SPARQLing Geodesy for Cultural Heritage – New Opportunities for Publishing and Analysing Volunteered Linked (geo-)data

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SUMMARY

Geodesists are part of a global digital connected world: the cloud. We practice Industry 4.0 and Spatial Information Management by using cross linked machines, people and data. Moreover, open source software, open geodata and open access are becoming increasingly important. Linked Open Data (LOD) must be published in order to provide free open geodata in interoperable formats, as part of the Semantic Web. As Smart Surveyors we have to control this process and implement tools as well as conceptional solutions for spatial data processing technologies. Some administrative agencies like the Ordnance Survey Ireland, provide geodata as LOD, interlinked with several resources in the World Wide Web. Furthermore, community driven volunteered databases such as Wikidata and Open Street Map (OSM) are continuously growing as they become enriched with source information and linked to related information in other official databases. The combination of these repositories, as well as other databases of natural sciences, cultural heritage (CH), etc. build a Linked Open Data Cloud containing Geospatial Big Data. However, this data is semantically structured and standardised by the W3C, so it would be easy to implement tools for GIS applications e.g. QGIS.

In these days, world's CH is being destroyed as a result of wars, sea- level rise, floods and other natural disasters by climate change. Several transnational initiatives try to preserve our CH via 3D digitalisation. In addition, volunteered databases like OSM and Wikidata allows everyone to easily preserve CH items in a digital way like LOD.

As best practice for preserving data serves the `Ogi-Ogam Project` with the aim to show an easy volunteered approach to model Irish `Ogam Stones` containing Ogham inscriptions in Wikidata and interlink them with spatial information in OSM and (geo)resources in the web. The project allows the preservation of CH data, involves volunteers, creates digital LOD and interlinks with geodata in

the cloud. The paper will present how easy it is to control the process of creating a Wikidata data model, inserting data, publishing as LOD, querying, implementing plugins, e.g. SPARQL Unicorn, and use them in third-party applications such as `R` or `QGIS` for statistical analysis. The cloud will continue to grow in the upcoming years as other interested parties, around the world begin to use this approach to preserve their local CH items, in a digital way. It will therefore be crucial for the geospatial community to take an active part of this technical evolution.