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# ENERGIC OD

# European NEtwork for Redistributing Geospatial Information to user Communities - Open Data

## Competition procedure and results: proof of concept result.

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[1] R = Report, P = Prototype, D = Demonstrator, O = Other

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# ENERGIC OD Consortium

National Research Council of Italy (CNR-IIA)
Italy

AED-SICAD Aktiengesellschaft (AED-SICAD)
Germany

Association Francaise pour l'Information Geographique (AFIGEO)
France

Bureau De Recherches Geologiques et Minieres (BRGM)
France

Alkante Sas – Geonet (ALKANTE)
France

Centre National de la Recherche Scientifique (CNRS)
France

Depth France Sas (DEPTH)
France

Verband der GeoInformationswirtschaft Berlin/Brandenburg (GEOkomm)
Germany

Instytut Geodezji i Kartografii (IGIK)
Poland

Luftbild Umwelt Planung GmbH (LUP)
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Politecnico di Milano (POLIMI)
Italy

Gesellschaft für Stadt-und Regionalplanung mbH (SRP)
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Regione del Veneto (VEN)
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Trilateral Research (TRI)
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# Abbreviations and acronyms

| Abbreviation / Acronym | Description |
|---|---|
| API | Application programming interface |
| BIM | Building Information Management |
| CA | Consortium Agreement |
| CAPEX | Capital expenditure |
| CIP | Competitiveness and Innovation Framework Programme |
| EB | Executive Board |
| EC | European Commission |
| ENERGIC OD | European NEtwork for Redistributing Geospatial Information to user Communities - Open Data |
| EOD | ENERGIC-OD |
| EU | European Union |
| GA | General Assembly |
| GI | Geospatial Information |
| GIS | Geographic Information System |
| GrAg | Grant Agreement |
| ICT | Information and Communications Technologies |
| IT | Information Technologies |
| NEF | Negotiation Form Facility |
| NGO | Non-Governmental Organization |
| NPV | Net present value |
| OD | Open data |
| PC | Project Coordinator |
| PO | Project Officer |
| PSI | Public sector information |
| PSP | Policy Support Programme |
| QC | Quality Control |
| ROI | Return on investment |
| R&D | Research and Development |
| SME | Small and medium enterprises |
| DSS | Decision support system |
| USP | Unique selling point |
| VH | Virtual Hub |
| WP | Work Package |
| WPL | Work Package Leader |

## Executive summary

ENERGIC-OD develops a geospatial data brokering infrastructure throughout Europe. The purpose of the project is to promote the access to geospatial data for SMEs (as well as for individual citizens, research institutions, large organizations, authorities, etc.), to promote innovativeness and competitiveness in Europe. The project has already implemented five national VHs (in Italy, France, Germany, Poland, and Spain) and one city level VH (in Berlin). The consortium is currently working on unifying them all to be accessed through a single gateway, so called 'pan-European VH'. The project has also developed ten pilot applications, showing the potential and viability of VHs in market and applied settings.

ENERGIC-OD contest organized in Year 3 of the project, between December 2016 and March 2017, was designed to provide the consortium with proof of concept of VHs functioning. Its purpose was to learn more about the types of applications that users might develop for VHs, together with the accompanying business models (i.e., mode of marketing, revenue streams, etc.). Furthermore, the contest was meant to inform ongoing activities of the consortium, in particular in the space of dissemination (who the key audiences for our marketing efforts are and what channels work best for reaching them) and exploitation (how to structure the licensing arrangements, what the pricing structure for the VHs should be, etc.). The consortium also wanted to see whether the technology is understandable to third parties.

The consortium designed the rules and regulations for the contest, as well as its judging procedures and criteria in Fall 2016. The prizes (cash and consulting sessions) were also determined at that time. An extensive marketing effort was undertaken by the consortium to ensure entries into the contest. All partners have been involved in it; the consortium decided to focus on universities and postgraduate students as the main target demographics. The consortium used a variety of methods: from the use of social media, talks at universities and in conferences, directed phone calls and email campaigns, to newsletter and internet forum presence. Approximately 8000-10000 people have been contacted about the contest through diverse channels. The contest was open between December 2016 and March 2017, and ten teams from various European countries ended up entered. In April 2017 the winners were announced, and the contest concluded in May 2017 with the payment and realization of prizes for the top three contesting teams.

Contesting teams produced diverse applications and different business models. One application focused on property search using a chat-bot interface, another pulled together various data (weather, terrain, pollution) to assist in planning of exercise routes, and other still developed a map-based system of rated experiences of student facilities by fellow users. Revenue models ranged from freemium, to full licensing arrangements. Some business plans would target citizens and their social groups as customers, other focused on business to business markets. One of the key problems experienced by the contestants in relation to their business plans was the discoverability problem – i.e., how to ensure that their application is noticed by potential customers in the thicket of similar applications.

The observations from the contest entries are currently used by the consortium to inform the remaining ENERGIC-OD activities. Dissemination (WP7) and exploitation (WP8) efforts have been enhanced accounting for the lessons from the contest. For the exploitation activities, it is the recommendation of this document not to charge fees for the access to the data brokered by the VHs, and instead to structure the revenue stream for the post-funding phase around licensing of the VH technology to third parties. Also, the establishment of a single pan-European VH will be helpful to marketing and comprehensibility of ENERGIC-OD. The consortium learned which components of the VH technology are most popular among the application developers – and which should be made as accessible as possible. Furthermore, the dissemination activities of ENERGIC-OD should assist application developers in overcoming the discoverability challenge. The dissemination should also focus more on informing the ENERGIC-OD networks that the technology of VHs is available for licensing for those parties, who wish to have their private VH instances.

# Contents

# 1. Introduction

## 1.1 ENERGIC overview

ENERGIC-OD aims to facilitate the use of geospatial information (GI) for diverse stakeholders across Europe. To that end, ENERGIC-OD deploys a set of Virtual Hubs (VH) to provide users with a single point of access to geospatial information provided by new or existing platforms and infrastructures (such as GEOSS, INSPIRE, COPERNICUS, and national spatial data infrastructures). That single point of access takes the form of a web-based application programming interface (API), which is easy to use for an operator with limited programming knowledge. This is meant to greatly facilitate the development of new and multidisciplinary applications based on the full exploitation of (open) GI, hence stimulating innovation and business activities.

On the highest level, the project objectives are to:

i. Develop VHs at different territorial scales (regions, member states, Europe), providing unique and mutually consistent points of access to heterogeneous data sources for both users and machines.
ii. Demonstrate the validity of the concept, design, implementation and deployment of VHs through the development of a set of eleven innovative applications in different domains, as well as though the submissions to the open contest.
iii. Optimize the exploitation of GI and the development of new marketable services based on the technological solution of ENERGIC-OD.

To realize these objectives, users across Europe must be engaged in the project. Communities of users of geospatial information (including citizens, employees of SMEs, large organisations, public organisations, networks, and others) must be aware of the existence of ENERGIC-OD and the new possibilities that it offers. They must be incentivized in the realistic and applicable ways to try out the Virtual Hub solution and to lead the uptake of ENERGIC-OD technological solutions. This will allow the consortium to learn more about the way in which project outputs are being used, what needs do they meet, and what problems persist. More importantly, these communities can then support the further development and influx of new technologies to ENERGIC-OD space (once the European Commission-funded project finishes), advocate for its uses and affordances, as well as ensure that ENERGIC-OD is used in practice – for instance in business and research contexts. There are also many other benefits of engaging communities of users in a project like ENERGIC-OD – for example increased potential for innovation, or knowledge and learning spill-overs that extend beyond the immediate context of the project. The contest organized as part of WP8 was among the main tools to promote the project's visibility with these key communities, as well as to encourage them to interact with the VH technology and business environment in a way that can be observed by the consortium (so that lessons can be learnt for further exploitation of ENERGIC-OD).

The overarching goal of the ENERGIC-OD contest was twofold. First, its purpose was to observe the types of ideas for VHs applications that potential users can come up with, to serve as a proof of concept to the consortium. This information then can guide the exploitation, technical refinement and other activities undertaken by the partners. Second, the contest function was to disseminate the information about ENERGIC-OD with the audiences who are the project's potential users, thus publicising the VHs to potential customers. As such, the contest activities strengthened the outcomes of both the project Dissemination activities (WP7) and Exploitation activities (WP8). The publicity activities reached approximately 8000-10000 people (basing on the estimated numbers of GIS professionals and organizations contacted by each partner), and ten different teams from seven European countries participated in the contest, including representatives from SMEs, research institutions, student entrepreneurs and start-ups.

Contestants have come up with a broad variety of ideas, particularly in the space of application design (less so for the business plan concept). The applications included system for better deployment of BIM

(building information management) in urban spaces, management of forests and keeping track of their growth and health, and an application that assists in finding and informing about tourist spots which other travellers have found most interesting. A more detailed list of all contest submissions is presented in Table 4. The three contest winners (i.e., the teams which finished in the 1st, 2nd and 3rd place) have focused their applications on, respectively: property search, exercise route planning, and student life assistance. Their more detailed descriptions are also presented below. In terms of business plan ideas, majority of entries relied on the dominant model of mobile applications co-deployed with freemium monetization model (where the application is available for free with in-built advertising, or available for a fee without the advertising). The contestants focused on mobile markets such as Apple Store and Google Play (Android Market).

The sections that follow outline the activities undertaken by the ENERGIC-OD consortium on organizing and running the contest. Section 2 reports the details of the contest call and its timeline, including the target audiences for the contest and sequence of events that took place. It also directs the reader to Appendix A, which includes the complete list of rules and regulations which governed the contest. Section 3 introduces the contest procedures, which are then included in this deliverable in full detail in Appendix B. Section 4 reports the marketing activities which have been undertaken by partners, and directs the reader to Appendix C and D which contain details regarding the organizations contacted, events attended, communication to groups and communities, and other measures. Section 5 that follows reports the contest outcomes. The Deliverable concludes with Section 6, which reiterates the main findings of the contest and its lessons both for the consortium and the project.

## 2. The contest call and timeline

This section provides an overview of the contest task, and what kind of submissions were sought from the entrants. This section also introduces the rules and regulations document which also included the templates for submissions (the full document is attached in Appendix A to this deliverable).

## 1.2 Contest call

The purpose of the contest was to demonstrate how to leverage geospatial open data in competitive market, using the infrastructure of one or more Virtual Hubs developed by ENERGIC-OD project. Contest entries should have demonstrated an innovative, technologically viable, business feasible and overall realistic (i.e. informed by market realities) idea for a software application (including its development, marketing and commercialization) that could be implemented in the real world. These application ideas had to use the infrastructure developed by the ENERGIC-OD project, meaning the Virtual Hubs for geospatial open data brokering. Contestants were instructed to prove their understanding of both the technological and business aspects of geospatial open data, as well as should have had a clear understanding of the contributions and affordances of the ENERGIC-OD project.

### 1.2.1 Contest eligibility

The contest was open to all, regardless of professional background or country of origin. This was to maximise the participation in the contest from the relevant ENERGIC-OD audiences. Still, it was guided by a practical focus on certain audiences as dictated by the limited resource that the consortium had to market and promote the contest. Following on a series of discussions with a fellow European Commission-funded project ODINE[3], the consortium decided to focus on attracting entrepreneurial students as the key demographic to participate in the contest. That was because ODINE advised us, that the level of financial prizes that ENERGIC-OD contest had was certainly not sufficient to attract SMEs to participate in it. As

[3] Open Data Incubator Europe. https://opendataincubator.eu/

ODINE specialize in promoting SME engagement and growth, we decided to follow their advice. This profile of students of geographic sciences, computer sciences, as well as business studies was deemed as fully appropriate to the project (Deliverable 8.2) goals. In particular, the students thinking about starting their own business or developing their innovative idea were the target for contest marketing. The consortium targeted renowned and well-reputed universities in their marketing campaign with good record in student employability and with focus on promoting their graduates' entrepreneurial activities[4]. Finally, students (and in particular, postgraduate students) are about to enter the labour market, and should be informed about new initiatives and technologies such as ENERGIC-OD, so they can then introduce it in their workplaces and professional practices.

