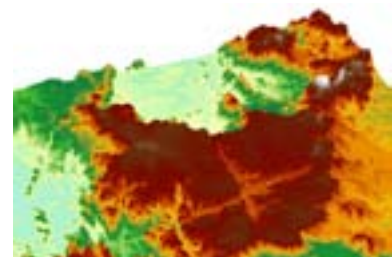
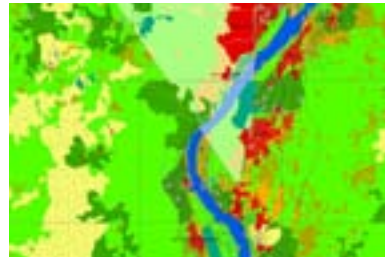
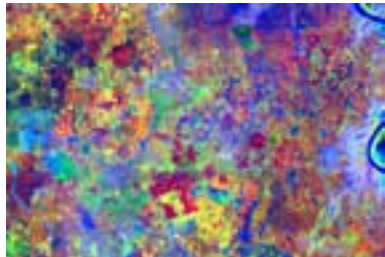
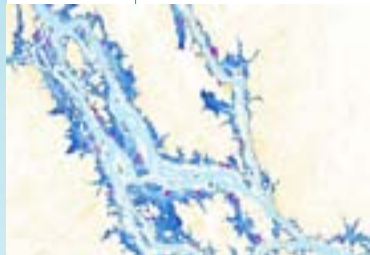


Geomatics



Geomatics



Geomatics play a major role in hydropower, land and water resources and other infrastructure projects. Lahmeyer International's (LI) worldwide projects require a wide range of approaches to the integration of different types of spatial information. To meet these needs, experts with various qualifications offer expertise in land administration surveying, cadastre, surveying, geography, remote sensing and rural development.

The Geomatics Department of LI has extensive experience in both developed and developing countries and works with a range of software products according to the task in hand.

Land Administration and Cadastre

In a world with continuously growing economic and social challenges the relation between ownership of land property and the future economic development of a country becomes more and more important.

Customised and future-oriented land development nowadays depends on the establishment of land information systems where land titles, rights and other relevant land information are registered together with their geographical reference data.

Lahmeyer International has been involved in multiple land administration, cadastre, land use and land resources projects during the last decades.



Services

- Consulting for land register and cadastre systems
- Introduction of modern information technology infrastructure
- Implementation of standards, routines and procedures
- Management and procurement of equipment and services
- Cadastral surveys and pilot projects
- Customization and training
- Dissemination of information for broad use
- Multipurpose cadastre
- Land use planning
- Land resources management
- Land valuation, taxation
- Political, legal and institutional framework
- Consideration of socio-economic impacts
- Quality management

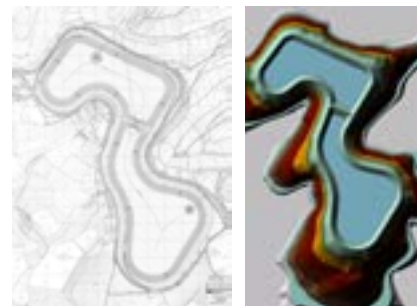
Surveying and Mapping

In all stages of project development from preliminary studies to final implementation and operation control, extensive surveying tasks are required to be performed. Lahmeyer International's Geomatics Department disposes of surveying experts in the fields of engineering survey, topography, photogrammetry, bathymetry and cartography.

We advise clients on how to solve technical and organisational problems in the fields of geodesy, mapping and cartography. Various system solutions are developed and geared to our clients individual requirements. Many tasks are performed with interdisciplinary co-operation between engineers of other fields within our company.

For more than five decades, Lahmeyer International has gained extensive experience in engineering surveying for projects of varying size in all areas of construction. This includes studies required for the establishment of foundations and preliminary planning as well as detailed design and final implementation.

Our main involvement is concerned with survey for power supply and large-scale hydropower projects including underground construction, dams and reservoirs. Other survey activities are transportation engineering (railway, road, tunnel construction), building and industrial plant construction, water supply engineering and large-scale irrigation and drainage projects.



Services

- Implementation of geodetic networks
- GPS surveys
- Underground surveys
- Project control networks
- Construction and underground surveys
- Geodetic deformation measurements
- Design and implementation of monitoring systems
- Topographic mapping
- Bathymetric surveys
- Terrestrial and airborne mapping at small and large scales
- Aerial photography and LIDAR
- Orthophoto mapping

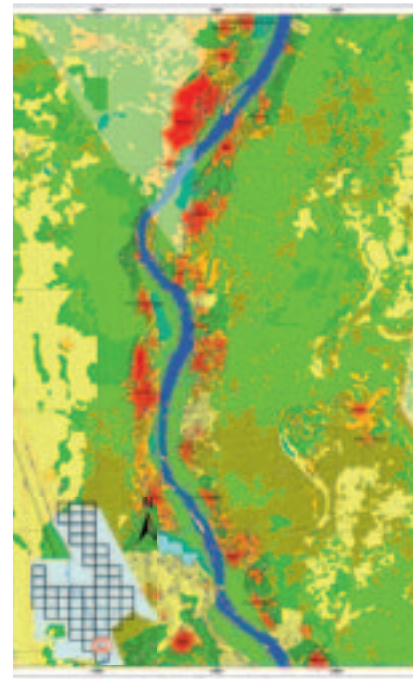
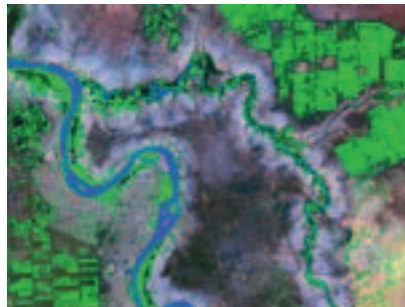
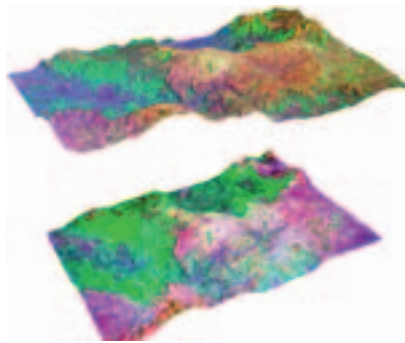
Remote Sensing

Remote sensing technology plays a fundamental role for primary data collection. The tremendously increasing number of satellite platforms in the last decade offers a large variety of earth observation data with different ground resolutions, swath width and spectral parameters.

