

EuroGeographics

Annual Review 2015



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EUROGEOGRAPHICS CONNECTING YOU TO THE AUTHORITATIVE GEOINFORMATION FRAMEWORK FOR EUROPE

EuroGeographics represents the European National Mapping, Land Registry and Cadastral Authorities and enables government, business and citizens to benefit from their collective expertise, products and services.

Our membership covers the whole of geographical Europe and we currently bring together 60 organisations from 46 countries. Together, they invest around €1.5 billion in the development of geoinformation each year and use cutting-edge technology to create, manage, maintain and make available authoritative national databases.

EuroGeographics' purpose is to further the development of the European Spatial Data Infrastructure through collaboration in the area of geographic information. Our members are doing this by delivering the European Location Framework.

By providing the practical means for delivering cross-border and pan-European services, this single source of authoritative geoinformation takes INSPIRE to the next level. It is key to realising our vision of a European society which makes decisions informed by our members' accurate, authoritative and quality-assured land and geoinformation data, services and expertise.



EuroGeographics was formed in 2002 by the merger of the Comité Européen des Responsables de la Cartographie Officielle (CERCO) and a subsidiary, the Multi-purpose European Ground Related Information Network (MEGRIN). In 2011, a change in status – from a French non-profit association to an AISBL under Belgian law – and move to Brussels consolidated our position as the European voice for geoinformation. We are registered on the EU Transparency Register and bound by its code of conduct.



PRESIDENT'S REPORT

EuroGeographics is the acknowledged voice for European National Mapping, Cadastre and Land Registry Authorities (NMCAs). Our members fulfill a unique role by providing definitive, detailed digital maps and land information.

We are committed to supporting them as they improve access to their rich source of data and information, but recognise that its power is not always fully realised by users. Ensuring that its benefits, and the important role our members play, is understood continues to underpin our work.

I am therefore delighted to present this review of our joint activities in 2015, which culminated in the Maps for Europe exhibition at the European Commission headquarters in Brussels. The exhibition focused on how digital maps, geographic and land information can be used to help deliver European Union (EU) priorities. The European Commission and its agencies as well as the European Environment Agency, has access to European geospatial data from our members through our four-year agreement with Eurostat, the statistical office of the EU.

As geospatial and statistical data are increasingly used together to support policy making, confidence that the geographic information provided is consistent, reliable and comparable, regardless of its national source, is key. We continue to maintain and update our pan-European product portfolio, created by harmonising our members' national data, which are widely used by a broad range of international customers. We also remain a key participant in the project developing the European Location Framework, which aims to expand the access and availability of richer, more detailed information from across Europe.

The European Location Framework (ELF) Project is just one way in which our members invest their expertise, time and resources in the development and distribution of geographic information. During 2015 we welcomed the European Court of Justice ruling that digital map content is protected under the Database Directive. We were particularly pleased that a number of members made submissions to assist AdV, the Working Committee of the Surveying Authorities of the Laender of the Federal Republic of Germany, in arguing our collective position in this matter.

Our representation strategy is based upon the principle of constructive participation. For example, we were invited to submit a briefing paper to the Commission on the importance of dependable geospatial information in a future digital single market. On a global scale, we continue to provide the secretariat for UN-GGIM: Europe



and this year took an active role in events including the first joint UN-GGIM: Europe and European Statistical System Meeting as well as a number of side meetings at the UN's New York headquarters.

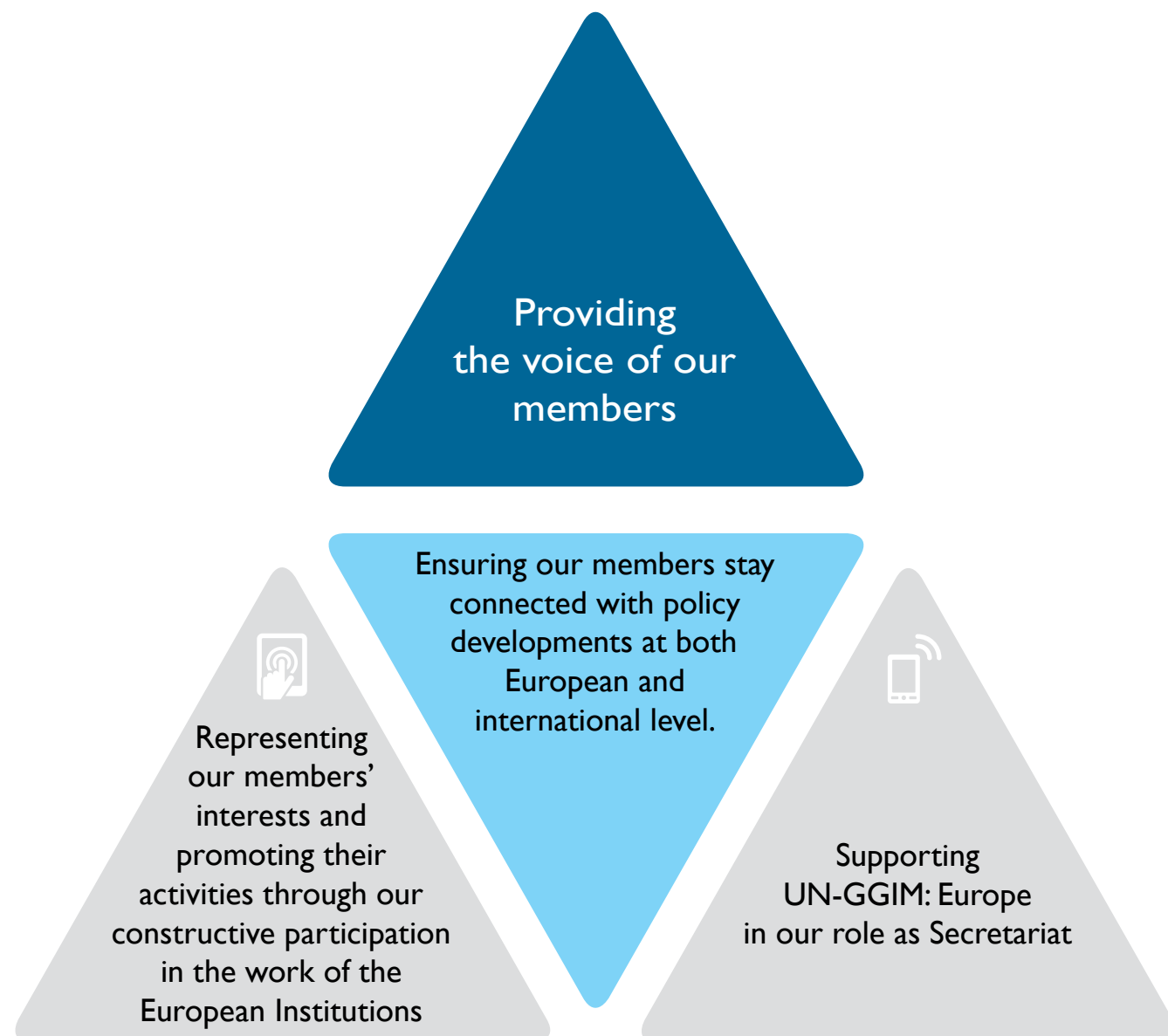
Membership grew once again with The Ministry of Environment and Urban Planning, General Directorate of Land Registry and Cadastre, Turkey, joining the Association in May. On-going interest in membership demonstrates the value NMCAs place on collaborating to find shared solutions to common challenges, particularly through our eight Knowledge Exchange Networks (KENS), which have more than 350 active participants.

2015 marked a change of leadership at our head office with Mick Cory succeeding Dave Lovell as Secretary General and Executive Director. I would like to thank Dave for his unwavering support and belief in the vision of EuroGeographics, and wish him well in his future activities. I know too that I speak for all members when I say how much we are enjoying working with Mick and benefitting from his skills, enthusiasm and passion for all things geospatial.

The case studies in the following pages demonstrate the important contribution our members are making to European life. I would like to thank all our members, my colleagues on the Management Board, and the EuroGeographics head office team, for ensuring that 2015 has been another successful year for all involved in national mapping, cadastre and land registry.

Ingrid Vanden Berghe
EuroGeographics' President

KEY CONTRIBUTIONS 2015



THE EYES, EARS AND VOICE OF OUR MEMBERS

Representation remains a priority issue for members. We are committed to ensuring members stay connected with policy developments at both European and international level. In 2015 we significantly enhanced our tracking and evaluation service which now includes a weekly policy update.

Our representation strategy, in which the Policy KEN plays a central role, is based upon the principle of constructive participation, enabling us to demonstrate and grow our relevance with effectiveness. We continue to be registered on the EU Transparency Register and are bound by its code of conduct.

Maps for Europe

The Maps for Europe exhibition was organised in collaboration with Eurostat, under the patronage of European Commissioner Marianne Thyssen. It demonstrated how geospatial data from our members can help to achieve the EU's priorities in areas such as sustainable growth, cleaner, more efficient transport and improving internet connectivity.

Held in the central Piazza of the Berlaymont, the headquarters of the European Commission in Brussels, it enabled us to engage with a wide range of stakeholders and build new relationships within the European Institutions. The exhibition was officially opened by Walter Radermacher, Director General of Eurostat, and Catherine Stihler MEP. It was supported by a series of side events, including a workshop for users of our data within the European Commission.

Database Directive

This year we saw the Database Directive tested against digital map data for the first time in the European Court of Justice (CJEU). It followed a challenge to a German court decision which made it unlawful to extract information from Bavaria's state topographic maps, and underlying data, for use in third party maps.

Informed by our briefing paper, members, including those from our Policy KEN, made submissions in support of their colleagues in AdV, the Working Committee of the Surveying Authorities of the Laender of the Federal Republic of Germany. The subsequent CJEU ruling clarified that map data is protected under the Directive when the contents of a geospatial database are represented in graphical form.



Digital Single Market

We were invited to submit a briefing paper to the European Commission on the importance of dependable geospatial in a future digital single market. We understand that it was well received and further raised awareness of members' capabilities and expertise in this EU priority area.

We worked with colleagues in the European Commission to facilitate the presence of geospatial information within future EU programmes. Members were also urged to declare their support for geospatial information projects, for example, within the ISA² programme. It is expected that these efforts will have a beneficial result for our members and associated EU programmes.

Contributing to UN-GGIM

On a global scale, we have cemented our support for UN-GGIM by providing the secretariat for UN-GGIM: Europe through an agreement with The Netherlands' Cadastre, Land Registry and Mapping Agency.

As part of this role, we participated in UNGGIM5 as an observer organisation and delivered four side events at UN headquarters in New York. We also organised the 2nd Plenary of UN-GGIM: Europe in Belgrade, Serbia and the first joint UN-GGIM: Europe and European Statistical System Meeting, hosted by Eurostat in Luxembourg.

KEY CONTRIBUTIONS 2015

Delivering
products and
services to meet
user demand

Improving access to a rich
source of definitive,
detailed geospatial data
and land information

Introducing
open data policies
to drive innovation
and economic growth

Developing
online services
for quicker, more
efficient and reliable
land registration

FACILITATING ACCESS TO MEMBERS' DATA

We continue to maintain and develop our portfolio of pan-European datasets created by harmonising members' national data.

Feedback from users indicates that they greatly value this high quality, reliable information from trusted sources. An annual meeting of technical producers and product managers provides a unique opportunity to discuss European specifications, plan revisions for the coming year and determine the delivery timetable. In 2015, 68 technical producers from 32 countries gathered in Warsaw, Poland.

In 2015, we released updated versions of EuroBoundaryMap and EuroRegionalMap as well as EuroGlobalMap open data. The enhancements include increased geographical coverage and the inclusion of the latest population figures.

As a result, EuroBoundaryMap, a seamless geo-database at 1:100 000 scale, offers the latest administrative information for 43 European countries. It also contains a European-wide unique identifier for more than 134,000 administrative units — from commune to country level — and links to LAU and NUTS statistical codes.

Our 1:250 000 scale topo-geographic dataset, EuroRegionalMap, now covers 34 countries and, where available, the latest population figures have been included. EuroGeographics' portfolio also includes EuroDEM, a digital elevation model for applications such as environmental change research and hydrologic modelling. EuroGeographics is currently piloting EuroDEM30 with the support of the Federal Agency for Cartography and Geodesy (BKG) Germany and EuroControl, the European Organisation for the Safety of Air Navigation. The pilot area covers parts of Poland, Germany and the Czech Republic.

Public administrations rely on dependable geographic information, for example when developing evidence-based policies, creating quicker and more efficient online services and managing resources. In April we signed a contract to provide pan-European geographic information and related services to Eurostat. The four-year agreement means that staff at the European Commission and its agencies, including the European Environment Agency, can access our members' geospatial data through its geographical information service, GISCO.



The academic sector continues to be a key user of our open data product, EuroGlobalMap. Since its launch in 2013, there have been almost 4,800 downloads of our 1:1 million scale dataset, of which some 1,600 were by academic users.

We would like to extend our thanks to our whole Production Team and the organisations which support these activities, including our Regional Coordinators and our many technical producers. The Federal Agency for Cartography and Geodesy (BKG), Germany, and National Geographic Institute (NGI), Belgium have made significant contributions to our production management process over many years. With changes now being implemented for 2016, we would like to take the opportunity to thank them both for the significant resources they have made available to deliver EuroBoundaryMap and EuroRegionalMap respectively. We would also like to thank the National Institute of Geographic and Forest Information (IGN) France for its continued support in producing EuroGlobalMap.

EuroGeographics remains committed to providing easy access to, and encouraging greater use of, members' data through the on-going development of pan-European products and services.

MEETING USER NEEDS WITH A TAILORED APPROACH TO GEOSPATIAL DELIVERY

The value of authoritative national geoinformation is currently increasing and the demand for reliable geospatial products grows. Using geoinformation as core reference data allows for data combinations, analysis and a wide variety of geospatial applications. Due to automatic processing and workflows in customers' processing lanes, controlled qualities and sustainable data structures are key requirements for content. In addition, different dissemination channels are needed to enable efficient access to geoinformation.

At the Austrian Federal Office of Metrology and Surveying (BEV) sustainable data structures, controlled content qualities and three main dissemination channels support accessibility and customer needs. The three dissemination channels are embedded in the Geoportal-BEV approach, which offers a web accessible shop, a spatial data service-based asynchronous webshop, as well as a standardised synchronous webmap, and processing services that cover the requirements of INSPIRE.

