

EXTERNAL VALIDATION REPORT - YEAR 3

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DELIVERABLE

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D2.4.2 EXTERNAL VALIDATION REPORT

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EXECUTIVE SUMMARY

This is a report on the external validation activities in the third year of the SDI4Apps project. The validation was done through a series of events including conferences, workshops and hackathons. The SDI4Apps participants got valuable feedback from the existing and potential users. Sometimes, the feedback was expressed by enormous interest in the SDI4Apps platform, pilot applications, open linked data use cases or data available through the SDI4Apps platform. In some cases, recommendations or comments that can improve the pilot applications from user perspective were raised.

A summary from all the events are included as well as selected recommendations for future development.

1 INTRODUCTION

The potential of geographic information (GI) collected by various actors ranging from public administrations to voluntary initiatives of citizens is not fully exploited. The advancements of information and communication technologies and shift towards Linked Open Data (LOD) give an excellent foundation for innovation based on reuse of GI. The establishment of spatial data infrastructures has largely been driven by the “traditional” GI community and the national and European policies governing this sector. However, GI is no longer a separate information space but finds itself part of a larger European information space where the ultimate objective is the creation of value-added services based on reuse of public sector information as defined by the PSI and INSPIRE directives rather than exchange of “layers” between different GI software.

Establishing an infrastructure to meet this new and wider objective puts greater strain on local authorities and institutions that traditionally were users of GI but now find themselves in an environment where they are also expected to be data and service providers, a role that is far more demanding in terms of technical knowledge and resources.

The main target of SDI4Apps is to build a cloud based framework that will bridge the gap between:

1. the top-down managed world of INSPIRE, Copernicus and GEOSS, built by SDI experts, and
2. the bottom-up mobile world of voluntary initiatives and thousands of micro SMEs and individuals developing applications (apps) based on GI.

SDI4Apps will adapt and integrate experience from previous projects and initiatives such as HABITATS¹, Plan4business² and EnviroGrids³, to build its cloud based platform with an open API for data integration, easy access and provision for further reuse. The solution will be validated through six pilot applications focused on easy access to data, tourism, sensor networks, land use mapping, education and ecosystem services evaluation.

The aim of this deliverable is to report on ongoing external validation of the SDI4Apps solutions and pilot applications. This is conducted in cooperation with dissemination activities, organised hackathons, conferences and stakeholder management groups.

¹ <http://www.inspiredhabitats.eu/>

² <http://www.plan4business.eu/>

³ <http://www.envirogrids.net/>

2 VALIDATION STRATEGY

The intention of SDI4Apps is to attract external developers such as students and small companies to the process of utilisation of the platform, its data and services. The goal is to extend the community around the platform and get some feedback on the technical development as well as usability of the solutions.

Social validation principles defined in Task 2.2 were used for validation. The focus was primarily on communicating the project results and getting feedback from various stakeholders through a series of events.

The SDI4Apps platform should serve different users from various domains. Therefore, a series of workshops and hackathons have been organised in order to attract different user groups.

A survey of external users has been organised and its results were included in the *D2.1.3 Annual Report from Stakeholders Management - Y3* (March 2017).

The validation took place during the following external validation events:

- **Stakeholder Meeting in Jelgava, 22 Mar 2017**
- **3 Stakeholder Workshops in Vidzeme, 8, 13 and 22 Mar 2017**
- **Final Conference in Sicily, 15 Mar 2017** - this event is reported in *D8.6 Final Conference with Pilot Showcases*
- **SPOI Code Camp in Pilsen, 15-17 Feb 2017**
- **LATA Conference - Open Technologies for Growth, Riga, 2 Feb 2017**
- **Open Data and Open Software for Commercial Sector, Prague, 23 Jan 2017**
- **Meeting with Majors and Councilors of Mascalucia Municipality, 20 Jan 2017**
- **Code Camp and Hackathon of FOODIE, Prague, 24-25 Jan 2017**
- **DanubeHack 2.0 in Bratislava, 12-13 Dec 2016** - this event is thoroughly reported in *D7.4 Developers' Contest Report*
- **Stakeholder Conference in Vidzeme, 8 Dec 2016**
- **Hackathon in Kosice, 27-27 Nov 2016** - this event is reported in *D7.3 Sprint Codes Report*
- **MIG-T Meeting at the JRC Ispra, 26 Oct 2016**
- **ISAF & Geomatics in Projects & Plan4all Joint Conference and Open Data Hackathon for Environment and Entrepreneurship, 3-6 Oct 2016**
- **INSPIRE Conference in Barcelona, 26-30 Sept 2016**
- **MedHackathon in Patras, 15-17 Jul 2016** - this event is reported in *D7.3 Sprint Codes Report*
- **Common Meeting of ENERGIC OD, SDI4Apps, OTN, FOODIE in Florence, 27 May 2016**

Reports from the above mentioned events are included in Chapter 3. Recommendations for future development resulting from the external validation are part of Chapter 4.

Furthermore, project partners performed at national level other actions to stimulate third parties and developers exploiting SDI4APPS outcomes for developing their own APPs and therefore contributing to the project promotion and next auto-sustainability after its completion.

Partners including end users VPR, ZPR, Hyperborea, STEPIM, UHLAVA, PRONATUR, ERFC and TALOS explained the SDI4APPS solution functionalities in different occasions and engaged developers that were also assisted in their participation from remote to some of the code camps and hackathons organised by the project (as listed above) or in developing apps based on the SDI4Apps platform.

The non-profit organizations Local Action Group Pošumaví z.s. and Tourist destination Prácheňsko a Pošumaví z.s. got acquainted with the results of the project. They presented it further to the member organizations. It is expected their use in the support of the tourist industry, raising the knowledge of local residents and promotion of the regional identity. There will also be addressed the elementary schools in the region with the possibility of training the teachers to use the application as a complement to the teaching of regional homeland study and information technology. The education department of the Pilsen

Regional Authority, as the founder of the most secondary schools in the region, will be also informed about the application.

In the course of the validation arose requirements to expand the database, e. g. of the modern architecture and technology and the entrepreneurs in the tourist industry would welcome the inclusion of quizzes about leisure time activities.

The feedback gathered was exploited in the testing sections carried out for the preparation of the D3.6.2 "Technical Test Report 2". The discussions with these communities of developers, SMEs, stakeholders, during the hackathons and at national level in separate sessions, were particularly useful for the SDI4APPS different modules final assessments.

3 EXTERNAL VALIDATION

3.1 Stakeholder Meeting in Jelgava, 22 Mar 2017

Zemgale Planning Region organised a validation workshop in Jelgava about open data in tourism, education, and land management, presenting the SDI4Apps results. The aim was to introduce municipalities open data possibilities, foster cooperation and introduce the open information base in the Zemgale Region. The workshop was targeted mainly at representatives from municipalities - development planners and other interested parties.

All the project pilots were presented to show different possibilities and potential of open data use. The questions and discussions were mainly about data reliability, functionality options and editing information without crowdsourcing options so it can really be used in the municipalities' homepages by assuring correctness of information provided. A big interest was in pilots I and II as tourism data play an important role in the region. Pilot V was evaluated as great opportunity to make questionnaires in the educational sphere. A lot of interest was in possibilities to merge and analyse those pilots - for example, brownfields potential in tourism sphere or transport. Such tools can play a significant role in the development of local and regional analyses.

At the end of the workshop, the participants were agreed on collecting data on tourist objects in the Zemgale Region and update them once a year by all municipalities.

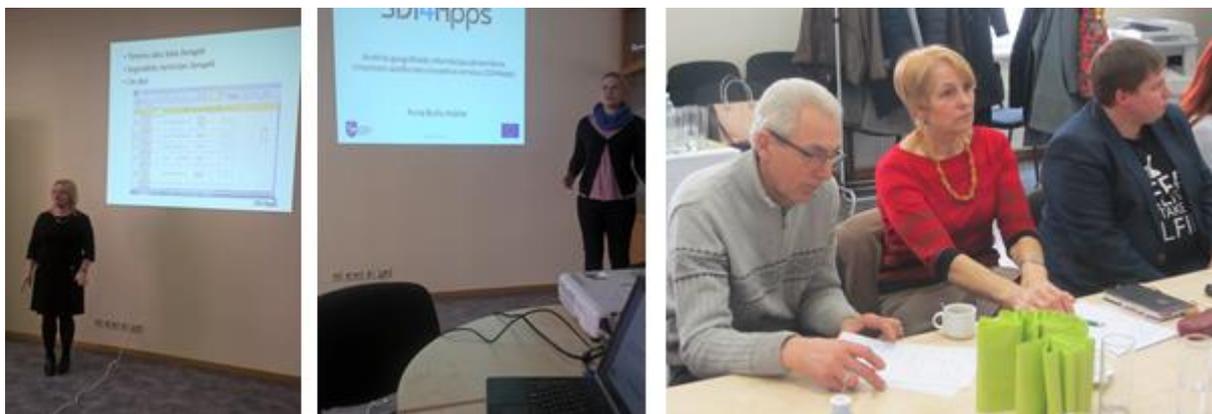


Figure 1 Workshop in Jelgava

3.2 3 Stakeholder Workshops in Vidzeme, 8, 13 and 22 Mar 2017

3.2.1 March 8, 2017

The workshop was attended by tourism specialists and tourism SMEs from 6 Vidzeme region municipalities - Valmiera, Cēsis, Amata, Pārgauja, Kocēni, Burtnieki. Raitis Bērziņš, BOSCO, presented the SDI4Apps project, its activities related to tourism. Raitis Bērziņš promoted the use of open data and the possibilities that it offers. He also introduced to the audience the hackathon results that worked with tourism solutions. His main focus was the Smart Points of Interest Application. He presented the App's functionality and how tourism specialists and entrepreneurs can use it for their needs.

Lecturer Reinis Zitmanis continued the interactive discussion with the municipalities about their needs and requirements regarding tourism promotion in their areas, using various open data solutions and digital tools and use cases by municipalities. The general consensus is that digital tools and data become more important for tourism promotion from the perspectives of municipalities and their tourism information centres. Usual practice relying on printed booklets and information about tourism destinations in

municipality owned homepages has to be enriched with interactive, open data based solutions that are available for tourists, are user-friendly and can be accessible by municipality specialists.

The questions from tourism specialists was about the practical use of the SPOI App - how to add a POI and how to ensure the correctness of the information. They shared experiences that sometimes the points do not correspond with the location in reality. For this reason, SDI4Apps, resp. Plan4all, is organising a call for members who would like to become local administrators of POIs, moderate changes and keep the quality of crowdsourced data on a certain level.

The tourism specialists wanted to know the advantages of this App in comparison to other navigation Apps that have gained tourist's attention. Further promotion of the App was suggested to augment its usability among tourists. SPOI app can be interesting for municipality tourism specialists only if the public uses this App, therefore a wider communication and dissemination towards the general public is expected from municipalities.

The language issue was also addressed by municipalities - tourists often search for the point in their language and when they do not find it, they add another point in an incorrect place in their own language. There was a discussion on the possible solutions for that - one of the solutions could be to grant control of certain territories to municipalities so that they could validate the accuracy of newly added POIs.



Figure 2 Raitis from BOSC presenting SDI4Apps

3.2.2 March 8, 2017

Following the first workshop in Valmiera on 13th March 2017, the second workshop in Cēsis was focused on further exploring data use case possibilities for tourism promotion, and educating local municipalities specialists - a potential users of SDI4Apps cloud framework and pilot services, about available tools, data sets and use cases for tourism promotion in digital environments. Visvaldis Gercāns, ICT expert from Mapping agency "Jāņa Sēta" introduced the audience with several characteristics of different types, classification and characteristics of various spatial data and open and linked spatial data and their practical use cases, including linking points of interest with other types of data, such as land use, road infrastructure, vegetation, event locations etc. and use cases of data usage together with augmented reality solutions, thus providing added services and features, that could enrich user experience and make such solutions more attractive to tourists and data providers.

