# Horizon 2020

# Call: H2020-SMEINST-1-2014

# Topic: ICT-37-2014-1

# Type of action: SME-1

# Proposal number: SEP-210182558

# Proposal acronym: DigMap

## Table of contents



### *How to fill in the forms*

The administrative forms must be filled in for each proposal using the templates available in the submission system. Some data fields in the administrative forms are pre-filled based on the previous steps in the submission wizard.

*Proposal ID* **650797** *Acronym* **DigMap**

# 1 - General information

Topic ICT-37-2014-1 Type of action SME-1

Call identifier H2020-SMEINST-1-2014 Acronym DigMap

Proposal title* Digital Map Excerpt - easy and standardized way to disseminate spatial and non-spatial data.

*Note that for technical reasons, the following characters are not accepted in the Proposal Title and will be removed: < > " &*

Duration in months *8*

Fixed keyword 1 *Entrepreneurship* Add

Fixed keyword 2 *Business support services* Add Remove

Fixed keyword 3 *New business opportunities* Add Remove

Free keywords *digital map service, dissemination of spatial and non spatial data, interoperability, free and open source, geographic information system, geo-report*

## Abstract

*DigMap solution enables easy and standardized way to disseminate spatial and non-spatial data. DigMap is innovative service offered both to the public and the private sector. Service is cloud-based in a way that allows an operational implementation based on open interfaces (OGC WPS - Open Geospatial Consortium Web Processing Service), leading to interoperability and portability. DigMap will enable the provision of re-useable service components which have appropriate data security feature.*

*DigMap shell provide a set of use cases and best practices, especially in field of Cadaster and Environment protection, which could be broadly deployed as National Spatial Data Infrastructure. DigMap will improve interoperability between administrations across borders (not only across national borders, but also across local/regional borders).*

*The Digital Agenda for Europe promotes the creation, production and distribution of digital content and services for a vibrant single market. DigMap is aligning with Open Data objective. Public sector information represents a major digital content resource for innovative applications and services. Geographic Information (GI) is an important component of Public Sector Information. GI is not only a primary source of data, but also an important means for creating innovative services.*

*Based on the work already accomplished across the EU, the role of GI as a motor for growth and jobs through the creation of innovative information products and services can be further enhanced. One of the main obstacles is the lack of agreed interoperability standards. DigMap will deliver standardized way for on line GI delivery, and enable easy and standardized way of offline storage on user's computers. DigMap is built on state-of-the-art technologies and offering new standardized WPS service. DigMap lead to an easier use of geographic information available for use in innovative applications and services, draw together datasets from various different sources.*

Remaining characters 0

Has this proposal (or a very similar one) been submitted in the past 2 years in response to a call for proposals under the 7th Framework Programme, Horizon 2020 or any other EU programme(s)? ○ Yes ◉ No

*Proposal ID* **650797** *Acronym* **DigMap**

## *Declarations*

| | |
|---|---|
| 1) The coordinator or sole applicant declares to have the explicit consent of all applicants on their participation and on the content of this proposal. | ☒ |
| 2) The information contained in this proposal is correct and complete. | ☒ |
| 3) This proposal complies with ethical principles (including the highest standards of research integrity — as set out, for instance, in the European Code of Conduct for Research Integrity — and including, in particular, avoiding fabrication, falsification, plagiarism or other research misconduct). | ☒ |

4) The coordinator or sole applicant confirms:

| | |
|---|---|
| - to have carried out the self-check of the financial capacity of the organisation on https://ec.europa.eu/research/participants/portal4/desktop/en/organisations/lfv.html. Where the result was "weak" or "insufficient", the coordinator confirms being aware of the measures that may be imposed in accordance with the H2020 Grants Manual (Chapter on Financial capacity check); or | ☒ |
| - is exempt from the financial capacity check being a public body including international organisations, higher or secondary education establishment or a legal entity, whose viability is guaranteed by a Member State or associated country, as defined in the H2020 Grants Manual (Chapter on Financial capacity check); or | ☐ |
| - as sole participant in the proposal is exempt from the financial capacity check. | ☐ |

5) The coordinator or sole applicant hereby declares that each applicant has confirmed:

| | |
|---|---|
| - they are fully eligible in accordance with the criteria set out in the specific call for proposals; and | ☒ |
| - they have the financial and operational capacity to carry out the proposed action. | ☒ |
| The coordinator is only responsible for the correctness of the information relating to his/her own organisation. Each applicant remains responsible for the correctness of the information related to him and declared above. Where the proposal to be retained for EU funding, the coordinator and each beneficiary applicant will be required to present a formal declaration in this respect. | |

According to Article 131 of the Financial Regulation of 25 October 2012 on the financial rules applicable to the general budget of the Union (Official Journal L 298 of 26.10.2012, p. 1) and Article 145 of its Rules of Application (Official Journal L 362, 31.12.2012, p.1) applicants found guilty of misrepresentation may be subject to administrative and financial penalties under certain conditions.

**Personal data protection**

Your reply to the grant application will involve the recording and processing of personal data (such as your name, address and CV), which will be processed pursuant to Regulation (EC) No 45/2001 on the protection of individuals with regard to the processing of personal data by the Community institutions and bodies and on the free movement of such data. Unless indicated otherwise, your replies to the questions in this form and any personal data requested are required to assess your grant application in accordance with the specifications of the call for proposals and will be processed solely for that purpose. Details concerning the processing of your personal data are available on the privacy statement. Applicants may lodge a complaint about the processing of their personal data with the European Data Protection Supervisor at any time.

Your personal data may be registered in the Early Warning System (EWS) only or both in the EWS and Central Exclusion Database (CED) by the Accounting Officer of the Commission, should you be in one of the situations mentioned in:
-the Commission Decision 2008/969 of 16.12.2008 on the Early Warning System (for more information see the Privacy Statement), or
-the Commission Regulation 2008/1302 of 17.12.2008 on the Central Exclusion Database
(for more information see the Privacy Statement) .

