



OGD und GDIs - gemeinsam oder einsam?

OGD & SDIs – sharing a platform?

geoplattform.at – geoplattform.at

Mittlboeck Manfred, 14 November 2013

OGD und GDIs – sharing a platform?

- Context: OGD & GDI
- (Geo-)information management
 - Organisation of Geoinformation
 - Organisation of Geo- Metadata in Austria using profiles:
 - Dublin Core
 - profil.AT, INSPIRE, ISO 19115, ISO 19139,
 - Cooperation OGD Austria - OGD Metadaten – 2.2 (Draft)
 - Enhancing geoinformation discovery with recommendations
 - Integrating semantic text matching
 - Communicate GeoData
 - SDI portals
 - OGD Portals
- Summary / discussion

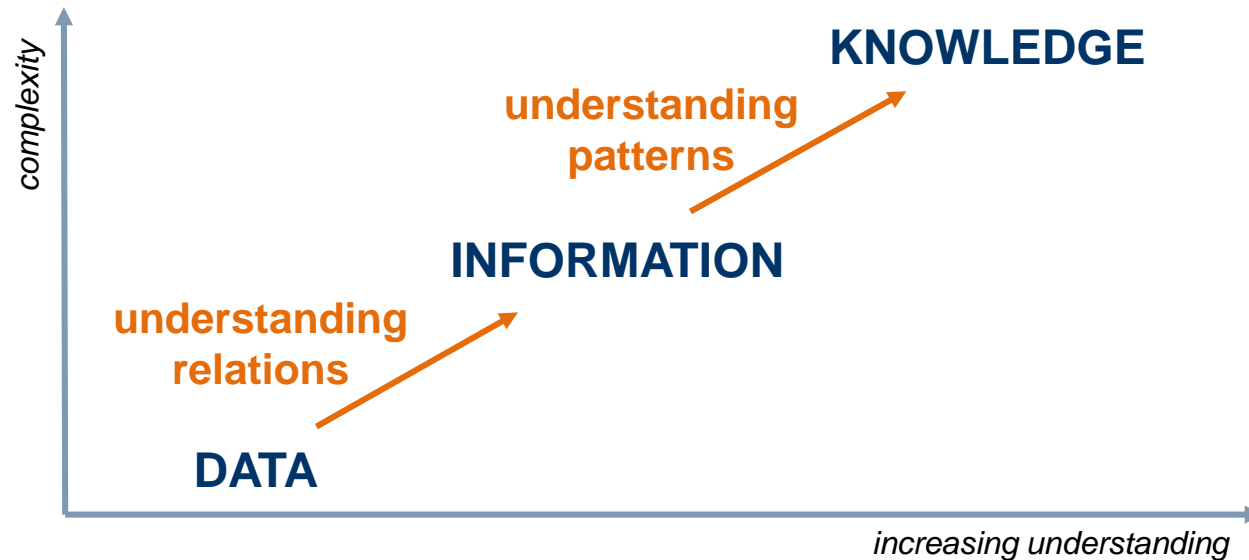
SDI & OGD

- 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.
(White House 2002)
- Open data is the idea that certain data should be freely available to everyone to use and republish as they wish, without restrictions from copyright, patents or other mechanisms of control
 - *Data produced or commissioned by government or government controlled entities*
 - *Data which is open as defined in the Open Definition – that is, it can be freely used, reused and redistributed by anyone.*
(opengovernmentdata.org)

OGD und GDIs – sharing a platform?

Value of Spatial Information

- Data **in context** becomes information
- **Space** (and time) enhance data integration capabilities and support understanding patterns
- **Spatial patterns** are important for decision-making



OGD und GDIs – sharing a platform?

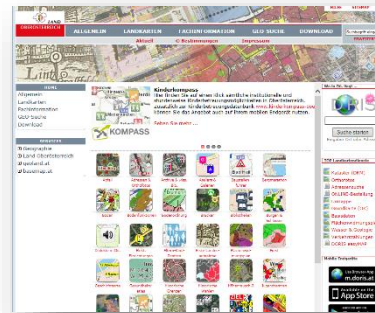
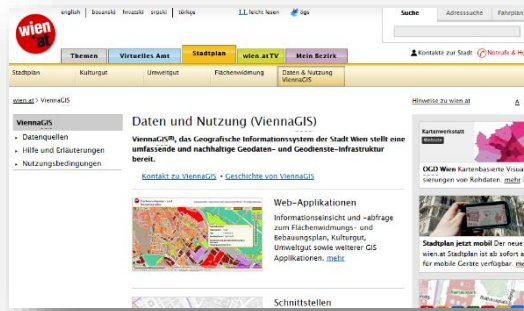
Value of Spatial Information

- Geo-enabled **decision making** through technical and organizational interoperability
- Ensure **information quality** through defined provision processes
- Optimize **data exploitation** and **investment** by establishing ordering processes
- Promote **reuse** through easy and interoperable data access
- There is an **increasing demand** for mobile use of spatial applications
- Consider that **contextual, intuitive, lean web apps** are frequently used across all departments and user types
- Promote **discovery, harmonization** and **interoperability** through a central point of contact for the spatial data and application portfolio

OGD und GDIs – sharing a platform?

