Federal Agency for Cartography and Geodesy

Session:

Database creation (theory)

v1.0

Pier-Giorgio Zaccheddu

Federal Agency for Cartography and Geodesy (BKG)

Richard-Strauss-Allee 11

60598 Frankfurt am Main

Tel.: +49 69 6333 305

Fax: +49 69 6333 441

Email: pier.zaccheddu@bkg.bund.de

Content

Preparing the names database – General issues

- What are the purposes of a database?
- Names database and Geographic Information System (GIS)
- Names database and Web
- Use cases for Web applications

Description of database characteristics – Database management

- Characteristics of databases
- Realisation of databases: open source vs. proprietary
- Data model vs. database modelling

Objectives for the ‘hands on’ experience for creating a database

I don’t want to…

- invest too much time in gaining technical IT knowledge
- understand the technical database management in detail
- use Geographic Information System (GIS) in future work
- technically understand Web services and Web applications

I do want to…

- understand a database model in principle
- discuss with and explain to my technical IT staff the use cases and database content
- explain the database model and its concept to my staff

What are the purposes of a DB?

Gazetteer

(printed)

Web

Names
DATABASE

national

GIS

Map

Names
DATABASE

international

What are the purposes of a DB?

Gazetteer

(printed)

Web

Names
DATABASE

national

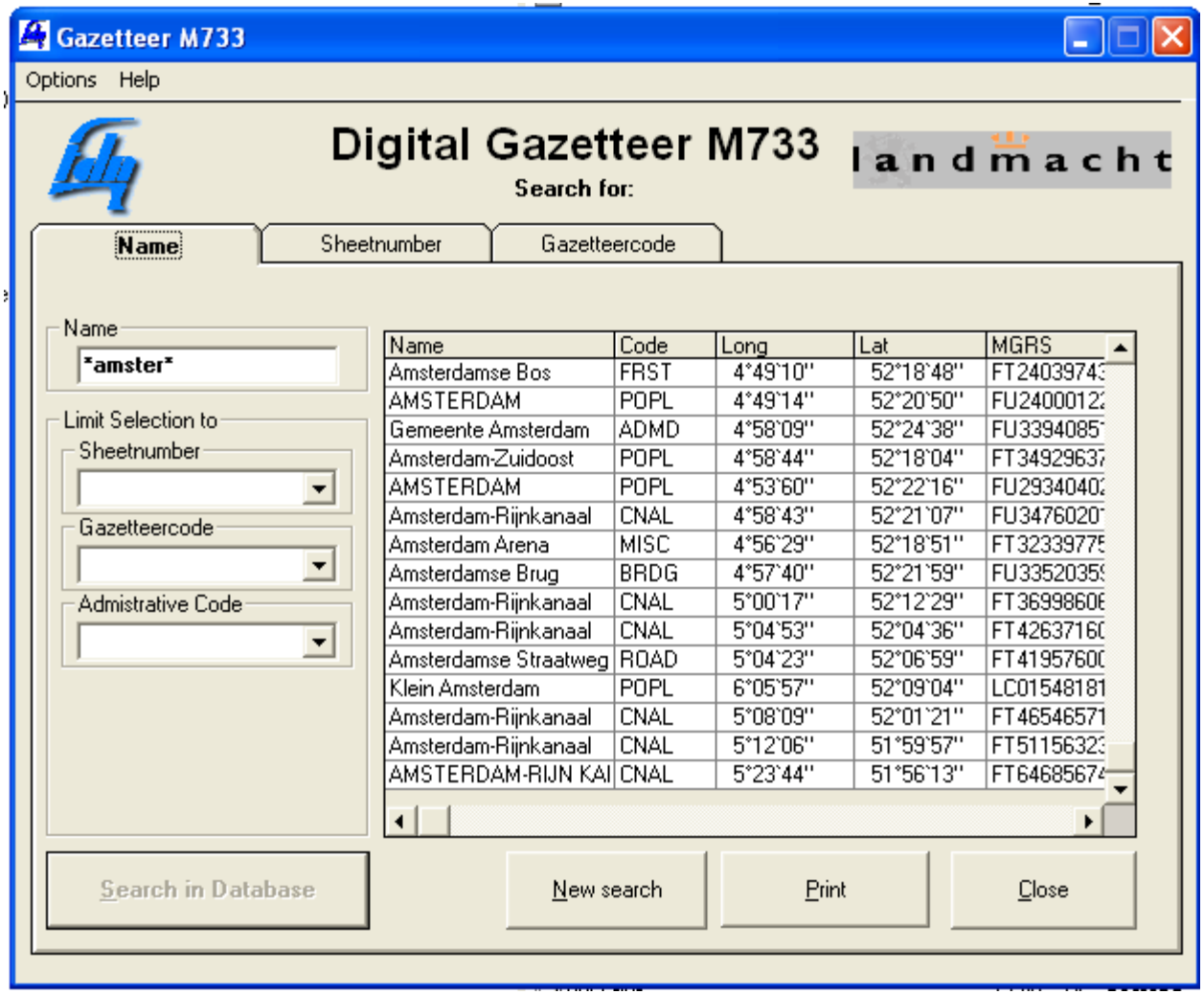
GIS

Map

Names
DATABASE

international

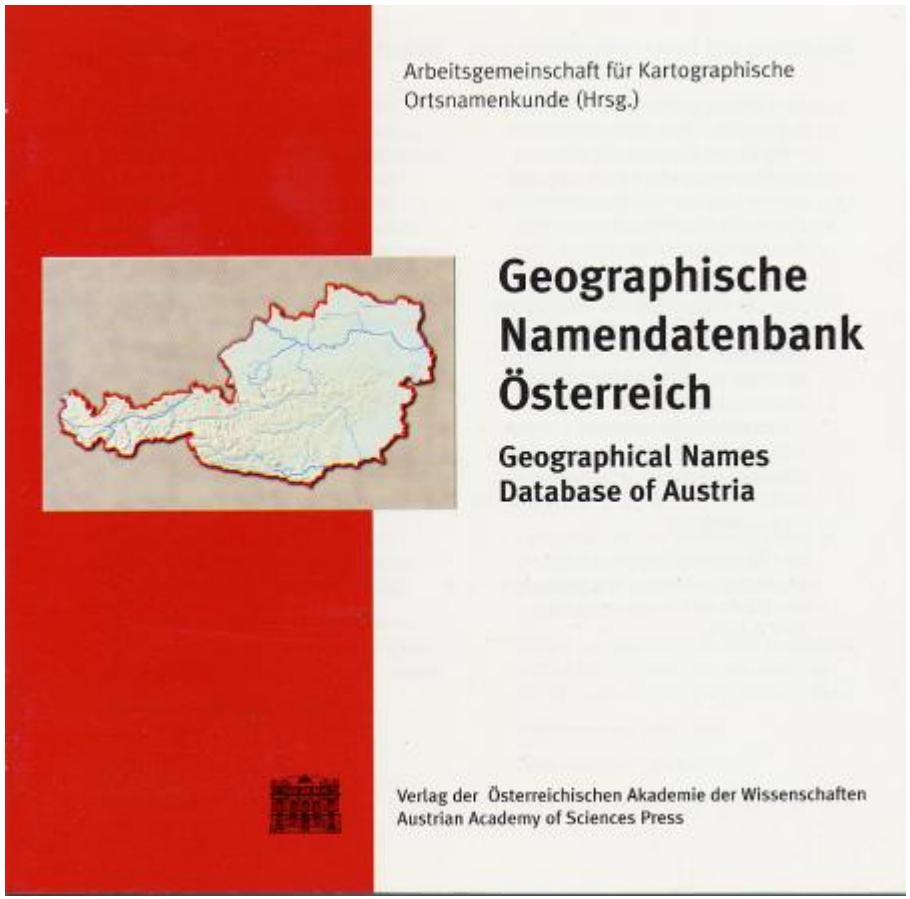
What are the purposes of a DB? Example: Netherlands



Geographical Names Database: Netherlands

Offline DB

What are the purposes of a DB?
Example: Austria



Geographical Names Data Base: Austria

Offline CD-ROM

What are the purposes of a DB? Example: Germany

Example of a topographic data file with integrated names data base: Germany

Offline CD-ROM

What are the purposes of a DB?

Gazetteer

(printed)

Web

Names
DATABASE

national

GIS

Map

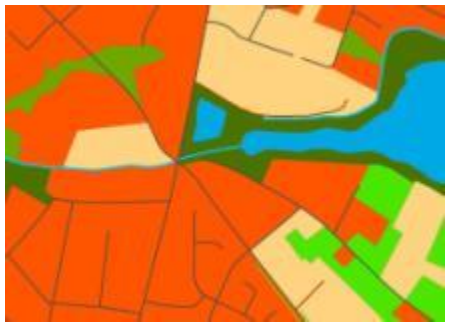
Names
DATABASE

international

Federal Agency for Cartography and Geodesy

Names database and Geographic Information System (GIS)

Reality ⟷ Model



- **Where am I?**
- **Where do I find…?**
- **Where is the next…?**
- **How do I get to…?**
- **How far is it to…?**
- **Where does this way lead to?**

Data models
↓ *consist of*
feature definitions + relations
↓ *including*
spatial reference to points, locations, areas or regions as specific feature

→ ***necessary information is called geo(graphic) information***

→ ***80% of all information is estimated to be spatially referenced***

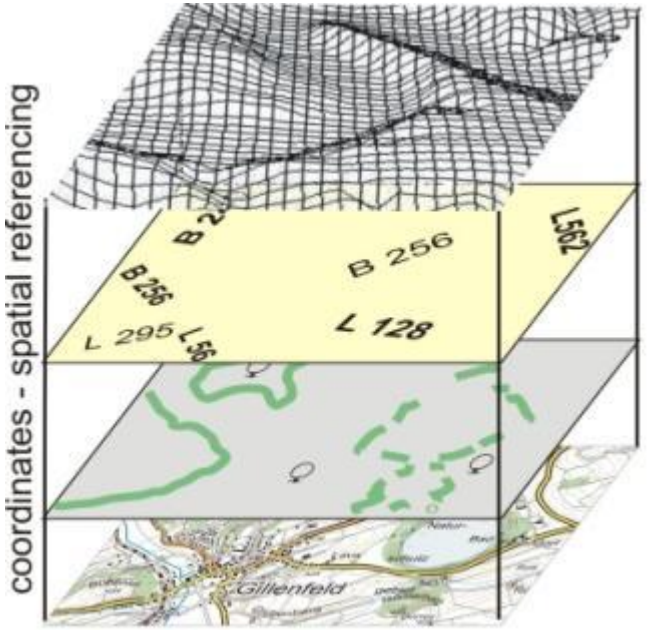
Names database and Geographic Information System (GIS)

Geographic Information System (GIS)

a GIS is an organized collection of computer hardware, software, (geographic) data and personnel.

→ designed to *capture*, *store*, *update*, *manipulate*, *analyse* and *display* all forms of geo referenced information.