*Proposal ID* **650797** *Acronym* **DigMap**

# 2 - Administrative data of participating organisations

| ***PIC*** | ***Legal name*** |
|---|---|
| *940853150* | *Geo-Meteo j.d.o.o.* |

*Short name: Geo-Meteo*

*Address of the organisation*

Street Poljana Zdenka Mikine 46

Town Zagreb

Postcode 10000

Country Croatia

Webpage www.meteo-info.hr

*Legal Status of your organisation*

Research and Innovation legal statuses

Public body ..... no
Non-profit ..... no
International organisation ..... no
International organisation of European interest ..... no
Secondary or Higher education establishment ..... no
Research organisation ..... no
Small and Medium-sized Enterprises (SMEs) ..... yes

Legal person ..... yes

Nace code

*Proposal ID* **650797** *Acronym* **DigMap**

## *Department(s) carrying out the proposed work*

**Department 1**

| | |
|---|---|
| Department name | Geo-Meteo j.d.o.o. |
| Street | Poljana Zdenka Mikine 46 |
| Town | Zagreb |
| Postcode | 10000 |
| Country | Croatia |

☒ Same as organisation address

*Proposal ID* **650797** *Acronym* **DigMap**

## *Person in charge of the proposal*

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Mr. | Sex: (•) Male ( ) Female

First name: **Nebojša** | Last name: **Subanović**

E-Mail: **nebojsa.subanovic@meteo-info.hr**

Position in org.: General manager

Department: *Please indicate the department of the Contact Point above in the organisation*

Street: Poljana Zdenka Mikine 46 | ☒ Same as organisation address

Town: Zagreb | Post code: 10000

Country: Croatia

Website: http://www.meteo-info.hr/

Phone: +385993832183 | Phone 2: *+xxx xxxxxxxxx* | Fax: *+xxx xxxxxxxxx*

*Proposal ID* **650797** *Acronym* **DigMap**

| ***PIC*** | ***Legal name*** |
|---|---|
| *939854729* | *yottabyte j.d.o.o.* |

*Short name: yottabyte*

*Address of the organisation*

Street Zagrebačka 126

Town Velika Gorica

Postcode 10410

Country Croatia

Webpage www.yottabyte.hr

*Legal Status of your organisation*

Research and Innovation legal statuses

Public body ..... no
Non-profit ..... no
International organisation ..... no
International organisation of European interest ..... no
Secondary or Higher education establishment ..... no
Research organisation ..... no
Small and Medium-sized Enterprises (SMEs) ..... yes

Legal person ..... yes

Nace code 62 -

*Proposal ID* **650797** *Acronym* **DigMap**

## *Department(s) carrying out the proposed work*

**Department 1**

| | |
|---|---|
| Department name | yottabyte j.d.o.o. |
| Street | Zagrebačka 126 |
| Town | Velika Gorica |
| Postcode | 10410 |
| Country | Croatia |

☒ Same as organisation address

*Proposal ID* **650797** *Acronym* **DigMap**

## *Person in charge of the proposal*

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Mr. | Sex: (•) Male ( ) Female

First name: **Krunoslav** | Last name: **Hrnjak**

E-Mail: **krunoslav@yottabyte.hr**

Position in org.: General manager

Department: *Please indicate the department of the Contact Point above in the organisation*

Street: Zagrebačka 126 | ☒ Same as organisation address

Town: Velika Gorica | Post code: 10410

Country: Croatia

Website: http://www.yottabyte.hr/

Phone: +385955174201 | Phone 2: *+xxx xxxxxxxxx* | Fax: *+xxx xxxxxxxxx*

*Proposal ID* **650797** *Acronym* **DigMap**

| ***PIC*** | ***Legal name*** |
|---|---|
| *937994269* | *LIST geoinformatika d.o.o.* |

*Short name: LIST geoinformatika*

*Address of the organisation*

Street Palinovečka 49

Town Zagreb

Postcode 10000

Country Croatia

Webpage www.li-st.net

*Legal Status of your organisation*

Research and Innovation legal statuses

Public body ..... no

Non-profit ..... no

International organisation ..... no

International organisation of European interest ..... no

Secondary or Higher education establishment ..... no

Research organisation ..... no

Small and Medium-sized Enterprises (SMEs) ..... yes

Legal person ..... yes

Nace code 62 -

*Proposal ID* **650797** *Acronym* **DigMap**

## *Department(s) carrying out the proposed work*

**Department 1**

| | |
|---|---|
| Department name | LIST geoinformatika |
| Street | Palinovečka 49 |
| Town | Zagreb |
| Postcode | 10000 |
| Country | Croatia |

☒ Same as organisation address

*Proposal ID* **650797** *Acronym* **DigMap**

## *Person in charge of the proposal*

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Mr. | Sex: (•) Male ( ) Female

First name: **Dragan** | Last name: **Divjak**

E-Mail: **dragan.divjak@li-st.net**

Position in org.: General manager

Department: *Please indicate the department of the Contact Point above in the organisation*

Street: Palinovečka 49 | ☒ Same as organisation address

Town: Zagreb | Post code: 10000

Country: Croatia

Website: http://www.li-st.net/

Phone: +385 95 902 0784 | Phone 2: *+xxx xxxxxxxxx* | Fax: *+xxx xxxxxxxxx*

*Proposal ID* **650797** *Acronym* **DigMap**

# 3 - Budget for the proposal

| | Estimated eligible* costs (per budget category) | | EU contribution | | |
|---|---|---|---|---|---|
| | A. Costs of the feasibility study/Direct and indirect costs of the action | Total costs | Reimbursement rate % | Maximum EU contribution | Maximum grant amount |
| Form of costs | Lump sum | | | | |
| Consortium/Beneficiary | 50.000 | 71.429 | 70 | 50.000 | 50.000 |

*Proposal ID* **650797** *Acronym* **DigMap**

# 4 - Ethics issues table

*Please, take into account that the ethics issues in SME Instrument Phase 1 only relate to the feasibility study and not to a possible further innovation project (i.e. Phase 2)*

| 1. HUMAN EMBRYOS/FOETUSES | | Page |
|---|---|---|
| Does your research involve Human Embryonic Stem Cells (hESCs)? (ii) | ○ Yes ◉ No | |
| Does your research involve the use of human embryos? | ○ Yes ◉ No | |
| Does your research involve the use of human foetal tissues / cells? | ○ Yes ◉ No | |
| **2. HUMANS** | | **Page** |
| Does your research involve human participants? | ○ Yes ◉ No | |
| Does your research involve physical interventions on the study participants? | ○ Yes ◉ No | |
| Does it involve invasive techniques? | ○ Yes ◉ No | |
| **3. HUMAN CELLS / TISSUES** | | **Page** |
| Does your research involve human cells or tissues?<br>If your research involves human embryos/foetuses, please also complete the section "Human Embryos/Foetuses" [Box 1]. | ○ Yes ◉ No | |
| **4. PROTECTION OF PERSONAL DATA (iii)** | | **Page** |
| Does your research involve personal data collection and/or processing? | ○ Yes ◉ No | |
| Does your research involve further processing of previously collected personal data (secondary use)? | ○ Yes ◉ No | |
| **5. ANIMALS (iv)** | | **Page** |
| Does your research involve animals? | ○ Yes ◉ No | |

