# 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.

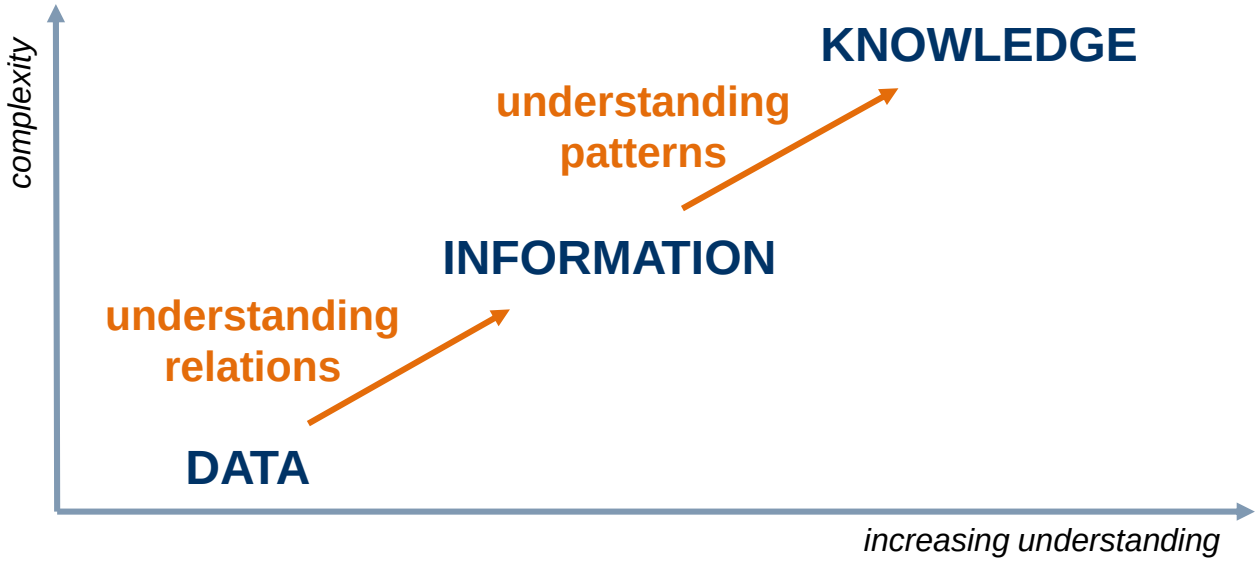
  (White House 2002)

- 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

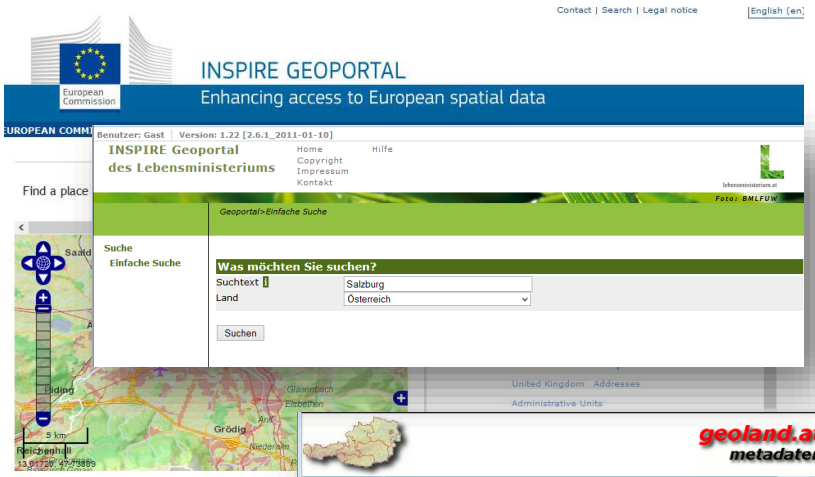


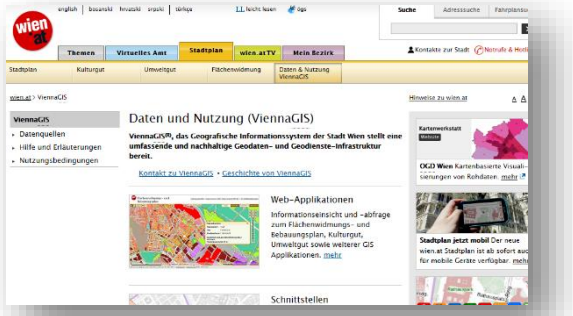
# OGD und GDIs – sharing a platform?
# Value of Spatial Information

