

## **Harmonising cross-thematic environmental data at the local level for global benefit: HUMBOLDT Urban Atlas Scenario**

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GMES and INSPIRE are mutually beneficial to the extent that:

- INSPIRE benefits from the GMES service use cases and reference material for service specifications that contribute to INSPIRE data and service specifications work;
- GMES service domains (land, marine, atmosphere), require coordination for the intersection between the domains and for the use of commonly agreed geospatial reference data sets;
- Extension of GMES services into the "horizontal" cross-cutting domains of Security, Emergency Response and Climate Change re-enforce the need for interoperability between services.

GIO (GMES Initial Operations) land services will be operational and as such an integrated part in support of operational workflows in the public interest domain. Land services should be therefore fully compliant with INSPIRE specifications and guidelines.

The FP6 HUMBOLDT project<sup>1</sup> provides various INSPIRE<sup>2</sup> and OGC<sup>3</sup> compliant state-of-the-art harmonisation tools and services (e.g. Humboldt Alignment Editor (HALE), Conceptual Schema Transformation (CST), etc) establishing a platform for developing cross-thematic harmonized environmental applications. These HUMBOLDT tools and services are applied in various environmental scenarios (use cases) in the domains of urban planning, forest, ocean, protected areas, river catchments, air quality, risk management and border security, where they are developed in respect of real-life use cases with the objective to demonstrate the effectiveness of the HUMBOLDT framework, compliance to INSPIRE standards and possible contributions towards GIO.

The need to secure interoperability between services is nowhere more evident than in the urban context. Urbanisation processes not only in Europe but also globally, are a major force for socio-economic evolution generating significant environmental impacts. The complex and inter-related drivers of change at the urban level that fuel the urbanisation process can create poor human health outcomes, biodiversity loss, excess GHG emissions, which in turn exacerbates climate change.

Major "win-win" policy co-benefits exist in reducing greenhouse gas emissions whilst enhancing human health, achieved by the promotion of more compact and less sprawling cities throughout Europe. However, the interconnectedness of urban drivers precludes the attainment of these policy co-benefits, unless measures of integrated environmental monitoring and management are deployed. One of the major requirements for the realisation of an integrated environmental monitoring system are tools and services to harmonise and integrate environmental spatial data, originating from various governmental and other agencies (e.g in-situ and space-based data) connected horizontally at the local, National and EU levels, using standards like INSPIRE, OGC, etc.

In the above context, the HUMBOLDT Urban Atlas scenario is an attempt to mitigate the cross-thematic harmonisation challenges providing the key to unlock the prime concerns of the policy end user to secure integrated intelligence that is critical to effective decision-making and policy integration. The HUMBOLDT Urban Atlas scenario demonstrates how non-standardized spatial environmental data from the Sustainable Observatory of the city of Vitoria-Gasteiz<sup>4</sup> (CEA) becomes compliant with European standards using the HUMBOLDT framework, providing interoperable communication with other European Spatial Data Infrastructures (ESDIs) and generating new environmental indicators at the local level.

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<sup>1</sup> <http://www.esdi-humboldt.eu/home.html>

<sup>2</sup> <http://inspire.jrc.ec.europa.eu/index.cfm>

<sup>3</sup> <http://www.opengeospatial.org/>

<sup>4</sup> <http://www.vitoria-gasteiz.org/cea/en/html/atlas-ambiental/medioFisico-Natural.shtml>