DELIVERABLE

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D7.4 DEVELOPERS' CONTEST REPORT

Revision no. 03

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## REVISION HISTORY

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EXECUTIVE SUMMARY

Document provides the summary of the activities resulting in two contest events (T-Systems Hackathon and DanubeHack 2.0). Both separate, but interlinked events were organised in late fall 2016 in Slovakia with aim to promote the results of the SDI4Apps project among the relevant developers communities.

Described activities took place under the Work Package 7 (WP7) "Support for External Developers" with aim to attract and provide a support for potential external developers of open (where relevant geo) data resources, technologies, ideas and knowledge provided by the SDI4Apps as well as other from other relevant projects, initiatives, and additional sources. Developers' contest events were important promoting instruments aiming to attract independent developers coming as from universities (students) as well as from micro enterprises (professional developers).

In comparison to the previous events documented in related deliverables (D 7.2 and D7.3) these events were aiming to provide the possibility to share the latest outcomes of the project, investigate their potential for the sustainability and collect the feedback from the community. Although both events were running on different places, addressing different stakeholders, their ambition remained in direction to create space where people can present what can be done with the open (where relevant geo) data resources, technologies, ideas and knowledge. Another important dimension of these events was also the possibility to provide the space, where people representing various types of stakeholders (from producers to the users) can meet and exchange their experience and knowledge.

Second chapter of the document provides an overview about the T-Systems Hackathon taking place in Kosice, Slovakia from 26 - 27.11.2016. After this, third chapter provides an summary of the DanubeHack 2.0 event, organised in Bratislava, Slovakia from 12-13 of December 2016. Set of evaluations and conclusions is provided via fourth chapter, following with conclusions.
1 TWO CONTESTS

Whilst first T-System Hackathon was mainly addressing the students and academia sector, the other DanubeHack 2.0 was reflected mostly by the representatives of the production sector (small and medium enterprises), but of course in both cases developers and information and communication (ICT) professionals from other domains were present too (public sector, non-governmental domain, research and development). Although T-Systems Hackathon was wider in terms of participation, DanubeHack 2.0 delivered more specific projects, accompanied by knowledge shared via Lightning talks. Both events delivered participants wide range of related activities, access to the experts, information, data resources, technologies, etc.

From the SDI4Apps project perspective, T-Systems Hackathon served as incubator, where SDI4Apps workshop provided the possibility to introduce the project, all main project outcomes and answer the questions of the participants by the Mentors. DanubeHack 2.0 was closer focused on the implementation of the SDI4Apps results in projects.

During 4 working days, more than 400 participants created unique environment delivering significant amount of data and technology resources which were used to support set of interesting and promising ideas. Out of 80 ideas introduced on the beginning of the Hackathons, 70 projects managed to present their results. The best projects were selected by the jury members and awarded with the attractive prizes. Many innovative ideas were presented, including those demonstrating the use of the SDI4Apps outcomes. All the results are available via event websites.
2 T-SYSTEMS HACKATHON

2.1 Summary

The chapter provides the summary of the activities resulting in SDI4Apps workshop within T-systems Hackathon. The event took place from 26th to 27th November 2016 at the Technical University of Kosice in Kosice (Slovakia). Following activities took place under the WP 7 “Support for External Developers” with the aim to raise awareness about SDI4Apps principals and mission in general and to attract as many external developers as possible to the usage of the project’s tangible outcomes.

T-systems Hackathon is the largest event of its kind in Slovakia and may be included among top 5 largest hackathons in Central Europe. Main organizer T-systems Slovakia Ltd. is one of the largest and fastest growing ICT companies in Central Europe. In 2016 the event took place in Kosice for the second time.

After e-PRO’s attendance at the 2015 T-systems Hackthon, members of the event’s organizing committee have approached e-PRO Group with the request of cooperation in 2016’s hackathon. The cooperation goal was co-organizing of one of the event’s individual session in the form of a workshop aimed at the potential of open (geo) data resources, technologies a best practices provided by the SDI4apps project’s outcomes.

2.2 Motivation

The main motivation to cooperate with T-systems Slovakia Ltd. within the 2016 T-systems Hackathon was the opportunity to raise awareness about SDI4Apps principles and the project’s tangible outcomes’ potential among more than 300 attending contestants. The event under the auspices of Slovakia’s most recognized ICT companies was a great opportunity not only to communicate SDI4apps, but also get informal feedback from unbiased external communities.

2.3 Objectives

In order to meet the original expectations from the SDI4Apps project’s Description of Work (DoW), reflect the developments with the SDI4Apps platform as well as to keep the connection with the latest data, technology and communities momentum, following objectives were defined:

- Presentation of the SDI4Apps project
- Collection of the relevant resources (data and technology)
- Identification of the relevant Mentors
- Organise 2 days event
- Achieve from 150 - 200 participants

2.4 Assumptions

Having defined the objectives, set of assumptions had to be identified in order to secure their achievement in line with the project activities as well as with the relevant Open Data movement in the target region. These assumptions were identified as:
● Provision of the free access to the SDI4Apps Workshop and the T-systems Hackathon
● Establish and publish the registration for the event
● Ensure the consistent interaction with the participants
● Publish all relevant information via event website and Facebook event social network

2.5 Thematic topics

The hackathon’s main slogan established for communicating the event was „HACK YOUR CITY”. To ensure support of usage of limitless creativity, no strict topics were communicated towards potential attendants. To ensure the contestants’ outcomes direction towards to results aiming at improving the usage of public services and Kosice cities tourism offer e-PRO group was requested to present SDI4Apps best practice within the workshop aimed at SDI4apps pilots. The aim of the informal „HACK YOUR CITY” topic was to bring solutions that could ultimately simplify the lives of citizens and visitors to a city, also including areas:

● transport,
● health service,
● education,
● environment,
● parking.

2.6 Additional support and acknowledgements

Many volunteers have contributed to organizing T-systems Hackathon 2016 and SDI4Apps Workshop. Considering the motivation (sub chapter 2.2) and securing background for an event with more than 300 attendants, without the main organizers support and cooperation with SDI4apps partners the Workshop could not have been achieved.