(see www.GIS.com)



Names database and Geographic Information System (GIS)

Geo(graphic) information:

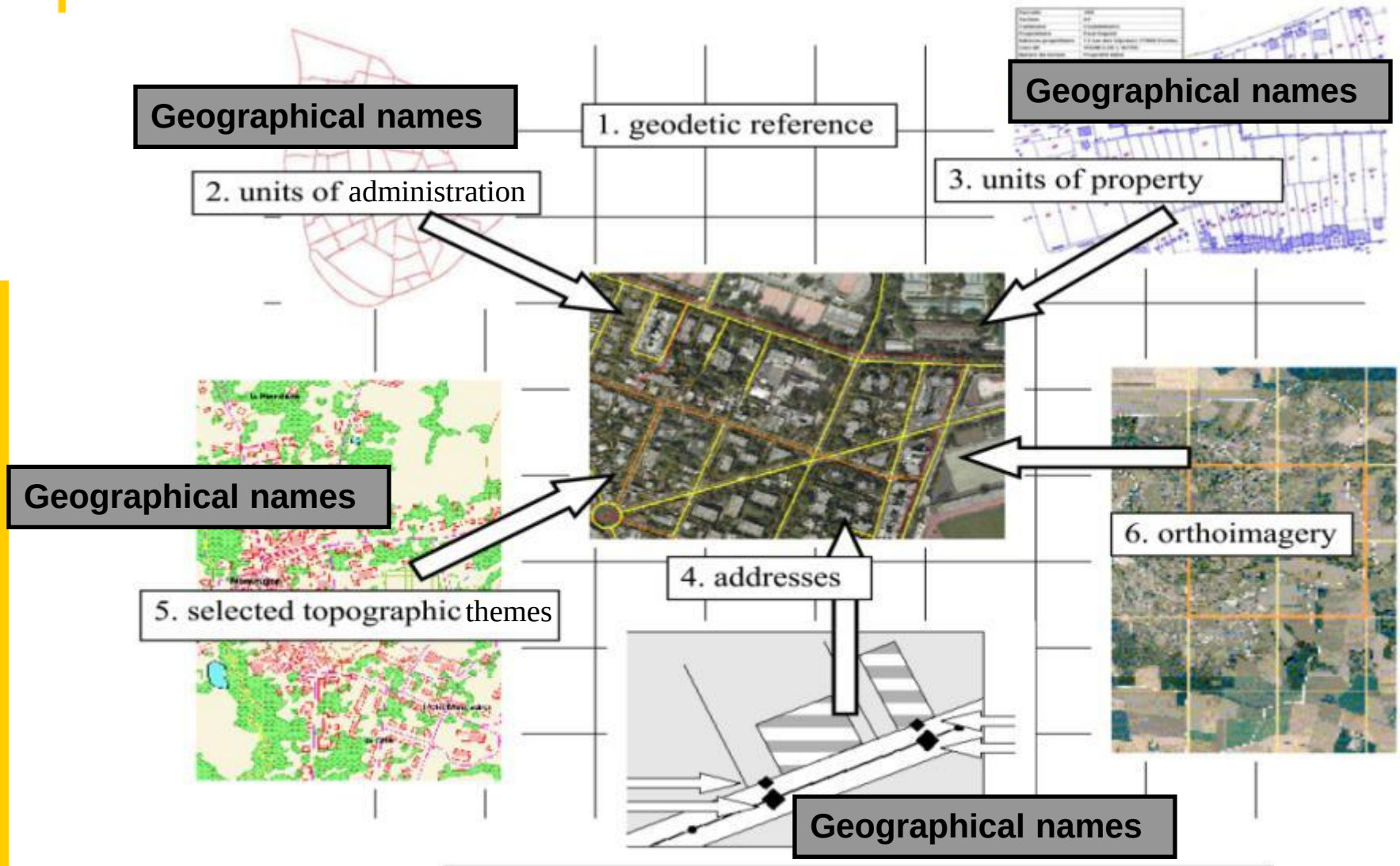
Information that is referenced to the earth‘s surface,
whether by coordinates (direct referencing) or by identifiers
such as addresses or postal codes or geographical names (indirect referencing).

Geo(graphic) data / spatial data:

Computer-readable geo information

Vector data model (feature data)	*Raster data model* (coverage data)
points, lines and polygons (areas)	gridded data (scanned maps, satellite images, orthophotos)

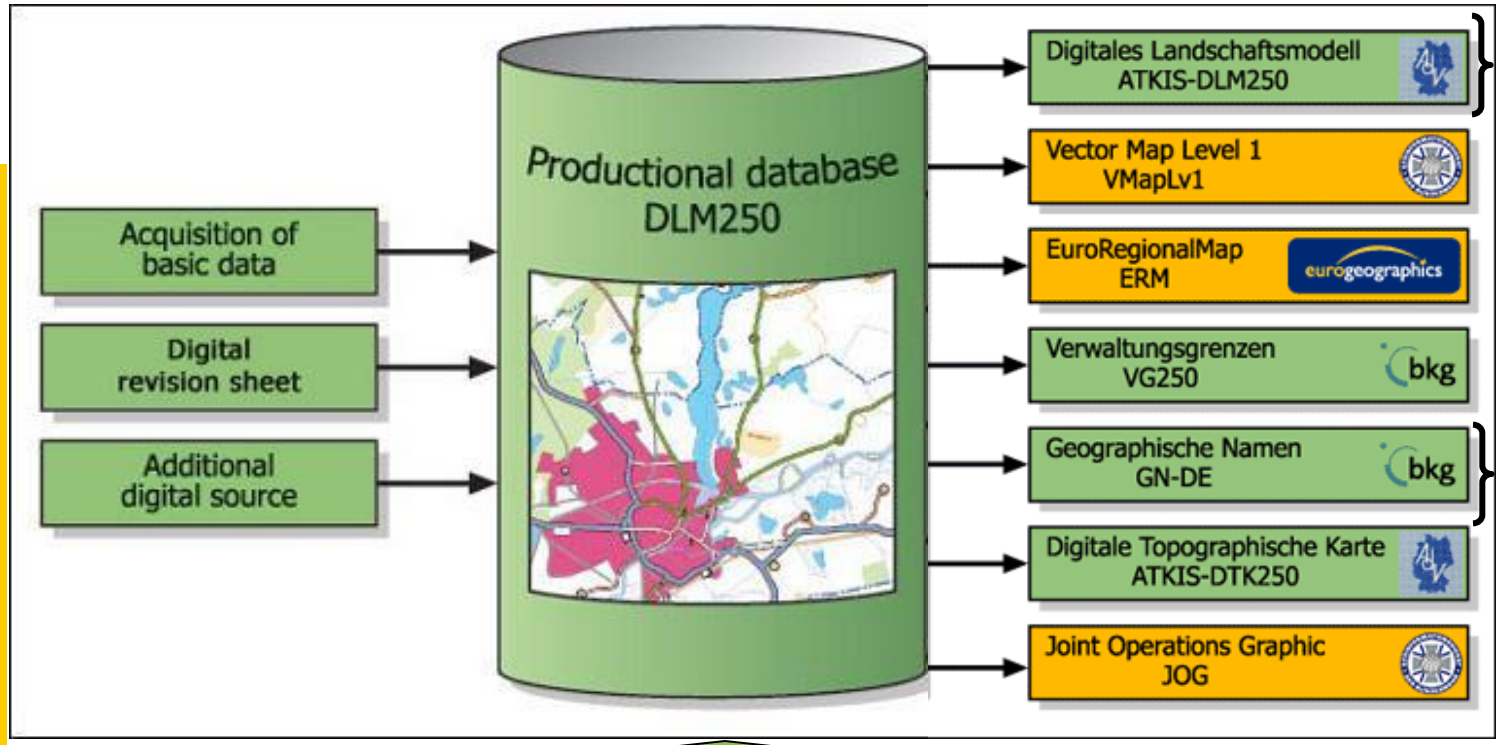
Names database and Geographic Information System (GIS)



The five components integrated in the sixth (common geodetic reference system) to create the complete set of

Names database and Geographic Information System (GIS)

BKG's produkt line – derived from the Digital Landscape Model (DLM250)



DLM for the AdV product line

GN dataset for the national gazetteer service

Geographical names data set **GN-DE** is essential part of the productional database and is unambiguously linked to the **spatial objects/features** through **unique identifiers (UIDs)**

Names databases and Web

Gazetteer

(printed)

Web

Names DATABASE

national

GIS

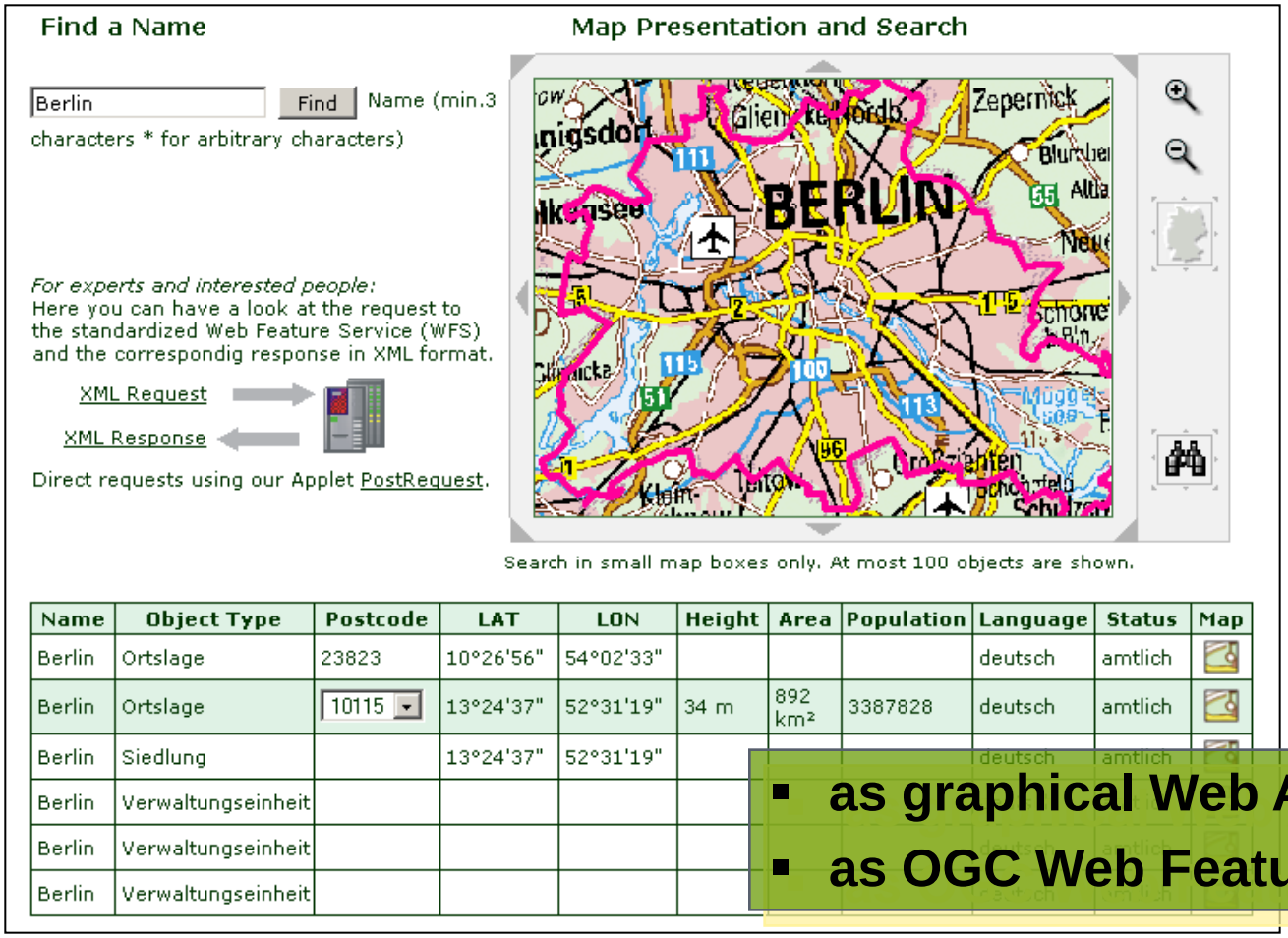
Map

Names DATABASE

international

The national gazetteer service –

search for geographical names of Germany…



Name	Object Type	Postcode	LAT	LON	Height	Area	Population	Language	Status	Map
Berlin	Ortslage	23823	10°26'56"	54°02'33"				deutsch	amtlich	
Berlin	Ortslage	10115	13°24'37"	52°31'19"	34 m	892 km²	3387828	deutsch	amtlich	
Berlin	Siedlung		13°24'37"	52°31'19"				deutsch	amtlich	
Berlin	Verwaltungseinheit									
Berlin	Verwaltungseinheit									
Berlin	Verwaltungseinheit									

