

SDI Implementation at the Local Administration Level of Germany

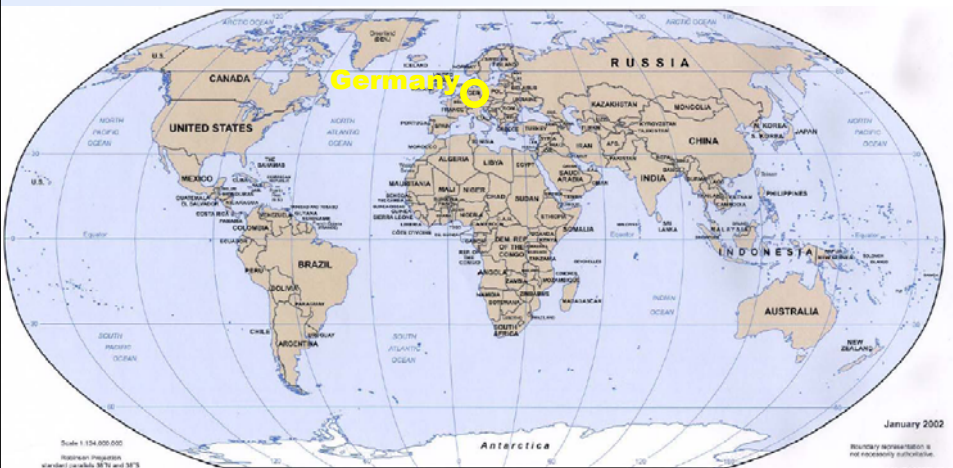
Hartmut Müller and Stephan von St. Vith

FIG Working Week 2009 – Surveyors Key Role in Accelerated Development,
Eilat, Israel, 3-8 May 2009

TS 5B – Current Trends in SDI (3494)

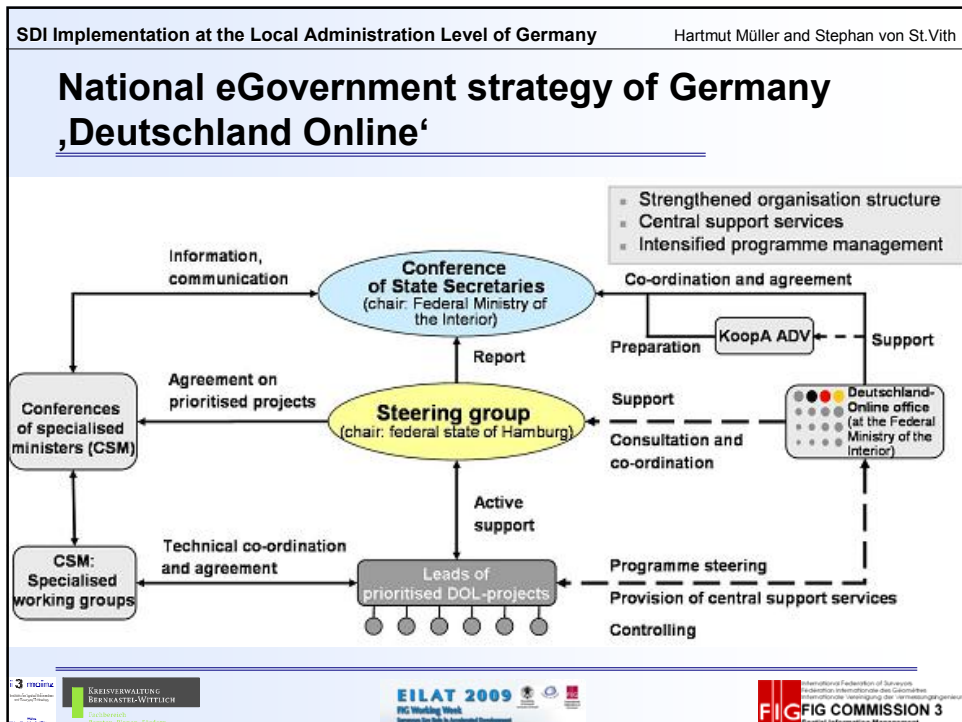
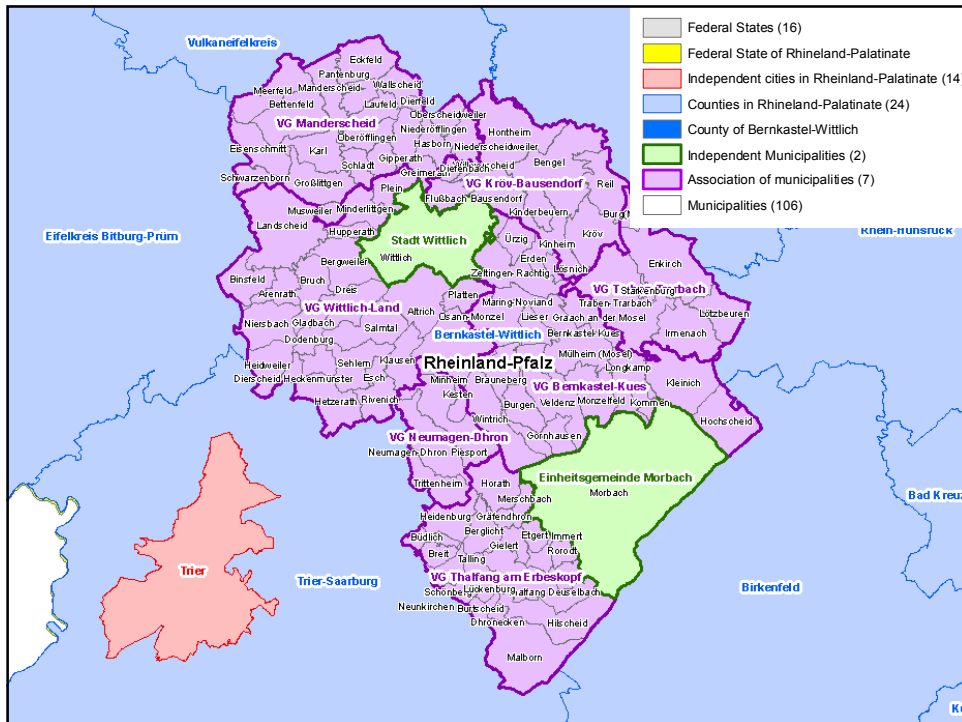


