



# Spatial Data Infrastructures in Liechtenstein: State of play Spring 2003

Country report on SDI elaborated in  
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3.0	2003-08-14	Jos Van Orshoven (SADL)	Harmonisation with 31 other country reports

## Executive summary

Already in 1995, the Liechtenstein government decided to build an integrated land information system (LIS/GIS-FL) covering its complete territory and containing geo-datasets for multiple use by various public users.

The responsible authority for the LIS/GIS-FL-project and for general spatial and geographic data and services, is the Office for Civil Engineering (*in German: Tiefbauamt - TBA*). This office maintains an on-line geo-data portal for the country. The principle functions of the TBA cover: construction and maintenance of roads, mudflows and lakes/rivers, survey, land information.

Today, the LIS/GIS FL is operational and can be considered as a simple, centralised but operational NSDI for a limited user base. A crucial element as a metadata catalogue is however not available.

For issues of organisation, standardisation and technical characteristics, the Liechtenstein NSDI is heavily oriented towards the Swiss model. Hence, the INTERLIS standard is pertinently used.

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## Abbreviations and acronyms

INTERLIS	Data exchange mechanism for Land Information Systems
LIS/GIS FL	Land Information System/GIS in the Principality of Liechtenstein
NSDI	National Spatial Data Infrastructures
SD	Spatial Data
SDI	Spatial Data Infrastructure
TBA	Office for Civil Engineering ( <i>in German: Tiefbauamt</i> )

# 1. GENERAL INFORMATION

## 1.1 Method

This report is summarizing the review of SDI in Liechtenstein, and reflects the degree to which the SDI situation is similar to the ideas set out in the INSPIRE position papers<sup>1</sup>.

The report is based mainly on the analysis of a limited number of web sites and other documents readily accessible<sup>2</sup>:

- <http://lvweb.liechtenstein.li/> website of the Government
- [www.avw.liv.li](http://www.avw.liv.li) Statistical Office

A few comments have been provided in written (e-mail) form by Mr Hubert Büchel, from the Ministry for National Economy and Mr Jürg Kaufmann, advisor to the government of Liechtenstein in SDI-related matters. These have been integrated in the report.

Although Liechtenstein clearly is working on an NSDI or at least has launched some NSDI-like initiatives, limited documentation is readily available.

## 1.2 Background

Liechtenstein government contracted 1994 a consultant (Jürg Kaufmann) to submit a basic concept for a coordinated geo-information management in the Principality. The resulting report recommended<sup>3</sup>:

- to build-up a common data infrastructure based on the official cadastral surveying;
- to implement a unit for coordination of geo-information of the government and acting as a consulting body for municipalities, public-private and private enterprises;
- to draft a legal framework for geo-information;
- to constitute an executive board for the implementation on an NSDI;
- to implement a consultative unit for information exchange with the stakeholders.

The evolution towards an NSDI in Liechtenstein goes along with important reforms in the Cadastre. A key document is the report Cadastre 2014: From theory to practice (see Kaufmann, 1998). The Cadastre 2014 report has been used to structure the new cadastral system for the Principality of Liechtenstein including new cadastral laws which declare

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<sup>1</sup> INSPIRE position papers, final versions: RDM, ETC, DPLI, ASF, IST, IAS (latest version).

<sup>2</sup> Including the analysis of various documents, project references and web sites readily accessible. Most resources were gathered from the Internet. Liechtenstein was originally treated within the same report as Switzerland because in many areas, such as database creation, land cover, geology, etc. Switzerland extends its coverage to Liechtenstein. With this report Liechtenstein is described independently. Throughout the report a distinction is made between actual SDI initiatives and GI and GIS based projects. Key elements that should be in place for an SDI to exist are: Status - strategy (or mandate) for SDI to be developed and not a one-off effort; Co-ordination - who will administer and organise the SDI; Scope - broad based interest and stakeholder involvement; Promoting - awareness, documentation, access; Funding - dedicated resources, a clear plan to pay for it; Partnerships - getting players on-board.

<sup>3</sup> (reference e-mail from Juerg Kaufmann, 21 July 2003)

that every set of legal land objects<sup>4</sup> are to be part of the NSDI. The new cadastre contains a broad range of information which will be shared by State and Municipal authorities, citizens and the market players. The information includes: Private property parcels; Encumbrances; Land use zones; Water/hydrology; Landscapes; Noise protection zones; Rock fall areas; Avalanche areas; Landslide risk areas; Monuments and building protection zones; Agriculture protection zones; Civil protection; Sewerage; Energy infrastructures; etc.

Other events and actions have also contributed towards providing a solid foundation to establish the NSDI, one key component being the creation of the INTERLIS<sup>5</sup>, a system-independent data-modeling and data exchange mechanism.