Gazetteer service based on the dataset **GN-DE**

- **as graphical Web Application**
- **as OGC Web Feature Service (WFS)**

The international UNGEGN database –

search for geographical names of countries and capitals

http://unstats.un.org/unsd/geoinfo/geonames/

Names databases and Web

UNGEGN World Geographical Names

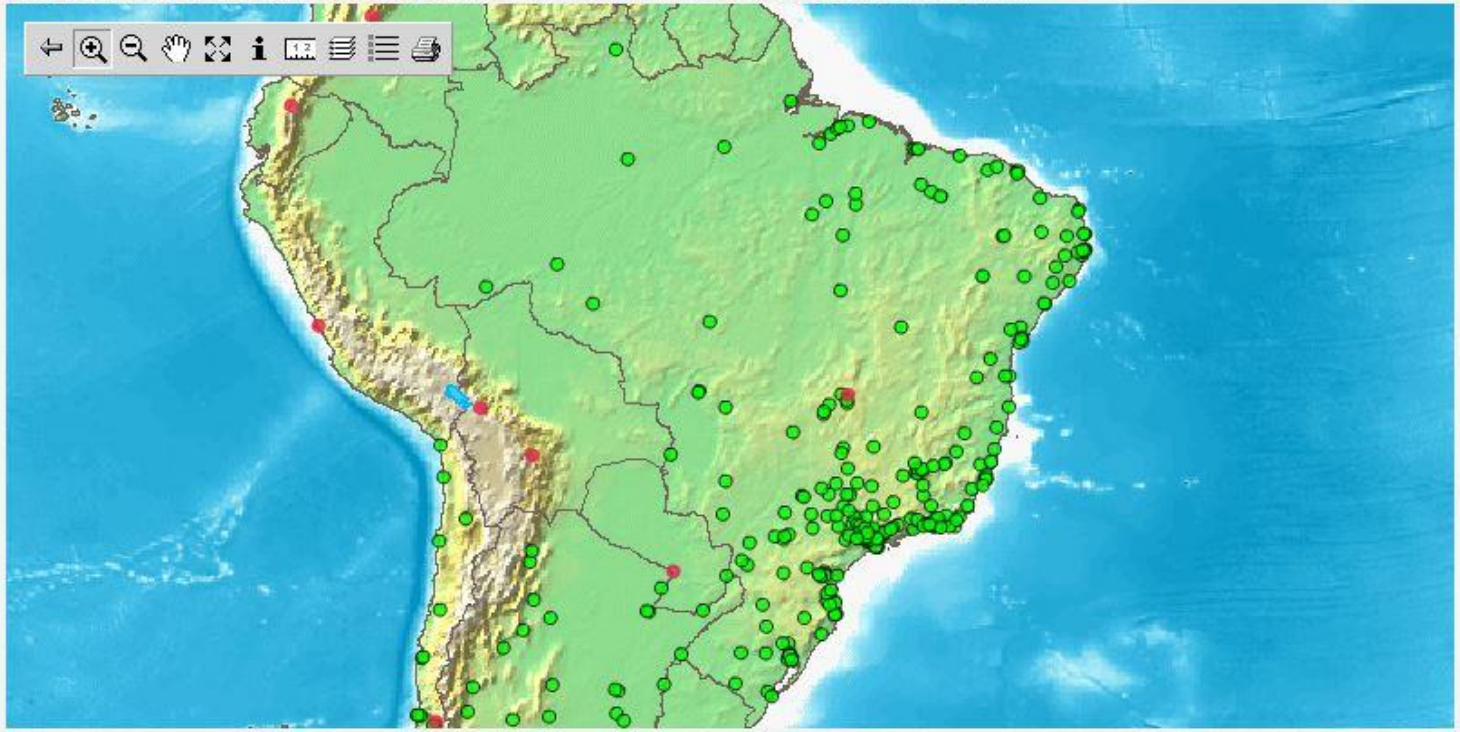
Multilingual, multiscriptual dataset of names of countries, capitals and major cities.

Geographical Names Database | About | FAQ | Feedback | Contact Beta version

Brazil

Roll over a country to display the country name in the six UN languages. Point to a city to see the city endonyms (where available and in romanized form only) and the English name. Capital cities are shown in red, other cities are shown in green.

Note: Depending on the computer settings, some names might not be able to be displayed properly.



Names databases and Web

Country names

Endonyms

Language	Short name	Formal name
Portuguese	Brasil (o)	República Federativa do Brasil (a)

United Nations languages

Language	Short name	Formal name
Arabic	البرازيل	الجمهورية الاتحادية البرازيلية
Chinese	巴西	巴西联邦共和国
English	Brazil	the Federative Republic of Brazil
French	Brésil (le)	la République fédérative du Brésil
Russian	Бразилия	Федеративная Республика Бразилия
Spanish	Brasil (el)	la República Federativa del Brasil

Capital and other major cities

Capital city

Lat: -15.78 | Long: -47.93 **Brasília**

Endonym

Language	City name	Source
Portuguese	Brasília	UNGEGN

Names databases and Web

Other major cities

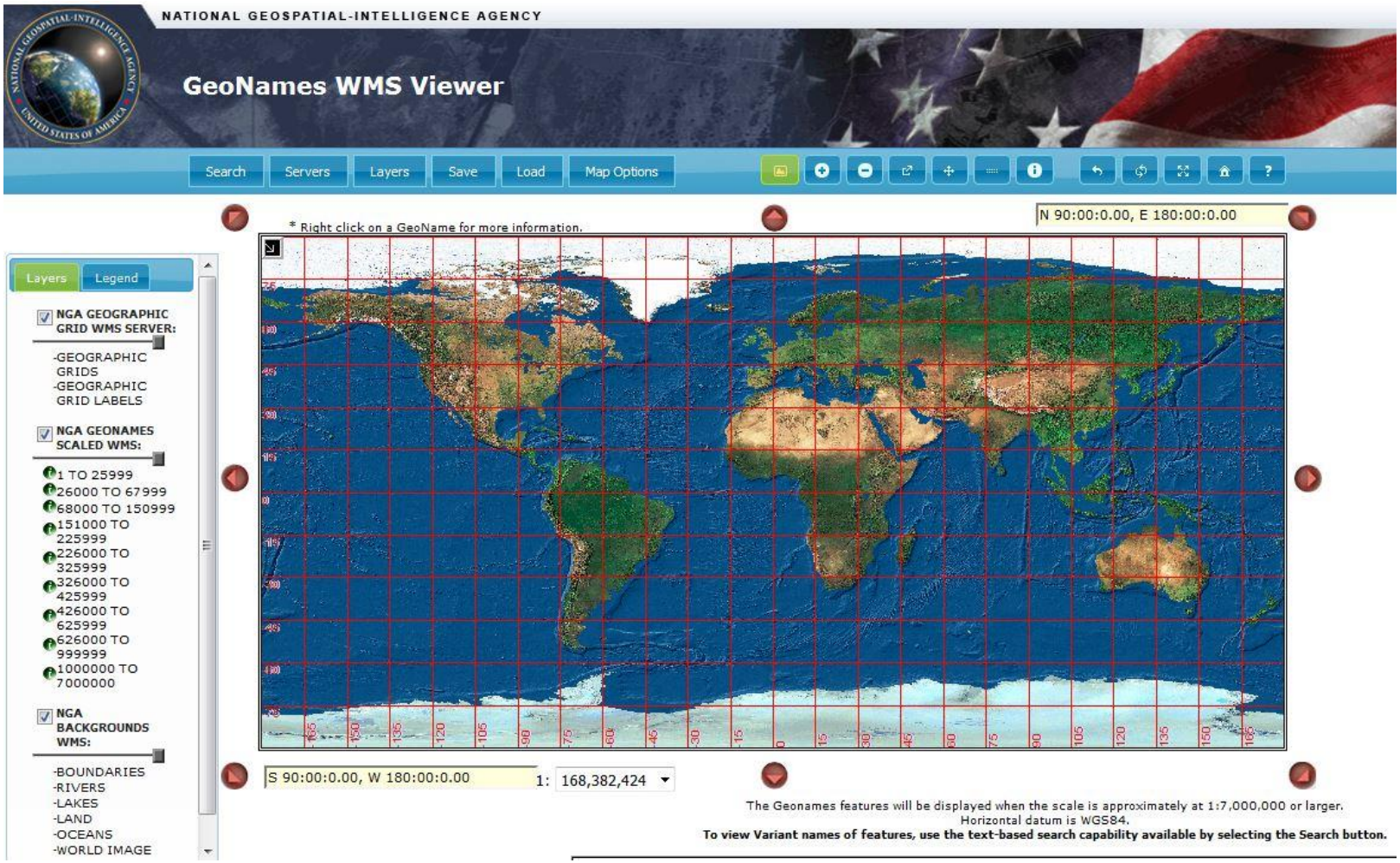
Lat: -32.03 | Long: -52.10	Rio Grande

Endonym

Language	City name	Source
Portuguese	Rio Grande	UNGEGN

Lat: -31.77 | Long: -52.34	Pelotas
Lat: -31.33 | Long: -54.11	Bagé
Lat: -30.08 | Long: -51.02	Viamão
Lat: -30.03 | Long: -51.23	Porto Alegre
Lat: -29.99 | Long: -51.08	Alvorada
Lat: -29.95 | Long: -51.09	Cachoeirinha
Lat: -29.94 | Long: -50.99	Gravataí
Lat: -29.92 | Long: -51.18	Canoas
Lat: -29.84 | Long: -51.14	Sapucaia do Sul
Lat: -29.76 | Long: -51.15	São Leopoldo
Lat: -29.75 | Long: -57.09	Uruguaiana
Lat: -29.72 | Long: -52.43	Santa Cruz do Sul
Lat: -29.68 | Long: -53.81	Santa Maria

Names databases and Web



Search for geographical names through the GEOnet Names Server (GNS) http://geonames.nga.mil/gns/html/, last accessed 04/2017

