DELIVERABLE

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Project Full Title: Uptake of Open Geographic Information Through Innovative Services Based on Linked Data

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Revision no. 03

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Dissemination Level

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REVISION HISTORY

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Statement of originality:
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EXECUTIVE SUMMARY

Document provides the summary of the activities resulting by the organisation of two Hackathons, MEDHACKATHON (Patras, Greece) and Baltic (Geo) Hackathon (Riga, Latvia).

Following 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.

The main ambition of the hackathons organised was to create space where people can present what can be done with the open (where relevant geo) data resources, technologies, ideas and knowledge. Another even more important dimension of the events was the willingness to provide also space where people representing various types of stakeholders (from producers to the users) can meet and exchange their experience and knowledge.

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

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 and the winner received a MAC book AIR and a PI Rassberry. 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 Ministry of Education & Culture.
All results are available via event website and the feedback provided by the 155 participants was the strongest satisfaction organizers could receive.

The Baltic (Geo) Hackathon took place between 16-18 March, 2016. The Venue of the events was Latvia two biggest universities - first two days were held in Riga Technical University, Architecture and Urban Planning Faculty and the last day in University of Latvia, Riga.

A hackathon is very often understood as some exercises of programmers or data specialists. The Baltic Open Data Hackathon extended this approach by inviting also end users. So we were looking for different types of developers, data specialists and users from different fields, not limited to the following ones:

- Open data providers
- Web GIS developers
- Web designers
- Semantic web experts
- Database experts
- User interaction experts
- Mobile developers
- Developers of apps in different areas like transport, tourism agriculture, planning
- Hardware experts focused on sensors, communication and machinery tracking
- GIS specialists for analysis
- Geographers
- Earth observation experts
- Experts on land use, landscape and land cover
- Spatial and urban planers
- Transport planners and managers
- Agronomist and farmers
- Travel agencies and tourism specialists
- Regional development agencies
- Environment protection experts
- Managers and investors interested to check or find new ideas
- Marketing experts
- Data Journalists
1 INTRODUCTION TO MEDHACKATHON

1.1 Motivation

The main motivation to organise the MEDHACKATHON in the way described by this document was creating a free access space where independent developers such as students, small micro companies or any other stakeholders could first time learn about the outcomes of the SDI4Apps project.

This public event was foreseen as initial opportunity to present the SDI4Apps platform 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. This allowed to enrich the common knowledge as a base for the set of following event foreseen to take place during the lifetime of the project and beyond.

Reflecting above motivation MEDHACKATHON was designed as a joint event of the Hackathon and the Conference that commenced the whole 3-days event. Both sessions took place in parallel, where Hackathon part was dedicated to the coding and development of new apps, services data resources, whilst Workshops were more focused on sharing the latest news about the data resources, technologies, projects, initiatives, including the panel and workshops specific discussions.

The title of the event was inspired by the MEDITERANEAN sea, providing the venue and symbolically linking the significant amount of EU and non EU countries.

Despite the increasing amount of the data that is created and made open in the Mediterranean region, its practical use is still facing various challenges. In the case of geo 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-active 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 Figure 1 and in detail described in following sections of this document.
1.2 Objectives

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

- Organising a conference entitled: “Open Data Empowering Society & Entrepreneurship”
- Provision of the Hackathon including the competition with the 5 projects in final
- Presentation of the SDI4Apps project
- Collection of the relevant resources (data and technology)
- Identification of the relevant Mentors (At least 10 mentors)
- Organise 3 days event
- Achieve from 50 to 70 participants

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

1.3 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 MEDHACKATHON
- 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 Facebook event social network
• Collect all the results of the event and share them publically
• Actively present the results on relevant events

1.4 Thematic scope

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.

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

1.5 Additional support and acknowledgements

Many individuals and organisations have contributed to the MEDHACKATHON. Considering the ambitions defined above and available budget allocated via project, it was obvious, additional support will have to be identified in order to prepare and organise the event of such a scale.
ORGANISERS

MEDiHackathon is organised by:

SUPPORTERS

SUPPORTING PROJECTS

Open Transport Net  FOODIE  CAPSELLA  LOA
Particular acknowledgment deserves members of the project teams in Hackathon, authors of the Workshops 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 the CEID at the University of Patras. Last but not least Big thanks goes to the all direct participants as well as remote sympathizers.
2 PREPARATORY PHASE

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

2.1 Basic structure and timing

In connection to the previous project related events, internal discussions and in line with the relevant ongoing activities the expectations for the combined event providing the possibility for knowledge exchange via set of workshops in combination with the Hackathon was obvious. Based on that concept for following two parallel sessions was proposed:

1. Hackathon - focused on coding and development of new apps, services data resources
2. Conference - dedicated to the presentation of horizontal policies related to open data at regional/national level plus the promotion of the business opportunities behind the use of such kind of data

![Figure 3 MEDHACKATHON RoadMap](image)

2.2 Event website

Initial step in preparatory phase was taken during the PragueHacks¹ and DanubeHack² events, where basic structure have been defined including the event website prototype. Such events served as initial inspiration for the further shaping of the expectations and consequent requirements.

![Figure 4 MEDHACKATHON Website](image)

Later on registration of the dedicated web domain ([http://www.MEDHACKATHON.eu](http://www.MEDHACKATHON.eu)) and further development of the event responsive website have been ensured with the support from SDI4APPS project partners. 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 English language.

¹ [http://www.praguehacks.cz](http://www.praguehacks.cz)
2.3 Venue

Selection of the venue is very important aspect to be taken into the consideration and in case of MEDHACKATHON it was influenced by set of factors and conditions, which had to be taken into the consideration and respect the legal condition for the public procurement. Of course the most important one was the involvement of the University of Patras in the organisation of the events. One of the main criterion was sufficient space composition, ideally represented by the concept of co-working centres, often providing this type of services. The size of the venue was defined by the expectations of more than 50-70 participants (our, ensuring sufficient space as for Hackathon section as well as for the conference, including some support space for catering, meetings etc. After the selection of the offers University of Patras, Conference and Cultural Center and University of Patras, CEID Labs were selected (Figure 5). Based on that set of meetings took place to arrange all logistic and related activities.
2.4 Facebook Event Page

Although not originally foreseen, after establishing this communication channel helped organisers share an updates about the preparation of the event and provide additional communication and interaction channel with the participant. At the same time Facebook Event Page\(^3\) (Figure 7), helped organiser better reflect certain recommendations proposed via this channel.

\(^3\) [https://www.facebook.com/events/933007653420731/](https://www.facebook.com/events/933007653420731/)
2.5 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 01st April 2016 till 12th of July 2016 83 participants registered for the event. Even after the registration was closed, additional requests and invitations have been registered (more than 29) so in total, registration was closed with 102 participants.

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 is available in Annex 2.

2.6 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\(^4\) have been populated containing information about the three type of possible resources:

Data - providing the list of 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. A wide number of 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 technology resources available for immediate deployment spanning from the desktop to the server tools and solutions available for the event participants 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.

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Smart Points of Interest [http://sdi4apps.eu/spoi](http://sdi4apps.eu/spoi) global dataset of POIs SPARQL endpoint ODbL licence
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Base map of Municipality of Thessaloniki is used according to License B, as stated by the national committee for geospatial information. For the digital base maps of the CADASTRE S.A. information can be found at: [http://www.ktimatologio.gr/Pages/Default.aspx](http://www.ktimatologio.gr/Pages/Default.aspx)
## Municipalities of Corfu

- **City**: Corfu
- **Website**: [http://gis.opendatagortynia.gr/?lang=EN](http://gis.opendatagortynia.gr/?lang=EN)
- **Services**: WMS, WFS, CSW
- **Data**: Geospatial, administrative, transportatio, statistical, visualized
- **Metadata Services**: [http://services.opendatacorfu.gr/geonetwork/srv/eng/csw?service=CSW&request=GetCapabilities](http://services.opendatacorfu.gr/geonetwork/srv/eng/csw?service=CSW&request=GetCapabilities)

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- OpenStreetMap license: [http://opendatacommons.org/licenses/odbl/](http://opendatacommons.org/licenses/odbl/)