AT – (Geo-) Information Discovery at a Glance

- SDI portals national
 - inspire.gv.at –
 - geometadaten.lfrz.at
 - www.austrianmap.at (BEV)
 - www.geoland.at
- SDI portals regional
 - Province & city SDIs
 - e.g. <http://gis.stmk.gv.at/geoportal/>



Geoinformation Management

AT – (Geo-) Information Discovery at a Glance

- OGD portal national/international
 - datahub.io
 - data.gv.at
- OGD regional
 - data.linz.gv.at,
 - data.noe.gv.at,
 - data.ooe.gv.at.at
 -

The screenshot shows the data.gv.at portal interface. At the top, there's a navigation bar with 'data.gv.at' logo and search options. A search bar contains 'Suchbegriff (z.B. Finanzen, Wahlen)'. Below the search bar, there are tabs for 'Startseite', 'Katalog', 'Anwendungen', 'News', 'Hintergrund-Infos', 'Netiquette', and 'Kontakt'. The main content area is titled 'Katalogsuche' and shows search results for 'Suchbegriff (z.B. Finanzen, Wahlen)'. A filter button is visible. Below the search results, there's a table with columns: 'Titel', 'Veröffentlichende Stelle', 'Veröffentlicht auf data.gv.at am', 'Letzte Änderung', and 'Format'. The table lists several datasets, including 'Linz Open Data' with various formats like CSV, GML, JSON, WFS, etc.

Titel	Veröffentlichende Stelle	Veröffentlicht auf data.gv.at am	Letzte Änderung	Format
LINZ OPEN DATA	Linz	9.09.2013	13.11.2013	CSV, GML, JSON (WFS), CSV (wfs), shp, kml, rss
		6.07.2012	11.11.2013	CSV
		1.04.2012	11.11.2013	GML, JSON, KML, RSS, CSV, SHP
		8.10.2013	11.11.2013	SHAPE, SHAPE
		1.04.2013	11.11.2013	CSV

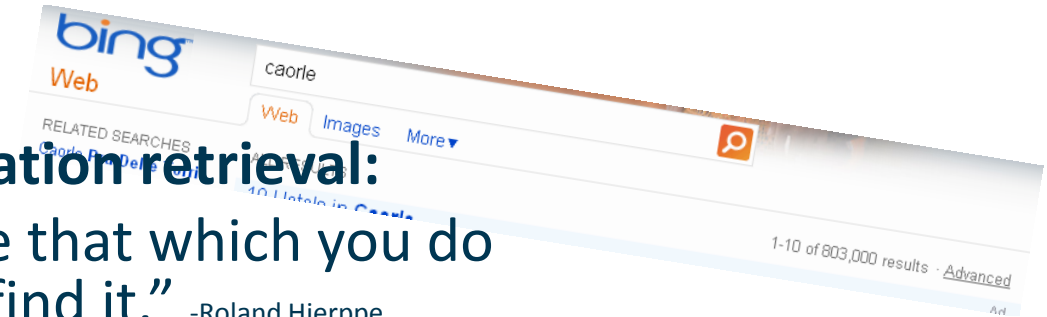
Information Retrieval - Discovery

The paradoxes of information retrieval:

1. “The need to describe that which you do not know in order to find it.” -Roland Hjerpe
2. “We can not put words into the search engine that we do not know.” -Tara Brabazon, University of Brighton

This means for data discovery:

- We tend to accept the first items in a search engine ranking list
- We do not question search rankings, accuracy or relevance of the first results





OGD & SDIs – sharing a platform

Documentation strategies

- Metadata standards: A common set of terms and definitions known as elements that describe an information resource.
- Create geo-metadata for datasets & services:
 - ISO & OGC core metadata compliance (19115:2003/2006)
 - profil.AT compliance (including feature catalogue description)
 - INSPIRE metadata compliance for Annex I,II (III in preparation)
 - OGD Metadata Austria 2.1/2.2 (beta)
 - Dublin core