Names databases and Web

Gazetteer for Scotland	http://www.scottish-places.info/
Gazetteer of Japan	http://www.gsi.go.jp/common/000042053.pdf
Magyarország Helységnévtára, 2012 - The Detailed Gazetteer of Hungary, 2012	http://www.ksh.hu/apps/cp.hnt2.gazetteer
ScotlandsPlaces, Historical place name gazetteer	http://www.scotlandsplaces.gov.uk/
The National Gazetteer of Wales	http://homepage.ntlworld.com/geogdata/ngw/places.htm
Composite Gazetteer of Antarctica	https://www1.data.antarctica.gov.au/aadc/gaz/scar/search.cfm
Gazetteer of British Place Names	http://www.gazetteer.org.uk/index.php
Getty Thesaurus of Geographic Names Online	http://www.getty.edu/research/tools/vocabularies/tgn/
Bavarikon, Ortssuche	http://www.bavarikon.de/places
Gazetteer of Australia - Geoscience Australia, Place Name Search	http://www.ga.gov.au/place-names/index.xhtml
Geographic Names Information System	http://geonames.usgs.gov/apex/f?p=136:1:8584754151386
Canadian Geographical Names Data Base - CGNDB	http://www.nrcan.gc.ca/earth-sciences/geography/place-names/search/9170
NWT Place Names Database	http://www.pwnhc.ca/cultural-places/geographic-names/database-of-nwt-geographic-n
North Dakota Place Names	http://www.webfamilytree.com/North_Dakota_Place_Names/index.htm
Directory of Towns, Villages and Hamlets Past and Present of Missouri	http://thelibrary.org/lochist/moser/search.html
A Gazetteer of Cities, Towns, Villages, Mountains, Hills, Rivers, and other Place names with their location, la	https://www.placenames.com/
GeoTWAIN 2.0	http://geotwain.de/
Openstreetmap Nominatim	https://nominatim.openstreetmap.org/
Crimean Tatar Place Names	http://www.iccrimea.org/place/placenames.html
Geographic Names Informations System, Query Form for Antarctica	http://geonames.usgs.gov/apex/f?p=gnispq:1:0::NO:1:P1_SHOW_ANTAR%2CP1_SHOW_A
Interaktyvus Rytų Prūsijos žemėlapis II IRPŽ II - Interaktive Karte von Ostpreußen	http://prusija.lki.lt/
Antarctic Place Names	https://www1.data.antarctica.gov.au/aadc/gaz/
Registar Geografskih Imena - Gazetteer of Geographical Names	http://cgn.dgu.hr/name-search/
Registar Geografskih Imena Nacionalnih Manjina Republike Hrvatske - Gazetteer of national minorities of th	http://www.dgu.hr/assets/uploads/Dokumenti/Poslovne%20info/Registar%20geog%20ir
Autoriserede stednavne i Danmark - List of authorized Danish place-names	http://www.stednavne.info/VisKort/Popupmap.aspx
Maanmittauslaitos - National Land Survey of Finland	http://kansalaisen.karttapaikka.fi/kartanhaku/paikannimihaku.html?e=406643&n=719513
Géoportail, le portail des territoires et des citoyens - Geoportal Frankreich	http://www.geoportail.gouv.fr/accueil
Geographische Namen Deutschlands GN-DE	http://www.geodatenzentrum.de/geodaten/gdz_rahmen.gdz_div?gdz_spr=deu&gdz_akt
Historische Ortsnamen	http://www.geodatenzentrum.de/geodaten/gdz_rahmen.gdz_div?gdz_spr=deu&gdz_akt

→ Session Names Servers…on Friday, May 19

Content

Preparing the names database – General issues

- What are the purposes of a database?
- Names database and Geographic Information System (GIS)
- Names database and Web
- Use cases for Web applications

Description of database characteristics – Database management

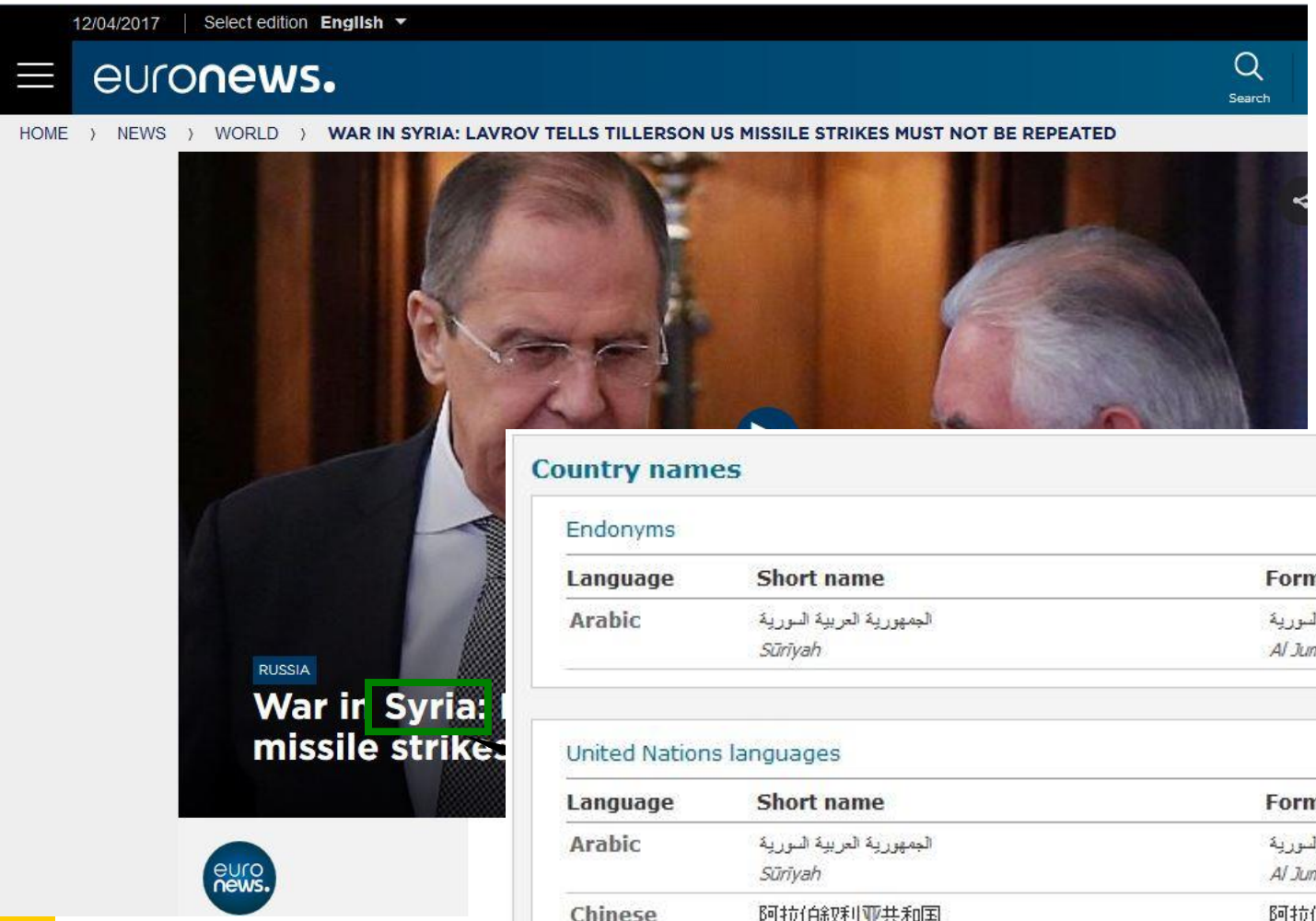
- Characteristics of databases
- Realisation of databases: open source vs. proprietary
- Data model vs. database modelling

Use cases for Web applications using names data services

International purchase of properties
with Internet property services
http://www.viviun.com/

⇒ Geographical names databases or web services can provide additional location based information

Use cases for Web applications using names data services



Provision of European news

⇒ GN databases or web services can provide additional location based information

Country names

Endonyms

Language	Short name	Formal name
Arabic	الجمهورية العربية السورية *Sūrīyah*	الجمهورية العربية السورية *Al Jumhūrīyah al 'Arabīyah as Sūrīyah*

United Nations languages

Language	Short name	Formal name
Arabic	الجمهورية العربية السورية *Sūrīyah*	الجمهورية العربية السورية *Al Jumhūrīyah al 'Arabīyah as Sūrīyah*
Chinese	阿拉伯叙利亚共和国	阿拉伯叙利亚共和国
English	Syrian Arab Republic (the)	the Syrian Arab Republic
French	République arabe syrienne (la)	la République arabe syrienne
Russian	Сирийская Арабская Республика	Сирийская Арабская Республика
Spanish	República Árabe Siria (la)	la República Árabe Siria

What are the purposes of a DB?

Gazetteer (printed)

Web

Names DATABASE

national

GIS

Map

Names DATABASE

international

What are the purposes of a DB?

Eighth United Nations Conference on the Standardization of Geographical Names, 2002

Resolution VIII / 6

Integration of Geographical Names Data into National and Regional Spatial Data Infrastructures

The Conference,

….

Recommends,

that standardized geographical names data should be considered in the establishment of national and regional spatial data infrastructures and included in their constructions.

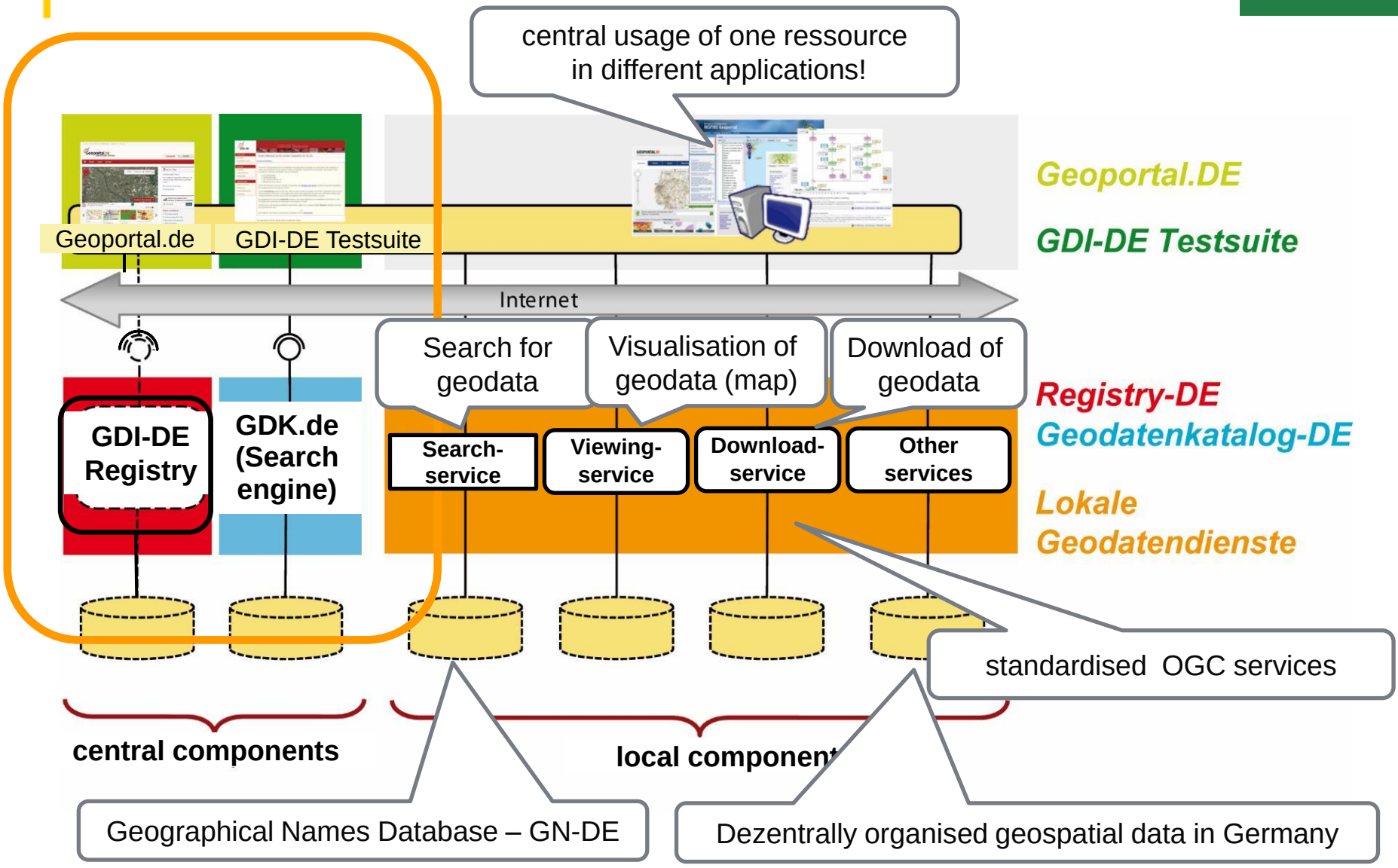
What are the purposes of a DB?