## Municipality of Mandra

- **City**: Mandra
- **Website**: [http://gis.opendatamandra-eidylias.gr/](http://gis.opendatamandra-eidylias.gr/)
- **Services**: WMS, WFS, CSW
- **Data**: Geospatial, administrative, transportatio, statistical, visualized
- **Metadata Services**: [http://gis.opendatamandra-eidylias.gr/](http://gis.opendatamandra-eidylias.gr/)

Available under the GNU General Public Licence version 3 ([http://www.gnu.org/licenses/gpl-3.0.html](http://www.gnu.org/licenses/gpl-3.0.html))

## Region of Western Greece

- **City**: Western Greece
- **Website**: [http://agrocart.pde.gov.gr/home](http://agrocart.pde.gov.gr/home)
- **Services**: WMS, WFS, WFS-T, CSW, WMX, KML, Atom, Shapefile
- **Data**: Geospatial, Shapefile administrative, KML, GeoJSON, CSV, gml2, rar
- **Metadata Services**: [http://agrocart.pde.gov.gr/chartes](http://agrocart.pde.gov.gr/chartes)

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## Region of Sterea Ellada

- **City**: Sterea Ellada
- **Website**: [http://egis.genceng.gr/dataset](http://egis.genceng.gr/dataset)
- **Services**: WMS, Shapefile, KML, CSV, geospatial, administrative transportatio, statistical, visualized
- **Metadata Services**: [http://egis.genceng.gr/dataset](http://egis.genceng.gr/dataset)

NA

## Region of Epirus

- **City**: Epirus
- **Website**: [http://www.opendataepirus.gr/](http://www.opendataepirus.gr/)
- **Services**: WMS, Shapefile, KML, CSV
- **Data**: Motorway, Hydrography, Environment, Administrative
- **Metadata Services**: [http://www.opendataepirus.gr/dataset](http://www.opendataepirus.gr/dataset)

Available under the GNU General Public Licence version 3 ([http://www.gnu.org/licenses/gpl-3.0.html](http://www.gnu.org/licenses/gpl-3.0.html))

## EU Open Data Portals (also containing Greek data)

- **Portal**: Europea Data Portal
- **Website**: [http://www.europedataportal.eu](http://www.europedataportal.eu)
- **Services**: HTML, WMS, WFS, PDF, XML, Atom feeds

Data, metadata and services are provided for FREE. A more concrete licensing schema (terms applying to access and use, limitation on public access) is about to be adopted soon. Depends on dataset
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<td>Depends on dataset</td>
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<tr>
<td>Data Open EU</td>
<td><a href="http://dataopen.eu">http://dataopen.eu</a></td>
<td><a href="http://dataopen.eu/apidocs">http://dataopen.eu/apidocs</a></td>
<td>Depends on dataset</td>
</tr>
<tr>
<td>Global Open Data sources</td>
<td>Datasets, services and software</td>
<td><a href="http://ring.ciard.info/rdf-store">http://ring.ciard.info/rdf-store</a></td>
<td>Creative Commons Attribution 4.0 International License</td>
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<td>CIARD RING</td>
<td><a href="http://ring.ciard.info">http://ring.ciard.info</a></td>
<td><a href="http://ring.ciad.info/rdf-store">http://ring.ciad.info/rdf-store</a></td>
<td>Creative Commons Attribution 4.0 International License</td>
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<td>Europe's Public Data</td>
<td>Various</td>
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<td>GeoNames Geographical database</td>
<td><a href="http://www.geonames.org">http://www.geonames.org</a></td>
<td>Geographical data</td>
<td><a href="http://www.geonames.org/export/web-services.html">http://www.geonames.org/export/web-services.html</a></td>
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<td>LinkedGeodata</td>
<td><a href="http://linkedgeoedata.org/Datasets">http://linkedgeoedata.org/Datasets</a></td>
<td>Geospatial data</td>
<td>data layers visualized on a map</td>
</tr>
<tr>
<td>UN Data</td>
<td><a href="http://data.un.org">http://data.un.org</a></td>
<td>statistical, financial, socioeconomic data</td>
<td><a href="http://data.un.org/Host.aspx?Content=API">http://data.un.org/Host.aspx?Content=API</a></td>
</tr>
<tr>
<td>Registry of Research Data Repositories (Re3Data)</td>
<td><a href="http://service.re3data.org/api/doc">http://service.re3data.org/api/doc</a></td>
<td>catalog/registry/directory/bibliographic data of research data repositories</td>
<td><a href="http://service.re3data.org/api/doc">http://service.re3data.org/api/doc</a></td>
</tr>
<tr>
<td>MODIS Level 1 and Atmosphere Archive and Distribution System (LAADS Web)</td>
<td><a href="https://ladsweb.nascom.nasa.gov">https://ladsweb.nascom.nasa.gov</a></td>
<td>atmospheric and aquatic data</td>
<td>FTP, OPeNDAP, MODAPS Web Services</td>
</tr>
<tr>
<td>MODIS Land Processes Distributed Active Archive Center (LP DAAC)</td>
<td><a href="https://lpdac.usgs.gov">https://lpdac.usgs.gov</a></td>
<td>The Land Processes Distributed Active Archive Center (LP DAAC) is one of several discipline-specific data centers within the NASA</td>
<td>1) Through the corresponding tools (<a href="https://lpdac.usgs.gov/data_access">https://lpdac.usgs.gov/data_access</a>) 2) Also available to download (e.g. <a href="http://e4ftl01.cr.usgs.gov/MOLT">http://e4ftl01.cr.usgs.gov/MOLT</a>)</td>
</tr>
<tr>
<td>Source</td>
<td>Earth Observing System</td>
<td>Copernicus Space Component Data Access System (CSCDA)</td>
<td>NASA Landsat data</td>
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<td></td>
<td>Satellite images</td>
<td>Satellite images</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1) API (<a href="https://scihub.copernicus.eu/userguide/5APIsAndBatchscripting">https://scihub.copernicus.eu/userguide/5APIsAndBatchscripting</a>)</td>
<td>2) Downloading (registration is needed)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Access to Sentinel data is free, full and open for the broad Regional, National, European and International user community;</td>
<td>All Landsat data are available for free.</td>
</tr>
</tbody>
</table>
### Geospatial Service Monitoring

The Federal Geospatial Data Committee (FGDC) provides a Service Status Checker (SSC) web service to validate, test and score geospatial web services. It returns a set of summary and test diagnostic information about the tests performed on each service.

**United Nations Environment Programme (UNEP) Geodata**

- **Tool**: [SSC](http://registry.fgdc.gov/statuschecker/index.php)
- **URL**: [http://geodata.grid.unep.ch/](http://geodata.grid.unep.ch/)
- **Notes**: N/A

**Agro-MAPS (FAO)**

- **Tool**: [SSC](http://geodata.grid.unep.ch/)
- **URL**: [http://kids.fao.org/agromaps](http://kids.fao.org/agromaps)
- **Notes**: Download (shapefiles)

**ASTER Global Digital Elevation Map (NASA)**

- **Tool**: [SSC](http://geodata.grid.unep.ch/)
- **Notes**: Data available in GeoTIFF format and the same gridding and tile structure as V1, with 30-meter resolution. Download

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**Notes**: JPL-authored documents are sponsored by NASA under Contract NAS7-030010. All documents available from this server may be protected under the U.S. and Foreign Copyright Laws. Permission to reproduce may be required.
<table>
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<tr>
<th>Dataset</th>
<th>Source URL</th>
<th>Ecosystem Metadata</th>
<th>Technical Details</th>
<th>Notes</th>
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<tr>
<td>Natural Earth</td>
<td><a href="http://www.naturalearthdata.com/download">http://www.naturalearthdata.com/download</a></td>
<td>Download</td>
<td>Free vector and raster map data at 1:10m, 1:50m, and 1:110m scales.</td>
<td></td>
</tr>
<tr>
<td>World Bank Geodata dump</td>
<td><a href="https://sourceforge.net/projects/googleworldbank">https://sourceforge.net/projects/googleworldbank</a></td>
<td>Download</td>
<td>Transforming World Bank indicators to Google Earth's KML format. Several indicators are included. Google Earth / World Bank KML Output</td>
<td></td>
</tr>
<tr>
<td>Global Agricultural Lands (NASA)</td>
<td><a href="http://sedac.ciesin.columbia.edu/data/collection/aglands/sets/browse">http://sedac.ciesin.columbia.edu/data/collection/aglands/sets/browse</a></td>
<td>Download</td>
<td>The Global Agricultural Lands in the Year 2000 data set represents the proportion of land area used as cropland (land used for the cultivation of food) and pasture (land used for grazing) in the year 2000.</td>
<td></td>
</tr>
<tr>
<td>European Environmental Information</td>
<td><a href="http://www.eionet.europa.eu">http://www.eionet.europa.eu</a></td>
<td>Creative Commons Attribution 2.5</td>
<td>Europea Environmental Information.</td>
<td></td>
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</table>