In August 2003 the official eGovernment-portal <http://www.llv.li> becomes operational. It provides public access to the geo-information declared to be public by law. Additional geo-information for official purposes is available on the intranet.

### **1.3 Overview of selected SDI-initiatives**

One single NSDI-initiative has been detected and is described in more detail in Chapter 2, i.e. the GIS/LIS-FL project, which is becoming operational for the full territory of the Pincipality.

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<sup>4</sup> A land object is a piece of land in which homogeneous conditions exist within its outlines. The legal land objects are described by the legal content of a right or restriction and the boundaries which demarcate where the right or restriction applies. (see definition as provided in the report [Cadastre 2014](#)).

<sup>5</sup> INTERLIS was created in the mid 1980's and has been most recently elaborated to include adequate geo-data descriptions.

## **2. Details of the NSDI(FL) and GIS/LIS FL**

### **2.1 General information**

The government adopted the proposals for coordinated geo-information management by Kauffman (see Section 1.2) in Spring 1995. Since 1995 a continuous development of a NSDI in the framework of a project called LIS/GIS-FL is going on.

One of the results is that all efforts for data acquisition are now coordinated (e-mail from Jürg Kaufmann, 21 July 2003).

The competent authority in Liechtenstein for spatial and geographic data and services, including the LIS/GIS-FL-project, is the Office for Civil Engineering (*in German: Tiefbauamt - TBA*). This office maintains an on-line geo-data portal for the country. The principle functions of the TBA cover: construction and maintenance of roads, mudflows and lakes/rivers, survey, land information.

For access and more information on the geo-data portal the contact persons are:

Mr Heinz Ritter, [Heinz.Ritter@tba.li](mailto:Heinz.Ritter@tba.li)

Mr Herbert Marxer, [Herbert.Marxer@tba.li](mailto:Herbert.Marxer@tba.li) tel.: +423 236 68 51

### **2.2 Component 1: Legal framework and funding**

#### **2.2.1 Legal framework and organizational issues**

A legal framework taking into consideration the geo-information has been drafted (e-mail from Juerg Kaufmann, 21 July 2003)

The coordination of the NSDI lies with the *Tiefbauamt* and the *Amt für Personal und Organisation der Liechtensteinischen Landesverwaltung*.

Liechtenstein is cooperating very closely with Switzerland. One can even say that the SDI-strategy used in Switzerland will also be adopted in Liechtenstein. Liechtenstein is autonomous in the domain of GIS-activities, but for this subject matter Liechtenstein usually adopts the Swiss norms.

#### **2.2.2 Public-private partnerships (PPP's)**

Contracts between the government and the municipalities and companies about common utilization of SD have been elaborated. (e-mail from Juerg Kaufmann, 21 July 2003).

In Liechtenstein, the private sector is especially involved in the development of geographical data and products. Data is almost exclusively created for the public administration.

#### **2.2.3 Policy and legislation on access to public sector information**

No specific information is available for Liechtenstein except for a metadata service. Currently there is no metadata catalogue for Liechtenstein. The development of such a metadata catalogue is however planned, in cooperation with Switzerland.

## **2.2.4 Legal protection of GI by intellectual property rights**

There are no special regulations on legal protection of GI in Liechtenstein. All data of the NSDI are captured and maintained according to a private or public law. (e-mail from Juerg Kaufmann, 21 July 2003).

## **2.2.5 Restricted access to GI further to the legal protection of privacy**

In Liechtenstein the law on data protection (235.1) dates from March 14, 2002 and the respective ordinance (235.11) from July 7, 2002 (see [www.gesetze.li](http://www.gesetze.li)). The regulations are based on EU-guidelines. (e-mail from Juerg Kaufmann, 21 July 2003)

## **2.2.6 Licencing framework**

In Liechtenstein, all public authorities use the same licensing policy.

## **2.2.7 Funding model for SDI and pricing policy**

### ***Funding***

The state of Liechtenstein bears the largest part of the financing of the NSDI. The municipalities and utilities companies also bear part of the costs, i.e. the cost for their own specific databases.

### ***Pricing***

In Liechtenstein, all public authorities use the same pricing policy.

Liechtenstein has a regulation on fees (214.311.3), which applies to all GI of NSDI. (e-mail from Juerg Kaufmann, 21 July 2003)

## **2.3 Component 2: Reference data and core thematic data**

### **2.3.1 Scale and resolution: European, National, Regional, Local, Other**

### **2.3.2 Reference data and core thematic data by resolution or scale range**

Since 1995 Liechtenstein has had a nation wide LIS/GIS set up (referred to as the LIS/GIS FL). The data available include the following topics:

- The official cadastre survey (and all the data it contains or will contain: private property parcels; encumbrances; land use zones; water/hydrology; landscapes; noise protection zones; rock fall areas; avalanche areas; landslide risk areas; monuments and building protection zones; agriculture protection zones; civil protection; sewerage; energy infrastructures; etc. )
- Regional development planning;
- Environmental protection;

- Water pollution (prevention);
- Disaster (prevention);
- Agriculture;
- Civil defense.