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BERNKASTEL-WITTLICH
Landkreis
Bernkastel, Wittlich, Prüm

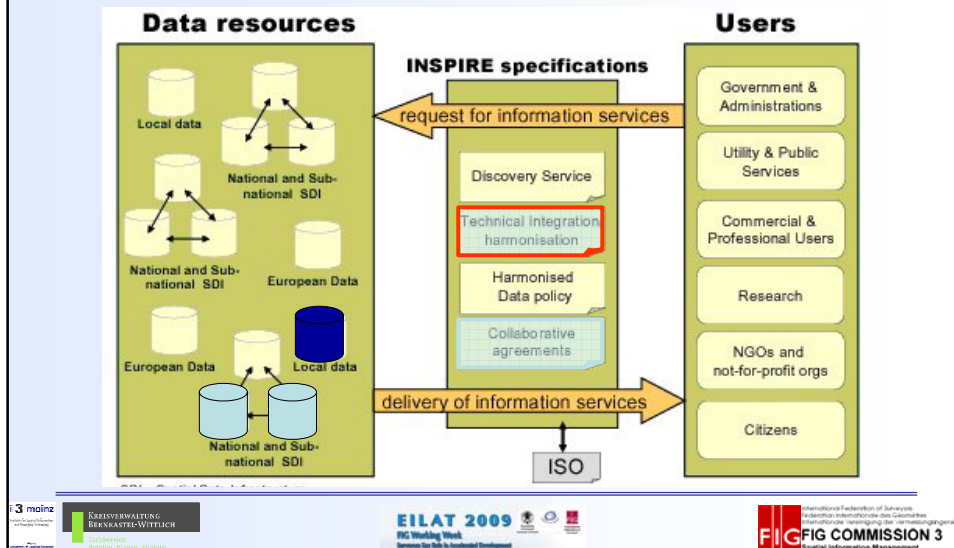


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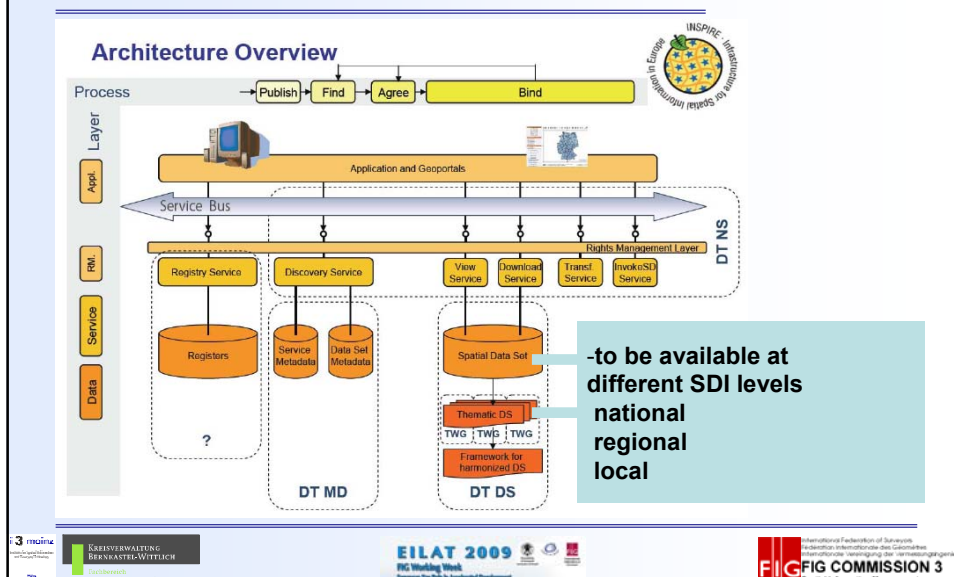




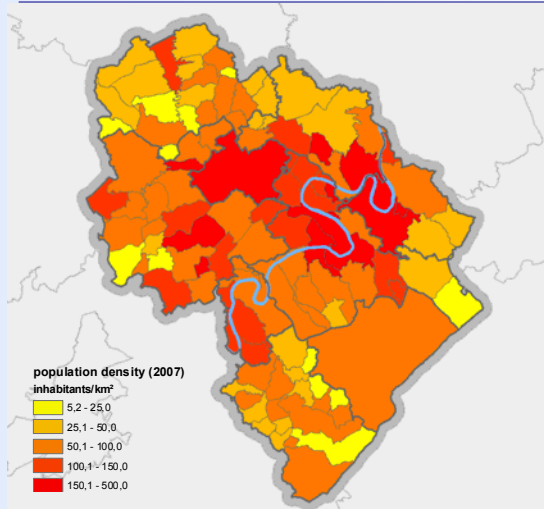
European project initiative INSPIRE



eGovernment connected with SDI



Case study - Germany – State of Rhineland-Palatinate - County of Bernkastel-Wittlich



- area 1178 km²
- 113.000 inhabitants
- 78 of 106 municipalities < 1000 inhabitants
- 97 inhabitants/km²

Project initiatives towards SDI implementation at the local level

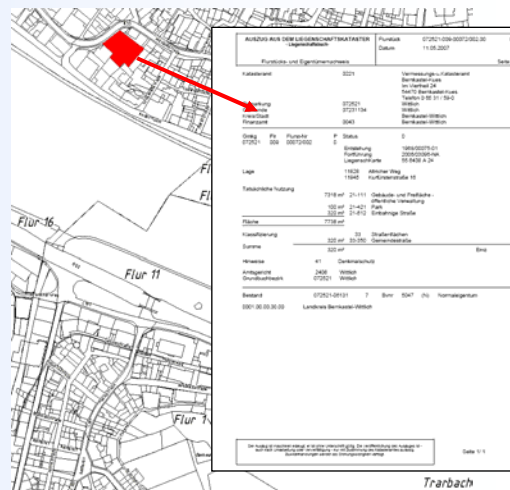
- several state-wide project initiatives starting in 2003 concerning local SDI implementation initiated by the umbrella organisation of all counties
 - **Project no 1** GIS implementation in the Rhineland-Palatinate counties
Goal: Developing a GIS implementation strategy for one exemplary local authority and creation of a functional specification for a modular build-up of a GIS
 - **Project no 2** Promotion of building up spatial data infrastructures (SDI) at local level
Goal: How to build up a spatial data infrastructure for the co-operation and the data exchange within local authorities and in between local and other authorities
 - **Project no 3** Build-Up of Rhineland-Palatinate regional SDI as a basis for the Federal State Development Plan IV (Landesentwicklungsprogramm IV)
Goal: what's the important spatial data for spatial planning at regional level to define a feasible spatial data repository
- project partners
 - Landkreistag Rheinland-Pfalz (umbrella organisation for all Rhineland-Palatinate counties)
 - i3mainz - Institut for Spatial Information and Surveying Technology (Mainz Univ. of Apl. Sc.)
 - County administration of Bernkastel-Wittlich (pilot authority)
 - Project group with other GIS experienced counties and some federal state institutions