NASA data are freely accessible; however, when you publish these data or works based on the data, we request that you cite the data sets within the text of the publication and include a reference to them in your reference list.
<table>
<thead>
<tr>
<th>Dataset</th>
<th>Description</th>
<th>URL</th>
<th>Access Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ion and Observation Network</td>
<td>Environment data from individual countries.</td>
<td><a href="http://iridl.ldeo.columbia.edu">http://iridl.ldeo.columbia.edu</a></td>
<td>Download or query</td>
</tr>
<tr>
<td>IRI/LDEO Climate Data Library</td>
<td>A powerful and freely accessible online data repository and analysis tool that allows a user to view, analyze, and download hundreds of terabytes of climate-related data through a standard web browser.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>European Climate Assessment and Dataset</td>
<td>The ECA dataset contains series of daily observations at meteorological stations throughout Europe and the Mediterranean.</td>
<td><a href="http://eca.knmi.nl/dailydata/index.php">http://eca.knmi.nl/dailydata/index.php</a></td>
<td>Download or query for use in non-commercial research and education projects only.</td>
</tr>
<tr>
<td>University of East Anglia, Climatic Research Unit Data</td>
<td>Gridded observational data across Europe, including cloudiness, temperature, precipitation, humidity, pressure, snow and sunshine.</td>
<td><a href="http://www.cru.uea.ac.uk/data">http://www.cru.uea.ac.uk/data</a></td>
<td>Download</td>
</tr>
<tr>
<td></td>
<td>The various datasets on the CRU website are provided for all to use, provided the sources are acknowledged. Acknowledgement should preferably be by citing one or more of the papers referenced on the appropriate page.</td>
<td></td>
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</tbody>
</table>
EUMETSAT
Satellite Application Facility on Support to Operational Hydrology and Water Management (H-SAF)

Download All intellectual property rights of the H-SAF products belong to EUMETSAT. The use of these products is granted to every interested user, free of charge. If you wish to use these products, EUMETSAT’s copyright credit must be shown by displaying the words “copyright (year) EUMETSAT” on each of the products used.

[TOOL] POETs: Python Open Earth Observation Tools (to be used with H-SAF data & other data sources)

A package which aims to provide a standard library that can be used for collecting, resampling and displaying geospatial image datasets.

Download Redistribution and use in source and binary forms, with or without modification, are permitted under specific conditions.

Soil Moisture & Ocean Salinity (SMOS) Data (ESA)

https://earth.esa.int/web/guest/missions/es-a-operational-eo-missions/smos/content/-/asset_publisher/t5Py/content/how-to-obtain-data-7329

Soil moisture data Download Users may not modify, publish, transmit, participate in the transfer or sale of, reproduce, create derivative works from, distribute, perform, display or in any way exploit any of the content, software, material or services, in whole or in part, without obtaining prior written authorisation.

Europea n Centre for Medium-Range Weather Forecast s (ECMWF)

ftp://data-portal.ecmwf.int
http://www.ecmwf.int/en/forecasts/datasets/public-wmo-and-acmad-datasets

Weather prediction s Download These products are available to the public and their use is unrestricted (including commercial use).

[TOOL] pytesmo
http://rs.geo.tuwien.ac.at/validation_tool/pytesmo/docs

Toolbox for the Evaluation of Soil Moisture Observations

Download N/A

Internatio nal Soil Moistur e Network

http://www.geo.tuwien.ac.at/insitu/data_viewerviewer/V2/ISMN.php

Soil moisture data Map layers / Download available to registered users (http://ismn.geo.tuwien.ac.at/data-access)

References to the individual networks are provided on the Networks page of the ISMN site and in the readme.txt files accompanying every data download.
Table 1 List of possible resources

WEB Services of Greek Ministry of Environment and Energy

([http://maps.ypeka.gr/arcgis/rest/services/YPEKA](http://maps.ypeka.gr/arcgis/rest/services/YPEKA)):

Guidelines for services: [http://aepo.ypeka.gr](http://aepo.ypeka.gr)

- [YPEKA/ADMINISTRATIVE](http://maps.ypeka.gr/arcgis/rest/services/YPEKA/ADMINISTRATIVE) (MapServer)
- [YPEKA/Arhaia_Theatra](http://maps.ypeka.gr/arcgis/rest/services/YPEKA/Arhaia_Theatra) (MapServer)
- [YPEKA/Astynomika_Tmimata](http://maps.ypeka.gr/arcgis/rest/services/YPEKA/Astynomika_Tmimata) (MapServer)
- [YPEKA/BaseMap](http://maps.ypeka.gr/arcgis/rest/services/YPEKA/BaseMap) (MapServer)
- [YPEKA/BATHYMETRIC_COLOURS](http://maps.ypeka.gr/arcgis/rest/services/YPEKA/BATHYMETRIC_COLOURS) (MapServer)
- [YPEKA/Corine1990](http://maps.ypeka.gr/arcgis/rest/services/YPEKA/Corine1990) (MapServer)
- [YPEKA/Corine90_00_Changes](http://maps.ypeka.gr/arcgis/rest/services/YPEKA/Corine90_00_Changes) (MapServer)
- [YPEKA/DASI_Aisthitika_dasi](http://maps.ypeka.gr/arcgis/rest/services/YPEKA/DASI_Aisthitika_dasi) (MapServer)
- [YPEKA/DASI_Diatiritea_Mnimeia_Fysis](http://maps.ypeka.gr/arcgis/rest/services/YPEKA/DASI_Diatiritea_Mnimeia_Fysis) (MapServer)
- [YPEKA/DASI_ektrofeia](http://maps.ypeka.gr/arcgis/rest/services/YPEKA/DASI_ektrofeia) (MapServer)
- [YPEKA/DASI_eleghomenes_kynigetikes_periohes](http://maps.ypeka.gr/arcgis/rest/services/YPEKA/DASI_eleghomenes_kynigetikes_periohes) (MapServer)
- [YPEKA/DASI_ektrofeia](http://maps.ypeka.gr/arcgis/rest/services/YPEKA/DASI_ektrofeia) (MapServer)
- [YPEKA/DASI_katafygia_agrias_zois](http://maps.ypeka.gr/arcgis/rest/services/YPEKA/DASI_katafygia_agrias_zois) (MapServer)
- [YPEKA/DASI_loipoi_topoi](http://maps.ypeka.gr/arcgis/rest/services/YPEKA/DASI_loipoi_topoi) (MapServer)
- [YPEKA/DASI_Prostateytika_dasi](http://maps.ypeka.gr/arcgis/rest/services/YPEKA/DASI_Prostateytika_dasi) (MapServer)
- [YPEKA/DASI_topoi_idiaiterou_fysikou_kalous](http://maps.ypeka.gr/arcgis/rest/services/YPEKA/DASI_topoi_idiaiterou_fysikou_kalous) (MapServer)
- [YPEKA/DIANOMES_Ktimatologio](http://maps.ypeka.gr/arcgis/rest/services/YPEKA/DIANOMES_Ktimatologio) (MapServer)
- [YPEKA/DIANOMES_OKXE](http://maps.ypeka.gr/arcgis/rest/services/YPEKA/DIANOMES_OKXE) (MapServer)
- [YPEKA/DIANOMES](http://maps.ypeka.gr/arcgis/rest/services/YPEKA/DIANOMES) (MapServer)
- [YPEKA/Drymoi2](http://maps.ypeka.gr/arcgis/rest/services/YPEKA/Drymoi2) (MapServer)
- [YPEKA/Drymoi](http://maps.ypeka.gr/arcgis/rest/services/YPEKA/Drymoi) (MapServer)
- YPEKA/EGY_FLOOD_RISK_MAP (MapServer)
- YPEKA/EGY_HISTORIC_FLOOD (MapServer)
- YPEKA/EGY_IBCM (MapServer)
- YPEKA/EGY_ZONESDYKP (MapServer)
- YPEKA/GEOLOGY (MapServer)
- YPEKA/Geothermika_Pedia (MapServer)
- YPEKA/HydrographyYPN_ISOBAHTSv2 (MapServer)
- YPEKA/HydrographyYPN (MapServer)
- YPEKA/HYDROLITHOLOGY (MapServer)
- YPEKA/Ktimatologika (MapServer)
- YPEKA/LandSat (MapServer)
- YPEKA/Natura2000 (MapServer)
- YPEKA/Oikismoi (MapServer)
- YPEKA/PERIVALLON_perioxes_oikohanaptyxis (MapServer)
- YPEKA/POLEODOMIA_HOROTAXIA_AGIA_MARINA_GAZI (MapServer)
- YPEKA/POLEODOMIA_HOROTAXIA_Eidikos_Tourismos (MapServer)
- YPEKA/POLEODOMIA_HOROTAXIA_GAZIOU_IRAKLEIOY (MapServer)
- YPEKA/POLEODOMIA_HOROTAXIA_Plaisio_Ydatokalliergeion (MapServer)
- YPEKA/POLEODOMIA_HOROTAXIA_PM05069_2_16 (MapServer)
- YPEKA/PPSX_A_stadio_A2_PERMAKEDONIAS (MapServer)
- YPEKA/PPSX_XARTIS_A2 (MapServer)
- YPEKA/Rdn_dmeo (MapServer)
- YPEKA/Wetlands (MapServer)
- YPEKA/X_RDS_Athina_Salonica (MapServer)
- YPEKA/YDATIKOI_POROI_Edres_Dieythinseon_Ydaton (MapServer)
- YPEKA/YDATIKOI_POROI_EGY_Aktogrammi (MapServer)
- YPEKA/YDATIKOI_POROI_EGY_Limnes (MapServer)
- YPEKA/YDATIKOI_POROI_EGY_Metavatika_Ydata (MapServer)
- YPEKA/YDATIKOI_POROI_EGY_Paraktia_Ydata (MapServer)
- YPEKA/YDATIKOI_POROI_EGY_Potamia (MapServer)
- YPEKA/YDATIKOI_POROI_Oria_Lekanon_Aporrois_Potamon (MapServer)
- YPEKA/YDATIKOI_POROI_Oria_Ydatikon_Diamerismaton (MapServer)