![SDI4Apps Workshop and T-systems Hackathon supporters]

Figure 2 T-systems Hackathon and SDI4Apps workshop supporters
2.7 Preparatory phase

Before launching the event, preparatory activities had to be executed and some issues had to be dealt with.

2.7.1 Basic structure and timing

Based on the experience from 2015 T-systems Hackathon and DanubeHack 2015 two parallel sessions were proposed:

1. T-systems Hackathon - focused development of new apps, where mentors from SDI4apps have taken the role of support for open (geo) data solutions.

2. SDI4Apps Workshop - focused on raising awareness about open (geo) data and SDI4Apss principals and project outcomes usability.

Defining the scope and taking into consideration of the DOW availability of project partners and the working schedule of target groups the event’s dates and length were fixed two 32 hours during the following two days:

Day 1 - Saturday 26.11.2016 - 9:00 - 00:00 (warm up, networking, workshop + ideas pitching, launch of contest)

Day 2 - Sunday 27.11.2016 - 00:00 - 17:00 (contest and follow up presentations)

2.7.2 Event website

All necessary information about the hackathon and registration were published¹, invitation and basic information about the workshop were published at the dedicated subpage².

¹ http://hackathon.myt-systems.sk
² http://hackathon.myt-systems.sk/#hackathon_workshop

Figure 3 The T-systems Hackathon and SDI4Apps workshop final website
2.7.3 Venue
After 2015 T-systms Hackathon experience the premises of Technical University of Kosice’s new Library were chosen as appropriate for a event assuming huge masses of attendants.

![Figure 4 Technical University of Kosice’s Library](image)

2.7.4 List of possible sources
SDI4apps provided at the time all available data, catalogues and tools. The list of possible resources were published on the event’s website and also clarified personally by SDI4apps mentors.

2.7.5 FAQ
For the event there has been created a subpage dedicated to FAQ³.

![Figure 5 T-systems Hackathon 2016 FAQ](image)

³ [http://hackathon.myt-systems.sk/#hackathon_faq](http://hackathon.myt-systems.sk/#hackathon_faq)
2.7.6 Mentors

A range of recognised experts from academia and private sector volunteered for supporting the attendants. Members of SDI4Apps were not only responsible for the SDI4App workshops, but were also present during the whole period of the event as support in the field of open (geo) data.

![Mentor List](image)

Figure 6 List of T-systems Hackathon mentors and SDI4Apps Workshop lecturers

2.7.7 Jury members and prizes

For final evaluation of the projects resulting from the Hackathon session group of independent jury members have been established:

1. Jozef Kubov (IBM)
2. Miroslav Matejovsky (Wirecard)
3. Petra Adamušínová (Global Logic)
4. Michal Hricišin (bart.sk)

The price pool was determined and sponsored by T-Systems Slovakia Ltd.:
1\textsuperscript{st} place: 3000 Eur
2\textsuperscript{nd} place: 2000 Eur
3\textsuperscript{rd} place: 1000 Eur

2.8 T-Systems Hackathon and SDI4Apps Workshop

As mentioned in chapter 2.7 the event took place in Kosice from 26\textsuperscript{th} November to 27\textsuperscript{th} November 2016. The rules for contestants were simple:

1. Develop an application;
2. Register the application;
3. Live presentation of the application’s TRL.

2.8.1 Hackathon

Some overall numbers:

3007 commits
made by
331 attendants (contesters)
divided into
61 teams
that registered
82 projects to github
from which
54 made it to final presentation

Figure 7 At the Hackathon
2.8.2 SDI4Apps Workshop

Worshp took place according to the event’s programme on Saturday 27\textsuperscript{th} November from 14:00 to 15:30, because of interest of participants informal individual discussions went on for the rest of event. Martin Tuchyňa (SAZP) and Tomáš Kliment (e-PRO Group) presented SDI4Apps project, main principles, projects outcomes and their possibilities.

![SDI4Apps Workshop](image)

Figure 8 SDI4Apps Workshop

2.8.3 Programme overview

Following table provides an overview of the programme\textsuperscript{4}.

![Program overview day 1](image)

Figure 9 Program overview day 1

\textsuperscript{4} http://hackathon.myt-systems.sk/en/#hackathon_schedule
2.8.4 Results

After two intensive days of hacking more than 60 project results were presented during the Final pitches. Out of these interesting ideas following three were selected as the best ones and awarded:

1st place: Pineapple - Smart City Air

Description: App running on Selfmade IoT hardware monitoring the contamination of Air.

Figure 11 Pineapple team

5 https://www.youtube.com/watch?v=QFsuRJn2-yM
2nd place: Cadaster GPS API

**Description:** Application for locating free parking spaces, based on application programming interface, helping to locate the parcels and their owners.

![Figure 12 Cadaster GPS API Team](image)

3rd place: Leaflets/Letáky

**Description:** App helping the distributors deliver leaflets based on the preferences of owners of the property.

![Figure 13 Leaflets/Letáky team](image)
3 DANUBEHACK 2.0

3.1 Motivation

The main motivation to organise the second edition of the DanubeHack 2.0 in the way described by this document was an effort to build up on experiences gained from DanubeHack organised in 2015 and provide the possibility to promote the outcomes of the SDI4Apps project. Important dimension was also support from the European Commission Joint Research Centre (EU JRC), aiming to support the Danube region development via Danube reference data and service infrastructure (DRDSI) initiative.

This public event was foreseen as one of the final opportunity to present the SDI4Apps outcomes to the wider communities of external developers and other stakeholders, together with the possibility for SDI4Apps project team to network and establish the new contacts as well as learn about the other relevant open data and technology resources.

Reflecting above motivation, the DanubeHack 2.0 was designed as joint event of the Hackathon, combined with the set of Lightning talks. Both sessions took place in parallel, where Hackathon part was dedicated to the coding and development of new apps, services data resources, Lightning talks were more focused on sharing the latest news about the data resources, technologies, projects, initiatives, including related discussions.

