

Technical interoperability: How far should we standardise in order to obtain a successful SDI?

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Abstract

Although there is an increasing need to use spatial data in different domains of public and private sector, this is prohibited because many technical and organizational barriers exist. Technical barriers are, amongst others: gaps in data availability, non-harmonization of data, lack of documentation of the data (metadata) and difficult access to the data. In view to overcome such barriers and to increase use and re-use of spatial data, producers and users of such data are increasingly engaged in the development of spatial data infrastructures (SDI).

An SDI is a set of organizational arrangements and technical set-ups within and between all stakeholders to provide effective, efficient, feasible and flexible solutions to share and use spatial data. The Internet is the backbone of such an SDI. From the technical point of view, the SDI can be compared with a network of nodes which are linked to each other to enhance spatial data sharing and access. Each producer and user of spatial data is a (potential) node of the network, while the links between the nodes represent the relationships between them. These relationships can be more or less intense. They can be weakened due to the existing barriers we referred to (technical and/or organizational). So the barriers are acting as a kind of impedance.

In order to overcome the technical barriers, and to enhance data sharing and access, SDI-components (data repositories, metadata catalogues, data services) must be technically interoperable. Technical standards have been developed, amongst others the ISO191XX-series, to address the issue of interoperability. In practice however, standards are poorly adhered to, and they are even less integrated in existing business processes (Reed, 2004). There is often no clear strategy for implementing them and/or they are applied in isolation. In addition, standards are evolving over time with several standardization bodies and consortia involved. This makes implementation even more complex.

In the upcoming research, we want to inventory the technical SDI-standards. Not by only listing them, but especially by analyzing their dynamic evolution over time. A comparative analysis will be carried out of the functioning and performance (in terms of effectiveness, efficiency, feasibility and flexibility) of SDI-nodes in Flanders (Belgium), adhering to those standards to a larger or lesser extent. This will lead to an evaluation of the role and importance of applying standards in the dynamic SDI-context. This should in turn also lead to the definition of different technical options and scenario's in view of criteria as defined by different stakeholders. In this context a key question will be: to which extent (and how) should standards be applied in order to make it 'work'? Where applicable, improvements will be proposed. A final, but important question is how interoperability and compliancy to standards can be measured. Therefore, procedures for testing of compliancy or conformity to standards will be reviewed, compared and applied to the Flemish situation.

The presentation summarizes the problem of interoperability from the technical point of view. We describe the major and secondary technical research questions that should be answered. But we also try to define how the technical options can have different organizational, social, economical and legal impacts and vice versa.