

DigMap - Digital Map Excerpt Software

SHARE PSI - paper for a plenary - Berlin Workshop:

Maximising interoperability — core vocabularies, location-aware data and more

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Excellence

Abstract

DigMap is digital map excerpt (DME) and it represents a part of ICT GIS infrastructure that can be widely used in different areas. Its most recognized usage is going to be for printing out digital cadastral map excerpt composed from several layers (most common digital ortophoto, land use, parcels and buildings) used to locate, inventory, and appraise all owner's property. Maps and map data are also important for other governmental agencies, the public, and the land information community (such as realtors, title companies, and surveyors).

DigMap in PDF format significantly simplify the view of geospatial data and feature attributes while DigMap embedded files can enhance the capability to manage, analyse, summarize, display, and disseminate geographically referenced information.

DigMap can be used in many different areas where digital map is needed. Exhaustive list of application areas can be found under INSPIRE Directive that addresses 34 spatial data themes needed for environmental applications. Due to DigMap standardization it can be used as a wide accepted technology and common format for digital geospatial data dissemination over Internet.

As support for many public services connected with delivery of geospatial data DigMap is going to be availability online. According to the eGovernment benchmark method DigMap is five-stage maturity model that supports forth transaction, and finally fifth as well, which is the highest targetisation level.

DigMap supports transactional maturity model - also called full electronic case handling – where the user applies for and receives the service online, without any additional paper work, which is increasingly becoming mainstream. DigMap also supports the fifth level, targetisation, which provides an indication of the extent by which front- and back-offices are integrated, data is reused and services are delivered proactively.

DigMap allows online “one stop shop” approach to many public electronic services even when complexity of geospatial data is involved. Due to DigMap standardization it can be used as a wide accepted technology and common format for digital geospatial data dissemination over Internet. Since data are enveloped in today’s most common interoperable PDF format it enables easy Citizen Participation using wide range of devices (smartphones, tablets, PC).

DigMap PDF enables easy view of geospatial data and feature attributes while DigMap embedded files can enhance the capability to manage, analyse, summarize, display, and disseminate geographically referenced information.

DigMap non-functional requirement include: Standardization, Interoperability, Authenticity, Billing.

- Standardization. DigMap will enable sharing spatial data in standardized .pdf format, providing end users with possibility to have a direct view on spatial data presented as a map (picture in PDF file).
- Interoperability. DigMap will be based on wide accepted OGC SLD, WMS, WCS WFS and WPS standard and fully INSPIRE compliant.
- Authenticity. To be able to use issued DigMap for legal purpose it must be signed with digital signature enabling authentication and non-repudiation.
- Billing. DigMap will have billing ability based on price of point, area or number of objects delivered to the end user.

Ambition

There are various commercial solutions on the market for creation of geo spatial reports offered by GIS top vendors like ESRI, Oracle, Intergraph, MapInfo and many others, and still we are missing free and open source solution that would be suitable for small and medium companies that have a need for easy to use, affordable solution.

Small and medium enterprises and government institutions would be the main target market for DigMap. DigMap is offering free and open source solution combined with professional implementation and support services at affordable prices following open-source software business model.

Digital map excerpt can be built on top of various free and open source technologies, integrated together in software development process. DigMap would offer bundled package ready for installation and configuration without software development or integration process, that fore saving efforts, time and money.

From the customer's perspective, the ability to use open-source technology under standard commercial terms and support is valuable. Customers are willing to pay for the legal protection (e.g., indemnification from intellectual property infringement), "commercial-grade QA," and professional support/training/consulting that are typical of commercial software built on top of the innovation and independence that comes with open source.

Impact

DigMap clearly contributes to the following impacts:

- It fosters wider use of spatial data, by public and private organisations, through value added services.
- It promotes the use and re-use of harmonised and interoperable data sets, related to a number of themes within annexes I-III of the INSPIRE directive, made or being made available, through different companies or institutions.
- It delivers enabling services for dissemination and visualisation of information.
- It implements processing services using related standards (WPS).
- Facilitate cross border use and data/service integration.

Social Impacts

Consumers are becoming increasingly demanding, especially as regards level of comfort and speed of public and private services delivered over Internet. DigMap smart services involving citizens will strongly help for delivery of digital map excerpts (innovative ways of government), like cadastre excerpts in real time as a self-service. DigMap can enhance growth, competitiveness, and jobs. DigMap promise a yet greater productivity boost. Europe's ambition is to create new business opportunities and accelerate the transformation of its business landscape through novel digital technologies, like DigMap, in order to increase growth and create employment.

Competitiveness of the EU

One of the principle missions of the European Commission is to promote the competitiveness of the ICT industries and services and to support the take-up of ICT and e-business practices by European enterprises. Innovations are regarded as crucial for ensuring the competitiveness of European industries in the knowledge economy.

The European Commission tabled on 26 June 2012 its strategy to boost the industrial production of Key Enabling Technologies -based products, e.g. innovative products and applications of the future. The strategy aims to keep pace with the EU's main international competitors, restore growth in Europe and create jobs in industry, at the same time addressing today's burning societal challenges.