system implementation at the local level – principal workplan

System analysis	System selection	System implementation
Strategic planning	Public tender	System installation, system acceptance
Field research and analysis	Offer rating	Data acquisition, data migration
Conceptual modelling	Functional tests	System use
Professional concept	System rating, system recommendation	
IT-concept		
Cost benefit analysis		

geo-spatial basic data – initial spark for the GIS implementation

- Digital Landscape Models (DLM)
- Digital Terrain Model (DGM)
 - aspect (here 135-225°)
 - slope (here > 25°)
- Topographic Maps (DTK 25, DTK 50, hier DTK 100)
- Digital Orthophotos (DOP)
- Digital Topographic Map 1:5000 (DTK 5)
- Official house coordinates (georeferenced building addresses)
- Automated land survey register (ALK)
- Automated register of land owners (ALB)



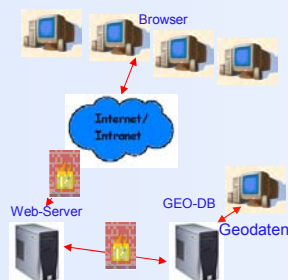
So far analogue...

Analogue data (paper documents and maps):

- Double or even multiple data
- Difficult retrieval of correct data in the existing data pool
- Rapid „aging“ of the data, therefore limited use
- Data can not be found or it is not known that such data exist
- Complicated updates
- Missing spatial reference



... now digital!



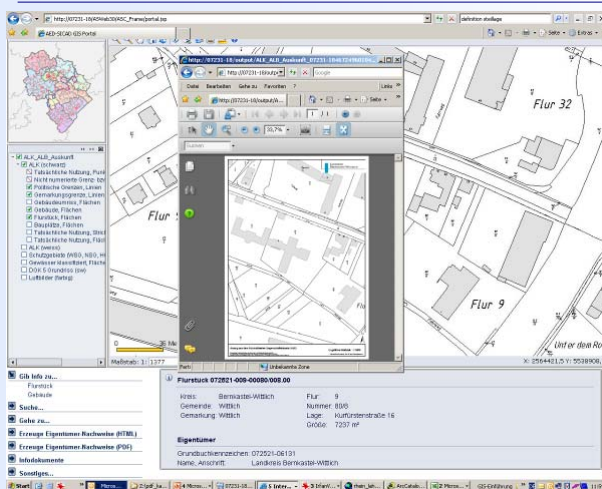
Geographical information system (GIS)

- Data is up to date (planning safety)
- Acceleration of workflows (efficiency)
- Permanent access to required data (time saving)
- Avoidance of redundant data storage (cost saving)
- Easy data exchange (time and cost saving)
- Analysis and presentation options (presentiveness)
- Establishment of a common spatial reference (combinability and comparability)

From experience

- Presentation of some practical applications
 - For all users: obtaining information from automated land survey register (ALK) and automated register of land owners (ALB)
 - Department of building and environment: mapping of habitats and reserves
 - Health department: geocoding of all locations of livestock farming within the county as prevention for avian influenza
 - Planning department: examination of potential locations for wind power stations
 - Department of building and environment: information system of legally binding land use plans
 - Integration of preparatory land-use plans in the federal state SDI

Most used application - obtaining information from automated land survey register (ALK) and automated register of real owners (ALB)



Hierarchic navigation:
 association of municipalities
 municipality/district
 local subdistrict
 cadastral district
 number of land parcel

moving to the information part
 selection of a land parcel
 Output of an owner proof
 Output of a land parcel extract