*Proposal ID* **650797** *Acronym* **DigMap**

| 6. NON-EU COUNTRIES | | Page |
|---|---|---|
| Does your research involve non-EU countries? | ◯ Yes ◉ No | |
| Do you plan to use local resources (e.g. animal and/or human tissue samples, genetic material, live animals, human remains, materials of historical value, endangered fauna or flora samples, etc.)? (vi) | ◯ Yes ◉ No | |
| Do you plan to import any material - including personal data - from non-EU countries into the EU?<br>If you consider importing data, please also complete the section "Protection of Personal Data" [Box 4]. | ◯ Yes ◉ No | |
| Do you plan to export any material - including personal data -from the EU to non-EU countries?<br>If you consider exporting data, please also complete the section "Protection of Personal Data" [Box 4]. | ◯ Yes ◉ No | |
| If your research involves low and/or lower middle income countries, are benefits-sharing measures foreseen? (vii) | ◯ Yes ◉ No | |
| Could the situation in the country put the individuals taking part in the research at risk? | ◯ Yes ◉ No | |
| **7. ENVIRONMENT PROTECTION**<br>See legal references at the end of the section. (viii) | | Page |
| Does your research involve the use of elements that may cause harm to the environment, to animals or plants? | ◯ Yes ◉ No | |
| Does your research deal with endangered fauna and/or flora and/or protected areas? | ◯ Yes ◉ No | |
| Does your research involve the use of elements that may cause harm to humans, including research staff? | ◯ Yes ◉ No | |
| **8. DUAL USE** (ix) | | Page |
| Does your research have the potential for military applications? | ◯ Yes ◉ No | |
| **9. MISUSE** | | Page |
| Does your research have the potential for malevolent/criminal/terrorist abuse? | ◯ Yes ◉ No | |
| **10. OTHER ETHICS ISSUES** | | Page |
| Are there any other ethics issues that should be taken into consideration? Please specify | ◯ Yes ◉ No | |

I confirm that I have taken into account all ethics issues described above and if any ethics issues apply, I have attached the required documents. ☒

*Proposal ID* **650797** *Acronym* **DigMap**

# 3 - Call specific questions

## *Call specific declaration(s)*

I declare on my honour that: Neither I nor any of the members of the consortium (if relevant) are involved in concurrent submission or implementation with another SME instrument Phase 1 or Phase 2 project. ☒

## *Excluded Reviewers*

*You can provide up to three names of persons that should not act as an evaluator in the evaluation of the proposal for potential competitive reasons.*

# DigMap - Digital Map Excerpt Software

**List of participants**

| Participant No * | Participant organisation name | Country |
|---|---|---|
| 1 (Coordinator) | Geo-Meteo j.d.o.o | Croatia |
| 2 | yottabyte j.d.o.o. | Croatia |
| 3 | li:st geoinformatika d.o.o. | Croatia |

**Table of Contents**



## 1 Excellence

DigMap solution based on FOSS (free and open source software) enables easy and standardized way to disseminate spatial and non-spatial data through digitally signed pdf report with maps and embedded spatial data. DigMap is innovative service offered both to the public and the private sector. Service is cloud-based in a way that allows an operational implementation based on open interfaces (OGC WPS - Open Geospatial Consortium Web Processing Service), leading to interoperability and portability. DigMap will enable the provision of re-useable service components which have appropriate data security feature.

Dig Map is aligned with directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE). INSPIRE is an EU initiative to establish an infrastructure for spatial information in Europe that is geared to help to make spatial or geographical information more accessible and interoperable for a wide range of purposes supporting sustainable development.

The Digital Agenda for Europe promotes the creation, production and distribution of digital content and services for a vibrant single market. DigMap is align with Open Data objective enabling standardized, interoperable and secure geographic information dissemination. As support for many public services connected with delivery of geospatial data DigMap is going to be availability online.

According to the eGovernment benchmark method DigMap is five-stage maturity model that supports forth transaction, and finally fifth as well, which is the highest targetisation level. DigMap supports transactional maturity model - also called full electronic case handling – where the user applies for and receives the service online, without any additional paper work, which is increasingly becoming mainstream. DigMap also supports the fifth level, targetisation, which provides an indication of the extent by which front- and back-offices are integrated, data is reused and services are delivered proactively.

## 1.1 Objectives

**DigMap „digital map excerpt“ goal is to create common and easy to use web based ICT GIS infrastructure to enable easy distribution and use of spatial data as part of public or private services for creation of value-added services.**

Probably most widely and recognized usage would be for printing out digital cadastral map excerpt composed from several layers (most common digital ortophoto, land use, parcels and buildings) used to locate, inventory, and appraise all owner's property. Maps and map data are also important for other governmental agencies, the public, and the land information community (such as realtors, title companies, and surveyors). DigMap PDF enables easy view of geospatial data and feature attributes while DigMap embedded files can enhance the capability to manage, analyse, summarize, display, and disseminate geographically referenced information.

Create technical GIS IT infrastructure by expanding existing spatial data solutions primary open source solution GeoServer with extension/plug in that will enable easy data dissemination trough digital map excerpt (DigMap) and enable "one stop shop" approach for geospatial data.

Support full online availability for many public services connected with delivery of geospatial data, full electronic case handling – where the user applies for and receives the service online, without any additional paper work. Enable online "one stop shop" approach to many public electronic services even when complexity of geospatial data is involved.

DigMap will contribute to making available harmonized information related to one or more of the specific themes enumerated in annexes I-III of the INSPIRE Directive and to fostering the development by the private sector of innovative value-added services based on this interoperable information on a cross-border or pan-European level.

DigMap will offer wide range of predefined templates ready to use after setting basic configuration parameters (organization name, heading title, etc.) and more advanced custom design can also be easily done with user friendly GUI tools.