A discussion on various ICT tools for tourism points of interest promotion, led by Reinis Zitmanis, further showcased the need for fully developed and upgradable web based and mobile based data solutions. In discussions, specialists agreed that pure web-based applications and services are not enough, and all SPOI promotion should happen on an equal levels both in web-based platforms and mobile devices. The trend in tourism industry is that tourists go to their destinations less-prepared, and rely on mapping services at places, which means that necessity for mobile solutions and solutions that can work off-line are becoming

more requested. Inclusion of various linked open data with SPOI, such as environmental data, road and transport information, information in event locations, land use data is seen by municipalities as a very beneficial features and functionalities. However, the main concerns are regarding the complexity of such apps that offer wider linked data solutions together with simpler SPOI promotion. Such functionality, especially on mobile and using augmented reality solutions, certainly could be seen as a very attractive for users, such as tourists, however it would require a larger input and coordination from data providers and those responsible for data relevance updating (such as municipal agencies), both from resource and technological skills perspective. Also, concerns about smooth running and speed of such linked data and functionality services, were raised. Form user perspective added, linked functionality and services are favorable, but only if sufficient ease of use and speed of services are ensured.



Figure 3 Second workshop in Cēsis

3.2.3 March 22, 2017

The closing workshop on SPOI promotion and open data use cases in tourism, for stakeholders in Vidzeme region built upon acquired knowledge in previous two workshops, was focused in SPOI promotion in mobile environments, and introduced audience with advanced satellite gathered spatial open data and their application and integration possibilities. Agris Brauns from the Institute for Environmental Solutions introduced local stakeholders with the COPERNICUS satellite data use possibilities for tourism promotion. Since the end of 2016. The Institute for Environmental Solutions (IES) has received the European Commission's Copernicus Relay status, which makes IES the national ambassador of the Earth's most ambitious observation programme. In 2016 the European Commission opened an application for volunteering institutions (Copernicus Relays) that can help to increase the uptake of the freely available Copernicus data, promote the benefits and opportunities of Copernicus, as well as coordinate domestic activities related to the programme.

The Institute for Environmental Solutions (IES) has received the European Commission's Copernicus Relay status, which makes IES the national ambassador of the Earth's most ambitious observation programme.

Only 58 institutions across the world were granted Copernicus Relay Status. As Latvia's only representative IES will play a key role in improving the domestic awareness and understanding of opportunities provided by Copernicus, as well as widening the community of users (both sectorial and geographical). Thereby maximizing the programme's impact by contributing to the development of new products and services that use Copernicus data and information. The Institute for Environmental Solutions (IES) has been approved as the only Latvian representative in the Copernicus Academy Network, thus, bringing international Earth observation knowledge closer to the next generation of Latvian researchers, scientists and practitioners.

The Copernicus Academy will connect European universities, research institutions, business schools, both private and non-profit organisations, in the Participating Countries of the Copernicus Programme and beyond. It will also work to increase exchange of ideas and best practices across borders and disciplines while contributing to the development of the use of Earth Observation data in general and Copernicus data and information in particular, in various public or private user organisations or industries. The members of the network have access to comprehensive toolbox of User uptake tools and will receive updated information from the European Commission and the recently established Copernicus Support Office. As a part of the European Space Strategy, the Copernicus Academy has the ambition to develop new tools, to foster exchanges of knowledge as well as cross-border and cross-sectorial collaboration. That will contribute to unleashing the vast potential of Copernicus Sentinel data and service information. The COPERNICUS open data can be used for various purposes, including SPOI promotion, and these data can be combined together with POI data, thus developing enhanced functionalities. For example Sentinel satellite data can provide information to monitor natural and environmental processes, which can be very useful for managing nature tourism in protected natural areas. COPERNICUS data can be used for development of nature trails, experience, adventure trails, establishment of best location for view-point towers, archaeological sites, development of 3D models for city and natural landscapes. All these features can be used in future development and upgraded of tourism focused web services and mobile applications. Discussion with stakeholders about integration such data functionality and SPOI promotion and place branding via social media and mobile environments, moderated by Reinis Zitmanis, focused on practical methodologies and step-by-step approach, how municipality tourism specialists should communicate with tourists via their available channels and promote usage of SPOI based applications and their features and how to communicate with them as users, to gather additional place based data and use their input for data validation. The key message was that mobile applications and mobile environments, and their promotion and integration with social media applications and google services, could be the main driving force for their uptake and wide usage by tourists. Only developing data heavy tourism application is not enough - such applications and their added value to users (such as additional functionalities and linked data possibilities) has to be heavily marketed towards users, via channels available to the municipalities, tourism information centres, tourism companies. Marketing side and constant relevance of any such application (added new features, functionality, fixed bugs, updated data, gathered feedback from users, promotion campaigns) is as important, as the application itself. SPOI promotion in the mobile environments and linkages to social media and other applications is the defining mega -trend.



Figure 4 Third workshop in the Vidzeme region



Figure 5 Participant of the workshop

Overall, the participants in all three workshops were very satisfied with the information and new knowledge they gained. Usage of open and linked data and various use cases are only now becoming more prominent in the daily work of tourism specialists in Vidzeme, and these workshops showed the enormous potential of using open data driven services and data sets for place branding and tourism promotion in the region. Municipalities showed great interest in availability of SPOI and other linked data. However, user friendliness, user experience, ease of use, reliability and relevance of the data and SPOI based applications are the key concerns and must be further improved.

3.3 Final Conference in Sicily, 15 Mar 2017

There were two groups of stakeholders at the final conference including students and teachers from two secondary schools (<http://www.iismarchesimascalucia.gov.it/>). The audience was of about 120 persons and an oral presentations on INSPIRE and open data were made by project partners. Both teachers and students demonstrated a large interest in the project main topic and especially the Inspire4Youth pilot. It was agreed to perform other sessions in which also the service developed in this pilot are presented along with potential training session on how to exploit SDI4APPS for developing apps exploiting the open data released by public administration.