- Metadatenstandard:**
- Dublin Core
 - profilAT 2.2+ Applikationen
 - profilAT 2.2+ Dienste
 - profilAT 2.2+ Datensätze
 - profilAT 2.2+ Datensatzserie
 - profilAT 2.2+ Attributinformation einer Ressource
 - profilAT 2.2+ Dienste (kurz, inkludiert Elemente von OGD***)
 - profilAT 2.2+ Datensätze (+ INSPIRE Annex I - Hydrographie)
 - profilAT 2.2+ Datensätze (+ INSPIRE Annex I - Schutzgebiete)
 - profilAT 2.2+ Datensätze (+ INSPIRE Annex I - Verkehrsnetze)
 - profilAT 2.2+ Datensätze (+ INSPIRE Annex I - Geographische Namen)
 - profilAT 2.2+ Datensätze (+ INSPIRE Annex I - Adressen)
 - profilAT 2.2+ Datensätze (+ INSPIRE Annex I - Verwaltungseinheiten)
 - profilAT 2.2+ Datensätze (+ INSPIRE Annex I - Katasterparzellen)
 - profilAT 2.2+ Datensätze (+ INSPIRE Annex II - Geologie)
 - profilAT 2.2+ Datensätze (+ INSPIRE Annex II - Bodenbedeckung)
 - profilAT 2.2+ Datensätze (+ INSPIRE Annex II - Höhe)
 - profilAT 2.2+ Datensätze (+ INSPIRE Annex II - Orthofotografie)

INTERNATIONAL STANDARD ISO 19115



Österreichischer Dachverband für Geographische information



ÖNORM A 2270

Ausgabe: 2010-04-15

Geoinformation

profil.AT

Metadatenprofil für Geoinformation — Regeln zur Umsetzung der ÖNORM EN ISO 19115

Geographic information — profil AT — Metadata profile for geoinformation — Rules for the implementation of ONORM EN ISO 19115

Information géographique — profil AT — Profils metadonnées pour information géographique — Règles pour la mise en application de l'ONORM EN ISO 19115