Data from SDI4Apps, OpenTransportNet and FOODIE projects

- Open Land Use ([link 1], [link 2])
- Smart Points of Interest ([link])
- Open Transport Map ([link])
Tools from SDI4Apps, OpenTransportNet and FOODIE projects

- HSlayers NG (link, more information here)
- WebGLayer - an advanced geovisualization API (link, more information here)
- SensLog - a solution for sensor networks (link, more information here)
- Layman LayMan - The Layer Manager (link, more information here)
- Sensor catalogue
- INSPIRE metadata in CKAN extensions (link, more information here)
- DanubeHack tools (link)

2.7 FAQ

Very important part of the event website was dedicated to the collection of the 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 11) helped participants to decide, whether this event is of their interest and help organisers to eliminate individual queries delivered via webform, or emails.

2.8 Mentors

To increase the support for the Hackathon participants as well as benefit from the presence of some important participants who acted as well as active contributors for the workshops session, concept of mentors have been proposed with the aim to provide the direct face to face support for specific topics with the experts in the field. Selection of the 19 mentors took place based on interaction with the set of experts in the fields addressed by the MEDHACKATHON and who confirm their possibility and willingness to act as
mentors. With that final list of the mentors have been completed and published with their short profiles on the event website.

http://medhackathon.eu/index.php/mentors
Figure 8 List of mentors - part 2
Figure 9 List of mentors - part 3

(STEIN) RUNAR BERGHEIM

Runar Bergheim is co-founder and director of research and development at Norwegian technology company Aquitan Web International.

RAITIS BĒRZĪNS

Raitis Bērziņš is a developer of web GIS systems, interested in semantic databases and various computer graphics solutions.

DIMITRI KOŽUCH

Dimitri Kožuch is a cartographer andGIS specialist.

MAREK ŠPLÍCHAL

Marek Šplíchal is a 3D's vector trout technology developer and administrator.
Figure 10 List of mentors - part 4
Figure 11 List of mentors - part 5
2.9 Jury members and prizes

For final evaluation of the projects resulting from the Hackathon session group of jury members have been established, composed by the following members:

- Prof Athanasios Tsakalidis, Head of CEID, University of Patras
- Visiting Prof Fotios Nanopoulos
- Dr Karel Charvat, Czech Centre for Science and Society

For the winners of the Hackathon, set of prizes have been prepared with the contribution of the supporters:

1. A MAC Air Book plus a RASBERY PI
2. A Drone
3. 2 Lenovo Tablets
3 MEDHACKATHON EVENT

3.1 Hackathon

As already mentioned main aim of the Hackathon was to create the space for coding and development of new apps, services data resources. Hackathon session started on Thursday 14th of July 2016 and finished on the Friday 15th of July 2016 while on the 13th of July we organized the MEDHACKATHON Conference. To make this happen, simple roadmap was defined for the Hackathon part with following milestones:

- Day0: Conference entitled “Open Data Empowering Society & Entrepreneurship”
- Day1: Medhackathon - commencement of work, required tasks and requests for help
- Day2: Continuation of work, 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:

- Processed data (quality analysis, LOD)
- Visualisations
- Applications

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

- Benefits - new added value
- Attractiveness
- Quality of product and presentation
3.2 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 Workshops. Online version is available via event website.6

6 [Link](http://medhackathon.eu/images/pdf/MEDHackathon_agenda_final.pdf)
CONFERENCE TITLE: “Open Data Empowering Society & Entrepreneurship”
CONFERENCE AGENDA – PRELIMINARY PROGRAMME

Wednesday, 13 July 2016
09:00 – 09:30 Registration – Welcoming Coffee
09:30 – 10:15 Welcoming speeches

- Prof. Odysseas Koulopoulou, Dean of Polytechnic School
- Prof. Ioannis Garoufalis, Chair Dept of Comp. Eng. & Informatics
- Mr. Kostas Peletidis, Mayor of Patras
- Mr. Georgios Aggelopoulos, Regional Vice-Governor
- Mr. Platon Marafakis, President Chamber of Commerce
- Prof. Vasileios Anastasopoulos, President of Patras Science Park
- Visiting Prof. Fotis Nanopoulos, ex General Director of EUROSTAT
- Mr. Idomeneas Manolitzakis, President of Ktelfi
- Mr. Dimitrios Pepantonious, President of Performance Technologies
- Mr. Stefanos Korodimos, CIO Attica Bank

The project has received funding from the EU ICT Policy Support Programme as part of the Competitiveness and Innovation Framework Programme.
10.15-11.15

The Hosting Project

SDI4APPS presentation, Mr. Runar Bergheim

Horizontal Issues

- National Documentation Center, Innovating with Open (Public) Data, Mrs Georgia Tzenou, Mrs. Maria Androustopoulou
- Overview of ESPON “open-source” tools for both territorial development analysis and policy-making, Ass.Professor Stella Kyvelou
- Corallia Cluster, Open Data Empowering Society & Entrepreneurship, Prof. Vassilios Makios

11.15 – 11.45 Coffee Break & Light Lunch

11.45 – 13.45 Thematic Sessions

a. Transport, Tourism & Culture

- Logistics Way, “The internet of things as an enabler to supply chain innovation”, Mr. Dimitrios Grigopoulos
- GALENA: Galileo-based solutions for urban freight transport, Mr. Panagiotis Liakos
- INTRASOF  International OTN (Open Transport Network project), Mrs. Irene Matzakou
- Ministry of Culture & Sports, ICT Department, Mrs. Kleopatra Christopoulou, Mrs. Maria Kotida

b. Agriculture & Food

- Ministry of Rural Development and Food, Mrs. Eri Zisi
- NEUROPUBLIC, Doing business with Open Data in agriculture, Mr. Vasileios Protonotarios
- CAPSELLA: Open Data supporting Agro-Biodiversity & Food Systems Innovation, Mr. Pavlos Georgiadis