Figure 6 Participants of the final conference

Lessons learnt are the effective involvement in Sicily of communities interested to contribute exploiting the project outcomes and to validate those. STEPIM started to stimulate this interest of different communities (schools, municipalities, local group of development) in not only using the project services (e.g. I4Y pilot and tourism ones) but in following same approach for developing their own apps and for releasing further open data.



Figure 7 Participants of the final conference

The final version of the SDI4APPS platform is effectively representing a stable building block these developers are starting to use to build their own solutions. STEPIM and external communities are contributing to actions whose main impact might be better measured in the sustainability of the next project phase. They are currently contributing to testing the SDI4APPS ecosystem and allowing demonstrating it could effectively be exploited in different local/regional contexts.



Figure 8 An article in the La Sicilia newspapers

3.4 SPOI Code Camp in Pilsen, 15-17 Feb 2017

This code camp was an internal meeting of 11 SDI4Apps developers in order to accommodate comments and challenges raised by external communities within the last year regarding the Smart Points of Interest dataset.

In addition to improving the dataset itself, the following components were updated and improved:

- HSLayers NG - visualization of SPOI
- HSCollector - mobile application for collecting VGI data
- SensLog - module for VGI
- SPOI Data Analyzer (<http://portal.sdi4apps.eu/spoi-webglayer/>)

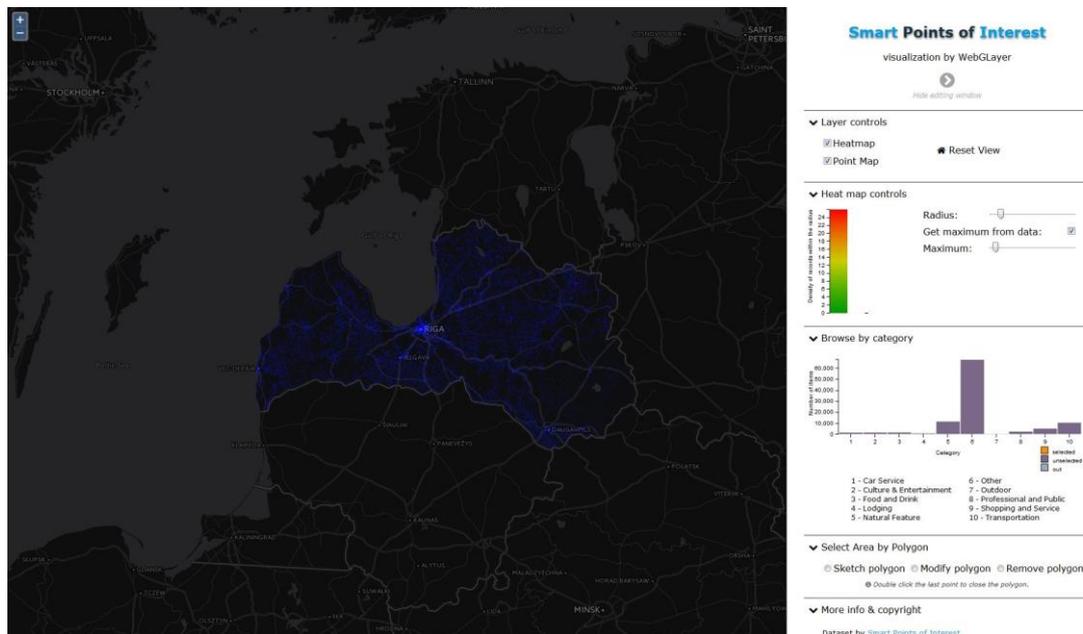


Figure 9 SPOI Data Analyzer

3.5 LATA Conference - Open Technologies for Growth, Riga, 2 Feb 2017

This event took place in the Academic Center for Natural Sciences of the University of Latvia (Jelgava st.1., Riga).

Latvian Open Technology Association (LATA) unites organizations and individuals, including information technology providers and users who consider that they, their organizations and the whole society will economically benefit from broader use of open source solutions in Latvia. LATA's main goal is to be leading Information and Communication Technology (ICT) industry association in Latvia that promote cooperation between technology suppliers and consumers, including public, municipal authorities, educational and scientific institutions on the basis of the following guidelines: 1) openness of technologies, interoperability, reusability and open standards in industry; 2) quality, efficiency and safety of technologies; 3) free and fair competition in technology development and supply.



Figure 10 John O'Flaherty presenting the SDI4Apps platform

The conference “Open Technology for Growth” is an annual event organized by LATA, and during the conference an annual award giving ceremony, celebrating the institutions that promote the usage of open data in Latvia, is held each year. This year conference received endorsements from the President and Prime minister of Latvia, and an opening speech from Minister of Environmental protection and regional development (VARAM). The main organizing partner of the conference was IBM.

The conference was organized in three sessions and an award ceremony:

Plenary session:

- Endorsements from authorities and opening speeches and presentations on open technology solutions by several Latvian ICT companies (Clusterpoint, Proact IT)
- Key note presentations:
 - The importance of being “Open by Design” in today’s world Andrzej Osmak, IBM Cloud Advisor
 - Geospatial open linked data and business opportunities, John O’Flaherty, MAC, SDI4Apps

John presented the overall information on Open Data (OD) and various open data formats, Linked Open Data (LOD) & Geospatial Information (GI), Irish Open Data Initiative and Irish linked open data examples, Open Data Market potential and market analysis and impact on public sector authorities, presented SDI4Apps Open Data Project and SDI4Apps open source platform, pilots and users and in particular Irish Open Data pilots (Pilot 1. “Easy data access”) and its implementation in Burren National Geo Park (Ireland). Audience was mainly interested to hear the differences between Irish national regulatory approach to open data usage in comparison to Latvia, and also where interested in market potential of open data solutions, usability of SDI4apps platform and practical aspects of Easy data access pilot implementation.