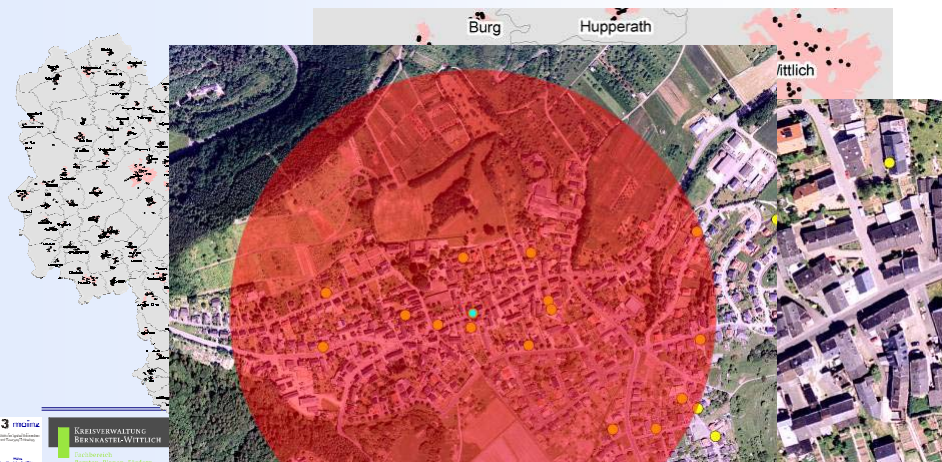
Department of building and environment
mapping of habitats and reserves

Conservation data in part
as OGC web map service (WMS)
From the Federal State Ministry for
Environment, Forest and Consumer
Protection

FFH-Ceblotsnummer, -Name und Gebietsgröße [ha]	005 ha
Lebensraumtypen mit EU-Code des Anhanges I und Arten des Anhanges II der FFH-Richtlinie (92/43/EWG), prioritäre Lebensraumtypen und Arten sind mit * gekennzeichnet. Stand Nachmeldung 2006 (31.01.2006)	
0008-001 Kutenbochtel	005 ha
Fließgewässer	3200
Fauche Hochstaudenfluren	6430
Flachland-Mähwiesen	6510
Silikat-Schutthalden	0110
Silikatfelsensystem	0010
Pionier- und Sekundärlebensräume	
Hainbuche	
Labkraut	
Schlicht- und Hangmischwälder *	9190 *
Erlen- und Eschenauenwald, Weichholzaunenwald *	9180 *
Cottus gobio (Groppe)	
Myotis bechsteinii (Bechsteinfledermaus)	
Myotis dasycneme (Tieffledermaus)	
Myotis myotis (Großes Mausohr)	
Lebensraumsprüche der gefährdeten Arten:	
Säugetiere	
Fischotter	Saubere Bäche und Flüsse, Artenreicher Wald und Wiesen in der Umgebung.
Luchs	Größtflächige und strukturreiche Laubwälder.
Bechsteinfledermaus	Ausgeglichene Wälder, Baumhöhlen als Quartier und Jagdgebiet im Wald und angrenzenden Wiesen.
Großes Mausohr	Wochenstubenkolonien meist in großen Dachräumen. Bevorzugte Jagdbiotopie sind Wälder und strukturreiche Lebensräume.
Mopsfledermaus	Sommerquartier in Stammrissen oder unter abstoßender Borke; alte Laubwälder; Winterquartiere in ungestörten Stollen.

Health department

- geocoding of all locations of livestock farming within the county as prevention for avian influenza case



Planning department
examination of potential locations for wind power stations

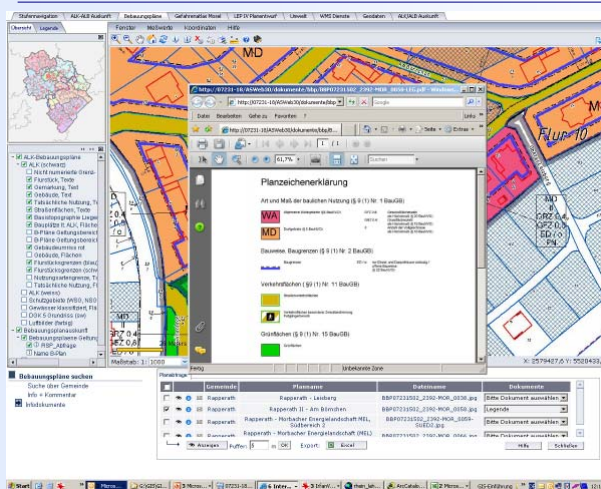
- Locations not to be affected (green)
- Precedence area for wind power stations (violet)
- Planned locations for wind power stations (red)
- Locations to be protected are buffered with 500 and 1000 meters distance, resp.
- Minimum distance of planned locations from critical locations ok



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Department of building and environment
information system for legally binding land use plans