Despite the increasing amount of the data that is created and made open in the Danube region, the event confirmed its practical use is still facing various challenges. In the case of geospatial data the situation is even more tricky. Similar conditions relate also to the software tools helping to collect, manipulate and publish such data.

To proof that there is potential in this data and ensure presence of participants pro-actively willing to contribute and benefit from the event anyone was invited to register and indicate their motivation and expectations from the event. This was possible to be done via presenting their work and achievements in the field, identification of the possibilities, pitching the ideas, promoting their data, re-using available open data & software technologies and creating new data, software, apps, or visualisations.

How this motivation was turned into the reality is depicted in the event Gallery (Figure X) and in detail described in following sections of this document.

![DanubeHack 2.0 Photo gallery](http://drdsi.jrc.ec.europa.eu/)

6 http://drdsi.jrc.ec.europa.eu/
3.2 Objectives

In case of the second edition of DanubeHack, following objectives were defined:

- Organise 2 days’ event
- Identification of thematic topics represented by the application domains
- Provision of the Hackathon including the competition for the presented project ideas
- Preparation of the set of Lightning talks
- Provision of special INSPIRE competition
- Presentation of the SDI4Apps project and outcomes
- Collection of the relevant resources (data and technology)
- Identification of the relevant Mentors
- Achieve from 50 - 70 participants

Above mentioned objectives were defined with good will to ensure the fulfilment of the expectations and ambition to achieve the credible results.

3.3 Assumptions

Having defined the objectives, set of assumptions had to be identified in order to secure their achievement in line with the project activities as well as with the relevant Open Data movement in the target region. These assumptions were identified as:

- Provision of the free access to the event
- Establish and publish the registration for the event
- Collect the offer and expectations from the registered participants
- Ensure the consistent interaction with the participants
- Publish all relevant information via event website and social networks
- Collect all the results and share them publically

3.4 Thematic topics

For setting the thematic scene initial list of the preliminary areas was proposed with the possibility to extent them as by the organisers as well as by the participants them self (Figure X).

![Initial list of thematic topics](image)
3.5 Additional support and acknowledgements

Many individuals and organisations have contributed to the DanubeHack 2.0. Considering the ambitions defined above and available budget, it was obvious, additional support will have to be identified in order to prepare and organise the event of such a scale. Based on direct financial support and cooperation between the JRC, SDI4Apps project partners Slovak environment agency (SAZP), ProNatur and e-PRO group and indirect support from the other projects and partners, the event could take place within the expected dimensions (Figure X).

![Organisers](image1)

![Projects](image2)

![Partners](image3)

Figure 16 DanubeHack 2.0 Supporters

Particular acknowledgment deserves members of the project teams in Hackathon, authors of the Lightning talks as well as Mentors often taking the roles of the extra team members. Important role was undertaken also by the jury members evaluating the results of the final presentations from the Hackathon. Special thanks goes also to the support teams of organizers as well as hosts of the event from ImpactHub in Bratislava. Last but not least Big thanks goes to the all direct participants as well as remote sympathizers.

3.6 Preparatory phase

Before the event itself took place, majority set of the activities was necessary to identify and execute.

3.6.1 Basic structure and timing

Based on experience and recommendations from first DanubeHack event and in connection to the other related events, set of modifications have been proposed in order to improve the attractiveness and eliminate possible risks. Based on that concept the following two parallel sessions were proposed:

1. Hackathon - focused on coding and development of new apps, services and data resources
2. Lightning talks - dedicated to the latest data and technology resources with space for discussion

Defining this scope and taking into the consideration time constraints of DoW, availability of the project partners as well as calendar of the other related events the length and the dates of the event were fixed for the period of almost 22 hours during the following two days:
3.6.2 Event website

Based on good experience from the DanubeHack 2015, new website was developed on the top of original template with colour modifications, keeping links to the archive. Website is hosted on the dedicated domain\(^7\) and further development of the event responsive website have been ensured with the support from the ProNatur project partner. Website have been constantly updated with the new contributions as main communication channel providing the relevant information and resources for the participants. Content of the website have been made available in bilingual version providing the information in Slovak and English language.

3.6.3 Venue

Selection of the venue was again very important aspect to be taken into the consideration and based on good experience from the first DanubeHack, the aim was to keep the event in open space, with estimated capacity, close to the city centre. Because of the end of the year period, it was not easy to ensure appropriate space, but fortunately available timeslot was possible to allocate in the same venue, where the first DanubeHack 2015 took place - ImpactHub Bratislava, within the period 12 and 13 December 2016. This time the venue offered slightly different room set-up, which was still sufficient for the event needs with the availability of the Main hall, Blue room and Bar + lounge (Figure X). Before the event, set of meetings had to take place to agree on details and arrange all logistic and related activities.

\(^7\) http://www.danubehack.eu
3.6.4 Facebook Event Page

In connection to the positive feedback we encountered in past, dedicated Facebook Event Page\(^8\) have been established, allowing organisers share an updates about the preparation of the event and provide additional communication and interaction channel with the participants. At the same time this channel (Figure X), helped organiser better reflect certain requests and recommendations.

\(^8\) https://www.facebook.com/events/974711919299763/
3.6.5 Event registration

In order to manage the event participation and establish closer connection with the stakeholders, organizers prepared and launched the registration linked with the short questionnaire aiming to:

- Help organisers get better information about the registered participants
- Motivate the interested participants for active contribution
- Adjust the content of the event better fitting the expectations of the participants

At the same time event registration served for organizers as potential selection criterion in case the capacity of the venue could not satisfy the demand from the registration.

Registration was opened from 4 November 2016 for one month when up till 7 December 2016 70 participants registered for the event. Complete list of registered participants can be found in Annex 1.

Out of the registered participants list, dedicated e-mail list have been established in order to communicate with the registered participants also via dedicated emails with the latest news and further instructions.

Registration form also helped to provide an initial overview about the foreseen participants’ profile. From the expertise background point of view, similarly, like in 2015 majority of the registered participants were developers and analysts, with some representation of designers as well as non-technical expertise (Figure X).