Whereas free-of-charge dissemination offers highly complex and fully detailed datasets, the webshop provides individually tailored selection mechanisms. These allow customers to select content and coverage and also offer standardised computer to computer interfaces that can be implemented in third party applications via the the Product Web Service. Tailored orders incorporate apriori search functions that provide results based on actual availability, data amount and costs.

The tailored geospatial dissemination of Geoportal-BEV follows three main customer requirements: Availability, accessibility and transparency. Search results will only include available products, which are quality assured and follow an official published structure, the product interface description. The system and its components are accessible 99% of the time through the Service Level Agreement. Any licences and terms of use are publicly available and are confirmed with an order.

The success of the tailored geospatial dissemination Geoportal-BEV is seen by the increasing numbers of customers for all webshop dissemination channels. Whereas the downloads of complex free-of-charge products are within a manageable amount, the customers for the webshop user interface and Product Web Service are constantly growing.



Therefore, an individual tailored search and access to the growing amount of geoinformation is not only a key functionality for most of BEV's customers, it is a central requirement and one for which they are willing to pay a fair price.



NEW PRODUCTION PROCESS TO DELIVER TWO NEW MAP SERIES IN BELGIUM

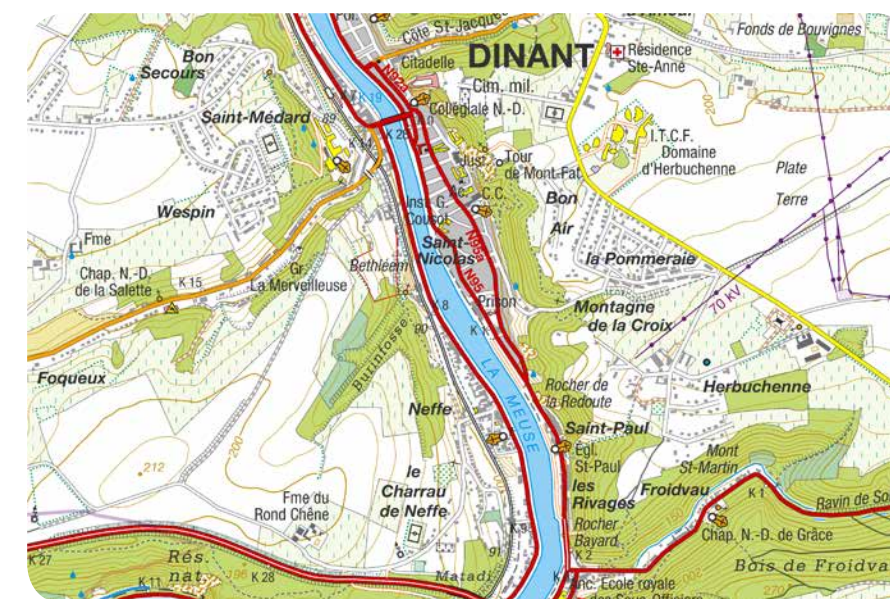
A new production process set up by the Belgian National Geographic Institute (NGI) is to generate two new series of topographic maps by 2021.

Within the next six years, NGI will deliver a fourth edition of the 1:50 000 scale map for civilian and military users. It is also producing a new 1:25 000 scale map which will now be the largest in its product range, although 1:10 000 remains the conceptual scale of the reference vector database.

Both new series are being produced through generalisation. Themes can be updated in various ways: In 3D through photogrammetric plotting (road networks and buildings); in 2D based on orthophotos (vegetation, water bodies, specific areas); or by integrating data coming direct from authentic sources, for example railway networks.

Symbolisation for the new 1:25 000 maps, the first of which was published in 2015, has been adapted from the existing 1:20 000 series (produced from 1990 to 2010). This has ensured coherence between the various scales produced by NGI and follows a positive reaction from users to a similar symbolisation.

NGI has also implemented a six-year update cycle for its toponymic database which allows it to almost fully automate the location of names in these new map series.



Extract from the first map at scale 1:25k: 53/7-8 Dinant

CZECH REPUBLIC TAKES SIGNIFICANT **STEPS TOWARDS** FULL ONLINE CADASTRAL REGISTRATION

Significant progress towards full electronic cadastral registration in the Czech Republic resulted in 50% of all applications completed using the e-service during 2015.

Following intensive work by the Czech Office for Surveying, Mapping and Cadastre (ČÚZK), the electronic management system for archiving and searching documents is now fully operational. It means that all documents delivered after January 2014, as well as many older documents, can now be provided in electronic form. Work to complete the database continues.

Application forms for registration into the cadastre of real estate can now be completed and sent online with the relevant documents, or printed and sent by post. Documents are then provided electronically from the paid application remote access to the cadastre of real estate.

The new procedure not only improves efficiency, as ČÚZK employees no longer have to log the information by hand, but also reduces the risk of errors. In 2015, approximately 75% of all applications were prepared in this way and 50% of all registrations were then realised using the electronic system.

Geoportal ČÚZK is the main access point to services and geographical data produced and provided to the public by ZÚ (Land Survey Office) and ČÚZK. It provides the following datasets: Administrative units (AU), Addresses (AD), Buildings (BU), Ortho-imagery (OI), Elevation (EL), Hydrography (HY), Transport network (TN) and Geographical names (GN) via web services that meet INSPIRE specifications. View and download services for the Buildings theme were launched in October 2015. For the Elevation dataset, published in the middle of 2015 together with a view service using coloured hypsometry for visualisation, the source dataset is the 4th generation digital terrain model of the Czech Republic (DMR 4G).

Work on the 5th generation digital terrain model (DMR 5G) is due to be completed in the next year. DMR 5G is based on airborne laser scanning and will provide a digital terrain model with the accuracy of 18cm in uncovered areas and 30cm in the wooded areas.



ČÚZK has participated in the ELF Project since March 2013. In 2015 it provided harmonised data and interoperable services, which were repeatedly successfully tested, and took part in pilot verification of the elevation data on the common state boundary point of Germany-Czech Republic-Poland. In addition, it co-organised two international ELF workshops and the INSPIRE KEN meeting in April 2015. A one-day ELF workshop especially for Czech specialists was also organised in cooperation with the Czech Association for Geoinformation (CAGI).

In 2015 significant administrative changes caused by the Civil Service Act took place in the whole state administration in the Czech Republic, including the branch of cadastre and land surveying. As a result, 90% branch employees transferred into the civil service and are now subject to new rules and regulations.

MAXIMISING THE VALUE OF **LAND REGISTRY DATA** IN ENGLAND AND WALES

For more than 150 years Land Registry has guaranteed and protected the rights of land and property owners in England and Wales through property registration. This has created one of the largest property databases in Europe with more than 24 million digital title records, covering 87% of the land mass.

To release the true value of this data, Land Registry is working with customers and stakeholders to identify how this can be maximised. Last autumn it unveiled two new datasets in response to customer feedback.

Published in November 2015, the National Polygon Service (NPS) is one of Land Registry's largest and most sought-after datasets. The creation of NPS followed extensive work with customers and stakeholders and delivered a proposition that met customer expectations. The service has three datasets:

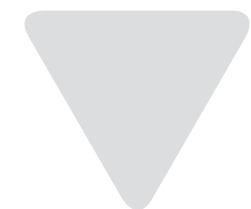
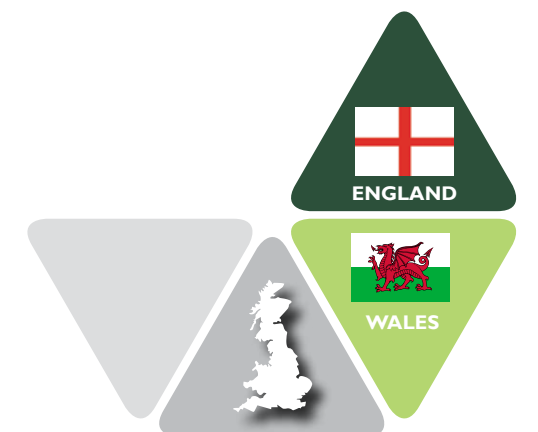
- The [National Polygon](#) dataset: containing the indicative boundary of every registered property.
- The [Title Descriptor](#) dataset: describing the legal interests that have been recorded against each title.
- The [Unique Property Reference Number](#) where this exists.

Customers also now have access to Additional Price Paid Data that was published in October 2015. This introduced price information for reposessions, buy-to-lets when identified by a mortgage, and transfers to non-private individuals.

For many people value is denoted by quality. Land Registry's data team has introduced new quality standards. By aligning its core datasets to ISO19100 and ISO19131 standards, the team can define quality levels that:

- Enable datasets to interact between different data models and applications
- Improve users' data understanding and the derived value
- Improve evaluation mechanisms.

With 10 successful datasets released since 2012, the team continues to deliver its planned licensable datasets. Data will continue to be released to open up more opportunities that derive further economic and social benefits.



GEOPORTAL AND MOBILE APPS MEET USER DEMANDS IN ESTONIA

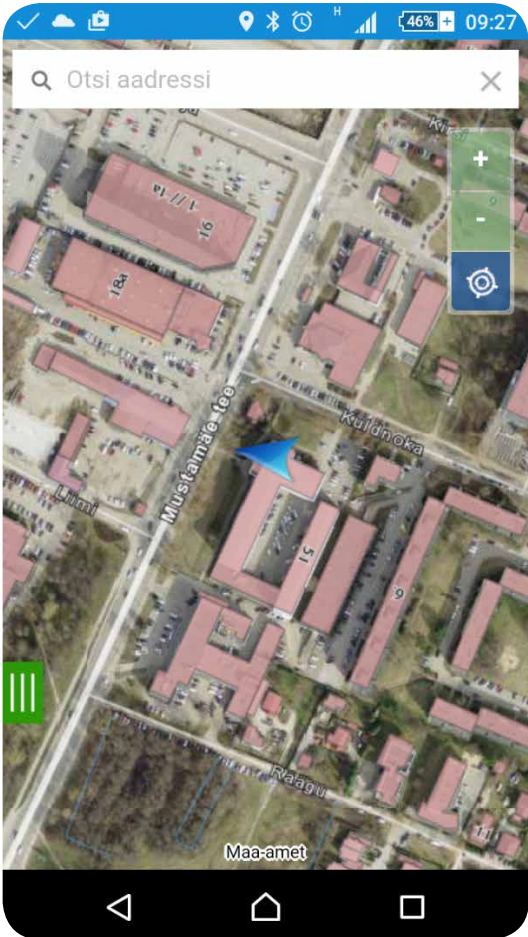
Estonia’s geoportal is the most frequently visited environmental sector website by business users according to a Ministry of Economic Affairs and Communications survey.

One third of respondents said that they visit the Land Board’s website on a daily basis with the most frequent users coming from agricultural and forestry organisations. Compared to the previous survey of public sector e-services in 2012, both the number of users, and their satisfaction with their experience, have increased.

The Land Board also continues to meet user demands by upgrading its services with the launch of a mobile version of its popular X-GIS Land Information Map Application. Based on mobile-friendly HTML5 technology, it means that users can choose between the full version or a mobile version for use on smartphones and tablets. An additional feature in the mobile version enables users to determine their location and, when the compass mode is activated, follow where they go on a map.

Existing map applications based on flash-technology, which have been in use since 2007, will continue to run in parallel as work continues to accommodate X-GIS functionality and all thematic map layers.

For more information visit, <http://xgis.maaamet.ee/maps>.



IMPROVEMENTS TO GEOPORTAL INCREASES DATA AVAILABILITY

The Agency for Real Estate Cadastre (AREC) is enhancing its national geoportal to improve access to geospatial data in the Former Yugoslav Republic of Macedonia.

The portal provides a preview for all geospatial data delivered by AREC. It includes the availability of cadastral parcels and buildings recorded in the real estate cadastre, all related information, such as owners, locations where construction permits have been issued and details on future projects where building is underway.

Users can also access topographic maps, geodetic points, aerial images, infrastructure objects, and all points of interest, such as locations of notaries, geodetic companies, municipalities and find out where AREC services are available.

A newly-developed distributive system provides a single point of access to the Agency’s digital geospatial data and allows online sales for both professional users and the general public. The real estate cadastre, geodetic, cartographic and registry of spatial data is available 24 hours a day at <http://oss.katastar.gov.mk/OSSP>.

Users can receive the requested data in digital or in paper form. Documents published in electronic form are signed using digital certificates and are valid as public documents for use in government bodies, banks and other institutions with information systems.



PROVIDING DATA FOR REPORTING ON GREENHOUSE GASSES IN GERMANY

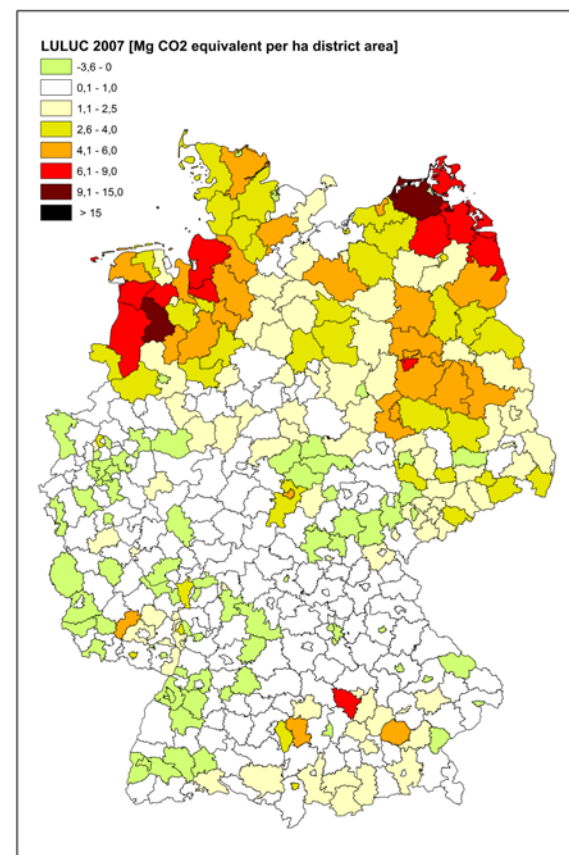
A digital landscape model (DLM) produced by surveying authorities is playing a pivotal role in reporting on greenhouse gasses in Germany. The ATKIS Basis-DLM is used as the base dataset for the National Inventory Report (NIR) of greenhouse gases from CRF-Sector 5 – Land Use and Land Use Change.

