



## Project Report

### - Part 2: Publishable Summary -

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**Project acronym:** plan4business

**Project title:** A service platform for aggregation, processing and analysis of urban and regional planning data

**Funding Scheme:** STREP

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## plan4business

### **A service platform for aggregation, processing and analysis of urban and regional planning data**

#### **Project Idea and Perspectives**

Urban and regional planning data sets are not aggregated so far, and thus it is very difficult to use them for any other purpose than for printing or simple publishing by the authorities that created them. It is not possible to create time series or comparative analyses on these data sets in cross-regional context. Researchers, spatial planners and professionals from the real estate world and other disciplines, such as insurance industry, investors, or market-relevant activities related to urban development have a growing stake in such capabilities.

Plan4business aims to create a service platform for integration, storing and analysing of spatial planning data. The platform serves as a full catalogue of planning data such as transport infrastructure, regional plans, urban plans and zoning plans. The aggregation platform offers clients data in an integrated, harmonised and thus ready-to-use form. It also provides rich analyses and visualisation services. Such services are offered via different interfaces, such as an API (Application Programming Interface) and an interactive web frontend (WebGIS).

The two main challenges that have so far hindered (re)use of planning data in such a manner are highly automated data integration and an ICT system for complex queries over the diverse planning data sets.

#### **The plan4business Objectives and Approach**

The main R&D challenge that this project addresses is the development of an approach that turns large-scale data integration from a liability into an opportunity. For this purpose plan4business designs, evaluates and implements declarative and collaborative integration approaches. This means the following in our understanding:

- **Specific:** The tools developed and analyses that can be performed are specific to planning data. This means they are not applicable to all data integration problems, but provide a high effectiveness for specific issues;
- **Process-Oriented:** The integration and harmonisation process will be separated into clear steps, each of which can be conducted individually. In this way, different curators can specialise on different steps in the process;
- **Declarative:** Any schema mapping (logical or conceptual) is performed in an atomic, declarative way. Thus, schema mapping parts can be re-used, e.g. for automatic determination of required additional mappings when several variants of a schema are mapped;
- **Collaborative:** On the basis of the right incentives as well as the process-oriented and declarative/atomic integration approach, the principles of collaborative mapping can be used on the planning data integration issue.

In the last aspect another major objective of the project is presented. So far, data integration and harmonisation have always been a user issue. Large numbers of geo data users have had to fend on their own with the complex issues appearing in this process, using complex tools that cover only individual aspects, such as geometric rectification. We think that many of the core problems that are encountered by users – and which often lead them to give up performing high-quality data integration or lead to the acquisition of data – are mutual and can be solved in a common approach. What is missing is the right organisational and technical platform for this.

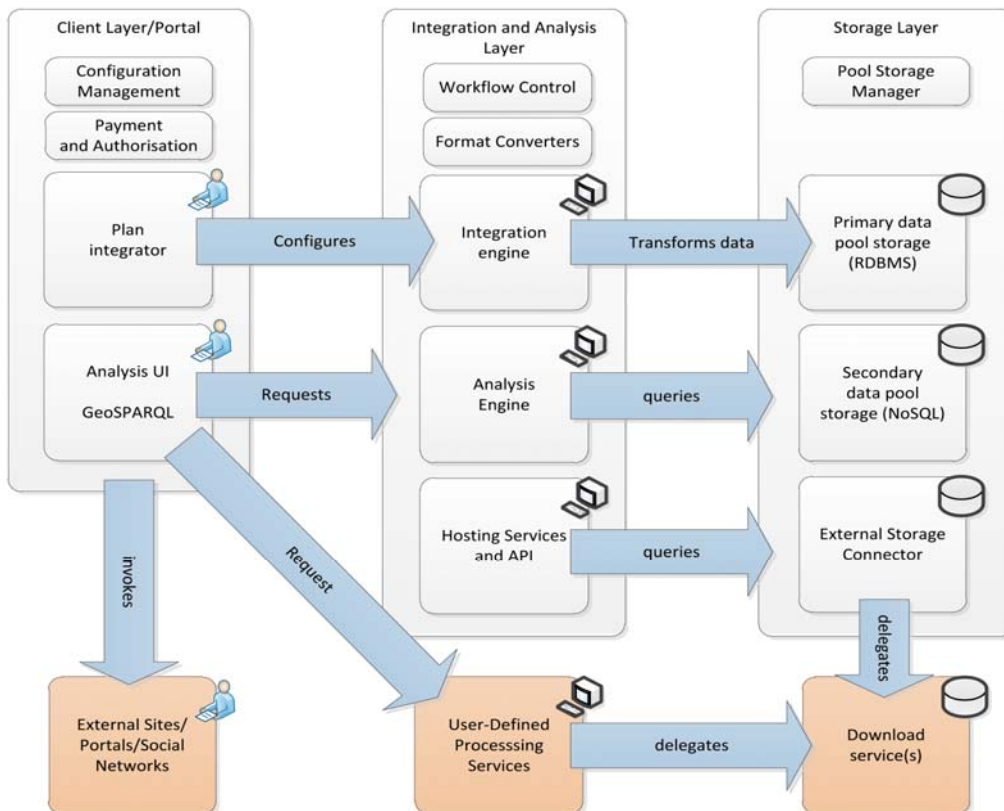
Queries performed on the basis of this WebGIS or the API can show quite a high variance and be quite complex. Consequently, one of the challenges that are addressed by this project is to develop a good web-based GIS extension allowing to express these queries.