### 1.2.2 Submission template

To make the task easier for the contestants, as well as to add structure to the contest and ensure the fair and transparent judging process, TRI developed a submission template which was published on the contest website. Adhering by this template was not mandatory, and its role was mainly to ensure the high quality and relevance of contest entries to ENERGIC-OD focus. The template is attached in Appendix A.

### 1.2.3 Prize design

Following on an internal discussion with Project Coordinator and partners, TRI decided to structure the contest prize as consisting of two parts: monetary and consulting. Monetary prizes are more attractive than goods of equal value as prizes, and are also more impactful when communicated in contest marketing. The partners also wanted to make sure that the contest winners receive help from the consortium to bring their ideas closer to the market (i.e., to build on the judges' feedback, and to give the contestants the opportunity to ask questions directly to consortium's experts), thus increasing the exploitation chances of winning applications (and providing the consortium with stronger proof of concept). The partners agreed to offer each of the top three contesting teams a four-hour long consulting session, focusing either on business or technical aspects of an application. The four-hour consulting sessions also had an additional rationale behind them – their role was to offer deeper insight into the applications and business plans developed by the contestants. By discussing the business or software development problems of the contestants, the consortium could probe in greater detail the concerns and priorities of ENERGIC-OD and VH users.

## 1.3 Contest timeline

The contestants were given four months to produce their entries (originally this was planned as three months, however, the contest deadline was extended by one month to boost the number of final submissions). Table 1 below presents the key dates of the contest.

| Date | Contest task or stage |
|---|---|
| September 2016 | Contest preparations start – rules and regulations are drafted. |
| October 2016 | Marketing materials are prepared – social media cards, contest website, |

[4] See for example for University of Manchester the IGNITE fund: http://umip.com/

| | |
|---|---|
| | contest visual identity. |
| **November 2016** | Judging table and criteria are developed. |
| **1st of December 2016** | Contest opens for entries. Contest marketing campaign starts. |
| **February 2017** | Judges are selected, judging criteria are vetted. Marketing strategy is adjusted. |
| **28th of February 2017** | The contest deadline is pushed by one month. |
| **March 2017** | Intensive marketing campaign. Ongoing communication with the contestants. |
| **31st of March 2017** | The contest closes and the entries are counted (10 entries in total). |
| **4th of April 2017** | First judges' meeting (see judging protocol attached in Appendix B for details). |
| **6th of April 2017** | Second judges' meeting (see judging protocol attached in Appendix B for details). |
| **17th of April 2017** | Review of all contest entries is completed. |
| **18th of April 2017** | The winners are announced (website, social media) and informed (email). |
| **April 2017** | Winners provide their bank details to TRI/CNR. Preparations to pay out the prizes, and making arrangements to deliver the consulting sessions to the winners. |

**Table 1. Contest timeline.**

## 3. Development of the contest procedures

The contest procedures relating to the selection of three best entries (i.e., 1st, 2nd and 3rd place) have been

captured in the judging protocol document attached in Appendix B. That document includes information on the selection of judges, as well as development of judging criteria. The criteria have been vetted internally by Trilateral Research Ltd. (the lead partner on WP8 and T8.2), and subsequently by all consortium members in a Project Meeting in Orleans (7-8.03.2017).

All partners have been involved in ensuring the high standard of judging criteria. Furthermore, many of the consortium partners participated in the contest as jury (see Appendix A). Colleagues with academic background were particularly active in the contest, bringing their reviewing experience to bear as judges.

## 1.4 Lessons learned

Basing on ENERGIC-OD experiences, there is several lessons that can be drawn from the way the consortium structured and communicated the contest procedures:

a. The contestants don't read the whole rules and regulations document. Instead, the key points of the rules and regulations must be provided on the main contest website, such as eligibility, deadlines, contest language, submission system, and prizes.
b. Attention must be paid to equal competition across all eligible contestant groups. ENERGIC-OD allowed SMEs and students of all levels to take part in the contest (from undergraduate to PhD-level). The top three places were taken by SME, postgraduates/start-up (Masters level), and again postgraduates (Masters level) teams, respectively. That suggests that more experienced contestants had an advantage over younger contestants. In the future, the scope of the contest call must be more limited and focused on just one group, or very similar groups, to ensure level playing field.
c. Where contest rules and regulations worked well was in the case of two contest entries provided by PhD students. These highly detailed entries on the technical side neglected the business plan development. They scored worse than less technically detailed, but more business and commercialization-focused entries. That demonstrates that the contest procedures and judging system and criteria worked towards achieving the contest objectives, which were focused on the marketing and business implementation of Virtual Hubs and ENERGIC-OD overall.

# 4. Marketing and outreach

The consortium has undertaken a broad range of activities to ensure good participation of various project stakeholders in the contest. The activities were led and coordinated by TRI, but partners from all five project countries (in addition to the UK) contributed and disseminated the information through their national (and in some cases, international) networks. The contest had a multifaceted presence on the Internet (using social media and the official project website, www.energic-od.eu/contest). The partners contacted potential contestants directly (through mailing lists of partners), as well as targeted various gatekeepers and their networks. Two key audiences have been targeted by the consortium: SMEs active in the domains of geospatial information, and students of all levels (undergraduate, postgraduate and doctoral) of the following disciplines: computer science, earth science, and business studies.

The marketing and outreach activities were also critical to the contest's success. The section below explains which approaches worked best for ENERGIC-OD consortium, and why. This section also discusses the lessons for other consortia and projects wishing to organize a contest as part of their activities.

## 1.5 Development of the marketing materials

Project partners (TRI and IGIK) developed a poster informing about the contest, which was also translated with the help of the consortium into all 6 ENERGIC-OD languages (German, Polish, Spanish, French,

Italian and English). That poster was intended to be a comprehensive source of information, directing interested parties to the website of the contest. Its purpose was to be hanged on university/department noticeboards, or to be sent out as a PDF attachment to emails informing about the contest to ENERGIC-OD partners' networks.

To complement the functionality of the poster, more targeted and less-wordy marketing materials also had to be developed to enhance contest's presence in channels such as social media. ENERGIC-OD consortium, by the permission of the Project Officer, enlisted the help of an external professional marketing firm (Soapbox, London-based firm) to develop such materials together with the visual identity of the contest targeted at SMEs and students. The total budget for this was 10,000.00 EUR, and the final cost of the subcontract was 3,924.00 GBP. The firm developed the 'look and feel' of the contest graphics (which was later implemented by IGIK to build the contest part of the ENERGIC-OD website), as well as social media cards targeted at Twitter and Facebook (Figure 1 below). The firm also helped to formulate the key messages (i.e., audience-targeted writing) to be communicated in the social media campaign for the marketing efforts to have maximum impact.

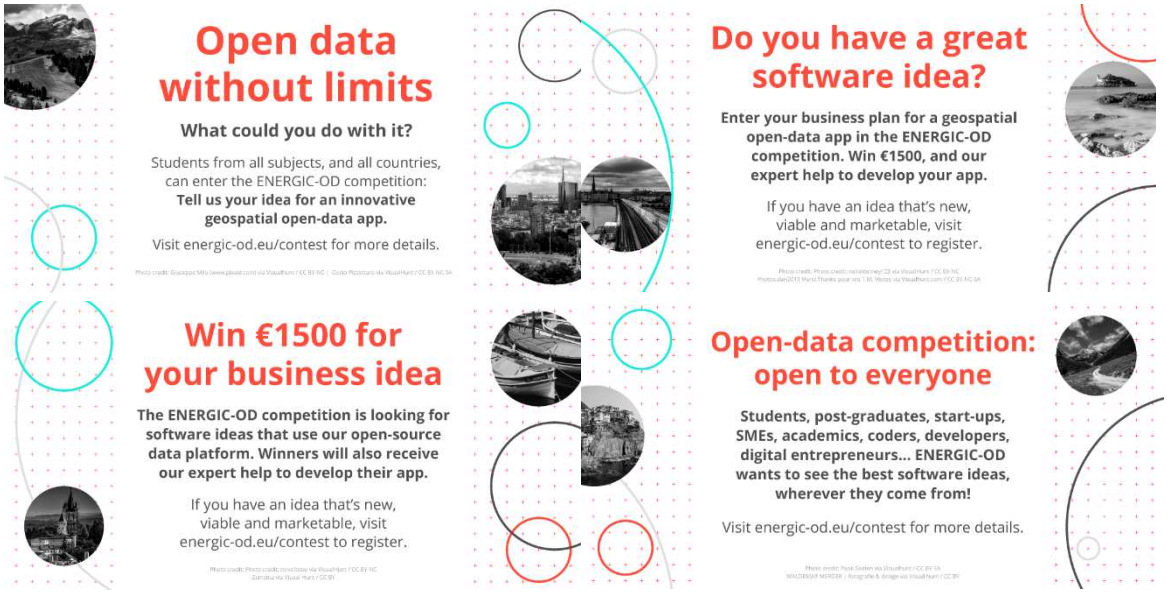


**Figure 1. Social media cards (for Twitter) developed by Soapbox for ENERGIC-OD contest.**

### 1.5.1 Lessons learned

There should be a two-pronged approach to preparing posters and social media cards. Posters must be informative and can contain more wordy explanations of the project and contest, but even then, the key information must be visible and readable from a distance – so that even the passers-by will glean some key information. Social media cards need to be understandable at a glance – with very few words and informative images (such as infographics for instance, or iconic memorable images). These materials can be translated into non-contest languages (in the case of ENERGIC-OD contest, into for example French or German), but it must be stipulated on these posters that all submissions must be in English.

Using a professional marketing company such as Soapbox is not imperative, but if decided against it, a consortium must make sure that they have in-house capability to create targeted and good-looking visual materials. The main problem that the contest organizers were facing was that of discoverability – that is, informing potential contestants that ENERGIC-OD contest exists.

## 1.6 Online presence

Online approach was two pronged, and consisted of social media campaign and the website. For the social media campaign, the three main channels used were Twitter, Facebook and LinkedIn, with the focus on the former. TRI used the ENERGIC-OD official social media accounts, as well as many partners were involved in tweeting, retweeting, liking, sharing and responding from their respective corporate accounts. Social media cards developed in the partnership with Soapbox were used extensively on social media, as well as in other digital communications about the contest (e.g., email).

On Twitter, partners have identified (and started following) over 70 relevant (i.e., active in the GIS space, representing entrepreneurs or relevant research departments, as well as student bodies) users with large following. The consortium would tweet at least three times a week during the peak Twitter hours (around 4-6 pm), using various hashtags (such as #contest, #GIS, #businessplan, #app, #opendata etc.) and user names.

The website for the contest was designed by Soapbox and TRI, and implemented by IGIK. It was a subsection of the official ENERGIC-OD project website (accessible through the main menu on top of the page). Its purpose was to be the ultimate source of information about the contest (all the key documents informing about the contest were available there: rules and regulations, submission template, as well as Virtual Hubs technical information). The website also included the submission form itself, where contestants could upload their entry to the jury at any point of time (after the contest opened on the 1.12.2016 and before it closed on 31.03.2017). The website is still available and accessible at www.energic-od.eu/contest, although the submission form has been removed after the contest closed and replaced with the information about the contest winners.