"A European strategy for Key Enabling Technologies - A bridge to growth and jobs" Communication adopted on 26 June 2012.

Policy impacts

DigMap contributes to the following EU political objectives and policies:

- Directive 2003/98/EC on the re-use of PSI: providing value added services on top of existing OWSs.
- Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE).
- The Digital Agenda for Europe, Pillar II: Interoperability & Standards and Pillar III: Trust & Security

- Initiatives from EEA (European Environmental Agency) including EIONET - European Environment Information and Observation Network: improving management of environmental data.
- SEIS principles: specifically referring to open source solutions supporting information sharing and processing.
- Current objectives of European Space Agency (ESA): in terms of interoperability and eInfrastructure.
- Current objectives of Joint Research Centre (JRC): in terms of interoperability, support to INSPIRE and ESDI.
- Policies set by the United Nations Spatial Data Infrastructure (UNSDI): contributing to the objective of enhancing spatial data and information sharing between UN agencies and programmes directly through partner CCSS which is UNSDI national coordinator.
- European interoperability framework for pan-European eGovernment services

Expected Impacts

The overall aim of the proposed project is to provide easy to use software for creation of digital map excerpt, digitally signed based on free and open source software.

The three adjectives (smart, inclusive and sustainable) characterizing the EU2020 strategy request for major change in the way of defining the way of being competitive and at the same time keeping under control the unbalances connected to regional disparities, but even to look for more effective and efficient solutions in the use of digital data. In fact, this way, especially those connected to the definition of smart solutions for the economic growth of European cities, city-regions and major scale territories, is strictly connected to the proper design of an EU Digital Agenda (DA).

Users

DigMap is facing very critical issues connected to the future quality of public service related to the publishing spatial and non-spatial data. The project is aware of the fact, already largely demonstrated within INSPIRE, that the awareness of availability and of the usage of new services has to be widely demonstrated and deeply supported at least in the starting phase. Because this a complex and robust action of networking, activities such as dissemination of results together with a continuous activity of feedback monitoring are foreseen in one dedicated work package - DigMap potential users survey – delivered on various addresses in EU.

DigMap outcomes are to identify in set of tools, services and policies that will contribute to major horizontal tasks connected the EU digital Agenda (e.g. access of data owing to public sector information, and enhancing the EU innovation capacity), but, at the same time, the project's outcomes will affect and impact on the realms of interoperability and standards of spatial data and trying to propose effective solutions for spatial data wide dissemination to public and citizens. These latter realms constitute key pillars of the DA for Europe. Outcomes, indeed, will depend on what is going to happen during the project's evolution and implementation.

Moreover, citizens are, thanks to new mobile devices, are ready to consume Internet base services like DigMap. With regard to this, those DigMap smart services involving citizens will strongly help for delivery of digital map excerpts (innovative ways of government), like cadastre excerpts.

DigMap aims to innovate the capacity to facilitating the development of EU wide markets for innovative ICT-based products and services and exploitation of digital content and DigMap looks at the stakeholders in

order to mobilize the suitable financial and human resources needed to carry out DigMap development and application in operating environment.

Concluding, DigMap output answer to the questions connected to inter-regional/cross border dissemination of geo spatial data, those connected to the indications for the design of trans-national services (the market is definitively global)

Implementation

Demo

There are two demos hosted at FIWARE Cloud:

<http://digmap-dme.fiware.yottabyte.hr/leaflet/> - demo showing DigMap usage using Leaflet front end

<http://digmap-dme.fiware.yottabyte.hr/geoext/> - demo showing DigMap using GeoExt front end

About company

yottabyte j.d.o.o. - www.yottabyte.hr

yottabyte j.d.o.o. is establish with mission to provide high quality consulting in ICT field. Services are provided by independent expert, Krunoslav Hrnjak, M. Sc. E.E., MBA, PMP, a company owner, ICT professional with ten years' experience. Logistics and support is provided by Tihana Hrnjak, Master of Political Science, and certified EU funded project's manager. yottabyte is offering full range of services including consulting, design, project management, education and turnkey solution implementation.

Key personnel

Krunoslav Hrnjak

Krunoslav Hrnjak, M. Sc. E.E., MBA, PMP works as independent consultant and court witness expert. He has more than ten years of experience in ICT filed acquired in regional and international companies (Siemens, KING-ICT, Geofoto, Infosistem) in various roles as: developer, solution architect and project manager. He teaches Linux and Ruby at the Computing University Centre. Relevant experience include projects like AREC –development of public portal for spatial data dissemination in Republic of Macedonia, ARPIS – implementation of digital Cadastre in Armenia, PRAGMA - development of GIS cloud platform and solutions for local government and KIR - development of web based GIS solution for geodetic survey.

Tihana Hrnjak

Tihana Hrnjak, M. A. in Political Science, certified EU funded project manager, provides logistic support for service-oriented businesses, tailor services to the particular client, act as a key account manager promoting company's services and taking care about marketing approach and client targeting. Tihana is irreplaceable in building a personal relationship with clients. She has experience in private entrepreneurship and currently is engaged in Erasmus+ program for entrepreneurship experience exchange.

Project funding

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