### Concept

The overall concept of plan4business comprises three main aspects:

- 1) the plan4business platform,
- 2) spatial planning data and
- 3) a solid business model.

The **plan4business platform** consists of several technical components, grouped into three layers.

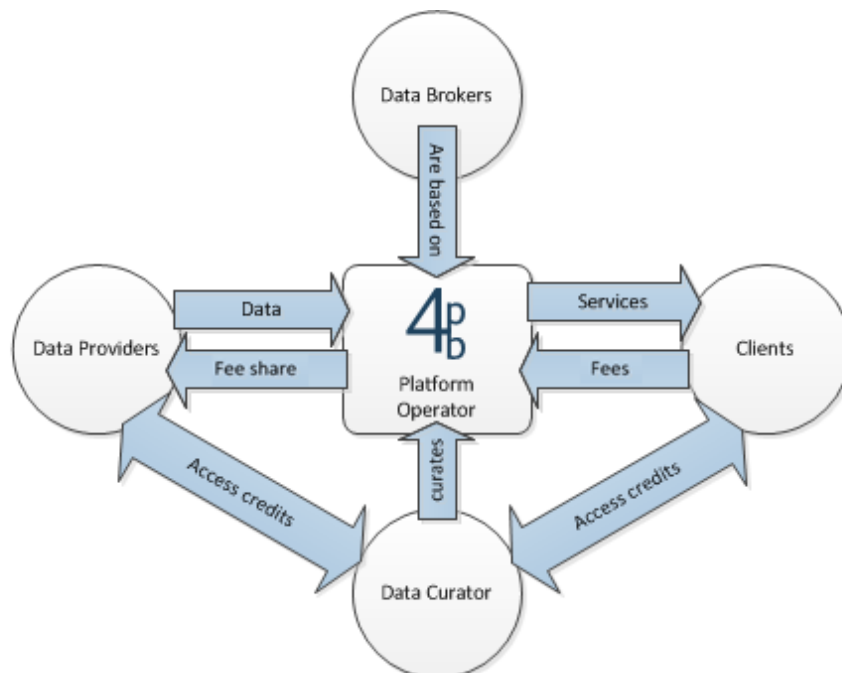


The first layer contains human-machine interfaces, specifically for planning data management, integration and conversion as well as for accessing the analytical functions of the platform. The second layer provides two groups of processing engines, again for integration and harmonisation on the one hand and for analytical processing on the other hand. In addition, this layer provides the *plan4business* API. The final layer is a storage layer, which contains a storage manager as well as two different data bases, each optimized for different goals.

**Spatial planning data** aggregated by plan4business include:

- Urban and regional planning data from different countries,
- Land use data including GMES Urban Atlas data,
- Open Street Map data as representative of road network and as a reference layer,
- Natura 2000 data as information about potential restriction coming from environment protection,
- Market information (number of properties, sale transactions, price levels),
- Social and economic data (CSP, Eurostat data)
- Individual property data (legal status, current use) and cadastral parcels.

The **business model** for the plan4business platform foresees several different groups of active stakeholders: data providers (planning authorities, engineering bureaus, researchers), data curators (who perform integration and quality assurance), clients and the data brokers who will be hosting and exploiting the plan4business portal.

