

Position paper INSPIRE – What if...?

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There is a major challenge for INSPIRE: how to create a stable, interoperable and useable infrastructure at acceptable costs (for development and maintenance) that at the same time is able to adopt new technology (/ standards) (because that will come the next years). Especially considering that the geospatial domain uses different types of standards (and a different approach) than other domains. Designing such an infrastructure for many years is a major challenge, for which we don't have all answers. In this paper we share ideas and views to start discussions for (re)designing the INSPIRE infrastructure.

1. Start with a simple, basic level. (KISS). Only if necessary, and if users can handle it, allow for more complex models on top of that.

In different domains, different specifications are used. And over time, different data encoding standards and practices evolve. A basic level facilitates the use of different (multiple) standards and specifications. The Simple Features model can be part of this basic level. The core of every data specification should be a simple features profile.

Current data specifications are tightly coupled to GML, which makes it hard to use other encodings than GML. In practice, complex GML is hard to use in common tooling. Simple features are supported in most tooling / software and allows for other encodings (like GeoJSON / JSON-LD and CSV on the Web¹ for some cases).

We do not think GML will be the standard of choice for geospatial data in 2025-2030. The practice of using XML for data exchange is on the decline. To enable a smooth transition to other standards, i.e. to remain flexible, the data models should not be tightly coupled to GML or any other exchange format.

Linked data (principles) can provide a solution for defining the models (using vocabularies or lightweight ontologies i.e. ontologies with a simple core defined in rdfs) and maybe for encoding data too. Because of the diversity in member states, the open world assumption of Linked data may be a better fit than the closed world assumption of UML/GML. Although Linked Data may remain somewhat of a niche technology, with JSON-LD or Schema.org, for example, it is easy to publish data in a simple features model *and* provide semantics. JSON-LD is supported more and more by search engines too.

You could ask yourself if you would still need catalogues in the world of 2020 and beyond. Catalogues are often designed for expert users, while the majority of people use search engines to find things on the web. However metadata is important both for making data discoverable and for allowing users to judge the fitness for use of data. For publishing metadata catalogues could still be used. In that case it would be very valuable to *also* provide DCAT / GeoDCAT encodings in addition to ISO 19139 (for 19115/19119). But most importantly metadata should be published in such a way that it becomes findable in search engines. Nowadays that's HTML + schema.org.

2. Build on top of the current geospatial infrastructure - in terms of resources and protocols - without using INSPIRE specific mandatory extensions. Extensions make implementation harder in terms of software, maintenance and knowledge required for data providers. The existing infrastructure is used quite a lot and core OGC specifications like GML, WMS and WFS are still supported widely and probably will be for some years.

¹ <https://www.w3.org/TR/tabular-data-primer/>

But WMS and WFS are for expert users. On top or next to these, publish REST APIs with a short “time to first succesful call”.

3. *Use web standards (in addition to current geospatial standards):*

We foresee that the next few years the geospatial domain will use general web & IT standards, protocols and approaches more and more. And non-geospatial will use spatial concepts more and more. *Spatial won't be special anymore*. However, the current INSPIRE infrastructure seems to be very hard to use by non-geospatial users. Common web standards will:

- increase “findability” / discoverability: e.g. every dataset could have an HTML webpage including annotations and/or linked data (e.g. JSON-LD snippets in an HTML page) as metadata “record”, that can be indexed by search engines and with download links for entire datasets.
- increase adoption / use outside the geospatial domain: no special knowledge required to use data. E.g.: use REST APIs serving (Geo)JSON and CSV where possible to support (web) developers.

Implementation could be on top of the existing infrastructure.

About this document

This position paper contains ideas and views of the authors. The authors all work at Geonovum (the Netherlands), on INSPIRE and (general) geospatial standards. This document is not a formal position of Geonovum, but serves as the start of a discussion.