Award ceremony “LATA annual award 2016” with three nominees in three categories:

- The Open public organization
- Excellent Technological solution in business
- Individual investment in open technologies popularization

Vidzeme Planning Region (VPR) was one of the three nominees in the category “The open public organization” and received a certificate of recognition for its involvement in the SDI4Apps project and project’s implementation in Latvia. VPR has led the social validation work package and promoted the usage of open data to a broader public on the regional level, by organizing the conference “Open Data for Regional Development”.

VPR Project Manager, WP2 coordinator Kristaps Ročāns received the certificate from Mr. A. Osmak (IBM) and Mr. Jānis Treijs (LATA)



Figure 11 Award ceremony



Figure 12 Award giving



Figure 13 Winning team from Vidzeme Planning Region and the certificate itself

After the award ceremony the conference was divided in two parallel sessions:

Parallel session 1. included presentations:

- Open data policy in Latvia (VARAM)
- Restrictions on personal data usage - challenges for open data (“Law Office Spridzāns” Ltd.)
- Start-ups in Latvia 2016 (TechHub Riga)
- Open technology business case (Grafomap start-up)
- Infrastructure and Open technologies (Alberta college)
- API Economy: API economy - making APIs part of new business model (IBM)
- Open technologies from the user’s perspective (TIETO Latvia)

Parallel session 2. Included presentations:

- Open Source Software: definition, benefits and challenges (Zabbix)
- Running a Pure Open Source Business (Taurus Balog)
- IT training cloud platform ReSeLa (University of Latvia)
- Machine learning trends (Squalio Cloud Consulting Ltd.)
- Open source code business management system Odoo (ITS-1)
- NoSQL database technological opportunities (Counterpoint)

Overall the conference attendance was high - more than 250 people (ICT professionals from Latvia and other EU countries, academia, governmental, regional and municipal level organizations, CEO’s of ICT companies) attended the conference and award ceremony.

Since the SDI4Apps project and its results were presented as a keynote presentation and in Award ceremony, SDI4Apps project featured prominently in Latvian Open Technology Association conference and gained a wide recognition among professionals and potential users of the platform and pilot applications.

3.6 Open Data and Open Software for Commercial Sector, Prague, 23 Jan 2017

This was an event co-organised by SDI4Apps, OpenTransportNet and FOODIE projects. The main aim was to showcase the project results and get feedback from the stakeholders including end users and data providers.



Figure 14 Photos from the workshop

The projects presented some joint effort such as contribution to the GeoDCAT application profile, as a result of cooperation with W3C. HSRS presented a new version of the Micka metadata software which has been released under the BSD licence. Other tools presented in this workshop included SensLog and HSLayers New Generation.

The afternoon session focused on reuse of pan-European data including Smart Points of Interest, Open Land Use Map and Open Transport Map. This event was followed by the FOODIE hackathon presented in the next section.

3.7 Meeting with Majors and Councilors of Mascalucia Municipality, 20 Jan 2017

STEPIM is very well involved in activities with local communities in Sicily. In January 2017 STEPIM met with the Majors and Councilors of Mascalucia Municipality (<http://www3.comunemascalucia.it/>). Twelve people in total, along with developers of the municipality, at the municipality premises where open data added-values and opportunities for local development were presented. This event paved the way for further occasions to exploit the project results. 24 February STEPIM met with the new established ETNA SUD local development group in Mascalucia (www.galetnasud.it) where at regional level, the SDI4APPS solution potentialities for local development were presented.

In both occasions, interested technical attendees demonstrated particular interest in both the opportunity to effectively release open data to be integrated in the project platform and to exploit the SDI4APPS solution for developing apps useful for tourism, local development of the addressed region.

3.8 Code Camp and Hackathon of FOODIE, Prague, 24-25 Jan 2017

The primary focus of this hackathon was on experimentation with data and tools developed by the FOODIE and SDI4Apps projects and to be utilised for commercial applications and research work.

The main progress has been made with improvement of HSLayers New Generation (HSL-NG). The developers collected ideas that came up during the project and discussed them with other developers at the hackathon. Some smaller problems were immediately repaired during the first day of the code camp. The main idea which was developed during the second day was to improve HSL-NG ability to be easily included as part of bigger application because until now, HSL-NG was developed mainly as so called Single page application (it takes the whole window of an Internet browser) and it was quite challenging to include it only as "part" of a page.



Figure 15 Hackathon participants

3.9 DanubeHack 2.0 12 - 13 Dec 2016

In order to validate the potential of the SDI4Apps project outcomes together with the external stakeholders acting in the Danube region, ProNatur, together with the SAZP, ePro and European Commission Joint Research Centre organised the DanubeHack 2.0 in Bratislava (<http://danubehack.eu>), Slovakia. Event provided unique opportunity for almost 60 participants to present the project results together with the other initiatives from the region via set of Lightning talks and created the hackathon space allowing to test and deploy data and technology resources in concrete projects. Out of 9 projects 4 projects managed to utilise the SDI4Apps incentives. Further details can be investigated in relevant deliverable *D7.4 Developers' Contest Report*.



Figure 16 DanubeHack 2.0 participants

3.10 Stakeholder Conference in Vidzeme, 8 Dec 2016

Vidzeme Planning Region (VPR) organized SDI4Apps conference “Open Data for Regional Development”, in Valmiera, Latvia. The aim of the conference was to present SDI4Apps results, promote the possibilities of creating and using open data, demonstrate practical data use cases in different domains, including tourism, transport, spatial planning, education and agriculture from Latvia and from other European countries. The main target audience were potential users of SDI4Apps platform and pilot applications - Local Municipalities in Vidzeme region, representatives from national level public organizations, academia, students, tourism specialists and SME's. More than 50 people attended conference. Nine different presentations, a networking and practical SDI4Apps platform hands-on demonstrations formed the conference content.