A **spatial data infrastructure** (**SDI**) is a data infrastructure implementing a framework of geographic data, metadata, users and tools that are interactively connected in order to use spatial data in an efficient and flexible way.

Another definition is:
[…] the technology, policies, standards, human resources, and related activities necessary to acquire, process, distribute, use, maintain, and preserve spatial data.

The White House - Office of Management and Budget (2002) Circular No. A-16 Revised, August 19, 2002

What are the purposes of a DB?



What are the purposes of a DB?

The German national geographical names database (GN-DE) published as a web service as part of the national spatial data infrastrucuture (GDI-DE) and visualized through the Geoportal application (Geoportal.de)

Content

Preparing the names database – General issues

- What are the purposes of a database?
- Names database and Geographic Information System (GIS)
- Names database and Web
- Use cases for Web applications

Description of database characteristics – Database management

- Characteristics of databases
- Realisation of databases: open source vs. proprietary
- Data model vs. database modelling

Characteristics of databases

What do you have to consider (or to know) before you start with creating a database?

Different computer support different characteristics…

Characteristics of databases

Data Capture

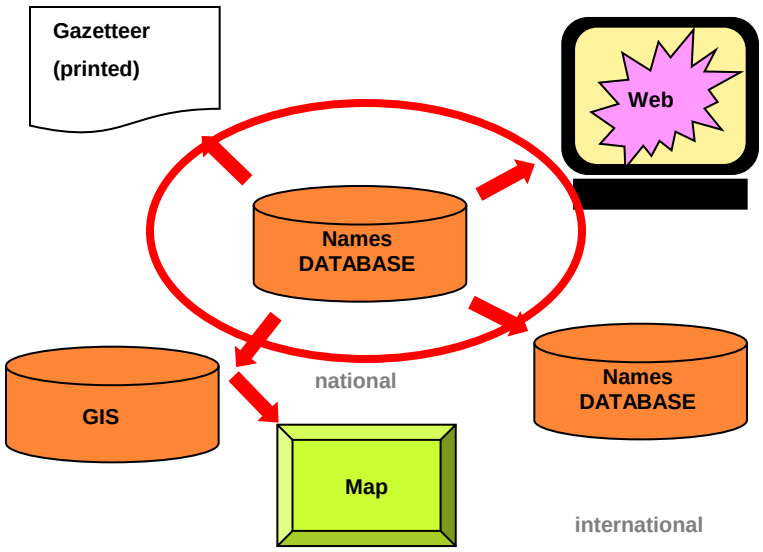
from cards, lists, books, fieldwork, maps, other databases, ...

Data Storage

in a database

Data Processing

Data Output



1. Operating system

An operating system (OS) is a software program that manages the hardware and software resources of a computer. The OS performs basic tasks, such as controlling and allocating memory, prioritizing the processing of instructions, controlling input and output devices, facilitating networking, and managing files.

Examples:

- Microsoft Windows (proprietary)
- Linux (open source = free of charge and usage)

2. Database

One possible definition is that a database is a collection of records stored in a computer in a systematic way, so that a computer program can consult it to answer questions.

Examples:

- Microsoft Access, Oracle, etc. (proprietary)
- MySQL, PostGreSQL/PostGIS, SQLite, etc. (open source)

3. Geographic Information System (GIS)

A **geographical information system** (GIS) is a system for creating, storing, analyzing and managing spatial data and associated attributes.

In a more generic sense, GIS is a tool that allows users to create interactive queries (user created searches), analyze the spatial information, and edit data.

Examples:

- ESRI ArcGIS, ViewMap, etc. (proprietary)
- Quantum GIS, etc. (open source)

Characteristics of databases

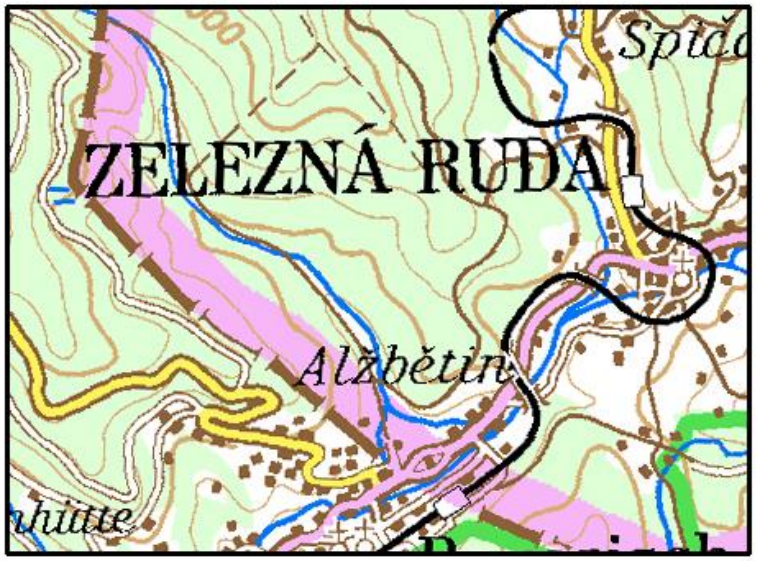
e.g. Codepages!!!

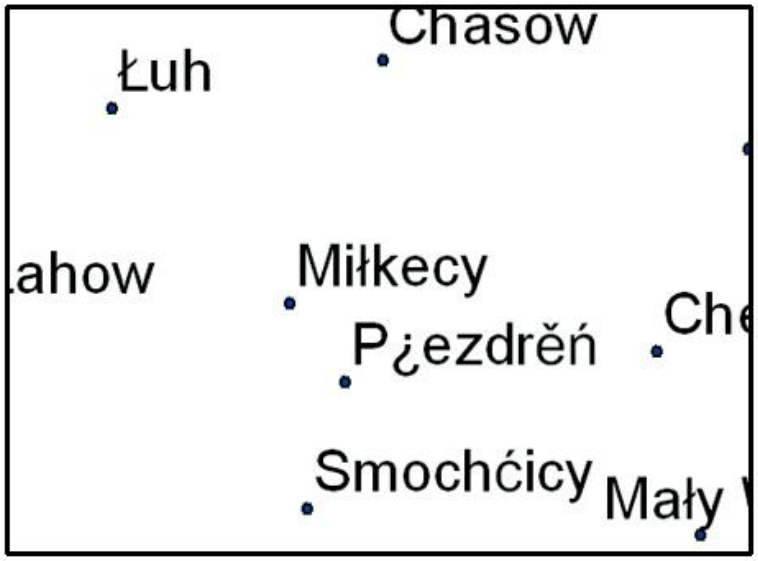
ISO8859 character set or ***Unicode?***
in (Microsoft Windows) operating system

Different interpretation of characters possible in

- Database products: MS Access or similar
- GIS software: ESRI ArcGIS or similar

Characteristics of databases





Content

Preparing the names database – General issues

- What are the purposes of a database?
- Names database and Geographic Information System (GIS)
- Names database and Web
- Use cases for Web applications

Description of database characteristics – Database management

- Characteristics of databases
- Realisation of databases: open source vs. proprietary
- Data model vs. database modelling

Realisation of databases

Operating System:

Microsoft Windows?

Linux? (open source)

Database:

Microsoft Access?

MySQL? PostGreSQL/PostGIS? (open source)

UNECA GeoNyms application? (open source)

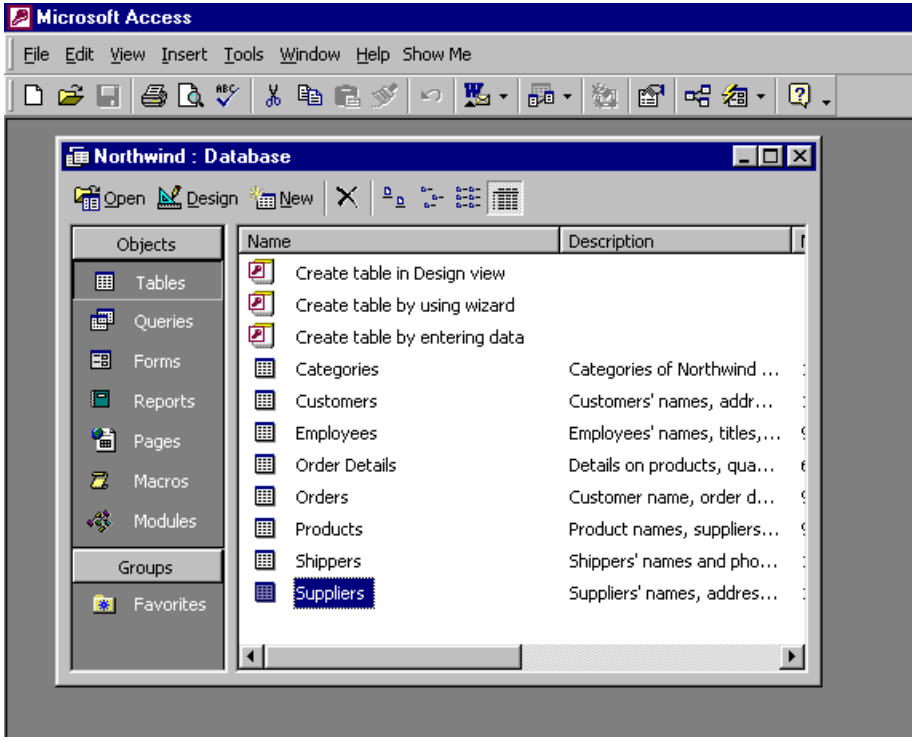
Geographical Information System

ESRI ArcGIS?