The project has received funding from the EU ICT Policy Support Programme as part of the Competitiveness and Innovation Framework Programme.
- FATIMA and FOODIE - Collection, Management & Processing of Agri-Food data, Mr. Karel Charvat
- Laboratory of Atmospheric Physics, University of Patras, ENORASIS: Weather forecasts in agriculture based on open data, Prof. Andreas Kazantzidis

**c. Spatial Planning & Governance**
- LD Athens, Innovative mobile services based on COPERNICUS, Mr. Angelos Maglis
- Athens Technology Center (ATC), YourDataStories: Making sense of open government data and following public money, Mr. Leonidas Kallipolitis
- PL Surveyors, CoMPI (Coastal Monitoring & Prediction Instrument), Mr. Nikolaos Petrelis
- Geopatral Enabling Technologies, Implementing PSI & Inspire directives in Greece using Free and Open Source Software (FOSS). Best combined practices, Mr. Gabriel Mavrellis

MEDHACKATHON - 14th - 15th July 2016

**MedHackathon – preliminary programme**

**Day 1 Thursday 14th July 2016**
- 09:00 – 11:00 Warm up, by presenting the aim of the event, input data and technology as well as participants. Pitching the ideas into the projects and setting up the project teams.
- 11:00 – 13:00 Main Development Phase
- 13:00 – 14:00 Lunch Break.
- 14:00 – 17:00 Main Development Phase
- 17:00 - 18:00 Presentation of 1st day progress per project

**Day 2 Friday 15th July 2016**
- 09:00 – 13:00 Day 2 follow up Coding
- 12:00 - 18:00 Day 2 follow up, presentation of the projects outcomes, evaluation and awarding of the best ones and the outlook for the future possible activities.

The project has received funding from the EU ICT Policy Support Programme as part of the Competitiveness and Innovation Framework Programme.

Table 2 Programme overview
3.3 Day 0 - Conference “Open Data Empowering Society & Entrepreneurship”

The first of the 3-days event, was dedicated to the organization of a conference entitled “Open Data Empowering Society & Entrepreneurship”. The conference had a thematic orientation including the following priorities

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

The topics addressed during each thematic session of the conference were the following

**Transport, Tourism & Culture**

- The internet of things as an enabler to supply chain innovation
- Galileo-based solutions for urban freight transport
- OTN (Open Transport Network project)
- Ministry of Culture & Sports, ICT Department

**Agriculture & Food**

- Doing business with Open Data in agriculture
- Open Data supporting Agro-Biodiversity & Food Systems Innovation
- Collection, Management & Processing of Agri-Food data
- ENORASIS: Weather forecasts in agriculture based on open data

**Spatial Planning & Governance**

- Innovative mobile services based on COPERNICUS
- Making sense of open government data and following public money
- CoMPI (Coastal Monitoring & Prediction Instrument)
- Implementing PSI & Inspire directives in Greece using Free and Open Source Software (FOSS). Best combined practices

There were more than 100 participants to the event apart from those connected through internet participating through a live internet link.
Before the start and during the whole event 71 participants have been recorded on the registration desk (Annex 3). Some participants registered before the event sent apologies not to be able to take part so only 53 registered participants took part, while some additional participants took part without the previous registration, as organisers allowed them to take part considering the current capacity of the venue. 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 remote participation from more Mediterranean countries (A wide email campaign took place dedicated to all IT Faculties of the major MED Universities).

Initial day (14th of July) 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.

Despite the shy start 12 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.

We saw as main motivation for participation on Hackathon and a good chance for networking. That was our primary goal. End users found solutions for their needs to promote their ideas; Developers learnt about new data, new tool and new business opportunities. It was also possible for them to find new talents for their company as well as to establish new business cooperation. Business oriented people found new excellent ideas for their business or investments. At the end, there was a chance to spend two exiting days with excellent friends and in excellent environment.

During MedHackathon we expected two groups of teams:

- Professionals composed from current employers of existing companies, users, designers, business oriented persons and others (students are not excluded) - for them we see as motivation to find new possibilities of business, new ideas, and new data new cooperation and also recognize new talents.
- Student teams composed only from students, starting from high schools, through bachelor, masters and PhD. Focus of our content will be on this teams. So we see this event as good possibilities for them to start new business or sell themselves. And our contest will help them. There will be group of mentors starting from technical experts, data experts but also business angels. We plan to offer incubation for best student team in Patras incubator.

### 3.5 Day 2

Last day of the event was dedicated to the finishing the projects and preparation for the final presentation. In total 12 projects (Table 3) presented their outcomes and overall results were positively received as by jury members as well as participants audience.
MEDHACKATHON final list of projects

<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Agri sensors datasets visualization</td>
</tr>
<tr>
<td>2</td>
<td>Agri plastic waste re-use (Marios)</td>
</tr>
<tr>
<td>3</td>
<td>Edu costs per head &amp; Exams &amp; geo-positioning of expertise</td>
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<tr>
<td>5</td>
<td>Ancient Athlisis</td>
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<tr>
<td>6</td>
<td>3D Plugin 4 Get SDI / Hack Mo Energy</td>
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<tr>
<td>7</td>
<td>Green city rewards</td>
</tr>
<tr>
<td>8</td>
<td>Industrial Tourism</td>
</tr>
<tr>
<td>9</td>
<td>DAS : Donate &amp; Save</td>
</tr>
<tr>
<td>10</td>
<td>Validate Public Open Data / Unemployment</td>
</tr>
<tr>
<td>11</td>
<td>Visiting Museums &amp; Transportation</td>
</tr>
<tr>
<td>12</td>
<td>Eye View</td>
</tr>
</tbody>
</table>

Table 3 Final list of the presented projects

MEDHACKATHON assessment criteria

Every application was evaluated on the basis of four criteria by experts. Every criterion was evaluated by every expert was given a score of 0 - 10 (with 10 being highest score). The final score was the sum of all experts in all criteria.

The assessment criteria were:

1. **Technology readiness** evaluated the status of solution, how far it is from the market. The following definition could be used as an example: [https://en.wikipedia.org/wiki/Technology_readiness_level](https://en.wikipedia.org/wiki/Technology_readiness_level)
2. **Novelty of solution** focused on how advanced the solution offered was, if it was beyond the state-of-the-art. It was focused on novel concepts and approaches, new products, services.
3. **Business potential** - what is potential of this solution on the market, are there users, who would be ready pay for such a solution, is there chance to introduce this solution to the market
4. **Social and environmental impacts** - has this solution some important social or environmental impacts. Could this solution help to disadvantage regions, could this solution help to protect the environment, etc.

Table 4.

<table>
<thead>
<tr>
<th>Results</th>
<th>Project Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1prize</td>
<td>DAS: Donate &amp; Save</td>
</tr>
<tr>
<td>2prize</td>
<td>Visiting Museums &amp; Transportation</td>
</tr>
<tr>
<td>3prize</td>
<td>Eye View</td>
</tr>
</tbody>
</table>

Table 4 Results of the evaluation of the presented projects
1st place: DAS: Donate & Save

Description of the idea by the developers

Firstly, we have to mention that we wish to provide an application without any cost by honoring the oath that every scientist gives, which is to serve the mankind with the power and weapons of technological knowledge.

“Five minutes are enough to save a life” that is the motto of the Hellenic Ministry of Health and Social Security for decades now. However, the posters in hospitals and other public buildings do not serve their purpose which is to activate the individual's contribution for donating by making an active citizen as Aristotle said more than 2000 years ago.

In our country the need in blood annually is 600,000 blood units and in this we do not include only the urgent need which emerges after a car accident but also for people who suffer from kidney inadequacy or thalassemia or even in case of surgeries or any other medical condition that it makes the blood quite valuable.

With an approximate calculation, we can say that if just the 10% of the Hellenic population was donating blood we could have a sufficient stock of blood units that can guarantee the support for all those who have a need.

In the same fate comes the bone marrow donation, an issue which is not adequately developed in Greece. The procedure of donating bone marrow is very simple and it is similar to donating blood. There are false rumors that is painful or dangerous. It is a simple procedure of taking sample for the drool.