- 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

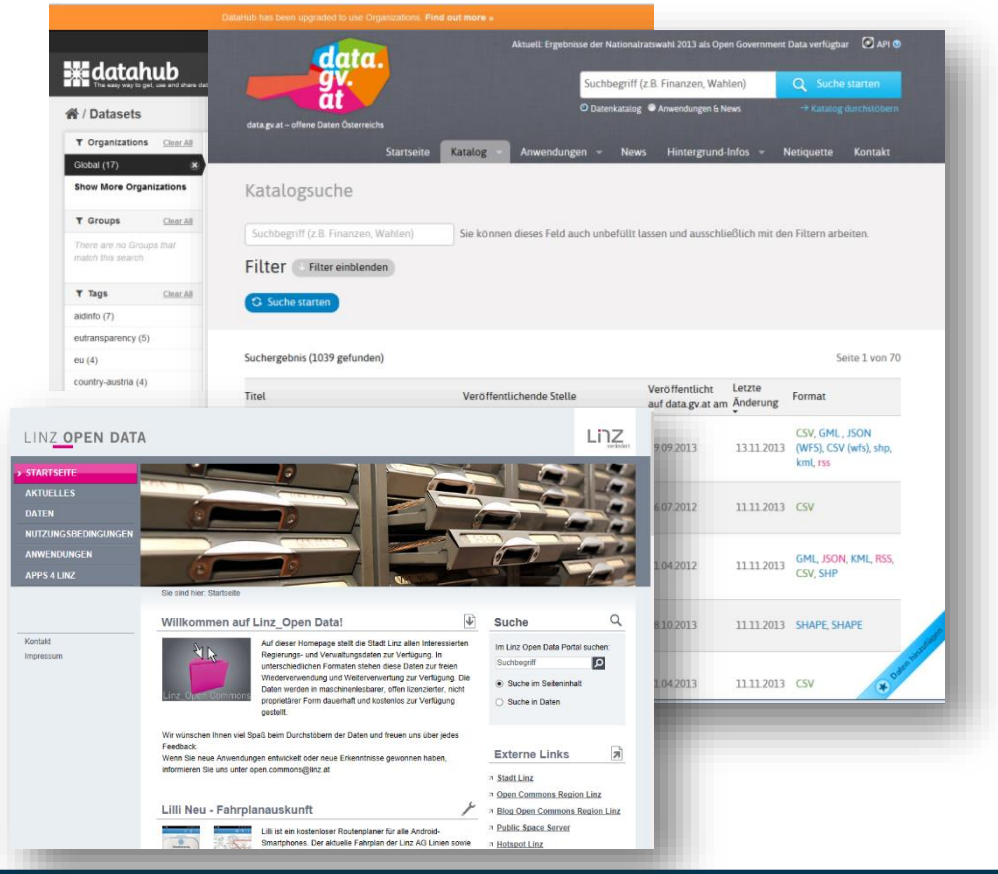
- SDI portals national
  - inspire.gv.at – geometadaten.lfrz.at
  - www.austrianmap.at (BEV)
  - www.geoland.at
- SDI portals regional
  - Province & city SDIs
    - e.g. http://gis.stmk.gv.at/geoportal/





# 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
  - ….



# 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 Hjerppe

2. "We can not put words into the search engine that we do not know." -Tara Brabazon, University of Brighton