It is provided by AdV, the Working Committee of the Surveying Authorities of the Laender of the Federal Republic of Germany and underpins the land use matrix created for the NIR. The inventory is required under international treaties against climate change, such as the United Nations Framework Convention on Climate Change (UNFCCC 1992) and the Kyoto Protocol (1997), as well as respective EU legislation.

The Thünen Institute of Climate-Smart Agriculture reports greenhouse gases from CRF-Sector 5 (Common Reporting Format of the United Nations Framework Convention on Climate Change – UNFCCC). CRF-Sector 5 reports Land Use and Land Use Change from the German soils and biomass from cropland. The results are published annually in the NIR.

The basis for calculating greenhouse gases from soil is a consistent time series of land use and land use change from 1990 to today. Since 2000, the ATKIS Basis-DLM has been the most important dataset to create this land use matrix.

The illustration here shows CO₂ emissions from land use in 2007 and the land use change from 2006 to 2007. Small sinks (that allow reductions of CO₂ in the atmosphere) are mostly related to an increase in biomass or a land use change from crops to grass. The largest source of CO₂ is from organic soils because most German organic soils are drained for agricultural use.



GEODATA FOR MANAGING THE REFUGEE SITUATION

Geodata for managing the refugee situation is being provided by The Federal Agency for Cartography and Geodesy (BKG), Germany as part of its commitment to Europe.

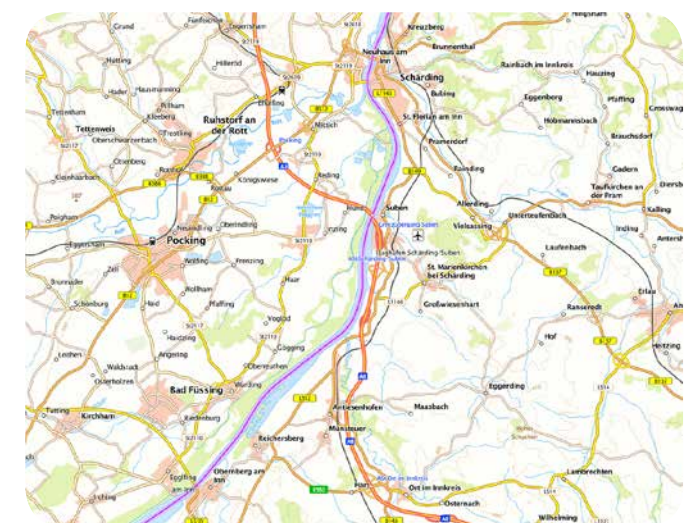
BKG supports all federal, Laender and local authority non-commercial projects, as well as non-governmental organisations and companies, by providing web services free of charge. These include the Europe-wide viewing service TopPlus-Web-Refugees, a routing service and the Germany-wide geocoding service of the surveying authorities of the Laender and the federal government. The services will be available until the end of 2017.

Both the 16 Laender and EuroGeographics have donated not-for-profit licences to use their authoritative products for this purpose. The licence from EuroGeographics covers the harmonised pan-European datasets EuroBoundaryMap and EuroRegionalMap.

The TopPlus-Web-Refugees service developed by BKG offers a uniform pan-European map with 14 levels of detail. The scale levels range from a Europe-wide overview to detailed, authoritative city maps. It is offered via various standardised interfaces and is perfectly suited for web presentation due to its high performance. The service provides authoritative data from Laender, federal and European sources, as well as sources of free geodata. The information for Germany is taken exclusively from authoritative sources.

The geocoding web service of the federal government and the Laender is operated at BKG and is based on international standards. It enables places, towns, streets and postal addresses to be searched by geographical name. The service provides the coordinates in UTM projection (zone 32), for example for displaying the relevant location on the TopPlus-Web-Refugees map.

Knowledge about the location and route to reach it is of special importance in a mobile information society strongly influenced by the internet. The routing service of BKG offers three profiles for cars, bikes and pedestrians to compute the fastest and the shortest routes.



AWARD-WINNING OSI MODERNISES DATA SUPPLY TO MAXIMISE EFFICIENCY

Authoritative Irish spatial data is now available through the GeoHive web portal launched by Ordnance Survey Ireland (OSi).

Prime 2

PRIME 2, an authoritative spatial data infrastructure for Ireland, was named winner of the Innovation in Government category of the Bentley Be Inspired Awards which recognise the world's most outstanding infrastructure advancements. The standardised, authoritative digital referencing framework enables the consistent referencing and integration of national data related to location. It provides the means for GIS data users to accurately integrate and use multiple data sources to provide better analysis and decision making, optimising resources and delivering efficiencies.

Multi Resolution Data Store

Ordnance Survey Ireland is developing an integrated solution to maximise efficiency in the modernisation of its product and data supply mechanisms. A contract with ESRI Ireland, due to be completed in 2016, is enabling the delivery of automated processes.

Having gained insight from the cartographic generalisation techniques at organisations including The Netherlands' Cadastre, Land Registry and Mapping Agency (Kadaster), OSi is using new processes to create both Digital Landscape Model (DLM) and Digital Cartographic Model (DCM) from the award-winning PRIME 2 Data Model and other data sources, such as Height.

GeoHive

The service provides free, web-based access to a range of OSi and other authoritative geospatial datasets through a data catalogue and a map viewer.

GeoHive also allows users to create specific maps which can then be saved and made available to others in the User Gallery. Information from different sources can be linked on a single map to offer different perspectives on location-based issues and enable a deeper understanding of topics to support decision-making.

For more information visit www.geohive.ie.



GM Surveying and Remote Sensing OSi, Andy McGill, GM Geospatial Systems OSi, Lorraine McNerney and Amar Sekhon, Bentley Account Manager at the Be Inspired awards.



OSi Chairman Ronan O'Reilly, OSi CEO Colin Bray and Minister for Communications, Energy and Natural Resources, Alex White are pictured here at the GeoHive launch.

ITALY INTRODUCES IMPROVED WORKFLOW, EASIER UPDATES AND NEW COORDINATE TOOL

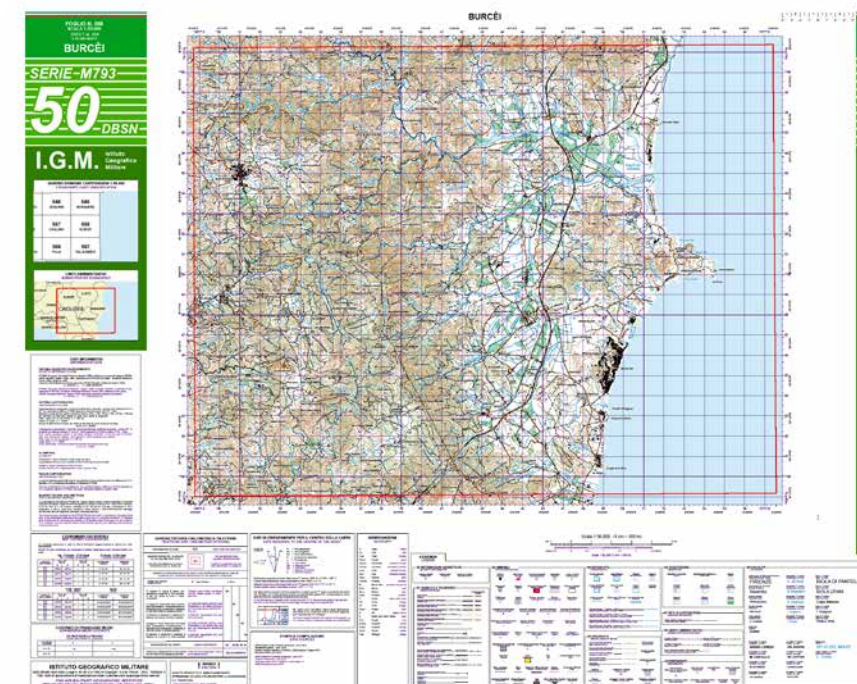
A new semi-automatic process developed by the Italian Military Geographic Institute (IMGI) is reducing the production time for its new 1:50 000 map series (M793). As a result, it is now easier to update products which is a useful benefit for both civilian and military users.

The new series replaces the M792 series as the IMGI base map. The entire production process is carried out using ESRI software and consists of different phases starting from DBSN (National Synthesis DB) data, through generalisation, integration and graphic representation, before the release of the complete product around three months later.

For this new series, data collection is limited to minor updates using high resolution aerial photos. The extent of the map frame is the same as the M792 series and is based on the ETRS89 datum instead of ED50.

In 2015, IMGI also launched a new tool for coordinate transformation via its website www.igmi.org/vol. The new tool, called VoL, performs transformations between the main geodetic reference systems used in Italy: ROMA40, ED50, ETRF89 and ETRF2000, both as geographic coordinate systems or as the corresponding projected systems.

VoL uses EPSG (European Petroleum Survey Group) codes to identify source and target reference systems. It is based on IMGI grids in NTV2 format and therefore does not include height. VoL allows users to submit data either by filling in an online form or by uploading data files in the most common formats, including ESRI Shapefile, AutoCAD DXF, Comma Separated Values ASCII file, KML, GML and Microstation DGN. Raster data in TIFF/GeoTIFF formats can also be converted.



OPEN ACCESS, AWARD-WINNING APP AND INTEGRATION INCREASES DATA USE IN LATVIA

Improvements to the Latvian cadastral data portal grew the number of users by more than 300% in 2015.

The modernisation work carried out by the State Land Service included making the cadastral map available free of charge. It has significantly extended access to kadastrs.lv and means that all services related to cadastral information are now available online. Customers can download real property information, including documents from the digital archive, perform data selection and receive data generated by the system. Other services enable applications for data registration or ordering updates of cadastral data.

The mobile application of kasastrs.lv was named winner of the national 2015 Platinum Mouse ICT Award as well as receiving a special prize for the best ICT solution for effective business from Lattelecom, one of the biggest ICT companies in Latvia, and the readers' choice award from the news portal Delfi.lv.

To reduce the administrative burden for public authorities, an e-service providing cadastral textual data, including information from the State Address Register, has been developed in cooperation with the State Regional Development Agency. The development of integrated procedures for real property registration, building and territorial planning is also helping to implement a one-stop shop between the Cadastre Information System and Land Register Information System.

The introduction of a pre-registration process for planned buildings is ensuring data exchange and service integration between the Cadastre and the Building Information System. As a result, planned buildings are automatically granted cadastral designation in the Cadastre Information System. In addition, collaboration between the State Address Register and Territorial Development Planning Information System now enables electronic notifications to be received as soon as changes are made in the planning system with administrative borders in the register updated accordingly.



Digital Europe – Towards Cadastre 2034

As part of the successful Latvian Presidency of the Permanent Committee on the Cadastre (PCC), the State Land Service organised the Conference and Plenary meeting in Riga. The Digital Europe – Towards Cadastre 2034 event brought together Heads of Cadastre and Mapping Authorities and experts from 20 EU Member States. The main issues of discussion were the quality of cadastral data and new sources for obtaining cadastral information, implementation of e-Cadastre and e-services, integrated procedures and development of dynamic cadastre information systems.



Director General, State Land Service, Elita Baklane-Ansberga is pictured here with Chairman of Management Board and Chief Executive Officer, Lattelecom Juris Gulbis and President of the Latvian Information and Communications Technology Association, Signe Balina.



PCC Conference and Plenary meeting.

DEVELOPMENT OF NEW CADASTRAL APPLICATIONS IN SLOVAKIA CONTINUES

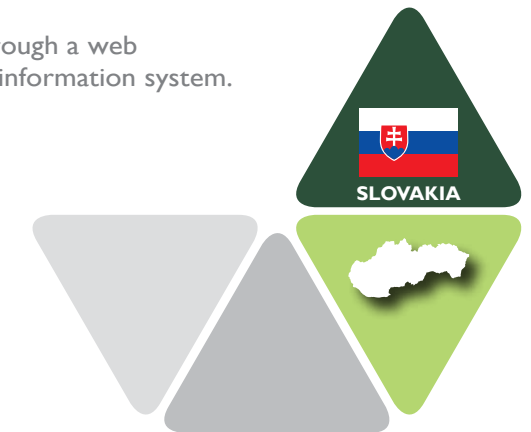
Quick and easy access to data is being achieved in Slovakia through a web application enabling users to browse and search the cadastral information system.

The map portal of real estate cadastre (MAPKA) also allows data to be combined with other spatial information, for example from the Basic Database for the Geographic Information System (ZBGIS), address points, orthophotos and ESRI maps. It does not require installation of any web plug-ins and is compatible with all operating systems as well as common web browsers.

The MAPKA application displays data from the geodetic data file (SGI) and descriptive data file (SPI) which together form the cadastral information system. It allows a quick view of a cadastral map with its parcels (SGI data) and, after clicking on any parcel, displays information (SPI data) about it, including acreage, land type, owner or tenant.

Cadastral maps and parcels can also be displayed in combination with selected background maps such as ZBGIS, World Topo Map, World Street Map and World Imagery. When using these background maps, it is possible to turn on additional layers - addresses in the form of address points (house number, house registry number) and orthophotos (on selected parts of the Slovak territory).

Further information can be found at mapka.gku.sk/mapovyportal/



SWEDEN TAKES STEPS TOWARDS OPEN DATA

Use of spatial information in Sweden continues to increase, making 2015 another busy but successful year for Lantmäteriet, the Swedish Mapping, Cadastral and Land Registration Authority.

The first steps towards an open data policy were taken in July with the release of the 1:250 000 scale General Map and a simplified elevation model of 50 metre resolution and two metre height accuracy. Both are now available without fees or restrictions, joining the free map search and place names service on www.lantmateriet.se.

More open data was released on 1 January 2016 – the 1:100 000 scale Road Map, 1:50 000 scale Terrain Map, 1:100 000 scale Mountain Map and a nationwide real-time service for measurement and positioning with metre accuracy, the SWEPOS network service DGNSS. It is hoped that other, more detailed geographical information can be part of the open data in the future. However this requires a political decision and Lantmäteriet is contributing to this discussion.

The on-going interest in maps was also seen in the release of a nationwide landscape model to all Minecraft users. The model is based on the National Land Survey maps and elevation data.