Cooperation OGD Österreich:
Arbeitsgruppe Metadaten

White Paper

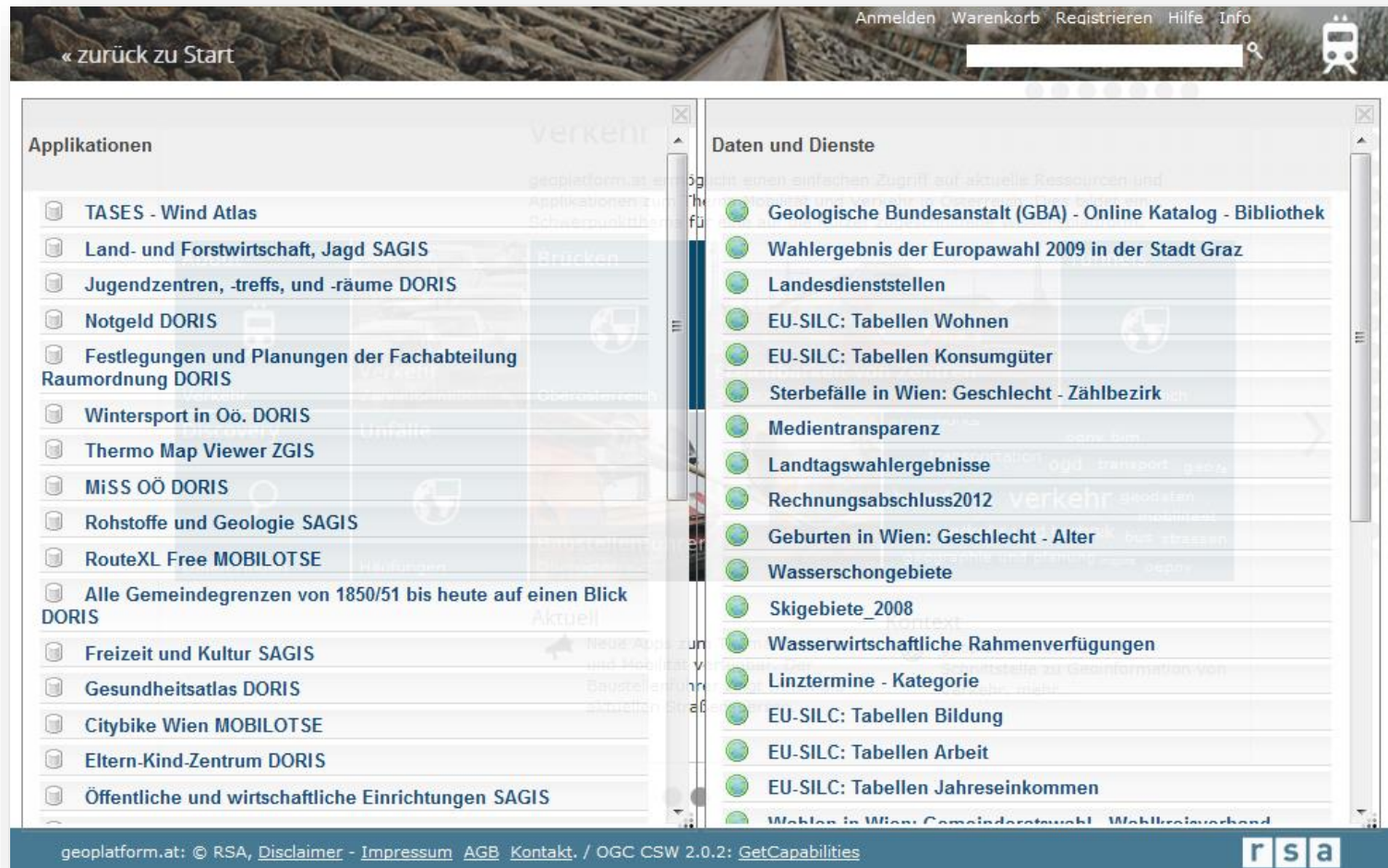
OGD Metadaten – 2.1

Ergebnis der AG

Information Discovery – geoplattform.at

The screenshot shows the geoplattform.at website interface. At the top, there is a navigation bar with links for 'Start', 'Wirtschaft', 'Bildung', 'Gesellschaft', 'Freizeit', 'Verkehr', and 'Umwelt'. To the right of the navigation bar are links for 'Anmelden', 'Warenkorb', 'Registrieren', 'Hilfe', and 'Info', along with a search bar and a globe icon. The main content area features a large header for 'geoplattform.at' with a descriptive paragraph: 'ist eine integrierte Schnittstelle für österreichische Geoinformations- inhalte öffentlicher und privater Anbieter. Die Plattform kombiniert die Funktionen und Inhalte bestehender Geoportale mit neuen Methoden kontextbasierten UX Designs.' Below this is a grid of category tiles: 'Discovery' (Daten Finden), 'Wirtschaft' (stärken), 'Gesellschaft' (gestalten), 'Freizeit' (genießen), 'Verkehr' (verstehen), 'Bildung' (teilen), and 'Umwelt' (erleben). A central tile displays 'Radlkarte Salzburg Stadt'. Below the grid are two sections: 'Aktuell' with a news item about a satellite image 'time machine' and 'Kontext' with a description of the platform as a gateway to geoinformation. The footer contains copyright information for RSA and the iSPACE logo.

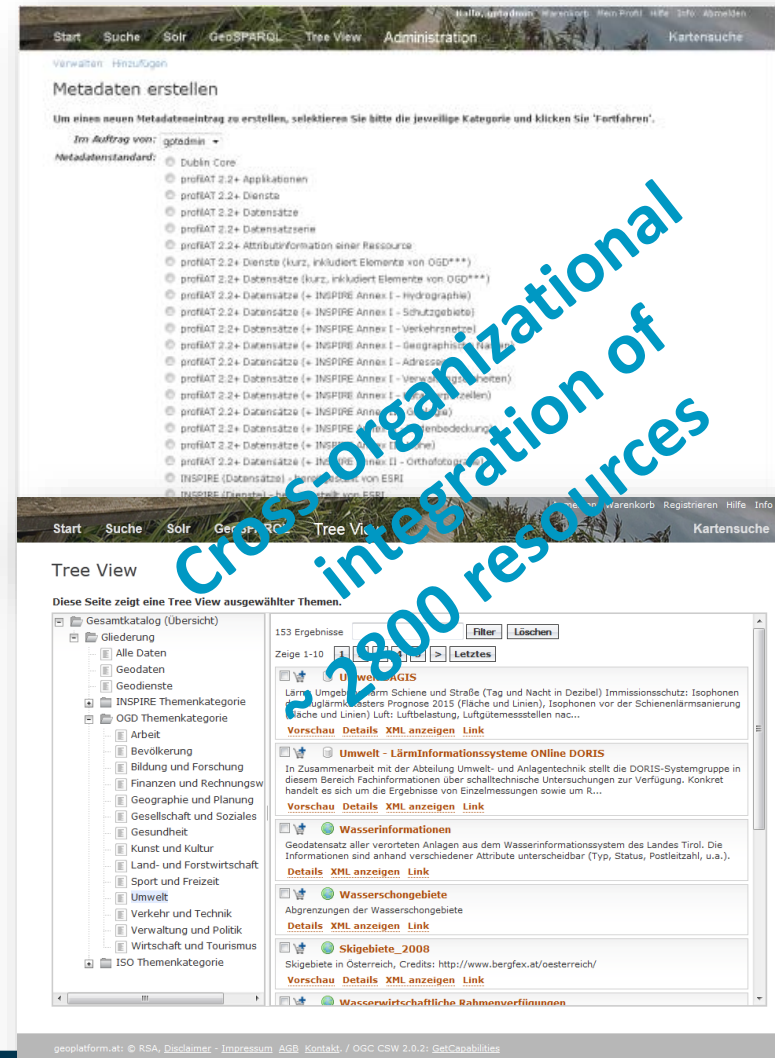
OGD & SDIs – sharing a platform geoplattform.at