The specific Dig Map project objectives (POs) are to design, develop, test and demonstrate the use of tool for digital map excerpt that support:

- PO1. Authenticity
- PO2. Standardization
- PO3. Interoperability
- PO4. Data billing
- PO5. FOSS (free and open source software)

#### *1.1.1.1 Authenticity*

To be able to use issued DigMap for legal purpose it must be signed with digital signature enabling authentication and non-repudiation. Many business transactions, including financial, legal, and other regulated transactions, require high assurance when signing documents. When documents are distributed electronically, it is important that recipients can:

- Verify document authenticity – confirming the identity of each person who signed the document
- Verify document integrity – confirming that the document has not been altered in transit

Certificate-based signatures provide both of these security services. Many businesses and governments have chosen to set up a certificate-based digital signature infrastructure within their organization – using third party certificate authorities to provide independent identity validation.

#### *1.1.1.2 Standardization*

DigMap will enable sharing spatial data in standardized .pdf format, providing end users with possibility to have a direct view on spatial data presented as a map (picture in PDF file) and also ability to further manipulate the data using embedded file containing data in digital form (vector and raster data) encoded in one of the mainstream format (GML, KML etc.)

#### *1.1.1.3 Interoperability*

DigMap will be based on wide accepted OGC SLD, WMS, WCS WFS and WPS standard and fully INSPIRE compliant. Web based services will enable cloud computing concept for Dig Map.

#### 1.1.1.4 Data billing

DigMap will have billing ability based on price of point, area or number of objects delivered to the end user. Very important aspect of data distribution is ordering and data billing. Many countries and institutions are charging for its geospatial data to enable income to cover their operational costs. There are many different billing rules that can be applied including but not limited to:

- number of points/ objects
- area
- area position (urban vs. rural)
- megabytes

#### 1.1.1.5 FOSS (free and open source software)

DigMap will be built and published as a FOSS enabling wide spread at low cost, enable integration and interoperability, further development according to users' needs and vendor independence. Also European interoperability framework for pan-european eGovernment services is based on open standards and encourage the use of open source software.

## 1.2 Relation to the work programme

Proposal relates to the Horizon 2020 dedicated SME Instrument - Phase 1 2014. Topic: Open Disruptive Innovation Scheme (implemented through the SME instrument), ID: ICT-37-2014-1

## 1.3 Concept and approach

At the moment DigMap is an elaborated idea waiting for further development and appropriate funding. There are some partial implementations in Republic of Macedonia, Agency For Real Estate Cadastre, where it is possible to make map print out based on DigMap technologies but missing robust software parameterization, encapsulation into pluggable extension and other main characteristics of DigMap like interoperability, authenticity and data billing.

DigMap integrates open source technologies within a comprehensive toolkit promoting interoperability through the use of OGC and other open standards for data exchange and services. This allows for independent development and functionality deployment provided by different web-services.

Horizon 2020 dedicated SME Instrument - Phase 1 2014 will support DigMap for functional specification preparation and validation and demonstration of DigMap software components. . According to the Technology readiness levels (TRL) DigMap is at stage TRL 3 (experimental proof of concept).

DigMap is based on two main world's leading FOSS technologies: GeoServer for digital map production and JasperReports as reporting tool. Cooperation with technology maintainer would be a great benefit enabling creation of technically superior product by co-engineering GeoServer and JasperReport for tight integration and easy to use geo-report creation.

Final DigMap solution should be pluggable FOSS extension to the referent OGC service map server implementation, named GeoServer. Wider deployment would be made through Phase 2, by DigMap development and implementation in different areas and various institutions and enterprises; it would go into demonstration in relevant and operational environment (TRL 6 and 7).

DigMap milestones are following software development lifecycle:

1. Functional specification
2. Tehnical specification
3. Implementation
    a. PDF printout
    b. Vector data embedding
    c. Data billing
    d. Digital signature
    e. GUI wrapper
4. Testing
5. Operational validation

DigMap will be managed according to a Guide to the Project Management Body of Knowledge, and by certified Project Management Professional.

DigMap is aligned with EU INSPIRE initiative and it will help to establish an infrastructure for spatial information in Europe that is geared to help to make spatial or geographical information more accessible and interoperable for a wide range of purposes supporting sustainable development.

## 1.4 Ambition

There are various commercial solutions on the market for creation of geo spatial reports offered by GIS top vendors like ESRI, Oracle, Intergraph, MapInfo and many others, and still we are missing free and open source solution that would be suitable for small and medium companies that have a need for easy to use, affordable solution.

Small and medium enterprises and government institutions would be the main target market for DigMap. DigMap is offering free and open source solution combined with processional implementation and support services at affordable prices following open-source software business model.

Digital map excerpt can be built on top of various free and open source technologies, integrated together in software development process. DigMap would offer bundled package ready for installation and configuration without software development or integration process, that fore saving efforts, time and money.

From the customer's perspective, the ability to use open-source technology under standard commercial terms and support is valuable. Customers are willing to pay for the legal protection (e.g., indemnification from intellectual property infringement), "commercial-grade QA," and professional support/training/consulting that are typical of commercial software built on top of the innovation and independence that comes with open source.

# 2 Impact

DigMap clearly contributes to the following impacts:

- It fosters wider use of spatial data, by public and private organisations, through value added services.
- It promotes the use and re-use of harmonised and interoperable data sets, related to a number of themes within annexes I-III of the INSPIRE directive, made or being made available, through different companies or institutions.
- It delivers enabling services for dissemination and visualisation of information.
- It implements processing services using related standards (WPS).
- Facilitate cross border use and data/service integration.

**Social Impacts**

Consumers are becoming increasingly demanding, especially as regards level of comfort and speed of public and private services delivered over Internet. DigMap smart services involving citizens will strongly help for delivery of digital map excerpts (innovative ways of government), like cadastre excerpts in real time as a self-service. DigMap can enhance growth, competitiveness, and jobs. DigMap promise a yet greater productivity boost. Europe’s ambition is to create new business opportunities and accelerate the transformation of its business landscape through novel digital technologies, like DigMap, in order to increase growth and create employment.

**Competitiveness of the EU**

One of the principle missions of the European Commission is to promote the competitiveness of the ICT industries and services and to support the take-up of ICT and e-business practices by European enterprises. Innovations are regarded as crucial for ensuring the competitiveness of European industries in the knowledge economy.

The European Commission tabled on 26 June 2012 its strategy to boost the industrial production of Key Enabling Technologies -based products, e.g. innovative products and applications of the future. The strategy aims to keep pace with the EU’s main international competitors, restore growth in Europe and create jobs in industry, at the same time addressing today's burning societal challenges.