There are more than 160 information layers in the LIS/GIS FL. The cadastre survey provides the geo-reference (data model) for all the data in the LIS/GIS FL, and all the datasets are defined following the INTERLIS standard.

### **2.3.3 Geodetic reference systems and projections**

Liechtenstein uses the same reference and projection systems as Switzerland. (e-mail from Juerg Kaufmann, 21 July 2003)

### **2.3.4 Quality of the reference data & core thematic data**

### **2.3.5 Interoperability**

The INTERLIS is a system-independent model driven approach for data exchange used in Switzerland and in the Principality of Liechtenstein.

INTERLIS provides for data transfer without information loss or requiring computer based checking and validation, while maintaining coherence, graphics descriptions, incremental updates, etc. In 1999 INTERLIS 2.0 was released. This version was specific for GI data description.

Interchange formats for Raster data appear to be according to TIFF specifications.

### **2.3.6 Language and culture**

The INTERLIS documentation is available in English, French, German, Italian.

## **2.4 *Component 3: Meta data for reference data and core thematic data***

Liechtenstein is using Geo-Shop for data distribution and intends to provide metadata according to the Swiss approach. (e-mail from Juerg Kaufmann, 21 July 2003)

## **2.5 *Component 4: Access and other services for reference data, core thematic data and their metadata***

No Information available

## **2.6 *Component 5: Standards***

Liechtenstein has fully opted for the INTERLIS-standards.

## **2.7 Component 6: Thematic environmental data**

The GIS/LIS FL is also designed to contain thematic environmental data. See section 2.3.2.

### 3. Annexes

#### 3.1 List of SDI addresses / contacts for Liechtenstein

Table: SDI contact list			
SDI Name (full)	Web address	Organisational mailing address	Over-all contact person: tel./fax/e-mail
National			
LIS/GIS-FL Coordination	<a href="http://www.llv.li">www.llv.li</a>	Coordination Spatial information c/o Tiefbauamt FL-9490 Vaduz	Peter Jehle <a href="mailto:Peter.Jehle@tba.llv.li">Peter.Jehle@tba.llv.li</a> Tel. +423 236 68 55
LIS/GIS-FL Consulting	<a href="http://homepage.hispved.ch/jkcons">homepage.hispved.ch/jkcons</a>	KAUFMANN CONSULTING Im Hauffeld 109 CH-8455 Rüdlingen	Jürg Kaufmann <a href="mailto:jkcons@swissonline.ch">jkcons@swissonline.ch</a> Tel. +41 1 867 14 36

#### 3.2 List of references for Liechtenstein

Publications:	
	Clark, Mike (2002). Briefing notes to the INSPIRE DPLI Working Group, <a href="#">Appendix A – EU Member States (briefl.doc)</a> .
	Craglia, M. (2000). Geographic Information Policies in Europe: National and Regional Perspectives – Report of the EUROGI-EC Data Policy Workshop, Amersfoort, 15 November 1999.
	Kaufmann, Jürg (1998). Cadastre 2014 – A vision for a future cadastral system. Report prepared for the International Federation of Surveyors (FIG), Commission 7 – Cadastre and land Management, Working Group 7.1 - Creating Land Administration in formal and informal environments. <a href="http://www.swisstopo.ch/fig-wg71/cad2014/cad2014/index.htm">http://www.swisstopo.ch/fig-wg71/cad2014/cad2014/index.htm</a>
	Kaufmann, Jürg and Joseph Dorfschmid (2001). “Reflections on the benefits and potential economy of geographic data standards”, Report #17e, February 2001.

	Masser, Ian (1999). "All shapes and sizes: the first generation of national spatialdata infrastructures", in the International Journal of Geographic Information Science, vol. 13(1), pp. 67-84
	Onsrud, H., Department of Spatial Information Science and Engineering, University of Maine, Orono, Maine. GSDI - Survey of National and Regional Spatial Data Infrastructure Activities Around the Globe, Part I – National Spatial Data Infrastructure Initiatives. <a href="http://www.spatial.maine.edu/~onsrud/GSDI.htm">http://www.spatial.maine.edu/~onsrud/GSDI.htm</a>
	When de Montalvo, Uta (2001). "Strategies for SDI implementation: A survey of national experiences. Paper presented at the 5th Global Spatial Data Infrastructure Conference, 21-25 May 2001