### 1.6.1 Lessons learned

Facebook was also regularly updated (at least once a week), although it didn't attract much attention from potential contestants (the page never had more than 30 observers or likes). Because of that, partners decided not to waste the resources by purchasing additional advertising options through Facebook platform (i.e., sponsored links, site promotion etc.). The ENERGIC-OD forums didn't receive any new registrations throughout the contest duration. That was despite the efforts by partners to encourage the potential contest participants to register on them and to use them for discussion and latest information (e.g., for the first three contest months the registration on the forum was mandatory, and all contestants had to provide their forum name together with their submission). Interestingly, in the fourth month of the contest, the List of Interest prepared using Google Forms by TRI and which was designed to play a similar function to the forums, received 58 registrations (see below for more details).

The contest's presence on Twitter was successful in Months 3 and 4 of the contest because of engaging in conversation and existing tweet threads. TRI wouldn't only broadcast information about the contest, but instead follow various relevant hashtags (see above) and participate in discussions that surrounded them. It tweeted at people (via public or private messages) voicing opinions, agreeing and disagreeing, at the same time communicating the message about the contest and inviting stakeholders to participate in it.

## 1.7 Consortium activities

Partners in UK, Germany, France, Italy, Poland and Spain engaged in the promotion of contest through their networks. Their activities involved sending emails through their respective mailing lists, attending local events (such as GIS developers' meetups in Berlin), as well as outreach to key stakeholders (e.g., Woman Who Code, Open Data Society, high-profile university professors, etc.). Partners also assisted in translating contest materials into local languages whenever needed. VENETO also reached out to the audiences and contestants of the ENERGIC-OD Appathon 2016 to encourage them to participate in the contest.

All partners contributed to the contest marketing effort. The detailed accounts of their activities are included in Appendix D. Here we will deep dive into just one example of these activities. Table 2 below presents the profile of BRGM's and AFIGEO's help in the contest, demonstrating the way in which this and other partners contributed to the contest activities.

## BRGM's and AFIGEO's activities

***Organisation:***

Sharing experiences learned from hackathons conducted in France: Info on HUB'EAU hackathon (June1st,2016 in Paris) about information, communication tools, registration through EventBrite, videos…. Suggesting websites, possible networks for advertising (e.g. Imagine with Orange platform…).

***Communication and advertising:***

Networks and user communities

Sending information on the contest to the list of user communities previously identified by BRGM (about 650 contacts), using the letter "Invitation to join ENERGIC-OD-FR "provided by TRI. This communication was also relayed by AFIGEO, through their usual networks, as previously agreed with the French ENOD community (who contributed their own networks to this AFIGEO mailing list). AFIGEO was addressing students and the academic world through their "Training and research community", SME's and spatial information actors, Open Data networks as well as developers, geographers and mapmakers…

On February 24th, 2017, a week before the contest initial deadline (28/02/2017), AFIGEO forwarded a reminder in a "communiqué" to their network (1575 users: AFIGEO newsletter addressees, journalists, geo-companies, BRGM and other French participants contact base) in the name of the French ENOD participants. When the contest was extended by a month, BRGM reactivated invitations to participates to various French Universities, and continuously advertised on Twitter and network.

In events

BRGM also advertised the project and orally informed on the Contest at Littoral 2016 and 9th Rencontres Dynamiques Régionales during the session dedicated to ENOD project and addressed to a large spatial information audience. The Rencontres Décryptageo (Jan 2017) with a specific session on Energic OD led by AFIGEO & Depth were also an opportunity to speak of the contest.

In social media and specific website and forums

BRGM advertising campaign for the EOD contest was led using various communication means Twitter account: @MojonLumier relayed information all through the contest campaign and directing people to the contest website. Posting, tweeting and retweeting many messages, using the social media cards provided , and pinning them on top of own page. Posts were targeting and addressing students and SMEs as well as academic and scientific world. Various contests messages and reminders were also addressed to specific accounts (Universities, start-ups and SME's). Information and communications were also relayed on ENERGIC-OD page on BRGM website, as well as retweets through BRGM twitter account (@BRGM_fr). Other channels were used such as GéoRezo web portal (https://georezo.net), a popular French web portal addressing the Geomatics and GIS networks and communities.

**Table 2. Vignette demonstrating BRGM and AFIGEO's activities on ENERGIC-OD contest.**

Furthermore, the news about the contest were disseminated through a variety of events in partner countries. For that and more details of partners' contest marketing activities can be found in Appendix D.

### 1.7.1 Lessons learned

It appears that disseminating information about the contest through physical gatherings and events, such as lectures, conferences or trade shows, wasn't the most successful method of attracting contestants. Compared to the very high resource and time expenditure associated with attending such events, we would not recommend focusing on this method of attractive attention to a contest. More targeted approach focusing on people who are interested in contests overall using social media or online forums is more efficient. People who participate in contest seem to be akin to lead users described by von Hippel (2005)[5]. That means, that they have an interest in not just the subject matter (i.e., geospatial information, IT, and business plans) but also who enjoy participating in contests and don't mind the reward uncertainty, time and effort investment required to do so. The communication effort should be focused on those individuals and their communities (for example discussion groups at universities, Special Interest Groups in business circles, etc.).

## 1.8 Brokering access with gatekeepers

TRI, with the help of other partners (IGIK in Poland, BRGM and AFIGEO in France, UNIZAR in Spain, POLIMI in Italy, AED-SICAD in Germany) informed the relevant university departments about the ENERGIC-OD contest and encouraged them (by providing ready-for-dissemination materials) to pass that information on to the students. In the UK and ROI, where TRI conducted this activity, it took the following form:

a. Relevant universities and schools/departments within them would be identified, including contact information (phone number).
b. TRI would call the offices of these departments (sometimes administrators, and sometimes deans or other high-profile academic staff) and pitch the contest to them.
c. Following on a positive conversation in which university staff would express their interest in the contest, TRI would send the email with all the contest information, ready to be forwarded to students.

Such two-pronged approach, albeit more labour intensive and time consuming, ensured good response rate among universities. Table 3 below lists the universities and department types successfully contacted by TRI in the UK and Republic of Ireland (i.e., those universities passed the information about the contest on to the students). Please note, that this is not a complete list for the ENERGIC-OD consortium, as many other universities have been contacted by other partners throughout Europe. We are not including them all here due to space considerations.

| University name | Computer science school | Earth sciences school | Business school |
|---|---|---|---|
| **Republic of Ireland** | | | |

[5] Von Hippel, E., (2005). Democratizing Innovation. MIT Press.

| | | | |
|---|---|---|---|
| **Trinity College Dublin** | | Yes | Yes |
| **University College Dublin** | | Yes | Yes |
| **University of Limerick** | | | Yes |
| **University College Cork** | | | Yes |
| **NUI Galway** | | Yes | |
| **United Kingdom** | | | |
| **University of Oxford** | | Yes | |
| **University of Manchester** | Yes | Yes | Yes |
| **University College London** | Yes | Yes | Yes |
| **University of Edinburgh** | Yes | Yes | Yes |
| **University of Glasgow** | | Yes | Yes |
| **University of Leeds** | Yes | Yes | Yes |
| **University of Liverpool** | Yes | Yes | |
| **University of Birmingham** | Yes | Yes | |
| **University of Bristol** | | Yes | |

| | | | |
|---|---|---|---|
| **University of Sussex** | | Yes | |
| **Newcastle University** | Yes | | Yes |
| **University of Dundee** | Yes | | Yes |
| **University of Aberdeen** | Yes | | Yes |

**Table 3. List of departments and universities contacted by TRI in the UK and ROI. 'Yes' means that a department was successfully contacted and that they disseminated the contest information through their network.**

TRI also gave one university lecture (at Adam Mickiewicz University in Poznan, Poland, at the department of earth sciences), which was well-attended by students and young entrepreneurs (approximately 70 students were in attendance). TRI, with the assistance from IGIK, also met a few high-profile professors in Poland and enlisted their help to disseminate the information about the contest through their networks.

Apart from the above approach to contacting universities in the UK and Ireland, other partners have also contributed to disseminating the information about the contest through their networks in various countries. The Table 4 below lists the focus of partners in various countries involved in the contest marketing. Further details of partners' activities are available in Appendix D.

| Partner | Country | Universities | SMEs |
|---|---|---|---|
| **TRI** | UK | Various universities in the UK and Ireland contacted, lectures and talks in the UK and Poland | Social media focus (Twitter) |
| **UNIZAR** | Spain | University-wide, emails to other universities, other universities on social media | Mailing list use |
| **POLIMI** | Italy | Emails to students, to other universities | |
| **VENETO** | Italy | Emails to students and Appathon contacts | |
| **GEOkomm** | Germany | Event with students and teachers, emails to | Presentations to SMEs, use of website and social |

| | | | |
|---|---|---|---|
| | | researchers and institutes | media, promotion in company newsletter |
| **AED-Sicad** | Germany | Emails to Munich universities, promotion with former interns | Articles on the webpage, promotion of contest at events |
| **AFIGEO** | France | Promotion in meetings and events, and mailing addressed to schools and universities teaching geographic information such as ESGT, ENSG, Agro Paris Tech IUT de Carcassonnes and Master SILAT | Newsletter, articles on the website, email campaigns, emails to managers in geomatics |
| **Datakode** | France | Presentation at various events | Presentation at various events |
| **Alkante** | France | Talks to students | Emails to former colleagues, social media use |
| **BRGM** | France | Emails to students and academies, use of social media, promotion in events | Emails to SMEs and journalists, use of social media, promotion in events |
| **IGIK** | Poland | Emails to universities, emails to professors and lecturers, talks in Poland | Information on various online communities and portals. |
| **LUP** | Germany | Promotion at conferences, meetings, and events | Promotion at conferences, meetings, and events |

**Table 4. Table summarizing the marketing effort of partners in various countries for two main audiences: university students and SMEs.**

Contestants in countries not represented on the consortium have also been contacted, although possibly to lesser extent than audiences in partner countries. This is due to language barriers and the limitations of already existing partners' networks. The contest received entries from Portugal and Belgium for instance, which demonstrate the cross-border reach of the consortium's efforts.

### 1.8.1 Lessons learned

As mentioned above, the approach to informing universities and students about the contest that worked was making phone calls informing about the contest, and then sending the emails with further information. That follow-up email would be ready for distribution directly to students, with no changes to its body needed. This worked for ENERGIC-OD and is a recommended for other consortia or organizations involved in running similar initiatives.

## 1.9 Strategy change

After the first three months of the contest duration (on the original deadline date, i.e. 28.02.2017), only three entries have been submitted to the organizers. It was clear that the contest marketing efforts were not bringing any effects. That caused the consortium to extend the contest deadline by one month, coupled with a more intensified and targeted at universities marketing strategy. Elements such as the List of Interest, direct phone calls to university departments, and more interactive use of social media (i.e., Twitter conversations instead of broadcasting) were added to ENERGIC-OD's activities in that fourth month. A more personal approach to recruiting potential contestants was adopted – universities would be researched to identify specific persons responsible for student activities. Those people would be contacted directly. All potential contestants were encouraged to register their email on the List of Interest, so that the consortium would understand the effects of the contest marketing efforts, and to maintain a good level of interest among the contest audience. It brought the expected effect – 7 new submissions were made in that extra month, bringing the contest total to 10 participating teams.

## 1.10 List of Interest

In the last, fourth month of the contest duration (March 2017), TRI developed and curated a community of contestants. TRI did that to track the effectiveness of the contest marketing methods, as well as to encourage contestants to participate in the contest. All interested parties were encouraged to register their interest in the contest through a 'List of Interest'. It was a simple Google Form requesting name, email address, occupation and institutional affiliation of potential contestants. 58 people (i.e., representatives of teams or contestants who were considering working on their entries individually) registered on the List. To develop a sense of contest community and to encourage new interested parties to register, all persons on the list would receive a bi-weekly email with simple hints and tips on how to better prepare a winning contest entry. The high number of entries on that list was achieved through targeted phone calls followed by emails to gatekeepers of key contest stakeholder communities (such as university secretariats or school administrators). The stakeholders were encouraged to register on the list by the promise of regular 'hints and tips' updates sent out to email addresses registered there, that would contain information on how to prepare a better contest entry. Such emails were sent throughout March, on average twice a week. The 'hints and tips' emails did not include any information that could be regarded detrimental to fair competition among all contestants (including the ones not on the List of Interest) – instead, the emails focused on the best practice in formatting, referencing, editing, and similar aspects of preparing formal (well-presented) documents. Table 5 and Figure 2 below presents selected information about persons (including types of organizations, countries) who registered their interest in the contest.

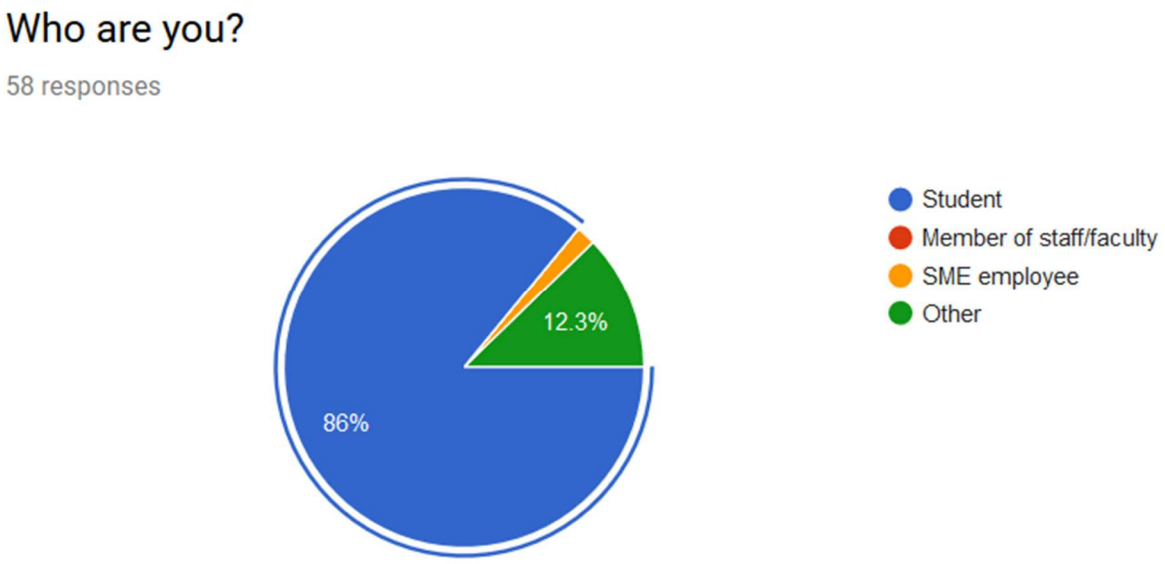


**Figure 2. Pie chart showing the occupation of people registered on the List of Interest (self-declared via Google Forms). Numbers: 49 Student, 1 SME employee, 7 Other.**

| Institution name | Number of people registered | Country |
|---|---|---|
| University of Aberdeen | 4 | UK |
| University College Cork | 3 | Ireland |
| University of Barcelona | 4 | Spain |
| University of Dundee | 2 | UK |
| University of Edinburgh | 5 | UK |
| University of Liverpool | 3 | UK |
| Universitat de Lleida | 3 | Spain |
| Technical University of Madrid | 2 | Spain |
| University of Salzburg | 1 | Austria |
| Warsaw University of Technology | 1 | Poland |

| | | |
|---|---|---|
| **University of Silesia** | 1 | Poland |
| **Trinity College Dublin** | 2 | Ireland |

**Table 5. Table showing the type of organization, number of people, and country of origin of people registered on the List of Interest. Only selected data is shown.**

### 1.10.1 Lessons learned

The goal of the List of Interest was to build a community of contestants, following on the main points outlined in D8.1 (the works of Burger-Helmchen and Cohendet, 2011[6]; as well as von Hippel, 2005). The List of Interest was an important tool in coercing contestants to participate, as well as in reminding them of the contest and its deadlines and requirements. Only one person requested to be removed from the List of Interest. The List also allowed to track the effectiveness of outreach and marketing methods countries as targeted by the consortium in response to specific activities. It allowed to adjust the level of effort (i.e., granting the consortium an understanding whether more effort is still required in a country, or which country is lagging, etc.).

Figure 1 clearly demonstrates that the most people interested in the contest were students. This is the direct result of the consortium's marketing efforts and the focus on entrepreneurial students and universities supporting entrepreneurship. The rationale for that decision has been outlined in Section 2 'Contest eligibility'.

Dominant nationalities (top three) on the List of Interest were: UK, Spain, and Ireland. That is likely linked to the higher effectiveness of outreach and marketing effort in these countries – the partners active in those countries might have spent more time on marketing the contest than in others. The lower language barriers (especially in the case of UK and Ireland) to participate in the contest might also be a factor – it was arguably easier for contestants from Anglo-Saxon countries to produce entries.

What is also interesting is the low conversion rate from List of Interest to actual contest entries. There were 58 people registered on the List, and only 10 entries were made at the contest closing date (ca. 17.2%). The consortium was not aware of that conversation rate at the time of the contest and expected that rate to be higher. Consequently, it is worthwhile to note the actual rate (it may differ for other instances) for organizations planning a similar approach in the future.

## 5. Contest outcomes

There were ten entries in total into the ENERGIC-OD contest. The contest was more attractive to entrepreneurial students thinking of starting their own businesses, but some participation from SMEs was also present (lower interest from the SMEs might have been due to modest monetary incentives associated with participation, as suggested by ODINE, as well as linked to the consortium's better links to academic environments):

- 3 SMEs (Puntofisso Limited, Gavia Stellata and GeoDomaines),
- 2 teams of PhD researchers (CLO-OPRiZ and IDLab),
- 5 teams of undergraduate and graduate students (Freshman, RouteRunner, TourK, ITAP and MS BIM-DATA).

[6] Burger-Helmchen, T., and Cohendet, P., (2011). User communities and social software in the video game industry. Long Range Planning, Vol. 44, pp. 317-343.

The contest was universally subscribed to by stakeholders throughout the EU, which is reflected in the nations represented in the contest. They were: UK, France, Poland, Portugal, Spain, Belgium and Italy. The most contestants were from the UK (4 teams), with all other nations represented by one entry. Table 6 below lists the details of the contest entries.

| Contest entry (team name) | Short description |
|---|---|
| **Freshman** | Application proposing a range of location-enabled services assisting students who are just starting university to shop, study, relax, find accommodation and related activities, based on proximity and other users' reviews. |
| **RouteRunner** | Application assisting in plotting run routes prior to commencing the workout. Application utilizes more data types (such as air pollution, weather, etc.) than just simple map-based route planning. |
| **Puntofisso Limited** | Application RUFUS is a property hunting chatbot. It allows users to search for properties to buy or rent, and presents them relevant geospatial statistics. Using cutting-edge AI technology, it engages with the user by means of a conversational interface. |
| **TourK** | Application using geospatial data guiding users to various landmarks and providing them with integrated information about them, as well as other visitors' reviews of their experience related to these landmarks. |
| **GeoDomaines** | Geo-Domaines is a mapping application designed for forest owners and managers. The application provides the user with the spatial coordinates of a variety of measurements from other data sources, thus guiding the user to the measurement's exact location. |
| **IDLab** | A programmable web interface which provides users with a suite of data and tools. The application offers an integrated service where anyone can load data and apply operations, thus further simplifying the use of Virtual Hubs. |
| **CLO-OPRiZ** | "Copernicus Land-cOver crOwdsourcing Platform for Riparian Zones-based mapping (CLO-OPRiZ)" will be based on ENERGIC OD Virtual Hubs and their data brokering capacity, and considering advanced big spatial data technologies, Data Mining (Deep Learning for Remote Sensing) and Extracting Word Embeddings from Tweets to Identify Groups of Interest to monitor and delineate actual and potential riparian (river) zones. |
| **Gavia Stellata** | Quicka is a decision support system (DSS) for exploratory environmental impact assessment on any construction project plan. |

| | |
|---|---|
| | Functionalities of the DSS allow users to identify species of fauna and flora affected by potential construction project scenarios. |
| **ITAP** | Integrated Tourism Analysis Platform (ITAP) will test the applicability of using mobile data for tourism analysis, their linkage with touristic venues and events by correlating self-reported, social media and physiological data with the geotagged city information related to environmental aspects, such as crowding, human movement, noise, light, pollution. |
| **MS BIM DATA** | This application targets the offices of engineering, urban planners, local authorities, and all entities managing public and private spaces. This app would provide a web environment where their databases would be easily accessible secure and up-to-date. And thus, allow to have a unique platform on their own data and thus to facilitate the exchange of their data with third parties. |

**Table 6. Summary of all application ideas submitted to ENERGIC-OD contest.**

### 1.10.2 Analysis of VH use by the contestants

The component of VH technology most widely tapped into by the contestants was the GI Suite brokering framework (developed by CNR). The contestants understood the main functionality of ENERGIC-OD and sought to realize their key value propositions basing on it. Their applications were using the VHs primarily to access various types of geospatial data, and then have their applications present that mashed data to the end user. The key functionality of these applications was focusing on facilitation of data access and its comprehensive presentation to a layperson.

Many applications also involved the use of crowdsourcing component of the VHs (component developed by BRGM allowing for end users to upload data to the VH) – for example TourK, CLO-OPRiZ, Freshman, and IDLab. The contestants wanted the end users of their applications to be able to upload new data to the VHs to enhance the application experience and accuracy of the information provided by it. For example, the users would be able to articulate their opinions about particular tourist spots in TourK, or would see which shops and accommodation are most popular with other users in Freshman.

Some applications (e.g., GeoDomaines, ITAP) integrated the web crawler component (i.e., the component developed by GeoKomm/SRP allowing the VH to discover and broker new data sources) of the VH in their design. They would have the capacity to identify and add new databases and data sources to be brokered by the VHs. Moreover, these (and some other) applications would also require adding new data sets to the VHs and would facilitate that process.

None of the applications made use of the sensor platform or the noise capture system of the VHs. This was expected – for the former, the sensor platform requires access to the network of sensors, which is difficult for start-ups. Such sensor network access must be either negotiated with authorities or agencies (such as weather stations, energy operators, etc.), or requires large capital investment in hardware. The noise capture system was developed for the specific needs of an ENERGIC-OD application (ONO-MaP), and as such it isn't expected to be widely used by other developers.

The above observations underscore the importance of the maintaining and updating of the three key components of the VH technology: the GI Suite, web crawler, and crowdsourcing component. These three have been most attractive to the application developers in the contest. The exploitation plan presented in

the final version of Deliverable 8.3 will be guided by that observation. Naturally, this is not to mean that the other two components of the VH technology (sensor platform and noise capture system) will be neglected – they will also continue to be developed and maintained, as there may be better-funded or connected organizations wishing to use them. The above observations will also have consequences for the marketing of VH and further dissemination of the information about the project, also during the period between October 2017 and December 2020.

Apart from the use of different VH components, the applications developed in the contest applied VH capabilities in a variety of market contexts. For most of cases that application was through a map-based interface. Different data from various sources would be displayed on an interactive and visually attractive map with a friendly user interface. Moreover, two applications used the VH technology to underpin decision support systems (DSS): Gavia Stellata and ITAP (as well as, to some extent, GeoDomaines). One application demonstrates the usefulness of VH technology for building information management (BIM) applications (MS BIM DATA). These two latter applications of VH technology have not been included in the project applications so far (i.e., none of the applications developed by partners taps into that form of software). It demonstrates the potential of VH solution in these novel contexts and serves as a proof of concept and pilot of their application in them. This information will be used to guide the ENERGIC-OD further marketing and exploitation activities.