Districts – larger than a property, smaller than a municipality

The Swedish Parliament is to start a new population registration in 2016, ending the final connection with the Church of Sweden and the country's division into parishes. As a result, residents will be registered nationally at municipality level, as well as at property and dwelling level.

A number of data users however need a stable and long-term division of the information which is larger than the property but smaller than a municipality. To meet these needs, districts have been developed by Lantmäteriet and the National Heritage Board in consultation with the Swedish Church.

In 2014, Lantmäteriet worked on preparing a name proposal for the districts and in 2015 developed products and services for the recognition of the new subdivision. These were made official from 1 January 2016.



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DELIVERING RELIABLE INFORMATION FOR REAL ESTATE

Switzerland is developing a new reliable information source for the real estate market which aims to cover the whole country by 2020.

The Cadastre of Public-law Restrictions on Landownership (PLR-cadastre) will provide an essential tool for the public sector, the economy and private individuals. It contains information about the main restrictions on the use of land which can be viewed online and/or downloaded. These legal provisions and official restrictions are referred to collectively as public-law restrictions on landownership.

The PLR-cadastre is jointly managed by the federal government and the cantons, who also share the costs. The federal government, represented by the Federal Office of Topography (swisstopo), is the supervisory authority responsible for the strategic focus while the cantons are responsible for its operational management.

In the initial phase, at federal level, the 17 most important landownership restrictions are being incorporated into the cadastre and made available online. These concern the areas of spatial planning, motorways, railways, airports, contaminated sites, groundwater protection, noise and forests.

Public-law restrictions listed in the cadastre comprise three elements: Plans showing the spatial delimitation of the restriction; the applicable legal provisions; and various additional details. All data entered in the cadastre can be depicted on screen as dynamic PLR-cadastre extracts in any desired combination. Static PLR-cadastre extracts are compiled for a specific plot of land and can be downloaded. These take the form of official documents that may be notarised (see picture).

The PLR-cadastre is being introduced in two stages. At the end of 2015, eight pilot cantons had introduced the cadastre for parts of, or the entirety of, their own sovereign territory. The remaining cantons will compile the new cadastre by 2020, receiving support from the pilot cantons as required.

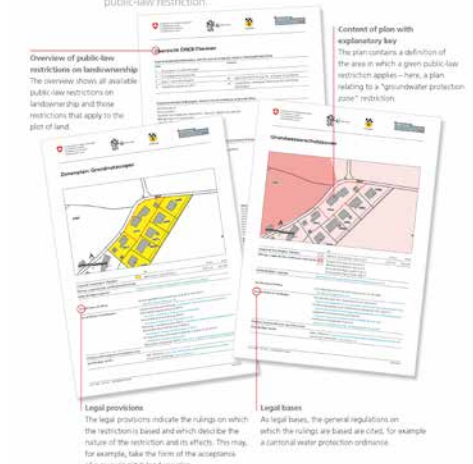
Benefits

- Relevant data will be available online for quick and convenient access.
- Time-consuming requests for information from various public authorities will become a thing of the past.
- Increased legal certainty in the real estate sector; the data relating to public-law restrictions is reliable and legally binding.



Components of a static extract from a PLR-cadastre

A static extract is issued for a specific plot of land. It contains a separate page, including a plan and explanatory key, for each applicable public-law restriction.



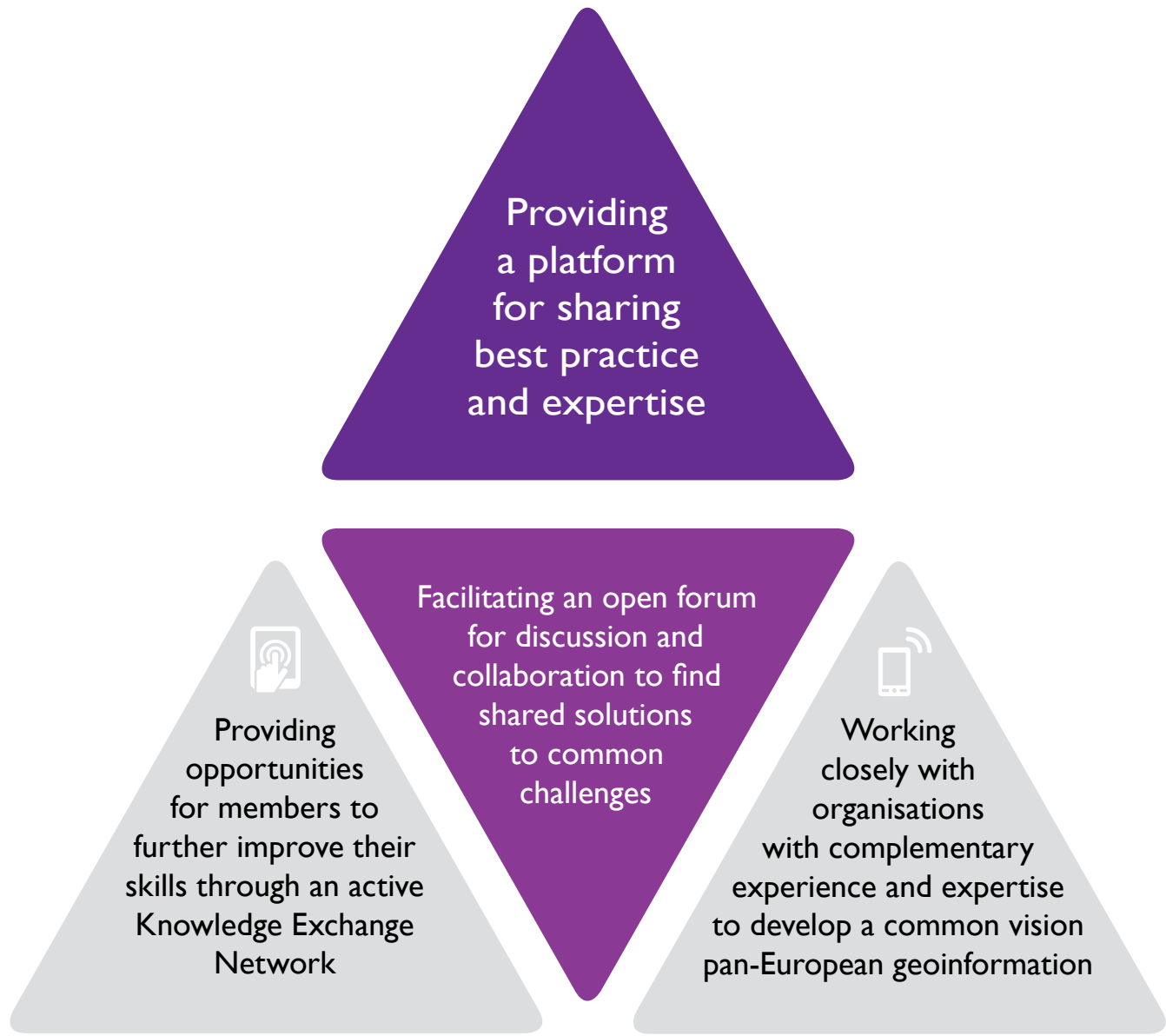
Ground-breaking geoportal recognised with special award

The geoportal of the Swiss Confederation, geo.admin.ch has been awarded the 2015 eGovernment special prize at the ninth national eGovernment Symposium in Bern.

The ground-breaking project was recognised for its consistent use of open source software, state-of-the-art web standards and cloud computing. The Federal Office of Topography, swisstopo, was tasked with making geo.admin.ch a reality.

geo.admin.ch is one of the eGovernment Switzerland programme's priority projects. The aim of the programme is to enable both Swiss companies and individuals to carry out important business with the authorities online. The authorities in turn are to modernise their business procedures and communicate with each other electronically. geo.admin.ch represents a significant boost to the exchange of geodata.

KEY CONTRIBUTIONS 2015



GENERAL ASSEMBLIES

EuroGeographics holds two General Assemblies each year. The Extraordinary General Assembly, for permanent correspondents, is held in the spring. It is followed later in the year by the main General Assembly which is attended by the heads of the European National Mapping, Cadastral and Land Registry Authorities.

In May, members were represented by 42 delegates from 23 countries at the Extraordinary General Assembly held in Leuven, Belgium. Keynote speaker, Ian Clark, Head of Policy and Frameworks, DG ECHO (Civil Protection & Humanitarian Aid), European Commission gave an overview of EU policy for disaster response and risk management. Updates were also provided by the KEN Chairs and production managers. In addition, the application for Full Membership from the Ministry of Environment and Urban Planning, General Directorate of Land Registry and Cadastre, Turkey was approved.

The 2015 General Assembly was hosted by the Republic Geodetic Authority, Serbia in Belgrade and attracted record-breaking numbers of delegates. More than 150 leaders from 47 member organisations took part in the two-day event to review progress, focus on future

plans, share expertise and discuss key issues. During the formal business of the Association, Igor Vasiliev from the Federal Service for State Registration, Cadastre and Cartography, Russia and Wernher Hoffmann from the Federal Agency for Metrology and Surveying, Austria were elected to the Management Board.

The conference was officially opened by Zorana Mihajlovic, Deputy Prime Minister, Serbia and Goran Vesić, Manager, City of Belgrade. Speakers included Borko Drašković, Director General, Republic Geodetic Authority and Frank Leyman, International Relations Manager at FedICT, Belgium who gave the keynote presentation on delivering efficiencies and citizen services through e-Government programmes. Delegates also heard from representatives of the European Environment Agency as well as EuroGeographics members and Management Board.



A PLATFORM FOR SHARING BEST PRACTICE AND EXPERTISE

Members place tremendous value on collaborating to find solutions to common challenges. This willingness to share experiences and best practice is central to the success of the Knowledge Exchange Networks (KENS) which provide an open forum for discussing issues of mutual interest.

For example, in January the Quality KEN was a co-organisier of the first International Workshop on Spatial Data and Map Quality. Later in the year, the Cadastre and Land Registry KEN held a joint workshop with the European Land Information Service (EULIS) and around 100 people from at least 26 countries took part in a webinar organised by the INSPIRE KEN in conjunction with the Joint Research Centre (JRC).

In addition, the Positioning KEN, which also incorporates experts from the European Position Determination System (EUPOS), the Reference Frame Sub Committee for Europe (Euref) and the Council of European Geodetic Surveyors met to discuss developments in GNSS.

The Business Interoperability KEN continued to focus on the business challenges arising from open data, associated government policy and pricing and licensing in 2015 whilst the Policy KEN played a vital role in our EU Affairs and Representation Strategy, particularly in activities around the Digital Single Market. The State Boundaries of Europe KEN's annual meeting also attracted great interest and provided the opportunity to discuss progress in the delivery of a dataset containing definitive descriptions of national boundaries.

EuroGeographics is committed to developing and delivering an active programme of briefings, workshops and seminars to which more than 350 people actively contributed in 2015. We also pursue joint activities with other associations working in the field of mapping, cadastre and land information. Our cooperation agreement with EuroSDR is a very strong example of this. It compliments and adds to the development of KEN activities and brings greater opportunities for professional development.



Business Interoperability KEN



Quality KEN



INSPIRE KEN



Cadastre and Land Registry KEN

ARMENIA COMPLETES IMAGERY PROJECT

Selected areas of the Republic of Armenia are now covered by aerial imagery and a digital terrain model following the successful completion of the ARMAP Project.

Implemented by the State Committee of the Real Property Cadastre with the assistance of the Norwegian Mapping Authority, the Norwegian-funded initiative has delivered aerial imagery for selected areas of Armenia to produce digital orthophotos and a digital terrain model.

During the project, aerial photography with a ground sampling distance of 10cm for urban areas and 20cm for rural areas was carried out and height contour lines produced. This represents a significant achievement in the sphere of geodesy and cartography and contributes to the creation of various scale topographic maps, demarcation and observation of community borders, as well as survey activities.

The State Committee of the Real Property Cadastre also opened an education centre for professional development in 2015. As well as training employees, the centre can be used by specialists, enabling non-employees to be included in the staff reserve.



A pilot project launched in September 2015 at the general consulate of Armenia in St Petersburg, is now enabling real estate information to be obtained without the need to attend service offices in the Republic in person. This saves both time and resources and enables users to obtain relevant documents and transactions. It is hoped that the project will be implemented in other areas with large Armenian communities.



COLLABORATIVE WEB PLATFORM ENABLES COMMUNITY AND CROWD SOURCING IN FRANCE

Collaboration was again a key focus for France's National Institute for Geographic Information and Forestry (IGN) in 2015.

In recognition of the on-going move towards reference data created by associating authoritative and contributed information, IGN has developed a collaborative web platform. This provides a tool for delivering its strategy of developing external contributions to reduce the time between receiving information alerts, integrating and updating its database, and onward distribution to users.

By allowing information to be superimposed on existing IGN data, the platform enables contributors to handle and capture new features directly within its internal infrastructure. The platform can be used for community sourcing from trusted partners as well as crowd sourcing. Changes submitted by both are subject to review by IGN surveyors before being accepted.

Community sourcing partners already use IGN data and are interested its quality, completeness and up-to-dateness. They are mainly reference organisations with official responsibilities, such as municipalities, and as a result make a significant contribution to data collection.

Occasional contributions (crowd sourcing) can consist of sketches or textual descriptions. Changes may also be captured through the IGN collaborative platform. For traceability, individual contributors are, as far as possible, identified through a login. These contributions are processed individually and reviewed by a IGN surveyor.

Developing innovation and research is one of IGN strategic priorities to meet the challenges of an evolving market while also contributing to public policies related to digital technologies, economic development, and modernisation. Consequently, IGN has enhanced its approach to open innovation to strengthen its ability to meet user needs and increase its performance.



The value of its research and development activities was further realised during the year with the successful launch of Geocube. This autonomous and ultra-compact GPS receiver developed by the IGN Instrumentation Laboratory enables the measurement of positions and displacements with sub-centimetric accuracy over long periods. A partnership with the SME Kyla resulted in the first Geocube products being brought to market in 2015.

The project incubator IGNfab also helps SMEs to develop innovative products and services using IGN data. Two projects are currently taking place. The first, an ultra-light photogrammetric camera developed by the IGN Instrumentation Laboratory, is being developed for the market by the Delair-tech drone manufacturer. The second, the In Sun We Trust (www.insunwetrust.solar) website will provide users with a precise assessment of the amount of solar power they could produce by installing roof panels. This project uses IGN topographic data and sunlight data to calculate close and distant shades.



