PLAN4BUSINESS

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

SEVENTH FRAMEWORK PROGRAMME

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Working Group:
WP4
References:,
Grant Agreement No. 296282, Annex I Description of Work

Short Description:
This deliverable includes a documentation of the system based on implemented features. This report describes the client side of the plan4business portal. It includes the design and implementation of version V1 of the portal within the first 12 months. The next releases are expected in month 18 (V2) and month 22 (V3).
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Client, Collaborative Schema Integrator, Analysis UI Development, Plan Hosting, Feedback components, plan4business

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List of acronyms

ACID	Atomicity, Consistency, Isolation and Durability
API	Application Programming Interface
AVINET	Asplan Viak Internet
CAS	Central Authentication Service
CDDA	Nationally Designated Areas
CLC	Corine Land Cover
CSV	*Comma-Separated Values*
FP	Framework Programme
GIS	Geographic Information System
GMES	Global Monitoring for Environment and Security
GML	Geography Markup Language
HALE	HUMBOLDT Alignment Editor
HILICS	Hierarchical INSPIRE Land Use Classification System
HSRS	Help Service Remote Sensing
HTTP	Hypertext Transfer Protocol
INSPIRE	Infrastructure for Spatial Information in the European Community
ISO	International Organisation for Standardization
ISOCARP	International Society of City and Regional Planners
JSON	Javascript Object Notation
KML	Keyhole Markup Language
LDAP	Lightweight Directory Access Protocol
OGC	Open Geospatial Consortium
OSM	OpenStreetMap
OWL	Web Ontology Language
OWS	OGC Web Services
PDF	Portable Document Format
RDBMS	Relational Database Management System
RDF	Resource Description Framework
SDI	Spatial Data Infrastructure
SQL	Structured Query Language
UML	Unified Modelling Language
URL	Uniform Resource Locator
UWB	University of West Bohemia in Pilsen
WKT	Well Known Text
WMS	Web Map Service
WP	Work Package
XML	Extensible Markup Language

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1 Introduction

1.1 plan4business

plan4business is a European project running from April 2012 until March 2014 and is co-financed by the 7th Framework Programme of the European Commission. The full title is plan4business – a Service Platform for Aggregation, Processing and Analysing of Urban and Regional Planning Data.

plan4business develops a service platform for aggregation, processing and analyses of urban and regional planning data in Europe. Harmonised data will be integrated into seamless, homogenous, constantly growing and updated trans-border dataset. The platform will enable spatial analyses across European datasets. The platform should serve not only as a catalogue of planning data but also as their integrator enabling users to search, view, analyse and download spatial planning data on European and regional levels. The main project objectives are the automation of harmonisation processes and possibilities of complex analyses.

The plan4business consortium comprises six organisations securing the project execution:

- Fraunhofer IGD - Fraunhofer Institute for Computer Graphics Research, Germany
- UWB - University of West Bohemia in Pilsen, Czech Republic
- HSRS - Help Service - Remote Sensing, s. r. o., Czech Republic
- ISOCARP - International Society of City and Regional Planners, The Netherlands
- GEOSYS - GEOSYSTEMS Polska, Poland
- AVINET - Asplan Viak Internet as, Norway

1.2 The Aim of the Report

This deliverable summarises the work performed and progress achieved in Plan Integration & Analysis Clients of the plan4business project.

The main objective of WP4 is the design and development of the client part of the plan4businessplan4business platform, based on existing solutions where applicable, and the design of user interfaces (UI). The objectives specifically include:

- Integration and configuration of authentication, authorization, DRM and payment components;
- Full environment for collaborative clients for integration of planning data,
- Client support for integration of data from distributed resources, which includes clients for data harmonisation and aggregation,
- Clients applications for data analysis supporting integration of analytical services,

- Provision of APIs for access to and hosting of spatial data based on OGC services, such as WMS, WFS and WCS,
- Social networking tools for feedback.

WP4 used results of WP3 Requirements Management and Service Pricing. WP4 runs closely and in parallel with WP5 Storage, Integration & Analysis Engines. The report includes the work performed within 12 months in the following tasks:

- Task 4.1: Collaborative Schema Integrator Development dealing with design and implementation of client side of clients for the collaborative integration of spatial and non-spatial data into the plan4business data pool.
- Task 4.2: Analysis UI Development which includes the design and implementation of client applications for data analysis supporting integration of analytical services based on different interfaces.
- Task 4.3: Plan Hosting and Feedback components, which include design and implementation of clients supporting uploading and downloading services for planning documentation.

1.3 Structure of the Report

The document is structured in 11 chapters.

Chapter **Chyba! Nenalezen zdroj odkazů.Chyba! Nenalezen zdroj odkazů.** contains a brief summary of the project, the main objectives of WP4 and the structure of the document. (HSRS)

Chapter 2 contains definition of used terminology. (HSRS)

Chapter 3.**Chyba! Nenalezen zdroj odkazů.** contains the management tools for the organisation of the development, source code control and issues tracking system. (HSRS)

Chapter 4 describes the agile methodology for the design and software development. (HSRS)

Chapter 5 **Chyba! Nenalezen zdroj odkazů.**describes the overall architecture of all the components and how these components are interlinked. (AVINET)

Chapter 6 describes the design of user interface based on mock-ups methodology. (AVINET, GEOSYS)

Chapter 7 describes the design of integration of the Liferay platform, CMS tools and interface for authorisation and authentication. (HSRS)

Chapter 8 describes the client part of the integration engine. (Fraunhofer IGD)

Chapter 9 describes the design and development of analytical user interface. (HSRS)

Chapter 10 describes Plan Hosting and Feedback Components (HSRS)

Chapter 11 summarises the next steps in the development and concludes the document. (HSRS)

All the literature used for this deliverable is duly referenced. The list of citations is inserted at the end of the document.

2 Terminology

Catalogue - consists of metadata in which definitions of database objects such as base tables, views (virtual tables), synonyms, value ranges, indexes, users, and user groups are stored. (Wikipedia)

Geography Markup Language (GML) - "OGC`s XML-based language for describing and encoding geospatial information. An application of XML, a specification developed by members of the Open GIS Consortium. http://www.opengis.org/techno/specs/00-029/GML.html ". GML is an XML encoding for spatial data. In a sense, it is a schema-writing language for spatial information." (OGC 2012)

Geoportal - "A Web site that provides a view into a universe of spatial content and activity through a variety of links to other sites, communication and collaboration tools, and special features geared toward the community served by the portal." (OGC 2012)

HUMBOLDT Alignment Editor (HALE) – a tool for defining and evaluating conceptual schema mappings.

KML - is an XML notation for expressing geographic annotation and visualization within Internet browsers. (Wikipedia)

Mock-ups - is a scale or full-size model of a design or device, used for design evaluation, promotion, and other purposes. (Wikipedia)

OGC Web Service (OWS) - is the group of service specifications (or protocol standards) created and maintained by the OGC. (Wikipedia)

User interface (UI) - field of human–machine interaction, is the space where interaction between humans and machines occur.

Web Map Context (WMC) - are XML documents that contain all information needed to display a set of maps for a selected area and size. (OGC)

Web Map Service (WMS) - provides a simple HTTP interface for requesting geo-registered map images from one or more distributed geospatial databases. (OGC)

Web Map Tile Service (WMTS) - is an Open Geospatial Consortium (OGC) standard for providing map tiles (small images that are part of a map) via the internet. (OGC)

3 WP Management (HSRS)

WP4 is coordinated by HSRS. WP4 is divided into three tasks with the following responsibilities:

- Task 4.1: Collaborative Schema Integrator Development - Fraunhofer IGD,
- Task 4.2: Analysis UI Development – HSRS,
- Task 4.3: Plan Hosting and Feedback components – HSRS.

AVINET and GEOSYS contributed to this report as partners of WP4. UWB (Tomas Mildorf) cooperated on the finalisation of the document. Chapters 1, 2, 3, 4, 7, 9 and 10 were elaborated by HSRS, Chapters 5 and 6 by AVINET using an input from GEOSYS and Chapter 8 by Fraunhofer IGD.

In order to secure a smooth design and development of all the platform components, a Redmine[1] management system was set-up by the Project Office (Figure 1). Redmine is a flexible and open source project management web application.

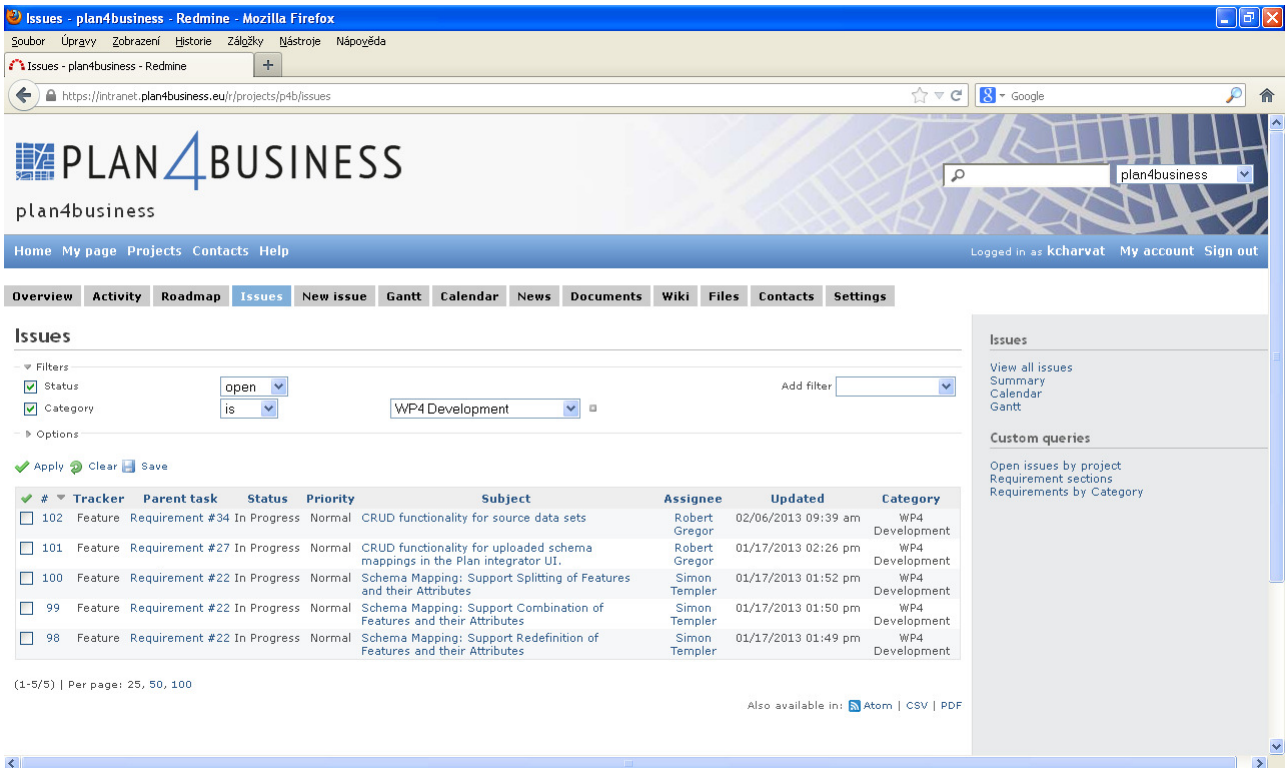

Figure 1 Redmine WP4 Requirements

Redmine serves for the following purposes:

- WIKI based documentation,

[1] http://www.redmine.org/

- issue tracking – bugs, new features, support issues and system requirements can be managed through issues assigned to a particular person and with specified deadline, priority, status, etc.

For the management of the source code, source documentation and configuration files, several Git repositories are provided. The repositories can be accessed through a Gerrit[2] installation and they are integrated in the Redmine system. Gerrit is a web based code review system, facilitating online code reviews for projects using the Git version control system.

Gerrit helps avoiding errors getting into the code base, as code is reviewed by developers and could also be verified automatically by a continuous integration system. Basic access to the Gerrit system is restricted to project members, while access to individual underlying git repositories can be further constrained to subsets of project members. Access to Gerrit is available over SSH2 with public key authorization. Accounts for Gerrit and the repositories are managed by the project office and are given on a per-person basis. Any account can principally be either a committer or a reader account, i.e. not all accounts need to be allowed to commit.

[2] http://code.google.com/p/gerrit/

4 Overall Methodology (HSRS)

4.1 Agile Methodology

The design and development of the client side for the plan4business platform is conducted in WP4. WP4 should result in the design and development of the client side components of the plan4business service platform including the Authorisation, Authentication, Integration, Analysis and Plan hosting, API (Application Programming Interface) for integration of the Analysis Engine into other portals.

On the base of previous experiences it was decided to run the development in parallel to collection of user requirements. It enables to receive feedback from users, but also support user demands on the base of existing tools. The agile approach is also taken to software development, and it is a basic requirement for WP3 (Requirements Management and Service Pricing) that results are delivered early and often. The work is running closely with WP5 Storage, Integration & Analysis Engines, where server side is designed and implemented.

In the design and development of each client component, we aimed for a close loop of work team of WP4 and development team (WP5) and the requirements collection team (WP3). The design and development in WP4 started with a “code camp” workshop held in Pilsen in July 2012. The code camp was highly effective in communicating common coding policies and in actually solving technical issues. The work started with the design activities and infrastructure set-up as well as the creation of the initial data model for data integration and proposal of several use-cases.

The client components developed are based on existing tools and these tools are modified and extended on the basis of user requirements. For this purpose, a series of workshops aimed to different groups of stakeholders are being organised and a feedback on the development is tracked using a questionnaire for workshops’ participants.

A complete evaluation including formal testing is conducted within WP6 System Integration and Operation. The testing is scheduled for the project months 12 and 24. The results of the complete evaluation are then fed back to the design and development team in WP4, who work in the second implementation phase to deliver the final application products.

4.2 Service Levels

Based on the user requirements coming from WP3, business model developed in WP2 and the agile methodology used for the system design and implementation (research and development in WP4, WP5 and WP6), four Service Levels related Milestones 3 – 6 were defined. These Service Levels represent high level measures for a successful implementation of the user needs and the business model.

A specific focus of these Service Levels is on a staged rollout of services to be offered by the *plan4business* platform. By using this staged approach, the platform starts to attract customers with concrete and useable

services from the early stage of the development. These early results are valuable in providing feedback and in testing the infrastructure.

The four Service Levels are:

Service Level 1 (Milestone 3, month 9): This level includes examples of various components of the future platform which are not necessarily integrated but they show the basic functions that can be further elaborated and extended. This level includes

- a data storage for disharmonised spatial and non-spatial data,
- a common data model for harmonised data based on the INSPIRE Directive,
- mechanisms for data integration into the common data model,
- features (platform prototype) for data display and simple navigation,
- utilisation of pan-European datasets related to spatial planning from scattered resources.

The developed components are used for showcases during workshops, presentations and other meetings in order to provide potential customers an idea of the future platform and its functions and get feedback from end users.

Service Level 2 (Milestone 4, month 12): The main goal for this level is to make the platform prototype publicly available and extend it by the following features:

- analysis of harmonised spatial data based on user requirements (this should include not only predefined queries but also a possibility for user defined queries),
- user customised data mining queries,
- retrieval of the data mining and analysis results for display and download,
- prototype management tools for data upload, download and publication using OGC Web Services,
- catalogue of spatial planning data,
- creation of user defined map compositions.

Service Level 3 (Milestone 5, month 15): This service level includes improvement of the features from previous service levels and in addition the following features will be utilised:

- mapping functions for maps' customisation based on identified use-cases,
- tools for utilising feedback from users of spatial planning data,
- integration of the harmonisation tools into the platform,
- integrated metadata for analyses, map compositions and integration schemas,

- extended catalogue of planning data using RDF principles,
- support of standard analysis methods and geometric functions such as intersection, buffers and unions,
- extended data management tools enabling maintenance of different versions of datasets.

Service Level 4 (Milestone 6, month 18): This service level includes improvement of the features from previous service levels and in addition the following features will be utilised:

- support of more complex queries by using the primary data storage as well as the secondary data storage,
- advanced portrayal of the analysis result in a form of a table, chart or a report.
- support of most of the data formats defined by the users,
- payment module,
- generation of a report from a selected area including information such as data availability, data quality, data source and non-spatial data that are integrated with spatial data.

5 Overall Architecture (AVINET)

The plan4business system is a comprehensive and complex system, built on flexible and scalable layers, interacting through a set of defined services, ensuring performance and security.

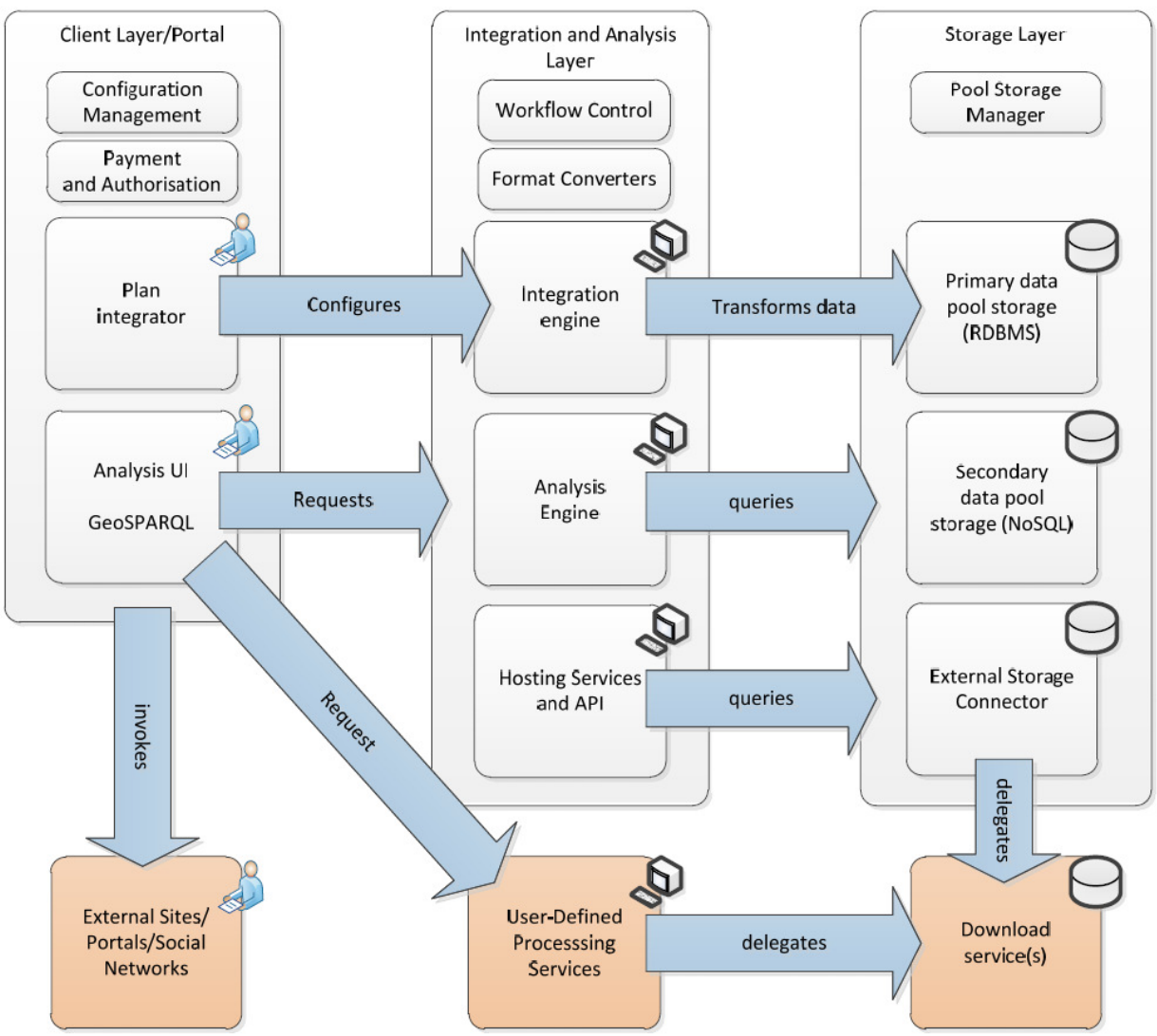

Figure 2 plan4business overall architecture

The three layers are:

- **Application** layer, consiting of user portals and interfaces for handling data, administrating the system and for data access, including analyses and data downloading.
- **Service** layer, with services for data integration, analyses, data access, processing and data hosting.
- **Data** layer, with data storage and download services.