![Area of expertise](https://example.com/area-of-expertise.png)

Figure 21 Foreseen expertise of participants

3.6.6 List of possible resources

Having available appropriate data and technology is one of the key precondition of any hack related events. In addition to the SDI4Apps datasets and technology framework, extensive list of possible resources have been populated containing information about the three types of possible resources:

- **Data** - providing the list of various datasets with the potential to be used during the Hackathon. Plenty of the collected datasets have been prepared particularly for this event and each record provides basic metadata about the datasets.

- **Catalogues** - sheet collects the list of various catalogues providing the interface for the further data, services and other related resources. More than 31 records provided rich potential of the national, European and Global catalogues, portals and websites with significant amount of information behind.

- **Tools** - offered additional list of 42 technology resources available for immediate deployment spanning from the desktop to the server tools and solutions available for the event participants.

---

9 https://goo.gl/vgC4Xn
with links to their home websites, short description, links for examples of implementation and information.

This list of possible resources (Table 1) was also requested by the participants and will be maintained also after the event and anybody is invited to contribute with the further update and maintenance.

<table>
<thead>
<tr>
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<tr>
<td>OpenCube</td>
<td><a href="http://www.opencube-project.eu/">http://www.opencube-project.eu/</a></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1 List of possible resources

In addition to this tabular list, web based Simple search list has been made also available for users to make their search easier (Figure 22).

![Figure 22 Figure 21 Web Simple search list](image)
3.6.7 FAQ

Very important part of the event website was dedicated to the collection of all relevant information for the potential event participants in the form of Frequently Asked Questions (FAQ). With that in mind, FAQ section with the appropriate list of questions and answers have been prepared and regularly updated. Having properly defined FAQ (Figure X) helped participants to decide, whether this event is of their interest and help organisers to eliminate individual queries delivered via webform, or emails.

![FAQ Table](image)

**Figure 23 DanubeHack FAQ**

3.6.8 Mentors

To increase the support for the Hackathon 2.0 participants as well as benefit from the presence of some important participants who acted as well as active contributors for the Lightning talks, concept of mentors has been again proposed with the aim to provide the direct face to face support for specific topics with the experts in the field. Selection of 10 mentors took place based on interaction with the set of experts in the fields addressed by the DanubeHack 2.0 and who confirmed their possibility and willingness to act in such a role. With that, the final list of mentors have been completed and published with their short profiles on the event website.

![Mentors List](image)

**Figure 24 List of mentors - part 1**

[http://www.danubehack.eu/?#section-mentors](http://www.danubehack.eu/?#section-mentors)
3.6.9 Jury members and prizes

For the final evaluation of the projects resulting from the Hackathon session, a group of jury members have been established, represented by the organisers, international experts as well as representation of the contributors for the prizes.

For the winners, the following set of awards\(^\text{11}\) have been prepared with the contribution of the supporters:

1. Place: 1500€, Airport UAV pack and WebSupport Virtual server V2 for 1 year,
2. Place: 1000€, Airport UAV pack and WebSupport - The Hosting for 1 year max. size 3GB
3. Place: 500€, Airport UAV pack and WebSupport - The Hosting for 1 year max. size 3GB

+ INSPIRE Award: Lenovo Yoga Tablet 2 10 LTE 32GB Ebony + cover with keyboard

Prizes have been supported by:
EC JRC, EEA foundation, E-Pro, HERE, ProNatur, SAŽP, WebSupport

\(^{11}\) http://danubehack.eu/#parallax1
3.7 DanubeHack 2.0 event

3.7.1 Hackathon

The main aim of the Hackathon was to create the space for the development of new apps, services and related data resources. Hackathon session started on Monday 12 December 2016 and finished on Tuesday 17 October 2015. To make this happen, simple roadmap was defined for the Hackathon part with following milestones:

- Day1: Pitch/Propose an idea or create teams, Midhack - presentations of the work done, remaining tasks and requests for help
- Day2: Final presentations, Jury evaluations, announcement of the winners

When question of possible outcomes of the projects took place following options were offered as an inspiration:

- New data, services, APIs
- New Apps
- Documentations and Visualisations
- Business models

Outcomes of the projects were the subject of the evaluation made by the jury members based on the following criteria:

- New data, services, APIs
- New Apps
- Crossborder scope
- Benefits evidence - new added value
- Open data used
- Attractiveness
- Quality of product and presentation

Figure 27 Atmosphere on Hackathon session
3.8 Lightning talks

There has been prepared set of 13 various topics presented by the experts with the possibilities to open discussions with the participants. All lightning talks took place in parallel to the Hackathon session during both days.

3.8.1 Programme overview

Following table provides an overview of the programme for the whole event with the direct links for the related documentation and presentations from the Lightning talks. Online version is available via event website\(^\text{12}\).

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Hack Session</th>
<th>Lightning talk Session</th>
<th>Author/s</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>08:30</td>
<td>Registration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monday</td>
<td>09:00</td>
<td>Invitation and introduction of the event</td>
<td></td>
<td>Alexander Kotsev, Martin Tuchyn(^\text{13})</td>
<td>EN</td>
</tr>
<tr>
<td></td>
<td>09:30</td>
<td>Organisational intro</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data intro (flash presentations)(^\text{13})</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10:00</td>
<td>Pitching/Collection of the project ideas - 2 mins/per</td>
<td></td>
<td></td>
<td>EN/SK</td>
</tr>
</tbody>
</table>