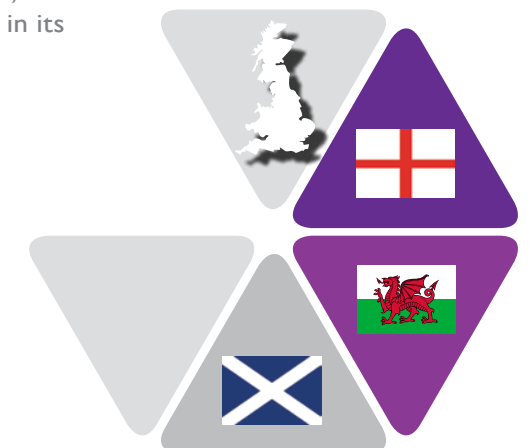
BUILDING ON 224 YEARS' EXPERIENCE TO CREATE STRONGER, LONG-TERM PARTNERSHIPS

Ordnance Survey (OS) welcomed a new Chief Executive Officer, Nigel Clifford in June 2015 whose strategic thinking is reflected in its ambitions for the future.

The organisation's strategy focuses on continuing to build capacity and capability in Great Britain and then supporting other nations so that they can realise the benefits of an accurate location framework. OS is committed to building on 224 years of expertise to create stronger, long-term international partnerships that focus on data management, as well as improving how partners and customers connect and gain benefit from their own content.

Today OS is a geospatial content and services business. The move from mapping to intelligent data, which can be manipulated and adapted, has resulted in technologies and innovations whose success relies on quality geospatial data. The OS strategy recognises the challenges felt at home and abroad – all of which have a geospatial dimension that is only going to intensify. One particular focus is on the challenges being faced by cities such as transport, population growth, big data, planning and health. It is in the areas of Smart Cities, Building Information Modelling (BIM) and the Internet of Things where OS will demonstrate real value and aim to build Great Britain as a global exemplar. Cities from all continents experience similar challenges and OS aims to ensure that experiences and expertise in data management are shared. The new strategy focuses on data management and improving how other nations can build, maintain and run a geospatial framework to support economic growth.

In the past five years, OS has awarded almost £650,000 in funding for 28 new ventures through its Geovation Challenges. In a further move to energise innovation in the UK geospatial industry, it has opened a London-based geospatial innovation hub to attract new players, visions, thinking and markets. The hub offers shared spaces, private rooms, workshop and demo areas and an events auditorium, as well as access to knowledge and support. In a few short months it has attracted 30 SMEs and three corporate members, as well as several hundred individuals. The fact that some SME members have already attracted outside funding for their ventures shows that the programme is working.



ResilienceDirect is the UK's secure platform for multi-agency partnerships to share information in both emergency response and in planning. The Resilience Community needs to have the best tools and services to support effective decision making at both tactical and strategic levels.

OS geospatial data is an integral part of the service, which has been delivered through a collaborative partnership with the Civil Contingencies Secretariat. The OS web development team used Agile methodology to enable rapid development of features and web applications, ensuring that the service is responsive to changing user needs and planning in an incident response. ResilienceDirect is starting to deliver results across the resilience community with more than 4,880 users.



COMPLETING CADASTRAL REGISTRATIONS OF BUILDINGS IN KOSOVO

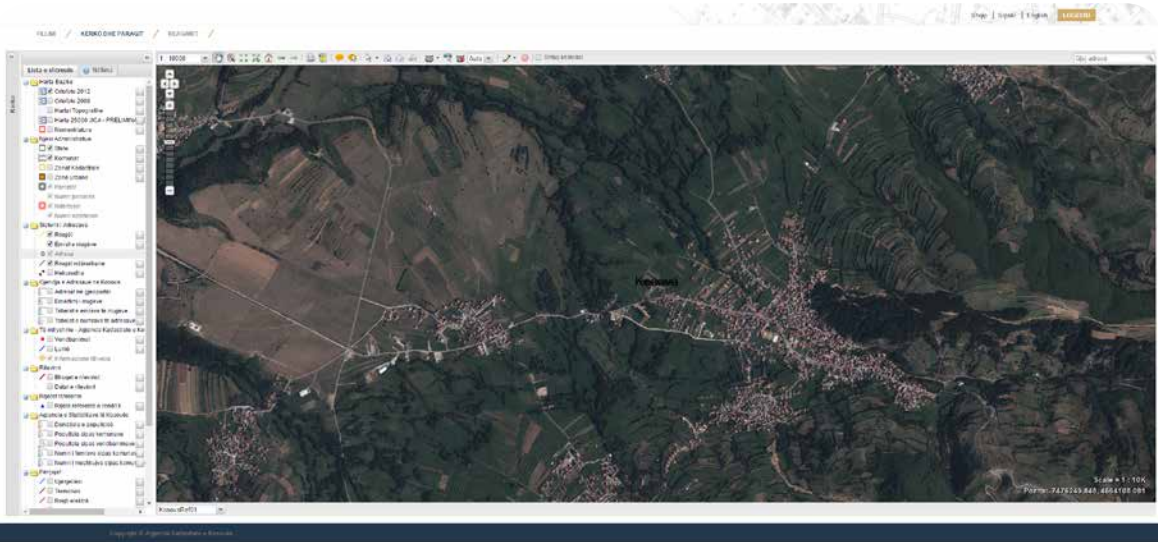
Kosovo has achieved cadastral registration for all buildings following the successful completion of a project to supplement formal documentation.

The initiative started as a pilot project in 2006 and is funded by the Norwegian government, the World Bank and the Government of Kosovo. It was based on the legal infrastructure and standards approved by the Kosovo Cadastral Agency. The Agency's duty is to register and provide data on immovable property rights and obligations. Prior to the projects for registration of real estate in cadastre, a building cadastre did not exist but now buildings and parts of buildings, such as apartments, shops, basements and garages, are included.

To meet the demand for spatial information, immovable property, as well as its features, must be registered in the cadastre and should be easily accessible. To provide a strong foundation for economic development, the Kosovo Cadastral Agency is ensuring that the register not only contains the necessary content but is also transparent. Its research has shown how economic progress contributes to the regular, safe and transparent registration of buildings and parts of buildings, particularly in terms of mortgages, transactions and the development of the free land market. Indeed, the number of mortgages and transactions in the free land market has grown in proportion to the increase in such registrations.

In 2011 the value of mortgages was €870 million, whereas in 2015 it had reached €1.5 billion. Mortgage values hit a peak in 2014, the year the registration in most major municipalities was finalised. By law, property that is not registered in the cadastre cannot be part of the immovable property free market and thus cannot be inherited or mortgaged.

Currently Kosovo is in 32nd place in the World Bank's Doing Business report 2016 for registering property.



PROVIDING A GI CONSULTANCY SERVICE TO THE NORTHERN IRELAND GOVERNMENT

Land and Property Services (LPS) offers a GI consultancy service to all Northern Ireland Government Departments. Under the terms of the Northern Ireland Mapping Agreement, it has contributed to a wide range of projects enabling policy-makers to easily visualise a variety of information using authoritative maps.

LPS Consultants have assisted the Northern Ireland Assembly Environment Committee to assess the impact of statutory separation distances between residential properties and wind farms. A GIS was used to visualise the area of land available if minimum separation distances were enforced, enabling a more informed decision to be made and the Committee was able to recommend that the Department of the Environment specify a minimum separation distance between turbines and dwellings. The Department is now undertaking further research as part of its strategic planning policy for renewable energy.

Other projects included:

- A site suitability model for assessing potential settlement locations for 2,000 Syrian refugees in the next five years completed on behalf of the Department of Social Development. Locational factors, such as the availability of suitable homes and healthcare, local school capacities and frequency of race-related crimes were integrated into a GIS and visualised on maps.
- A web mapping application visualising a site suitability model of potential locations for Quiet Area designation under the EU Directive produced for the Department of the Environment.
- A spatial view service for the Legal Services Agency to assess the availability of legal aid to clients by valuing their property against the legal costs of their cases.
- A school performance web application visualising the latest school statistics and providing access to the latest Education and Training Inspectorate (ETI) reports. Available on the ETI's website, it allows the public to find out about the quality of education in different areas of Northern Ireland.
- A series of maps for the Department of Finance and Personnel (DFP) IT Assist Shared Services tele-working scheme. These show the locations of tele-working sites, the staff working at each, and on which day, as well as a travel time analysis.



- A pilot project for the Department of Enterprise Trade and Investment Telecoms Section to identify areas that have basic broadband and those with superfast broadband coverage. This project also identifies gaps in broadband provision.
- Updating the data displayed on the Rivers Agency internal and external GIS viewers. This included reviewing flood hazard data, calculating flood risk data, updating databases and web services and producing digital mapping for printing.
- Working on behalf of the Department of Agriculture and Rural Development to both inform the strategy and act as an ongoing management tool as part of a £7.5 million wildlife intervention research project. This included identifying the most appropriate study areas within Northern Ireland that contained an adequate density of various animal species, farm businesses, and an appropriate terrain for field staff to access.



CREATING A CENTRE OF EXCELLENCE IN ROMANIA

A new centre of excellence for cadastre and land management in Romania will increase opportunities for international cooperation whilst promoting expertise and best practice.

A financing agreement signed in May 2015 with the European Commission is enabling the National Agency for Cadastre and Land Registration (ANCP) to develop the unique resource known as CENTRIC. It will promote scientific excellence in areas such as aerial and satellite image processing, the analysis of 3D and 4D data, photogrammetry topographical techniques and the interconnection of geospatial information.

In addition, the project will ensure long-standing cooperation between partners from developed and less developed countries, as well as between ANCP and its corresponding institution in Trento, Italy which is considered an example of best practice at EU level. ANCP has also introduced initiatives for students from various academic centres in Romania and Moldova to gain experience.

Work to ensure a solid foundation for long-term projects has also continued. One of the most important is the ambitious National Program for Cadastre and Land Registry which aims to complete systematic cadastre and registration of real estate in the Land Books by 2023. A special department employing some 600 specialists has been created within ANCP to achieve this.

Lack of proper and accurate property rights records remains a challenge and has a negative impact on economic growth as well as the absorption of EU funds for large investment projects. To ensure the success of the systematic cadastre program, Law 7/1996 of Cadastre and Real Estate Publicity was amended to simplify procedures.



ANCP has also issued a tender for services to enable the systematic registration of agricultural land within the integrated cadastre and land registry system. It covers sites of more than one million hectares in 191 Administrative Territorial Units. Property registration will be free of charge with all costs borne by ANCP.

Like many other European countries, Romania is making sustained efforts to implement the INSPIRE Directive and improve the national geoportal. In 2015, a property functionality was added to allow rapid searches updated in real time as well as faster spatial analysis to enhance decision-making and underpin emergency and disaster management. A legal framework was also completed with a new normative act that establishes the responsible public authorities and participating authorities in the 34 themes of the INSPIRE Directive.



COOPERATION AND A COMMITMENT TO IMPROVING TRANSPARENCY DRIVES ACTIVITIES IN UKRAINE

International cooperation continues to be a key focus for the StateGeoCadastre in Ukraine which is also delivering projects to improve transparency and simplify land registration.

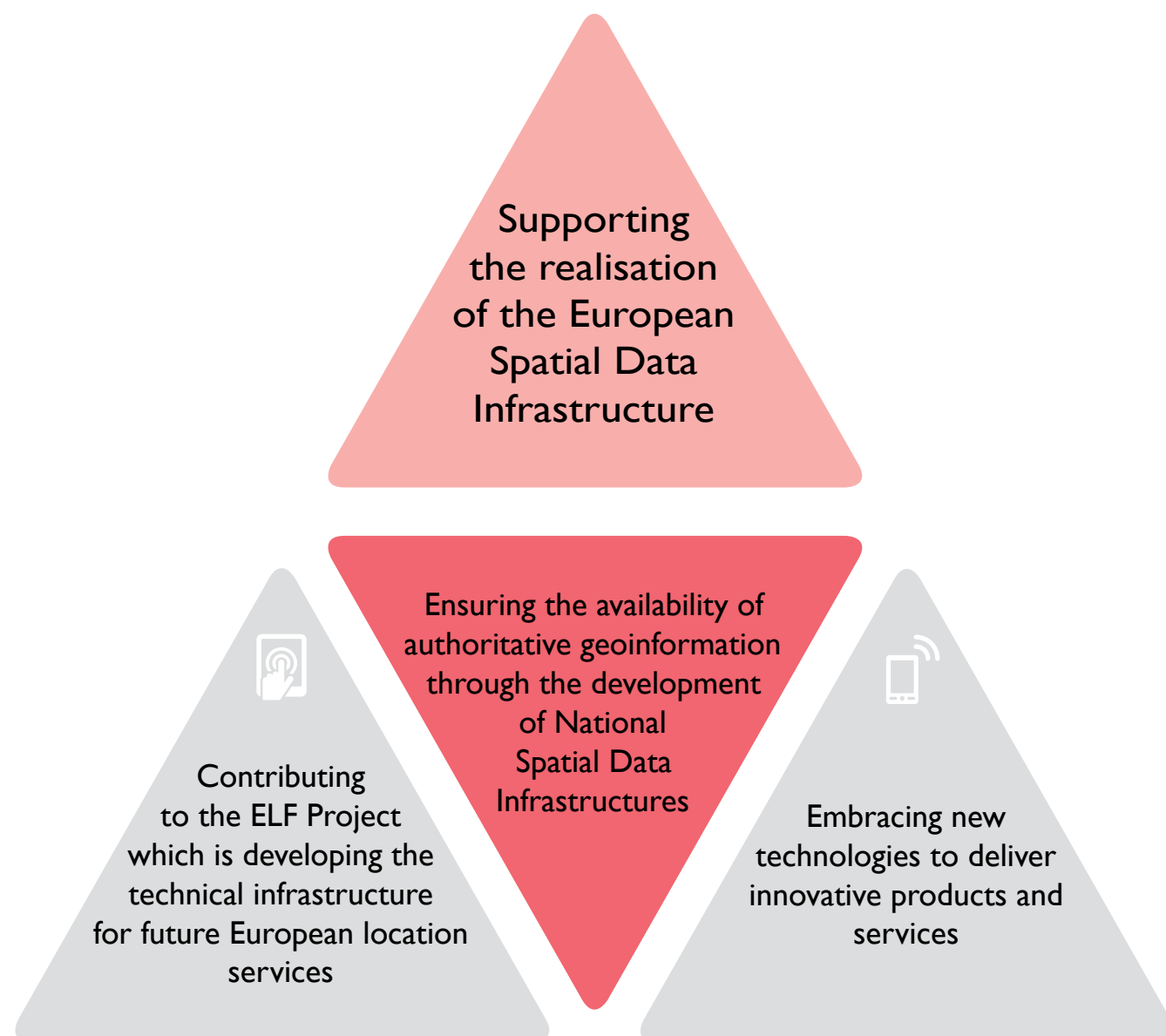
2015 saw the successful completion of the EU-funded twinning project providing institutional and legislative support to help develop an open and transparent land market. In addition, monitoring of land relations was introduced as part of the World Bank Project to deliver an evidence-based land and agriculture policy. The past year also marked the start of an initiative to create a national spatial data infrastructure. StateGeoCadastre is now working with the Japan International Cooperation Agency on a system prototype for a pilot area.