The architecture is inspired by the technical architecture designed through the FP6 project Humboldt and eContentPlus project Plan4all (ref. plan4all D5.1 Data Sharing Requirements, chapter 2.2).

6 User Interface Definition (AVINET, GEOSYS)

6.1 Objectives of Client Side

The objective of the plan4business client side is to provide a set of user interfaces enabling the human user to easily interact and utilise the components of plan4business to support his/her tasks and objectives in respect of accessing and using data for planning purposes.

The client interfaces shall directly support the identified business usage of plan4business and their prioritised use cases, ref. deliverable D2.4.1.

Three main types of end-users are identified;

- Data user, using plan4business for spatial and data analyses and for data downloading / purchase.
- Data provider, using plan4business to make data under his jurisdiction available through the system, including undertaking necessary data harmonisation.
- plan4business administration, including tools for user administration, licensing, payment, authorisation and authentication, system administration, etc.

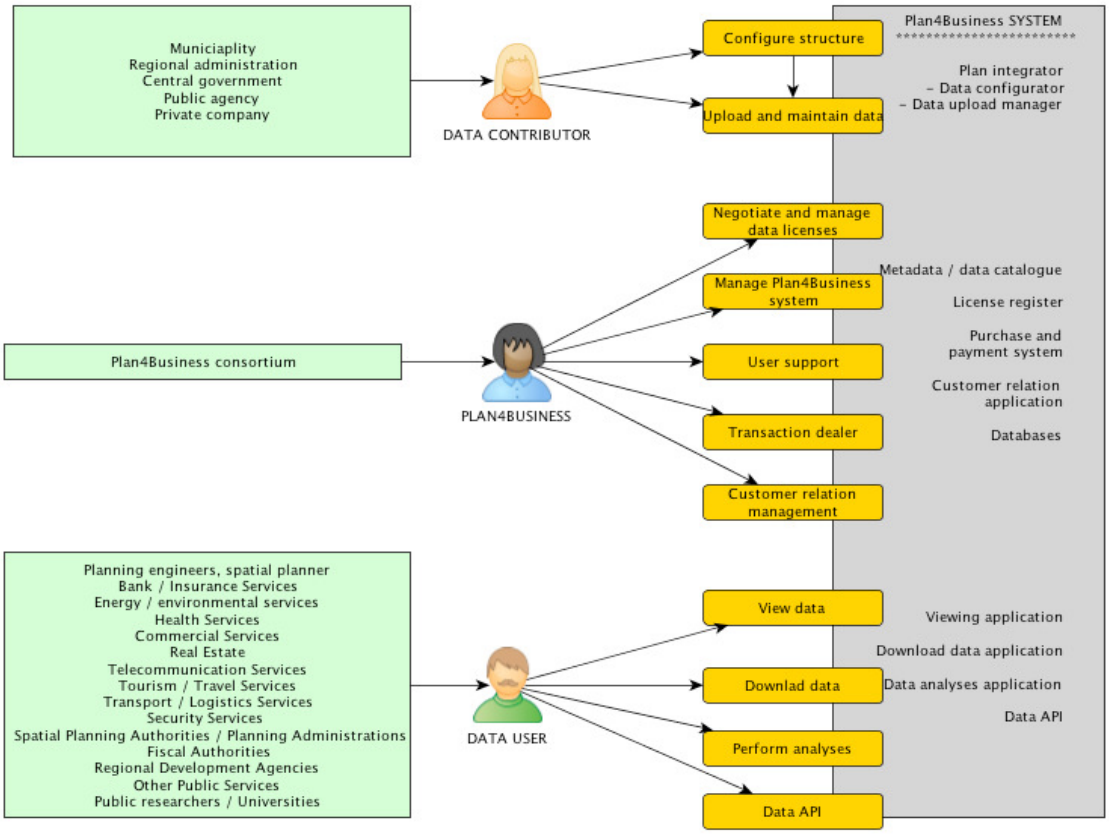

Figure 3 User groups and functionality

The figure above, from plan4business, D2.4.1 illustrates the main purpose and tasks of the user interface.

6.2 Work Done and Progress Achievements

There were design interfaces for Service level I, II and partly also III and IV. So the designed mock ups are now used in additional tasks.

6.3 Overall UI Definition

The overall user interface is under development and implementation at the stage of this deliverable, utilising components from the various parts of the project.

6.3.1 User Interface Principles

The user interface is per definition the interaction between human as user and machine as service. The UI enables the user to operate, control and provide information required for the machine(s) to interact and for the machine(s) to provide feedback. User interface is relevant for all areas human is interacting with machine, e.g. cars, TV or elevator, but in our context, user interface is the interface between a set of services, made available through a web portal to its human end users.

User interface designed for computer has evolved from the early command prompts, via windows oriented graphical user interfaces to the current focus on web-based interfaces.

The main interaction between human and machine is still the combination of screen, keyboard and mouse, however, the touch-based user interface has experienced an enormous growth, particular related to tablets and now also Microsoft Windows 8.

plan4business is not targeting the consumer market, but its users, regardless of group, will be professionals normally working in front of a desktop computer, either with or without touch-screen possibilities.

plan4business has identified a set of principles we find paramount for the planned user interface;

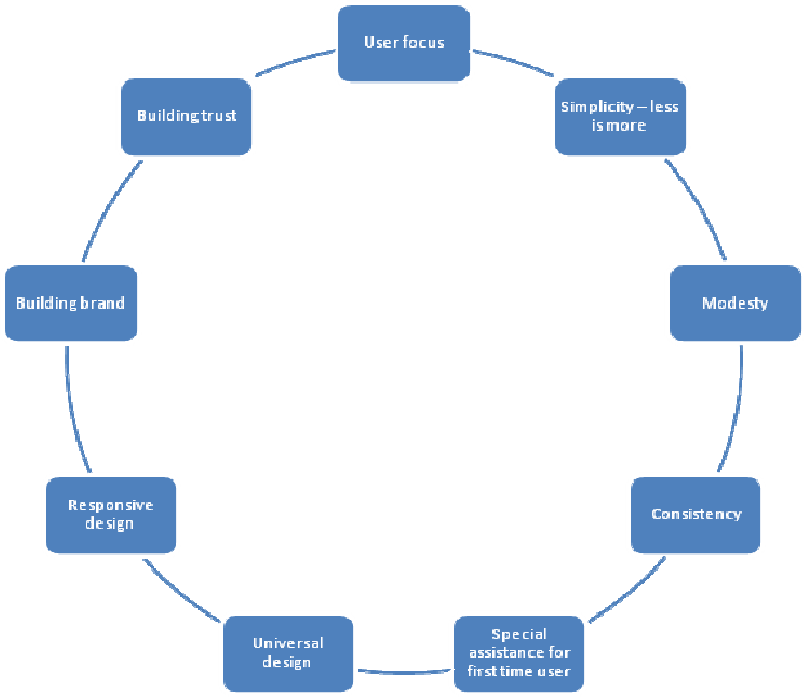

Figure 4 UI principles

User focus; Knowing the actual user and let him be in focus is critical for any user interface. The more specific we know the user, his needs, working habit, working environment, the more we can adapt the user interface to its area of use.

The users have been identified through WP3 which is using a set of use cases to describe how these may interact with plan4business.

A specific focus ensures all functions are directly related to user needs, adapted to his business processes and ensure easy access.

Simplicity – less is more; an overcrowded user interface with functions, menus, graphical elements and information provides a lot of opportunities but also the increased chance of being inaccessible for the user. A simple comparison is a restaurant menu. A menu with some few items indicates for the customer that the kitchen has some specialities and you will normally expect good quality of the available items. If the menu consist of a very long list of items, most being variants of each other, you often assume this kitchen can do everything, but most likely not very good.

Simplicity implies we identify those main components the user interface shall consist of and give them space, while we remove all other components that could possibly be of use, but are not central in our solution.

Modesty; Designing a graphical user interface, the designer has a multitude of choices in respect of colours, fonts, elements, animations, shapes, etc. An overcrowded design removes the focus from the content and

purpose of the site to the site itself. By applying a modest design, we want to maintain the focus on the site to its main purpose.

Consistency; Consistency is important for the same reason as modesty. The user shall be ensured the site does what it is supposed to do and in a way the user intuitively understands.

Special attention for first time users; It is a target to attract first time users – and at the same time maintain earlier users. The first time user shall be introduced to plan4business, its content, functionality and mechanisms. This information is however redundant for the user revisiting the site. Attention shall be given through the user interface to ensure a differentiation between first time user and re-visitor.

Universal design; Respect for users with disabilities is mandatory for any site today. This is accounted by avoiding user interface elements that are small and complex to access.

Responsive design; Access to web-based services has more and more shifted from the traditional computer based approach to mobile units – mobile phones and pads. None of the identified use cases promotes the use of mobile units for plan4business, however, we have to ensure a cross-platform approach to the degree it is relevant. The principles of responsive design will therefore be guidelines but not necessarily requirements.

Building brand and trust; The user interface will be the main channel for communication between the user and our clients and plan4business. The portal is therefore our brand and window toward the world. The brand has to be viewed by trust, which will be the guarantee for the portal´s content and calculated results.

6.3.2 Mock-ups / Scenarios

Mock up is a scale or full-size model of a design or device, used for design evaluation, promotion, and other purposes. We use this methodology to define different UI models for different tasks defined by Description of Work and by D3.1. Different sets of mock-ups have been prepared with the purpose of forming guidance to the developers and better understanding between requirements, use cases and the expected results. The mock-ups are prepared at different stages of the design process, having different approaches and background. They have been subject to assessment and feedback from the project team.

The mock-ups have covered different tasks for different users. It includes a design for

- **Customers – end users** using the platform will be a group of institutional and individual investors. From the investor's point of view it's interesting to find a proper location for the new facility or house, and being able to evaluate this location in respect to its future assignment.
- **Local administration** for publishing harmonized planned land use layer. Thanks to the plan4business business model it is feasible to collect needed input data form local authorities, and process it using knowledge and experience of local spatial planners.

- **Mapping scenarios** which allows for transformation of local LU classification systems into the HILUCS classification system, required by INSPIRE.

In next pages a subset of the designed mock-ups is given below together with elaborative descriptions. It includes:

- Initial Web page as One Step Shopping
- Mock ups for analytical tools
- Data access mock ups
- Downloading data from portal
- Complex design of solution for investors

The mock ups design was mainly focused on customers end users, but also included different mapping scenarios.

Front page - introduction

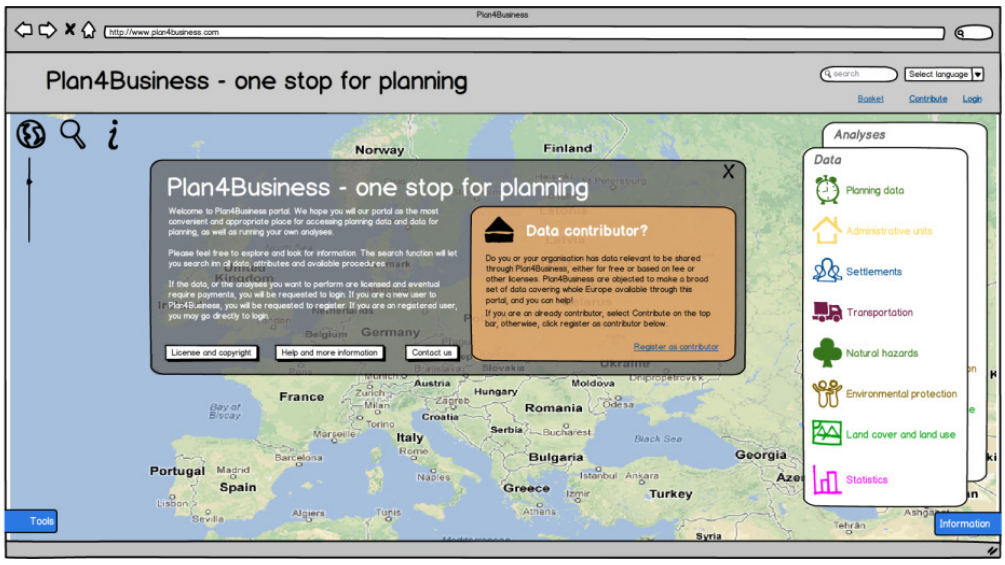

Figure 5 Front page

The front page introduces plan4business – „one stop for planning“. The portal is mainly for end users who are targeting for data or for analyses related to planning. The “front page“ also guides the data provider user further.

The mock-up is map-centric, using the map as the main graphical user interface component. This approach is chosen to underpin the focus plan4business has on spatial data and spatial planning and to provide the map as an efficient tool input and output of information.

When the user revisits plan4business, the dark box in the middle of the map shall not be visible, but available through the „Information“ link.

A set of different analyses

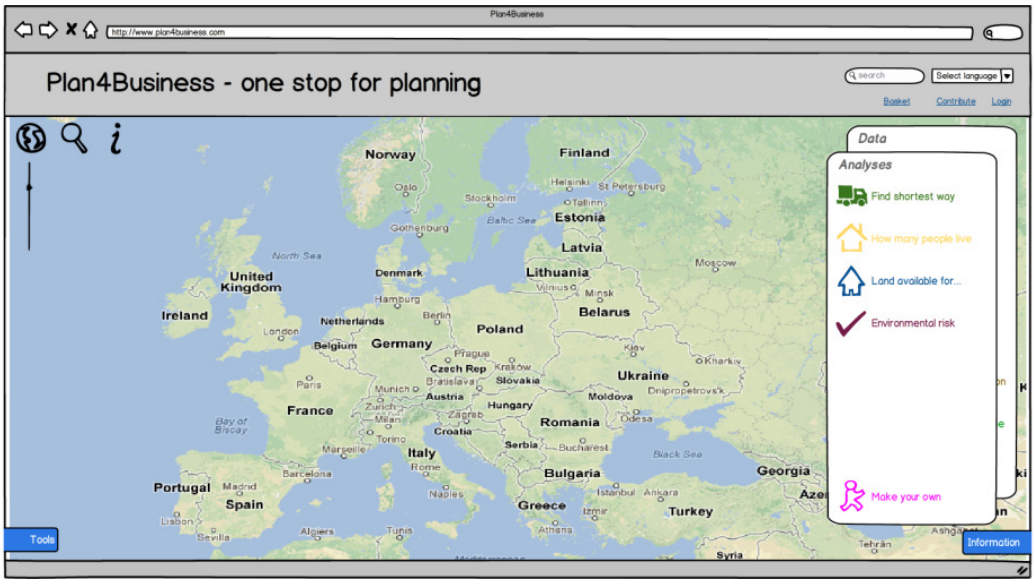

Figure 6 Set of analyses

The portal will provide a short and descriptive list of available analyses (Note; the list is made at an early stage of the design work and is being assessed and modified at the current stage of the project).

An ongoing assessment is to decide whether all analysis functions shall be available through the (one) plan4business portal or alternatively, plan4business will provide a set of different portals, all adapted to the different business functions or markets. This assessment has not been completed yet.

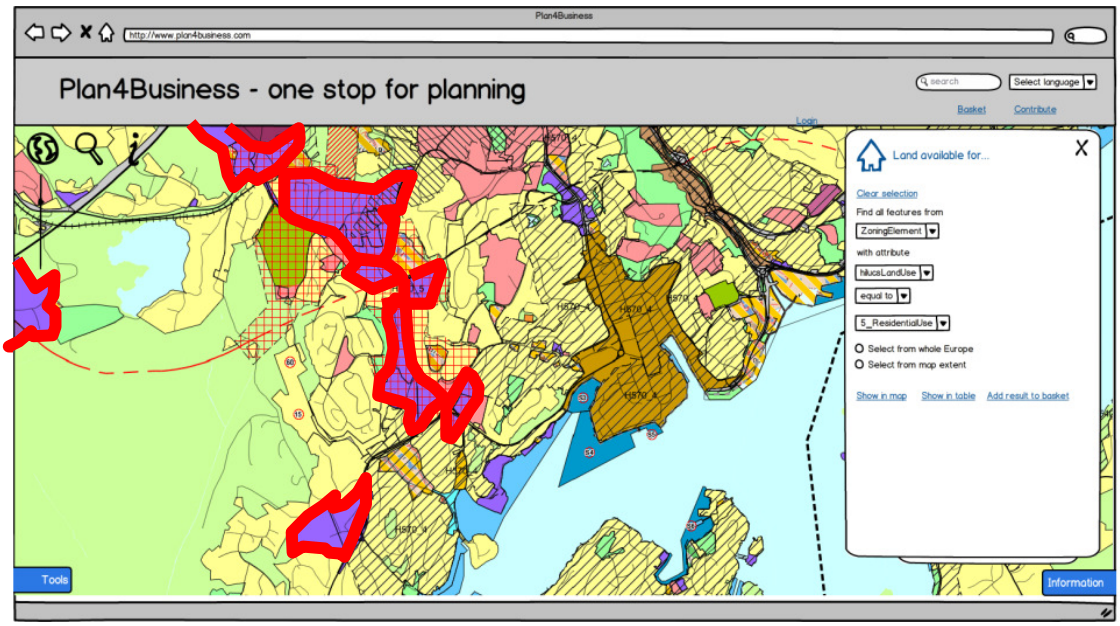

Figure 7 Running an analysis

Running an analysis, most of the parameters will be pre-defined, however, it is expected that the user makes a few choices and alters some of the parameters.

The mock-up also shows how the portal integrates land use data (zoning plan) and use this for its analyses and providing results.

Data access

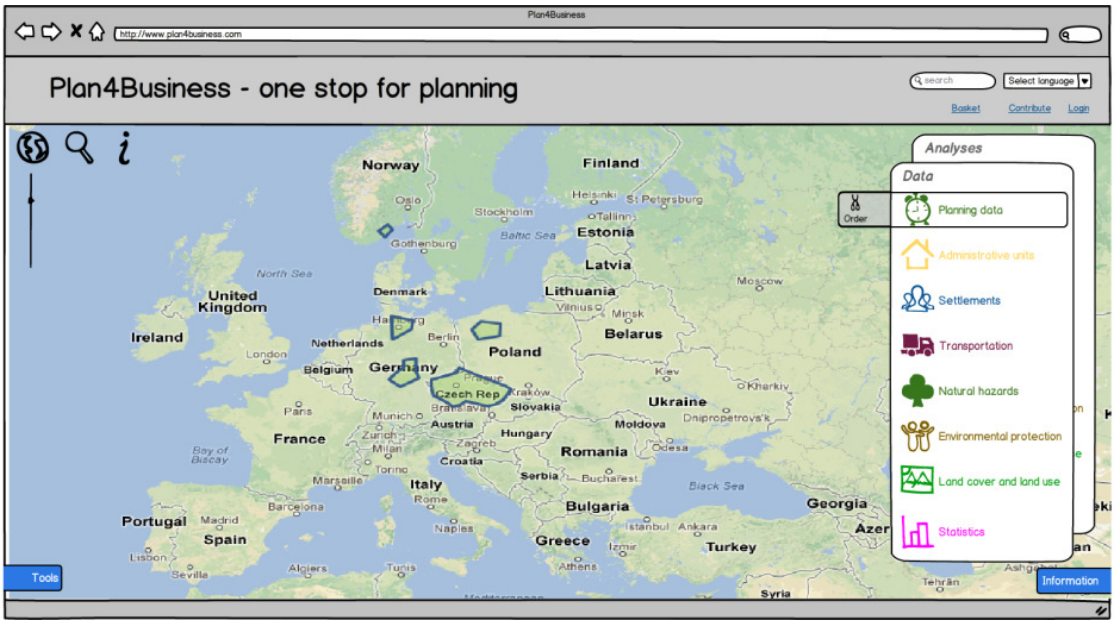

Figure 8 Data Access

Data content will be gradually built, based on availability and willingness. The “data approach” gives hence an overview over what is available – where do we have coverage.

