



Universität für Bodenkultur Wien



# **The Role of Service-Oriented Mapping in Spatial and Regional Sciences**

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# Outline

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- Introduction
- Service Oriented Mapping - sourcing via SDI´s
- Regional sciences and -assessment
- Our thesis, constraints and aim
- “Preliminary” Conclusion

This work aims at ...

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- Defining the **role of Service-Oriented Mapping** in spatial and regional sciences?
- Adding **statistical significance**
- **Enhancing validity** and reliability
- Supporting requirement- and **communication goals**



# SOA/SOMAP approach

## Main important characteristics

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- **Decentralized** networked infrastructure
- Responsible **stakeholders** for single system components
- combined **stewardship**
  
- Ubiquitous accessibility
- Publishing and maintenance by the responsible provider
  - **sharpening competencies**
  - **reducing/controlling redundancy**



### ■ Infrastructure quality

- **Performance and consistency** of search- and result delivery
- Performance and **capacity** of services and data access
- Standard **conformity**
- Safety and **reliance**
- Availability

### ■ „Freedom for use cases“

- Support of serendipity effects: generating added values by „free“ orchestration of data and services



[2014] [www.ethiopianreview.com](http://www.ethiopianreview.com)

# Toolset: regional sciences and -assessment

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- Planning area – available data – surveys – observations – assessment – **decision support** (outcomes and their effective communication)
- **Where** to build infrastructure facilities? **Catchment areas?**
- **Defining supply and determine capacities** of infrastructure facilities for a given planning horizon?
- (Development of) Spatial behaviour and awareness of qualities?
- Spatial-thematic relations?



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- „Location analysis“
- (Spatial) requirements for infrastructure facilities
- Allocation: evaluation of „**best location**“ in a defined area (municipality, region)
- „best“ in terms of all stakeholders
- **Reachability: equal living conditions** in terms of access to/usage of infrastructure (mobility, accessibility via public transport, individual traffic, ...)



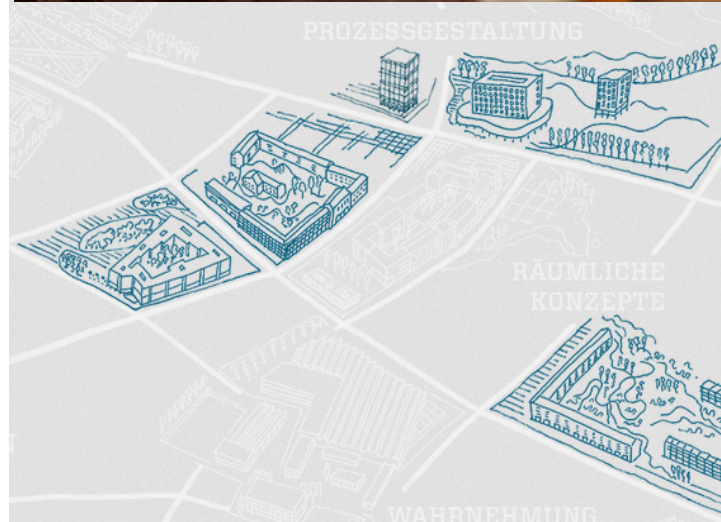


# Necessities of regional sciences and -assessment

## Capacities of infrastructure facilities

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- Demand- and stable-oriented approximation
- Focussing the thematic content
- Provisioning science  
(what kind of infrastructure to provide)
- Regional sciences (knowledge by spatial **change observation**)
- Ongoing observation of spatial development
- **Derivation of consequences**
- Change of socio-demographic and -economic structures (aging, emergence of poverty, changing mobility behaviour, migration decisions, etc.)





# Hypothesis, aim and constraints

## ■ Hypothesis

- Data aggregation on the basis of SDI provide useful „**new and additional**“ resources

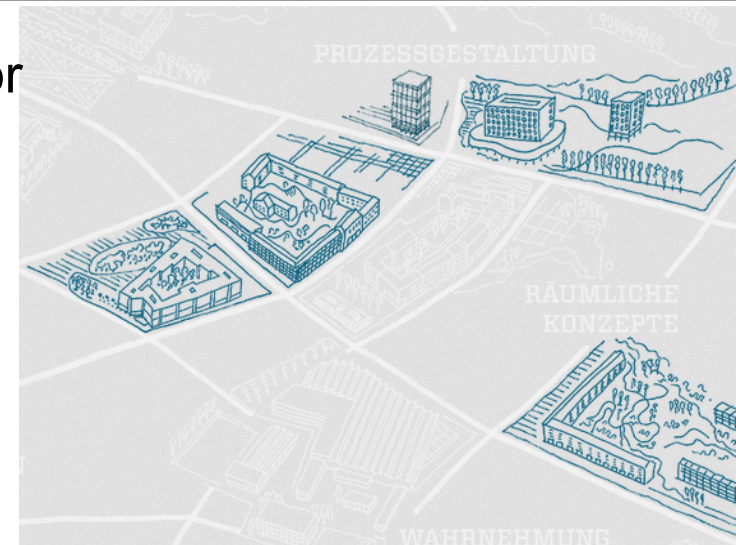
## ■ Aim

- **Refinement** of statistical models for analysis, evaluation and decision-making