\(^{12}\) \url{http://www.danubehack.eu/?#section-programme}

\(^{13}\) \url{https://docs.google.com/presentation/d/1X8WqKfOd8AtNkSEcqCWBRf0pur_zzZEArZrS-0muVlg/edit?usp=sharing}
<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Lightning Talks</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00</td>
<td>Coffee break and creating the teams</td>
<td></td>
</tr>
<tr>
<td>11:30</td>
<td>Hacking</td>
<td>Lightning talks:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Price of open source with my gives and takes, while working on open source software(^\text{14}) Jáchym Čepický EN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EU Data Sources(^\text{15}) Kathi Schleidt EN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Open Geo Data and IoT Revolution(^\text{16}) Aleksander Kotsev EN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Open geo data endpoints of air quality data in Belgium(^\text{17}) Olav Peeters EN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SDI4Apps - An Instrument for Unleashing Open Geographic Information(^\text{18}) Dmitrii Kozhukh EN</td>
</tr>
<tr>
<td>13:00</td>
<td>Lunch</td>
<td></td>
</tr>
<tr>
<td>14:00</td>
<td>Hacking</td>
<td>Lightning talks:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Open Data @ SK Open Government Partnership(^\text{19}) Milan Andrejkovič EN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Open community made by Slovensko.digital(^\text{20}) Lubor Illek EN</td>
</tr>
</tbody>
</table>

\(^{14}\) https://docs.google.com/presentation/d/1m5unBz41w0-gprxV9iI3xEp3dZLJNxI5N70iPfSGe4/edit?usp=sharing

\(^{15}\) http://danubehack.eu/outcomes/lightning_talks/day1/02_kathi_schleidt/20161212_02_kathi_schleidt_EU_DataSources.pptx

\(^{16}\) http://danubehack.eu/outcomes/lightning_talks/day1/03_aleksander_kotsev/20161212_03_Alex_Kotsev_OpenData_IoT_Revolution.pptx

\(^{17}\) http://danubehack.eu/outcomes/lightning_talks/day1/04_olav_peeters/20161212_04_Olav_Peeters.opendata_endpoints.pdf

\(^{18}\) http://danubehack.eu/outcomes/lightning_talks/day1/05_dmitrii_kozhukh/20161212_05_Dmitrii_Kozhukh_SDI4Apps.ppt

\(^{19}\) http://danubehack.eu/outcomes/lightning_talks/day1/06_milan_andrejkovic_iveta_fercikova/20161212_06_Milan_Andrejkovic_DanubeHack.opendata_OGP.pptx

\(^{20}\) http://danubehack.eu/outcomes/lightning_talks/day1/07_lubor_illek/20161212_07_Lubor_Illek_S.D.pptx
### Day II

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00</td>
<td>Hacking</td>
</tr>
<tr>
<td>11:00</td>
<td>Coffee break</td>
</tr>
<tr>
<td>11:30</td>
<td>Hacking</td>
</tr>
<tr>
<td></td>
<td>Lightning talks:</td>
</tr>
<tr>
<td></td>
<td>Power of open source, Business perception</td>
</tr>
<tr>
<td></td>
<td>Dirk Frigne</td>
</tr>
<tr>
<td></td>
<td>Potential of UAVs (Drones as a data source)</td>
</tr>
<tr>
<td></td>
<td>Brooke Tapsall</td>
</tr>
<tr>
<td></td>
<td>Citizen Science in relation to open data (gathering and use)</td>
</tr>
<tr>
<td></td>
<td>Sven Schade</td>
</tr>
<tr>
<td></td>
<td>Promoting the free sharing of geospatial knowledge</td>
</tr>
<tr>
<td></td>
<td>Codrina Maria llie</td>
</tr>
</tbody>
</table>

---

21 [http://danubehack.eu/outcomes/lightning_talks/day1/08_miroslav_liska/20161212_04_Miroslav_Liska_SLO_D.pdf](http://danubehack.eu/outcomes/lightning_talks/day1/08_miroslav_liska/20161212_04_Miroslav_Liska_SLO_D.pdf)


23 [http://danubehack.eu/outcomes/lightning_talks/day2/01_dirk_frigne/20161213_01_Dirk_Frigne_Business_Perspective.odp](http://danubehack.eu/outcomes/lightning_talks/day2/01_dirk_frigne/20161213_01_Dirk_Frigne_Business_Perspective.odp)

24 [http://danubehack.eu/outcomes/lightning_talks/day2/02_brooke_tapsall/20161213_02_Brooke_Tapsall_AIRPORT_UAV_hackathon_flash.pptx](http://danubehack.eu/outcomes/lightning_talks/day2/02_brooke_tapsall/20161213_02_Brooke_Tapsall_AIRPORT_UAV_hackathon_flash.pptx)


3.8.2 Day 1: 12 December 2016

Before the start and during the whole event the registration desk was opened and all participants were asked to register. During the whole event 58 participants have been recorded on the registration desk (Annex 3). Participation covered all main societal groups, whilst majority participant came from private, non-governmental sector as well as individuals. In addition, there was also obvious involvement of academia, research and development, but organisers expected stronger participation from the public and local government sector.

First day was dedicated to the opening of the event, invitation to the participants and explanation of all the concepts, programme, actors and all related information. After the introductory part Hackathon facilitated session started with the possibility for participants to present the ideas they would like to work on.

11 project ideas were presented by the participants defining the main objective, expected expertise for the team, including the foreseen requirements of the data and technology. Following this Idea pitch session, remaining participants were asked to team up with the ideas they would like to work/support.

After the coffee break with the teaming up in parallel to the Hackathon session, Lightning talks session has also started, presenting the data and technology with the relevant experts. First morning session was dedicated to the experts presenting data and technology, whilst afternoon session brought talks for speakers coming from Slovakia and the Czech Republic sharing latest knowledge about the open data, INSPIRE, standards and linked data. On the end of the first day, small Midhack took place with update about the progress of the teams.
3.8.3 Day 2: 13 December 2016

Second day also offered promising programme, where hackathon was accompanied with the third and last Lightning talk session. The participants could learn more about the Open source, UAVs, Citizens Science and Geospatial knowledge.

Hackathon session was dedicated to the projects finalization and preparation for the final presentation. In total 9 projects (Table 3) presented their outcomes and overall results were positively received as by jury members as well as participants’ audience.