Purchasing / downloading data

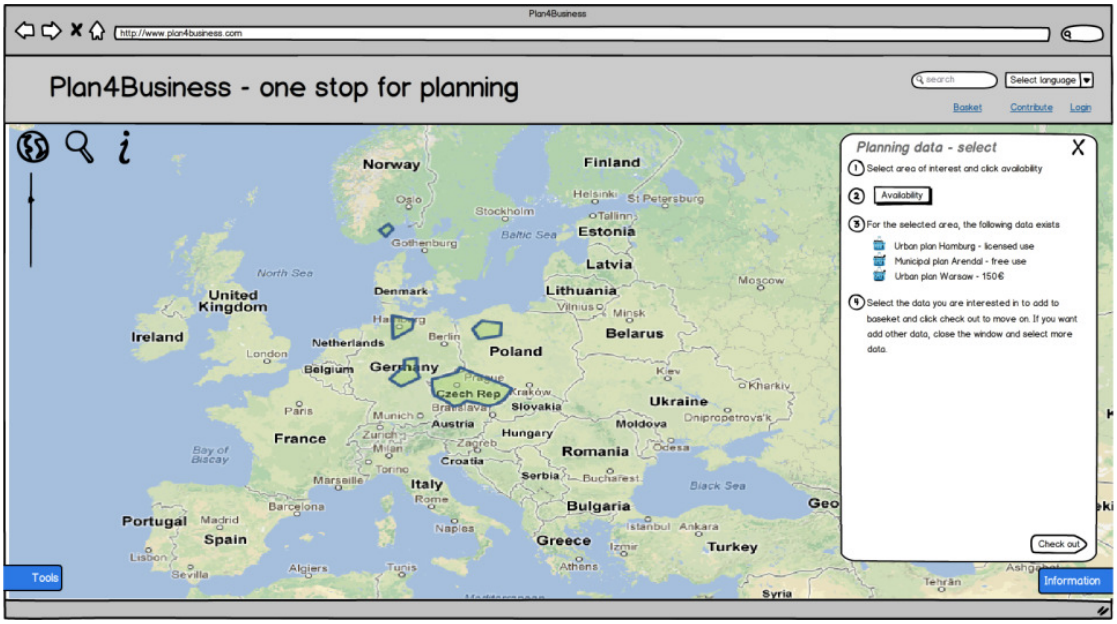

Figure 9 Purchasing downloading data

The user can check for availability within a given area and “add data to basket”. The approach uses the “basket” approach regardless of whether the data is for free or not, it will anyway be available through the basket.

Analyse – a more comprehensive approach

The next wire-frame drawings are showing the approach for a dedicated search, based on a use case for a potential investor. On the basis of the selected use cases and scenarios in D3.1, the following mock-ups were designed. These mock-ups provide an idea of the final user interface as well as how certain features can be accessed.

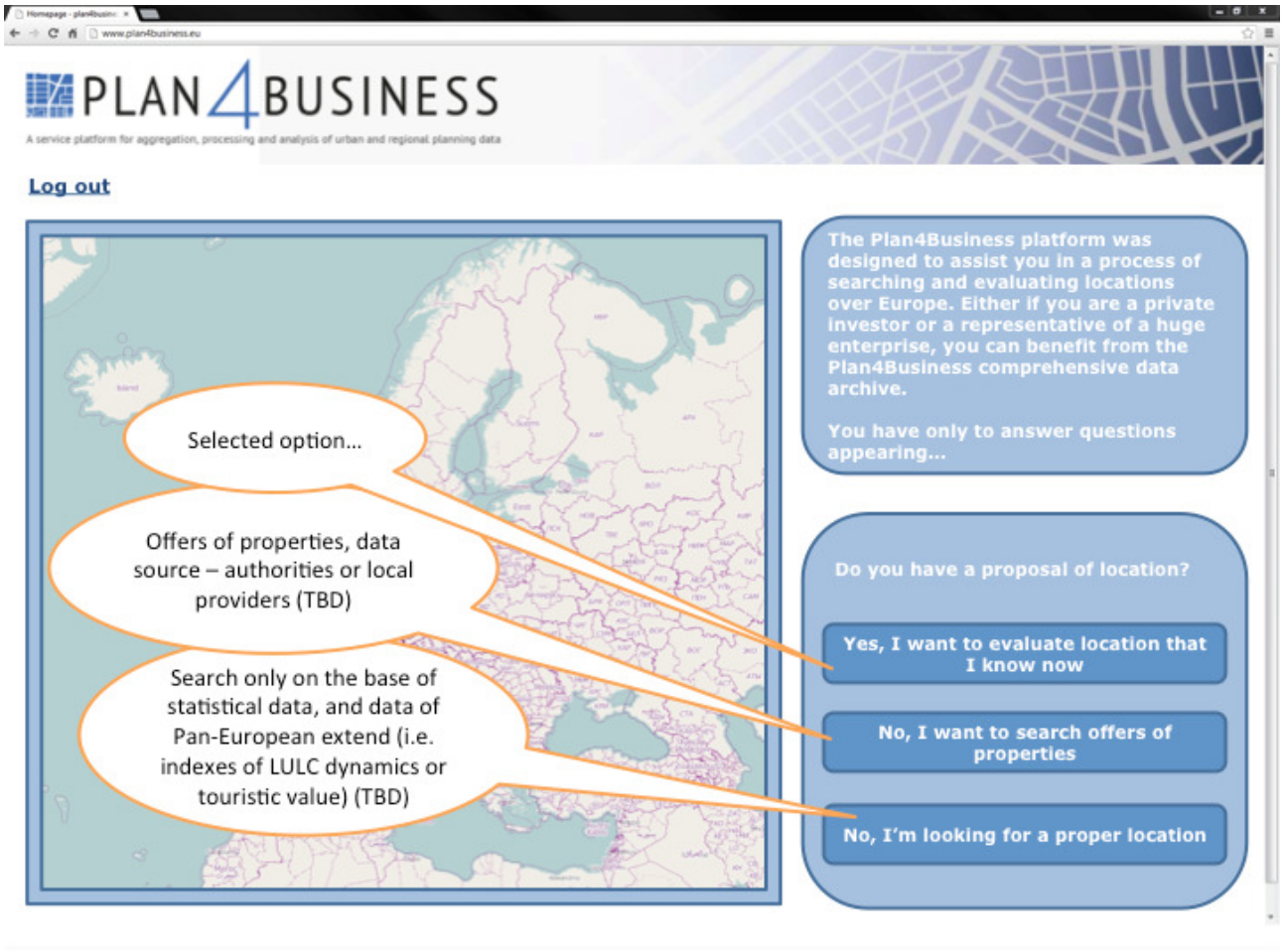

Figure 10 Investors use case I – a navigation through the portal based on user preferences

Figure 11 Investors use case II – defining an area of interest (AOI)

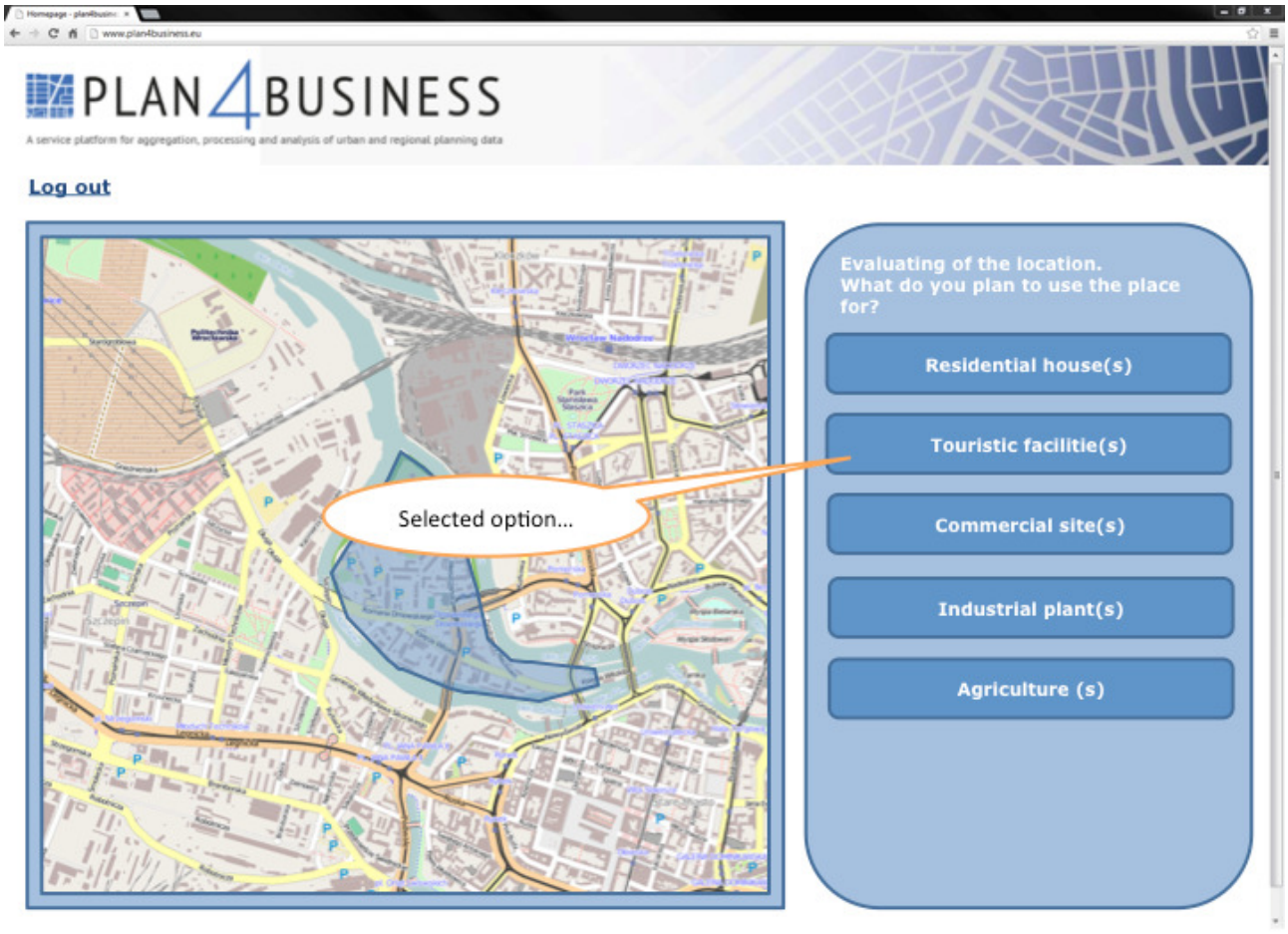

Figure 12 Investors use case III – a set of predefined options

Figure 13 Investors use case IV – defining the specialism of interest

Figure 14 Investors use case V – an example of the analysis visualisation from the economic point of view

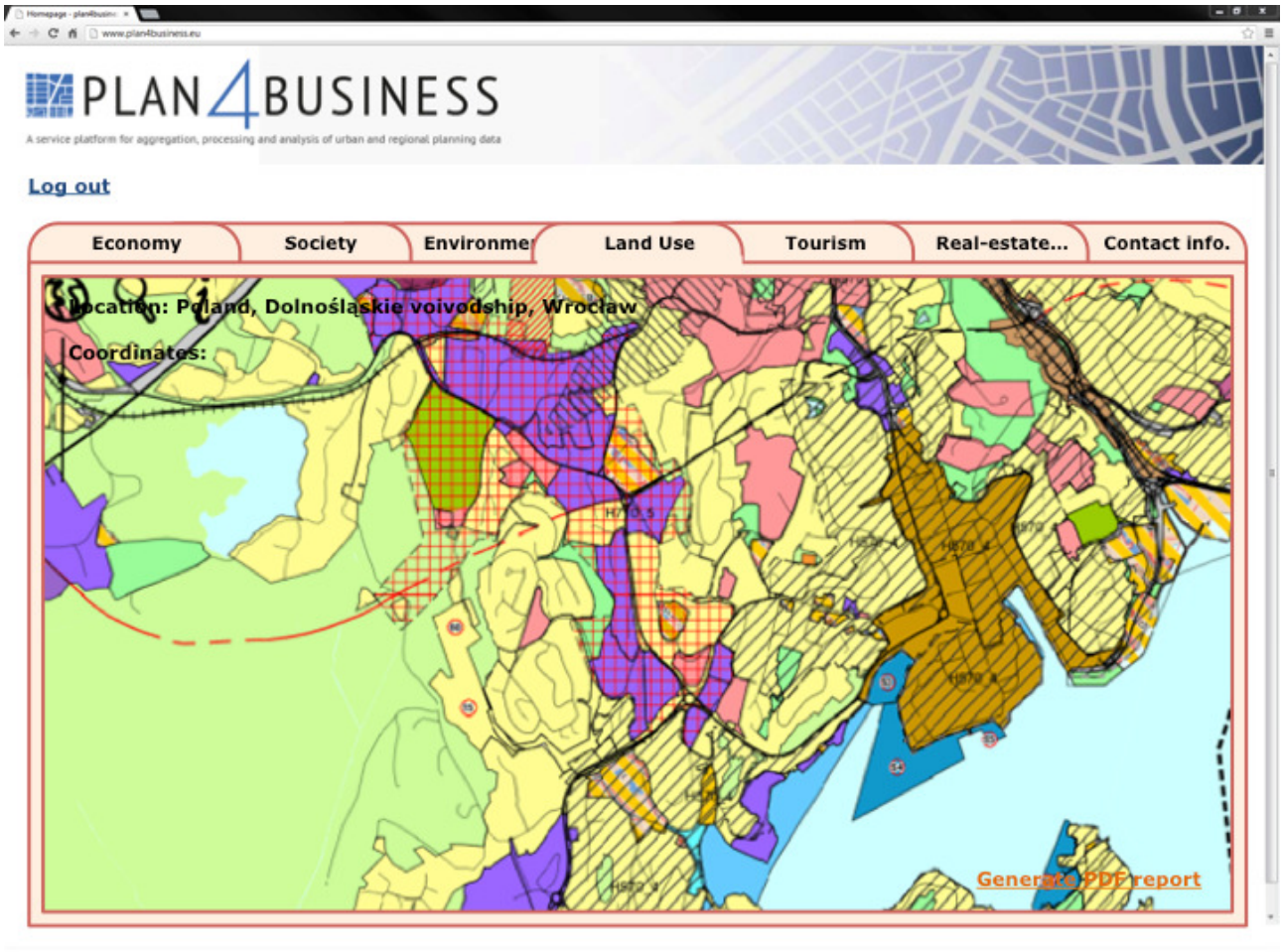

Figure 15 Investors use case VI – an example of the analysis visualisation from the spatial planning point of view

Summary

The mock-ups are tools for the development process. They are under continuous development and update as the project moves forward and more and more business functions are identified and defined.

6.4 Next Steps

The mock-ups are now used for implementing of user interfaces and client side for portals. Part of the interfaces was already implemented and is described in next chapters. The further extensions of the user interfaces will be implemented in V2 and V3 of the client's solution.

7 Integration Platform, Content Management System (CMS) and Authorisation and Authentication Client (HSRS)

7.1 Objectives

The plan4business portal is based on the Liferay[3] solution. It is a web platform orchestrating all the portal components and other gadgets, portlets, pages etc. Liferay allows editing the web pages (part of the geoportal interface) and their content. Liferay enables administrators to:

- define the content and the system of the menu;
- manage users authorisation and authentication;
- insert different components of plan4business as portlets;
- publish articles, images, links etc.;
- publish predefined map compositions;
- publish RSS channels.

There are many other functions that can be used and that are described in detail in the manual of Liferay available at http://www.liferay.com/. Liferay is focused on usability and simplicity for end users but also on clarity and security of the implementation.

7.2 Work Done and Progress Achieved

The Integration Platform, CMS and Authorisation and Authentication Client are not explicitly mentioned in the DoW. But on the basis of user needs it was necessary to provide the implementation of these tools. The work realised during the period fully cover the needs of Service Level 1 and Service Level 2. For Sservice Levels 3 and 4 it is necessary to integrate all the portlets of single clients into the Liferay platform and provide integration of authentication and authorisation mechanisms.

An instance of the Liferay system was installed and is accessible from the following domains:

www.whatstheplan.eu

www.urbanplan-business.eu

www.urbanplan-business.com

These are the final domains that will be used for the business portal when fully operational. On the basis of the mock–ups from Chapter 5, the customisation of Liferay and other tools started, and analytical client, metadata client and spatial data manager were integrated.

[3] http://www.liferay.com/

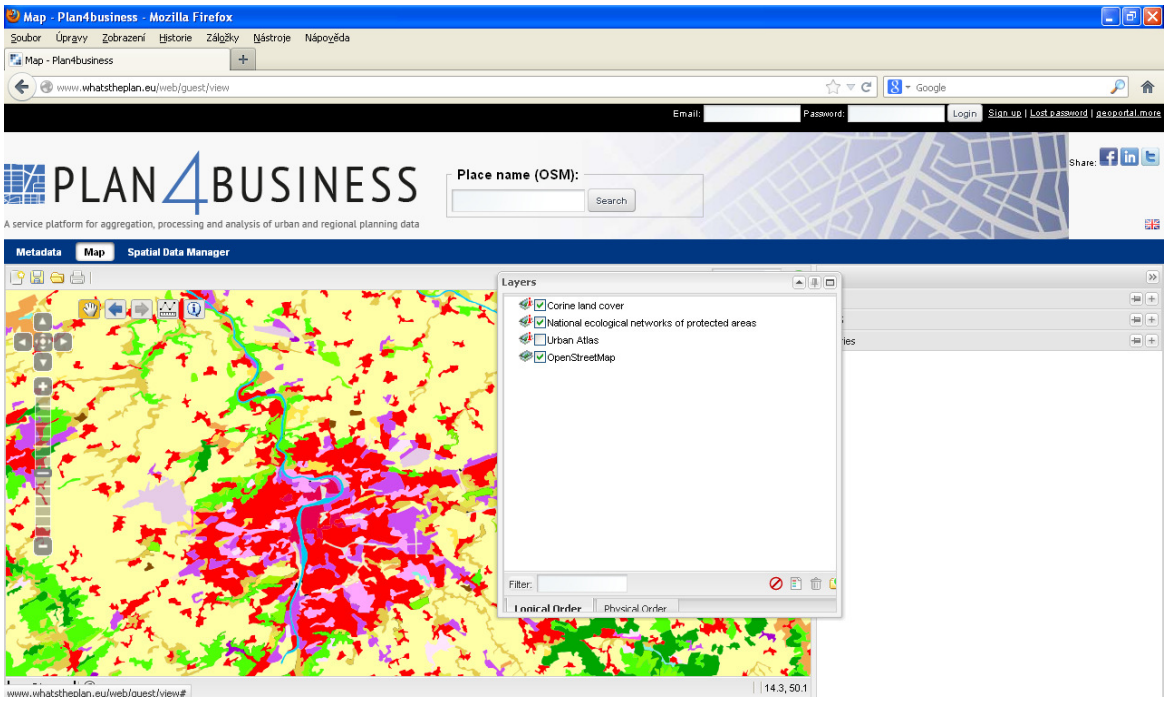

Figure 16 Liferay with the Analytical Client

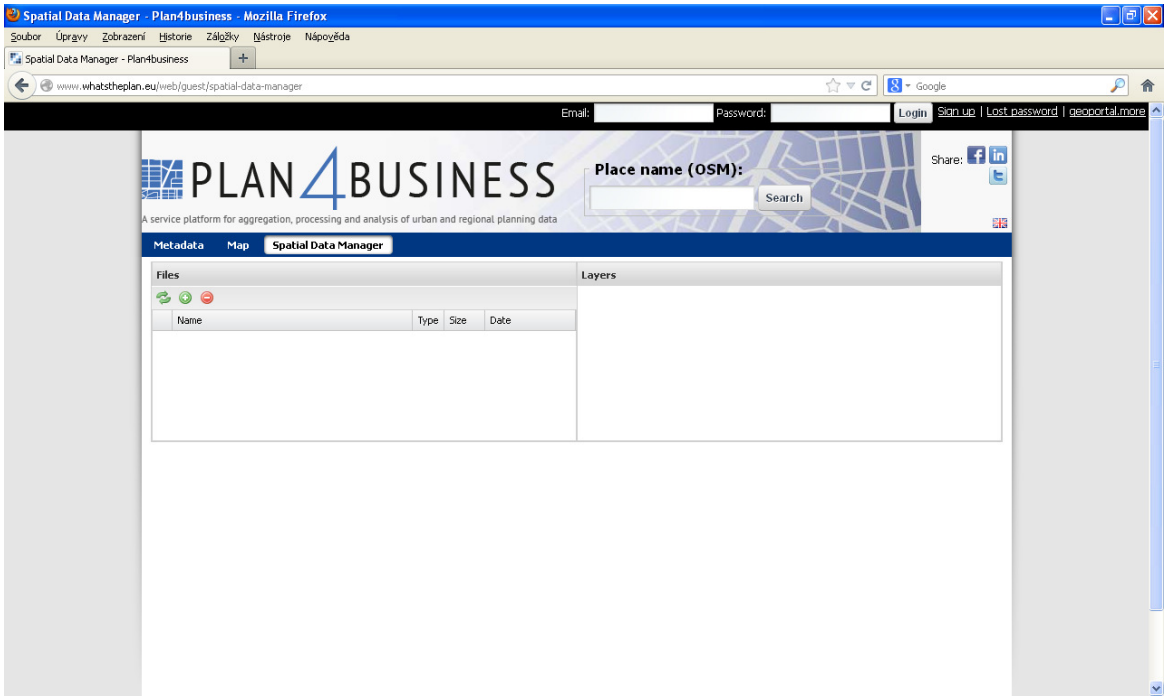

Figure 17 Liferay with spatial data manager

7.3 Detail Component Description

The plan4business portal is composed of independent server components (modules) described in the Deliverable 5.1 and different client applications described in chapter 7, 8 and 9 of this report. The part of information provided through the plan4business portal can be made publicly available and every user is authorised to access it without authentication, but there will also be commercial information available for registered users. For the cases where the information can be for example viewed or modified by only a restricted group of people, the authentication and authorisation mechanisms are put in place.