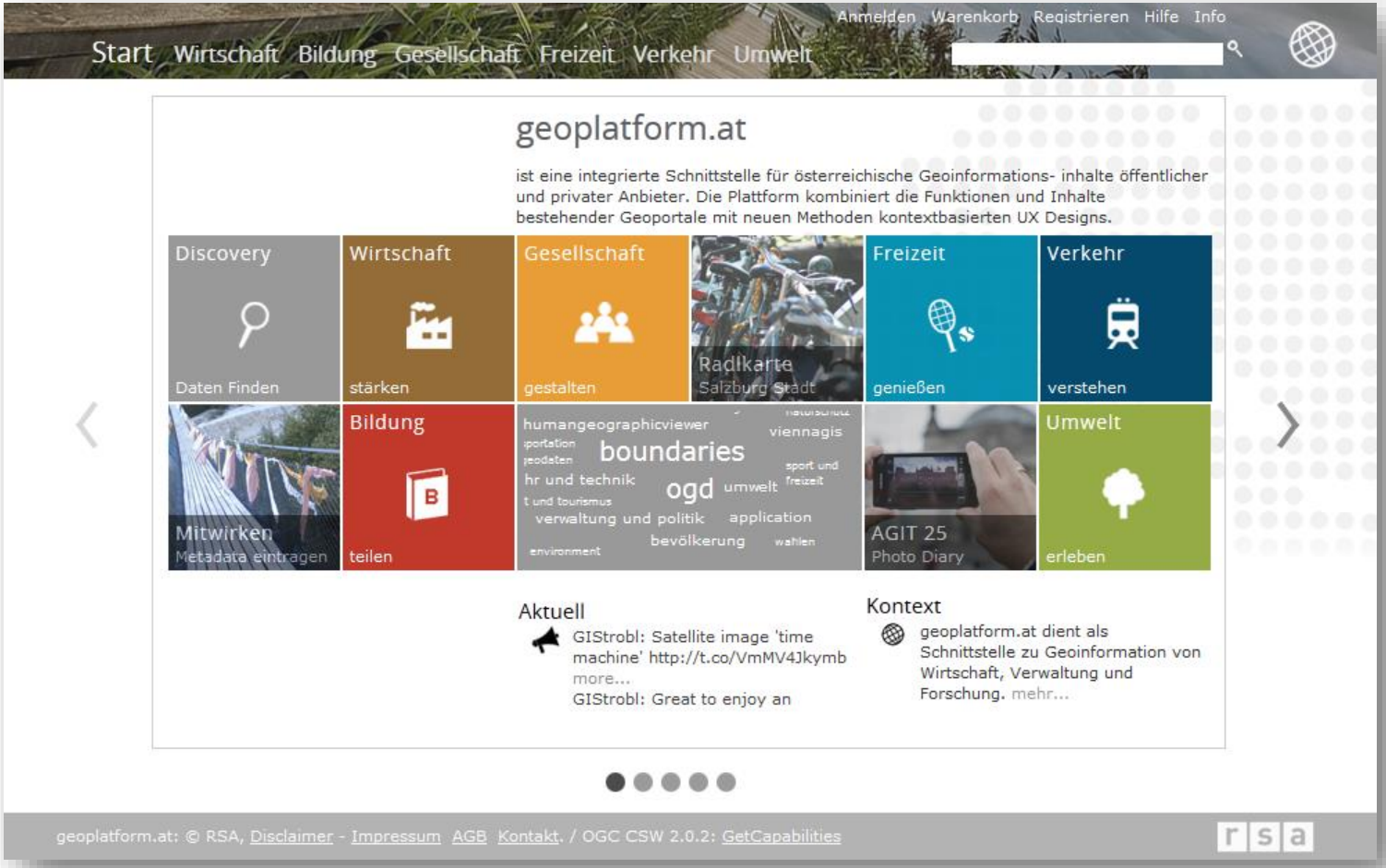
**This means for data discovery:**

- 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

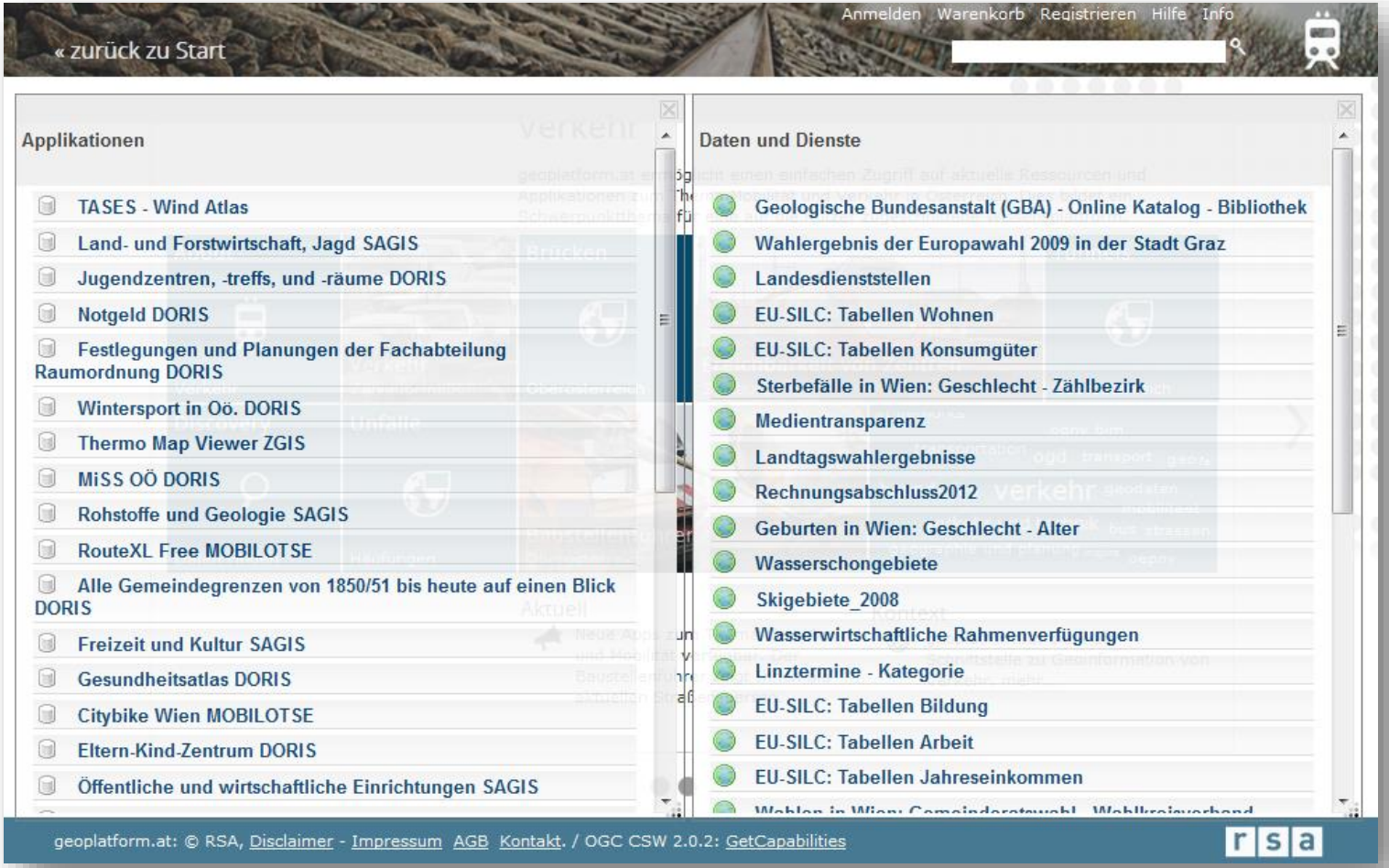
# OGD & SDIs – sharing a platform
# Documentation strategies