Figure 17 Karel Charvat/CCSS presenting SDI4Apps

Conference morning session started with introductory presentation from VPR, followed by presentation of SDI4Apps project and Plan4All association, by Mr. Karel Charvat (CCSS), Presentation on open data status-quo situation in Latvia, by Mr. Toms Ceļmillers (Minsitry of Environmental Protection and Regional Development) and finished by presentation on open data services and accessibility in Latvia, by Mr. Arvīds Ozols, Latvian Geospatial Information Agency. Morning session gave a broader picture about the current status quo with open data in Latvia, and the results of the SDI4Apps project and the possibilities of SDI4Apps platform and Plan4All association. Conference participants discussed about the ways to improve open data availability, relevance and easier access to users and developers in Latvia. Mainly problems with different national legal regulations that restrict data availability to users, hamper broader uptake of open data services and solutions, and limited information to public about already available services.

CONFERENCE OPEN DATA FOR REGIONAL DEVELOPMENT		8th December 2016, Concert hall „Valmiera” Leona Paegles Street 10, Valmiera, Latvia Conference program	
10:00	Arrival, registration, morning coffee		
10:30	Vidzeme Planning Region and implemented projects <i>(Latvian with translation to English)</i>	Kristaps Ročāns, Project Manager in Vidzeme Planning Region	13:10
10:50	Project's SDI4Apps and association's Plan4All opportunities for open data <i>(English)</i>	Karel Charvat, Manager, <i>Czech Centre for Science and Society (Czech Republic)</i>	13:50
11:30	Open data status-quo situation in Latvia <i>(Latvian with translation to English)</i>	Toms Ceļmilleris, Systems Analyst, Ministry of Environmental Protection and Regional Development of the Republic of Latvia	14:10
11:50	Latvian Geospatial Information Agency's open data services and accessibility in Latvia <i>(Latvian with translation to English)</i>	Arvīds Ozols, Senior GIS expert, Latvian Geospatial Information Agency	14:30
12:10	Lunch, networking and SDI4Apps platform hands-on demonstrations		15:10
Conference is financed by the project „SDI4Apps” that has received funding from the European Union's ICT Policy Support Programme as part of the Competitiveness and Innovation Framework Programme.			
			  

Figure 18 Conference programme

Conference afternoon session started with presentation on Open data solutions in the Burren National Geo Park, Ireland -SDI4Apps Easy Data access pilot, by Mr. John O'Flaherty, MAC, continued by presentations on Open Data crowdsourcing based Nature observation platform “Nature data.lv” (dabasdati.lv) Ms. Nora Rustanoviča, followed by presentation on Open data use case - spatial analysis education data analysis tool in Latvia, Mr. Janis Upenieks (VPR), presentation on Open data solutions in agriculture and transport management: cases from project FOODIE and OTN, concluded by presentation from Institute for Environmental Solutions on Environmental Spatial data collection, analysis and visualization examples. After presentations, in discussions focus was on practicalities of implementation and usage of various instruments - Irish case generated big interest in Latvian stakeholders and discussions of how to implement similar solutions in Latvia arose. Many specialists from municipalities acknowledged that there is lack in practical skills and specific knowledge in public sector that hampers the faster uptake and usage of various open data solutions and praised the initiatives, such as this conference, that showcase various use cases for open data solutions.



Figure 19 John O'Flaherty presenting the Irish pilot

After the conference an evaluation survey was issued to the participants and 18 attendees provide their feedback (~ 35% of all attendees). Most of the attendees praised the conference and said that the information they gained will be valuable in their professional lives. Most of the surveyed said that most important open data and solutions or services for them would be in the areas of spatial planning, tourism management and promotion, transport management and navigation.

3.11 MIG-T Meeting at the JRC Ispra, 26 Oct 2016

SDI4Apps has been closely observed by the spatial data team at the Joint Research Centre (JRC) in Ispra, especially by the team responsible for the INSPIRE implementation, the INSPIRE Maintenance and Implementation Group focused on technical aspects (MIG-T).



Figure 20 MIG-T meeting notice

Every year, SDI4Apps showed the progress done and gave comments to the INSPIRE implementation and vice versa, the INSPIRE team gave response to the SDI4Apps achievements. This was the case also for this this

MIG-T meeting, where the SDI4Apps, FOODIE and OTN projects were presented to national representatives of INSPIRE.

SDI4Apps received some comments on the Open Land Use Map and the Smart Points of Interest dataset. The main issue was to include as many references to INSPIRE standardised data as possible. The discussion led to the current state of the INSPIRE implementation where most data are not yet accessible and applying the INSPIRE data specifications in all occasions is not always the best or more practical solution. SDI4Apps showed the way how to speed up data collection through crowdsourcing and merging the INSPIRE data specifications with voluntary geographic data is possible.



Figure 21 Tomas Reznik presenting the FOODIE results

The full details of the event are presented at https://ies-svn.jrc.ec.europa.eu/projects/mig-inspire/wiki/MIG-T_meeting_34.

3.12 ISAF & Geomatics in Projects & Plan4all Joint Conference and Open Data Hackathon for Environment and Entrepreneurship, 3-6 Oct 2016

This event included an open data hackathon followed by a joint conference co-organised by the SDI4Apps project. The other organisers include the Information Systems in Agriculture and Forestry (ISAF), the Department of Geomatics at the University of West Bohemia and the Plan4all association. All the SDI4Apps results will be transferred to Plan4all at the end of the project and further maintained under the umbrella of this association. The collaboration with Plan4all is essential in order to make the project results sustainable after the end of the project.



Figure 22 The conference logo

The main aim of this event was to attract local and regional public administration and commercial companies to discuss further development and steps for establishing public private partnership in the area of open data.

3.13 INSPIRE Conference in Barcelona, 26-30 Sept 2016

This event brought the SDI4Apps platform in front of the international audience full of coders and developers. This was the first ever hackathon organised in the frame of the INSPIRE Conference. The organisers included SDI4Apps and other EU projects from the Citizens Observatories track such as LandSense.



Figure 23 An invitation to the INSPIRE Hackathon

The “VGI & Citizens’ Observatories INSPIRE Hackathon” was the first ever hackathon taking place at an INSPIRE conference. It sustains and develops the unique European Citizens’ Observatories concept as a forceful tool in environmental management and public participation.