Quantum GIS? (open source)

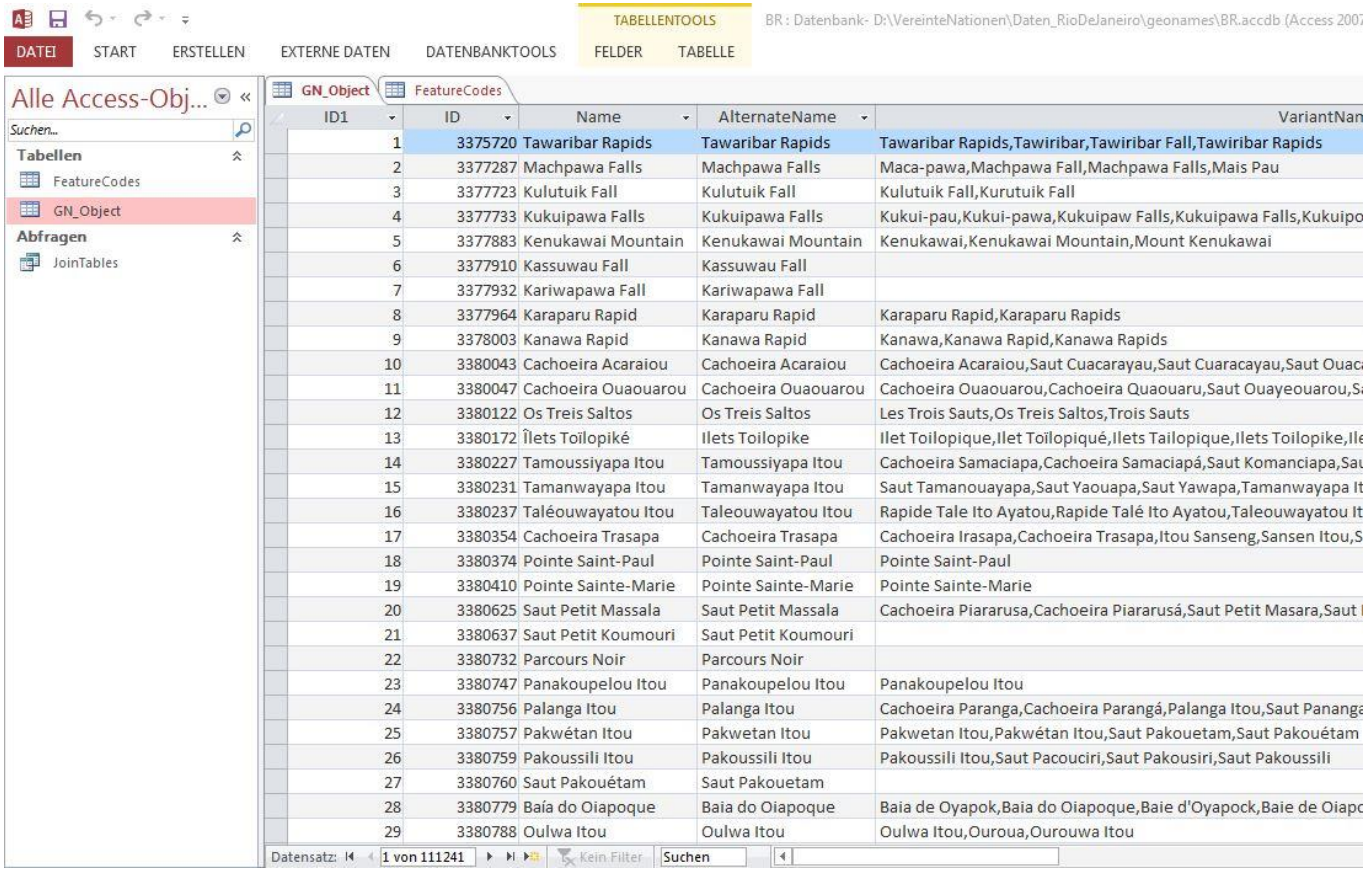
Database:
Microsoft Access? (proprietary)

- Microsoft Access is a **pseudo-relational database management** system from Microsoft that combines the relational Microsoft Jet Database Engine with a graphical user interface and software-development tools.
- Access stores data in its **own format** based on the Access Jet Database Engine. It can also import or link directly to data stored in other applications and databases.
- Website: http://office.microsoft.com/en-us/access/



Database:

Microsoft Access? **(proprietary)**



ID1	ID	Name	AlternateName	VariantNam
1	3375720	Tawaribar Rapids	Tawaribar Rapids	Tawaribar Rapids,Tawiribar,Tawiribar Fall,Tawiribar Rapids
2	3377287	Machpawa Falls	Machpawa Falls	Maca-pawa,Machpawa Fall,Machpawa Falls,Mais Pau
3	3377723	Kulutuik Fall	Kulutuik Fall	Kulutuik Fall,Kurutuik Fall
4	3377733	Kukuipawa Falls	Kukuipawa Falls	Kukui-pau,Kukui-pawa,Kukuipaw Falls,Kukuipawa Falls,Kukuipo
5	3377883	Kenukawai Mountain	Kenukawai Mountain	Kenukawai,Kenukawai Mountain,Mount Kenukawai
6	3377910	Kassuwau Fall	Kassuwau Fall	
7	3377932	Kariwapawa Fall	Kariwapawa Fall	
8	3377964	Karaparu Rapid	Karaparu Rapid	Karaparu Rapid,Karaparu Rapids
9	3378003	Kanawa Rapid	Kanawa Rapid	Kanawa,Kanawa Rapid,Kanawa Rapids
10	3380043	Cachoeira Acaraiou	Cachoeira Acaraiou	Cachoeira Acaraiou,Saut Cuacarayau,Saut Cuaracayau,Saut Ouac
11	3380047	Cachoeira Ouaouarou	Cachoeira Ouaouarou	Cachoeira Ouaouarou,Cachoeira Quaouaru,Saut Ouayeouarou,S
12	3380122	Os Treis Saltos	Os Treis Saltos	Les Trois Sauts,Os Treis Saltos,Trois Sauts
13	3380172	Îlets Toïlopiké	Ilets Toilopike	Ilet Toilopique,Ilet Toïlopiqué,Ilets Tailopique,Ilets Toïlopike,Ile
14	3380227	Tamoussiyapa Itou	Tamoussiyapa Itou	Cachoeira Samaciapa,Cachoeira Samaciapá,Saut Komanciapa,Sau
15	3380231	Tamanwayapa Itou	Tamanwayapa Itou	Saut Tamanouayapa,Saut Yaouapa,Saut Yawapa,Tamanwayapa It
16	3380237	Taléouwayatou Itou	Taleouwayatou Itou	Rapide Tale Ito Ayatou,Rapide Talé Ito Ayatou,Taleouwayatou It
17	3380354	Cachoeira Trasapa	Cachoeira Trasapa	Cachoeira Irasapa,Cachoeira Trasapa,Itou Sanseng,Sansen Itou,S
18	3380374	Pointe Saint-Paul	Pointe Saint-Paul	Pointe Saint-Paul
19	3380410	Pointe Sainte-Marie	Pointe Sainte-Marie	Pointe Sainte-Marie
20	3380625	Saut Petit Massala	Saut Petit Massala	Cachoeira Piararusa,Cachoeira Piararusá,Saut Petit Masara,Saut
21	3380637	Saut Petit Koumouri	Saut Petit Koumouri	
22	3380732	Parcours Noir	Parcours Noir	
23	3380747	Panakoupelou Itou	Panakoupelou Itou	Panakoupelou Itou
24	3380756	Palanga Itou	Palanga Itou	Cachoeira Paranga,Cachoeira Parangá,Palanga Itou,Saut Pananga
25	3380757	Pakwétan Itou	Pakwetan Itou	Pakwetan Itou,Pakwétan Itou,Saut Pakouetam,Saut Pakouétam
26	3380759	Pakoussili Itou	Pakoussili Itou	Pakoussili Itou,Saut Pacouciri,Saut Pakousiri,Saut Pakoussili
27	3380760	Saut Pakouétam	Saut Pakouetam	
28	3380779	Baía do Oiapoque	Baia do Oiapoque	Baia de Oyapok,Baia do Oiapoque,Baie d'Oyapock,Baie de Oiapo
29	3380788	Oulwa Itou	Oulwa Itou	Oulwa Itou,Ouroua,Ourouwa Itou

Database:
MySQL? PostGreSQL/PostGIS? (open source)

My SQL *"The world's most popular open source database"*

- MySQL is a **relational database management system** (RDBMS) that runs as a server providing multi-user access to a number of databases.
- The MySQL development project has made its **source code available** under the terms of the GNU General Public License, as well as under a variety of proprietary agreements.
- MySQL is a popular choice of database for use in web applications.
- Website: http://www.mysql.com/

Database:

MySQL? PostGreSQL/PostGIS? **(open source)**

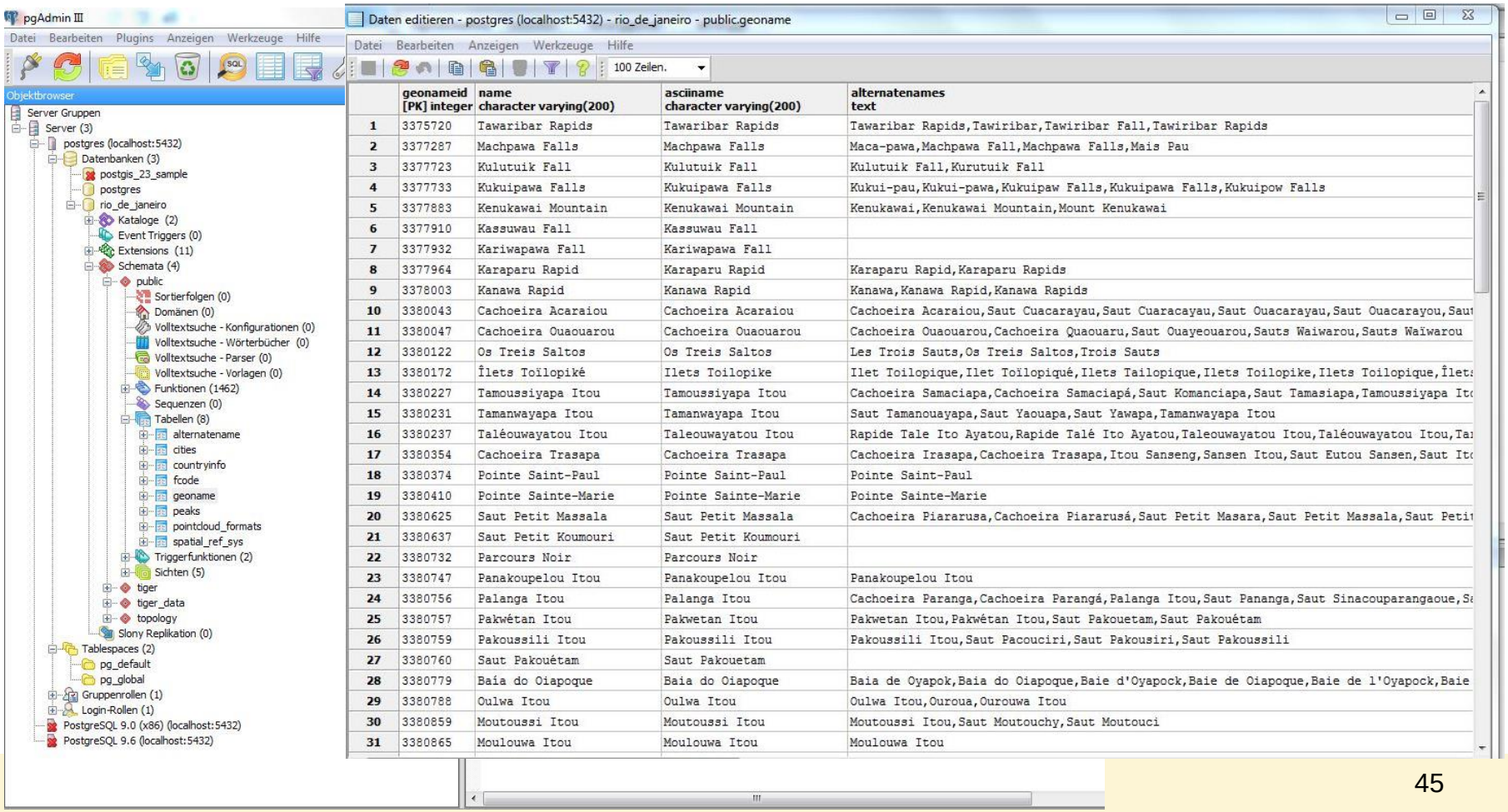
PostGreSQL / PostGIS (open source)