OGD & SDIs – sharing a platform

Information Discovery

- Create geo-metadata for datasets & services:
 - ISO & OGC core metadata compliance (19115:2003/2006)
 - profil.AT compliance (including feature catalogue description)
 - INSPIRE metadata compliance for Annex I,II, III
 - OGD Metadata Austria 2.1/2.2 (Draft)
 - Dublin core (documents)
 - **Testing a NEW “Application” profile**



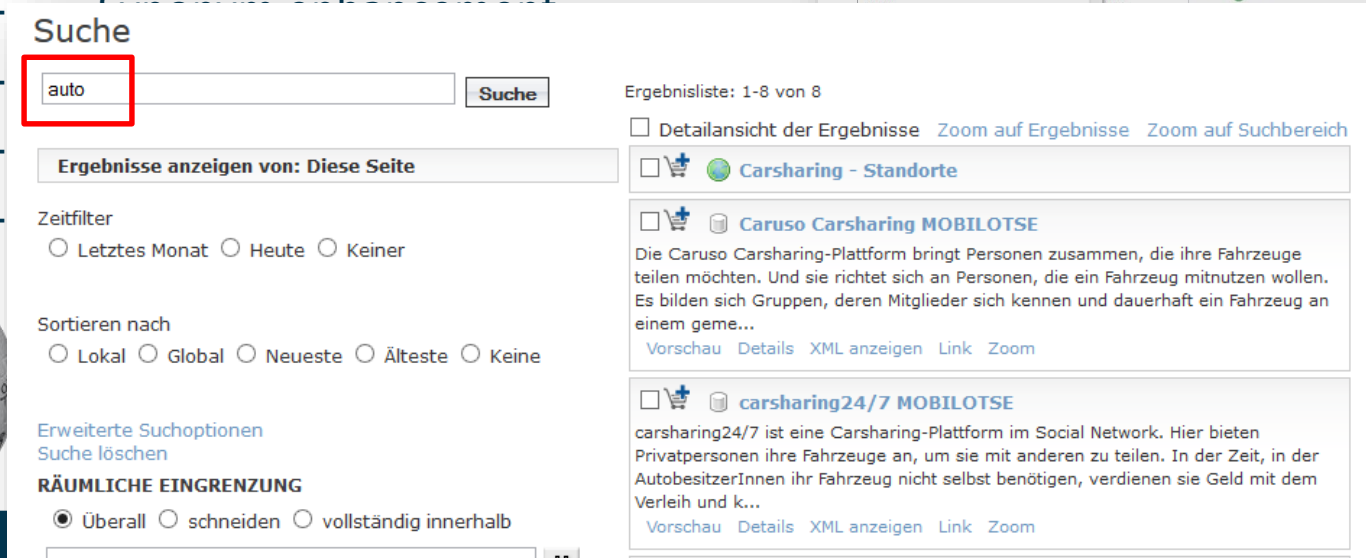
Cross-organizational integration of 22000 resources

OGD & SDIs – sharing a platform

Enhancing Information Discovery



- Discovery improvement for geoinformation resource discovery by applying automated methods such as
 - Autosuggestion lists
 - Tag clouds
 - Contextual similarity of texts
 - Geo Enhancement (Toponyms)