<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Abstract</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Explore your urban environment</td>
<td>Explore nature within your city with treasure hunts based on open environmental data.</td>
</tr>
<tr>
<td>2</td>
<td>Viewer for complex INSPIRE geodata</td>
<td>Define a method for visualization of complex INSPIRE Features.</td>
</tr>
<tr>
<td>3</td>
<td>Waste2Fuel (Biomass optimization application)</td>
<td>App enables owners of orchards and vineyards to give the location of pruned branches in order for biomass producers to pick up the branch pile. It gives an overview of available mass, but also functionality to analyse security risks of burning the piles and to check the reliability of the given location by using LPIS dataset. The datasets used are taken from DRDSI platform - digital orthophoto WMS, Corine Land Cover, ARKOD-LPIS and OpenStreetMap. It produces new dataset - potential biomass locations (PBL). The main benefits are: - Security is increased since there is less burning outdoors without controlled conditions - The owners have less work since they don't need to organize burning activities, so it is easier for them to maintain the orchard or vineyard - Environment protection – less pollution of atmosphere from combustion - Environment protection – less healthy trees need to be cut down in order to acquire raw material for biomass</td>
</tr>
<tr>
<td>Project Title</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td>Fluidhub - Integrated Mobility in Urban Areas of the Danube Region</td>
<td>FluidHub (<a href="https://www.fluidtime.com/de/fluidhub">https://www.fluidtime.com/de/fluidhub</a>), Data from Mobility providers (OpenData, OpenAPIs, commercial APIs, Information from Websites), sdi4Apps (especially Parking), Google APIs</td>
<td></td>
</tr>
<tr>
<td>Manual for SDI4Apps platform</td>
<td>Developing documentation and examples to SDI4Apps platform</td>
<td></td>
</tr>
<tr>
<td>Copernicus WebApp</td>
<td>Web app providing an access to the visualisation and basic calculation on top of Copernicus data</td>
<td></td>
</tr>
<tr>
<td>SlovakEye</td>
<td>The aim is to publish and share data from Sentinel II mission and basic derivates from this data. We use Level 1C (georeferenced) imagery which covers the area of Slovakia. Final dataset should be accessible through WMS and WCS.</td>
<td></td>
</tr>
<tr>
<td>GeoData 4 JIRA - Visualization extension</td>
<td>Our project is based on GeoData for JIRA extension. This addon is currently used in New Town district in Bratislava to collect requests and suggestions. This dataset is also used in our project as reference data. Our work in the project is focused on three goals: 1. Create mobile application to collect requests 2. Allow citizens to link their requests with objects from external datasets (public lights, trash bins, etc.) 3. Provide Heatmap for requests based on specific metrics (votes, severity, etc.)</td>
<td></td>
</tr>
<tr>
<td>OLU quality viewer</td>
<td>The main goal of the project was to visualise the quality of land use HILUCS categories provided by the SDI4Apps Open Land Use dataset. The LAND COVER/USE STATISTICS (LUCAS) point dataset micro data was used to check the thematic accuracy of Land Use categories determined from various land use / cover resources as Urban Atlas, Open Street Map and Land Cover 2012. The final data were published as WMS/WFS and visualised with the Heatmap function provided by Geoserver WPS plugin and in a light Leaflet based web app</td>
<td></td>
</tr>
<tr>
<td>Viewer for complex INSPIRE geodata</td>
<td>FluidHub (<a href="https://www.fluidtime.com/de/fluidhub">https://www.fluidtime.com/de/fluidhub</a>), Data from Mobility providers (OpenData, OpenAPIs, commercial APIs, Information from Websites), sdi4Apps (especially Parking), Google APIs</td>
<td></td>
</tr>
</tbody>
</table>

Table 3 Final list of the presented projects

Evaluation of the presented projects took place by the jury members based on the assignment of the simple value schema, where each jury member could assign points from 1-3 for three best projects, where the best one received the highest value. Outcomes of the evaluation are summarised in Table 4.

<table>
<thead>
<tr>
<th>Results</th>
<th>Project Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1place</td>
<td>Explore Your Urban Environment</td>
</tr>
<tr>
<td>2place</td>
<td>Waste2Fuel</td>
</tr>
<tr>
<td>3place</td>
<td>Copernicus WebApp</td>
</tr>
<tr>
<td>INSPIRE award</td>
<td>SlovakEye</td>
</tr>
</tbody>
</table>

Table 4 Results of the evaluation of the presented projects
1st place: Explore Your Urban Environment

Team: Karin Wannemacher

Description: Explore nature within your city with treasure hunts based on open environmental data

Used data resources:
1. Tree inventory of Vienna
2. Basemap.at
3. OSM
4. Vienna WFS & WMS Services

Used technologies: jQueryMobile, Leaflet, PostgreSQL

Additional info:
- Presentation
- GitHub repository
- Link 2 app

2nd place: Waste2Fuel

Team: Josip Lisjak; Saša Vranić; Hrvoje Tomić; Tomáš Kliment

Description: App enables owners of orchards and vineyards to give the location of pruned branches in order for biomass producers to pick up the branch pile

Used technologies: OpenLayers, Geoserver, PostgreSQL, HTML5, jQuery, Bootstrap

Sources:
- Presentation
- GitHub repository
- Link 2 app
3rd place: Copernicus WebApp
Team: Gergely Padányi-Gulyás

Description: Web app providing an access to the visualization and basic calculation on top of Copernicus data

Used data resources: SK, HU Copernicus data

Used technologies: MANGOL web mapping GUI framework

Sources:
- Presentation
- GitHub repository
- Link 2 app

![Figure 32 Gergely Padányi Gulyás](image)

INSPIRE award: SlovakEye

Team: Jakub Kočica, Tomáš Kliment

Description: The aim was to publish and share data from Sentinel II mission and basic derivatives from this data. We use Level 1C (georeferenced) imagery which covers the area of Slovakia. Final dataset should be accessible trough WMS and WCS

Used data resources: SK Copernicus open data from ESA`s Sentinel 2 mission

Used technologies: Geoserver

Sources:
- Presentation
- GitHub repository
- Link 2 app

![Figure 33 Team SlovakEye](image)

Descriptions of the remaining projects including the links to the relevant sources has been made available via dedicated project website Results section.

http://www.danubehack.eu/index.php#section-results
4 EVALUATIONS AND CONCLUSIONS

This section provides simple evaluation of the whole task from two perspectives with the aim to summarize, how initial objectives were met, respecting the real condition activities were facing during the preparatory, execution and follow up period.