"A European strategy for Key Enabling Technologies - A bridge to growth and jobs" Communication adopted on 26 June 2012.

**Policy impacts**

DigMap contributes to the following EU political objectives and policies:

- Directive 2003/98/EC on the re-use of PSI: providing value added services on top of existing OWSs.

- Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE).
- The Digital Agenda for Europe, Pillar II: Interoperability & Standards and Pillar III: Trust & Security
- Initiatives form EEA (European Environmental Agency) including EIONET - European Environment Information and Observation Network: improving management of environmental data.
- SEIS principles: specifically referring to open source solutions supporting information sharing and processing.
- Current objectives of European Space Agency (ESA): in terms of interoperability and eInfrastructure.
- Current objectives of Joint Research Centre (JRC): in terms of interoperability, support to INSPIRE and ESDI.
- Policies set by the United Nations Spatial Data Infrastructure (UNSDI): contributing to the objective of enhancing spatial data and information sharing between UN agencies and programmes directly through partner CCSS which is UNSDI national coordinator.
- European interoperability framework for pan-European eGovernment services

## 2.1 Expected Impacts

The overall aim of the proposed project is to provide easy to use software for creation of digital map excerpt, digitally signed based on free and open source software.

The three adjectives (smart, inclusive and sustainable) characterizing the EU2020 strategy request for major change in the way of defining the way of being competitive and at the same time keeping under control the unbalances connected to regional disparities, but even to look for more effective and efficient solutions in the se of digital data. In fact, this way, especially those connected to the definition of smart solutions for the economic growth of European cities, city-regions and major scale territories, is strictly connected to the proper design of an EU Digital Agenda (DA).

### 2.1.1 Users/Market

DigMap is facing very critical issues connected to the future quality of public service related to the publishing spatial and non-spatial data. The project is aware of the fact, already largely demonstrated within INSPIRE, that the awareness of availability and of the usage of new services has to be widely demonstrated and deeply supported at least in the starting phase. Because this a complex and robust action of networking, activities such as dissemination of results together with a continuous activity of feedback monitoring are foreseen in one dedicated work package - DigMap potential users survey – delivered on various addresses in EU.

DigMap outcomes are to identify in set of tools, services and policies that will contribute to major horizontal tasks connected the EU digital Agenda (e.g. access of data owning to public sector information, and enhancing the EU innovation capacity), but, at the same time, the project's outcomes will affect and impact on the realms of interoperability and standards of spatial data and trying to propose effective solutions for spatial data wide dissemination to public and citizens. These latter realms constitute key pillars of the DA for Europe. Outcomes, indeed, will depend on what is going to happen during the project's evolution and implementation.

Moreover, citizens are, thanks to new mobile devices, are ready to consume Internet base services like DigMap. With regard to this, those DigMap smart services involving citizens will strongly help for delivery of digital map excerpts (innovative ways of government), like cadastre excerpts.

DigMap aims to innovate the capacity to facilitating the development of EU wide markets for innovative ICT-based products and services and exploitation of digital content and DigMap looks at the stakeholders in order to mobilize the suitable financial and human resources needed to carry out DigMap development and application in operating environment.

Concluding, DigMap output answer to the questions connected to inter-regional/cross border dissemination of geo spatial data, those connected to the indications for the design of trans-national services (the market is definitively global)

### 2.1.2 Company

DigMap would offer a large number of opportunities to project participants in terms of selling professional services regarding DigMap implementation. It includes consulting, development, system integration and education services for successful DigMap implementation into client environment and setup for production.

Successful open source contribution implies technical skills, “peer-certified” and publicly documented. Deep insight into DigMap implies better work quality, which leads to high reputation among user community and potential customers what leads to increased consulting services sales.

Supporting DigMap services would increase participant’s arrangements in consulting services. Estimated arrangement for each participant is eight month/year what is high utilization rate for consultancy services if ten DigMap installation project would be run on yearly basis.

Geo-Meteo as a member of the consortium will use DigMap solution for presenting, distribution and selling meteorological fields like temperature, clouds, precipitation etc. DigMap will provide possibility of presenting grib2 files on the GIS platform. Grib2 is standard output format from meteorological forecast numerical models. Existing graphical service, grads, for presenting grib2 files is very rude and not proper for making images with media quality requirements. There are several benefits in using such DigMap solution:

- Presentation of the various meteorological fields is much better on real geographical maps and it can be used for publishing in various media. This provides better position of Geo-Meteo in meteorological market.
- Graphical products made by DigMap service can be faster delivered to the customers because they will be produced on the cloud and ftp protocol computing machine-server-customer can be avoided.
- New meteorological graphical products, a different kind of maps, on demand buying service could be established.

DigMap can be made as a standalone application or embedded into GeoServer ad software extension. By creating GeoServer extension DigMap becomes add-on on top of the today’s leading open source software for mapping with more than **115,122** download from the beginning of the year (http://sourceforge.net/projects/geoserver/files/stats/timeline?dates=2014-01-01+to+2014-06-10). This gives an overview of potential DigMap users who want to disseminate their spatial data and made them ready for offline usage.

## 2.2 Measures to maximise impact

### 2.2.1 Dissemination and exploitation of results

During the project, and after its successful completion, the results will be disseminated and exploited in a comprehensive manner to ensure a maximum return for all stakeholders, including participants and the EC. The dissemination and exploitation of results from DigMap will be undertaken in with the overall objectives of disseminating the outcomes to audiences across the EU and developing plans for the exploitation of the results for the benefit of EU industry and society.

To ensure all dissemination and exploitation activities are executed in the most effective manner, DigMap project will follow a five-stage strategic model:

1. Clear rationale for and objectives of dissemination and exploitation.
2. Strategy to identify which results to disseminate and/or exploit and to which audiences.
3. Determine organisational approaches of key stakeholders and allocate responsibilities and resources
4. Implement the strategy: identify and gather results and undertake activities and collect feedback.
5. Monitor and evaluate the effects of the activity and modify dissemination to improve effectiveness.

