the satellite images are used in Geographical Information System (GIS) projects on end-user level, rather than classical remote sensing projects. The main reason is up-to-date and cost-effective base data production, which is one of the most significant steps in GIS projects. In INTA SPACETURK, we have also initiated very important projects in engineering and Geographical Information Systems using not only our imaging tools and but also the collected images as 'inputs'. In the projects undertaken by our company, each and every step including

- Satellite imagery rectification and orthorectification
- Vector data generation on image
- Transformation of CAD data to GIS data
- Digitalization of non-digital maps and plots
- Topographical analysis
- 3D analysis
- Terrain vegetation – utilization mapping
- Application software development
- System analysis and design
- Training

is realized on a turn-key basis.

In INTA SPACETURK, we offer cost-effective and come-effective solutions to our customers by employing all these capabilities and abilities. Our satellite images can be used as end-products in dynamic and complex systems which are affected by a lot of factors such as agriculture, telecommunications, forestry, mapping-cadastre, transportation, local governments and disaster management; furthermore they can be used as inputs in projects carried out by our company and offered to our customers as solutions. Two important examples to such projects include the Disaster Decision Support System (DDSS Package), Satellite Istanbul Guide and Kayseri Water and

Sewer Services Administration (KASKI) Subscriber Information System projects developed by our company. In both projects, all phases from system analysis to development of application software and training were carried out by INTA SPACETURK.

At the local-government level, INTA SPACETURK has provided services for more than twenty municipalities, mostly of metropolitan cities. Although some of these services involved only the providing of base imagery, a lot of projects have been carried out to offer solutions particularly for subscriber tracking and infrastructural planning in water and sewer services administrations. The latest example to these is the Subscriber Tracking System project for Kayseri Water and Sewer Services Administration.

- Vector production of 90,000 buildings and 15,000 road segments with orthorectified IKONOS satellite imagery with a coordinate accuracy of 1 meter for the General Directorate of KASKI, a large institution providing services for roundly 90,000 buildings and 200,000 subscribers in a service area of 45,000 hectares
  - Transfer on to digital environment of questionnaires which include 200,000 subscriber Information collected from site
  - Transfer of all graphic data such as Settlement Plan, infrastructure maps to GIS environment and database entries
  - Development of application software for approximately 30 units to ensure KASKI automation
  - Query and analysis based on correlated database management of all data
  - System integration and training phases have been carried out by INTA SPACETURK, with its own means.
- Disaster Decision Support System (AKDS), is an integrated information management system developed by INTA SPACETURK. System data includes:
- IKONOS Satellite Imagery for production of updated base and graphic data
  - Building information form, sketch information form and critical facilities information form data collected from the field

and other graphic data (geology, soil, telecom, electrification, oil-natural gas pipelines, etc.). This system, which we have produced based entirely on our own means, is composed of two sections, namely graphic and verbal, which incorporates all the necessary functions such as:

- New verbal and graphic data generation and editing,
- Single or interactive cross-query and reporting
- Locational analyses

#### OTHER ACTIVITIES

Inta Space Systems, Inc. expands its market with new space sensors and new applications in its second year of operation. The Company gets access to SPOT 5 satellite in parallel to Ikonos, being a one-stop-shop for its customers. Jean-Marc Nasr, CEO of Spot Image and President of Inta signed SPOT Channel Partnership Agreement on September 29, 2003 in Istanbul. In addition to new sensors, Inta opens new software development office at Bilkent University Cyberpark to produce Location Based Services, a fast growing market mainly in wireless industry. These new approaches and developments are collected under Inta SpaceTurk brand name.

Inta SpaceTurk tasks Ikonos from its ground station in Ankara and collects 1-metre resolution imagery. 1:5000 scale maps and GIS requirements of most Turkish cities are fulfilled by Ikonos imagery. Imagery collection for Land Parcel Identification System Project in Poland and Rural Cadastral Project in Nahchivan of Azerbaijan performed in shortest time. As reported in the media, Inta SpaceTurk collected more than 200,000 sq.km of imagery before and during the Iraq War.

SPOT 5 satellite launched in 2003 by CNES of France and operated by Spot Image. The satellite collects 2.5 and 5.0 m resolution imagery. SPOT 5 has an outstanding capability of collecting large areas and enables low scale mapping with exceptional stereo collection capacity with HRS instrument. We will mainly utilize the Spot 5 products for the agriculture, forestry, environment and mapping markets. Inta SpaceTurk leads the Very High Resolution Imagery market in Europe, Middle East and Central Asia.

### Istanbul Technical University - Centre for Satellite Communications and Remote Sensing (ITU-CSCRS)

#### Real-time and archived data and value added products from Turkish satellite receiving station

The mission of the CSCRS is to develop advanced remote sensing and satellite communications capabilities to meet the requirements of the scientific and operational community. Being a major centre of remote sensing expertise,

it has a specific mandate to increase remote sensing awareness in Turkey and the region. We aim to be a leading institution capable of organizing, managing, and executing research and applications projects for civil and military customers at the local, regional, national and international scales. The development of remote sensing and satellite communications skills for our customers and students is supported by comprehensive and tailored education programs.

The ITU-Satellite Ground Receiving Station (SAGRES) was established at the ITU-Maslak Campus in 1996 with



financial support from the Turkish State Planning Agency. As part of the constant renewal process to remain with the "state-of-the-art" it became the "ITU-Center for Satellite Communications and Remote Sensing" (ITU-CSCRS) in May 2003. It was the first ground receiving station dedicated to remote sensing in Turkey. The ITU-CSCRS conducts national and international research & development projects for civil and military customers. As part of the University, it provides educational remote sensing activities and training services covering academic and sectoral concerns. The center comprises two units: The Satellite Ground Receiving Station Unit (SAGRES) and Projects Management Unit. The units are integrated for application and research projects with satellite communications and remote sensing.

The ITU-CSCRS has officially been operational since November 2002 and we downlink data from SPOT -2/4, RADARSAT -1, ERS -2 as well as the Meteosat and NOAA meteorological satellites. Data is archived at the station for future use, and a comprehensive metadata catalogue is maintained to facilitate searching the archive. The Centre is an important facility for Turkey and the region.

The CSCRS has been involved in, and executed, applications in forestry, hydrology, geology, agriculture, fisheries, coastal zone management, marine pollution, urban development, mapping and tailored military applications. The CSCRS actively supports international environmental and

wildlife protection programs such as the Caspian Sea Project (2003, 2004 and 2005) and IMPSAT (2004). Apart from the variety of on-going projects, GIS applications and solutions are provided using our well equipped, modern, GIS facility.

The downstation is a fully operational 24/7x7 activity, and with its large area of coverage (about 3000 km radius), it is particularly suitable for supporting real-time applications requiring quick response such as in pollution management, disaster recovery, and other emergencies. The CSCRS operates a comprehensive set of software for the operational processing of satellite image data, including correction, rectification, enhancement, classification, merging and product generation. Software can be developed in-house to cover specific requirements and contingencies.

With the new investment of 2 Mbits internet connection now established, it is possible to provide reliable FTP based data transfer at high speeds for users with near-real time (NRT) requirements with acquisitions being transmitted within an hour. Alternatively, the centre has 2 VSAT antennas (2.4m and 4.6m diameters) to distribute data and image products via telecommunication satellites working in Ku-band.

Further information about the center, in the first instance, can be obtained by visiting our new website and on-line archive at [www.cscrs.itu.edu.tr](http://www.cscrs.itu.edu.tr).

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