Authorisation and authentication terms are often used interchangeably. The following definitions should clarify the difference between them.

The plan4business portal enables users to control access to all their resources stored on the geoportal using the authentication and authorisation mechanisms. Registered users can be authenticated by credentials including the email address and a password (see Figure 18).

Figure 18 Authentication of a registered user

Unregistered users can create an account using a simple form depicted in Figure 19 by filling in a name, date of birth, gender, username and email address. The creation of the user account is protected by CAPTCHA[4] ensuring that the form is filled by a person.

[4] http://en.wikipedia.org/wiki/CAPTCHA

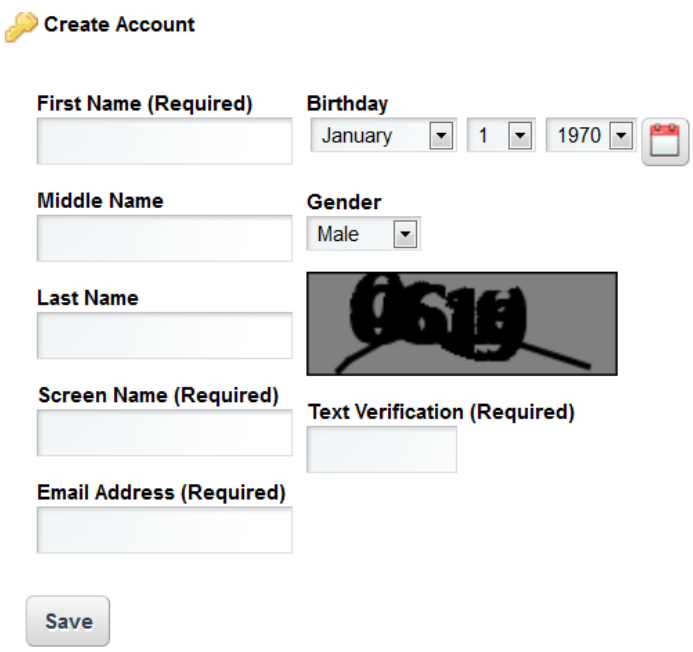

Figure 19 Creating an account

The registration of users as well as the provision of permissions (authorisation) can be managed by the system administrator.

The administrator can define the menu of the geoportal and its submenus. Any menu or submenu can incorporate external web links. The user can publish articles using the content holders. A WYSIWYG[5] editor provides a good user experience for beginners. The content holders support HTML code for advanced users. The editor allows inserting various multimedia content including You Tube videos, photos, SlideShare presentation etc. The print screen of the content editor is in Figure 20.

[5] http://en.wikipedia.org/wiki/WYSIWYG

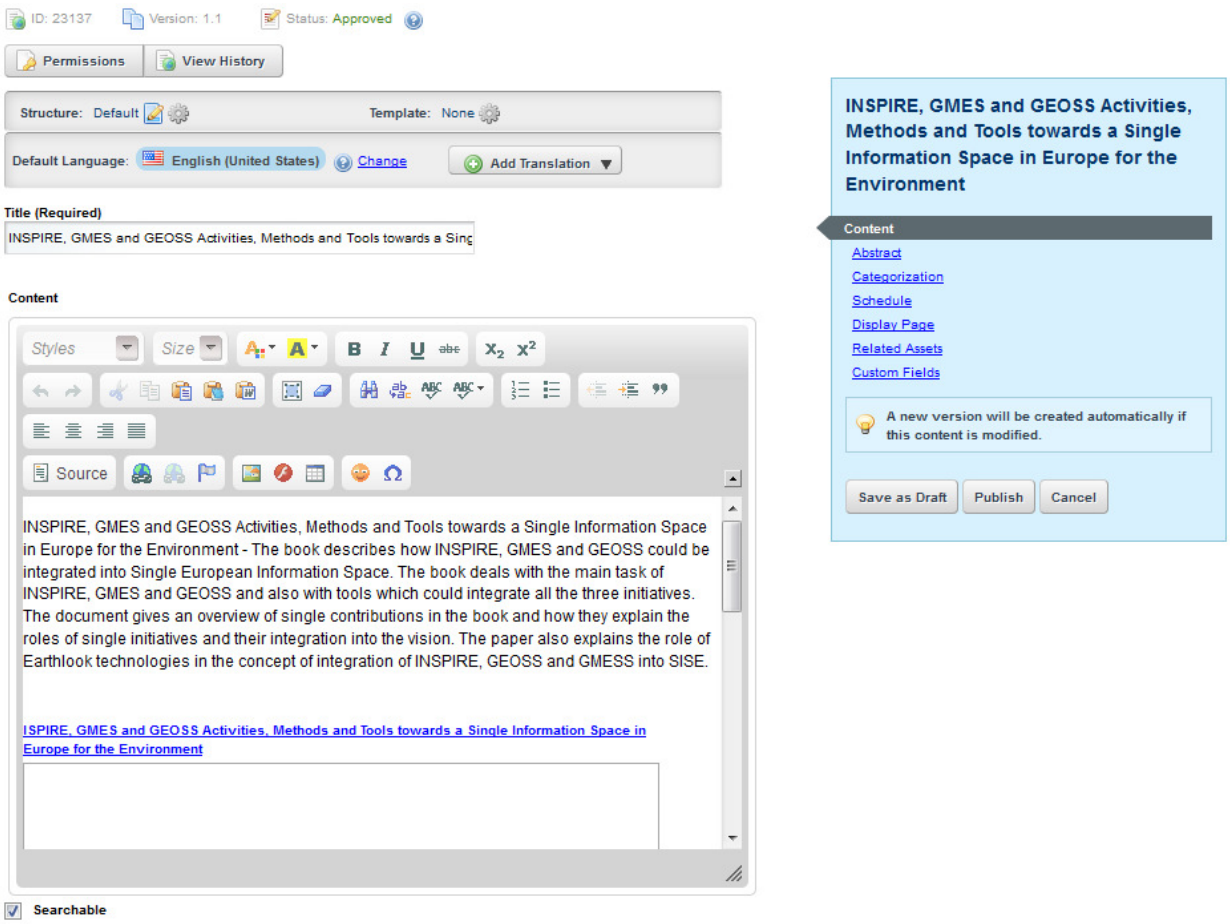

Figure 20 Content editor

The geoportal supports RSS and GeoRSS feeds that can be displayed from remote sites. This enables a straightforward and easy way of promoting the plan4business portal services.

RSS (most commonly expanded as Really Simple Syndication) is a family of web feed formats used to publish frequently updated works—such as blog entries, news headlines, audio, and video—in a standardised format. GeoRSS is an emerging standard for encoding location as part of a Web feed.

7.4 Next Steps

The current implementation allows integration of all server and client components of the plan4business portal. Additional functionality and updates will be provided based on the analysis of user requirements and on experimental testing.

8 Collaborative Schema Integrator Development (Fraunhofer IGD)

8.1 Objectives

This task includes the design and implementation of the client side for the collaborative integration of spatial and non-spatial data into the plan4business data pool. The work encompasses the **design and implementation of the web interface** for the data upload and harmonisation workflow. The following functionalities and components are foreseen:

- **Data source upload** for all datasets that will be stored in the primary data pool.
- Configuration of the "Integration Engine" component (= Schema Mapping Component + Plan Matcher Component) to do the actual data integration:
  - for vector data: the **Schema Mapping Component** supports data transformation for Existing and Planned Land Use (into a simplified INSPIRE Data model) in HALE;
  - for raster data: the **Plan Matcher Component.**

8.2 Work Done and Progress Achieved

Components for Service Levels 1 and 2 were implemented. From the point of view of integration of these components with the plan4business portal (under uniform graphical design according to mock-ups and integration of the components with the Liferay portal) was not yet fully realised and there is approximately one month delay according to the defined milestones.

In the following text we first give an overview on the overall workflow that is related to data upload and integration. This workflow describes the interaction of the user (Data Provider) with the system for the data upload as well as the subsequent processing steps required for integration and writing into the database (related to the Integration Engine described in D5.1). This comprehensive workflow description is then followed by a detailed description of the Web Interface developed for organising the data upload and integration workflow.

8.2.1 Concept of Integration Workflow

The following four figures provide an overview of the workflow for integration of vector data sets using the Plan Integrator UI and the Integration Engine (see D5.1).

Figure 21 Top Level Integration Workflow gives an overview on the overall process of data integration. The main activities in the top level integration process are uploading data for integration, storing it in its original form and creating tasks for the integration of the different files/documents into the primary data pool. These tasks serve to decouple the data upload from the actual integration, and later on store the integration

configuration. As simplification, the completion of the tasks is displayed in the process model in linear order, with each task being finished completely, but in the implementation later on integration tasks may be completed partial and started or continued independently of each other.

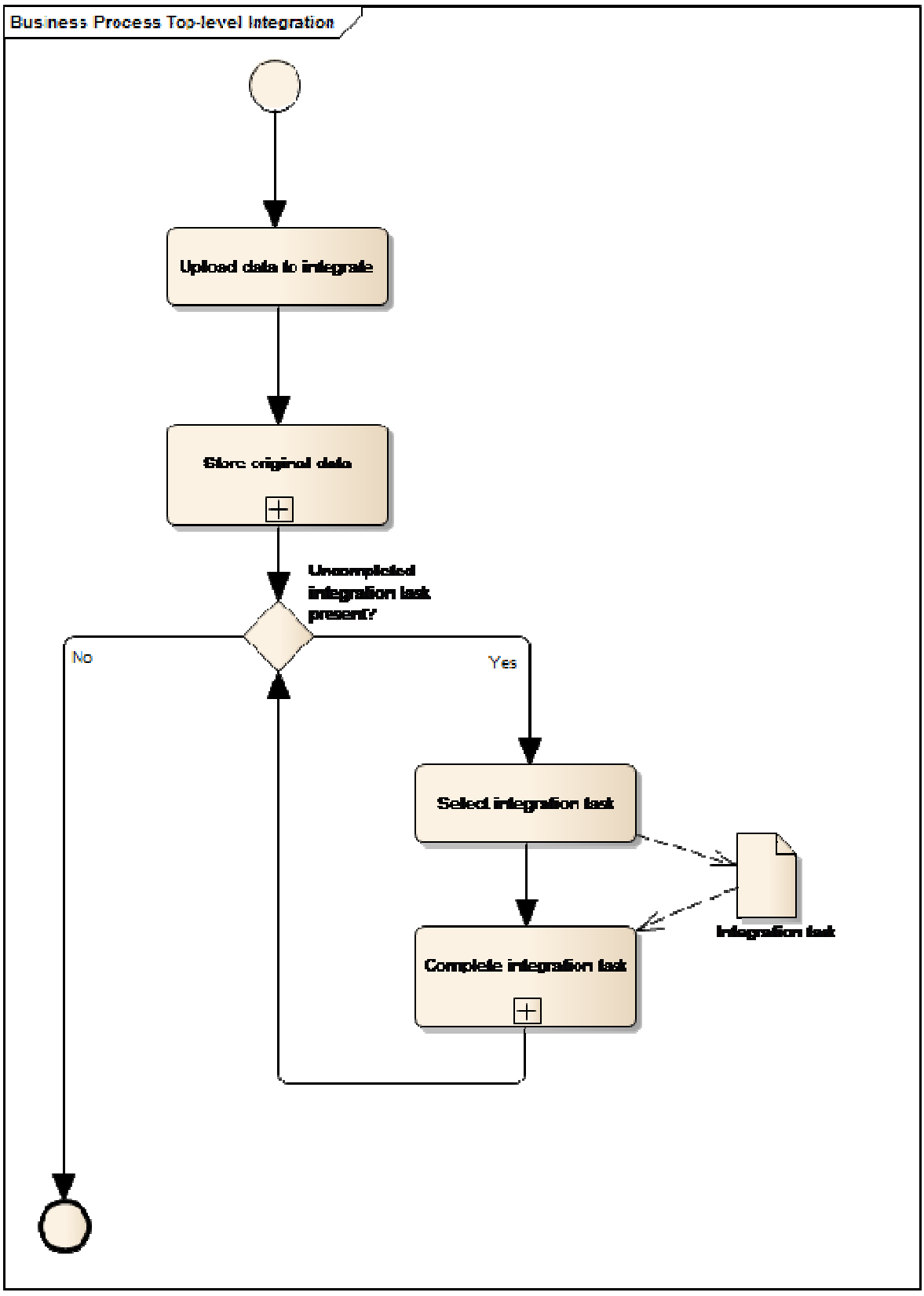

Figure 21 Top Level Integration Workflow

The remaining three figures showcase specific details about the sub-processes of “Store original data”, the complete integration “Store original data”, “Complete integration task” – and more specifically as part of the integration task “Schema Mapping” – are sketched in detail. The proposed workflows are an initial draft and are subject to change in the further progress of the project.

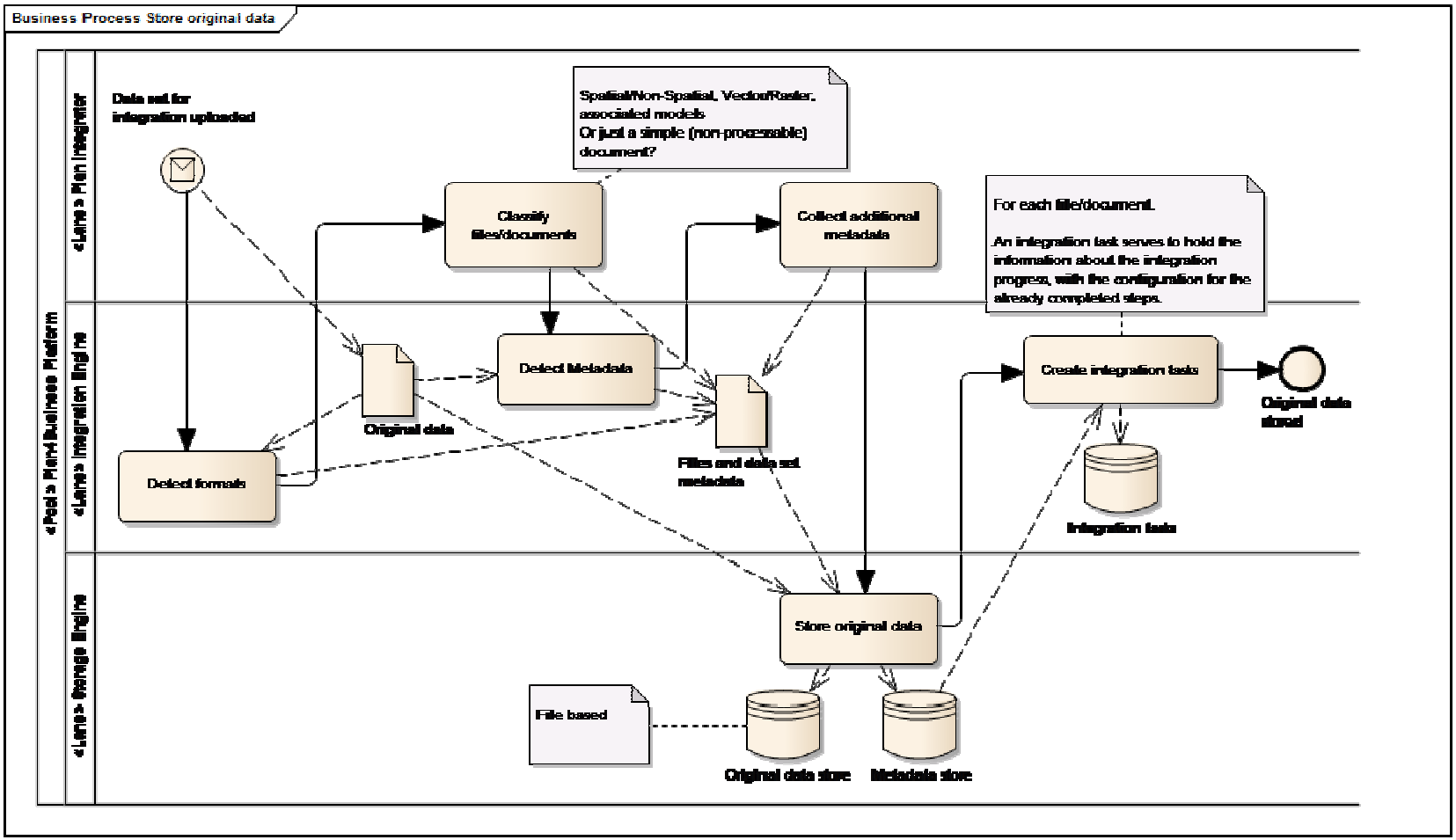

Figure 22 Workflow for storing original planning data sets

In the process “Storing original data” (Figure 22), the uploaded files are processed, classified and metadata is collected. As a result, the original data set and file/document metadata has been stored in the system. For each file/document an integration task is created that controls the further integration into the system to make the data usable for visualization and analysis.

Figure 24 below shows the process of completing an integration task. As a result the data is stored in the primary data pool. During the process, data is handled differently according to its format. One activity necessary for translating vector data to the plan4business models is Schema Mapping. Like many of the other activities in this process it is rather complex by itself, and is not just restricted to the Integration Engine component but involves also the Plan Integrator and through that the data curator.