Paper proposal for general track presentation titled “DigMap - digital map excerpt as a part of ICT GIS infrastructure » has been accepted for presentation at FOSS4G-Europe 2014, as well as proposal for “Geo Reports” workshop. Presentation and workshop will take place on FOSS4G-Europe 2014 conference in Bremen, Germany from 15$^{th}$-17$^{th}$ July 2014. Presentation is first draft to DigMap idea, and workshop should show DigMap technical readiness. This conference will gather user and industrial stakeholders and academic representatives from Europe who will be introduced to DigMap project and will have ability to express their interest in project participation and fill out DigMap user survey.

Feasibility study results will be presented in various forms, from presentations, posters, to articles in professional magazines. The following list shows possible events and places for dissemination, which can be lately widened and focused (towards potential users):

- Magazines
  - Directions Magazine
  - GEO World
  - GIS Monitor
  - GIS World
- Scientific Journals
  - International Journal of Spatial Data Infrastructures Research
  - Scientific Journals in the domains of:
    - Information technology,
    - Environmental,
    - Energy,
    - Security,
    - Forestry,
    - Transport
    - Cadastre
- Fairs
  - Intergeo (yearly)
  - Intergeo East (yearly)
  - FOSS4G
  - FOSS4G-E
- Professional associations
  - EuroGeographics
  - The Geospatial Information & Technology Association (GITA)
  - FIG
  - EUROGI
  - ISSR
- Standardization Bodies:
  - OGC

Furthermore project's results will be transferred towards a number of communities, revolving around EU projects, through linkage with other relevant EU initiatives.

Commercialization of result should come from selling professional services for DigMap development and implementation to selected prospects according to the open source business model by selling consulting, implementation and education services.

### 2.2.2 Intellectual Property, knowledge protection and regulatory issues

A specific task will address IPR terms & Licensing Policy with specific regards to open source developments. DigMap feasibility study results will be delivered under Creative Commons license. DigMap software will be released as Free & Open Source Software (FOSS). This will ensure continuing development of the core value added services. This approach will bring a further advantage to DigMap which will leverage on the Open Source (OS) community in order to exploit the enormous potential of the OS world in terms of actual software component development and further dissemination. The OS community channel will amplify the potential adoption of the technology to a broader audience. This will ensure that costs of further developments of processing functionalities, built on top of the DigMap framework, will be carried on at low costs by public administrations or private industries according to their specific needs.

# 3 Implementation

## 3.1 Work plan – Work package and deliverable

### 3.1.1 Deliverable

**Table 1 3.1.1 Deliverables with Responsibility Assignment Matrix (RACI) chart**

| Work package/delivery \ Responsible person | Krunoslav Hrnjak | Nebojša Subanović | Tihana Hrnjak | Dragan Divjak | Estimated effort [man/month] | Timeframe |
|---|---|---|---|---|---|---|
| TASK1: IPR study | C | A | | | 1 | M0-M1 |
| TASK2: project management plan | C | A | I | C | 7 | M1-M8 |
| TASK3: functional specification | C | I | | A | 2 | M0-M2 |
| TASK4: architecture technical specification | A | I | | C | 4 | M2-M6 |
| TASK5: DigMap SWAT analysis | R | I | A | C | 2 | M0-M2 |
| TASK6: commercial feasibility study | R | R | A | C | 3 | M4-M7 |
| TASK7: potential users survey | R | C | A | | 3 | M5-M8 |
| TASK8: DigMap brand graphical design | R | C | A | | 1 | M7-M8 |
| **TOTAL** | | | | | **23** | **8 months** |

Roles & responsibilities is the Responsibility Assignment Matrix (RACI matrix). RACI stands for:

- Responsible – Who is responsible for the execution of the task?
- Accountable – Who is accountable for the tasks and signs off the work?
- Consulted – Who are the subject matter experts who to be consulted?
- Informed – Who are the people who need to be updated of the progress?

### 3.1.2 TASK1: IPR study

During this task, DigMap building blocks copyright and software licensing model will be reviewed in order to identify specific terms of use of the results achieved during the course of the DigMap project. This will include the state of the background IPR, the rights to use the foreground generated in the project and access rights.

In order to ensure most efficient dissemination of DigMap solution it will be primarily open platform, meaning that interested bodies will be able to use re-use its components. It will be accomplished by mechanisms like open source and also by publication of relevant documents. This approach will bring a further advantage to DigMap which will leverage on the Open Source (OS) community in order to exploit the enormous potential of the OS world in terms of actual software component development and further dissemination. The OS community channel will amplify the potential adoption of the technology to a broader audience. Specifically the software will be developed as an Open Sources and will made available through the most suitable channel (e.g. SourceForge, OSGeo etc.).

External consultants will be called upon, if appropriate, to deal with legal aspects and to ensure the compliancy with existing norms or directives during the licensing model definition.

### 3.1.3 TASK2: project management plan

The main objectives of this TASK are:

- To ensure all formal procedures, including contractual agreements, are properly dealt with.
- To ensure the project‘s goals and objectives are met in compliance with the project work plan.
- Risks are properly monitored and relevant countermeasure taken.
- Highest quality standards are met.
- Costs are properly determined and compliant with budget.

A project management plan is the planning document, capturing the entire project end-to-end, covering all project phases, from initiation through planning, execution and closure.

A comprehensive plan for DigMap implementation will covers followings areas and components:

- Overview: Why the project is being conducted and its primary objectives
- Scope: Business needs, requirements, deliverables, constraints and work breakdown structure
- Schedule: Activities schedule and project milestones
- Costs: Project budget and its funding approach
- Quality: Quality measurement and control approach
- Project team: The people working on the project, their roles and responsibilities
- Communication: Communication type, channels and the reporting approach
- Risks: Risk index, methods to identify and evaluate risks, risk mitigation and contingency planning
- Procurements: Required procurements and purchase processes
- Closure: Closure approach, including the deliverables hand-off protocol
- Changes: Procedures used to track changes in the project
- Baselines: Scope, schedule and budget baselines

### 3.1.4 TASK3: functional specification

As a very first step the work will be focused on the creation of a Scenario building and analysis activity. This activity regards the definition of a number of scenarios and use cases (that will be built also through the involvement of the end users with the realisation of focus groups and in-depth interviews). On the basis of such scenarios the end users will be asked to provide: i) and initial feedback on the project foreseen services and features; ii) a specific indication of the characteristics/data that they will be willing to provide for DigMap; iii) a set of specific requirements, key features (including also information on data format) in regard to the data they will be providing (or willing to use) within the DigMap. During this phase also work to collect both user and technical requirements and to realise their first analysis will be realised.