### 1.10.3 Prize release

Winning entries were characterized by good understanding of the Virtual Hubs and their technological potential. They also included detailed business plans, which were clearly presented and included all key information. The contesting teams finished in following places:

1. Puntofisso Limited (UK),
2. RouteRunner (PL),
3. Freshman (UK),
4. TourK (UK),
5. GeoDomaines (BE),
6. IDLab (UK),
7. CLO-OPRiZ (ES),
8. Gavia Stellata (IT),
9. ITAP (PT),
10. MS BIM DATA (FR).

All cash prizes were paid by TRI by a direct bank transfer into the accounts nominated by the three winning contestant teams. All of them have subsequently confirmed in writing by email that they received the prize monies. All members of the winning teams were also issued with certificates confirming their achievement.

TRI, with the help from CNR, organized a series of consulting sessions with winning teams. Each team had 4 hours of partners' time in their chosen field. The consulting sessions were divided into business and technical sessions. The contestants were informed that all consulting sessions must take place in May 2017, and after that all unused hours expire and no more consulting sessions can be held. RouteRunner and Freshman both elected to have their consulting sessions (Freshman: 2 hours of business and 2 hours of technical consulting; RouteRunner: 2 hours of business consulting only). Puntofisso Limited didn't request any consulting sessions, despite reminders of the prize expiration date being sent. The sessions focused on answering the teams' questions and mapping actions that they can take to bring their ideas to the market (including their technical realization using the Virtual Hubs).

All winning contestants were also issued with official certificates confirming their achievement. The certificates included information about the team composition, ENERGIC-OD project, contest call, as well as the prize won. The certificates were distributed to the winners electronically (vie email) in May 2017.

### 1.10.4 Lessons learned

The applications widely used three of the five components comprising the VHs. These components have been designed to be modular – i.e., it is up to the VH user which of the components their application uses, as each of the VH modules is independent of others. They can be deployed in any configuration – apart or together. The owners of the IP associated with these most popular VH modules – GI Suite brokering framework (CNR), web crawler (SRP/GeoKomm), and crowdsourcing component (BRGM) must consider the licensing terms and agreements that will accompany the commercialization of the VHs and the terms on which their technology can be used. Furthermore, these components might also become most attractive to stakeholders wishing to license the VH technology itself and to have it deployed as their own VH (for instance a private VH if it's to broker sensitive, non-public data). These licensing terms and mutual warranties and obligations will be discussed in a dedicated project meeting and included in the final version of Deliverable 8.3.

The marketing of VH solution should focus on the capabilities of VH stemming from the three components as discussed above. The message of ENERGIC-OD should focus on the software architecture advantages of GI Suite, web crawler and crowdsourcing component. Furthermore, that message will be targeted not just at businesses in the GIS space, but also at companies developing decision support systems (DSS) and building information management (BIM) software. That significantly expands the target group of businesses for ENERGIC-OD, and offers new opportunities for the project exploitation.

For the VH pricing strategy, the current plans of the consortium have been validated. The grace period of 6 months without any charges for the use of VH should lower the barriers of entry and help businesses to establish themselves and their services as using ENERGIC-OD. Still, to attract even more SMEs to the ENERGIC-OD space, it would be best to make the use of VH completely free of charge. The VH host organizations would cover the operating cost of the VHs (or, if the pan-European VH is established as currently planned, the host of that single VH could cover the operating costs of that VH). This is because the organizations interested in ENERGIC-OD might likely be small enterprises and start-ups, for which even the smallest cost can act as a barrier to adoption of a technology. Moreover, it is a powerful message to be used in marketing when informing software developers that VHs are free to use. VHs could be monetized instead as a software to be licensed to third parties who wish to establish their own private VHs. These third parties would have to agree on the licensing terms with the owners of the VH components to be involved.

Similar contests to ENERGIC-OD might consider having more contest languages. For ENERGIC-OD it was possible as the jury members speak various languages, but was decided against due to the objectivity concerns. We wanted all judges to be able to judge every entry as to eliminate the threat of biases and conflicts of interests. Using various languages would have created certain scope for error (i.e., the work of all jury members couldn't be checked by other jury members) and it would require more coordination – to ensure the congruity and consistency across the scores assigned by the judges.

## 6. Conclusions

The contest demonstrates that the proof of concept for ENERGIC-OD has been achieved. Virtual Hubs can be successfully taken up by the marketplace by a diverse set of actors (SMEs, start-ups, entrepreneurs, students, researchers) and new applications can be developed using ENERGIC-OD infrastructure. The VH interface is comprehensible and flexible, and is a powerful solution allowing for a broad variety of applications to be developed, to serve different markets. New insights pertaining to the dissemination, marketing, licensing and pricing strategy for the VHs have also been unearthed – and will be used to guide WP7 and WP8 efforts of the consortium (see below for more details).

Analysing the type of entries to the contest, we draw the following conclusions pertaining to the involvement of user communities:

- As expected, all applications show heavy reliance on open data brokering capability of VHs. Winning applications were best at capitalizing on the VHs' capacity for bringing diverse datasets together. That feature of the VHs is also their key value proposition and unique selling point. The consortium must take special care when determining the pricing structure for VHs as a service (i.e., during finalizing of Deliverable 8.3), as setting these prices too high might serve as a deterrent to large groups of potential stakeholders. It would be the recommendation of this Deliverable to keep the VHs data brokering capability entirely free of charge to all users, and to seek revenue streams elsewhere within ENERGIC-OD.
- One attractive area for VH development is combining broader heterogeneity of data using VHs – not just GI with GI data, but also GI with other types of data (as we see in the example of Puntofisso Limited or GeoDomaines). That further expands the scope of industries and contexts in which VHs can be used, and allows for more innovative applications to be developed as ENERGIC-OD's aftermath. This is also linked to the specialized markets for ENERGIC-OD, such as decision support system and building information management sectors. The consortium and VH managers should be open to brokering data pertaining to these applications to enable diversification of ENERGIC-OD into domains neighbouring GIS.
- Business models presented in the contest do not focus on data generation or acquisition – instead, the challenges of discoverability and monetization are more important problems to the developers. Discoverability problem is related to the sheer number of applications offering a very similar service – and very often the application that becomes most downloaded (and most commercially successful) is not necessarily the one which has the best technology or most comprehensive service. Instead, applications which have good marketing and have high visibility to potential customers are the ones with the advantage. Monetization pertains to the strategy of extracting revenues from customers or from third parties – e.g., from advertisers or sponsors. ENERGIC-OD and VHs should allow the maximum degree of flexibility in that space and not limit the potential monetization models through needlessly strict licensing terms.
- Potential developers of applications using VH technology must trust the reliability of ENERGIC-OD as a data-brokering service provider. Developers must be able to focus on the problems of discoverability and monetization to focus their resources where they can make most difference. That shows their trust in ENERGIC-OD as a platform will likely be linked to their willingness to pay low fees for the use of VHs (if that's the revenue strategy which will become ultimately adopted by the consortium).
- Ensuring sustainability, continuity and reliability of VHs should be a priority to ENERGIC-OD consortium. The trust of developers in VHs functionality will attract (or deter, if it's not there) actors to develop enterprises based on that technology. The developers of applications using VHs will likely quickly develop a community of users (united by the practicalities of the VH technology exploitation). In such settings, positive or negative word of mouth has a very pronounced effect and the partners must ensure that it is positive and leads to increased adoption of VH technology in the marketplace[7].
- International dimension of VHs important, as many applications submitted into the contest use cross border data. Furthermore, it was of key importance to their business models to be able to expand to other European countries (apart from their country of origin). This aspect of the consortium exploitation activities must be continued, together with promoting the pan-European VH currently in development (as of M31). Such a single European gateway to the VHs will also simplify the marketing message, as well as will facilitate the decision regarding the allocation of responsibilities within the consortium for the post-funding phase (October 2017 to December 2020).
- To fully capitalize on the VHs' market potential, emphasis must be placed on explaining the technical aspects of VHs to potential users. The consortium during the final phases of the project, as well as for

[7] Gebauer, J., Füller, J., Pezzei, R., (2013). The dark and the bright side of co-creation: Triggers of member behaviour in online innovation communities. Journal of Business Research, Vol. 66, pp. 1516-1527.

the two years after its conclusion, should make sure that the affordances of VHs are explained as part of dissemination and exploitation actions. The consortium must make use and further develop the technical guides for VH users, make the code and interfaces of the VHs easy to use and user-friendly, as well as demonstrate the VH solution in trade shows (such as GEO Business 2017), conferences and workshops.

- The consortium must reach very large numbers of potential software developers for VHs to attract sufficient attention to that technology. Judging from the numbers of people contacted in the course of ENERGIC-OD contest and the low response rate (and even lower participation in the contest), more effort is required from the consortium on the dissemination activities.

One of the main contest outcomes was intensive dissemination of the information about ENERGIC-OD project to various stakeholder groups, with emphasis on students in computing, earth sciences and business studies, as well as university researchers and SMEs/entrepreneurs. Because of the contest marketing actions described above, this task has also produced positive effects for WP7 (Dissemination) and for all partners, thus adding significant value outside of WP8. Contest marketing aimed to reach as many people as possible using social media and direct contacting of gatekeepers in important target stakeholder communities. IGIK (the partner leading the dissemination WP7) has been provided with the full lists and information of the stakeholders who have been informed about ENERGIC-OD during the contest.

In the space of WP8, the partners have learned about new markets in which ENERGIC-OD may be used (i.e., the development of decision support systems and building information management). The consortium also observed which components of the VH technology are most commonly used by the market – GI Suite, web crawler, and crowdsourcing component. The contest also yielded insights into the pricing model of ENERGIC-OD – with the realization that the data brokering function of the pan-European VH should be free of charge permanently to all, and the income should be solely generated from the licensing of VH components for users who wish to have private VHs.

## Appendix A – Rules and Regulations document

This document was published on the ENERGIC-OD contest website on 29.11.2016 and was the main source of information about the eligibility and winning criteria of the contest.

Rules and regulations – version 27.02.2017

## Contest target audience

Contest is primarily targeted at the residents and citizens of the European Union and the EEA (European Economic Area), although participants from other parts of the world are also eligible to participate. Contest is open to everyone.

The contest is particularly targeted at:

- students, i.e. young people in education establishments of at least 18 years of age and registered for a course. Students in disciplines such as geological sciences, IT, business studies, and industrial design should be particularly interested in the contest – although the contest is open to students of all disciplines.
- start-ups and SMEs in the fields of geospatial information (GI) and software development.
- members of communities of interest related to GI, geology, cartography, software development, open data, outdoor hobbies, and others.

## Contestant registration and eligibility

1. The contest is open to all participating teams which register via the registration form available on the contest website.
2. Only one contest registration per team is required.
3. There is no age or occupational limitation for the contestants, although the contest is targeted in particular at students and young people.
4. Contest is open to all disciplines and levels of experience, to people of all nationalities.
5. Contestants must be at least 18 years of age to participate.
6. The language of the contest is English, and all submissions must be made in English only. All communications from contest organizers shall be delivered in English only.
7. Contestants are encouraged to form teams of 2-4 people, ideally composed of members with different discipline backgrounds (for instance software engineering, business development, graphic design).
8. Contestants who decide to participate individually (not as a member of a team) can also take part – although no preferential treatment will be given to them, and their submission will be held to the same standard as the ones made by teams with few members.
9. Contestants are required to pick a name for their team (or for themselves, if working individually). Contest submission should be signed with the name of the team (not the names of the team members).
10. A contestant can only participate in one contest submission. Multiple submissions from a contestant are not allowed (i.e., a contestant can't be a member of multiple teams).
11. By registering in this contest, contestants agree to all the terms described in this document, as well as with the judging criteria.