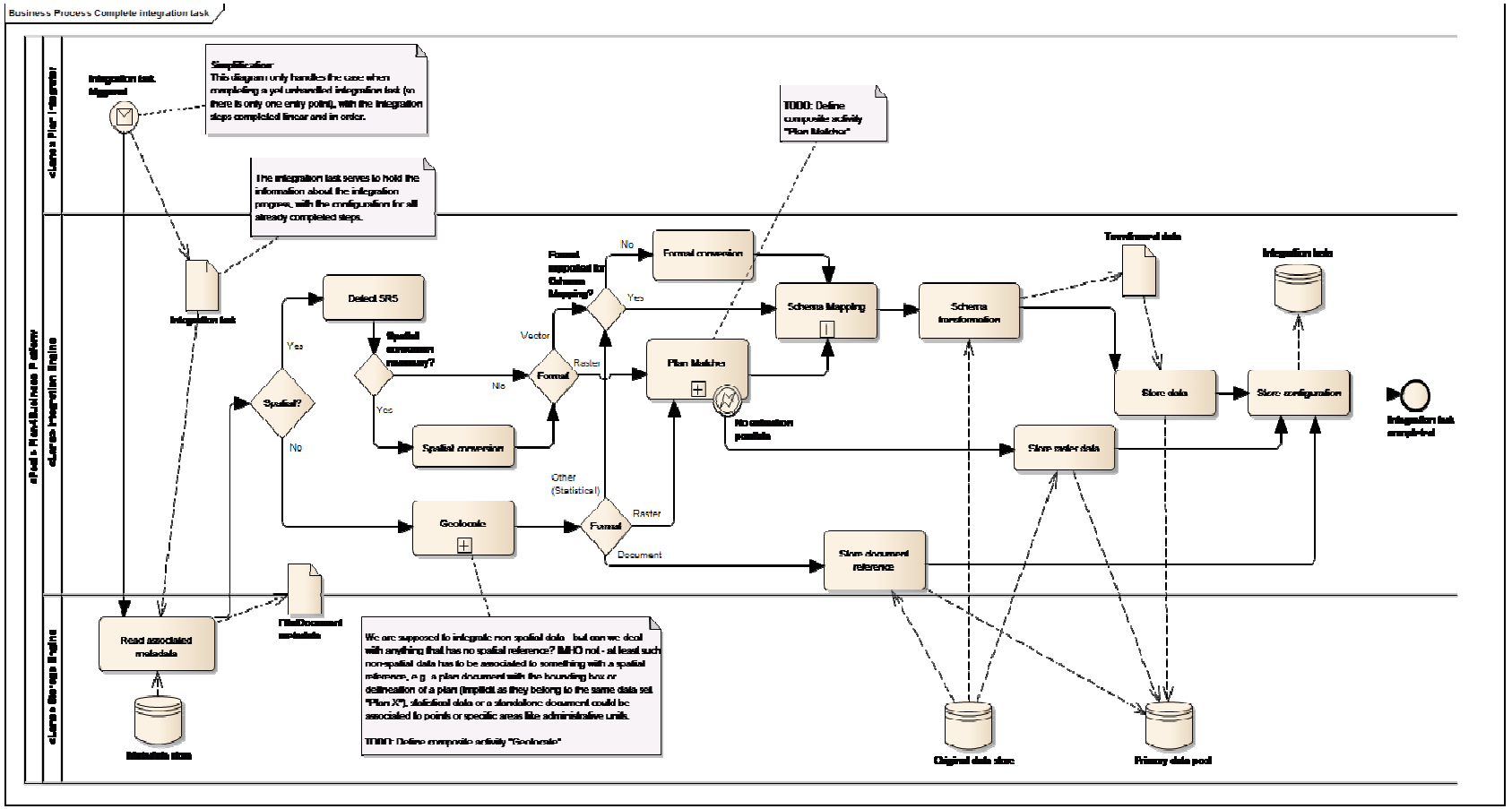

Figure 23 Workflow for the actual schema integration I

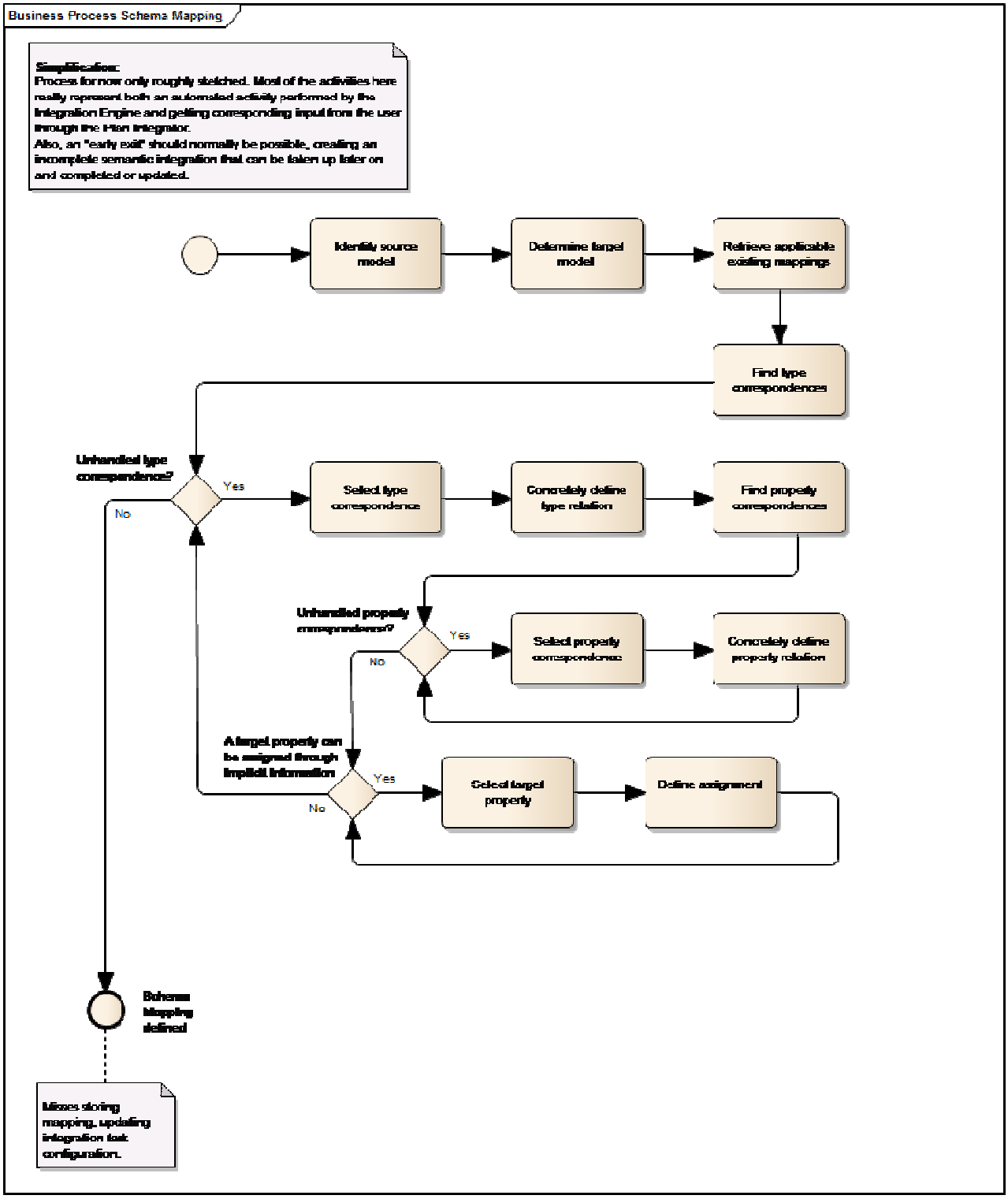

Figure 24 Workflow for the actual schema integration II

8.2.2 Design and Implementation of the Web Interface

Figure 25 provides an overview on the implementation levels roughly defined for the plan integrator component in relation to the developments for the Integration Engine (see D5.1).

The following description focuses on the implementation status reached so far, which is the interface for uploading data and mapping projects (level A in Figure 25). The functionality maps to the workflow depicted in Figure 22 on storing original data and partly also to the workflow depicted in Figure 24 on the actual schema integration.

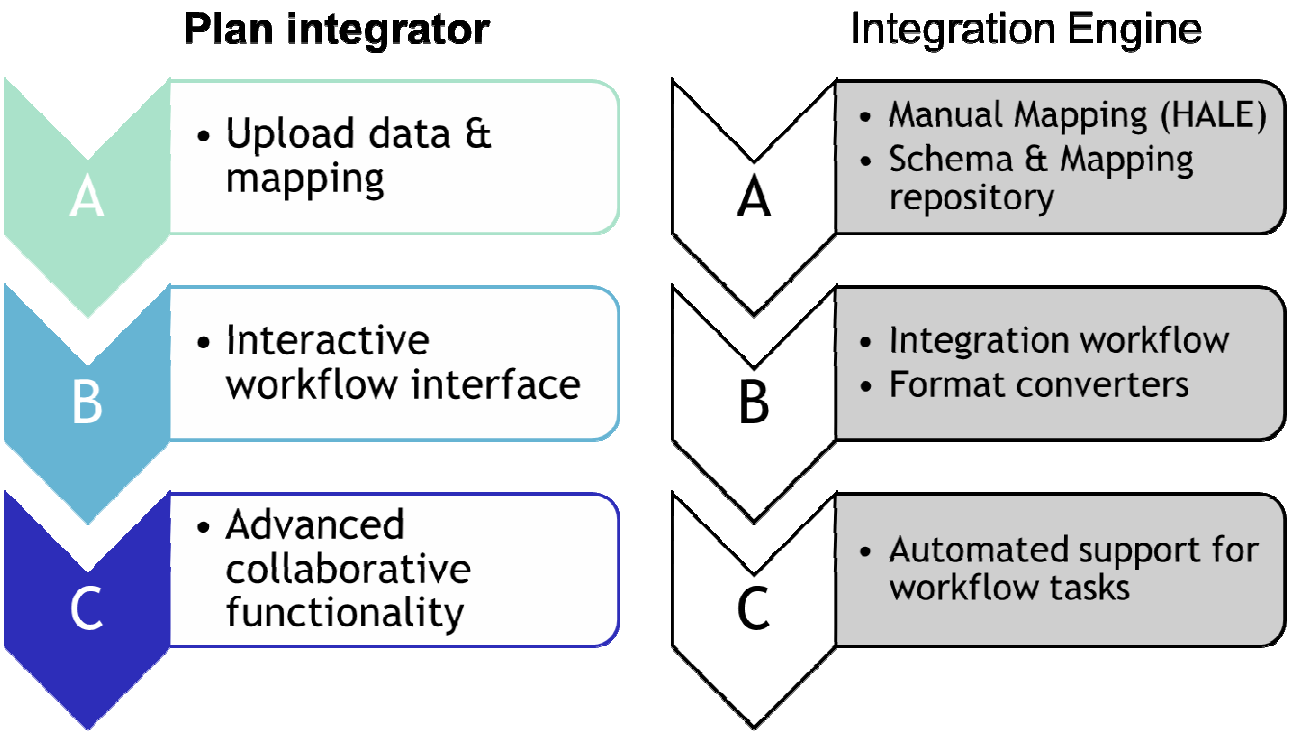

Figure 25: Rough implementation levels for the Plan Integrator components and related status of the implementation progress with the Integration Engine

The functionalities that are implemented in the Plan Integrator Interface are the following. Source Data is uploaded and stored in the plan4business file system and related metadata is stored in the primary data pool. We have implemented the primary data pool with a PostGIS database, as explained in detail in D5.1. All data formats can be uploaded into the system; so far no restrictions are imposed on the data sets. The data upload is organized as “Source Data Projects”, i.e. it is possible to upload multiple datasets as one Source Data Project. Related files that belong together can thus be grouped. This allows that all relevant regulations, plans or other related sources can be uploaded as a grouped data project. For example, for all

datasets on planned land use it is very important to have also the related regulations uploaded and available for the end users.

For each “Source Data Project” an explicit spatial reference is stored. This is either automatically extracted from the data files uploaded or it will be requested from the user via sketching a bounding box on a map.

While uploading the source data, the user is requested to insert some additional metadata. The set of elements that are requested include:

- Name of the source data project
- Specification whether the uploaded data represent Existing Land Use or Planned Land Use
- If multiple datasets are uploaded, the user has to identify the source schema and the attribute that contains the code list for land use classification. This information is needed to specify the mapping project for the subsequent integration task.
- A validation date for the data needs to be specified
- Additional metadata collected include: Country, administrative level according to NUTS nomenclature, contact person, etc

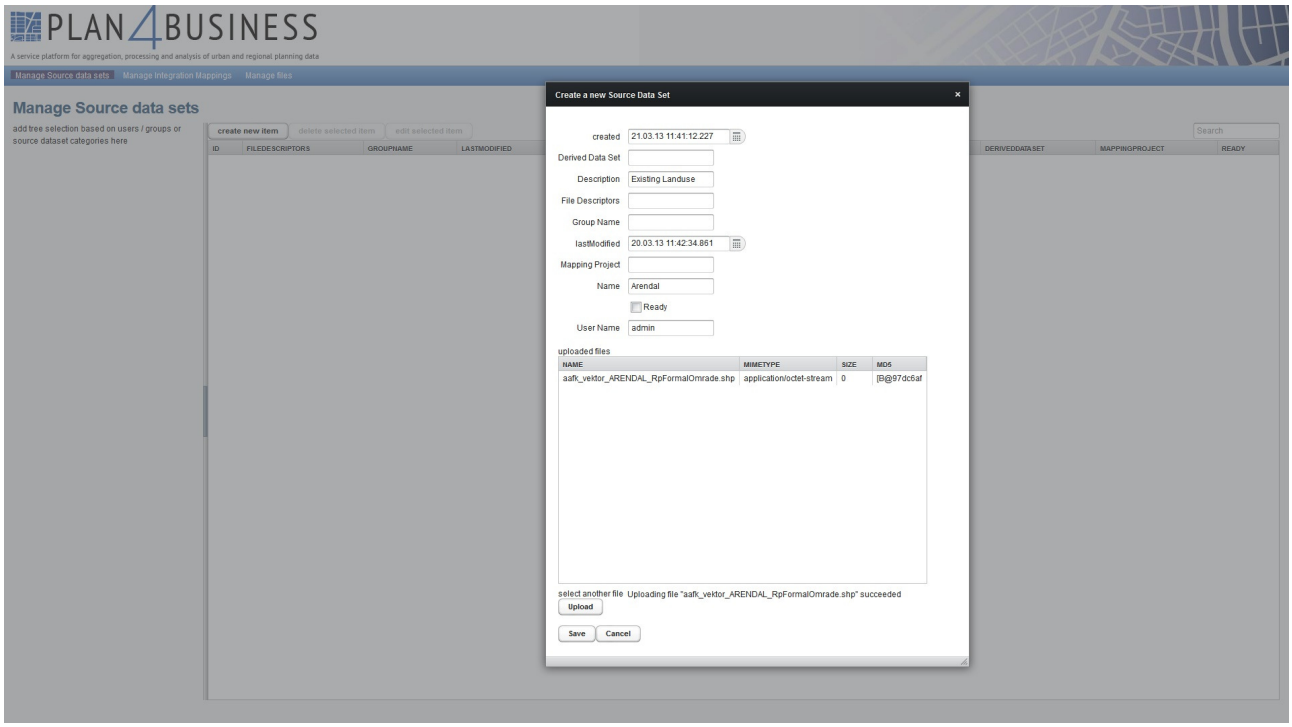

Figure 26: First version of the web interface for uploading source datasets.

After the source data project and its metadata have been defined and stored in the database by the users, the next step involves the definition of a HALE mapping project needed for the integration towards the INSPIRE Data Model for Land Use.

The users have the possibility to either choose an existing mapping project from the storage, or to define a new project from scratch. If a mapping project already exists, the transformation process can be easily executed on the source datasets. The transformation runs on the HALE Server. The results of the transformation process, the harmonized set of existing or planned land use data can then be uploaded into the primary database.

If no mapping projects for the source data exist, a new mapping project will be created. Currently, this mapping project has to be defined offline in the HALE desktop application. For the next implementation level, i.e. level B in Figure 25, an interactive workflow will be implemented that enables the definition of the mapping project based on specific information collected from the data provider on the source datasets. This will include the mapping table between the original classification of land use applied on the source data to the HILUCS classification used in the INSPIRE data model for land use. These mappings will be stored, analyzed and exploited in order to support other users with their mapping tasks on the Land Use classification.

8.3 Next Steps

Next work will be focused on full integration with the plan4business portal, uniform design and the interaction with the other components that form the plan4business platform. After finishing the work on the first implementation level, the user interface will be extended with an interactive workflow specifically tailored for creating a schema mapping for integration of land use vector data into the platform.

9 Analysis UI Development (HSRS)

9.1 Objectives

There are the next objectives for the Analysis UI interface:

1. Provide seamless mapping theme for land use data, statistical data and spatial planning across Europe, suitable on global, as well as local level.
2. Provide the user with available data and possible analyses (queries), which might help him to perform his task. Enable the user to query available datasets, before usage (using geospatial catalogue server/client).
3. Automatically generated user interface for query forms.
4. Enable the user to perform the query, see its result in a fast and friendly way.
5. Enable the user to save the query or download it According expected business model (D2.4.1) this functionality fill be for commercial users and this (this feature will be charged).

The Analysis UI consists of two components: 1) an application for customers - end users who are searching the portal for needed information and 2) an application for expert users (administrators). In the expert interface, map compositions, which will contain map layers together with available analytical tools, will be managed and created. The concept of map composition is extending the OGC WMC concept (detail description is in 8.3). The original OGC WMC concept allows only to combine different WMS resources. plan4business extended this concept by a possibility of combining also locally stored data, WFS, WCS and, what is the main issue, analytical functions. Details are in Sections 8.2 and 8.3 of this report.

In the standard user interface, the user can browse the map, select a desired areas where available layers together with available analyses will be offered. The user can pick a desired analysis and perform it. The result will be displayed in the map and can be stored and downloaded.

9.2 Work Done and Progress Achieved

Single components of for the Analysis UI were implemented for Service Levels 1 and 2 and partly also for Service Level 3. From the point of view of integration of these components with the plan4business portal (under uniform graphical design according to mock-ups and integration of the components with the Liferay portal) was not yet fully realised and there is approximately one month delay according to the defined milestones. The possibility of embedding clients into other platforms is not yet fully implemented, it is running only as part of HSlayers.

Two web mapping applications were set up. One for expert users – partners of the consortium – which will enable the user to manage existing compositions and create new ones. Second for the customers - end

user, which should be simpler in general and enable the user easy to navigate between available compositions and to select and run available analysis.