Volunteered geographic information (VGI) is the harnessing of tools to create, assemble, and disseminate geographic data provided voluntarily by individuals. (source: Goodchild, 2007).

Citizens’ observatories are where work is undertaken by civic educators together with citizen communities to advance science, foster a broad scientific mentality, and/or encourage democratic engagement, which allows society to deal rationally with complex modern problems. (Source: Ceccaroni et al., 2016)

The Hackathon built the link among data from the area of citizen observatories and projects focused on Open GI Data (Foodie, SDI4Apps, Open Transport Net). The hackathon transferred results from these projects to the new suite of citizens observatories (GROW, SCENT, Ground Truth 2.0, LandSense) so that they can benefit from the work done and further develop the results.

In addition to make use of existing tools, it is also a goal to combine data from various sources, including those provided by the current Citizens Observatories, Copernicus, GEOSS, and INSPIRE, as well as data collected and produced in the MyGEOSS apps and the EU projects Foodie, SDI4Apps, Open Transport Net, etc.

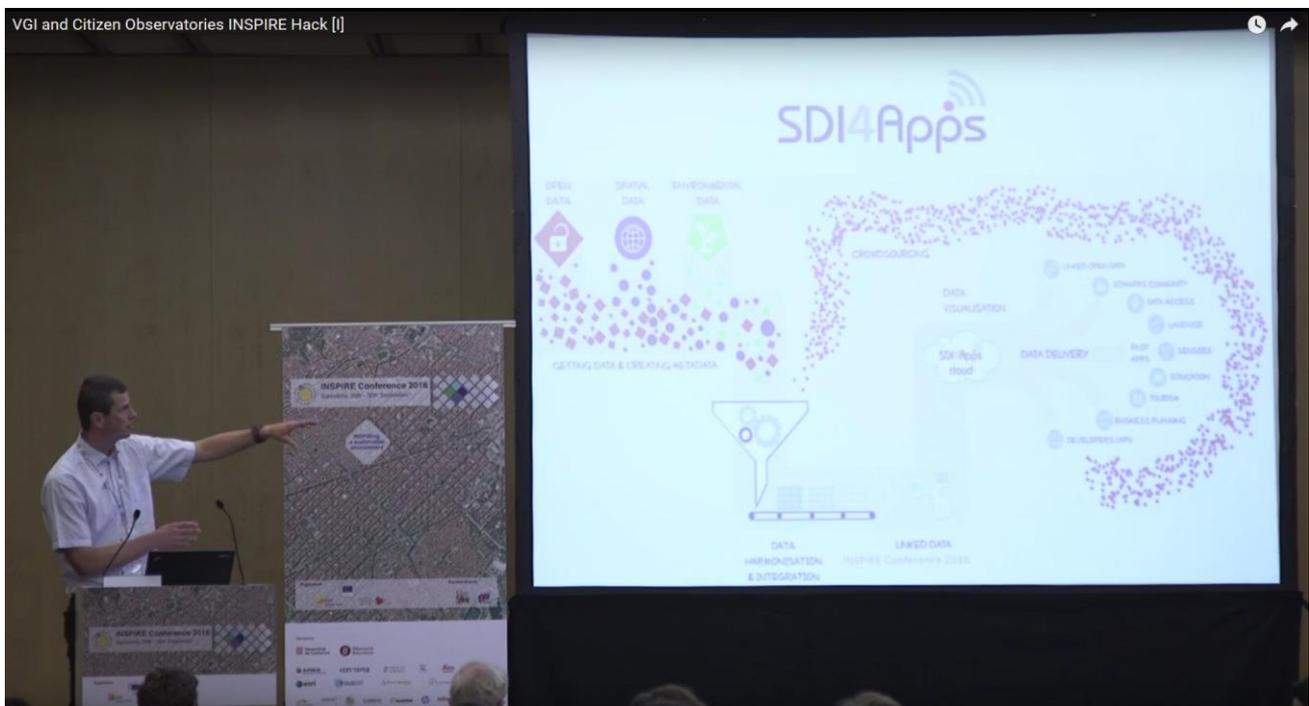


Figure 24 Presenting the SDI4Apps platform

This event was broadcasted and enabled remote participation. The main result of this event was to make plans for future developments and including already existing networks and data sourcing provided through citizen observatories.

One of the most significant results was interchange of data between two applications developed in two projects - SDI4Apps and CITI-SENSE. A report on this achievement is described on the developers’ blog at <http://sdi4apps.eu/2016/09/inspire-hackathon-challenge-3-results/>.

Another significant result was advancing with the idea of collaborative maps, a similar concept to Google Docs. A proof of concept of collaborative whiteboard for drawing maps was achieved. More details on the developers’ blog at <http://sdi4apps.eu/2016/09/inspire-hackathon-challenge-2-first-proof-of-concept-for-google-docs-for-maps/>

More details on the hackathon and links to all presentations and video streams are presented at http://inspire.ec.europa.eu/events/conferences/inspire_2016/page/wsl.

3.14 Mediterranean Open (Geo) Data Hackathon & Conference in Patras 13-15 July 2016

MEDHACKATHON (Mediterranean Open (Geo) Data Hackathon & Conference) took place from 13th to 15th of July in the Computer Engineering and Informatics Department (CEID) of University of Patras, Greece.



Figure 25 MEDHACKATHON Logo

MEDHACKATHON was running in two sessions, where the Hackathon part was dedicated to the coding and development of new apps, services or data resources based on the list of identified possible resources (Data, Catalogues and Tools). The other part was dedicated to the organisation of a conference entitled “Open Data Empowering Society & Entrepreneurship”. The conference had a thematic dimension dedicated to the following specific topics:

- a. Transport, Tourism & Culture
- b. Agriculture & Food
- c. Spatial Planning & Governance

The conference presented latest data and policies related to open data and how it could become a real opportunity for an entrepreneurial uptake. Moreover, during the conference, many opportunities raised for successful B2B cooperation, a number of Open Data projects presented as well as practical guidelines how to present open data projects, or data sharing related presentation with interesting discussions.