To improve transparency and contribute to anti-corruption measures, personal data about land owners in Ukraine's land ownership registry became open to citizens. StateGeoCadastre has also provided access to the state land cadastre system for notary officers. Land registration procedures have been greatly simplified by reducing the number of documents needed to submit applications. A number of e-services to meet demand for the most popular applications, such as online ordering, were also launched. All other services are provided to citizens by regional offices via a nationwide network of Centres for Administrative Services.

StateGeoCadastre is responsible for 2,000 cadastral registers, has 557 regional offices in each district of the Ukraine and more than 10,500 employees. In 2015, a number of new directors were appointed through an open competition.



KEY CONTRIBUTIONS 2015



THE EUROPEAN LOCATION FRAMEWORK

The European Location Framework will be the gateway to pan-European maps, geographic and land information, bringing together geospatial information from different agencies and different countries. It is a single source of official, quality-assured data from Europe's national mapping, cadastral and land registry authorities and provides the single point of access to license data from multiple countries.

EuroGeographics and some of its members are part of the ELF Project which has developed the standards, specifications, tools and technical infrastructure to deliver pan-European geospatial content. Project partners will now deliver a package of pilot products and services to defined international standards to test the market and develop solutions that meet user needs.

As a practical example of INSPIRE implementation, the ELF Project has supported the delivery of national web feature services (WFS) and has provided valuable feedback on the data specifications as they are implemented in different countries. This work is now helping others in the European Union to meet INSPIRE legislative requirements.

Project partners include private companies, academic organisations and national mapping, land registry and cadastral authorities who have agreed to provide data. It is therefore a good example of the public, private and academic sectors working together in an international collaborative venture that will benefit governments, businesses and, ultimately, citizens across Europe.



The ELF Project, which started in March 2013, is co-funded by the EC's Competitiveness and Innovation framework Programme (CIP), Information and Communication Technologies Policy Support Programme (ICT PSP).



ALBANIA COMPLETES PROJECT TO ENABLE ELECTRONIC PROPERTY REGISTRATION

Albania is now covered by an electronic register of immovable property which links all registration offices with the central office in Tirana.

The new web-based computerised system, delivered by the Immoveable Property Registration Office (IPRO), contains both alphanumeric data and maps and is being used in all local offices. The first registrations have been completed in urban areas, such as Tirana, Durrresi, Vlora and other main cities. Work is now starting on a second phase in smaller cities which is planned to finish by the end of 2016. It corresponds with the completion of new working regulations prepared by the Legal Department which are now with the Ministry of Justice for approval before being sent to the Council of Ministers.

In May 2015, IPRO signed an interoperability agreement for GNSS networks with Montenegro and Kosovo which sets how they will cooperate to exchange data about permanent stations. At the official signing IPRO Directors were joined by the Albanian Minister of Justice. The same agreement came into force with the Former Yugoslav Republic of Macedonia in February 2016.

IPRO Central Office is also part of the IMPULS project to build a geospatial data infrastructure in accordance with the INSPIRE Directive. It involves all countries of the Western Balkans and is led by the Swedish Mapping, Cadastral and Land Registration Authority (Lantmäteriet) with financing from the Swedish International Development Agency (SIDA).



CYPRUS LAUNCHES GEOSPATIAL INFORMATION PORTAL

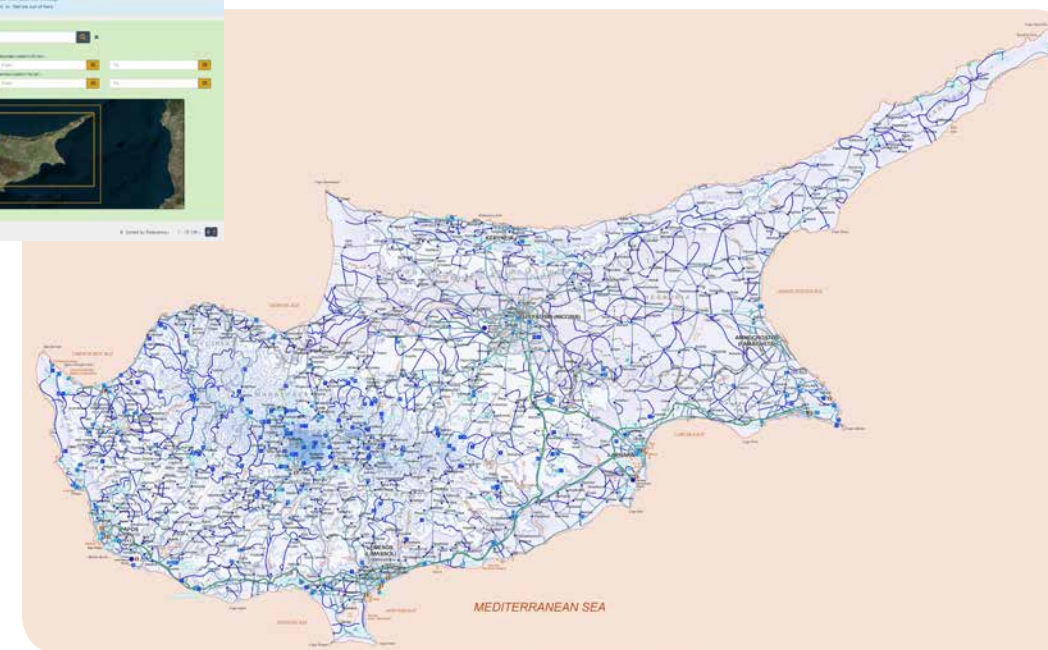
Cyprus has launched a new geoportal which enables users to search, view, download and access government geospatial datasets.

The e-service at www.geoportal.gov.cy was developed in accordance with the INSPIRE Directive and the provisions of Law 43(I)/2010. The pioneering project allows access to a large volume of official, updated geospatial datasets directly from the organisations that produce and maintain them. It also includes information related to the development of INSPIRE in Cyprus with relevant links. In addition, there is a link to the INSPIRE platform in which all electronic geospatial services have been stored. The geoportal works both in Greek and English.

All relevant information and descriptions are included in the metadata of the geospatial datasets. The e-services can be searched, viewed, downloaded and most importantly, directly accessed by any GIS system or any other relevant application. They can also be integrated with users' own datasets.

The geoportal constitutes a very useful tool for a wide range of users including government departments and services, universities and schools, technical offices and citizens. It is expected that it will significantly improve existing procedures, reduce processing time and will play a key role in assisting citizens and improving the national economy.

It is heavily based on the Integrated Land Information System operated by the Department of Lands and Surveys since 1997. The department is now developing a brand new multifunctional portal which will offer a large variety of information, applications and e-services. This will be directly connected to www.geoportal.gov.cy and will further enhance INSPIRE functionality when it becomes operational in 2016.



A NEW ORGANISATION AND NEW TASKS FOR THE NATIONAL LAND SURVEY OF FINLAND

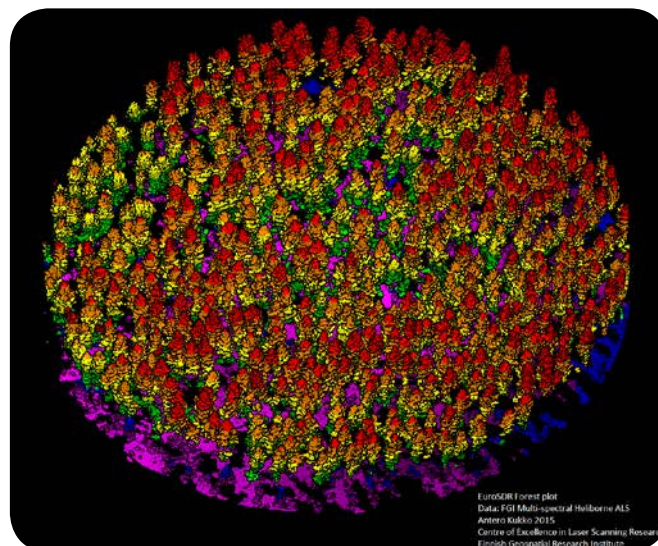
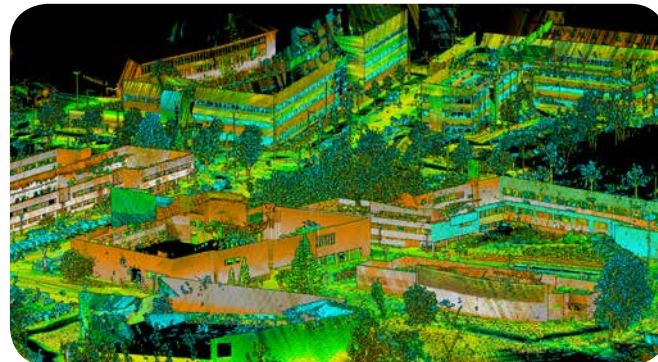
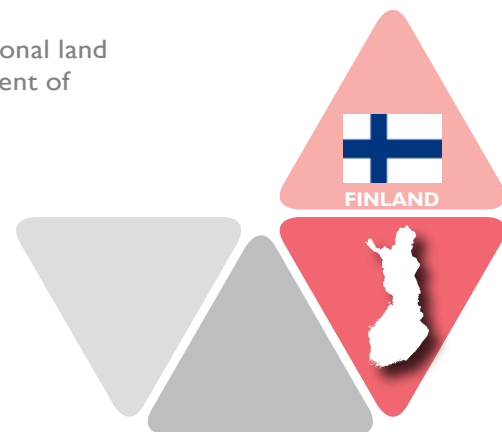
The National Land Survey of Finland is responsible for the national land registry, cadastre and mapping. It also promotes the development of a spatial data infrastructure.

In 2015 the Finnish Geodetic Institute (FGI) and the Centre for ICT Services, which provides Ministry of Agriculture and Forestry agencies with sector-specific IT services, merged with the National Land Survey. As a result, it now has responsibility for spatial data research, spatial application development and information system development. The basic tasks of maintaining the topographic data system, real property system and registration system remain unchanged.

FGI carries out research in geodesy and geodynamics, remote sensing and photogrammetry, navigation and positioning as well as geoinformatics and cartography. The merger of a spatial data research institute and an agency specialising in the application of spatial data paves the way for new innovations and practical applications.

The competence of FGI was immediately put to use in the National Topographic Database programme. The new National Topographic Database will be a multi-level database consisting of base map data from municipalities and topographic data collected by the National Land Survey. The initiative is responding to changing demands for spatial information, for example a growing requirement for 3D modelling, with the first pilot results expected in 2017.

Research results from FGI will be used to generalise municipal data. It is also investigating the use of mobile mapping and unmanned aerial vehicles for updating base maps as well as automated methods for analysing remote sensing data. A small laser scanning system for mobile platforms developed by FGI has already proved popular with start-up and utility companies. For example, when mounted on an unmanned aerial vehicle, it enables faster, more cost-effective identification of survey faults in power lines such as after a storm. Previously this required five helicopters in flight for a week to map power lines maintained by five different utility companies. With 50 robot drones, the same area can be inspected in half a day.



Euromed Forest plot
Data: FGI Multi-spectral Helicopter ALS
Antero Kallio 2015
Centre of Excellence in Laser Scanning Research
Finnish Geospatial Research Institute

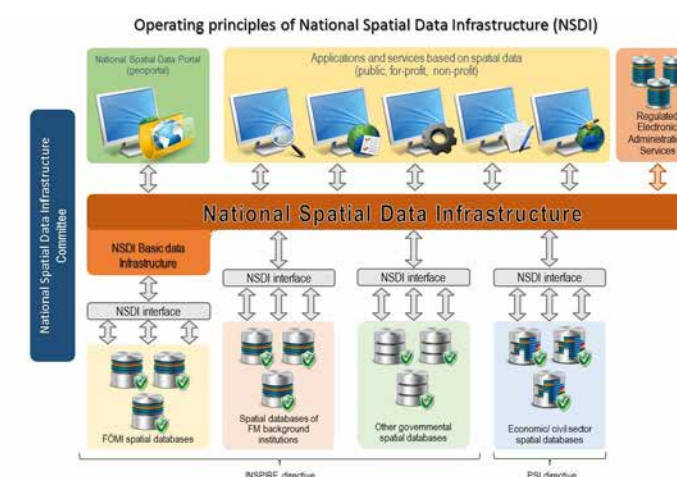
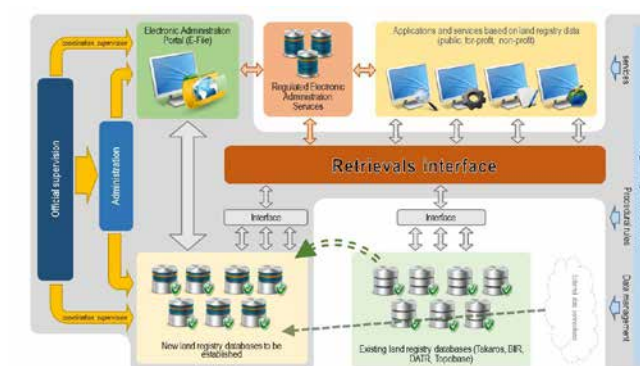
HUNGARY LAUNCHES TWO NEW LAND ADMINISTRATION PROJECTS

Two new projects have been launched in Hungary, one will enable electronic land administration whilst the other will harmonise more than a hundred public databases.