## Nature of submission

1. The contest shall be open starting from 1st of December 2016 (opening at 10 am), and will close on 31st of March 2017 (closing at 23:59).

2. New entries and new team registrations are allowed at any point during that time. Contestants can submit their entries at any point during that period, which will in no way affect the judging and review of their submission.
3. The submission should consist of two main elements: Virtual Hub application mock-up and the business plan for that application. Incomplete submissions will not be considered and will be automatically disqualified.
4. Business plan should have a cover page, listing the names, contact numbers and email addresses of the team members.
5. The organizers recommend that the minimal person-hour effort in preparing the contest submission is 20 person-hours.
6. Contestants are required to follow the business plan and application mock-up guidelines provided by the contest organizers.
7. Only one entry per team is required. Only the first submission counts. Any further entries will be discarded.
8. Virtual Hub application mock-up is a visual representation of the main functionality and the key features of the application that could be developed for a VH. The functioning of the application and how it could be developed in practice (what development approaches, length of time needed, programming language, platforms and middleware used, etc.) can be described in detail. The mock-up should be realistic and represent a feasible and viable development effort within the scope and resources outlined in the business plan.
9. Contestants may use any popular software or electronic tool to prepare the mock-up of the app, although it is strongly recommended to use a widely-available program (such as Photoshop, PowerPoint, or similar).
10. Business plan will be a description of the bringing of the proposed application to the market – meaning the resources and key processes and timetable needed for its development and marketing. Organizational structure, financing and projected revenue streams (contestants are encouraged to present a simple cash flow, or net present value calculation in their business plan), as well as ideas for branding, potential markets and customers, as well as regions of operations are all recommended to be included in the document.
11. Contestants may use any software in the preparation of their business plan document, and must make their submissions in a file format readable by Adobe Reader (PDF).
12. Business plan document should be 2,000 – 2,500 words in length.
13. Attractive presentation of the business plan is recommended.
14. All entries should be signed on every page with the team name.
15. Each team can only make one entry into the contest – any further or duplicate entries will be discarded.

## Judging process and criteria

1. The submissions will be judged by a panel of experts consisting of members of the ENERGIC-OD consortium as well as of representatives of User Groups.
2. The panel will consist of three members. It will include: two ENERGIC-OD members (an expert in software development, and an expert in business and management), and one expert representing the User Groups of ENERGIC-OD (having expertise in a field relevant to ENERGIC-OD).
3. The opinions of judges will have equal weighting, with each judge reviewing the part of a submission corresponding to this field of expertise (the Virtual Hub application mock-up and the business plan document).
4. Different submissions may be reviewed by different judges.
5. Judges will be assigning points to submissions basing on the assessment criteria table, available on the project website.
6. Judges will be objective and will have no conflicting interests with the contestants.

7. All submissions will be reviewed within 2 working weeks following the closing of contest submissions.
8. All submissions will be reviewed only after the contest submission window is closed, to ensure that they are all treated equally.
9. There will be a reconciliation session, when all reviewers shall compare the scores they have assigned and make sure all submissions have been treated equally.
10. In case of draws between submissions which otherwise would be in the top three highest-ranking positions, all reviewers will compare them and assign tie-breaking points.

## Awards and announcement of the winners

1. Winners will be announced no later than 2 working weeks following the closing of the contest submissions.
2. The winning submissions will be published on the official ENERGIC-OD website (the copyright and ownership will remain with the authors).
3. The monetary prizes for the contest winners are as follows: 1st place 1,500.00 EUR, 2nd place 1,000.00 EUR, 3rd place 500.00 EUR.
4. The winners (the teams who produced the top three-ranking submissions) will be also entitled to a half-day (4 hours) clinic with ENERGIC-OD experts, who will help with further developing the winners' ideas. Those 4 hours can be split into shorter sessions taking place on different days. The winners may choose what kind of help they need.
5. The monetary prizes will be paid out within two working weeks of announcing the winners by bank transfers in the Euro denomination.
6. The expert clinics will be delivered (i.e., 4 hours per winning team) within one calendar month of announcing the winners. After that time, the expert clinic award expires and can no longer be used.

## Business plan template – 50% marks

| Part I – Overview of the application – 500 words |
|---|
| Who is the application aimed at, who are its key customers?<br>What unique value does the application provide?<br>How will the application use the ENERGIC-OD infrastructure? |
| Part II – Application market – 750 words |
| Who are your main competitors?<br>Please provide some basic market figures and indicators (you may use SWOT, PESTLE, Five Forces).<br>How are you going to market the application? |
| Part III – Development of application – 500 words |
| Why is the current team well-equipped to carry out this project and bring it to the market (if not, who else is needed)? |

| |
|---|
| How will the project be managed?<br><br>Please provide Gantt chart of the application development and bringing to the market. |
| Part IV – Finances and revenue streams – 750 words |
| How is the app's development going to be funded?<br><br>How will the application be monetized?<br><br>Please provide simple cash flow analysis (you may include NPV and/or ROI). |

## Application mock-up template – 50% marks

| |
|---|
| Part I – Introduction and technological details – 250 words |
| What will the application do?<br><br>What platform will it run on, and why?<br><br>What programming language / software environment will you use, and why? |
| Part II – Application mock-up – PowerPoint, Photoshop, etc. |
| Please provide the visual representation of the key functionalities of your application, showcasing its main features and attractiveness to the user (ease of use/intuitiveness, functionality, design). Please provide the rendering of the following:<br><br>- Home screen,<br>- Options menu,<br>- Main functionality screen,<br>- Monetization screen,<br>- Others (if applicable). |

## Appendix B – Contest judging protocol

This document provides the insight into various steps taken to ensure fair and transparent review of contest entries, with the aim of selecting the winners. Contest judging criteria are also included in this document (below).

## Selection of judges

Judges for the ENERGIC-OD contest were selected based on their skills and competences in the domains directly related to the nature of the contest submissions: business plans and geospatial software applications. Judges were selected from within the ENERGIC-OD consortium, as a good working knowledge of the Virtual Hubs and other project details was required. Differences in judges' skills and backgrounds are compensated for by open and collaborative judging process, where judges discuss the points that they assign to submissions (using the standardized assessment criteria document) and compare these scores, adjusting them as needed so that all contestants are held to the same standard. Many judges have academic background, with experience in assessing papers and using criteria like the ENERGIC-OD's contest. The judging panel was chaired by Trilateral Research Ltd., who are also the partner on the ENERGIC-OD consortium leading the WP8 and Task 8.2 (the contest is part of this task, and this document is included in the Deliverable 8.2 to the European Commission).

## Judges' credentials

**Paolo Mazzetti** *(male)* is researcher at the Institute of Atmospheric Pollution Research of the National Research Council of Italy (CNR-IIA). He taught "Telematics" at the University of Florence at Prato for the degree in Information Engineering for seven years. He has more than fifteen years of experience in design and development of infrastructures and services for geo-spatial data sharing in the context of national, European (FP7, CIP, H2020) and global initiatives. He has been member of the GEO Institutions Development Implementation Board (IDIB). He participated in the E-Infrastructures and Data Management Collaborative Research Action of Belmont Forum. He is the Italian national representative in the Arctic Data Committee (ADC).

**Yves Riallant** *(male)* holds a Master of Computer Science from National School of Computer Science and Applied Mathematics of Grenoble. Business System Engineer at International Computer Limited in Geneva, Head of IT Department at the Honegger Frères Company in Geneva, Head of IT department at the engineering office Monod in Lausanne, Founder of Progress Informatic in Lausanne, National Sales Manager for SIG APIC Editor, Head of Geographic Information Systems at Lyonnaise des Eaux, Secretary General of the French Association for Geographic Information since 2004.

**Mattia Previtali** *(male),* Master of Science in Civil Engineering cum laude. Philosophiae Doctor in Environmental and Infrastructure Engineering (profile Geomatics), at POLIMI. 2011-17 Temporary Researcher at POLIMI (DABC). Main research fields: Open Source geoportal architecture, open data, SDI, Web-GIS data implementation. Author of more than 40 papers. Participant of projects at National and European level.

**Branka Cuca** *(female)*, Master of Science in Architecture cum laude, PhD in Geomatics and Infrastructures at POLIMI, Italy. Since 2017 she is an Assistance Professor in Topography and Cartography at POLIMI. Her research regards the geometric documentation and valorization of cultural heritage with focus on digital reconstruction and geo-spatial data management. Cuca has been involved in a number of international projects, including EU funded FP7 and H2020 projects. Since 2013 she acts as a co-chair of the Working Group Earth Observation/Copernicus of the European network NEREUS.

**Miguel Ángel Latre** *(male)* holds MS and PhD degrees in Computing Science from the Universidad de Zaragoza (Spain). He is currently an Assistant Professor at the Department of Computer Science and Systems Engineering at the same university. He has been working with the Advanced Information Systems Lab (IAAA) for the last 20 years, where has been involved in several R&D projects related with the software engineering aspects of Geographical Information, Spatial Data Infrastructures and its application to the environmental domain.

**Umberto Trivelloni** *(male)* has the following main training experiences: Degree in Geology, Master in Geographic Information Systems and Remote Sensing, numerous other courses of cartography, GIS, remote sensing, databases, LiDAR, UAVs etc. In the last 15 years he has been involved in the production and management of geographic data through GIS tools and data processing, also in the role of Project Director; he is also a member of national and international working groups. Since last year he is the head of cartographic and geodetic office at the Veneto Region.

**Silvano De Zorzi** *(male)* is involved in production and management of Geotopographic Databases, Regional Digital Base Map, geodetic networks and other data derived from remote sensing processes for the implementation of the regional GIS and Spatial Data Infrastructure (SDI-RV), in Veneto Region. Member of the evaluation team, Mercator Ocean Nereus for Copernicus Marine Environment Monitoring Service (CMEMS), European projects Evaluator for the European Commission. Evaluator as an external expert. European projects, expert SC5-2015 H2020, H2020-WATER-2015, H2020-WASTE-2015; Coordination and Support Actions; Research and Innovation Actions. Coordinator of the Sub-Group Land Applications, part of the WG-Copernicus GMES/Earth Observation within NEREUS EO/GMES-Copernicus WG. Member of the Nereus Standing Committee. He provides technical support in managing and implementing the regional geodetic infrastructure composed of vertices of densification planimetric and leveling cornerstones. Silvano holds a degree in Geographical Information Systems University Institute of Architecture in Venice IUAV.

**Marek Baranowski** *(male)* is a Professor of geomatics at the Institute of Geodesy and Cartography, holds a PhD of the technological sciences in Digital Cartography, as well as is a Doctor habilitatus of the Earth Sciences in Geography. He is a Software developer (SINUS and KARTEM GIS packages author, GIS implementations designer, computer programmer in many languages, etc.) and a team member of the Data Specification Drafting Team for implementing rules of the INSPIRE directive. He has over 30 years serving as managing director of the Geodetic and Cartographic Computer Centre, UNEP/GRID-Warsaw Centre and Institute of Geodesy and Cartography. He is also Secretary General of the Association of Geographic Information Laboratories in Europe, President of the Cartographic Agency of the Polish Geographic Society, Vice President of the Polish Association of the Spatial Information.

**Helga Kuechly** *(female)* is a GIS and Remote Sensing Specialist, with more than 5 years of experience in science and consulting business (Master in Geo-ecology).

**Rachel Finn** *(female)* is the Practice Manager of the Data Science team at Trilateral. She coordinates and participates in a number of FP7 and H2020 projects, including those focused on the evaluation of data analytics practices, conducting privacy impact assessment (PIA) and addressing risks associated with big data, open data and data security practices. Rachel has published on these issues in various peer-reviewed publications, including *Info*, *Computer Law & Security Review*, the *Journal of Information, Communication and Ethics in Society*, as well as others. She has a PhD in Sociology from the University of Manchester. Her latest book is entitled *Mobilising data in a knowledge society*.