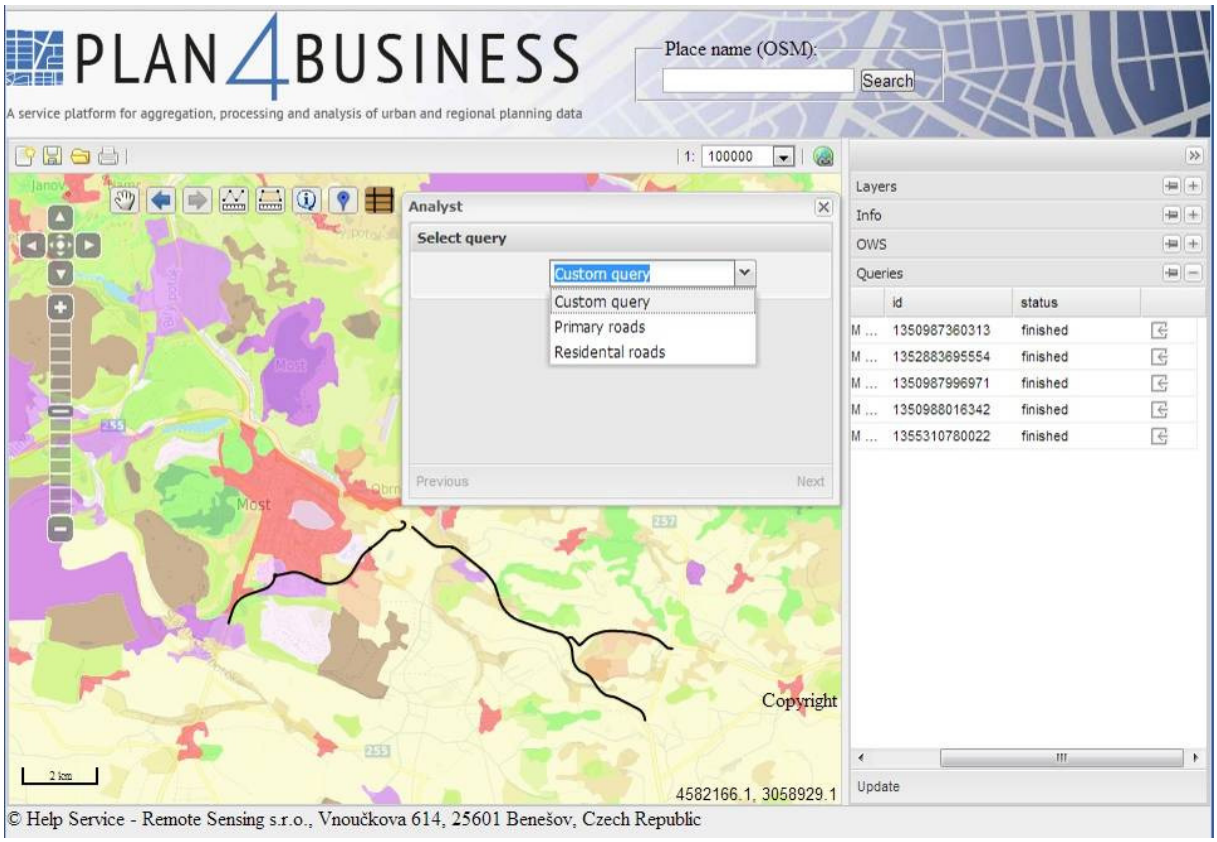

Figure 27 Analysis performing

Expert user interface is based on HSLayers JavaScript Mapping framework. HSLayers builds on top of two known JavaScript frameworks, namely OpenLayers & ExtJS. Detail description of used functionality is in Chapter 8.3. It consists of map, tree-based layer switcher, OWS client and other components including length and area measurement tools, module for printing of hard-copy maps and query tool. This whole environment enables the user to collect data from various data sources (WMS, KML, WFS, WMTS and others) and to prepare map compositions. Potentially style the maps, if possible (using SLD styler component). Layers can be made visible, transparent; their order within the layer stack can be changed. Once done, new map composition can be stored.

The work on Analytical UI went in two directions:

- Modified existing HSlayers library and provide implementation according mock ups design in Chapter 6
- To extend current functionality of HSlayers to cover all required functionality

As part of work, which is not directly connected with analytical functionality, but more with plan hosting and feedback, ale functionality of on line editing was implemented.

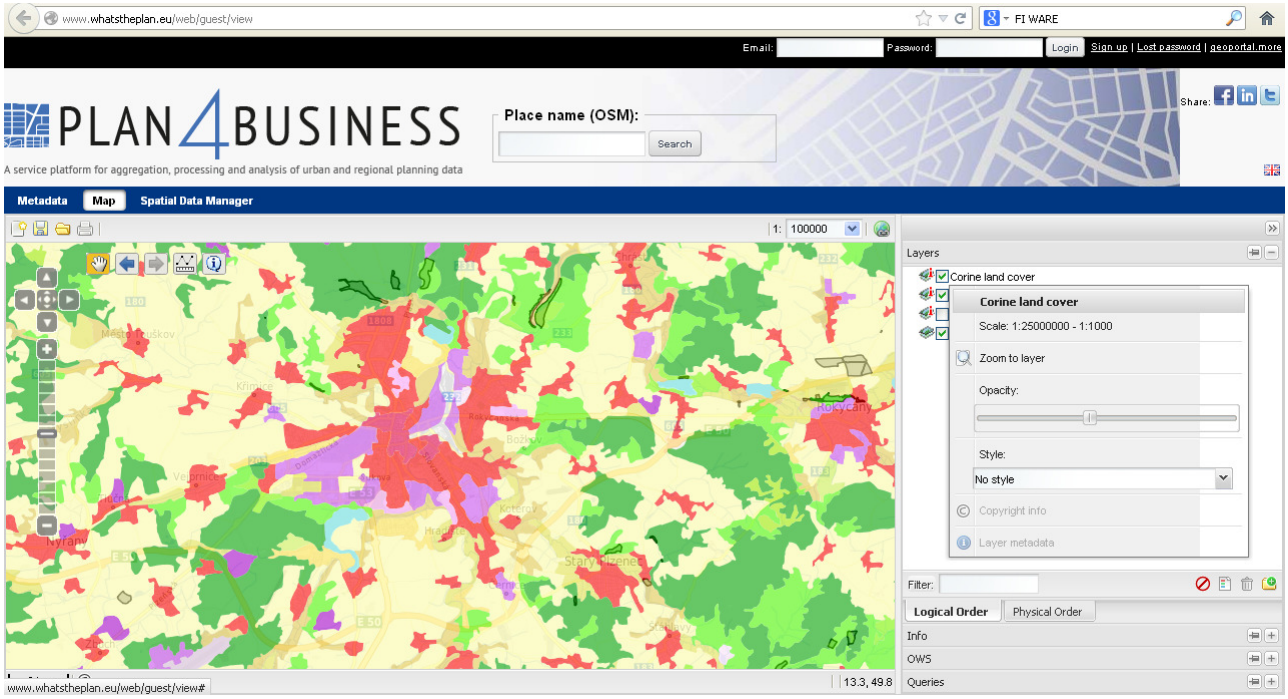

Figure 28 Style wizard

For this purpose, new wizard-based form has been developed, which guides the user through creation of composition process. User can adjust layers available in the composition, set its title, abstract, keywords (useful for later catalogue operations), set bounding box for the composition etc. In the next step, user details are set (name, company, address, etc.). They are basically obtained from the environment. After that, composition string is generated. And can be downloaded to the hard drive for later usage or stored to the server, while its metadata are catalogued seamlessly by catalogue server. From now on, the map composition can be found in the list of available compositions in the generic user interface.

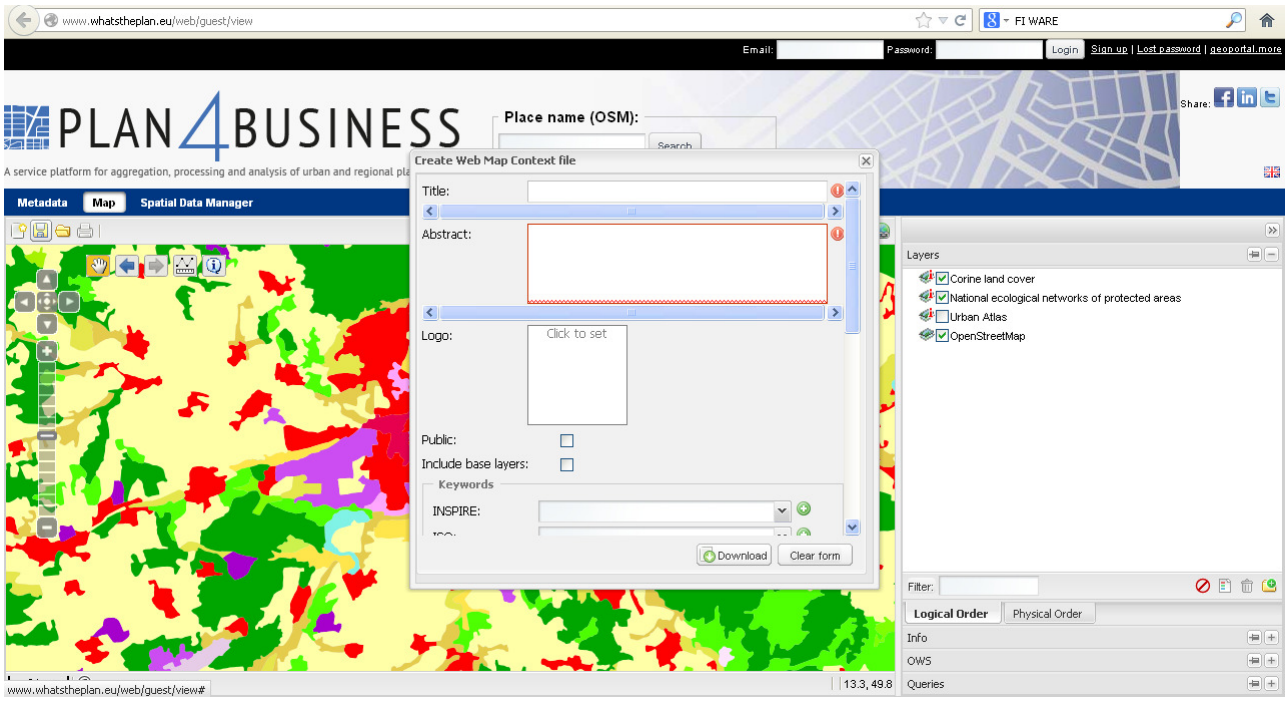

Figure 29 User composition generation

In this user interface, existing compositions can be loaded and edited again.

Standard user interface has several functions, which we have to achieve:

- Display harmonized data on global (European) as well as local (municipal) levels.
- Display additional data layers; enable the user to perform this task.
- Enable the user to perform desired queries or analysis.
- Store and display results of such analysis.
- Enable spatial queries (base on the mouse pointer) and display their results.
- Everything in a simple, user-friendly interface.

This standard user interface is again map-centric application, with three panels next to the map:

- layer switcher,
- analysis panel, where particular prepared query (data analysis) can be picked and configured,
- composition selection panel, where particular areas with available data and corresponding data analysis can be picked and loaded into the map.

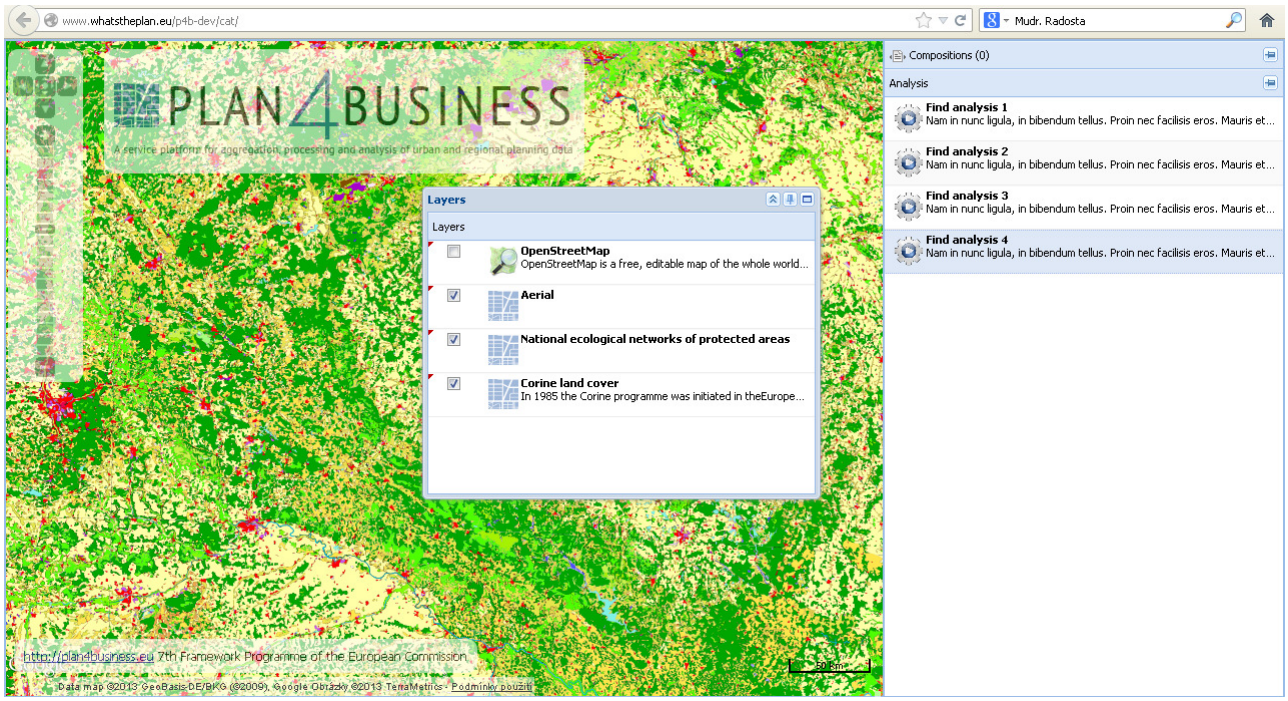

Figure 30 Customer – end user interface

User can find a desired location on the map, then he/she can select a prepared map composition from the list of compositions available for this region. Layers are then automatically added to the map, as well as to the list of available analyses.

Then the user can perform the analysis (via wizard interface) and display the result as a new map layer.

9.3 Detailed Component Description

The most of functionality of Service level 1, 2, 3 and 4 is already now covered by HSlayers. Some functions were part of HSlayers, some were developed during plan4business first year implementation.

HSLayers are designed as a set of basic components which can be put together and customised for building an application reflecting user needs.

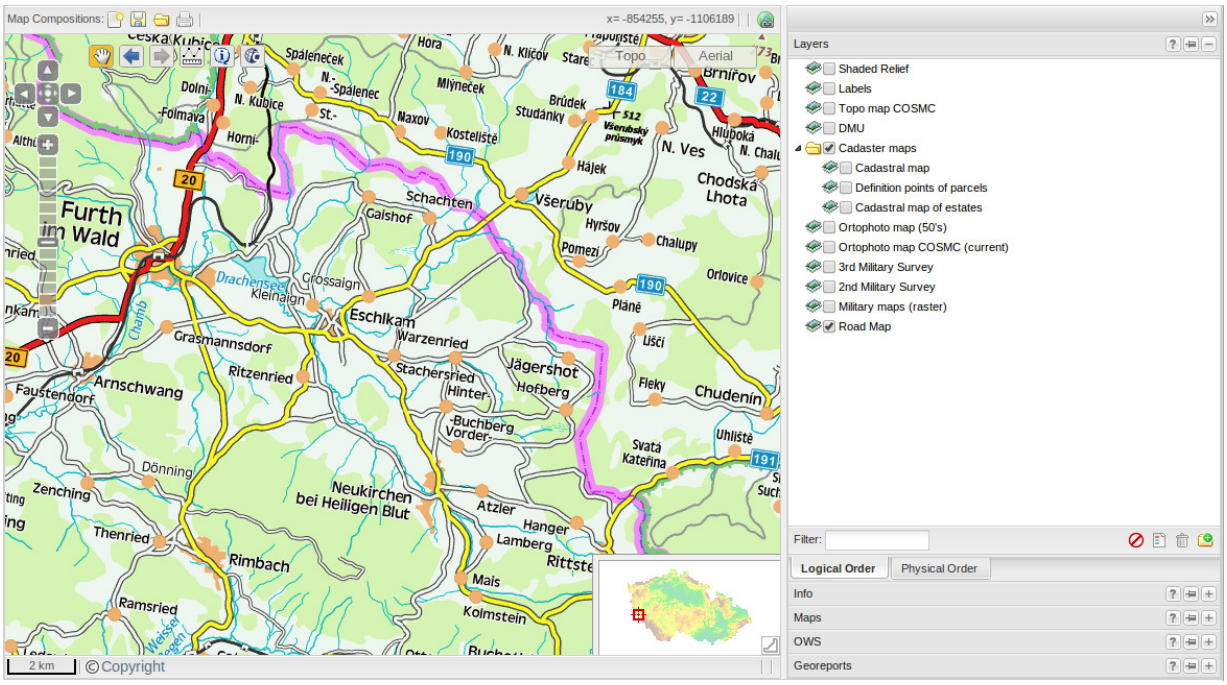

Figure 31 HSlayers Map Portal

The HSLayers set of tools is used in new generations of map applications, and includes:

- HSLayers Components,
- HSLayers Portal,
- Server scripts (transformation, print),
- Editing with HSLayers,
- Special HSLayers.Layer.MapServer type.

From a developer's point of view, HSLayers/OpenLayers is a pure JavaScript library for displaying map data in most modern web browsers, with no server-side dependencies. OpenLayers implements an object-oriented JavaScript API for building rich web-based geographic applications, similar to the Google Maps and MSN Virtual Earth APIs. OpenLayers can display various types of raster and vector data formats. It

inherently supports OGC WMS specification, as well as common Image formats (in PNG, GIF or JPEG format).

There is also support for multiple proprietary formats, such as Google Maps, Yahoo maps and others. OpenLayers uses tiling of raster data. A numbers of vector (and text) data formats are also supported. The system allows the rendering of vector features in GML, OGC WFS, GeoRSS, KML formats. Creation of regular shapes (boxes, circles, etc.) is also supported. Points can be displayed as special point features with image icon or vector point features. Many controls are available to support map interactivity and customization. Among others, these include: zoom bar, overview map, layer switcher, various toolbars and mouse action handlers.

HSLayers features are coming up from OpenLayers and therefore their characteristics are as follows:

- Portrayal of various types of data:
    - Raster: OGC WMS(-T), Image (PNG, JPEG, GIF), …
    - Vector: OGC WFS(-T), GML, GeoRSS, KML, GPX, GeoJSON, …
    - Data sources from commercial servers: Google Maps, Virtual Earth, Yahoo Maps,and others.

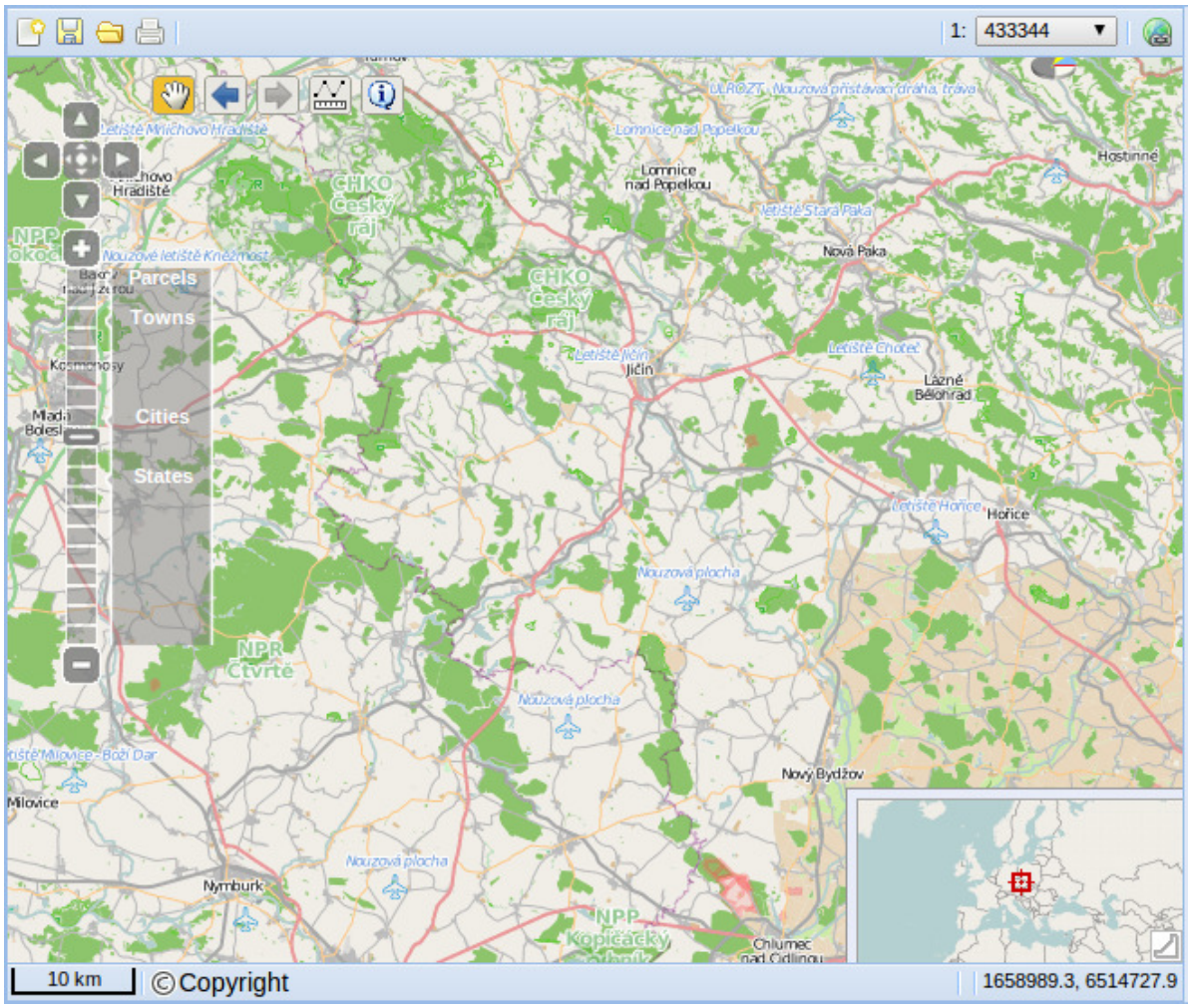

Figure 32 Map Window

HSLayers.MapPanel is container for the map. The map usually interacts with the user through mouse gestures, so it zooms in/out, pans etc. There usually is a graphical tool for setting the desired region - bar for panning and zooming. Several other tools, which do enable the interaction with the map are available too, namely zoom history, measuring of lines and areas, tool for querying the layers and other custom tools. Tools for working with the map content, such as saving/restoring web map content (WMC) files, printing the map content or generating the permanent link for current map state are available too.