- 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

# Information Discovery – geoplatform.at



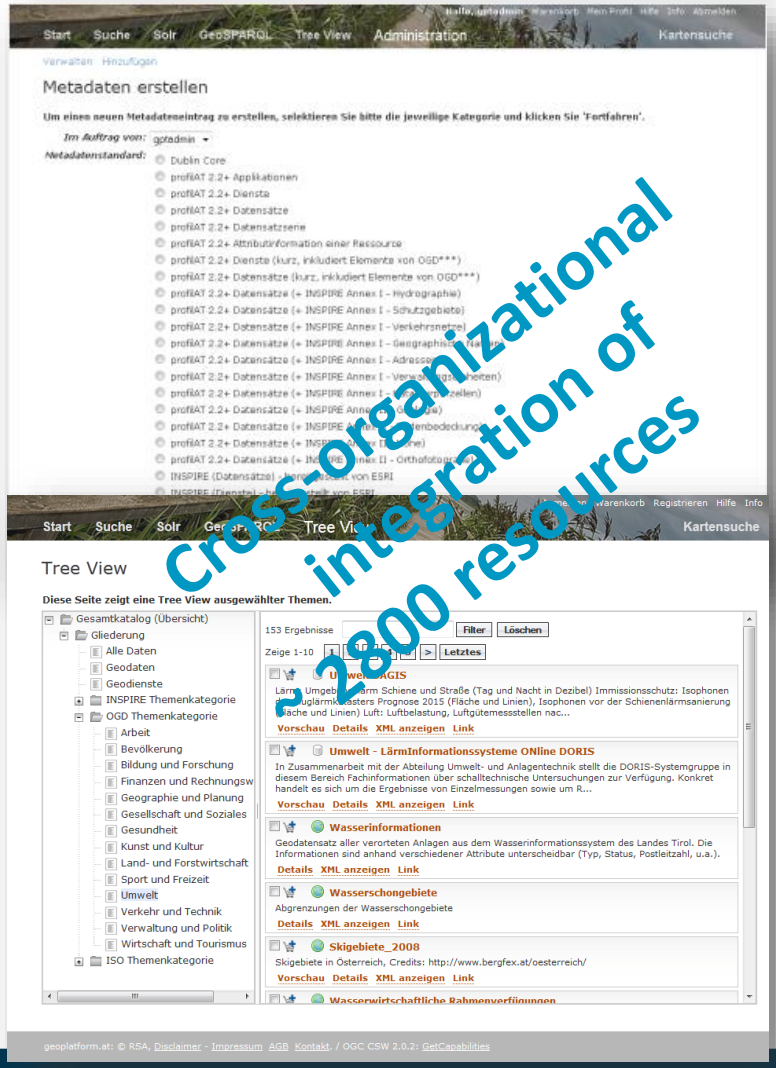
# OGD & SDIs – sharing a platform geoplatform.at