During the last 20 years many transplants took place, but only few of the donors were from Greece. For example in Norway where the population has racial homogeneity only 20,000 donors are adequate to cover the bone marrow needs.

As you understand we have a major problem and we seek an optimal solution. In Greece we have a mechanism that is too "old" to deal with this kind of things. So we thought to connect 21 century technology and the excessive use of mobile network devices like smartphones and tablets.

So we have decided to create a system that includes two parts, the one is for the mobile and the second one will be established into hospital's infrastructure.

The new system will be dynamic as well as user-friendly and will exploits the internet of things, the system and the data bases that are already in use today are not unified. Despite the fact that donating blood to another hospital is really complicated in our days, this application will make the procedure much easier.

Thus, firstly, our solution to the problem needs the user-donor to download the application and visit the nearest hospital for registration. Therefore, the user receives a unique 11 digital number from the hospital along with a username and a password. Then the user will fill the right gaps in the mobile application and after the registration to the app the user will be aware of the demand.

As far as the medical staff is concerned, when an emergency case comes up and the doctor decides that there is a blood/bone marrow need then the doctor or nurse will announce the immediate demand for the specific type of blood and any user-donor who locates in a radius distance of 10 kilometres will receive a text message that will give information about the location of the demand.

Of course, the messages which ask for donation will appear firstly to the user with the matching blood type. If more donors than expected arrive, then the blood will remain to hospital's stock for future use. The whole procedure will take place according to the medical confidentiality.

To be more specific as for bone marrow donations, the whole procedure is not exactly an emergency case but it lasts 3 to 4 hours. We thought it was necessary to add the bone marrow donation so as to familiarize people with a not so popular but necessary issue.

The system-app of hospital which was referred earlier demands a unified network between hospitals along with servers and of course an admin that can maintain the system in good condition and can guarantee its efficiency.

Of course such a system demands only an average computer knowledge but it is essential to educate and familiarize the medical staff and the users with the usage of the app.
Our problem which is the lack of blood and bone marrow donation is a big deal. In addition, despite the fact that the area of usage is limited, he results will solve a serious and big matter.

There are several traditional methods that can solve this problem such as advertising the benefits of blood and bone marrow donation. Thus, due to the fact that the posters will only coughing dust and the commercial spots will be immediately forgotten, we suggest a solution that use modern technology methods and even the younger people will be able to use.

Used data resources:


Sources: [http://medhackathon.eu/](http://medhackathon.eu/)

2nd place: Visiting Museums & Transportation

**Description of the idea by the developers**

When you are on vacation, in a place you don’t know very well, finding an archaeological site might be a difficult task. What if you had an app running on your smartphone, which proposes nearby sites based on your location?

**Museum Finder** is a simple app that helps you find and visit nearby museums and archaeological sites.

Used data resources:


Sources: [http://medhackathon.eu/](http://medhackathon.eu/)

3rd place: Eye View

**Description of the idea by the developers**

In an age, of accelerating challenges, towards a new digital era of cultural heritage dissemination, the convergence of information and telecommunication technologies have given us significant advantages in promoting the cultural content in all over the world. A cultural “product” exists only if knowledge about its meaning and importance is shared among a social group. Knowledge of other cultures brings people together and creates peaceful intellectual ties among social or ethnic groups of different cultures. In this sense, culture is communication and communication is culture. It is quite clear that we are facing a real challenge of capturing one or several methods in designing and developing new ways of improving real or web visitor’s experience in archeologic and other cultural interesting areas.

The proposed system, called Eye-View, is to provide a whole new, more engaging and personalized experience to every unique visitor by combining already-established and well-tested technologies, such as Wi-Fi-RFID sensors and Smartcards with real-presence viewing, recording and analysing the live interaction between people and cultural exhibits, artifacts or other intellectual creations. With Eye-View system competent authorities can manage in a better way their cultural “products” and visitors would have the opportunity to interact with them by declaring their liking. Visitors would also have the chance to learn more about the century, the creator, the architecture and other information, considering the exhibits that they like by proposed books and other museums on the same or in another
country.

Used data resources:


Sources: [http://medhackathon.eu/](http://medhackathon.eu/)

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Figure 15 Day 2
4 MEDHACKATHON AWARENESS RAISING

There has been undertaken of activities focused on awareness raising about the event before and after the MEDHACKATHON took place. Some screenshots can prove that fact:

Websites:
MEDHACKATHON: Η Hackathon και Συνέδριο για τα Ανοιχτά Δεδομένα 13-15 Ιουλίου 2016

13 Ιουλίου 2016 by ppr

Το MEDHACKATHON είναι το πρώτο hackathon το οποίο θα πραγματοποιηθεί σε συνεργασία με ένα συνέδριο, και διεξάγεται στην Πάτρα στις 13-15 Ιουλίου 2016. Στόχος του MEDHACKATHON είναι να δημιουργήσει το χώρο για να συναντηθούν όλοι οι ενδιαφερόμενοι για τις δυνατότητες των ανοιχτών δεδομένων, για να παρουσιασθούν οι ειδικές τις γνώσεις τους και να συζητήσουν πως πεθαίνοντας τρόπους περαιτέρω συνεργασίας σε έργα και ειδές.
MEDHackathon

We are pleased to invite you to the MEDHACKATHON and the related conference which will take place between 13 – 15 of July 2016 in Patras, Greece, hosted by the Computer Engineering and Informatics Department (CEID) of University of Patras.

Registration & Participation

Participation both at MEDHackathon and at the conference is free of charge; however, registration is required (Registration form here). After your registration you will receive a

Social Networks:

Karel Chavvat
@chavvat_kar

- Tweets: 135
- Following: 181
- Followers: 53
- Likes: 10

@chavvat_kar

- New ideas for MedHack “Public data from the National Centre for Education. medhackathon.eu/index.php/blog...
- Test on MedHack sharing your maps on Social Media medhackathon.eu/index.php/blog...
- Foodie-project.eu/public/2016070...
- Traffic volumes Paris region (WMS-0).geo.gis/3SpOr #map #gis
D7.3 Sprint Codes Report


Τμήμα Μηχανικών Η/Υ & Πληροφορικής
Πανεπιστήμιο Πατρών

MED Hackathon: The potential of Open Data for Society & Entrepreneurship

http://www.medhackathon.eu

ΔΗΜΟΦΙΛΗ
• Οδηγίες Σιτηρίων 2015 - 2016
• Απάντηση Πρόκλησης

ΨΗΦΙΑΚΕΣ ΥΠΗΡΕΣΙΕΣ
• Webmail
• My Oειδ.
• Helpdesk
• Directly
• Οδηγίες Αρίθμησης
• Επικοινωνία με την Εταιρεία
5 CONCLUSION OF MEDHACKATHON

MEDHACKATHON wanted to create the space, where anybody aware about the potential of Open (Geo) Data could come and present what can be created 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 and especially the Conference, confirmed it was worth to do it. Some Hackathon outcomes comes with the chance for the further development and offer provided by the European Commission Joint Research Centre for the winning project gives promising opportunity to improve the quality of the underlying apps for another dimension. Although final prizes were awarded to the first three places, all project belongs 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 Conference delivered valuable information available via presentations including the interesting discussions resulting in knowledge and opinions exchange, existing policies and triggering some ideas about potential joint project proposal. Whether the MEDHACKATHON will start its own tradition is too soon to say, anyway there is strong commitment to take all lessons learnt into the consideration for any similar events organised in the future.
6 BALTIC (GEO) HACKATHON

The importance of open data and open geodata is increasing. But the potential of open (geo) data has not been fully exploited. This is true in most parts of Europe including the Baltic Region. Similar conditions relate also to the software tools helping to collect, manipulate and publish such data. There is a need to address these challenges and where possible to improve this situation. For this reason, the Baltic Open (Geo) Data Hackathon was organized.

Event website with all practical information about the venue, programme, available data and tools, expectations was developed. Also registration was available in there.

Programme of the event consisted of two-day coding and the presentation of the results.

The Venue of the events was Latvia two biggest universities - first two days were held in Riga Technical University, Architecture and Urban Planning Faculty and the last day in University of Latvia, Riga.