MapPanel contains various map layers, it enables the user to work with the map (zooming, panning, ...). Zoom bar together with overview map are available.

Tools for direct interaction with the map are available too, such as navigation, navigation history, measuring, querying and others.

The top toolbar and bottom toolbar are used for other informative tools, or tools for working more with the map content, than in the map itself. We can see buttons for saving and restoring OGC WMC files, printing, permanent link generator, scale, mouse position and copyright information.

With LayerSwitcher, user can change visibility of available layers, change their order in the layer stack, set transparency and other features and use shortcut links to layer metadata or remove them from the map.

LayerSwitcher is one of the most complex components of HSLayers. We do introduce two different views at the layer stack: the *physical structure* and the *logical structure*.

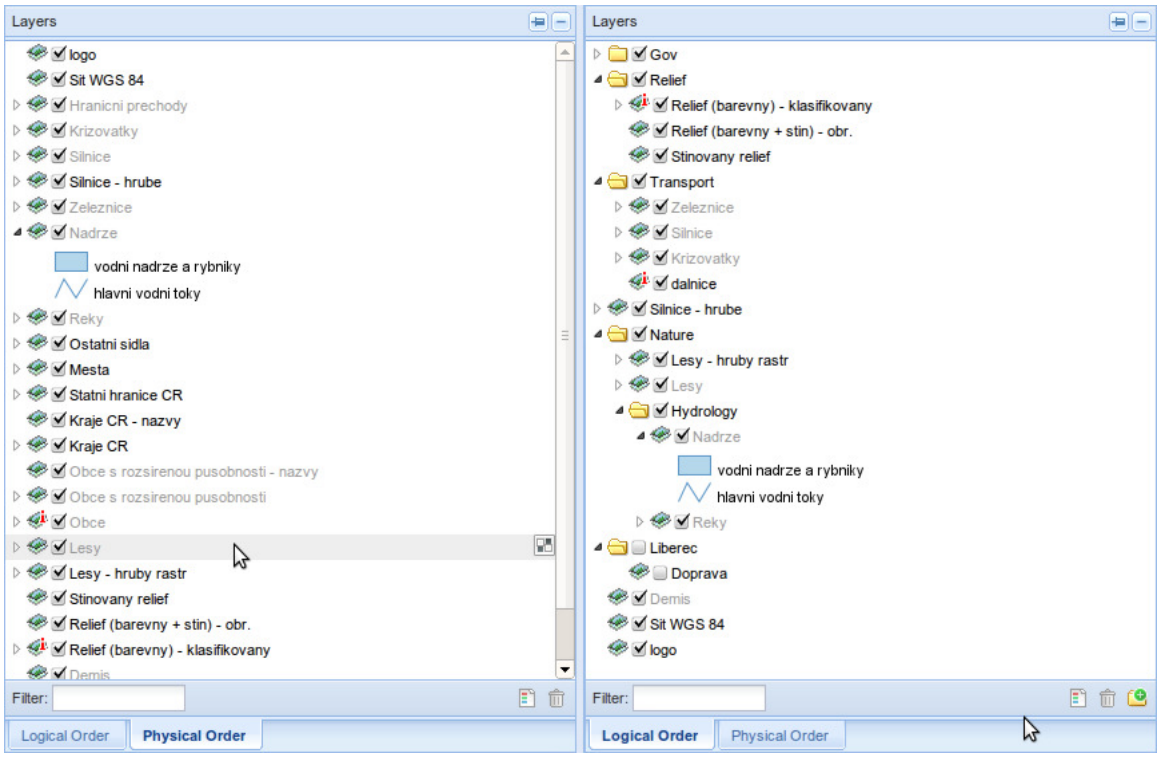

Figure 33 Physical and Logical Structure

Logical structure represents the view on the application, where layers are organized into groups (or folders) according to some user-defined logic. Layers can be sorted into folders according to their original service, or based on their content.

Physical structure corresponds with the layer stack, how it is displayed in the map. User can change layer order (using drag & drop) etc.

LayerSwitcher is able to display also legend to all layers, perform user searches in the layer stack, display basic information and settings in the layer menu (such as abstract, scale range, title, ...). User can move the layer, drop the layer or change layer's name.

There is also basic work done, on WFS filtering, SLD defining, transparency settings etc. User can use several shortcut links to layer's metadata, copyright information and others.

The Layerswitcher also uses 3-state checkbox. Every folder checkbox has three states - **on** (all layers within the folder are visible), **off** (everything is invisible) and **custom**.

HSLayers contains complex OGC OWS client, which is capable to work with OGC WMS data directly, with OGC WFS and OGC WCS via server-side script Proxy4ows.

HSLayers contain mechanism, how to read parameters from URL directly, so the application can start with OWS Client open and Capabilities document parsed.

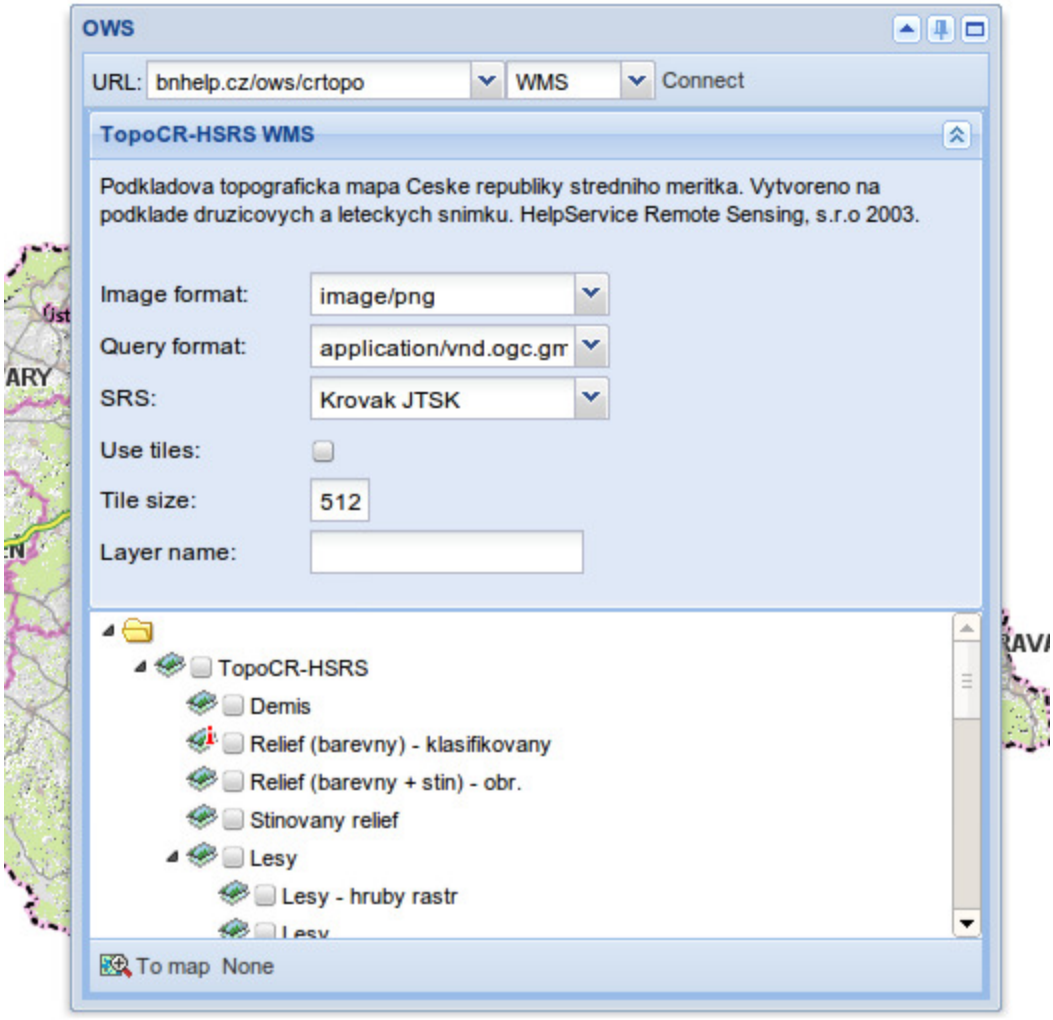

Figure 34 HSLayers.OWS - Open Web Services client

Working with OWS Client is straight forward - user gives the URL, where the service is running and type of the service (usually OWS). After capabilities are loaded, form with service parameters is displayed (image format, query format, etc.) together with layer tree, where several layers can be checked. Service metadata (service provider, abstract, title, etc.) are displayed in separate tab.

After that, layers can be added into map. When user wants to display some on-line available files, such as GeoRSS, GML, KML or similar, she just need to specify the URL and file format. After that, user is requested for the layer name and it is added to the map as well.

HSLayers includes printing setup, so that content of the map can be printed at any printer or used in other desktop GIS workstation. The printing client enables the user, to choose between printing a map to a pre-defined template (PDF or HTML output) or saving the content of the map into a raster image (image output).

When the user makes a choice that he wants to create a raster image with the map's current content, he can either directly click the button, and a copy of the map window will be displayed, according to the selected image format (which can be one of PNG, JPEG, GIF and geo-referenced GeoTIFF). The desired scale and region can be set as well. When a user chooses to print a map to a pre-defined template, a new box is drawn, representing the paper box.

Users can move the paper over the map and define the desired region. The size of the paper box is always adjusted according to the selected scale. Additional information can be added as well (map title, description, icon). The map is then layouted according to selected pre-defined template to PDF or HTML output. The template is prepared as a HTML page. Printing is provided by a server script, which is able to work with standard WMS services, tiled-layer, vector data and other inputs. The paper is dependent on prepared templates - it can be virtually anything from A5 to A0.

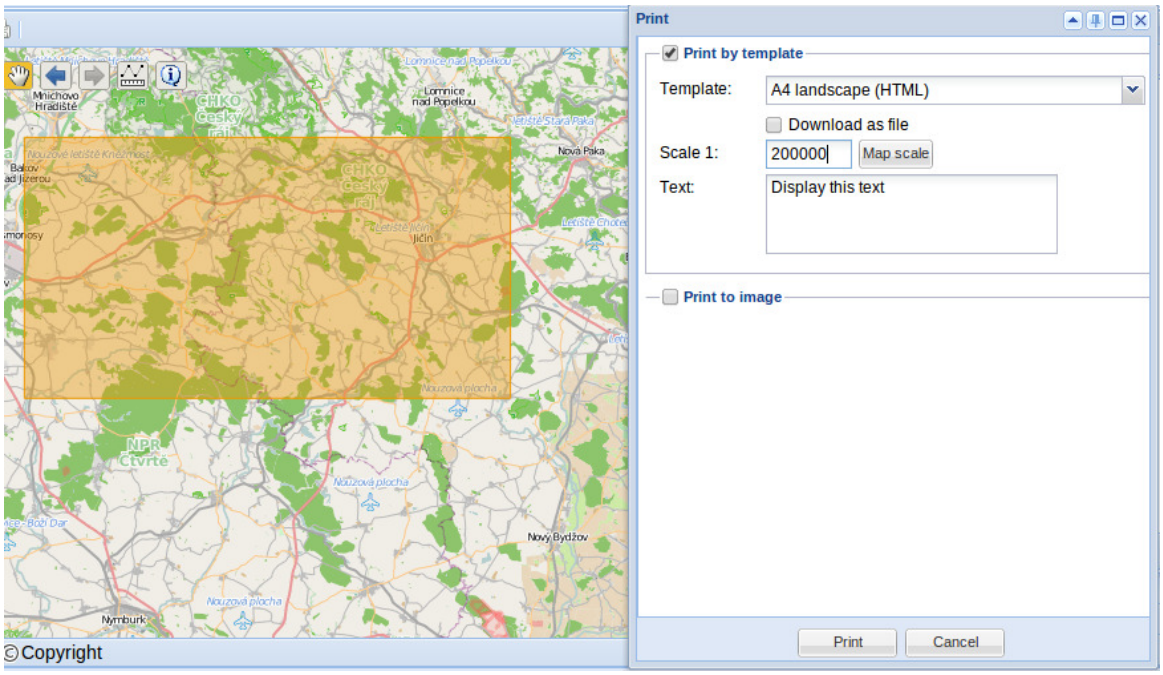

Figure 35 Printing with HSLayers

Printing form: The orange square represents the paper. User can move the paper on the map and define the printing area. In this case, HTML output page will be generated, according to selected template.

For the printing, server component is used, which uses MapServer mapscript for preparing the mapfile according to displayed map layers (raster, service or vector) and layouts the map in the desired form (PDF according to template or simple image). Output templates are HTML-based, and they are converted from HTML to PDF using webkit renderer.

Printing result - based on given HTML template with several additional keywords (easy to setup for everybody), user will get PDF output with title, map, legend and overview map rendered.

The important new issue is the support for Web Map Context (WMC). Web Map Context describes how to save a map view comprised of many different layers from different Web Map Servers. A 'context' can be encoded and saved so that Web maps created by users can be automatically reconstructed and augmented by the authoring user or by other users in the future. A Context document is structured using eXtensible Markup Language (XML). Potential uses for context include creating default initial views for Web maps for different hazards, saving the state of a user's work on a viewer client to preserve information such as how geospatial layers are added or modified, and saving the state of a client session for sharing with other users. This mechanism is valuable for efficiently communicating across shift transitions. Also, context documents can be catalogued and discovered for reuse by others

- Define WMC on the base current composition on portal
- Save composition on local disk
- Save composition with metadata on server
- Open composition from local disk
- Open composition from server
- Open composition from remote servers using metadata description

The implementation of the WMC concept presents a new way to the future upcoming solution, when the system will support easier collaboration and sharing of results. It also supports the reuse of results of work done on portal by other applications.

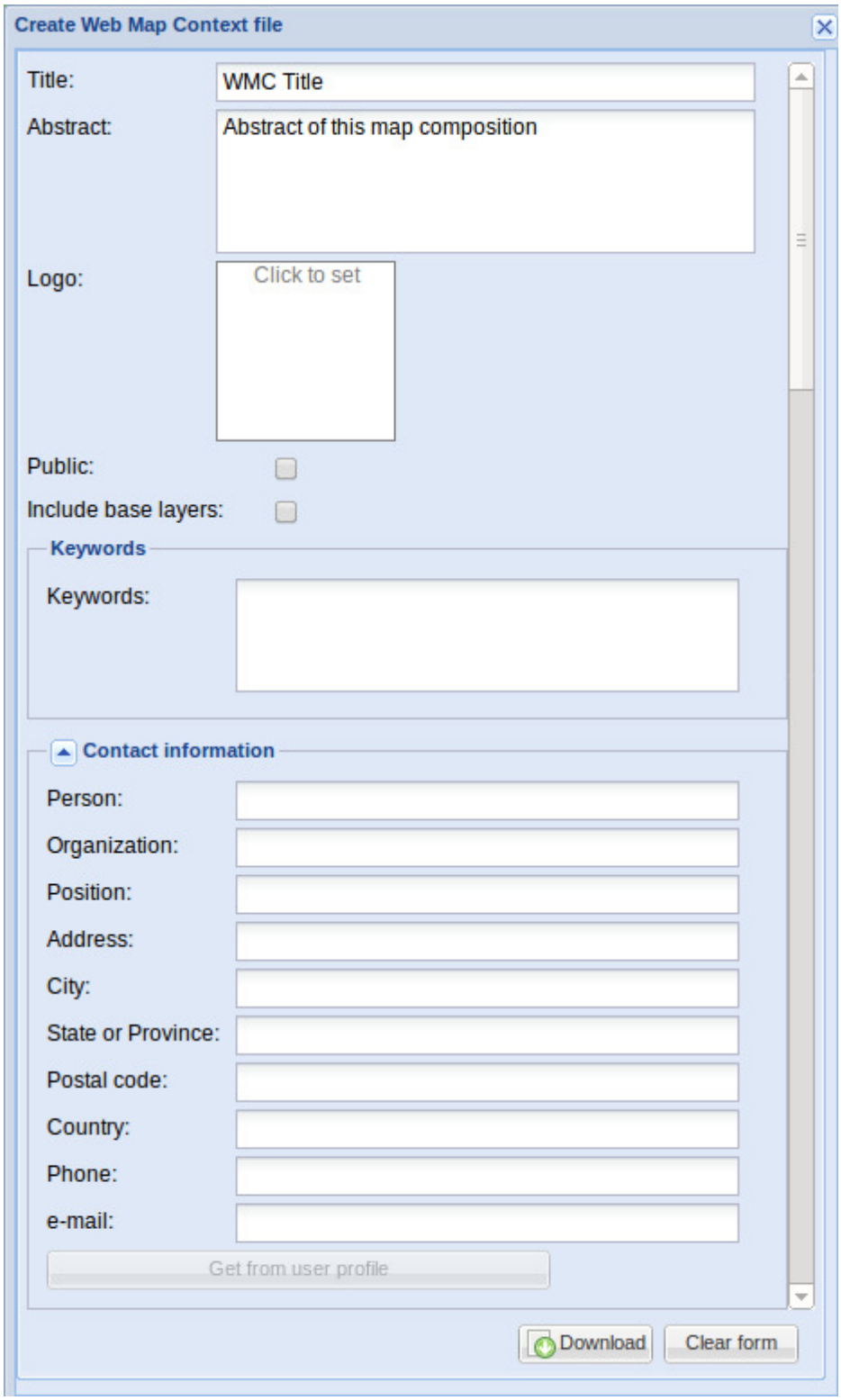

Figure 36 Web Map Content Editing

This figure represents the basic configuration of form, which will save (to local drive, not upload to some server-service) WMC file, containing information about current map composition.

OGC WMC is rather old standard, which does not support all possible types of layers, which can be displayed in HSLayers. On the other hand, it is only one standardized format. For saving map content more precisely, we've developed custom JSON format, which is used among others in Permalink. Permalink (portmanteau of permanent link) is a URL that points to a entry after it has passed from the front page to the archives. Because a permalink remains unchanged indefinitely, it is less susceptible to link rot. Originally, all hyperlinks were permalinks, as content was static. However, when many web pages became dynamic, this was often no longer the case. Permanence in links is desirable when content items are likely to be linked to, from, or cited by a source outside the originating organization. Before the advent of large-scale dynamic websites built on database-backed content management systems, it was more common for URLs of specific pieces of content to be static and human readable, as URL structure and naming were dictated by the entity creating that content. Increased volume of content and difficulty of management led to the rise of database-driven systems, and the resulting unwieldy and often-changing URLs necessitated deliberate policies with regard to URL design and link permanence. (Wikipedia Permalink)

The main disadvantage of WMC is that it able to store WMS and WFS layers only, while having Image, WMST, Raw vector data and other layer types in the map. For storing complete web content, including user-defined data, Permanent link can be used.