# OGD & SDIs – sharing a platform

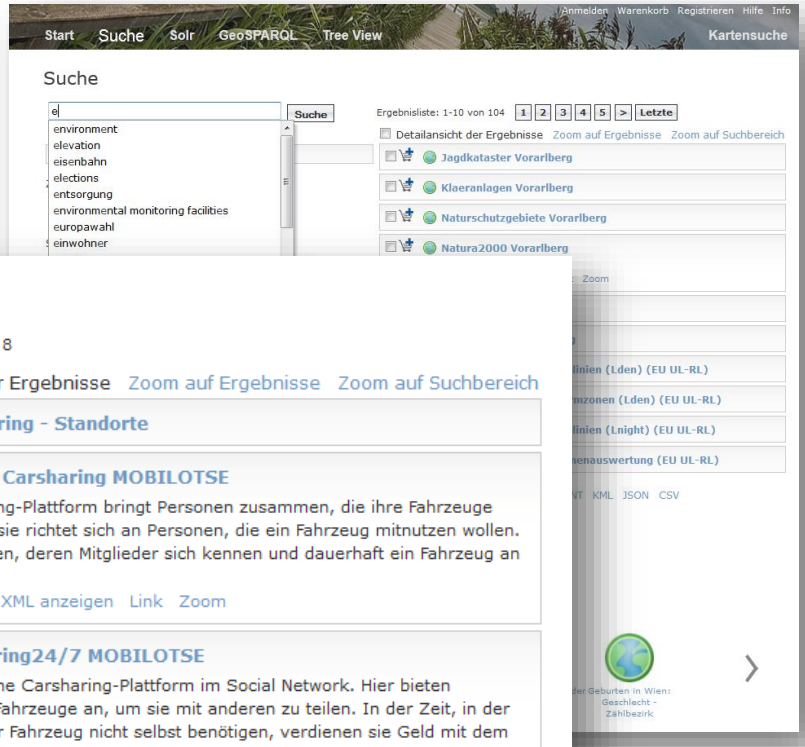
## Information Discovery

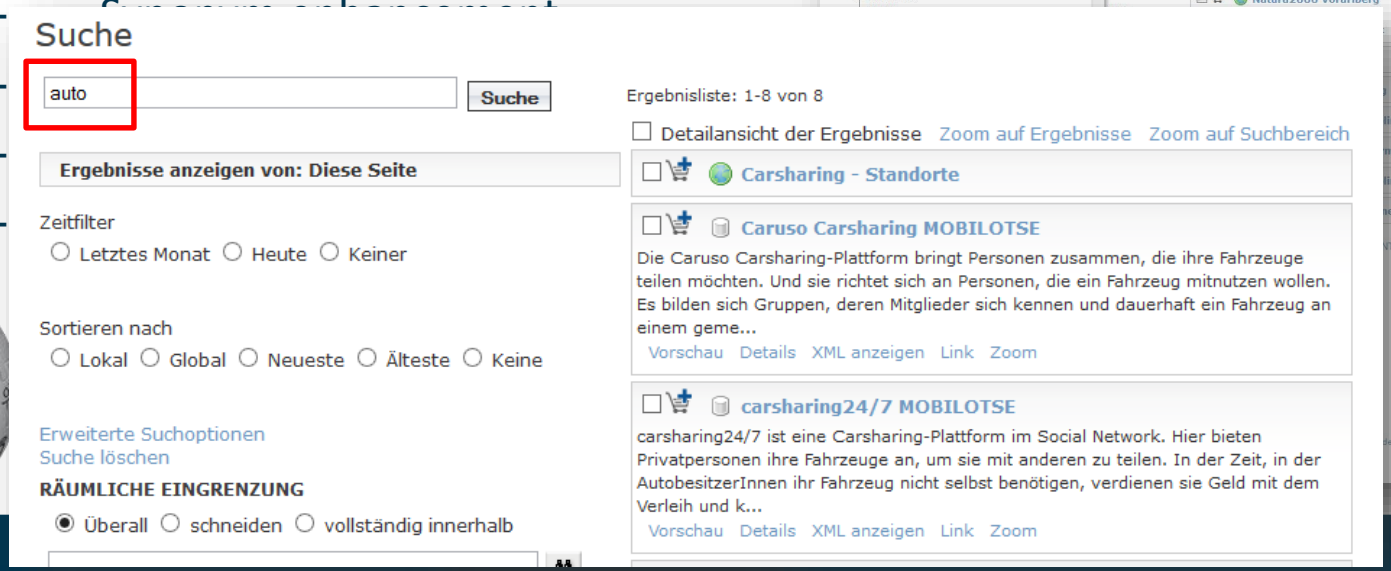
- Create geo-metadata for datasets & services:
  - ISO & OGC core metadata compliance (19115:2003/2006)
  - profil.AT compliance (including feature catalogue description)
  - INSPIRE metadata compliance for Annex I,II, III
  - OGD Metadata Austria 2.1/2.2 (Draft)
  - Dublin core (documents)
  - Testing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



# OGD & SDIs – sharing a platform Enhancing Information Discovery

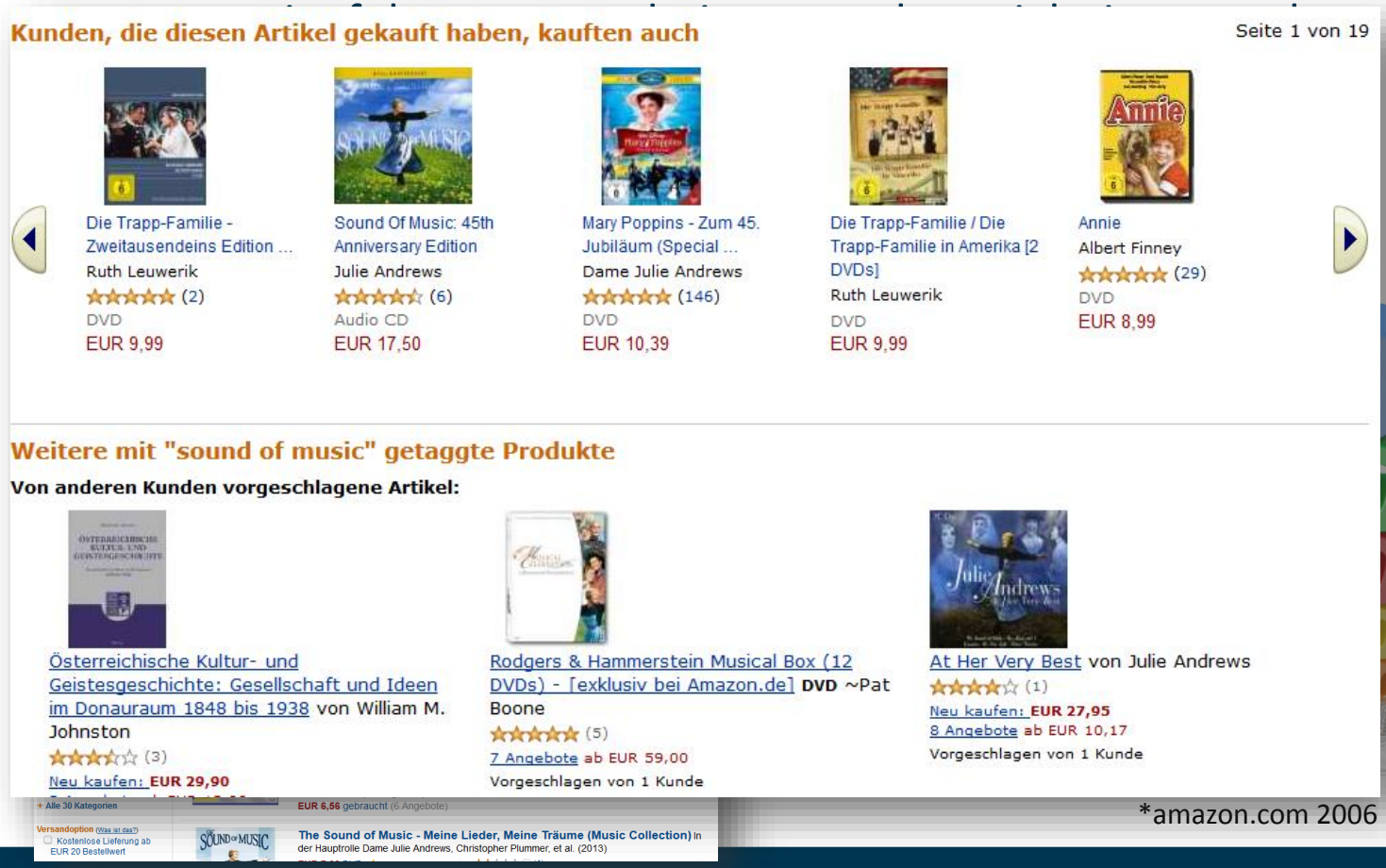
- Discovery improvement for geoinformation resource discovery by applying automated methods such as
  - Autosuggestion lists
  - Tag clouds
  - Contextual similarity of texts
  - Geo Enhancement (Toponyms)
  - Synonym enhancement