4.1 Organisers perspective

From the overall organisers' perspective, the whole task resulting in the both events fulfilled original expectations. At the same time, it has to be stated, some objectives were met only partially and these lessons learnt shall be taken into the consideration for the further activities within the WP7 as well as all the project related activities.

4.1.1 Positive lessons learnt

The most positive outcome of the event for the organisers was the direct and indirect feedback from the participants, which exceeded all issues or challenges making both events the reality. In addition, the following list provides examples of some other positive observations, organisers encountered:

- **Importance of preparation** - Although preparatory phase revealed difficulty to arrange sufficient data and technology base for the Hackathons at the end of the day events provided interesting initial list of possible resources, including resources presented by the participants.

- **Establishment of the GitHub repo** - allowed the organisers, get better overview about the ongoing projects and project teams could have consolidated place to share their results, following the instructions of the organisers.

- **Importance of Mentors** - Was confirmed by the demand for their expertise as well as via results from DanubeHack 2.0 Survey (Chapter 4.2).

- **Unique knowledge exchange experience** - Overall interest from the stakeholders was very positive and inspiring, confirming existence of the demand for this kind of events, where people can access interesting data, technology resources, but most importantly meet people with similar interest or different experience and mutually exchange this knowledge and create the new contacts and networks.

- **Attractive and promising ideas** - Type of presented ideas / use-cases and the level of their maturation after the effort spent during the events was very interesting and reflecting the current societal expectations and needs. At the same time having the possibility to see, where the initial ideas were on the beginning and then on the end of events shows how fast some project can be developed but also how much additional effort can be needed to move them further more towards operational phase.

- **Smart brains hunting** - Event provided the unique possibility to present the expertise and potential of all actively contributing participants, where direct presence on the event help, students, SMEs, but also public sector and academia representatives to see who could be their potential new employee and employer, helping to solve their tasks and contact them directly.

- **Pool for following project proposals** - At the same time DanubeHack 2.0 planted some ideas for the project proposals, which started their life and continued after the event aiming to meet certain calls for participations or other interesting funding opportunities.

- **SDI4Apps impact** - Event helped to present the project including the available outcomes. Some projects (e.g. SDI4Apps Open Land Use Quality Viewer, or Waste2Fuel) managed to use data and software components from the project.

- **X border missing use-cases** - Comparing to the previous DanubeHack, this time some projects managed to prepare/present the data across the border (e.g. SDI4Apps Open Land Use Quality Viewer, Copernicus WebApp).
4.1.2 Room for improvements

Preparation of this kind of events brings a lot of new observations and things to improve. Despite of that, organisers were trying to react on these the best current situation allowed and are also ready to take those un-reflected into the consideration for the future. To list those observed so far:

- **Two parallel session experience** - The same point as in previous chapter brought some doubts from some participants, as having the parallel session caused sometime disturbing the hackers from their work and wise versa.

- **Stronger facilitation of the SDI4Apps outcomes re-use** - Although project representatives provided necessary information about the project data and technology resources, and some of them were directly used in the projects in general wider reuse of available resources and Platform components was expected.

- **Better managed space for teaming up** - After the initial projects were presented, despite of the identification of places, where participants could team up, some of them mentioned, they had problems to find the original project authors, or better understand the expectations of particular project.

- **Confirmation of the registered participants** - Some participants, mentioned, they did not receive an email after they completed the registration.

- **Wider space for relax during the DanubeHack 2.0** - The space, where could the participants take rest was limited to the lounge only.

- **Low feedback on DanubeHack 2.0 Evaluation Form** - Organisers also prepared for the participants a possibility to evaluate the quality and the relevance of the event and provide them with the feedback from the participants about the things they liked, or would like to change in the future.

4.2 Participants perspective

There has been set of channels through which the DanubeHack 2.0 participants and sympathizers shared their feedback during all phases of the event. From the beginning as the main communication channel was used registration and contact form, later on email and Facebook Event Page served as important interaction platforms. Specific feedback was expected to be collected via DanubeHack 2.0 Evaluation Form, distributed to the all participants after the event.

Comparing the approach taken during the first DanubeHack, where questionnaires were distributed among the participants during the events, seems the approach of webform disseminated afterwards delivered even lower, or almost the same amount of responses as in first year.

Although 7 received forms represents about 10% of the participants, basic outcomes provide some thoughts which can be considered too.
Summary of the responses from the DanubeHack 2.0 Evaluation form:

What is your overall perception from DanubeHack 2.0? (7 responses)

![Bar chart showing overall evaluation](image)

Figure 34 Overall evaluation of the event (5 - Excellent, 4 Very good)

Why you were interested in the event? (7 responses)

- GeoICT + INSPIRE enthusiasts and expert
- To see how open data can be used and the different takes on adding value to a Project with open data.
- To learn something from open data and geo areas.
- Meeting the people, getting known about the open data in other countries
- Open Data
- Zaujímajú me geo data na lepšiu vizualizáciu súvislostí v mojom okolí, a hlavne po dobrých skúsenostiach z minulého roku.
- Curious to see who's doing what, what's going on, what data is out there, what can be done with it

Figure 35 Motivations for the event

What did you like on the event? (7 responses)

- Commitment of the main organisers
- Lovely venue, crisp agenda
- The presentations of projects - projects were really interesting
- the overall concept, place of the event - excellent
- almost everything
- Atmosféra.
- Informal atmosphere, creative chaos

Figure 36 Points of appreciation
What you were not happy about? (6 responses)

Not sure about having lightning talks extent, and having them in the same room with the developing groups. I think, the content of the presentations occasions was to comprehensive and not touching the challenges and problems the developers within individual teams have to deal and handle.