The outcome of the work will be an abstraction of the features and services to satisfy the final users, a full scenario description able to capture the mapping between end-user needs and all the specific functionalities offered and required to the DigMap and to guide the further steps of the validation protocol activities.

### 3.1.5 TASK4: architecture technical specification

This activity will define the system architecture of the DigMap infrastructure. This includes list of the set of software components and the client applications to be developed under DigMap. Special attention will be paid to software interfaces, between already available software components and DigMap. Interfacing with components specifically developed in the context of the project will be clearly defined through detailed UML class diagrams. The outcome from all other tasks in this work package will be taken into consideration along with other critical factors (such as technology and implementation flexibility, scalability, adherence to industry standards, etc.).

The final DigMap platform will be specified as an open design that provides easy customisability for better integration with existing platforms. The approach will be 'User-Centred Design' (UCD), also known as 'pervasive usability', in which specific attention is paid by users to the final infrastructure at each stage of the design process. The main difference from classical design strategy is that UCD fosters optimisation around the specific use cases, adapting the design to respond to the user requirements rather than assuming the user will change their existing behaviour.

This will be based on a multi-stage approach that will not only assume how the user will be using the system, but also assess the validity of assumption through test according to the use cases as defined during functional specification. The results of this task, will bring to the definition of the UML-based document DigMap system architecture.

### 3.1.6 TASK5: DigMap SWAT analysis

DigMap SWAT (**s**trengths, **w**eaknesses, **o**pportunities) analysis will evaluate and compare DigMap with similar commercial solutions from leading GIS vendors like ESRI, Oracle, Intergraph in terms of functionality and implementation cost.

### 3.1.7 TASK6: commercial feasibility study

The task will produce a blueprint that will provide the foundation of any exploitation initiative through a Business Plan, thus benefiting from common knowledge and experience. The methodology revolves around the identification of the AS-IS business scenarios, thus identifying the target market, competition and internal competencies. This will lead to the creation of the appropriate DigMap business model, where the corresponding market segments will be estimated according to the best practice models of market forecast.

To this extent both post-project technological and market feasibility of the DigMap outcomes will be fostered. After the conception of a business framework, the derivation of business models for different application cases derived from the DigMap scenarios will follow.

A business model will be the basis for a 5-year business including the required investments and the estimated Return on Investment (ROI).

In essence the methodology will produce a business plan that will also include a strategy, financial analysis with meticulous risk analysis. The risk analysis will be performed to detect any potential weakness and identify adequate solutions.

### 3.1.8 TASK7: potential users survey

Potential users that express interest in DigMap project will fulfill survey. The survey will do all of the following:

- Create user profiles and target groups: categorization of users
- Reveal existing service issues and opportunities regarding map excerpts
- Identify (unmet) needs
- Have an implicit marketing function
- Obtain input for strategic DigMap development planning
- Perceived benefits (impact): perceived benefits of using DigMap service

The reference interview remains a valid avenue to determine what a user needs. Interview will be conducted with selected user to determine are DigMap assumptions and specifications valid.

### 3.1.9 TASK8: DigMap brand graphical design

DigMap graphical design will enable easy DigMap recognition by using simple logo, fonts and colors combination. Logo will help to communicate and implement brand that will become stronger by communicating one consistent visual identity. The brand will be recognizable and it will accurately symbolize the benefits of this great project we are all proud to be a part of. The color, the content and the symbol of DigMap will communicate what the project is. DigMap brand graphical design will be selected on Logo Design Contest.

## 3.2 Management structure and procedures

Management procedures will follow PMI best practice described in A Guide to the Project Management Body of Knowledge (PMBOK Guide). Consortium is composed of four top professional consultants with lean management structure, with Mr. Subanović as a project manager and three SMEs (subject matter experts).

## 3.3 Consortium as a whole

Consortium is based on key experts, top independent professional consultants, with ten, fifteen or more years of experience in IT system development and project management. Key experts are having long history of business experience in working with spatial data primary in area of Cadastre and Meteorology.

## 3.4 Resources to be committed

| | A. Costs of the feasibility study/Direct and indirect costs of the action | Total costs | Reimbursement rate % | Maximum EU contribution | Maximum grant amount |
|---|---|---|---|---|---|
| Form of costs | Lump sum | *(in EUR)* | | *(in EUR)* | *(in EUR)* |
| | 50 000 | 71 429 | 70 % | 50 000 | 50 000 |

Table 2 Work package description

| | |
|---|---|
| **Work Package Title** | Feasibility Study |
| | |
| **Objectives**: please see chapter "3 Implementation" on page 7 | |
| | |
| **Description of work** (where appropriate, broken down into tasks), lead partner and role of participants: please see Table 1 3.1.1 Deliverables with Responsibility Assignment Matrix (RACI) chart on page 7 | |
| | |
| **Deliverable:** please see chapter "3.1.1 Deliverable" on page 7<br>**Feasibility report, including a business plan** | |

# 4 Members of the consortium

### 4.1.1 Geo-Meteo j.d.o.o. - www.meteo-info.hr

**Geo-Meteo j.d.o.o.** is SME for performance and development of projects in the scope of geology, geophysics and meteorology. In its activities, Geo-Meteo uses several methods to present data and data fields on geographical maps and has experience in this scope. It has three employees, two meteorologists and one technician. Geo-Meteo has different clients, from Croatian National Electric Company, Air, Maritime and Railway Traffic Accident Investigation Agency to RTL TV, two biggest Croatian newspapers and several Internet portals of different kinds. Geo-Meteo has ISO 9001:2008 Certificate in the scope of meteorology.

### 4.1.2 yottabyte j.d.o.o. - www.yottabyte.hr

**yottabyte j.d.o.o.** is establish with mission to provide high quality consulting in ICT field. Services are provided by independent expert, Krunoslav Hrnjak, M. Sc. E.E., MBA, PMP, a company owner, ICT professional with ten years' experience. Logistics and support is provided by Tihana Hrnjak, Master of Political Science, and certified EU funded project's manager. yottabyte is offering full range of services including consulting, design, project management, education and turnkey solution implementation.