Geoinformation Management

Recommendations Enhancing Discovery



- Recommender systems facilitate the process of discovery giving

Kunden, die diesen Artikel gekauft haben, kauften auch Seite 1 von 19

 Die Trapp-Familie - Zweitausendeins Edition ... Ruth Leuwerik ★★★★☆ (2) DVD EUR 9,99	 Sound Of Music: 45th Anniversary Edition Julie Andrews ★★★★★ (6) Audio CD EUR 17,50	 Mary Poppins - Zum 45. Jubiläum (Special ... Dame Julie Andrews ★★★★★ (146) DVD EUR 10,39	 Die Trapp-Familie / Die Trapp-Familie in Amerika [2 DVDs] Ruth Leuwerik DVD EUR 9,99	 Annie Albert Finney ★★★★★ (29) DVD EUR 8,99
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Weitere mit "sound of music" getaggte Produkte

Von anderen Kunden vorgeschlagene Artikel:

 Österreichische Kultur- und Geistesgeschichte: Gesellschaft und Ideen im Donauraum 1848 bis 1938 von William M. Johnston ★★★★☆ (3) Neu kaufen: EUR 29,90	 Rodgers & Hammerstein Musical Box (12 DVDs) - [exklusiv bei Amazon.de] DVD ~Pat Boone ★★★★★ (5) 7 Angebote ab EUR 59,00 Vorgeschlagen von 1 Kunde	 At Her Very Best von Julie Andrews ★★★★☆ (1) Neu kaufen: EUR 27,95 8 Angebote ab EUR 10,17 Vorgeschlagen von 1 Kunde
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+ Alle 30 Kategorien EUR 6,56 gebraucht (6 Angebote)

Versandoption (z.B. ab 10€)
 Kostenlose Lieferung ab EUR 20 Bestellwert

The Sound of Music - Meine Lieder, Meine Träume (Music Collection) in der Hauptrolle Dame Julie Andrews, Christopher Plummer, et al. (2013)

*amazon.com 2006

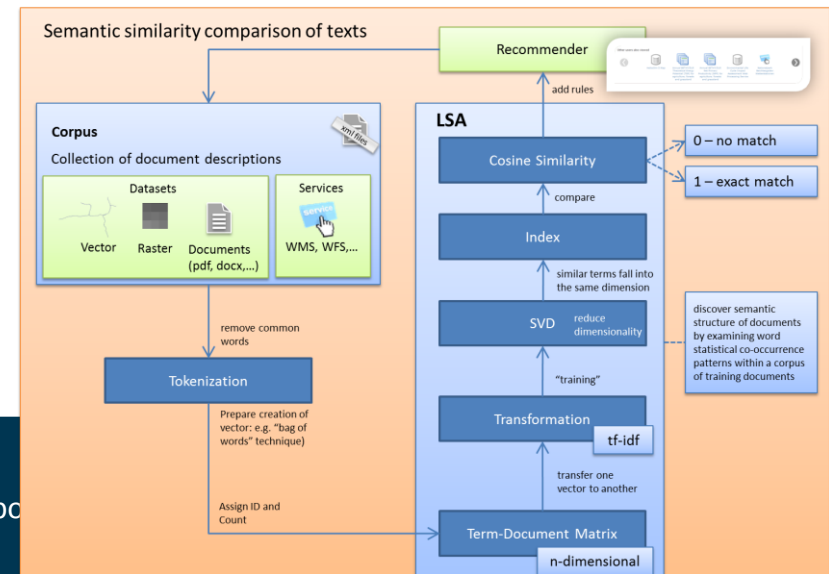


Geoinformation Management

Integrating recommender algorithms (part)

Algorithm: Association Rule Miner (ARM) – Shopping

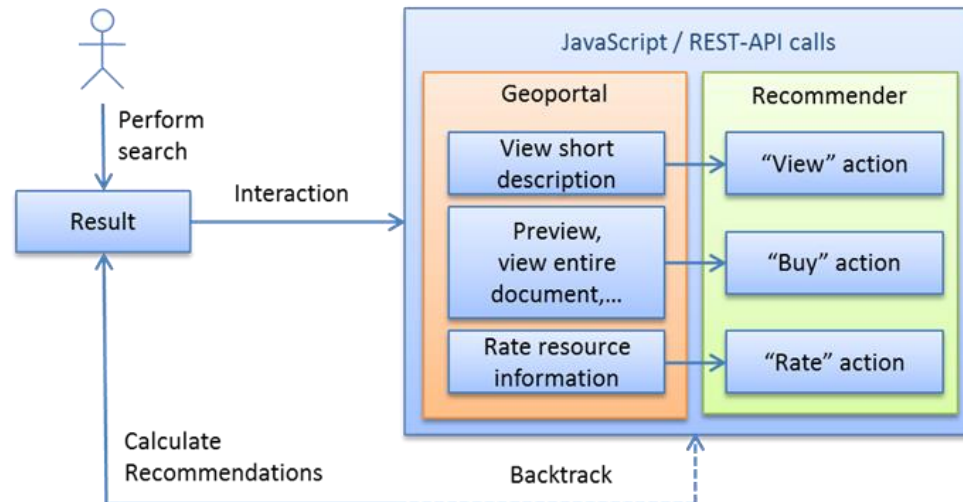
- Apriori algorithm R (Agrawal & Srikant, 1994):
 - Learning algorithm for association rules
 - “users loading their cart with item A and item B also put item C in it with a likelihood of 90%”
- SlopeOne (Lemire & Maclachlan, 2005)
 - Item-based collaborative filtering technique
 - Assumption: behavior of certain groups can be used to conclude on particular interests of individuals
 - Predict how a user would rate an item based on the ratings of a group of users