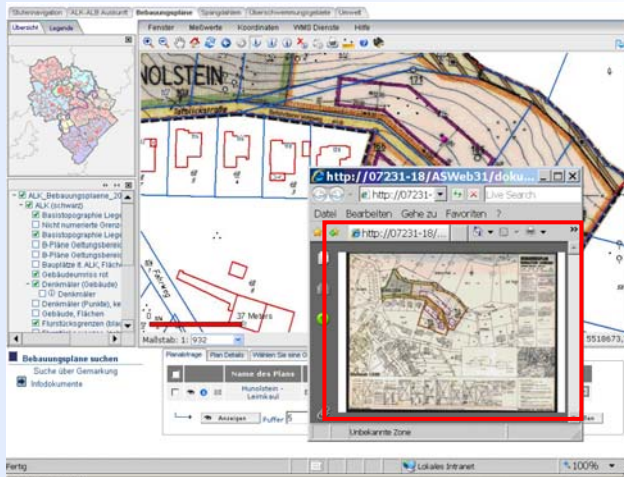
- select the municipality
- all plans available for the municipality are listed
- select the appropriate plan and zoom to the extent of the plan
- set the appropriate scale and layer
- activate the metadata available for the plan
- activate the textual description
- activate the legend



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Department of building and environment
information system for legally binding land use plans
interface to the building permit application management



Open building permit application program

Mark the parcel for which building permit is applied for

Move to the GIS application program

Creation of a map centered to the marked parcel

Call metadata to identify the legally binding land-use plan

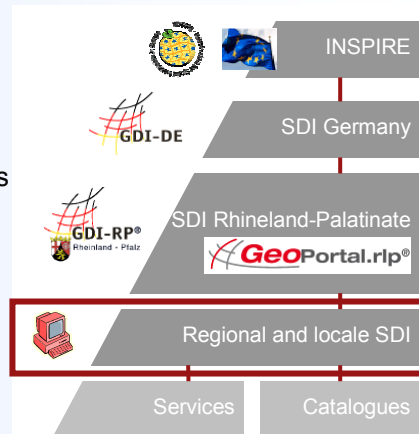
Display identified plan in PDF format



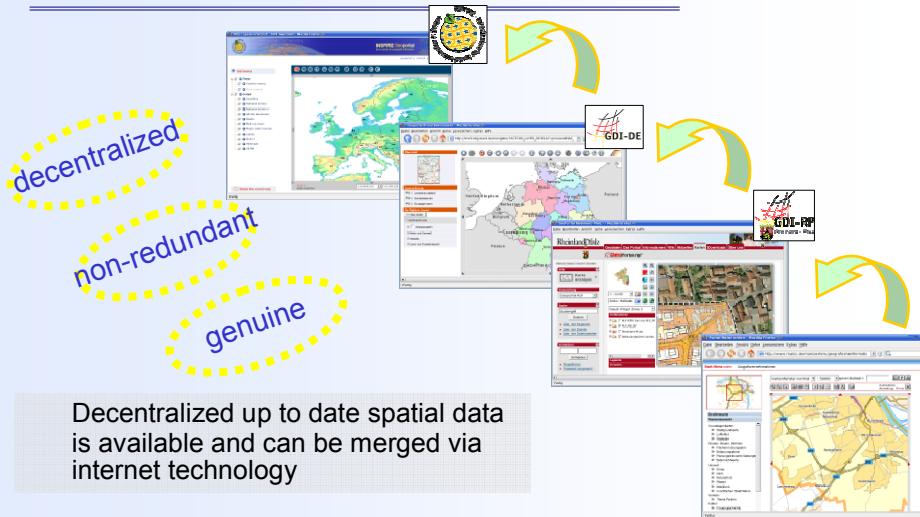
Regional and local SDI

Steps to be done at local level

- Implementation of GIS
- Built-up of local SDI
- Providing for OGC-conform services
- Using GeoWebServices
- Pilot-project Bernkastel-Wittlich



Spatial Data Infrastructure – from local level to European level



Preparatory land use plan in Federal State Regional SDI

Conclusions and further work

- SDI implementation at the local level closely related to and able to fulfil many basic needs of citizens and public administration by providing huge amounts of basic spatial data
- Careful SDI design and implementation at the local level indispensable for establishing a working SDI at all higher levels
- Consideration of standards, mainly those defined by OGC makes it possible to integrate local SDI bricks smoothly into an overall SDI
- Many questions concerning semantic interoperability, metadata specification and maintenance not yet answered in a sufficient way