The event took place between 16 and 18 March 2016.
A hackathon is very often understood as some exercises of programmers or data specialists. The Baltic Open Data Hackathon extended this approach by inviting also end users. So we were looking for different types of developers, data specialists and users from different fields, not limited to the following ones:

- Open data providers
- Web GIS developers
- Web designers
- Semantic web experts
- Database experts
- User interaction experts
- Mobile developers
- Developers of apps in different areas like transport, tourism agriculture, planning
- Hardware experts focused on sensors, communication and machinery tracking
- GIS specialists for analysis
- Geographers
- Earth observation experts
- Experts on land use, landscape and land cover
- Spatial and urban planers
Transport planners and managers
Agronomist and farmers
Travel agencies and tourism specialists
Regional development agencies
Environment protection experts
Managers and investors interested to check or find new ideas
Marketing experts
Data journalists

There were two possibilities to present ideas and attract potential team members:

1. First, it could be promoted in advance through the SDI4Apps developers’ blog. All contributions were distributed through LinkedIn and Facebook pages. This was a chance to discuss and prepare project and build team in advance.

2. The second option was to present idea during the hackathon. Everybody was given a chance to prepare their own 5 minute pitch to attract other team members.
6.1 Available data

The SDI4Apps, OpenTransportNet and FOODIE projects and other partners provided sets of available open data. However, hackathon activities were not limited to these data sets. A preliminary list of available data included:

- Open Land Use
- Smart Points of Interest
- Open Transport Map
- Satellite data from Landsat and Copernicus
- DanubeHack list of Data and Catalogues
- OpenStreetMap
- Wikidata
- DBpedia

Latvian open data sources:

- Register of enterprises
- The Procurement Monitoring Register
- Riga open data catalogue
- Regional indicator model
- Municipalities data providing service
- Nature data management system OAK
- Statistics database
- State budget
- Election results
- “Latvia’s State Forests” (LVM) open data
6.2 Available tools

The SDI4Apps, OpenTransportNet and FOODIE projects offered also a set of tools and open source software, which was able to help you with building new solutions. However, hackathon activities were not limited to these tools and participants were free to use any other tools they like. A preliminary list of tools included:

- HSlayers NG
- WebGLayer - an advanced geovisualization API
- SensLog - a solution for sensor networks
- Layman LayMan - The Layer Manager
- Sensor catalogue
- INSPIRE metadata in CKAN extensions
- DanubeHack tools

6.3 Moderator

The Moderator of the The Baltic Open Data Hackathon was Karel Charvat. Karel Charvat is a project manager of Czech Centre for Science and Society, WirelessInfo, Help Service Remote Sensing and Baltic Open Solution Centre and vice chairman of Club of Ossiac. He studied on Mathematical Physical Faculty of Charles University in Prague topic theoretical cybernetics, where he received degree Doctor in theoretical cybernetics. He is member of CSITA. In period 2005-2007 he was President of European Federation for Information Technology in Agriculture Food and Environment (EFITA). Karel has participated in more than 30 European projects. He was coordinator of several EC projects (WirelessInfo, PremathMod, NaturNet Redime, Naturnet Plus) and also technical coordinator of other projects (Plan4all, FOODIE, SDI4Apps). He has also large experience as evaluator of EC projects. His key qualification are project management, Open Data, ICT for Agriculture and Environment, International cooperation, SDI design, strategic studies and management of projects in ICT and SDI. He has more than 200 publications and he is co-author of seven books.

6.4 Mentors

Mentors of the Baltic Open Data Hackathon were (Stein) Runar Bergheim and Raitis Bērziņš.

(Stein) Runar Bergheim

is co-founder and director of research and development at Norwegian technology company Asplan Viak Internet, a part of the Asplan Viak group, a Norwegian consultancy house whose roots go back to 1958. Outside of Europe, Bergheim works through the international consulting partnership NORPLAN. Mr Bergheim studied landscape management, spatial planning and GIS at Sogn og Fjordane University College and later went on to work for Sogn og Fjordane County Council as a GIS consultant. Here he took an interest in the application of GIS within spatial planning. In 2001 he co-founded Asplan Viak Internet (AVINET) to bring web map solutions to the Norwegian market and as a vessel for applied research and development within GIS. From 2002 Mr Bergheim was managing director of AVINET before he in 2008 directed his energy towards large scale projects for NORPLAN in the United Arab Emirates and the Sultanate of Oman. During the span of his career, Mr Bergheim has undertaken more than two hundred assignments in twenty countries. His key areas of expertise are design, supervision and management of information technology projects with four professional focal points: planning, land management, heritage and learning. His personal forte is to bridge the gap between technical and non-technical mindsets.
Mr Bergheim is a frequently used speaker at national and international conferences and events. He has also been a guest lecturer in GIS at Sogn og Fjordane University College as well as at the University of Tromsø.

Currently, Mr Bergheim shares his time between Brussels, Abu Dhabi and Muscat. In Europe, he plays an active role in projects related to INSPIRE and EUROPEANA; on the Arabian Peninsula, he is supporting the implementation of new street addressing systems in the capitals of UAE and Oman.

Raitis Bērziņš

Raitis Bērziņš is a developer of web GIS systems interested in semantic databases and various computer graphics solutions. He can help with questions regarding JavaScript, Hslayers mapping library and SPARQL technologies.

6.5 Main Organizers

The main organizer was the SDI4Apps project partner Zemgale Planning Region.
6.6 Additional Organizers

Additional organizers were Help Service Remote Sensing, Czech Centre for Science and Society, WirelessInfo, University of West Bohemia, SAZP, EXIGEN, projects OTN and FOODIE:

HS-RS  
CCSS  
WirelessInfo  
geomatika

Open Transport Net  
FOODIE  
EXIGEN Services

6.7 Supporters

Supporters were Riga Technical University, Latvia Open Data association and Riga municipality:
7 BALTIC OPEN (GEO) DATA HACKATHON

Baltic Open (GEO) Data Hackathon started with the speech form ZPR representative A. Builo-Holme with practical issues and the floor has been given to Karel Charvat, Moderator of the event, who gave the information background for the existing available tools and data.

After potential ideas presentations started - 8 persons presented their ideas - totally 11 ideas. After the team building started and it has formed 8 teams, who divided in University building for coding:

- EcoSystem Services Portal
- 3D model of buildings automatically created from open datasets
- Use of Linked Open Data (LOD) for Educational Purpose
- Delineation of yield potential zones based on satellite remote sensing
- SK INSPIRE Open Land Use Map
- Ideas and data form Open Riga
- IT system for development of national economy in the 21st century
- Open Data real-time road Maps for Autonomous Driving from 3D LIDAR point clouds
In the third day public workshop of the hackathon showed included the presentation about situation in Latvia by Toms Čeļmīlcers from the Ministry of Environmental Protection and Regional Development of the Republic of Latvia, which is responsible for implementing policy in three areas - environment protection, regional development as well as information and communication technologies, opened the public workshop. Toms spoke about the legislative and policy background introducing the right to access public sector information in the form of open data.

![Open data in the EU scale (ePSI Platform scoreboard)](image-url)
Karel Charvat from the Czech Centre for Science and Society gave thanks to the organizers, mainly to Zemgale Planning Region and Riga Technical University, and supporters including Open Riga.

Karel gave thanks also to all the ‘hackathors’, the ones who took the challenge in the hackathon as active participants. Karel then introduced the idea of SDI4Apps, its objectives and potential for Europe. The key part of his presentation was the Open Land Use Map, Smart Points of Interest and Open Transport Map as key data sources used for the hackathon.