It was difficult to follow the lightning talks while working on the projects.

there was no social event, people left as the program finished, curtain between the coffee break room and the conference room (sometimes noise)

sitting (my back took some hits in past decades so I need some more options to sit plus a place to lay down) + distractions (at your fault, simply other stuff I needed to attend to during hackaton)

Prednášky a hackovanie v jednej miestnosti. Nejde mi naraz počúvať a robiť – z prednášok nemám nič (nič si z nich nepamatám), pôsobí rozrušivo.

That I had to leave early (would be good to time end of event with major departure route, i.e. flight to Malpensa.)

Figure 37 Disturbing points

What shall be changed to make the event better? (5 responses)

Add 1/2 a day (i.e. Wednesday morning) for presentations and discussions?

basically nothing, I understand why some things have to be the way they are

just the sitting options

Lepšie rozdelit prednášky a prácu. A ak by to trvalo o deň dlhšie, tak by to nebolo vôbec zlé. Minule nám z toho dosiahlo „prepínalo“, človek je z toho sice mimo, ale tá česta na hranice možností a schopností sa mi k podobným akčiam hodí.

It might be easier to re-identify the individual groups by putting something on the table, the posters where somewhere in the room, for folks with a bad facial memory difficult to remember who’s who.

Figure 38 Points for improvement
Figure 39 The need to maintain the List of resources

Figure 40 Usefulness of Lightning talks

Figure 41 Use of mentors
What could be done to help the projects to achieve sustainability? (5 responses)

- Higher involvement / interest of Public bodies directly involved in implementing INSPIRE, and other European, national GI projects. They've been paying so far huge resources to private firms full of "expertise", however, there's a lot of valuable and much easily accessible resources available exactly form the groups attending such events as Danubehack.
- Add a mentor or talk that can give informations about the business end of the process.
- Get a financial support (?)
- Continue mentoring and monitoring for at least few months, in case of problems try obtain/provide help to them (but of course only if it is clear: projects members are working and willing to continue :)
- Continuing funding and publicity

Figure 42 Suggestions for sustainability

Do you think, such event can contribute to the creation of new contacts and exchange of knowledge?
(7 responses)

- Yes
- No
- Maybe

85.7%
14.3%

Figure 43 Role of events in contacts creation and knowledge exchange
4.3 Recommendations

Based on the experience and reflecting the suggestions from the participants this chapter provides a set of recommendations to be taken into the consideration in future related events.

- **Proper definition of the event ambition and target audience.** Selection of the relevant domains/topics to be addressed and identification of potential for appropriate stakeholders is half of the success.

- **No budget - No fun** - Without essential budget or funding from the sponsors is very difficult to initiate any activities. In some cases, event can be build only on top of the voluntary activities, but sufficient willingness and possibilities have to be identified and ensured in advance. Important observation is that not all the time money will solve everything, too.

- **Selection of suitable level of detail** - Event can be organised on various level of detail (from company, community, regional, national or as in this case as international) - anytime shall be
appropriate to the defined motivation and ambitions

- **Proper structure and focus** - Hackathon doesn't have to be always organised with the side activities as workshop and often it makes sense to link it with the possible release of some new (ideally attractive) data resources.

- **Don’t underestimate the preparation** - It’s important to allocate sufficient time and resources, as reality will be at least 1,5 - 2 times higher demanding than the worst scenarios. Don’t forget to confirm registered participants.

- **Ensure the suitable venue** - Having venue allowing this type of activities can increase the attractiveness of the event and provide the conformable space for work and relax.

- **Establish the event website** - This is the initial place telling the world something is going to happen. Keeping the website regularly updated with proper way of sharing of these updates increase the credibility.

- **Proper order of the programme** - Mainly in case of events with combined or parallel sessions should be eliminated overlaps of the activities, where the same participants are expected to take part. Also present all available data first and then start pitching the project ideas and coding.

- **Open communication and responsiveness** - Appropriate feedback on questions and willingness to take recommendations into the consideration increases the confidence. Provide the participants the chance to shape the program or direction of the event.

- **Preparation and the cleaning the data and technology resources** - Having appropriately prepared and well documented resources in advance can help a lot - except the cases, where the event is dedicated to activities, where for example data scraping or cleaning is foreseen. Appropriate attention shall be paid to the clarification of the conditions of the use for provided resources.

- **Reliable infrastructure in place** - Appropriate infrastructure on the venue is critical factor, which is often difficult to guarantee before the all participants are on place (and WIFI starts to fail).

- **Ensure the presence and involvement of the Mentors** - Although their role can be seen as not important, the reality can be completely opposite. It is also very good to facilitate their contribution as took place in T-Systems Hackathon.

- **Collection of the feedback** - Prepare for the participants the simple tools to provide their feedback for evaluation and motivate them in attractive and not forced manner to share their views with you, preferably during the event.

- **Distinguish who is who** - Badges, T-shirts with colour code - to distinguish organisers, visitors and mentors.

- **Promote & disseminate** - It’s important to spread the word about the event, where relevant.

- **Importance of evaluation** - Where possible evaluation of the event can be very useful source of motivation and inspirations as for the organisers as well as for anyone else planning to organise similar event.

- **Acknowledgement** - Independently from the conditions, event took place, it’s important to acknowledge all contribution and support provided in the connection of the event.
5 CONCLUSION

Both contests aimed to create the space, where anybody aware of the potential of Open (Geo) Data domain could come and present what can be created and achieved with related data and technology resources or simply learn more about how location information can influence our life. Although organisers didn’t expect the dimension of the consequences for making such event, achieved Hackathon results, workshop, Lightning talks, including the received feedback serve as confirmation about fulfilment of identified set of objectives. Although final prizes were awarded to the first three places, all projects belong to the winners as they managed to complete their mission, which can be further developed and improved as well as used as important reference. Also results from the side activities delivered valuable information available via presentations including the interesting discussions resulting in knowledge and opinions exchange and triggering some ideas about potential joint project proposals. Both events managed to establish a solid ground for their own tradition and it is great to see remaining commitment to take all lessons learnt into the consideration for similar events organised in the future.