# Geoinformation Management
# Recommendations Enhancing Discovery

- Recommender systems facilitate the process of discovery giving

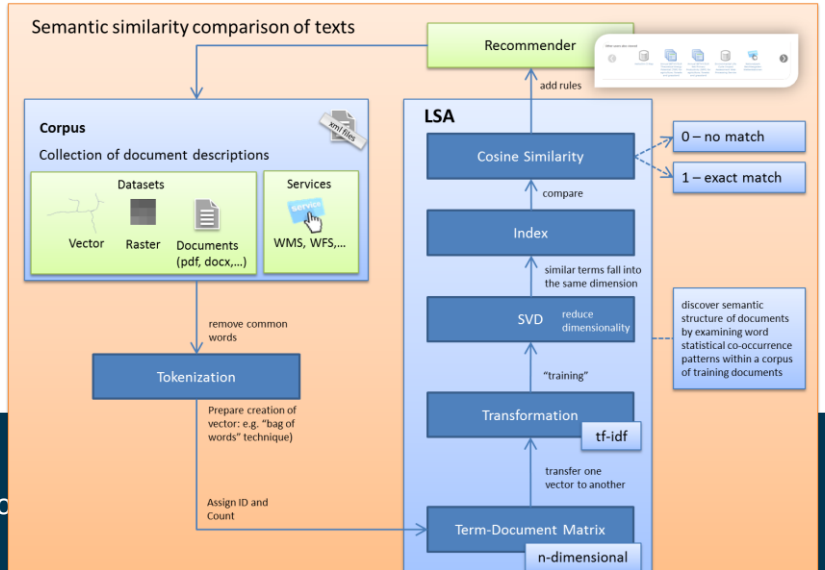



*amazon.com 2006

# Geoinformation Management
# Integrating recommender algorithms (part)

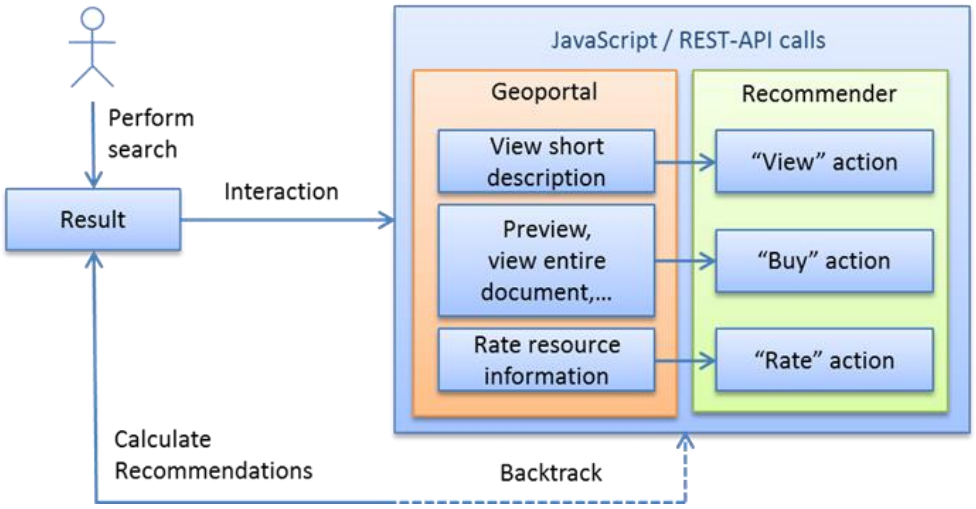
## Algorithm: Association Rule Miner (ARM) – Shopping