- PostgreSQL, often simply Postgres, is an **object-relational database management system** (ORDBMS).
- PostgreSQL is not controlled by any single company — a global community of developers and companies develops the system.
- PostGIS **adds support for geographic objects** to the PostgreSQL object-relational database. In effect, PostGIS "spatially enables" the PostgreSQL server, allowing it to be used as a backend spatial database for geographic information systems (GIS), much like ESRI's SDE or Oracle's Spatial extension.
- Website: http://www.postgresql.org/
  http://postgis.refractions.net/

Realisation of databases

Database:

MySQL? PostGreSQL/PostGIS? **(open source)**



	geonameid [PK] integer	name character varying(200)	asciiname character varying(200)	alternatenames text
1	3375720	Tawaribar Rapids	Tawaribar Rapids	Tawaribar Rapids,Tawiribar,Tawiribar Fall,Tawiribar Rapids
2	3377287	Machpawa Falls	Machpawa Falls	Maca-pawa,Machpawa Fall,Machpawa Falls,Mais Pau
3	3377723	Kulutuik Fall	Kulutuik Fall	Kulutuik Fall,Kurutuik Fall
4	3377733	Kukuipawa Falls	Kukuipawa Falls	Kukui-pau,Kukui-pawa,Kukuipaw Falls,Kukuipawa Falls,Kukuipow Falls
5	3377883	Kenukawai Mountain	Kenukawai Mountain	Kenukawai,Kenukawai Mountain,Mount Kenukawai
6	3377910	Kassuwau Fall	Kassuwau Fall	
7	3377932	Kariwapawa Fall	Kariwapawa Fall	
8	3377964	Karaparu Rapid	Karaparu Rapid	Karaparu Rapid,Karaparu Rapids
9	3378003	Kanawa Rapid	Kanawa Rapid	Kanawa,Kanawa Rapid,Kanawa Rapids
10	3380043	Cachoeira Acaraiou	Cachoeira Acaraiou	Cachoeira Acaraiou,Saut Cuacarayau,Saut Cuaracayau,Saut Ouacarayau,Saut Ouacarayou,Saut
11	3380047	Cachoeira Ouaouarou	Cachoeira Ouaouarou	Cachoeira Ouaouarou,Cachoeira Quaouaru,Saut Ouayeouarou,Sauts Waiwarou,Sauts Waïwarou
12	3380122	Os Treis Saltos	Os Treis Saltos	Les Trois Sauts,Os Treis Saltos,Trois Sauts
13	3380172	Îlets Toïlopiké	Ilets Toilopike	Ilet Toilopique,Ilet Toïlopiqué,Ilets Tailopique,Ilets Toilopike,Ilets Toilopique,Îlet
14	3380227	Tamoussiyapa Itou	Tamoussiyapa Itou	Cachoeira Samaciapa,Cachoeira Samaciapá,Saut Komanciapa,Saut Tamasiapa,Tamoussiyapa It
15	3380231	Tamanwayapa Itou	Tamanwayapa Itou	Saut Tamanouayapa,Saut Yaouapa,Saut Yawapa,Tamanwayapa Itou
16	3380237	Taléouwayatou Itou	Taleouwayatou Itou	Rapide Tale Ito Ayatou,Rapide Talé Ito Ayatou,Taleouwayatou Itou,Taléouwayatou Itou,Ta
17	3380354	Cachoeira Trasapa	Cachoeira Trasapa	Cachoeira Irasapa,Cachoeira Trasapa,Itou Sanseng,Sansen Itou,Saut Eutou Sansen,Saut It
18	3380374	Pointe Saint-Paul	Pointe Saint-Paul	Pointe Saint-Paul
19	3380410	Pointe Sainte-Marie	Pointe Sainte-Marie	Pointe Sainte-Marie
20	3380625	Saut Petit Massala	Saut Petit Massala	Cachoeira Piararusa,Cachoeira Piararusá,Saut Petit Masara,Saut Petit Massala,Saut Petit
21	3380637	Saut Petit Koumouri	Saut Petit Koumouri	
22	3380732	Parcours Noir	Parcours Noir	
23	3380747	Panakoupelou Itou	Panakoupelou Itou	Panakoupelou Itou
24	3380756	Palanga Itou	Palanga Itou	Cachoeira Paranga,Cachoeira Parangá,Palanga Itou,Saut Pananga,Saut Sinacouparangaoue,S
25	3380757	Pakwétan Itou	Pakwetan Itou	Pakwetan Itou,Pakwétan Itou,Saut Pakouetam,Saut Pakouétam
26	3380759	Pakoussili Itou	Pakoussili Itou	Pakoussili Itou,Saut Pacouciri,Saut Pakousiri,Saut Pakoussili
27	3380760	Saut Pakouétam	Saut Pakouetam	
28	3380779	Baia do Oiapoque	Baia do Oiapoque	Baia de Oyapok,Baia do Oiapoque,Baie d'Oyapock,Baie de Oiapoque,Baie de l'Oyapock,Baie
29	3380788	Oulwa Itou	Oulwa Itou	Oulwa Itou,Ouroua,Ourouwa Itou
30	3380859	Moutoussi Itou	Moutoussi Itou	Moutoussi Itou,Saut Moutouchy,Saut Moutouci
31	3380865	Moulouwa Itou	Moulouwa Itou	Moulouwa Itou

Geographical Information System

ESRI ArcGIS? **(proprietary)**

ESRI Arc GIS

Esri® ArcGIS® facilitates collaboration and **lets you author data, maps, globes, and models on the desktop** and serve them for use on a desktop, in a browser, or in the field, depending on the needs of your organization.

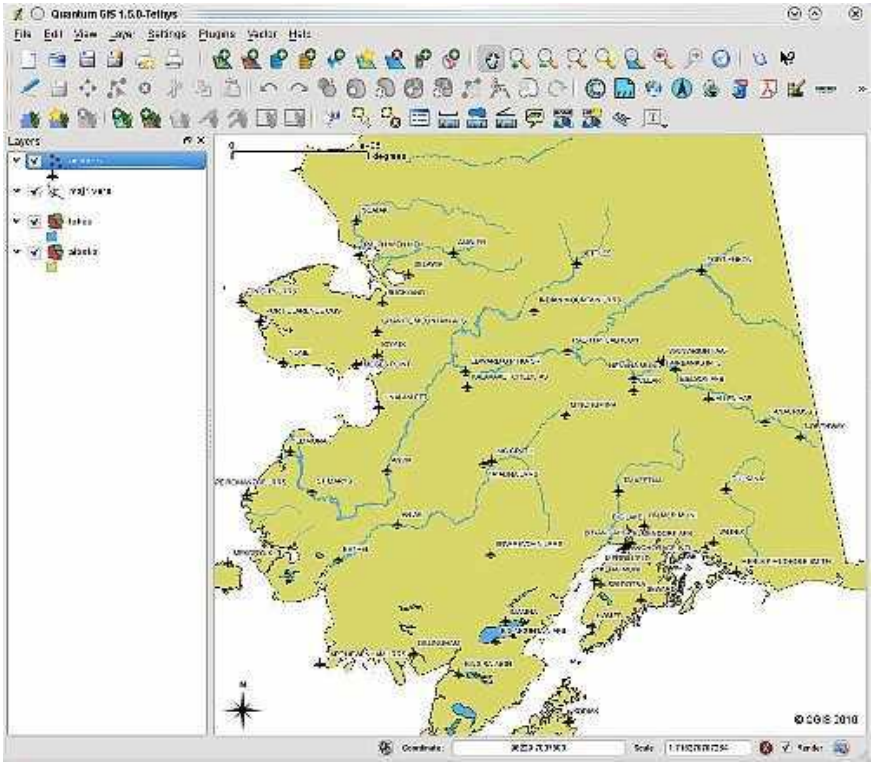
- ArcGIS **support and educational services** consist of technical maintenance programs, software releases and updates, technical support, online support services, publications training, and consulting services.
- Website: http://www.esri.com/software/arcgis/index.html

Geographical Information System

Quantum GIS? **(open source)**

Quantum GIS

- QGIS **provides data viewing, editing, and analysis capabilities**.
- Quantum GIS (QGIS) is a user friendly Open Source Geographic Information System (GIS) licensed under the GNU General Public License.
- QGIS **runs on Linux, Unix, Mac OSX, and Windows** and supports numerous vector, raster, and database formats and functionalities.
- Website: http://www.qgis.org/en.html

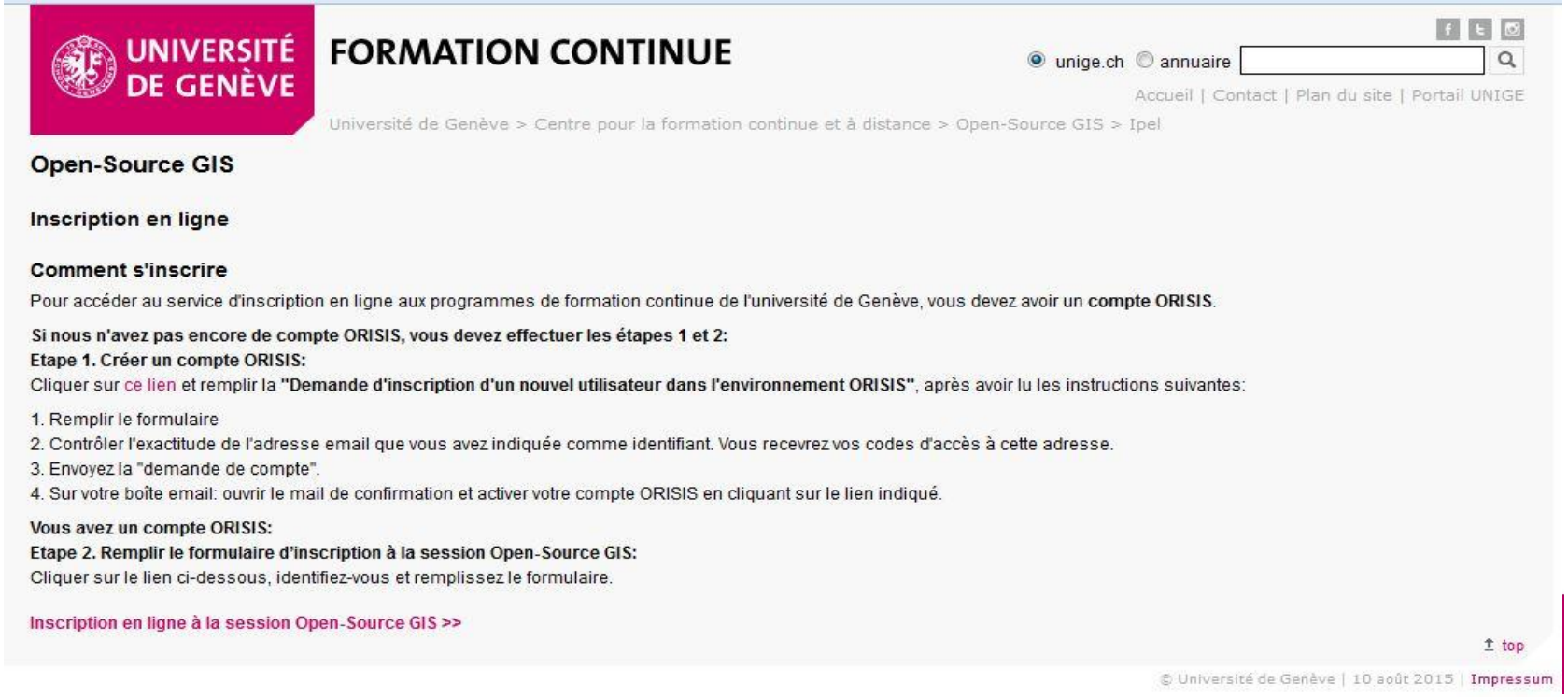


Open Source Software Collection

Open source software collection: **OSGeo Live**
URL: http://live.osgeo.org/en/index.html

about:
OSGeo-Live is a self-contained bootable DVD, USB thumb drive or Virtual Machine, that allows you to try a wide variety of open source geospatial software without installing anything. It is composed entirely of free software, allowing it to be freely distributed, duplicated and passed around.