After presentations by 8 teams was done:

- Martin Tuchyna - EcoSystem Services Portal
- Pavel Hajek - all 3D model of buildings automatically created from open datasets
- Dmitrij Kožuch - Use of Linked Open Data (LOD) for Educational Purposes
- Karel Charvat Junior - Delineation of yield potential zones based on satellite remote sensing
- Martin Tuchyna - SK INSPIRE Open Land Use Map
- Pavel Hajek - Ideas and data form Open Riga
- Aldis Bulis - IT system for development of national economy in the 21st century
- Rihards Gailums Drivenet Maps - Open Data real-time road Maps for Autonomous Driving from 3D LIDAR point clouds
7.1 Evaluation procedures - Winning Applications

Evaluation of the results were done by the jury members - Kaspar Skalbergs (Baltic Open Solutions Center, Latvia), Anna Builo-Holme (Zemgale Planning Region, Latvia), Inga Bērziņa (Farmers Parliament, Latvia), Sarmīte Barvika (Riga Technical University, Latvia) and Kristaps Ročāns (Vidzeme Planning Region, Latvia)

The first three winning applications were:

1. Pavel Hajek, Jan Macura, František Kolovský - Ideas and Data from Open Riga
2. Pavel Hajek, Jan Macura, Jakub Kočica, Irena Košková, Rinor Shala - 3D Model of Buildings Automatically Created from Open Datasets

Winning application Ideas and data from Open Riga was created by František Kolovský, Pavel Hájek, Dmitrij Kožuch, Agris Šnepsts, Dainis Kreilis. The goals was The analysis of the optimization of public transport infrastructure was made on the level of the individual bus links but also on the level of their segments and individual bus stops. The additional factors (such as land use in the area surrounding the bus stop, the density of people in the area surrounding the bus stop and the road infrastructure was taken into the account). Main motivation was to explore the optimization of the public transport in Riga. Since just bus data are available, the focus was just on the bus links. Public transportation in Riga is highly subsidized: last year municipal authorities + state subsided public transport in Riga (“Rīgas satiksme”) with around 93 mil. €, meanwhile the profit from selling tickets was estimated to be under 10 mil. €. As the outcome of the analysis there would be proposed such measures as replanning the links, changing the link intervals, i.e. something that can make public transport more efficient. Together with this, additional measures were needed to be taken - to propagate use of public transport by the wider circle of people. This might help to avoid traffic jams on the road, improve the environment and also increase the profits of the public transport company. The first step done was to calculate the frequency of the bus connections at the individual bus stops. The second step was to calculate how many people per day are entering bus at the individual bus stops. From the results of these two steps - the week spots can be identified (i.e. spots that have many connections but too little travelers). If these week spots form a cluster on the certain bus route - there can be frequency of the buses at that route changed. Further there can be relation between the density of the residential buildings/industrial buildings in the area adjacent to the bus stop (500 meters buffer zones) examined. Obviously residential areas with higher building densities (here also the densities of the people can be taken into account) require bigger number of bus connections. Areas with high industrial densities typically require high number of bus connections in the morning and in the evening when people go to and from work. On contrary areas with small densities of residential and industrial buildings don’t require such frequent intervals. Further the data about traffic intensities on the road segments (such data was prepared by us before the hackathon) can be taken into the account to plan bus links routes to avoid jammed segments. Used data were:

Riga Open Data portal (https://opendata.riga.lv/)
- bus schedules
- ticket validation data (for one sample working day 08/02/2015)
- bus stops
- bus links

Open Transport Map (http://opentransportmap.info/)
- road segments + traffic densities

Open Land Use Map (http://app.hslayers.org/open_land_use_lv/)
- land use map
During the hackathon it was able to calculate the number of people entering the bus at each of the stations (an issue was that in the provided tables there is no unique identifier for the bus or validator, at which validation of the ticket was made), also the number of bus connections per bus stop per day was calculated.

The second winning application was created by Jan Macura, Pavel Hajek, Jakub Kočica, Irena Koškova and Rinor Shala with the goal To create a 3D city map automatically from source data for 3 areas of interest - different size of such areas and had 3 different approaches to implement => using of different source data (CAD data, Laser-scan data, images for photogrammetry. It was used Area of Gjakove (Kosovo), CAD based model with used data: Data from local providers and own created data, Area of Liberic region (Chech) with used data from Open Land Use, Registry Of Territorial Identification, Addresses And Real Estate (RÚIAN) and data from the local authorities and providers and the Area of Riga region (LV) with used data from Digital Elevation Model over Europe (EU-DEM), Buildings’ Footprints, Data from Eurostat and Ortophoto Image. The created models can be used mainly for: Presentations of models, Using such models as source data for various kinds of 3D analysis: Visibilities; Spatial relationships; Crisis Management, etc. But not for example for the purposes of 3D cadastre - because the models of buildings are to course for such a use. The advantage of using CAD data is in very short time of computing such a 3D model. The computing based on data from laser scanning or from ortophoto images is very time consuming and reaching the limitations of computing capacity of standard PCs.
The third winning application **Delineation of yield potential zones based on satellite remote sensing** was created by Vojtěch Lukas, Karel Charvát jr. with the goal to identify yield potential zones within selected field (plot) - Yield potential zones are areas with same yield level within field and the yield level of zone is expressed as percentage of average yield within individual plot. Main data sources form Latvia were Open Data - USGS ESA Repository of LANDSAT images. Mainly EVI and CFmask and private data about field boundaries from local farmers. The main steps were: Obtaining input data and preprocessing, Computing average EVI for each field, Computing ratio: EVI / Average EVI for each pixel, Aggregation for more years, Resampling data and Classification (5% classes). Main advantages were usable where complete series of yield maps are missing and that application was based on open data (fully or partly for different countries). Main disadvantages were low spatial resolution, many factors can cause various inaccuracies and sometimes lack of usable Landsat scene (cloudy period).
Other applications developed during the hackathon included:

- Martin Tuchyňa, Tomáš Kliment - Ecosystem Services (ESS)
- Dmitrii Kozuch, Irena Košková, Otakar Čerba, Dainis Keilis, Raitis Bērziņš - Use of Linked Open Data for Educational Purposes
- Martin Tuchyňa, Tomáš Kliment, Jakub Kocica, Dmitrii Kozuch - Slovakian Open Land Use
- Richards Gailums, Klāvs Taube, František Kolovský, Kristaps Krūmiņš, Pavel Hajek - Drivenet Maps - Open Data Real-time Road Maps for Autonomous Driving from 3D LIDAR Point Clouds
- Aldis Bulis, Mārtiņš Dudelis - IT system for development of national economy in the 21st century

Best Online Apps

The public were invited to vote for the best app, through an online form. The result, at least in the case of the first three places, is exactly the same as the final decision of the jury that evaluated all 7 applications in Riga during the event. The people’s choice of Best app of the Baltic Open (Geo) Data Hackathon 2016 is: Ideas and Data from Open Riga (Pavel Hajek, Jan Macura, František Kolovský, Dmitrii Kozuch, Agris Snepsts, Danis Kreilis). See the full voting result here.
### ANNEX 1 MEDHACKATHON REGISTERED PARTICIPANTS

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ANNEX 2 REGISTRATION FORM

MEDHACKATHON registration

Name: *
Firstname
Surname: *
Lastname
E-mail address: *
Organisation/department: *
Please type your affiliation including your department (if applicable)
URL of your organisation/department:
Please type in the web address of your organisation or department.
Organisation type: *
Multiple options can be selected.

- [ ] Public authority/body
- [ ] Large private company
- [ ] Small and medium enterprise (SME)
- [ ] Non-governmental organisation (NGO) including association and community
- [ ] Education/research
- [ ] Other:

What's your main specialisation? *
Multiple options can be selected

- [ ] Informatics/IT
- [ ] Geomatics/geoinformatics
- [ ] Urban and spatial planning
- [ ] Environment
- [ ] Web design
- [ ] Geography
- [ ] Transport and logistics
- [ ] Agriculture
- [ ] Data journalism
- [ ] Tourism
- [ ] Education
- [ ] Other:

Tell us something about yourself:
Short bio, your experience with hackathons, developing apps, data, etc.

I would like to attend: *

- ( ) The conference (13/7) and the hackathon (14-15/7)
( ) Only the conference (13/7)
Here you can write details about your participation
Can you attend only certain days? Do you need any help or assistance?

Have you got already an idea that you would like to work on during the hackathon?
If yes, please describe briefly the idea including the functionality of the resulting app, data and tools you plan to use and who is the target audience.

Do you know any open data sources that could be used during the hackathon and that are not listed at http://www.medhackathon.eu
If yes, please list them including their URLs

How did you find out about this event?

[ ] From a colleague/friend
[ ] From social network
[ ] From the SDI4Apps website
[ ] Email
[ ] Other:
Do you want to participate remotely?

( ) No
( ) Yes

Any other comments?

All data above will be published to maximize collaboration between participants and interested parties whatsoever. If you do not agree, please tick the check-box

[ ] I do not agree to publish the above data