Both are specified within the Administration and Public Services Development Operational Programme and are led by the Ministry of Agriculture with the Institute of Geodesy, Cartography and Remote Sensing (FÖMI) playing a key role.

The €56.5 million e-land registry project aims to harmonise the land registry and land parcel IT systems in Budapest and other land offices. A unified system and common base datasets will ensure interconnectivity and interoperability with government records. Pleadings will be received electronically and e-administration will be completed by 2018. The project is a significant step towards establishing a 3D land registry as underground facilities – such as wine cellars and underground car parking – will also be recorded in the cadastral database.

The aim of the €58.4 million national spatial data infrastructure project is to promote the more effective use of spatial information through data exchange, harmonisation and cooperation between owners and users. It will allow connections to be made, ensuring the flow of information and delivering mutual data services. This will enable parallel data production and maintenance to improve the economical effectiveness of spatial data management and services.



PLATFORM FOR THE FUTURE FOCUSES ON LINKED DATA

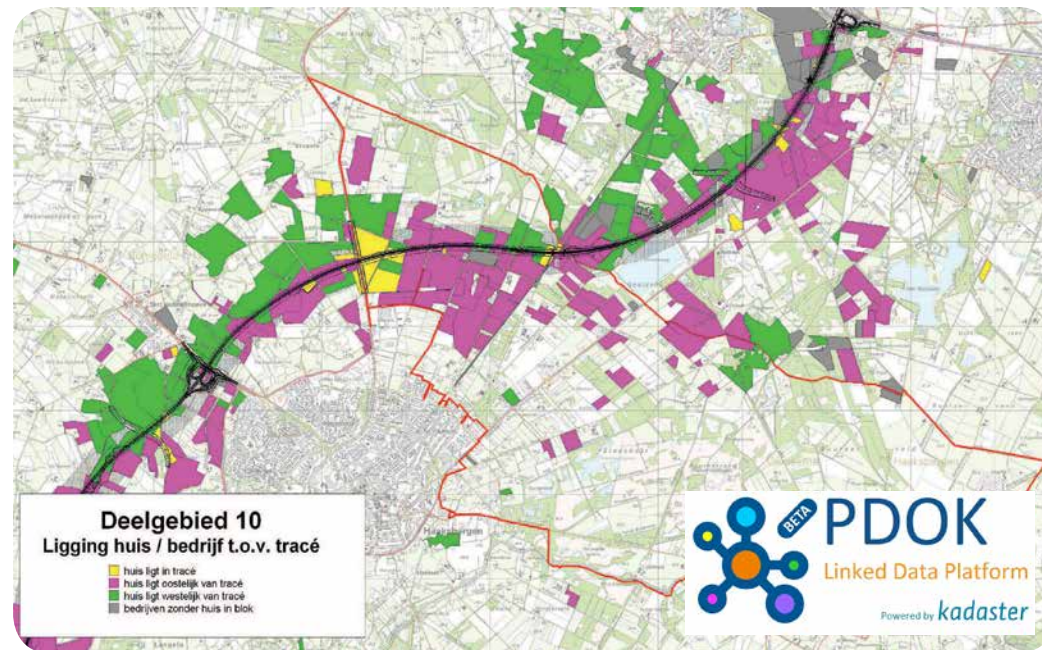
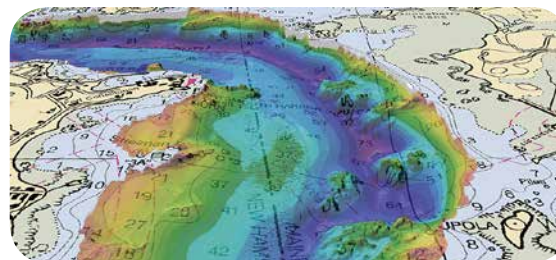
A data platform for the future developed in The Netherlands is focusing on linked data to share geospatial information online.

Created by the Cadastre, Land Registry and Mapping Agency (Kadaster), this early prototype is designed to serve high quality data in easy to use formats to a wide range of potential users. In time, the platform could become part of the information infrastructure of the new Environmental Planning Act.

The emphasis is on linked data, an approach based on current web technology and open standards for sharing data online. There is also the possibility to add semantics to further improve data quality.

The platform is developer-friendly and provides both APIs and a supporting framework. The prototype developed by Kadaster automatically creates APIs and linked data using web feature service (WFS) downloads of geospatial datasets. The intention for 2016 is to upgrade the prototype service into full production mode.

The work is being carried out in collaboration with Platform Linked Data Netherlands, an initiative co-founded by Kadaster for sharing knowledge and access to state-of-the-art technology.



DELIVERING DIGITAL POLAND

Nearly 24 million users have accessed the 240 services available within the Polish Geoportal which play a key role in the Spatial Data Information Infrastructure (SDI).

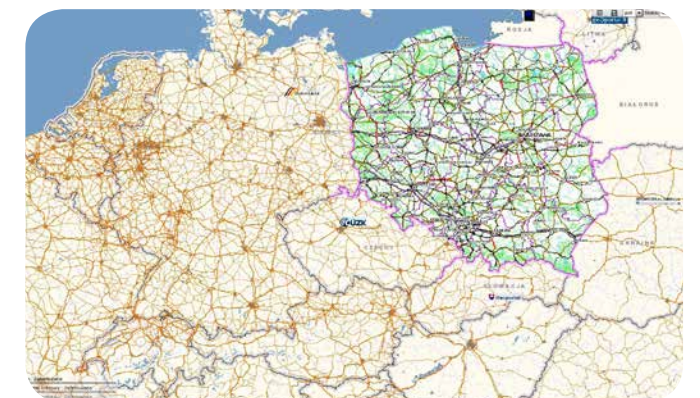
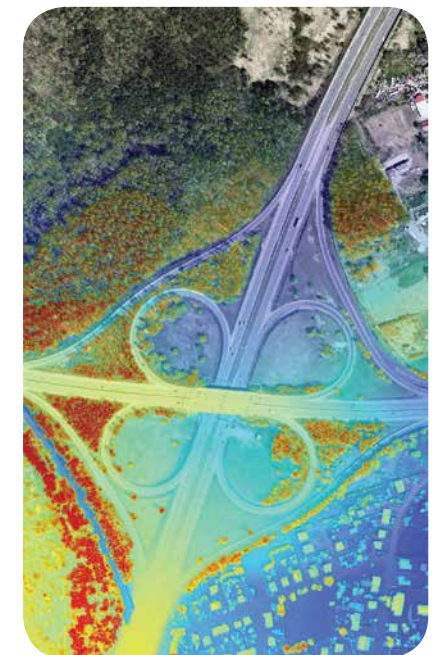
The completion of the Geoportal 2 project has facilitated common access to spatial information and associated services, as well as the creation of new applications. Currently the total availability of services amounts to 99.4%.

Three projects developed by the Head Office of Geodesy and Cartography (GUGiK) gained financing during the first competition announced under Operational Programme Digital Poland (OPDP). Of the 39 applications submitted, six were selected including three from GUGiK which will receive almost €100 million to implement important new geospatial initiatives.

The Centre of Spatial Analysis of Public Administration (Centrum Przestrzennych Administracji Publicznej - CAPAP) aims to encourage greater use of geospatial data by the public administration, entrepreneurs and citizens. It will achieve this by increasing the tools, services and data available whilst also enabling the interoperability of electronic services and spatial information. In addition, it will raise awareness of services and improve users' competence in spatial analysis and digital map applications.

The second project, K-GESUT - the national geodetic database of the land reinforcement network – will develop coherent, up to date and harmonised spatial information about networks of land by facilitating organisational, technical and technological processes. Harmonisation of public registers will contribute to the digitisation of internal processes within the administration and trade enterprises. The ZSIN project – Construction of the Integrated System of Information about Real Estate - Stage II will enable the exchange of information between geodetic registers and land and mortgage registers. Letters of intent have been signed with 11 provinces which have committed to modernising their registers and databases. Ultimately, this will enable geodetic data to be combined with information originating from other registers.

Training for users also remains an important part of GUGiK's work and, during the past year, around 5,000 administration office employees were trained in the operation of the address register and the SDI. This initiative was accompanied by an information campaign entitled 'Each address is important'. It included three films describing cases where lack of address information could lead to tragic situations.



NEW NATIONAL GNSS STATIONS NETWORK SERVICE IN SERBIA

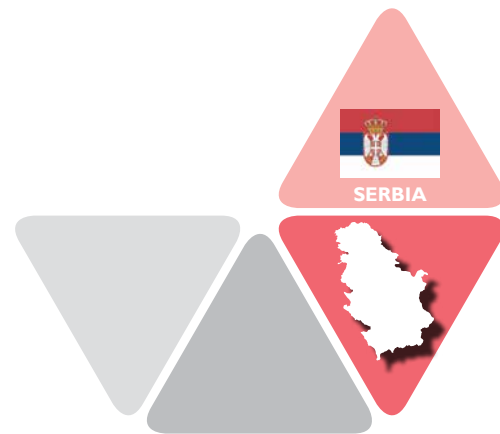
Comprehensive, enhanced quality overviews of GNSS analysis are being delivered in Serbia through a new web service. The improvements have been made by the Republic Geodetic Authority as part of its commitment to improve the transparency of the AGROS Network Control Centre.

The AGROS Control Centre is one of 16 Local Analysis Centres of the European Permanent GNSS Stations Network (EUREF Permanent Network). Currently it processes and analyses a total of 122 GNSS stations daily. These include 31 AGROS Network stations; 14 stations from neighboring GNSS networks; 54 European stations; 14 stations of the Former Yugoslav Republic of Macedonia (FYROM) GNSS Network; and 9 stations of the Montenegrin GNSS Network.

By following the EPN LAC basic menu at agros.rgz.gov.rs, users can access links to web pages showing tropospheric refraction parameters, coordinate variability and tectonic shifts. The web application Stations Shift – Map Overview provides an interactive map and table overview of tectonic shift vectors at European, Serbian, FYROM and Montenegrin GNSS permanent stations. Station shifts are calculated daily by resolving a system of normal equations, according to the multi-annual cumulative processing principle.

The application provides users with a clear overview of Euro-Asian tectonic plate shifts across the West Balkans and South Eastern Europe, as well as higher precision coordinate transformation from any given international or European reference frame. Modeling this geodynamic phenomenon enables the unification of AGROS GNSS network datum with global reference datum, while also making it more resilient against geomagnetic deformations which occur due to the movement of permanent tectonic plates.

The National AGROS Network Control Centre will continue to develop new applications and improve existing services to meet user requirements.



MODERNISING THE SPATIAL DATA INFRASTRUCTURE IN SLOVENIA

A project to modernise Slovenia's spatial data infrastructure is reducing the risk and impact of floods whilst also meeting the requirements of the INSPIRE Directive. In addition, the initiative is being used to establish the vertical component of the national coordinate system as well as basic topographic and hydrographic data layers.

Cooperation and increased operational performance of the public administration is key to its success with different authorities, including the Surveying and Mapping Authority of the Republic of Slovenia, working together to develop a national geodetic reference system comparable with European standards. This not only provides the foundation for a new topographic system, but will also enable an upgrade of the underlying hydrology data.

The establishment of the national combined geodetic network, or zero order geodetic network, will enable long-term and high-quality georeferencing and is now coming to a close. Five new points have been constructed with an additional reference point at Koper to be integrated into the combined geodetic network. This is already functioning as a mareograph station and as one of 16 permanent GNSS stations of the SIGNAL network.

Existing data is now being transferred into a new structure, which includes quality control and new content. The Geodetic Institut of Slovenia, in cooperation with the company Monolit, performed the migration, the scope of which was determined by the project to change the existing topographic model to meet INSPIRE.

In accordance with the INSPIRE Directive, the discovery network service for all metadata was established and the existing discovery network services adjusted to meet its demands. The public now has access to view network services for buildings and orthophoto data as well as access to the Register of Spatial Units and some other spatial datasets. The development of view and transformation services, along with the connection to other services for topographic and hydrographic data, is in the final development stages. Experiences gained from the creation of network services were used as the basis for instructions and guidelines for the harmonisation of spatial data network services not currently covered by the INSPIRE Directive. With their inclusion, interoperability in the field of spatial data is being further strengthened.



Another benefit of the project will be improved efficiency in water management services and hydrological forecasting thanks to the establishment of a unified, central data structure and the incorporation of new products and findings. This will also enable more effective flood protection. All newly-created data sets will comply with the INSPIRE Directive regarding data access and use.

PROJECT DESCRIPTION »MODERNIZATION OF SPATIAL DATA INFRASTRUCTURE TO REDUCE RISKS AND IMPACTS OF FLOODS«

PROJECT BUDGET



PROJECT OBJECTIVES



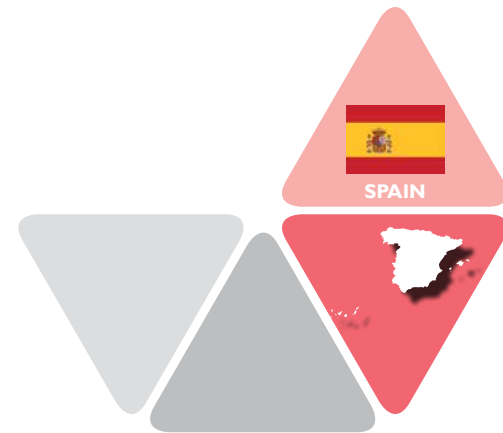
INCREASING LEGAL CERTAINTY AND TRANSPARENCY IN SPAIN

Spain is taking significant steps to increase legal certainty and transparency through the introduction of reforms to the mortgage law and revisions to the law on real estate cadastre (Law 13/2015).

The Spanish Cadastre and the Land Registry are two independent but closely related organisations. The Directorate General for Cadastre, dependent on the Finance Ministry, holds physical and economic data of the real estate together with the identification of the cadastral title holder. It also features graphical databases allowing the location and identification of real estate as well as the assignation of a cadastral reference. The Land Registry depends on the Ministry of Justice and constitutes a legal registry of rights that ensures a high degree of legal security in real estate transactions. The Registry stores titles and deeds and is a freely accessible public information service. The Spanish Cadastre is compulsory by law, the Land Registry is not.

Under the old mortgage law, the Cadastre provided the Land Registry with all cadastral information about the real estate before a title inscription. In addition, notaries and Land Registrars were obliged to include cadastral reference in the deeds and submit all information concerning the documents they had authorised or registered to the Cadastre. Lack of graphic information, however meant that the Land Registry could not accurately define the real estate.