During the 3 days, 155 participants created unique environment delivering significant amount of data and technology resources, as well as valuable know how & expertise which were used to support set of interesting and promising ideas. Out of 12 ideas introduced on the beginning of the Hackathon, 12 projects managed to present their results after two days of intensive work. The best 3 projects were selected by the jury members and awarded with the prizes provided by the set of contributors for the prizes. Many innovative ideas were presented. Although participation on the event was free of charge, selection of the participants was announced based on the registration form, where organisers wanted to identify the motivation of the applicants to take part as well as ensure the event will meet their expectations. Based on real attendance lists as well as direct interaction with the participants their structure they mainly represented private sector, academia, non-governmental organisations and individual enthusiasts. We should underline here that the representation from the public sector was significant and we received interesting datasets. Additionally, one of the three prized was awarded to the application “«Visiting Museums & Transportation»” which was developed especially for the Greek Ministry of Education & Culture.



Figure 26 MEDHACKATHON Conference “Open Data Empowering Society & Entrepreneurship”



Figure 27 Hackathon

This event was broadcasted and enabled remote participation. The main result of this event was to make plans for future developments and including already existing networks and data sourcing provided through citizen observatories.

More details on MEDHACKATHON can be found in the deliverable *D7.3 Sprint Codes Report*.

3.15 Common Meeting of ENERGIc OD, SDI4Apps, OTN, FOODIE in Florence, 27 May 2016

On Friday 27th May 2016, a common meeting in Florence in Consiglio Nazionale Delle Ricerche - CNR IIA premises was organized by European projects including European NETwork for Redistributing Geospatial Information to user Communities - Open Data EnergiC OD (<http://www.energiCod.eu/default.asp>) on the one side and three already cooperating projects on the other side SDI4Apps, OpenTransportNet and FOODIE. All four projects are financed under ICT Policy Support Programme: Theme 2: Digital content, open data and creativity, Objective 2.2: Open data.

This extended cooperation will increase added value of all projects and also will support better utilization of Open Data in Europe. During the meeting, EnergiC OD presented Virtual Hubs aiming to facilitate access to and use of heterogeneous data published by existing Spatial Data Infrastructures (SDIs), including INSPIRE-compliant systems, GMES/Copernicus services, etc. and existing portals of SDI4Apps <http://sdi4apps.eu/portal/>, OpenTransportNet data Hub <http://www.opentransportnet.eu/> and FOODIE portal <http://portal.foodie-cloud.org/>. Possibilities of reusing existing results of SDI4Apps, OpenTransportNet and FOODIE by the ENERGIc OD project were discussed including a possibility to cooperate on future developments.

4 CONCLUSIONS

The series of events described in Chapter 3 showed big interest in the SDI4Apps platform and pilot applications including data and services, as the key outcome of the project. The validation process took through different events including conferences, hackathons, workshops and other meetings.

The best validation result is when one sees that the project outcomes are used, reused and discussed by different communities that also provide valuable feedback for improvement of those outcomes and contribute to the development of sound and sustainable project results exploitation strategy and business model. This was certainly true for SDI4Apps and the different communities participating in the events. The number for applications developed by external communities at the hackathons show the potential for businesses and public authorities and invested practical interest from developers and users.

The communities involved in external validation include:

- Joint Research Centre of the European Commission
- Copernicus team
- GI specialists working in the field of territorial planning
- Community around the INSPIRE initiative
- Open data networks and communities
- Citizen observatories projects
- Other EU projects from the same call
- Policy makers on national, regional and local level
- Professionals from commercial and public sector on national, regional and local level
- Students, scientists and researchers
- General public

A progress has been done during the last year of the project, especially in terms of documenting the platform and its components. The updates of the platform and related data and services were issued in several cycles.

During the validation process, many comments and issues were raised and discussed. Some of them are of general character, such as how do you ensure that data are up-to-date or why don't you use Google Maps. Some of the questions were concrete and then easier to employ.

The following recommendations from the validation should be considered for future development and business planning:

- Users are interested in data quality. This include knowing the harmonisation processes undertaken and the origin of data. This is essential for reuse, especially by professionals in the GI domain.
- General public seeks easy to use applications that will provide them with information they need. The needs of general public significantly varies from professionals in the field. In the case of tourism, users would appreciate offline access to app information, e.g. accessing SPOI data through mobile phones.
- For the full business stage, it is essential that apps and services are published once they are finalised, verified and validated in order to ensure that users come back.
- Project results which are available for free and provide the same functionality as commercial applications seem to be suspicious for potential stakeholders. It is recommended that project results are transferred under an umbrella of an organisation which can sustain the results and offer the services long term in the future. In this way, references and good reputation of such organisation can change the mind of potential stakeholders.

- Currently, the range of uses of the SDI4Apps platform is unlimited. It is a general cloud platform providing number of services for data and information management which can serve for spatial planning, transport or precision farming. The comments received were very often diverse and sometimes in contradiction. Some users prefer easy to use app, while others require set of parameters they can change in order to get what they want to achieve. It is recommended that future business activities focus on limited number of specialisms (e.g. tourism). In this way, it will be easier to accommodate user specifications and get the apps and services right.
- Documentation should be made for every, even simple, application or service to enable wider reuse.
- The big strength of SDI4Apps is in its pan-European coverage and cross-border applications. This should be properly accommodated in the future business activities.

External validation has been closely linked to business activities and business planning of the consortium and pilot cases. The fact that the SDI4Apps results will be transferred in the Plan4all association is the result of communication with stakeholders. The original plan was to set up a commercial business and transfer all the results in this company. However, it would be very difficult to convince external data providers to contribute with open data, as they would see it as supporting the business of the company, rather than building an open database. Therefore, a non-profit organisation has been chosen - the Plan4all association.

The external validation helped to design individual business plans for each pilot. These business cases are documented as part of the non-public deliverable *D.8.5.2 Business Model - Final Version*.