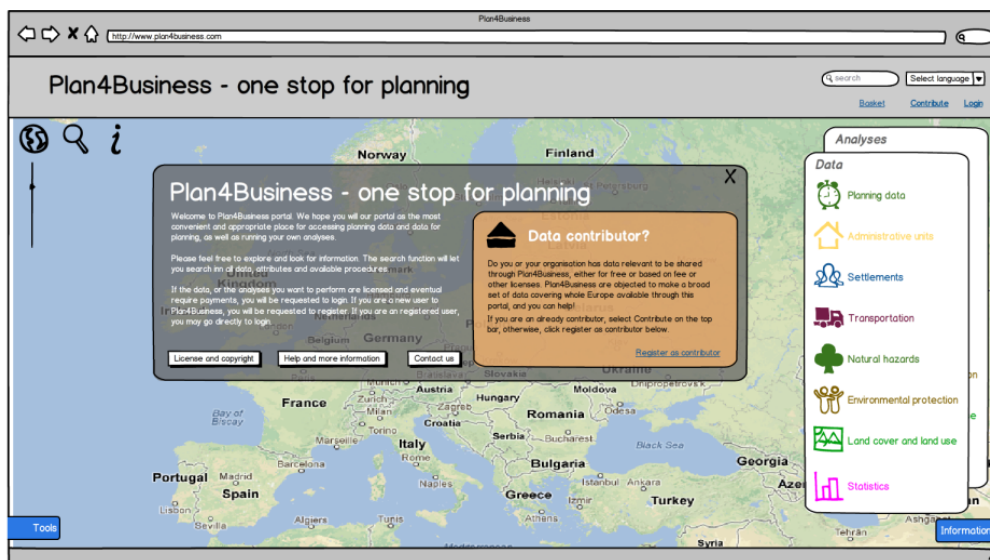


## Status of the Project and Next Steps

During the first year of the project a requirements collection was performed to identify the requirements of the professionals, who are active in the field of urban and spatial planning. From the analysis of the requirements the user stories and use cases were identified and further developed as a basis for the realisation of the plan4business platform. Following those steps the development infrastructure was elaborated and the system specifications defined.

In parallel, the elaboration of the business model was started for making the plan4business platform operational and successful from the commercial point of view. Important tasks were connected with establishing communication with future platform users and data providers and defining legal frames for data and services distribution. Following the first approach of a business model supporting actions were performed in the first year of the project, like the customer relationship management, the approach for data and service management, as well as a customer cost/benefit analysis. This process will be further developed towards the final business model for commercial use of the platform and its data pool. This will build on the progress of the plan4business platform implementation and the resulting operational system and also a service pricing model to be developed.

One focus of the platform development in the first year of the project was on system planning and implementation of the client side of the plan4business portal. The important part of work was to define and design the overall structure of the portal. The overall user interface is under development as a web-based interface utilising components from various parts of the project.



Further the design and implementation of the client side for the collaborative integration of spatial and non-spatial data into the plan4business data pool was set up. The work encompasses the design and implementation of the web interface for the data upload and harmonisation workflow.

The second focus for this period was an analysis, research and set-up of the server part of the plan4business platform including the Storage, Integration and Analysis Engines. This includes also the development of an API (Application Programming Interface) and access control system. The development is currently in the stage of presenting the first results in the form of demonstrations through selected use cases.

Based on the discussions on planning data and its integration, the integration work-flow was created. One part, the schema mapping, is based on the result from the previous project Humboldt. Technology from the Humboldt Alignment Editor (HALE) is used for the data transformation. Mapping of heterogeneous data into common plan4business application schema was analysed and a strategy for possible solutions and further steps was outlined. Furthermore, the conceptual design of the core data models and their relations was developed.

The Analysis Engine is one of the plan4business platform components ensuring management of spatial planning data stored in a relational database. It enables accessing and processing spatial planning data and their retrieval for visualisation in the map client. The Analysis Engine provides access to all analytical functions of the spatial database. The focus was on analysis that can be performed using available data such as spatial plans, flood areas and other. The main stress in the research and development part was on visualisation of SQL queries. Set up of the plan4business platform prototype.

The plan4business system will be an integrated portal, utilising client- and server components, based on requirements identified. The process is iterative and has inter-dependency between the different work packages, tasks, results and system.

In the first year the focus was to:

- Utilise and assist the work in respect of identifying and formulating system requirements, design and expectations
- Give feedback and support the development work
- Prepare procedures and guidelines for integration and testing of the system
- Design individual components of the platform and start implementing them using the agile methodology,
- Prepare and establish procedures and platform for operational environment

### **Impact of the plan4business Results**

The expected results of the plan4business project with its ICT platform and data pool will have impact in urban and regional planning as follows:

- Overcome the heterogeneous situation of planning information across Europe through harmonisation of the data
- Contribute to better cooperation in cross boarder activities and transparency of spatial planning activities
- The interactive platform will provide solutions for identification of urban areas and more dynamic models of investment to support the criteria of the Europe 2020 Strategy.
- Impact on European economy and services by integrating current planning data sets from selected European countries building up an attractive source of information for a wide range of branches.

## General Information



Plan4business is an on-going small and medium scale focused research project (STREP) within the Framework Program 7 of the European Commission.

The project submitted to the ICT call FP7-ICT-2011-SME-DCL “SME initiative on Digital Content and Languages” is funded by the European Commission (Project number 296282).

The project is established with six partners from five countries to deliver the project goals and objectives. The partners include ISOCARP as representative from the user community, two research groups from University of West Bohemia (UWB) and Fraunhofer IGD, and three industrial partners with two SMEs: GEOSYSTEMS Polska Sp. z o.o., Help Service Remote Sensing (HSRS), and Asplan Viak Internet as. (AVINET). The project is coordinated by Fraunhofer Institute for Computer Graphics Research IGD, Darmstadt, Germany. The project commenced on April 1, 2012 and will end in March 2014.

Plan4business has established a Stakeholder Board to obtain further inputs from the community, secure evaluation and feedback on project developments and to support the dissemination of the results via the user communities.

General information concerning the project as well as a list of the publicly available results and deliverables can be obtained at the plan4business website <http://www.plan4business.eu>. For further information, please, contact the plan4business Project Office or the Coordinator.

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