

# Fit for purpose: Tools Supporting A Decentralized Infrastructure

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**Key words:** Digital Cadastre, Fit-for-purpose, GSDI, Data Quality, Data Exchange, standards

## Abstract

The fit-for-purpose approach is a recognised method for speeding up the mapping and bounding delineation of land administration systems. The participatory approach with grassroots surveyors in remote areas requires the use of decentralised land administration systems. In order to validate the acquired data, experiences show that it is helpful to export data sets and merge them into a centralized storage. Such a database can also be used as source for making the data available to the citizen through web-applications or apps. By having data merged together in a complex infrastructure must only be maintained at one place. A viable approach for decentralized mapping systems with integrated data validation, data exchange from decentral organisation to a central agency is presented.

The fundament of the solutions is built upon INTERLIS: While INTERLIS was originally designed and used mainly for land administration; it is not restricted to land administration data modelling. In fact INTERLIS is a general purpose modelling language. Due to its flexibility it has become part of the Swiss Act on Geoinformation (Swiss Confederation, 2007). INTERLIS has a unique set of features setting it well apart from other modelling standards (i.e. UML, XML-Schema or EXPRESS):

- INTERLIS can be used to describe relational or object-oriented data models in a system neutral way;
- INTERLIS can be easily understood by application and IT experts, therefore bridging the gap between IT and application domains;
- each INTERLIS data model automatically defines a system neutral XML based data exchange format;
- the language has built-in geometric data types (point, poly-line, polygon), making it especially suitable for models in the geoinformation domain
- it is possible to quality check INTERLIS data against INTERLIS data models, thereby enabling fully automated quality control of spatial data including geometric attributes;
- INTERLIS is compatible with the most relevant international standards (UML, XML Schema, XML, GML);
- as a system neutral data exchange mechanism, it is a perfect format not only for the exchange of data, but also for archiving versions of data sets.

There is a flourishing ecosystem around INTERLIS which will be presented:

- the INTERLIS compiler checks the syntactical correctness of an INTERLIS data model (free);
- the INTERLIS checker (infoGrips, 2006) can quality check INTERLIS XML data against INTERLIS data models (free);

- the INTERLIS UML editor is used to create INTERLIS models from UML diagrams or to visualize existing INTERLIS data models as UML diagrams (free);
- data translators can convert data sets from many GIS systems / databases to and from INTERLIS XML (free and commercial);
- schema tools can generate database schemata directly from INTERLIS data models (free and commercial);
- there is even a web based data server / map server based on INTERLIS (commercial).

The entire range of products are completely in-line with ISO/OGC standards (ISO 19152, GML, WMS etc.) and the process chain for is well established for large amount of data collected by many different organisations. The lightning talk and the session will show the implementation of LADM in INTERLIS, production systems and validation systems mainly based on open source components.

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