### 4.1.3 li:st geoinformatika d.o.o. - www.li-st.net

**LIST geoinformatika d.o.o.** is GIS Company founded in 2012. Although only recently founded, it gathers GIS and IT professionals with long experience in Croatian GI market with international experience. Its main area of expertise is providing consultant services for GIS, SDI and INSPIRES, as well as implementation of nation – wide GIS systems. The company is actively supporting creation of Croatian SDI through participation in working group for technical standards of Croatian SDI, Technical Committee 211 for geo-information of Croatian Standards Institute and implementing unique web map applications. The overall number of professional resources employed and collaborating with LIST geoinformatika is up to 5 persons including project managers, GI and IT experts.

#### *4.1.3.1 Key personnel*

#### *4.1.3.2 Krunoslav Hrnjak*

Krunoslav Hrnjak, M. Sc. E.E., MBA, PMP, male, works as independent consultant and court witness expert. He has more than ten years of experience in ICT filed acquired in regional and international companies (Siemens, KING-ICT, Geofoto, Infosistem) in various roles as: developer, solution architect and project manager. He teaches Linux and Ruby at the Computing University Centre. Relevant experience include projects like AREC –development of public portal for spatial data dissemination in Republic of Macedonia, ARPIS – implementation of digital Cadastre in Armenia, PRAGMA - development of GIS cloud platform and solutions for local government and KIR - development of web based GIS solution for geodetic survey.

#### *4.1.3.3 Nebojša Subanović*

Nebojša Subanović, male, has experience in FP7 Project ROADIDEA. Currently, he is owner and general manager in Geo-Meteo j.d.o.o. meteorological company. He is graduated meteorologist with more than 17 years of meteorological experience, 15 of those in private companies.

#### *4.1.3.4 Tihana Hrnjak*

Tihana Hrnjak, M. A. in Political Science, female, certified EU funded project manager, provides logistic support for service-oriented businesses, tailor services to the particular client, act as a key account manager promoting company's services and taking care about marketing approach and client targeting. Tihana is irreplaceable in building a personal relationship with clients. She has experience in private entrepreneurship and currently is engaged in Erasmus+ program for entrepreneurship experience exchange.

#### 4.1.3.5 Dragan Divjak

Dragan Divjak, Mr.Sc. in Geodesy and Geoinformation, male, is a top expert in field of Cadastre, with fifteen years of experience. He is members of various professional bodies: Croatian Chamber of Charted Engineers (www.hkoig.hr), Technical Committee 211 for geoinformation of Croatian Standards Institute (www.hzn.hr), Croatian Cartographic Society (www.kartografija.hr), NSDI workgroup for technical standards (www.nipp.hr), NSDI workgroup for spatial data (www.nipp.hr), GIS Institute (www.i-gis.hr). He wrote about twenty papers and publications. As relevant professional experience he can point out:

- Consultant's services for production of a technical specification for a national geoportal of the Republic of Macedonia including methods for performance of quality control, quality assurance and supervision of the production, Development of Danube Reference Data and Service Infrastructure
- Development of Danube Reference Data and Service Infrastructure, support for the Digital Earth and Reference Data Unit of JRC in activities related to the development of the Danube Reference Data and Service Infrastructure (DRDSI) supporting the EU Danube Strategy.
- Consulting services for development of technical solution for implementation of Environmental protection portal – ENVI.
- iSCOPE project (www.iscopeproject.net) aims at providing a significant contribution to standards in the domain of smart city services, through contribution to extension and wider adoption of CityGML as key enabling open standard for 3D smart city services.

## 4.2 Third parties involved in the project

Call for cooperation will be send to DigMap main technology providers, Geoserver developers: Boundless (former OpenGeo), GeoSolutions, Refractions Research, and JasperReport developer TIBCO Jaspersoft. Co-engineering with DigMap technology providers would result with GeoReport solution as general purpose report solution with spatial data reporting capabilities and broader commercialization of DigMap main technology providers. Cooperation with named companies is not mandatory but it would be beneficial for project.

Task DigMap brand graphical design will be purchased through the public call on design contest. Marketing analysis and commercially available analytical reports (like Gartner, IDC Adriatic etc.) will be subject for third party consulting services not selected at this phase.

# 5 Ethics and security

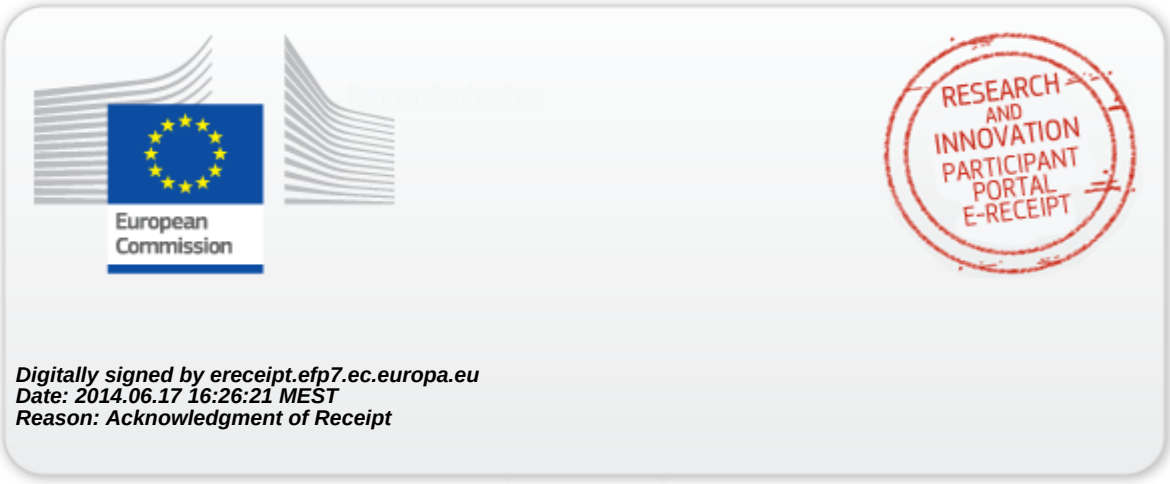
## 5.1 Ethics

Please see Administrative Form Part 4 for the completed Ethics Table, this confirms that **there are no Ethical Issues** arising from the implementation of DigMap project.

As a member of an internationally recognized association for the project management PMI (Project Management Institute) and as a Certified Project Manager PMP (Project Management Professional), Krunoslav Hrnjak respects and implements high standards for top professionals through a code of ethics for the PMI, which is developed around four core values: responsibility, respect, fairness and honesty. Other team members also oblige to respect and implement a PMI code of ethics.

## 5.2 Security

- activities or results raising security issues: NO
- 'EU-classified information' as background or results: NO

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