



**2019-IPR-B-000-013309**

**INSPIRE-OpenStreetMap integration**

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| <p><b>Position for:</b></p> <p>Trainee</p> | <p>As the science and knowledge service of the Commission, the mission of Joint Research Centre is to support EU policies with independent evidence throughout the whole policy cycle.</p> <p>The JRC is located in 5 Member States (Belgium, Germany, Italy, the Netherlands and Spain). Further information is available at: <a href="http://www.jrc.ec.europa.eu">http://www.jrc.ec.europa.eu</a></p> <p>The Digital Economy Unit (JRC-DE) of the JRC Directorate Growth and Innovation provides quantitative and qualitative techno-socio-economic research targeting the impacts of Digital Transformation (DT) on the economy and society. It aims to provide an independent assessment of key opportunities and challenges for Europe arising from new digital technologies and of the measures that could be taken to shape future outcomes to the benefit of European society.</p> <p>The Unit has been the technical coordinator of the implementation of INSPIRE (Infrastructure for Spatial Information in Europe) Directive.</p> <p><b><u>Short description of activity:</u></b></p> <p>The purpose of this traineeship is to investigate possible synergies between the INSPIRE and OpenStreetMap (OSM) data ecosystems, including the feasibility of developing an OSM encoding for INSPIRE data. This will include the analysis and comparison of the conceptual data models and default encoding of INSPIRE and OSM data, the definition of transformation rules to encode INSPIRE data into the OSM data structure (and possibly vice versa), transforming existing INSPIRE data sets for selected themes and integrating them with OSM data sets.</p> <p>The trainee will also document the pros and cons of the transformation, technical and organisational barriers and challenges</p> |
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encountered, as well as usability issues solved. The trainee is encouraged to present their findings in scientific papers and/or at conferences or workshops.

**Background:** The INSPIRE Directive (Infrastructure for Spatial Information in Europe) has established a legal, technical and organisational framework for the creation of a pan-European spatial data infrastructure (SDI) to support EU environmental policies as well as policies or activities which may have an impact on the environment. INSPIRE fosters sharing environmental spatial information among public sector organisations of EU Member States to facilitate public access to such information across Europe and assist in policy-making across boundaries. From the technical perspective the main components of the infrastructure, which is at large based on open standards (e.g. from ISO and the Open Geospatial Consortium - OGC), are metadata, data sets and network services.

The spatial scope of INSPIRE covers 34 cross-sectoral data themes, whose conceptual data models are defined using the Unified Modeling Language (UML). The default encoding rule maps these UML models to XML Application Schemas, which makes the Geography Markup Language (GML) the default encoding for INSPIRE data. To improve the accessibility and usability of INSPIRE data, Action 2017.2 on alternative encodings for INSPIRE data has defined alternative encoding rules for INSPIRE data departing from the same UML models. Most notably, the Action has developed a GeoJSON encoding rule for INSPIRE. Other efforts are expected to follow within the INSPIRE community to develop additional encoding rules, targeting both specific community domains and/or specific formats (e.g. GeoPackage).

In parallel, the OpenStreetMap (OSM) project is gaining popularity in many geospatial-related disciplines. Started in 2004, it aims at creating a crowdsourced database of spatial vector objects with a global coverage. Thanks to the open license under which it is distributed (ODbL), the OSM database is increasingly used by a variety of actors including governments, not-for-profit and humanitarian organizations, businesses and researchers. The number of contributors is steadily growing and many studies have already demonstrated that the quality of OSM data is often comparable, if not even better,

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|                                   | <p>than the corresponding authoritative data sets.</p> <p><b>Reference:</b> Minghini M., Kotsev A. and Lutz M. (2019) Comparing INSPIRE and OpenStreetMap data: how to make the most out of the two worlds. The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences Volume XLII-4/W14, 167-174. <a href="https://www.int-arch-photogramm-remote-sens-spatial-inf-sci.net/XLII-4-W14/167/2019/">https://www.int-arch-photogramm-remote-sens-spatial-inf-sci.net/XLII-4-W14/167/2019/</a></p> <p><b>Qualifications:</b></p> <p><b>Essential:</b></p> <ul style="list-style-type: none"> <li>• The candidate shall have a Masters/PhD degree, or be enrolled in a PhD degree or the final year of a Masters degree in Geo-information Science, Geomatics, Computer Science, or a related discipline.</li> <li>• The candidate shall be familiar with geospatial data formats and standards and the OpenStreetMap project.</li> <li>• Good knowledge of spoken and written English (level B2).</li> </ul> <p><b>Advantage:</b></p> <ul style="list-style-type: none"> <li>• Knowledge and experience in INSPIRE</li> <li>• Knowledge of UML</li> <li>• Basic programming skills (data management &amp; processing)</li> </ul> <p><b><u>For general eligibility requirements, please read the rules governing the traineeship scheme of the JRC:</u></b></p> <p><a href="https://ec.europa.eu/jrc/en/working-with-us/jobs/temporary-positions/jrc-trainees">https://ec.europa.eu/jrc/en/working-with-us/jobs/temporary-positions/jrc-trainees</a></p> |
| <b>Unit /Directorate</b>          | Directorate B Growth and Innovation<br>Unit B.6 Digital Economy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Duration</b>                   | 5 months                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Preferred starting date</b>    | Q1/2020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>JRC Site</b>                   | Ispra                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Country</b>                    | Italy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b><u>JRC contact details</u></b> | <p><b>For any technical problems with your application, please contact:</b></p> <p><a href="mailto:HR-AMC8-RECRUITMENT-TOOLS-SUPPORT@ec.europa.eu">HR-AMC8-RECRUITMENT-TOOLS-SUPPORT@ec.europa.eu</a></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |