Introduction to INTERLIS

Michael Germann

AGENDA

- Who we are
- Introduction to INTERLIS
- Discussion and further Steps

Introduction to INTERLIS, History 1/2

- First Documents from 1987
- Digitalisation of the Swiss Cadastre
  - Federal structure of Cadastre (Government / Canton / Community)
  - Decentralized data collection: 300 private surveying offices
  - IT Systems from many different vendors in use for Cadastre (Unisys, Intergraph, Leica, Adasys, others)
- Proposed solution
  - **System neutral data modelling language** INTERLIS with **system neutral data exchange mechanism** ITF
  - **Freedom of methods** (i.e. free system choice)
  - **Only results count** (process to achieve goal is left open)

Introduction to INTERLIS, History 2/2

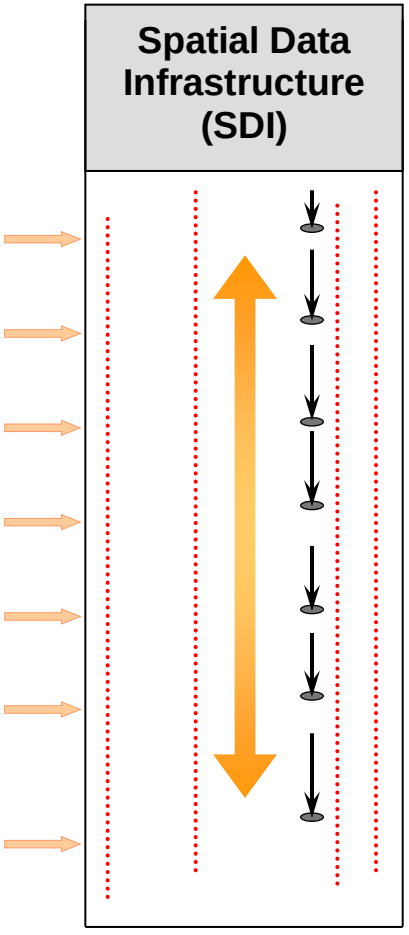
- 1993: First official data model for Cadastre (AV93)
- 1998: First SIA (Swiss Engineers and Architects) data models for utility services (water, sewage, electricity, gas, remote heating)
- 2004: Land registry modelled in INTERLIS
- 2007: INTERLIS 2.3 (object oriented modelling language)
- 2007: Geoinformation law, with INTERLIS mentioned in the law to define all **160 federal data layers** in Switzerland
- 2010: Cadaster / Register model of Azerbaijan
- 2014: ISO 19152 LADM modelled in INTERLIS
- 2016: Cadaster / Register, Public Law restrictions Columbia (on-going)
- 2016: more than 120 federal data layers modelled in INTERLIS (see models.geo.admin.ch)

We focus on Content NOT Formats !!!

SES - Common Data Integration Concept

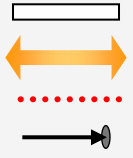
(Spatial Enabled Society, holistic View on Information)

Legal topic	Institution, stakeholder	spatial data and textual data
Water/noise protection	Local government	
Environ. protection	Environ. dept.	
Land-use planning	Planning dept.	
Collective land rights	Corporations, tribes, clan	
Land valuation	Government	
Public-law restrictions	Government	
Land registry, cadastre	National government State government Local government	



Four basic principles for a common data integration concept:

1) to respect the legal / institutional independence of stakeholders
2) to use a standardized data modelling concept
3) to use a common geodetic reference framework
4) no logic relations to objects in different topic except through geographic location



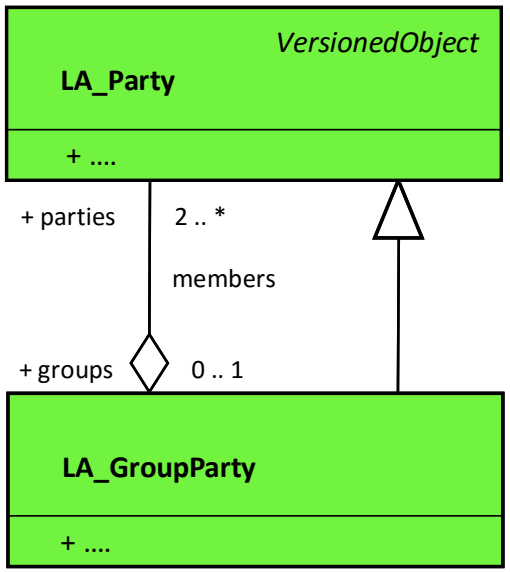
Introduction to INTERLIS, Language Features

- **Object oriented, very precise** modelling language
- **Human and Machine** readable
- **Textual representation of models with rigid syntax** (free compiler to check model syntax is available)
- **Built in data types for geo information systems** (coordinates, lines, surfaces in 2D/3D)
- **Built in constraint language** (foundation for checker, check service)
- **System neutral data exchange** based on XML. **XML schemas (XTF or GML) are derived by encoding rules** from INTERLIS model
- All **documentation is freely available** in German, French, Spanish and English from www.interlis.ch

Introduction to INTERLIS, Small Example 1/2

INTERLIS Model, from ISO19152 LADM (Land Administration Domain Model)

UML Diagram	INTERLIS Description

	CLASS **LA_Party** EXTENDS VersionedObject =
	  ...
	END **LA_Party**;
	
	CLASS **LA_GroupParty** EXTENDS **LA_Party** =
	  ...
	END **LA_GroupParty**;
	
	ASSOCIATION members =
	  parties -- {2..*} LA_Party;
	  groups -<> {0..1} LA_GroupParty;
	  share: Fraction;
	END members;

Introduction to INTERLIS, Small Example 2/2

XML-Transfer, from ISO19152 LADM (Land Administration Domain Model)

```
<?xml version="1.0" encoding="UTF-8" ?>
<TRANSFER xmlns="http://www.interlis.ch/INTERLIS2.3">
  <HEADERSECTION VERSION="2.3" SENDER="UNKNOWN">
    <MODELS>
      <MODEL NAME="LADM_CH_V1_LV03_EN" URI="http://www.infogrips.ch" VERSION="" />
    </MODELS>
    …
  </HEADERSECTION>
  <DATASECTION>
    <LADM_CH_V1_LV03_EN.Control_Points BID="xBASKET1">
      <LADM_CH_V1_LV03_EN.Control_Points.ControlPoint TID="xControlPoint.8">
        <originalLocation>
          <COORD><C1>606502.434</C1><C2>228932.101</C2></COORD>
        </originalLocation>
        <pID>
          <LADM_V1.Oid>
            <namespace>CH02000000SO</namespace>
            <localId>25a</localId>
          </LADM_V1.Oid>
        </pID>
      </LADM_CH_V1_LV03_EN.Control_Points.ControlPoint>
      …
    <LADM_CH_V1_LV03_EN.Control_Points>
  </DATASECTION>
</TRANSFER>
```

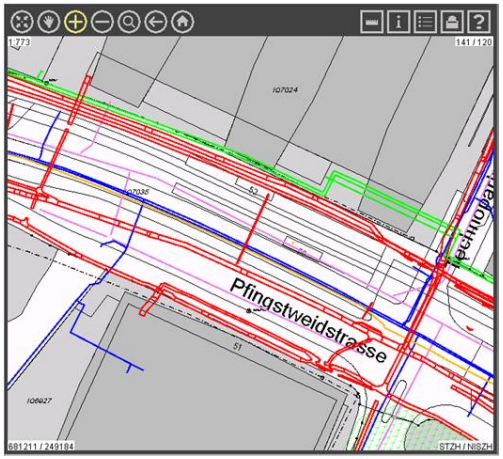
Introduction to INTERLIS, Tools

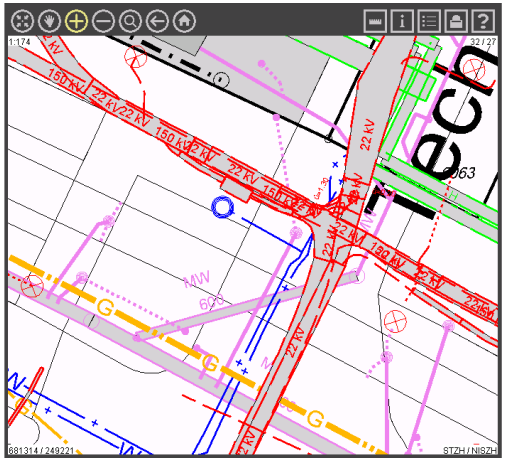
- **Free Compiler** to check the syntax of models
- **Free Checker** to validate XML data against data models
- **Free UML Editor** to create / visualize INTERLIS models with UML diagrams
- Many **commercial and non commercial tools** from different vendors (i.e. data translators, db generators, data quality check services, data servers, etc.)

INTERLIS is implemented and we use it every day !!!
(see www.interlis.ch)

Introduction to INTERLIS, Applications 1/2

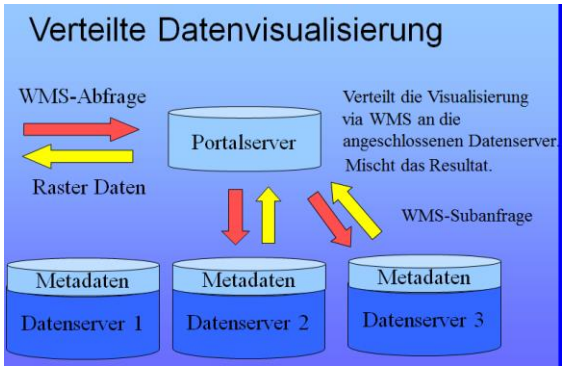
- **Geoportal of the City of Zürich**
  - Decentral data collection and distribution
  - Many layers (cadastre, water, sewage, electricity, tree cadastre, etc.)
  - Data updates are published the same day
  - INTERLIS used for system and db upgrades

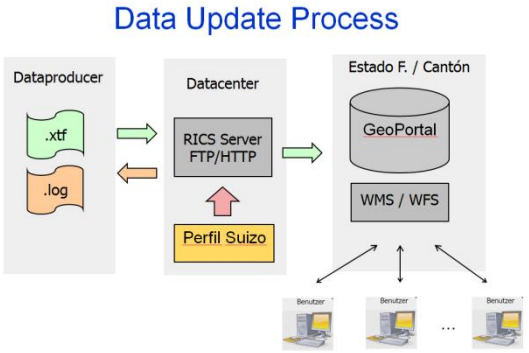




Introduction to INTERLIS, Applications 2/2

- **Cadastre portal of Switzerland**
  - Distributed architecture
  - Automated data quality control by check service
  - Backup and archive of spatial data
  - Data updates at least once per month (normally daily / weekly)
  - Supports desktop and mobile devices





Discussion and further Steps

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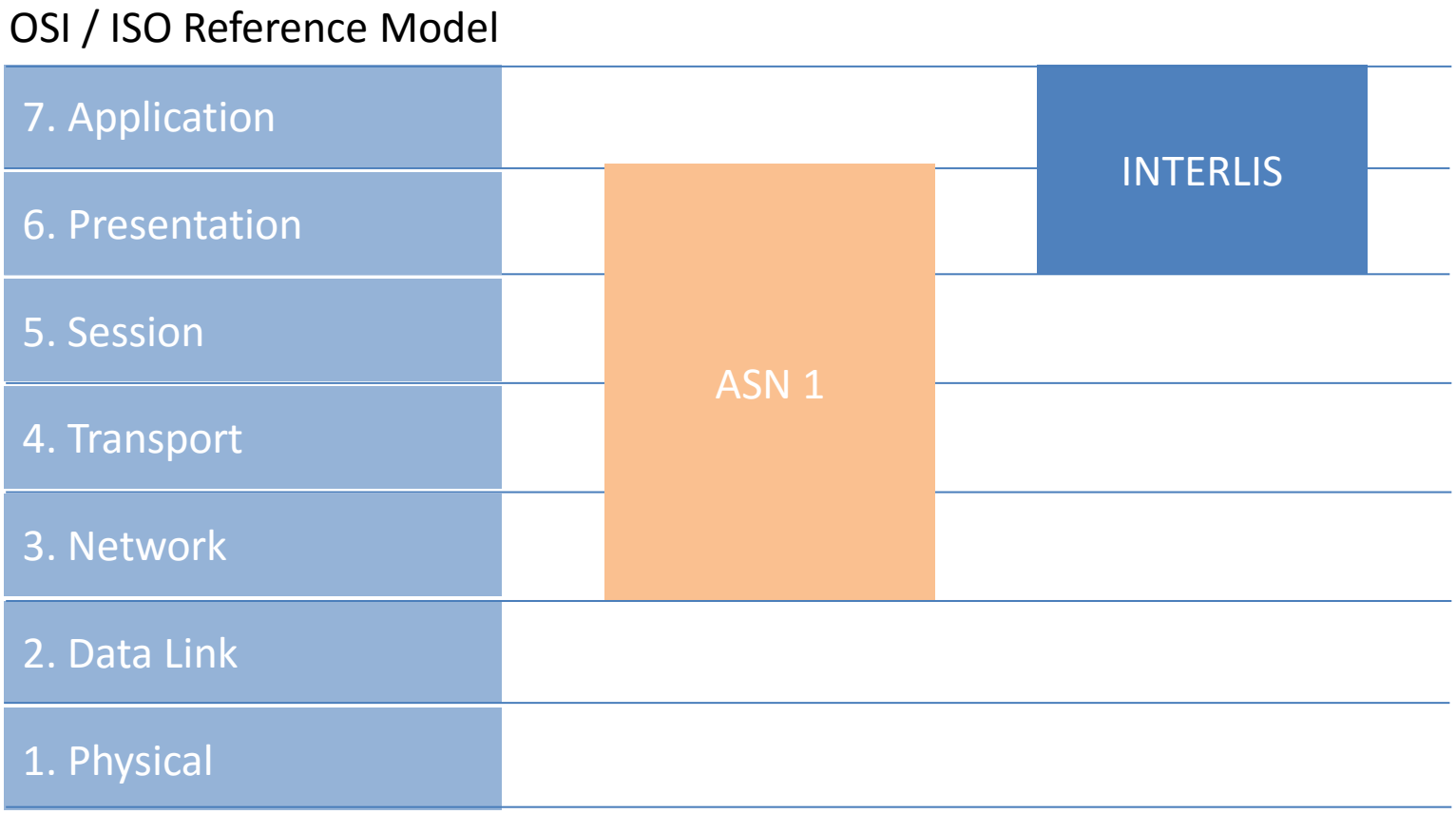

INTERLIS & Data Exchange Formats