In Lahmeyer Internationals Geomatics Department remote sensing data and image analyses techniques are increasingly used as an economic solution for up-to-date information and long-term monitoring surveillance at different scales and for various applications.

Whether for topographic or thematic mapping, land use planning, forest inventories, environmental monitoring or disaster management very different approaches according to the project requirements are applied. Adapted to the clients project requirements computer-aided visual interpretation, automatic classifications or knowledge based techniques are used.

Lahmeyer International's remote sensing and GIS experts organize and execute all kinds of remote sensing projects from data acquisition and capture, field surveys and ground truthing through all phases of image processing and analyses, the extraction and presentation of information in geographic information systems and professional maps. Accuracy assessment, quality control, training and information dissemination through internet and other media are further services.

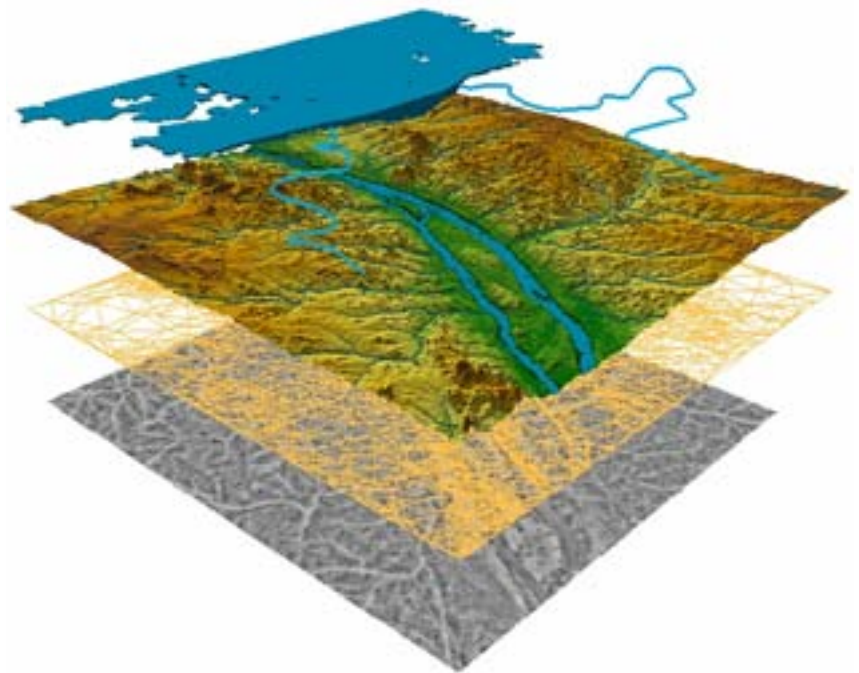


Services

- Provision and update of topographic information at different scales
- Urban and rural mapping
- Soil and geological surveys
- Forest inventories
- Applications for agriculture, irrigation and hydrology
- Natural resources management
- Land cover and land use inventories
- Change detection
- Topographic and thematic cartography
- Modelling
- GCP surveys and ground truthing
- Training

Geographic Information Systems

Proper functioning of engineering services relies on suitable maps for situational analysis and visualisation, modeling and interpretation of processes. Geographic information systems (GIS) are in Lahmeyer International's Geomatics Department used as effective standard tool for integrated geographic analyses, professional map production and long-term data management and modeling. The spatial analytical capabilities of GIS are used for a variety of applications.



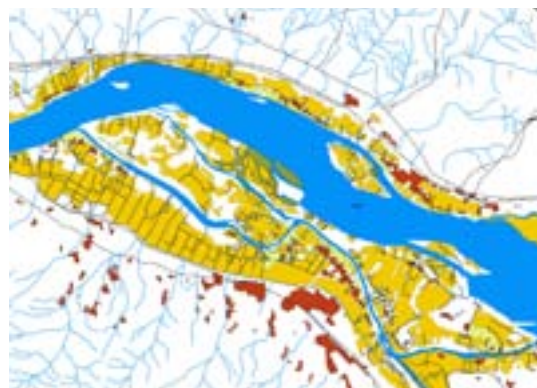
Applications

- Environmental mapping and monitoring
- Environmental impact studies
- Land suitability analysis
- Site selection
- Distance and proximity calculations
- Multi-criteria analysis
- River basin modeling
- Flood control and water management
- Hydrological and hydraulic modeling
- Hydropower project analyses and evaluation
- Natural hazard risk management
- Erosion analysis
- Damage documentation and assessment
- Disaster management solutions
- Change detection

Beside the project-related use of GIS Lahmeyer International is well experienced in the set-up of client oriented GIS solutions and software applications using a wide range of technology on different platforms and for the various applications. All necessary tasks are carried out well adapted to the clients requirements.

Services

- Consulting for GIS solutions
- Set up of complex land information systems and software applications
- Application building and customizing
- Modeling
- Web/Internet Mapping
- Training programmes



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