- 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

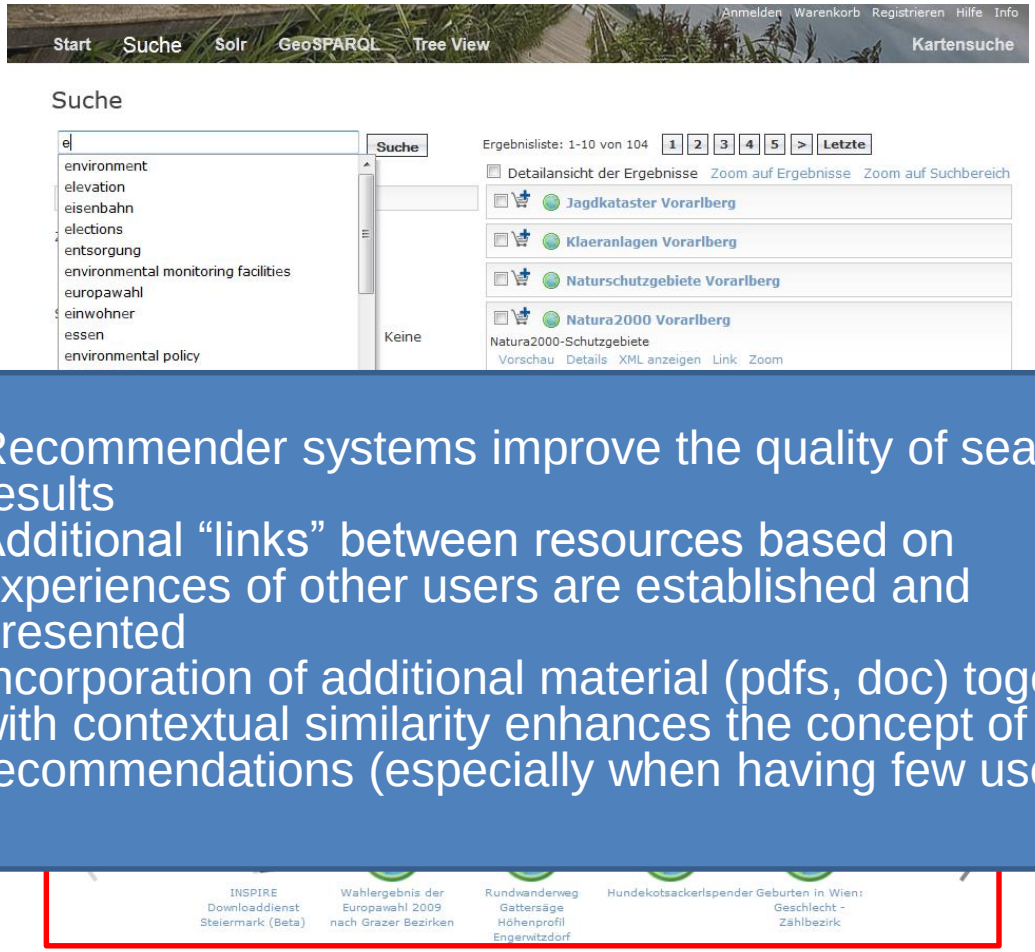
- Integration of recommendations based on user interactions
  - Improvement of discovery in geoportals by evaluating the user's interactions with the search results & resources
  - Analogy between geoportal interactions and recommenders:




- + Integration of contextual similarity of texts

# OGD & SDIs – sharing a platform

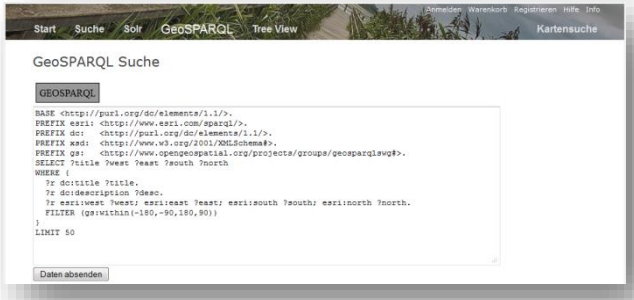
# Example: Recommendations in a Geoportal

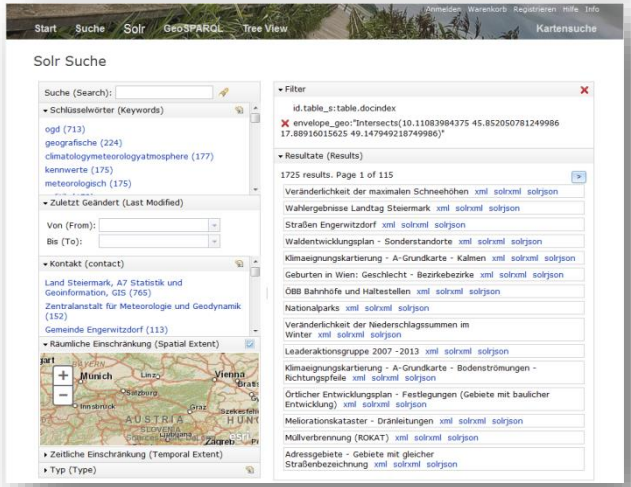



- Recommender systems improve the quality of search results
- Additional “links” between resources based on experiences of other users are established and presented
- Incorporation of additional material (pdfs, doc) together with contextual similarity enhances the concept of recommendations (especially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