Reforms introduced in 2015 established a system of coordination between the Real Estate Cadastre and Land Registry with web services implemented by both organisations to reduce the administrative burden of the changes. Using the cadastral cartography as basis, it will incorporate real estate information registered in the Land Registry with the graphic geo-referenced description. Once the cadastral data has been incorporated with the real estate information in the Land Registry, the delimitation, location and area data is considered certain for all legal purposes. The Land Registry record will also indicate if the real estate is coordinated with the Cadastre and the date of coordination.



The technical requirements for information exchange and the coordination mechanisms have been developed by a Joint Resolution of the Directorate General of Cadastre and D.G for Registries and Notaries which entered into force on 1 November 2015. This means the description of properties in the Land Registry can now be accompanied by the geo-referenced graphical representation of the real estate using information based on INSPIRE specifications supplied by the Cadastre. The INSPIRE GML format is embedded in the Cadastral Certification and will be used by all agents involved in property transactions.

Citizens may request the addition of a cadastral representation in the Land Registry at any time, however it must be included when there is a modification of the real estate configuration or description, such as first inscription, fusion and land consolidation. If there is a disagreement, citizens can provide an alternative representation which can be added following validation by a public administration and agreement from the Cadastre.



GEOPORTAL PROVIDES GCM DATA FOR TURKEY IN ONE PLACE

General Command of Mapping (GCM), the National Mapping Agency for Turkey, has launched the GCM-Geoportal to provide easy access to its data.

The comprehensive geospatial data catalogue and search service enables both the discovery and use of geospatial datasets, raster data and web services provided by GCM. Metadata is available in HTML or ISO 19139-compliant XML format.

The GCM-Geoportal, which was developed using open source software, also complies with the OGC Catalogue Service for Web (CSW) 2.0.2 and can be used with either a Turkish or English interface. The map viewer window enables users to search data using their own OGC compliant web service. Search results are shown using this background and metadata can be obtained by clicking the centre of the map or the show metadata icon.

The GCM-Geoportal can be accessed at <http://hgkgeoportal.hgk.msb.gov.tr/>

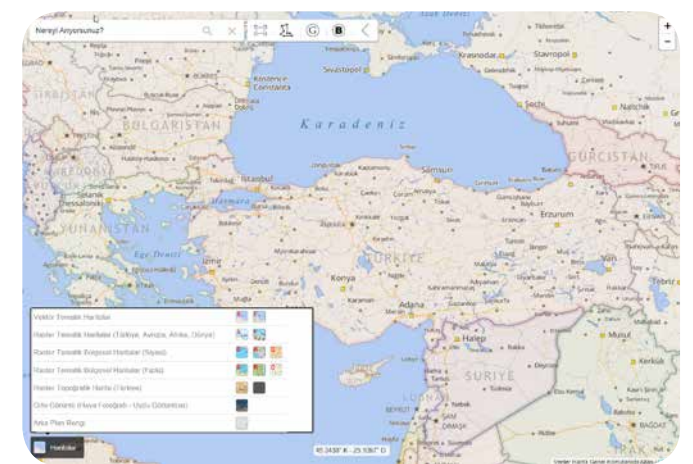
GCM has also developed the web application hgkAtlas, named after an abbreviation of Harita Genel Komutanlığı which is Turkish for General Command of Mapping.

hgkAtlas, which has 11 zoom levels, provides worldwide data with Turkey covered in the greatest level of detail. It includes vector and raster layers with new additions such as orthophotos planned for the future. The application is compatible with mobile devices and offers a web mapping service (WMS) as well as tools for searching place names, length and area measurement, coordinate reading, screenshot saving and a function for sending feedback.

hgkAtlas can be found at <http://hgkatlas.hgk.msb.gov.tr/>

A project to modernise the Turkish height system and gravity recovery is also underway. This will replace the current height system which uses the mean sea level of the Antalya tide-gauge as the zero-height level and is realised with first and second order levelling networks.

The gravimetric geoid models computed using this system do not have the accuracy to enable direct use in GNSS positioning. In addition, the rapid destruction of numerous levelling benchmarks due to the recent reconstruction of roads has also led to problems in determining precise heights. The mean accuracy of the recently released geoid model THG-09 is about +/- 9 cm and is not sufficient for border areas, along the coast, over bodies of water or



inland regions where large gravity data gaps exist, especially in mountainous areas. It is now estimated that up to 63% of benchmarks in the levelling network have been destroyed.

To overcome these shortcomings, a five-year collaborative project between five national organisations was proposed to the Ministry of Development and started officially in April 2015. The main goal of the initiative, which finishes in 2020, is to deliver a high-accuracy and high-resolution geoid model that will enable GNSS users in Turkey to determine orthometric heights of discrete points at any time and under any weather conditions in a faster and cheaper way than spirit leveling. New absolute and relative gravity campaigns and airborne gravimetry will be performed during the project to recover the gravity database. GNSS and levelling measurements will start in 2016 and be conducted at three separate lines to refine test points. After computation, the new model will be released to users through CORS-TR system.

Relative, absolute and airborne gravimeters, along with GNSS receivers and motorised levelling equipment, have been purchased and field teams organised and trained.

EUROGEOGRAPHICS' MEMBERS

	Organisation	Country
	National Authority for Geospatial Information (ASIG)	Albania
P36	Central Office of Immovable Property Registration (IPRO)	Albania
P27	State Committee of the Real Property Cadastre of the Government of Republic of Armenia	Armenia
P10	Federal Office for Metrology and Surveying (BEV)	Austria
	Real Estate Cadastre and Address Registry Service	Azerbaijan
	under the State Committee on Property Issues, the Republic of Azerbaijan	
	The State Committee on Property of the Republic of Belarus	Belarus
P11	National Geographic Institute (IGN)	Belgium
	General Administration of Patrimonial Documentation	Belgium
	Federal Administration for Geodetic and Real Property Affairs (FUGU)	Bosnia & Herzegovina
	Republic Authority for Geodetic and Property Affairs of Republic of Srpska	Rep.Srpska, Bosnia & Herzegovina
	Geodesy, Cartography and Cadastre Agency (GCCA)	Bulgaria
	State Geodetic Administration (DGU)	Croatia
P37	Cyprus Department of Lands and Surveys	Cyprus
P12	Czech Office for Surveying, Mapping and Cadastre (ČÚZK)	Czech Republic
	Danish Geodata Agency	Denmark
P14	Estonian National Land Board	Estonia
P38	National Land Survey of Finland (NLS)	Finland
P28	National Institute of Geographic and Forest Information	France
P15	Agency of Real Estate Cadastre (AREC)	Former Yugoslav Republic of Macedonia
	National Agency of Public Registry (NAPR)	Georgia
P17	Federal Agency for Cartography and Geodesy (BKG)	Germany
P16	Working Committee of the Surveying Authorities	Germany
	of the Leander of the Federal Republic of Germany (AdV)	
P29	Ordnance Survey Great Britain (OS)	Great Britain
P13	Her Majesty's Land Registry (HMLR)	England and Wales
	Hellenic Military Geographical Service (HMGS)	Greece
	National Cadastre and Mapping Agency S.A.	Greece
P39	Institute of Geodesy, Cartography and Remote Sensing (FÖMI)	Hungary
	Geoinformation Service of Hungarian Defence Forces (GEOSS)	Hungary
	National Land Survey of Iceland (NLS)	Iceland
	Registers Iceland	Iceland
P18	Ordnance Survey Ireland (OSi)	Ireland

	Organisation	Country
P19	Italian Military Geographic Institute (IGMI)	Italy
	Revenue Agency	Italy
P30	Kosovo Cadastral Agency (KSA)	Kosovo
P20	State Land Service (SLS)	Latvia
	Latvian Geospatial Information Agency (LGIA)	Latvia
	National Land Service under the Ministry of Agriculture	Lithuania
	State Enterprise Centre of Registers	Lithuania
	Administration of the Cadastre and Topography	Luxembourg
	Malta Planning Authority	Malta
	State Agency for Land Relations and Cadastre (ARFC)	Moldova
	Republic Of Montenegro Ministry Of Finance Department Of Real Estates	Montenegro
P31	Land and Property Services (LPS)	Northern Ireland
	Norwegian Mapping Authority (SK)	Norway
P41	Head Office of Geodesy and Cartography (GUGIK)	Poland
	Directorate General for Territory	Portugal
P32	National Agency for Cadastre and Land Registration (ANCP)	Romania
	Federal Service for State Registration, Cadastre and Mapping (ROSREESTR)	Russia
P42	Republic Geodetic Authority (RGZ)	Serbia
P21	Geodesy, Cartography and Cadastre Authority of the Slovak Republic (GCCA)	Slovakia
P43	Surveying and Mapping Authority of the Republic of Slovenia	Slovenia
	National Geographic Institute (IGN)	Spain
P44	General Directorate for Cadastre	Spain
	Territorial Commission of the Geographic High Council	Spain
P22	The Swedish Mapping, Cadastral and Land Registration Authority	Sweden
P23	Federal Office of Topography (Swisstopo)	Switzerland
P40	Cadastre, Land Registry and Mapping Agency (Kadaster)	The Netherlands
P45	General Command of Mapping (GCM)	Turkey
	General Directorate of Land Registry and Cadastre	Turkey
P33	StateGeoCadastre	Ukraine

* Members with page numbers have a case study in this report



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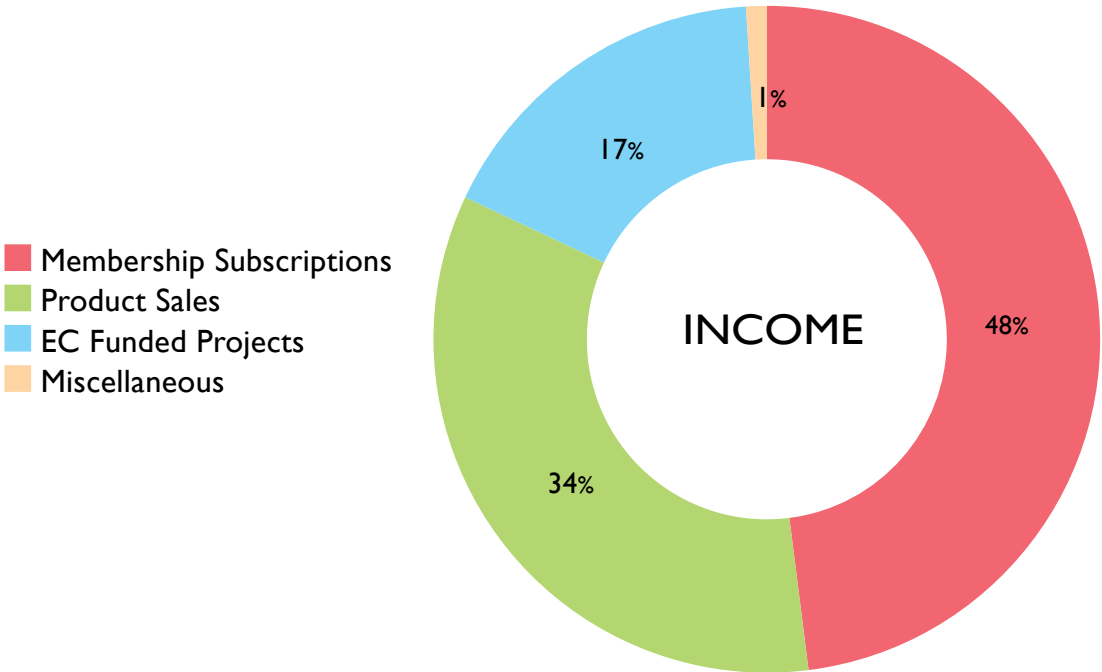
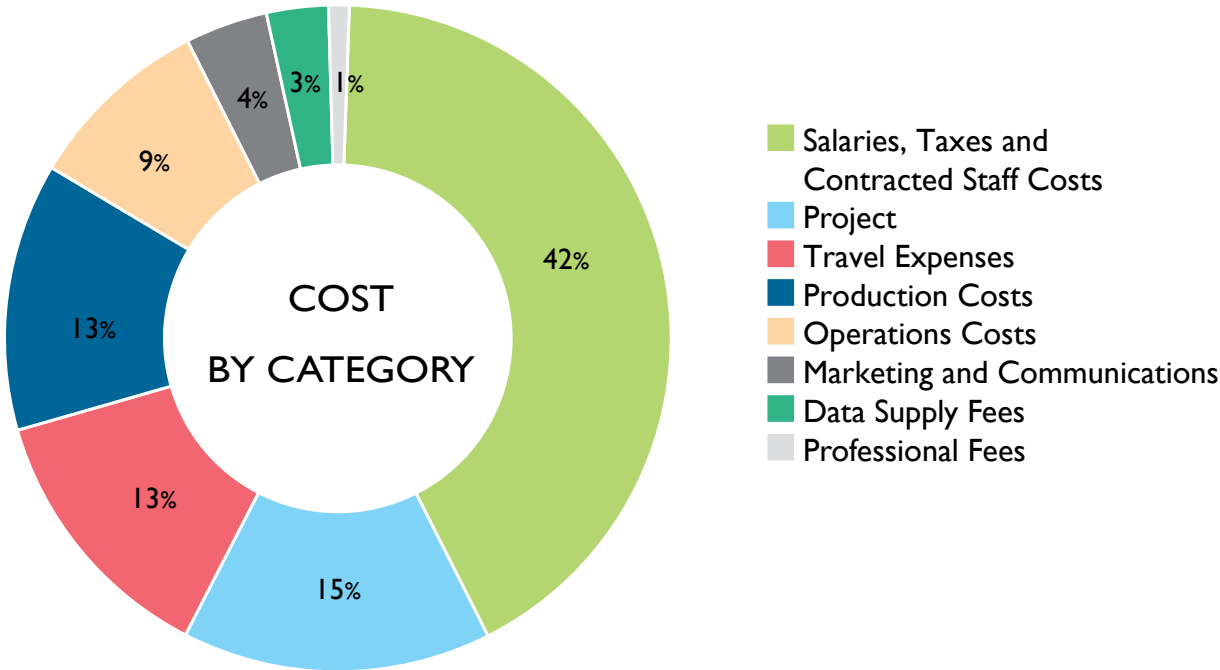


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