**Jedrzej Czarnota** *(male)* is a Research Analyst at Trilateral. His areas of expertise and research interests include innovation, open source, high-technology and creative industries, as well as co-creation of services. He has been involved in projects relating to user-led innovation, financial appraisal, crowdfunding, and organisational transformation. He has provided consultancy services to the videogames industry in the USA and Europe, working on several projects related to data security and business model innovation. Jedrzej completed his PhD in Business and Management at Manchester Institute of Innovation Research (Alliance Manchester Business School).

## Blinding steps

The following blinding and transparency steps have been taken to ensure a fair and unbiased process:

a. Contest entries have been assigned to judges at random.
b. A check was conducted to ensure that in the first round of judging all contest entries have been assigned to judges of nationalities other than the entry author's.
c. Judges were asked to declare whether they personally knew the authors of entries assigned to them, or if they had any other potential conflict of interest. One of the judges declared conflict of interest, and care was taken that this and other judges were not assigned submissions of contestants whom they would know personally.
d. Completed assessment sheets (i.e., Excel spreadsheets) were all compared for outlying score values, and for these outliers the points assigned were double-checked by another judge. The completed assessment sheets were also reviewed at random to check for congruency of judging process and ensure accord across judges (so that similar quality entries would receive similar points).
e. All entries were then assigned second round of reviews, following the same rules as above.

## Judging process

All submissions have been reviewed separately by two judges. The judges did not consult each other during the scoring phase, and did not know how well a submission scored with the other judge. For all pairs of scores, simple arithmetic average was taken and recorded as the final score for an entry. In one case, where the scores assigned by the judges differed significantly (i.e., by more than 15 percentage points), a third ruling by a third judge (who also didn't consult the other two judges, or didn't know the scores previously awarded) was needed. That happened in one case; arithmetic average was derived from the three resulting scores, thus producing a final score for a submission. Table attached below demonstrates the scores for individual entries assigned by judges, as well as the final scores.

| | | | Second round | | | | | |
|---|---|---|---|---|---|---|---|---|
| Place | Team name | (1st) | (POL) | (CNR) | (AFIG) | (UNIZ) | (TRI) | Average score |
| | GeoDomaines | 72 | | 58 | | | | 65 |
| | MS BIM DATA | 18 | | | | 20 | | 19 |
| | CLO-OPRiZ | 49 | | 58 | | | | 53.5 |
| 3 | Freshman | 71 | | 81 | | | | 76 |
| | Gavia Stellata | 12 | 65 | | | | 49 | 42 |
| | IDLab | 59 | | | 52 | | | 55.5 |
| | ITAP | 27 | 34.5 | | | | | 30.75 |
| 1 | Puntofisso Limited | 84 | 87.5 | | | | | 85.75 |
| 2 | RouteRunner Team | 74 | | | | | 81 | 77.5 |
| | TourK | 71 | | 76 | | | | 73.5 |

**Table 7. Scores assigned to entries by judges, together with the averages of the scores to produce the final scores. The case where a third ruling was needed is highlighted in red.**

## Scoring system

Scoring system was developed basing on the requirements for contest entries and the nature of submissions envisioned by the consortium. A thorough scoring table was developed by Trilateral Research Ltd. (where it went through development iterations and internal reviews) and then vetted by the whole

consortium in the Orleans (March 2017) Project Meeting. That scoring table was used by all judges for all reviews, and is attached below. During the judging process, there were no problems reported with the scoring system. Judges' rulings were (except in one case discussed above) congruent.

| ENERGIC-OD International Contest - Judging Criteria | | Max. 100 points | |
|---|---|---|---|
| | | | |
| **Business plan** | | **50 points in total** | **Comments** |
| Category A | Clarity and presentation | | |
| A1 | Are the ideas conveyed in a clear manner? Do they authors make it clear to the reader what their ideas are, and how they are going to realize them? | 0-5 points | |
| A2 | Have all the sections of the template been addressed? Is it a complete business plan, or are there any significant aspects/sections missing? | 0-5 points | |
| A3 | Is the business plan well-presented and easy to read? Does it contain diagrams and figures? Is it free of errors (punctuation, grammar, spelling)? | 0-5 points | |
| A4 | Have any of the analytic tools been appropriately used (i.e., SWOT, PESTLE, Five Forces and others)? | 0-5 points | |
| Category B | Idea quality and actionability | | |
| B1 | Is this a realistic plan, i.e., could it be implemented by the team who authored it, within the timeframe and resource limitations described? | 0-5 points | |
| B2 | Is the core idea viable and feasible? | 0-5 points | |
| B3 | Has the market been analysed, and potential customers and competitors identified? | 0-5 points | |
| B4 | Are the value propositions, revenue streams, and selling points considered and explained? | 0-5 points | |
| Category C | Relevance to E-OD | | |
| C1 | Is the proposed business idea relevant to ENERGIC-OD focus and themes, i.e. does it operate within GIS, open data and related fields? | 0-5 points | |
| C2 | Does the idea take advantage of the Virtual Hub system and illustrate an interesting use of it? | 0-5 points | |
| | | | |
| **Application mock-up** | | **50 points in total** | |
| Category D | Clarity and presentation | | |
| D1 | Is the functionality of the app well-explained? Is it clear what it will do? Are the technical details (platform, programming language, etc.) well-explained? | 0-5 points | |
| D2 | Does the app match the business plan, i.e. does it have the functionality to support all the functions/activities described in the business plan? Conversely, is there any potential in the app that isn't being tapped into by the activities described in the business plan? | 0-10 points | Reduce points if the answer to the latter question is positive. |
| Category E | Realistic and innovative application | | |
| E1 | Is the app possible to implement, considering ENERGIC-OD's technical arrangement? Do the developers demonstrate a good understanding of ENERGIC-OD and its VH architecture? Is the app making a good use of the opportunities offered by E-OD? | 0-5 points | |
| E2 | Basing on the mock-up and comparing it to general software development the state-of-the-art, can the app deliver all its functions? | 0-5 points | Please use your knowledge in programming, server architecture, GIS technology and other fields to check if the proposed app is feasable. |
| E3 | Is the app innovative? Does the app have an advantage/unique selling point when comparing it to existing market offerings? How significant are its advantages? | 0-10 points | |
| Category F | Application's competitive qualities | | |
| F1 | Does the app have user-friendly appeal? Is the proposed user interface clear and usable? | 0-5 points | |
| F2 | Is the payment/monetization function well-integrated in the app? Is there a real benefit for the users from paying for the app? | 0-5 points | |
| F3 | Can the app support open data? Does the app allow community collaboration or open source development? | 0-5 points | |

**Table 8. Scoring table used for ENERGIC-OD contest.**

## Timeline

The contest closed on the 31st of March 2017. The judges started the review process by holding a meeting on the 4.04.2017. In that meeting, the submissions were assigned to judges. Following on it, the first round of reviews took place. The judges reconvened on 6.04.2017 to discuss any problems or challenges they

encountered while reviewing the submissions (e.g., with the scoring criteria, or submissions, or differences in opinion). The submissions were assigned second-round reviewers in that meeting. The judging of all submissions and cross-checking of the scores assigned were completed by the 17.04.2017 (with a break due to Easter holidays), including the third round of review in one case. On 18.04.2017, the winners were announced by email and by website update.

## Appendix C – List of organizations contacted by IGIK about the contest

1. KN Politechnika Warszawska
   www: Darek Gotlib
2. KN Enigma Politechniki Krakowskiej
   www: http://www.fmi.pk.edu.pl/zima_11_12/kn/Enigma.pdf
   Email: pufornal@cyf-kr.edu.pl
3. KN Inżynierii Oprogramowania Politechniki Krakowskiej
   www: http://www.fmi.pk.edu.pl/zima_11_12/kn/Inz.%20Oprogramowania.pdf
   Email: pzabawa@pk.edu.pl
4. KN Informatyków Politechniki Krakowskiej
   www: http://www.fmi.pk.edu.pl/zima_11_12/kn/Informatykow%20PK.pdf
   Email: kni@kni.pk.edu.pl
5. Samorząd Studentów Wydziału Fizyki, Matematyki i Informatyki Politechniki Krakowskiej
   Email: gieratm@gmail.com
6. Koło Naukowe Informatyków UW
   www: http://kni.wikidot.com/
   Email: kni@mimuw.edu.pl
7. Grupa.Net Studentów Wydziału Informatyki i Zarządzania „PIAST>NET" Politechniki Wrocławskiej
   Email: przemyslaw.izdebski@studentpartner.pl
8. Międzywydziałowe Koło Naukowe Tworzenia Aplikacji Webowych
   Email: kn.tworzenia.aplikacji.webowych@gmail.com
9. Koło Naukowe Robotyków Automatyków Informatyków Politechniki Poznańskiej
   www: http://rkn.put.poznan.pl/pokaz/kolo-naukowebr-robotykow-automatykow-informatykow/89
   Email: mateusz.przybyla@put.poznan.pl
10. Akademickie Koło Aplikacji Internetowych Politechniki Poznańskiej
    www: http://rkn.put.poznan.pl/pokaz/akademickie-kolobr-aplikacji-internetowych/84
    Email: mikolaj.morzy@put.poznan.pl
11. Koło Naukowe Inżynierii Komputerowej Politechniki Poznańskiej
    www: http://rkn.put.poznan.pl/pokaz/kolo-naukowebr-inzynierii-komputerowej/88
    Email: piotr.katarzynski@put.poznan.pl
12. Biuro Samorządu Studentów Politechniki Poznańskiej
    www: http://samorzad.put.poznan.pl/#kontakt
    Email: samorzad.studentow@put.poznan.pl
13. Grupa .NET Politechniki Białostockiej
    www: https://www.facebook.com/pg/Grupa.NETBialystok/about/?ref=page_internal
    Email: piotr.jurkiewicz@studentpartner.com
14. Grupa Technologii Mobilnych
    www: https://gtmpb.com/#/
    Email: d.kamienski@gtmpb.com
15. KINo - Koło Informatycznego Niepokoju Sekcja PROGRAMOWANIA FUNKCYJNEGO Politechniki Łódzkiej
    www: http://ftims.p.lodz.pl/course/view.php?id=4
    Email: jan.stolarek@p.lodz.pl
16. Informatyczne Koło Studenckie Politechniki Gdańskiej
    www: http://pg.edu.pl/studenci/kola-i-organizacje?organization_subtype=2&faculty=&action=&p_p_id=1_WAR_espeoproxyportlet
    Email: iks.weia@gmail.com
17. Koło Naukowe GRID Politechniki Gdańskiej
    Email: szewczyk@eti.pg.gda.pl
18. Naukowe Koło Informatyczne Politechniki Gdańskiej
    Email: jacek.wachowicz@zie.pg.gda.pl
19. Studenckiego Koła Naukowego Informatyków "KOD" Politechniki Rzeszowskiej