# OGD & SDIs – sharing a platform
# Integrated Discovery

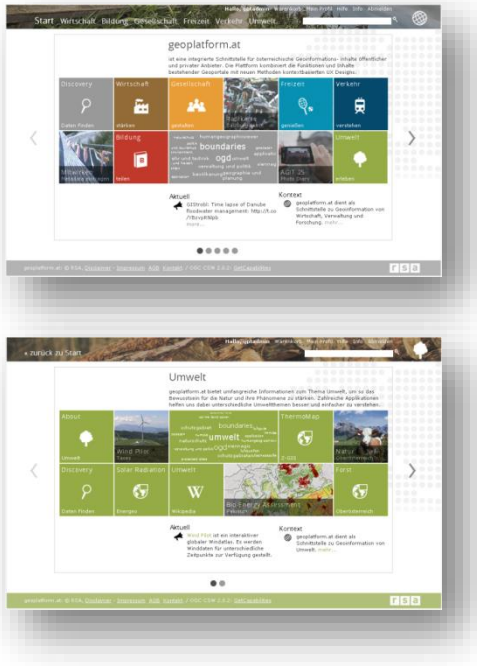
- Discover geo-resources:
  - Query title, abstract, keywords etc.
  - Applying spatial and temporal filters
  - Enhanced  Lucene search capabilities
  - Introduction of multi-lingual translation capabilities
  - REST Interface
  - CSW & INSPIRE interfaces
  - DC & DCAT interfaces
  - geoSPARQL endpoints





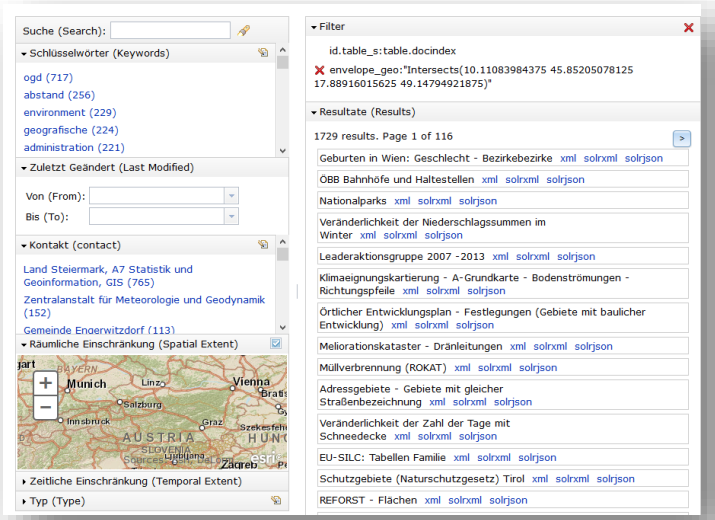
# OGD & SDIs – sharing a platform
# Adopted communication strategies

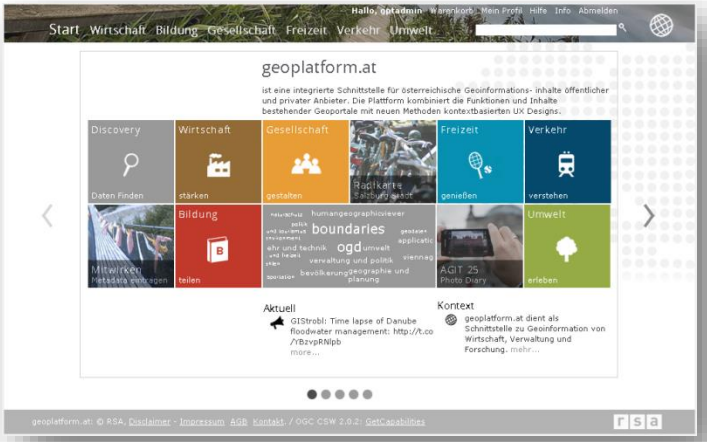
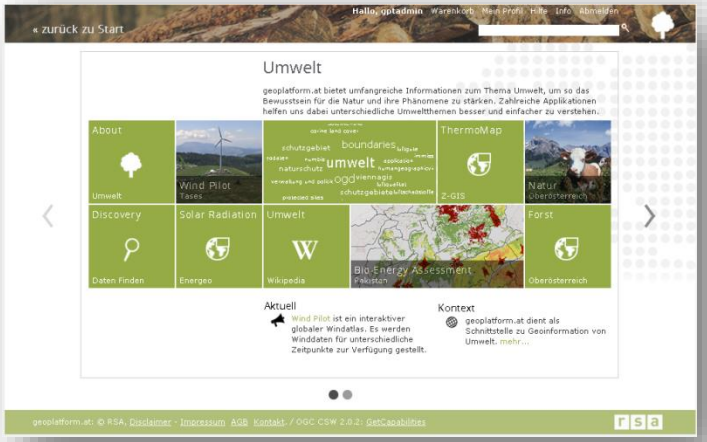
- **Presentation approach: „GeoPlatform“**
  - Reach our users
  - Hide complexity of discovery infrastructure
  - Similarity to „Apps“ on mobile devices intentional – support for new internet consumption (> 100 Mio pad devices sold within the last year)
  - Basic tasks presented on GeoPlatforms’ start 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 geoplatform.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 Knowlege !!

- Communication approach: „GeoPlatform“
  - Reach our users
  - Foster enhanced discovery linking **‚all‘** available ressoures
  - 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 ☺**