Open your Mind through GIS: training in Open Source GIS



UNIVERSITÉ DE GENÈVE

FORMATION CONTINUE

unige.ch annuaire

Accueil | Contact | Plan du site | Portail UNIGE

Université de Genève > Centre pour la formation continue et à distance > Open-Source GIS > Ipel

Open-Source GIS

Inscription en ligne

Comment s'inscrire

Pour accéder au service d'inscription en ligne aux programmes de formation continue de l'université de Genève, vous devez avoir un **compte ORISIS**.

Si nous n'avez pas encore de compte ORISIS, vous devez effectuer les étapes 1 et 2:
Etape 1. Créer un compte ORISIS:
Cliquer sur ce lien et remplir la **"Demande d'inscription d'un nouvel utilisateur dans l'environnement ORISIS"**, après avoir lu les instructions suivantes:

1. Remplir le formulaire
2. Contrôler l'exactitude de l'adresse email que vous avez indiquée comme identifiant. Vous recevrez vos codes d'accès à cette adresse.
3. Envoyez la "demande de compte".
4. Sur votre boîte email: ouvrir le mail de confirmation et activer votre compte ORISIS en cliquant sur le lien indiqué.

Vous avez un compte ORISIS:
Etape 2. Remplir le formulaire d'inscription à la session Open-Source GIS:
Cliquer sur le lien ci-dessous, identifiez-vous et remplissez le formulaire.

Inscription en ligne à la session Open-Source GIS >>

top

© Université de Genève | 10 août 2015 | Impressum

http://www.unige.ch/formcont/opengis.html

Content

Preparing the names database – General issues

- What are the purposes of a database?
- Names database and Geographic Information System (GIS)
- Names database and Web
- Use cases for Web applications

Description of database characteristics – Database management

- Characteristics of databases
- Realisation of databases: open source vs. proprietary
- Data model vs. database modelling

Data model – database modelling

"UNGEGN schema" (proposal): elements

Field Name	Data Type	Description	Example
RecordID	Index	This number is assigned automatically by the system. Do not change it.	
UID	Number (long integer)	A unique identifier assigned to the name (or named feature). In our exercise, each group may start to count from 1 and add the group number multiplied by 100, e.g. 201 for the first name by group 2.	20001 might indicate e.g. 2000 for feature type 'Populated places'
Name	Text (50 char.)	Geographical name in Romanian	Oran
Latitude	Number (double)	Geographical Coordinates, in degrees decimal.	35,…
Longitude	Number (double)		-0,5…
FeatureCode	Text (50 char.)	Feature codes, from an existing feature code table	DDS
AdminUnit	Text (50 char.)	Name of the administrative unit where the name is situated in	Departement d' Oran, Department of Oran
Language	Text (50 char.)	Language of the name	
Description	Text (255 char.)	Field remarks, meaning of the name, language of the name, historical names if any	e.g. capital of a political entity
VariantName	Text (50 char.)	Enter variant names, if any e.g. Hungarian name	Wilaya d' Oran,Wilaya d' Oran
MapSheet	Number (long integer)	Reference to a map sheet in a topographic map series, e.g. 1:250.000	80
Source	Text (255 char.)	Source of the information on the name: - Informant - Interviewer	Mr. XY, old person at xyz, interview by group 1
Status	Text (50 char.)	The status of the name. In our case, the names are not yet approved by the Board.	not approved
Pronunciation	OLE-Object	Audio-files of the pronunciation of the geographical name	e.g *.wav -file
Location information	OLE-Object	Digital pictures of the location	e.g *.jpg – image file

Data model – database modelling

The European (INSPIRE) GN schema: elements

mandatory

- name(s) (text, spelling)
- geomety
- feature type
- unique identifier

'voidable'

- language {three letter codes from ISO 639-3 or -5}
- nameStatus {official, standardised, historical, other}
- link to relatedSpatialObject
- script {four letters codes defined in ISO 15924}
- nativeness {endonym, exonym}
- transliterationScheme
- grammatical gender {masc., fem., neuter, common}
- grammatical number {singular, plural, dual}
- pronunciation
- sourceOfName
- typeLocal
- lifeCycleInfo (begin/end of the object in the source DB)
- …

Federal Agency for Cartography and Geodesy

Data model – database modelling

INSPIRE priorities in Annex I-III and the selction of „Core Data“ for Europe through UN-GGIM: Europe

Annex I

Coordinate Reference Systems

Geographical Grid Systems

Geographical Names

Administrative Units

Addresses

Cadastral Parcels

Transport Networks

Hydrography

Protected Sites

Annex II

Elevation

Land Cover

OrthoImagery

Geology

Annex III

Statistical units

Buildings

Soil

Land use

Human health and safety

Utility and governmental services

Environmental monitoring facilities

Production and industrial facilities

Agricultural and aquaculture facilities

Population distribution - demography

Area management/restriction/ regulation

Natural risk zones

Atmospheric conditions

Meteorological geographical features

Oceanographic geographical features

Sea regions

Bio-geographical regions

Habitats and biotopes

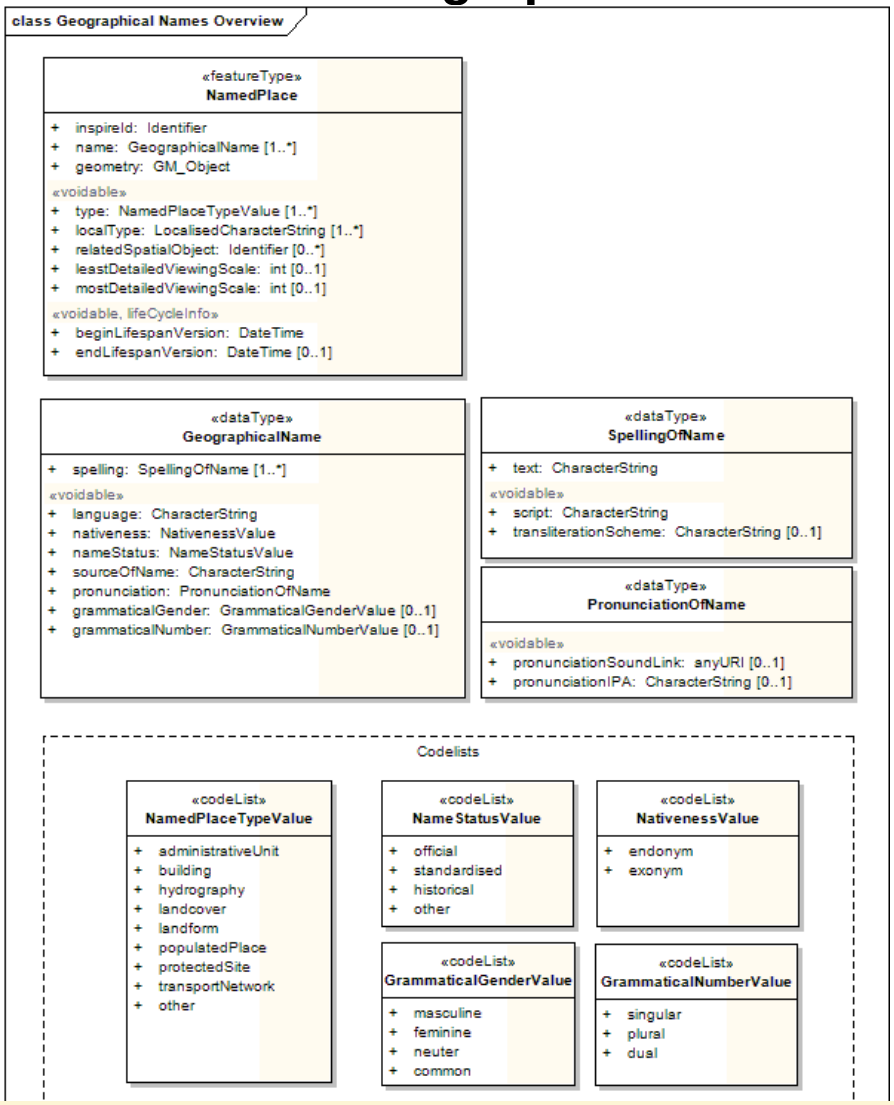
Species distribution

Energy resources

Mineral resources

Data model – database modelling

INSPIRE Geographical Names – UML Schema



A <u>Named Place</u>,
representing a real world entity referred to by a Geographical Name
e.g "the City of Athens" type = built-up area
geometry = {X, Y}

is associated with one or several <u>Geographical Names</u>,
i.e. proper noun applied to the feature

(1) "Athína" language = Greek
nativeValue = Endonym
(2) "Athens" language = English
nativeValue = Exonym

and may have one or several <u>Spellings of Name.</u>
i.e. proper way of writing the name

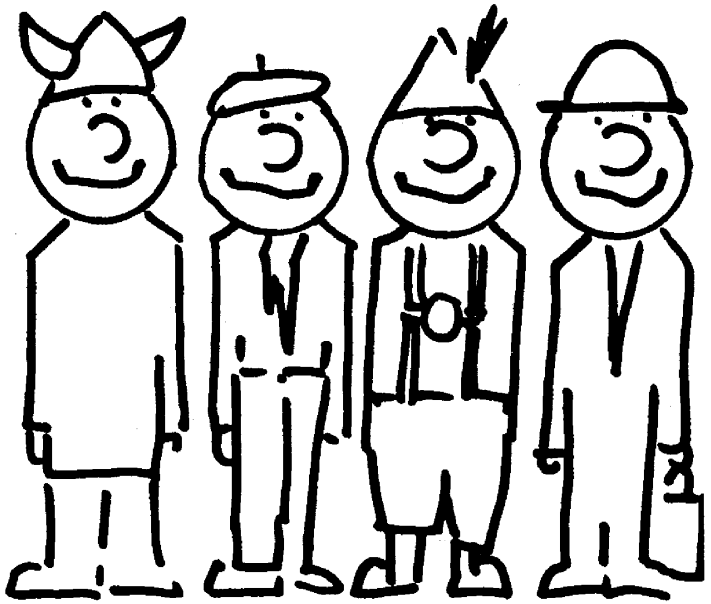
(1.1) text = **Aθnva**
script = Greek
(1.2) text = **Athína**
script = Latin

(2.1) text = **Athens**
script = Latin

Standardization in Europe

Not standardized and very different

Almost harmonized, but with national specialities



Thank you for your attention!