www: http://kod.prz.edu.pl/Kontakt
Email: kod@kni.prz.edu.pl

20. Koło Naukowe Politechniki Rzeszowskiej
www: http://it.kia.prz.edu.pl/
Email: it@kia.prz.edu.pl
21. Koło Naukowe Nowych Technologii Programistycznych Wyższej Szkoły Informatyki i Zarządzania z siedzibą w Rzeszowie
www: http://knntp.azurewebsites.net/
Email: mjaszuk@wsiz.rzeszow.pl
22. Koło Naukowe Programistów i Miłośników Informatyki Politechniki Krakowskiej
www: http://www.m7.mech.pk.edu.pl/index.php/dla-studentow/koa-naukowe/282-koa-naukowego-programistow-i-mionikow-informatyki
Email: mateusz.witkos@studentpartner.com
23. Koło Naukowe Programistów >dev
www: http://dev.uek.krakow.pl
Email: dev@uek.krakow.pl
24. Koło Naukowe Informatyki
www: http://www.kni.uek.krakow.pl
Email: kni@uek.krakow.pl
25. Koło Naukowe UZ.NET Uniwersytet Zielonogórski
www: https://www.wiea.uz.zgora.pl/index.php/studenci/kola-naukowe
Email: A.Mowna@issi.uz.zgora.pl, K.Mielcarek@imei.uz.zgora.pl
26. Stu-denckie Koło Infor-matyki i Elek-tron-iki Uni-w-er-sytetu Zielonogórskiego
www:
Email: W.Zajac@issi.uz.zgora.pl
27. Koło Naukowe „fan-tA-SIC" Stu-den-tów Wydzi-ału Infor-matyki, Elek-trotech-niki i Automatyki Uni-w-er-sytetu Zielonogórskiego
www: http://porto.iie.uz.zgora.pl/fantasic/
Email: M.Doligalski@imei.uz.zgora.pl
28. Stu-denckie Koło Naukowe O2UZ
www:
Email: T.Gratkowski@imei.uz.zgora.pl, J.Tkacz@imei.uz.zgora.pl
29. Koło Naukowe Robo-t-yki Uni-w-er-sytetu Zielonogórskiego „RoboCraft„
www:
Email: M.Patan@issi.uz.zgora.pl
30. Koło Naukowe Dev&Games
www:
Email: M.Sawerwain@issi.uz.zgora.pl
31. KOŁO NAUKOWE PROGRAMOWANIA
www: http://www.wsti.pl/strefa-studenta/aktywnosci-studenckie/kola-naukowe/846-kolo-naukowe-programowania-dzialalnosc-czasowo-zawieszona
Email: roman@siminskionline.pl, kontakt@gebickionline.pl
32. Zarząd Studenckiego Koła Naukowego Informatyki UMCS
www: http://www.umcs.pl/pl/studenckie-kolo-naukowe-informatyki,1798.htm
Email: mateusz.a.kozlowski@gmail.com, kaska_kraw@vp.pl, skni@alan.umcs.lublin.pl
33. Informatyczne Koło Naukowe
www: http://www.wsb.edu.pl/informatyczne-kolo-naukowe,new,ds,73,105.html,1290
Email: mrostanski@wsb.edu.pl
34. Koło Naukowe Informatyków REDINUX SGGW
www: http://www.wzim.sggw.pl/studia/kola-naukowe/studenckie-kolo-linuksa/
Email: redinux.sggw@gmail.com
35. Koło Naukowe Informatyków Silver .NET przy Wydziale Zastosowań Informatyki i Matematyki SGGW w Warszawie

www: http://www.wzim.sggw.pl/studia/kola-naukowe/silver-net-group/
Email: Ignacy.wilczynski@silver.sggw.pl

36. STUDENCKIE KOŁO NAUKOWE GOSPODARKI PRZESTRZENNEJ SGGW
www: http://skngp.sggw.pl/kontakt/
Email: skngp@sggw.pl
37. Koło Naukowe Programistów Społecznej akademii Nauka w Łodzi
www: http://www.lodz.san.edu.pl/studenci/studenckie-kola-naukowe/
Email: kgrzanek@san.edu.pl
38. Koło Naukowe Studentów Informatyki
www: http://www.wspa.pl/student/organizacje_studenckie/kola_i_kluby_studenckie/knsi/
Email: knsi.wspa@outlook.com
39. Koło Naukowe Data Science - Wydział Matematyki i Nauk Informacyjnych Politechniki Warszawskiej
www: http://datascience.mini.pw.edu.pl/?page_id=165
Email: datascience@mini.pw.edu.pl
40. Koło Naukowe Gospodarki Przestrzennej PW
www: http://www.kngp.gik.pw.edu.pl/
Email: kngospodarkiprzestrzennej@gmail.com
41. Studenckie koło naukowe „eSens" PW
www: http://esens.ise.pw.edu.pl/
Email: sknesens@gmail.com
42. Geoawesomeness.com
www: http://geoawesomeness.com/
Email:
43. Twarde Pierniki
www: http://geekclub.pl/grupy/116
Email: lukasz.szulc@studentpartner.com
44. Grupa .NET Politechnika Śląska
www: http://geekclub.pl/grupy/94
Email: marcin.gurbiel@studentpartner.com
45. umcs.NET
www: http://geekclub.pl/grupy/98
Email: mateusz.kozlowski@studentpartner.com
46. Kolor .NET
www: http://kolor.org.pl/
Email: szymon.komorowski@studentpartner.com
47. Junior .NET Łódź
www: http://geekclub.pl/grupy/JuniorNETLodz
Email: stanislaw.pulawski@juniorNET.onmicrosoft.com
48. Łódzka Grupa Profesjonalistów IT & .NET
www: http://geekclub.pl/grupy/Lodz
http://www.meetup.com/Lodz-NET-IT-Pro-User-Group/
Email: grupa@lodzka-grupa.net
49. Code.Academy
www: http://geekclub.pl/grupy/codeacademy
Email: arkadiusz.biel@juniorNET.onmicrosoft.com
50. Grupa UTH.NET
www: http://geekclub.pl/grupy/156
Email: pawel.charzewski@studentpartner.com
51. Regionalna Lubelska Grupa Microsoft
www: http://geekclub.pl/grupy/rlgm
Email: p-nieweglowski@hotmail.com
52. Polish SQL Server User Group
www: http://plssug.org.pl/, http://geekclub.pl/grupy/plssug

Email: leaders@plssug.org.pl

53. SGH IT
    www: http://geekclub.pl/grupy/sghit
    Email: dz57183@sgh.waw.pl
54. Junior.NET Lublin
    www: http://geekclub.pl/grupy/JuniorLublin
    Email: konrad.tomczyk@juniorNET.onmicrosoft.com
55. Grupa .NET UEP
    www: http://geekclub.pl/grupy/157
    Email: dominik.wojciekiewicz@studentpartner.com
56. ASiX
    www: http://geekclub.pl/grupy/asix
    Email: axceel@interia.pl

## Appendix D – Partners' marketing activities

Below the contest marketing activities of various partners are listed. This is not an exhaustive list. For some additional activities of BRGM, IGIK and TRI please see the main body of the Deliverable.

## AED-SICAD

AED-SICAD spread the information by:

- Publishing articles on our company's homepage,
- Sending the contest information to our contacts at the universities in Munich,
- Directly contacting former interns (students),
- Promoting the contest at the GeoDev Meetup #4 2016.

## AFIGEO

List of actions that were taken by AFIGEO related to the contest:

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- Promotion during events organized by AFIGEO (or its partners),
- Promotion of the competition on the occasion of the 9th Meeting of the regional dynamics in geographic information - 17 and 18 Nov. 2016,
- Promotion of the competition for the 7th Apéro Géomatique & Innovation (AFIGEO / RATP) - 23 Jan. 2017,
- Promotion of the competition at the BARCAMP ENERGIC OD - 20 March 2017.

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Articles on the AFIGEO website:

- Opening of the "Expand your Geo-App" contest and its business plan "on 1 December 2016,
- ENERGIC OD Contest - Expand your application and earn up to € 1,500,
- ENERGIC OD winners: "Develop your Geo-App" and its business plan".

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Articles in the AFIGEO Newsletter:

- Article in The AFIGEO Newsletter N ° 116 - Oct. / Nov. 2016.
- Brief in The AFIGEO Newsletter N ° 117 - Dec. 2016 / Jan. 2017.
- Brief in the AFIGEO Newsletter N ° 118 - Feb. / March 2017.
- Brief to come in the next AFIGEO Newsletter (N ° 119 - April / May 2017).

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E-mailing campaigns

- ENERGIC OD - Latest project news - Oct. 2016 13 October 2016 (1,518 recipients),
- ENERGIC OD - More than 4 days to enter the contest - February 24, 2017 (1,575 recipients).

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Mails sent directly to training managers in geomatics:

- 1 collective mailing addressed to all members of the AFIGEO Training and Research Pole (20 recipients),
- 1 individualized mail addressed directly to the training managers of 4 schools (ESGT, ENSG, AgroParisTech, IUT of Carcassonne).

## UNIZAR

This is an outline of UNIZAR's dissemination activities for the contest:

- It was announced twice (when initially launched and when the deadline was extended) in the UNIZAR daily bulletin (sent to all UNIZAR students and staff and available online)
- Announced twice to a more targeted audience in the webpage of the Engineering and Architecture School
- Specific mails were sent to a more specific target audience (3rd and 4th-year students of the Computer Science degree at UNIZAR)
- The contest was presented in the classroom to these students too
- Dissemination material was printed and hanged on noticeboards at classrooms and corridors.

Social media:

- GIS list at Red Iris (760 subscribers from the Spanish and Portuguese academia and GI companies),
- Twitter,
- LinkedIn,
- Other universities,
- Announced in the webpage of the Department of Topography and Cartography of the Universidad Politécnica de Madrid,
- 40 mails to colleagues of other universities: UPM, UdC, UJI, US, UdL, UJ, UPC, UPF, UdG, UB, UAB, UCM, UAM, UAH, UC3M and URJC in Spain, Universidade de Lisboa and Universidade Nova de Lisboa in Portugal and Universität Salzburg in Austria, targeting earth sciences, computer sciences, and business degrees.

## IGIK

The information about the contest was posted on such websites as:

- geoforum.pl, http://geoforum.pl/, National (Poland), online geoinformation portal.
- gisplay.pl, http://gisplay.pl/, National (Poland), online geoinformation portal.
- Geo4All, http://www.geoforall.org/, Worldwide, Open Source Geospatial Foundation's Open Educational.

## Datakode

Examples of contest-marketing activities in events include:

- Presentation of the contest at the event: "9e édition des Rencontres des dynamiques régionales en information géographique" in La Baulle on the 17th of November (Datakode).
- Presentation of the contest at the event: "Decryptageo" in Paris the 24th of January (Datakode).
- Presentation of the contest at the event: "BarCamp EnergicOD" in Toulouse the 20th of March (Datakode).

## Alkante

The list of actions conducted by Alkante for promoting the contest:

- Social media: retweets of contest announcement and additional information,
- Talks: 2 hours talk to SIGAT students at University of Rennes 2: 15 students in 2nd year of GIS Master Degree,
- Mailing: announcement on the SIGAT former-student list (around 250 subscribers, most of them are GIS professionals).

## GEOkomm

The following actions have been undertaken to promote the contest:

- Holding an event with students and their teachers from Paris Geo information faculty, which included a presentation of the project, Virtual Hubs and different application and presentation of Exploration bot and of course the ENERGIC contest.
- Presenting the project along with the contest in different start-up firms, meet up events, workshops and conferences.
- Promoting the contest on the website of GEOkomm e.V. and on its twitter account.
- Promoting with leaflet and materials which were provided by Trilateral either per email or as a print out in events, etc.
- Promoting the contest by highlighting it in our newsletter.
- Promoting the contest by notifying our stakeholders, networks of Geo information universities and faculties, and other research institutes per email.

## POLIMI

POLIMI's actions related to the contest promotion:

- Promotion of the contest through LinkedIn with frequent posts using contents provided by Trilateral.
- E-mailing campaigns to POLIMI students (repeated after the extension):
    - communication service of the university, Lecco campus (to 1769 students)
    - specific email service to the POLIMI students of School Industrial and Information Engineering.
- Email sent to other interested parties (repeated after the extension):
    - email to colleagues of School of Science at Biccoca University, Milan (for further distribution to their students).

## LUP

List of actions that were taken by LUP related to the contest:

- Promotion during events organized by LUP,
- Promotion of the competition at the *Nationale Forum für Fernerkundung und Copernicus 2017*, 14-16. 03. 2017 BMVI Berlin, Germany.