Geoinformation Management

Integrating Recommender Strategies

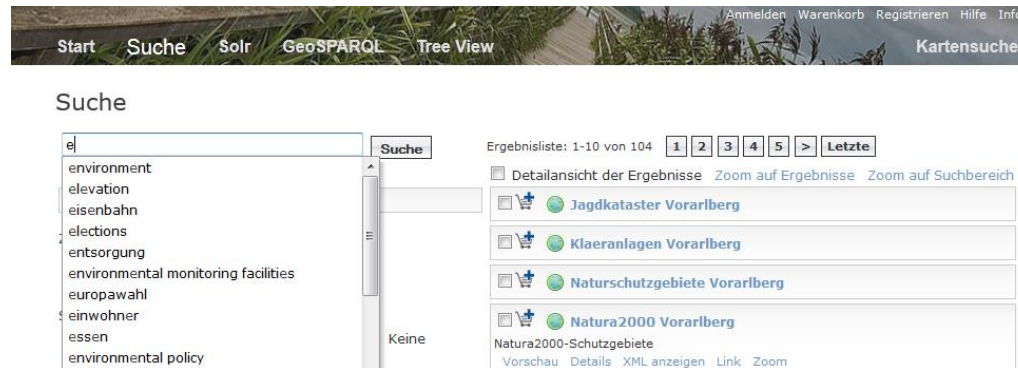
- Integration of recommendations based on user interactions
 - Improvement of discovery in geoportals by evaluating the user's interactions with the search results & resources
 - Analogy between geoportal interactions and recommenders:



- + Integration of contextual similarity of texts

OGD & SDIs – sharing a platform

Example: Recommendations in a Geoportal



- Recommender systems improve the quality of search results
- Additional “links” between resources based on experiences of other users are established and presented
- Incorporation of additional material (pdfs, doc) together with contextual similarity enhances the concept of recommendations (especially when having few users)

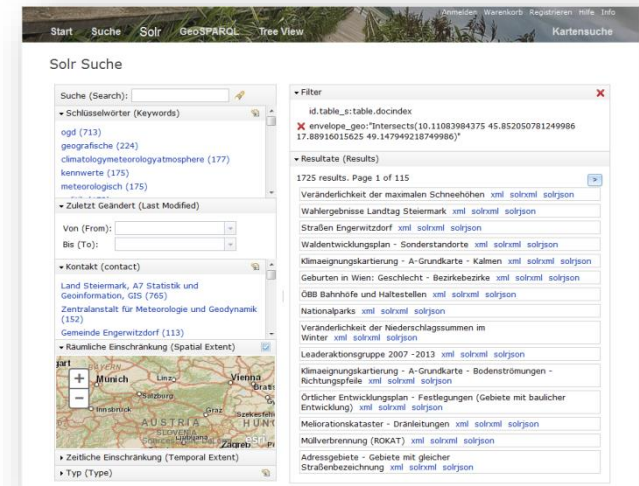
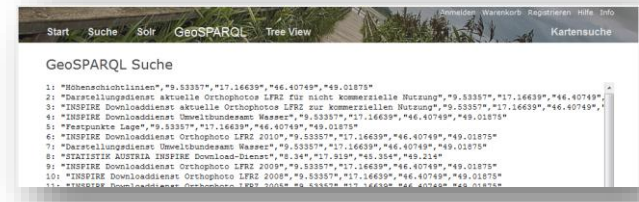
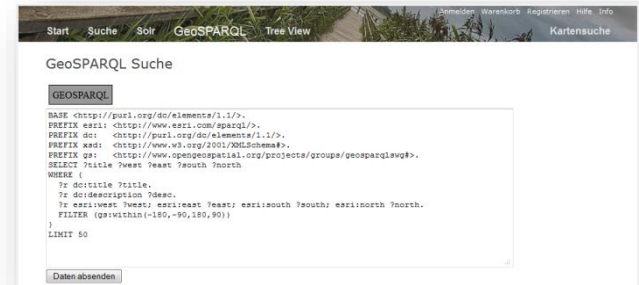