Users often spend hours with creating ideal map compositions, based on various web services, custom user graphics and other data sources. How to save the map content?

Another issue is, how to send custom map composition, or just simple user graphics (e.g. parcel specification), zoomed into particular location?

For this, Permalink has been developed. Unlike Permalink which is widely used among various mapping applications, we cannot store information about displayed layers into the map's URL. For this purpose, special JSON structure with the map content is stored on the server. The file can be also downloaded to local hard drive. Unlink OGC WMC (which is supported by HSLayers too), every layer type displayed in the map can be stored into this structure. User sends just the link to another user, and whole map content will be reconstructed at the other computer.

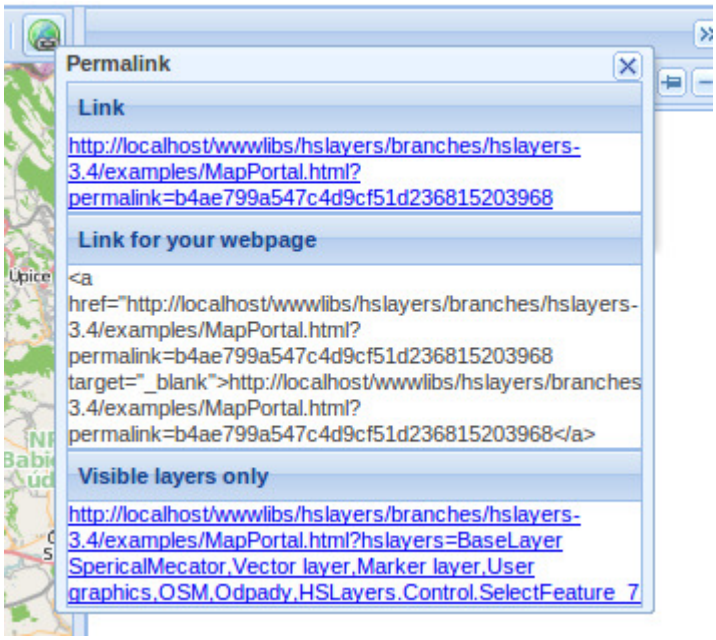

Figure 37 Permanent Link

Permalink window, which is displayed after copy of current map content, is saved to the server. User can now download the JSON structure or send the link to another user.

Some users do want to prepare their map composition and display the result in their own web page. For this purpose HSLayers Embedded is available. It generates HTML snippet, which can be added to any web page and after the page is re-loaded, map pops up.

Embedded uses same JSON format for saving the structure of the map content, as for example Permalink does. All layers displayed in the map portal are transferred into the embedded map.

This particular component needs little PHP-based script, which generates the desired form of embedded map. Pure HTML, Simple ExtJS and Advanced ExtJS output are supported, based on the complexity, the user wants to have the resulting map.

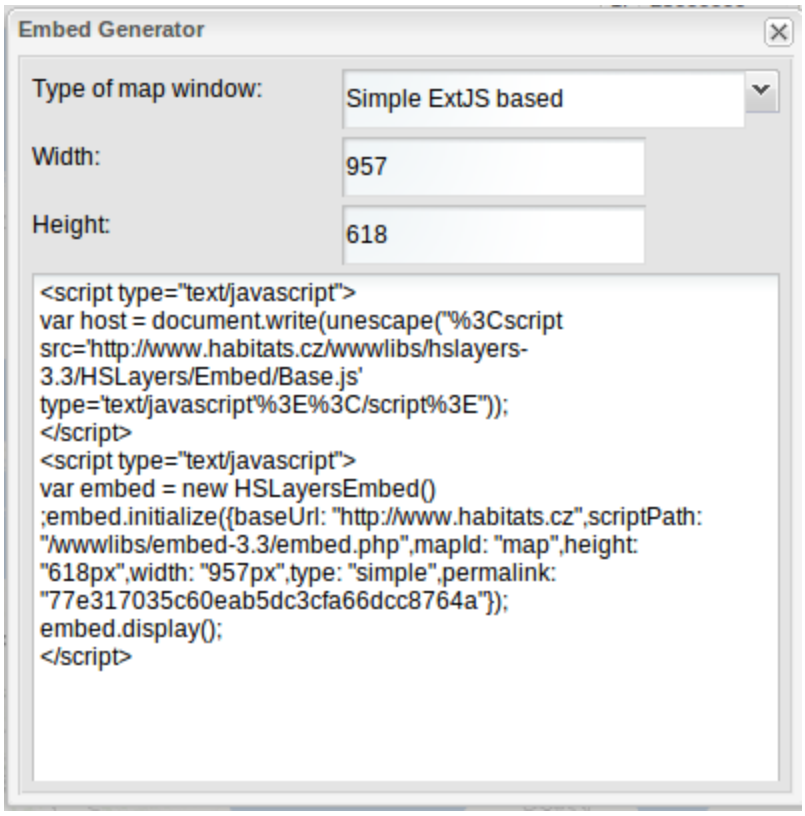

Figure 38 Embedded

HSLayers.Control.Query is tool, which enables the user to point with mouse in the map at some place and perform spatial query. Following layer types are queryable:

- OGC WMS with capability to display information in text, html, GML or other format
- Vector layer of any type, such as KML
- Proprietary MapServer layer (not only point, but also box query is allowed).

This works in a very straight-forward way. User does not need to take care about layer query type or server output format. HSLayers tries to display result of the query in a grid form, if possible. All visible layers are queried automatically. Along with query result, mouse position is displayed as well, so that user can copy and re-use it.

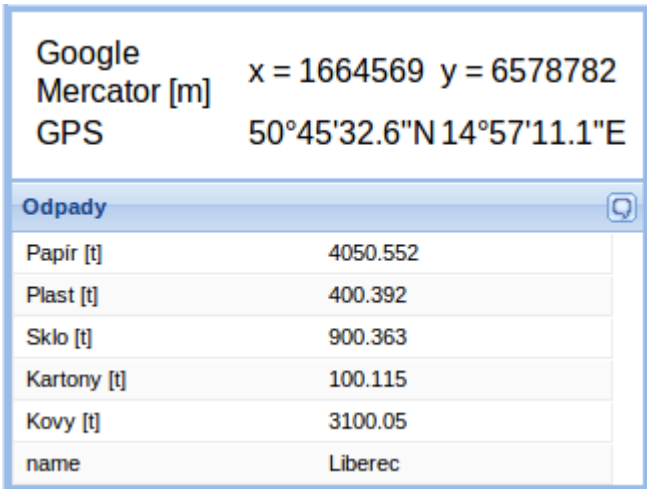

Figure 39 Result of the point query on one vector layer.

HSLayers do offer possibility of measurement of lengths and areas. Unlike most other systems, HSLayers do enable the user to measure several objects at once - not only one line can be drawn, but many. User can also combine lines with areas.

HSLayers extended the measuring function into the **user graphics concept**. User can draw any geometry feature, set its attributes. User can draw new graphics, delete existing ones, set attributes (simple or complex). Resulting graphics can be printed or used in Permalink or Embedded map.

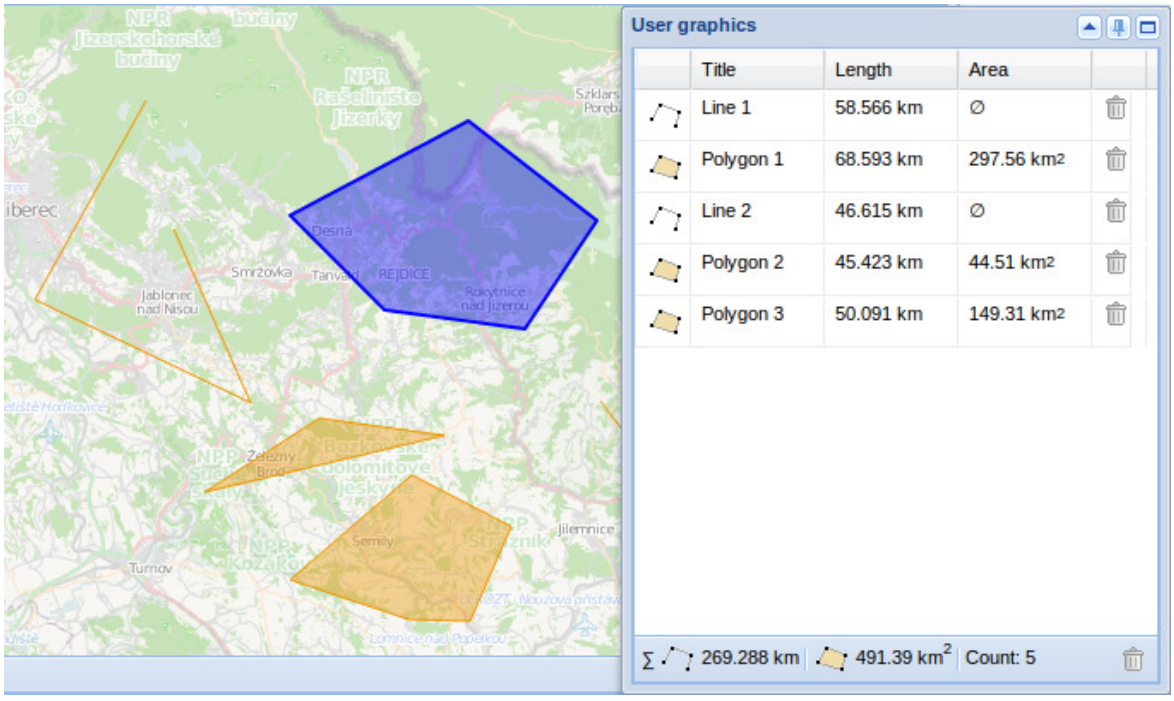

Figure 40 User graphic

9.4 Next Steps

The next steps will be focused on two parts:

- Full integration of HSlayers with server side mainly with focus on extending analytical functionality
- Open API for integration with other platforms
- Graphical re design and simplification of HSlayers component to making system more intuitive for non-expert users.

10 Plan Hosting and Feedback Components (HSRS)

10.1 Objectives

The main objective of this task is to provide a geo-hosting tool that enables planning data to be uploaded, stored, configured, published and made available through different services for view, download or update. The access to all the tasks needs to be controlled, so this task proceeds in close cooperation with Task 5.4 “Access Control System & Pool Data API” (described in D5.1)

10.2 Work Done and Progress Achieved

To achieve these goals, the geo-hosting tool named Layer Manager (or LayMan) has been developed. In comparison with existing similar tools (such as GeoExplorer) it offers means for user authentication and authorisation as needed in Plan4busines, integration with the Liferay portal and beside publishing on GeoServer, it keeps open possibility to publish on MapServer in future as well.

Layer Manager consists of a web client developed in JavaScript, a server part developed in Python that provides LayMan REST API, it communicates with several parties such as Liferay, filesystem, PostGIS database and GeoServer and it is secured by the Plan4Busines Access Control System. The LayMan client and server are described here, for detailed description of the LayMan REST API and the Access Controll System please refer to D5.1.

Single components Service Levels 2 and 3 were implemented. From the point of view of integration of these components with the plan4business portal (under uniform graphical design according to mock-ups and integration of the components with the Liferay portal) was not yet fully realised and there is approximately one month delay according to the defined milestones.

10.3 Detail Component Description

10.3.1 Layer Manager – Client

The Layer Manager Web client allows the user to upload files in the user's directory on the server file system and to publish the layers based on these files in the workspace belonging to the group. If the user belongs to several groups, he/she can select which workspace he/she wants to use. The LayMan client window resembles classical file managers:

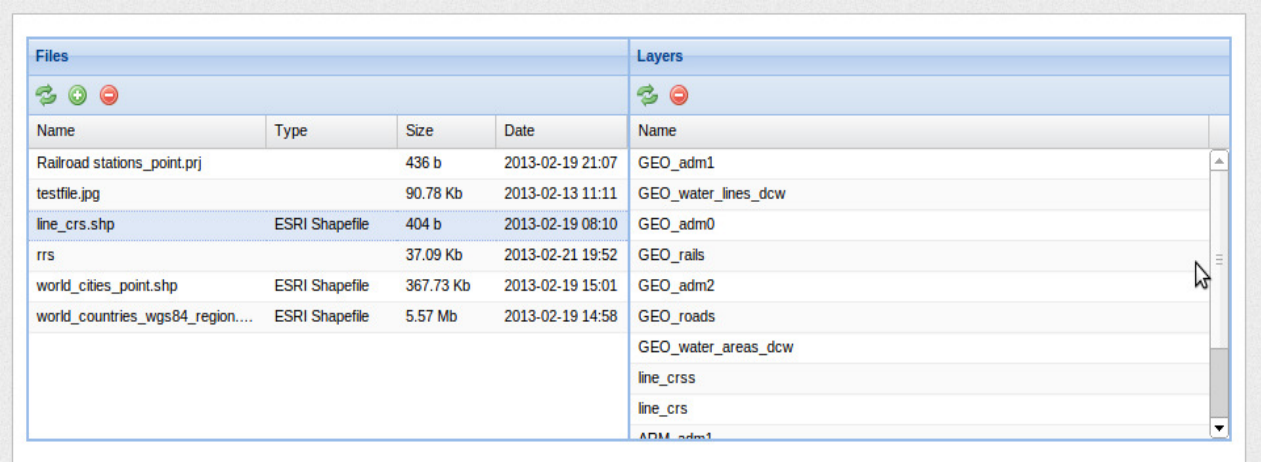

Figure 41 Layer manager

In the left column, the files uploaded on the server are shown. In the right column, the published layers are displayed.

New files can be uploaded to the server in the left column by clicking on “plus”.

Once the file is uploaded, basic information and several operations are available by clicking on the file name:

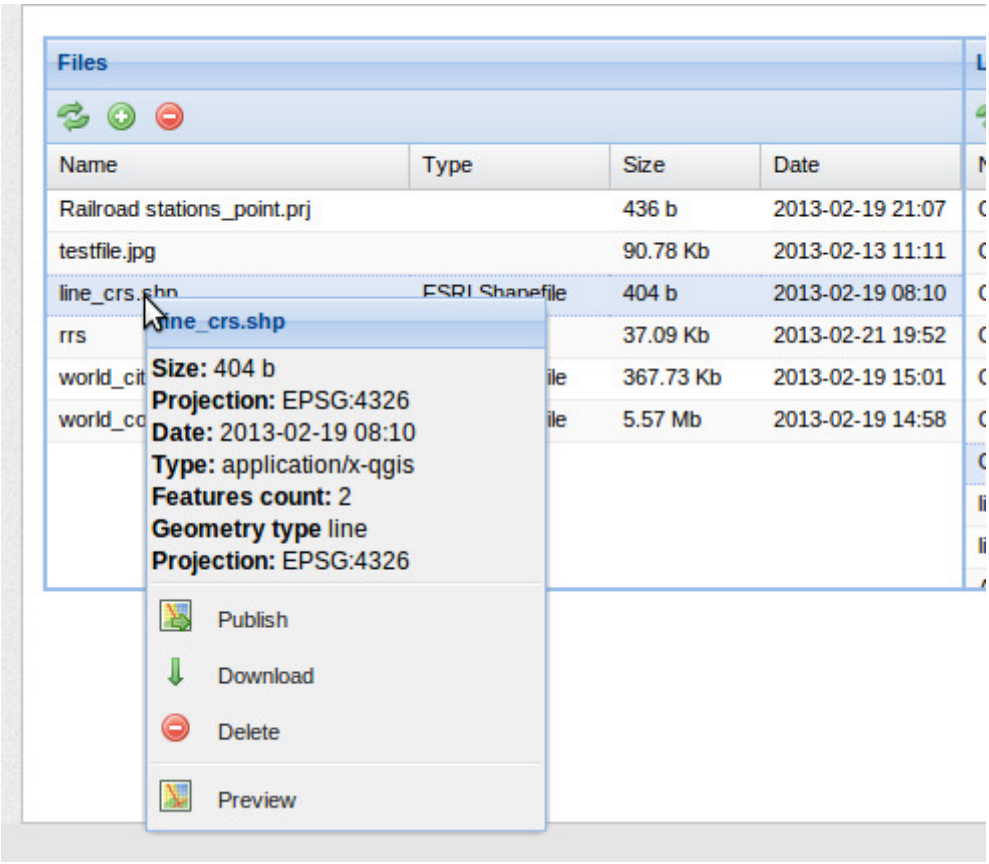

Figure 42 Data Publishing I

Shapefiles can be published. The support for other formats is under development. After click on the "Publish" operation, the layer attributes can be configured:

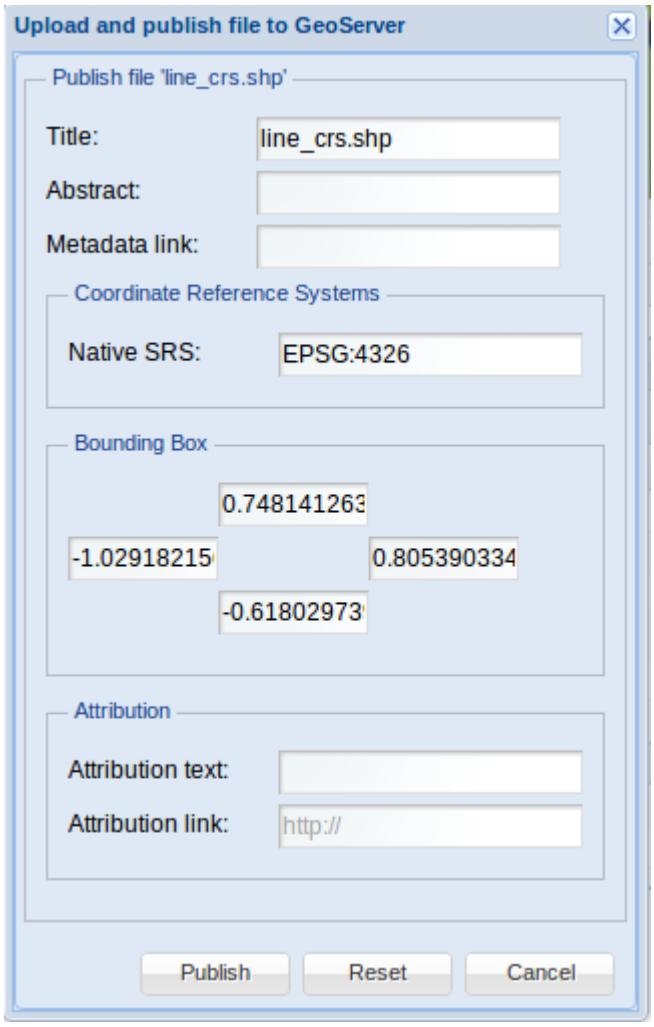

Figure 43 Data Publishing II

After publishing, the layer is available in the map viewer.

10.3.2 Layer Manager REST API

LayMan REST API allows clients to upload, update or delete files, to publish, configure or delete layers and also to manage the GeoServer workspaces. For detailed description please refer to D5.1, section Pool Data API.

10.4 Next Steps

As next steps, support for publishing raster data will be added and also for the other formats as need arises.

Then, the integration of LayMan and HALE Integrator is foreseen, so the user can integrate the planning data with the HALE Integrator and smoothly publish the result with LayMan. Also, the tools for providing feedback to planning data need to be added.

11 Conclusions

This report describes the design of user interface for the plan4business portal and the V1 release of the portal. The work is being realised on the basis of user requirements coming from WP3 and with close cooperation with WP5, which is implementing server part of the portal. The portal is currently available on the next URLs:

www.whatstheplan.eu

www.urbanplan-business.eu

www.urbanplan-business.com

All the components planned for Service Levels 1 and 2 were implemented, but during the period, there were small delays (approximately one month in total) in the integration of single client components. The delay was caused mainly by difficulties in defining a common user interface and also by needs to design, select and implement the integration platform for all the components (Liferay). This delay has no influence on the overall development and will be solved during next month.

The work will continue till month 22. The focus will be on extending the portal functionality, user interface for payment module, but also on developing of open API allowing integration of analytical client into other portals.

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