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Integrated Discovery

- Discover geo-resources:
 - Query title, abstract, keywords etc.
 - Applying spatial and temporal filters
 - Enhanced Lucene search capabilities
 - Introduction of multi-lingual translation capabilities

- REST Interface
- CSW & INSPIRE interfaces
- DC & DCAT interfaces
- geoSPARQL endpoints



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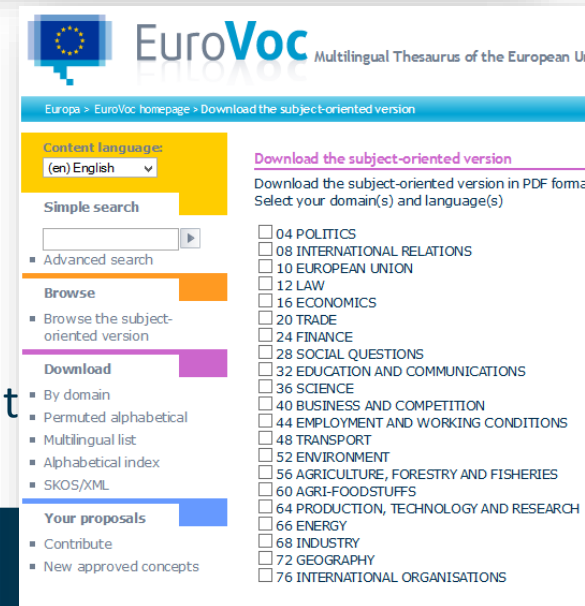
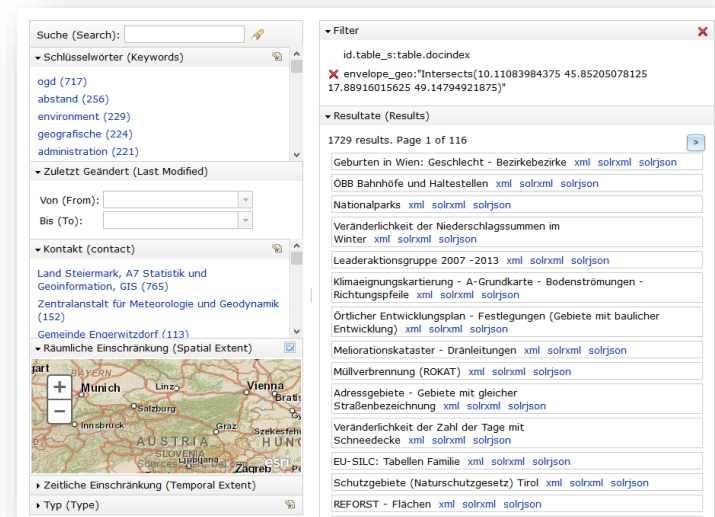
Adopted communication strategies

- **Presentation approach: „GeoPlatform“**
 - Reach our users
 - Hide complexity of discovery infrastructure
 - Similarity to „Apps“ on mobile devices intentional – support for new internet consumption (> 100 Mio pad devices sold within the last year)
 - Basic tasks presented on GeoPlatforms’ start page
 - Each application answers a certain question – equal to tasks to accomplish
 - Organize for users and groups (security)
 - Foster collaboration
- **Design geared to design principles of tile-based app-design metaphor**



OGD & SDIs – sharing a platform geoplattform.at challenges

- proposed future enhancements
 - Optimize Synonym and Geo enhancement strategies
 - Optimize faceted search capabilities integrating Ontologies
 - Domain ontologies
 - SKOS systems
 - e.g. Eurovoc thesaurus
 - Enhanced user interfaces supporting different *domains & perspectives*
 - Integrated distributed search & discovery (and indexing)
 - Analyze & prototype Integrate performance and update optimization strategies for mass content
- promoting & establishing geoplattform.at



Explore the Benefits of Sharing Geospatial Knowledge !!

- Communication approach: „GeoPlatform“
 - Reach our users
 - Foster enhanced discovery linking
 - „all‘ available resources
 - Support for semi-automated metadata extraction
 - Linking spatial and non-spatial (documents & tables) resources
 - Support multiple exchange interfaces
 - Organize for users and groups (security)
- Goal
 - Foster collaboration 😊