## ■ Constraints

- Temporal consistency
- Semantic consistency

## ■ Side-effects based on data combinations



# Hypothesis, aim and constraints

## Example: stationary facilities

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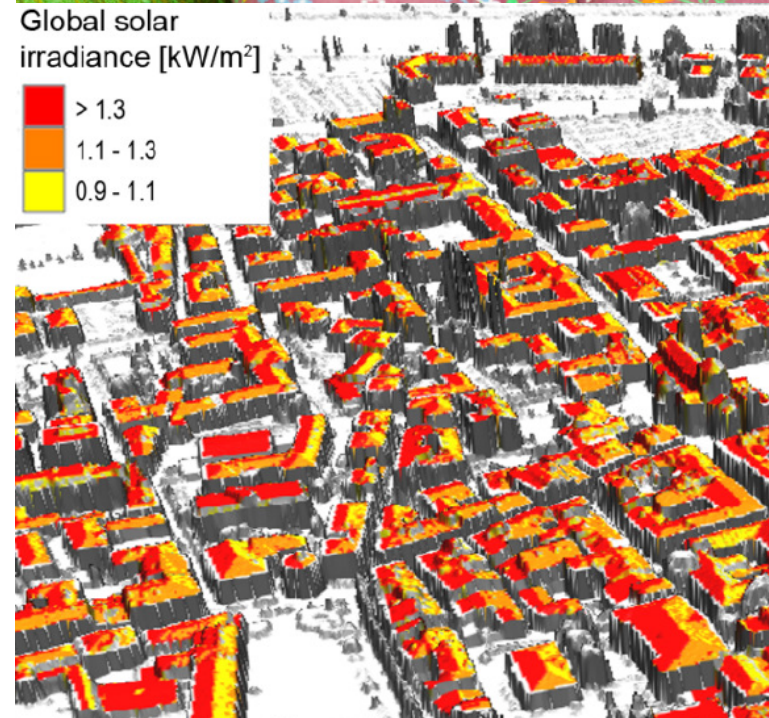
- Location and **reachability** of stationary facilities (nursery homes)
- Criteria and evaluation on the basis of questionnaires (statements of heads of institutions)
- This first evaluation results among others **unveil** following main **observations**:
  - Role of topography
  - Spatial arrangement
  - Individual situations
  - Reliability of results



# Hypothesis, aim and constraints

## Example: stationary facilities

- Topography
  - Hillside situation/exposition/...
  - Reachability by car or public transport
- Spatial arrangement observation
  - In bigger cities good reachability (central or peripheral) is preferred
  - In rural areas generally outskirts are used
- Reliability
  - ~60% of the questions are not answered / resulting in **low significance**

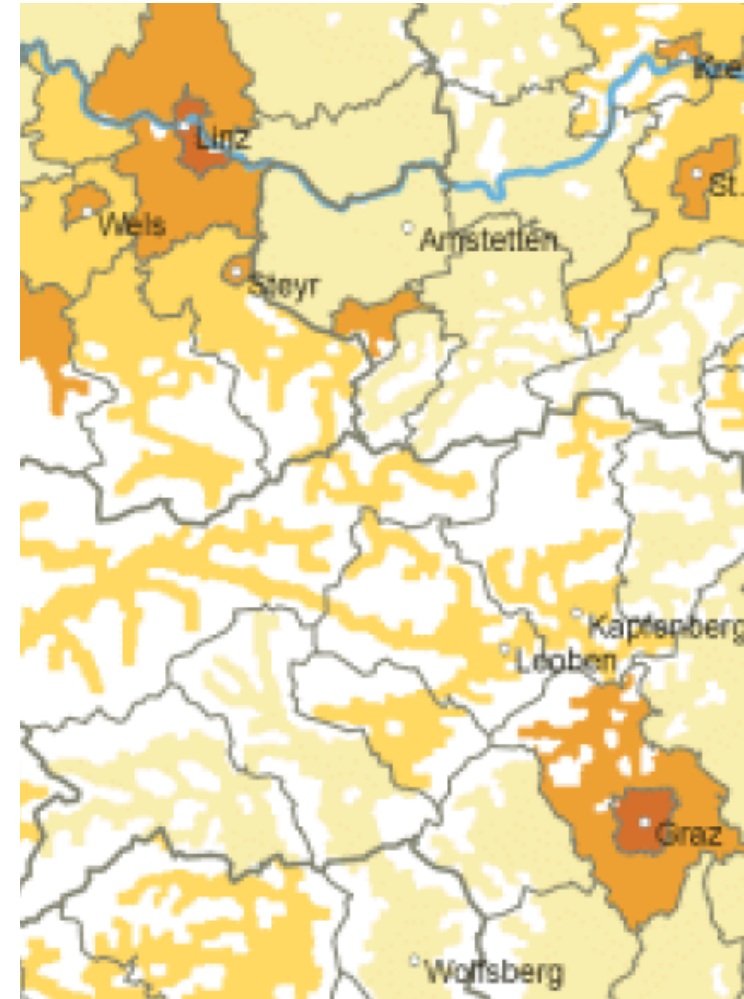


Agugiario 2012

## Next steps

### Example: stationary facilities

- Comparison of surveys/questionnaire results with actual geospatial analysis to support the **location assessment**
- **GDI-supply-profiling** / How to evaluate lineage, usability and information depth?
- **Requirements identification** for regional sciences in terms of geoinformatics as well as cartography (communication)

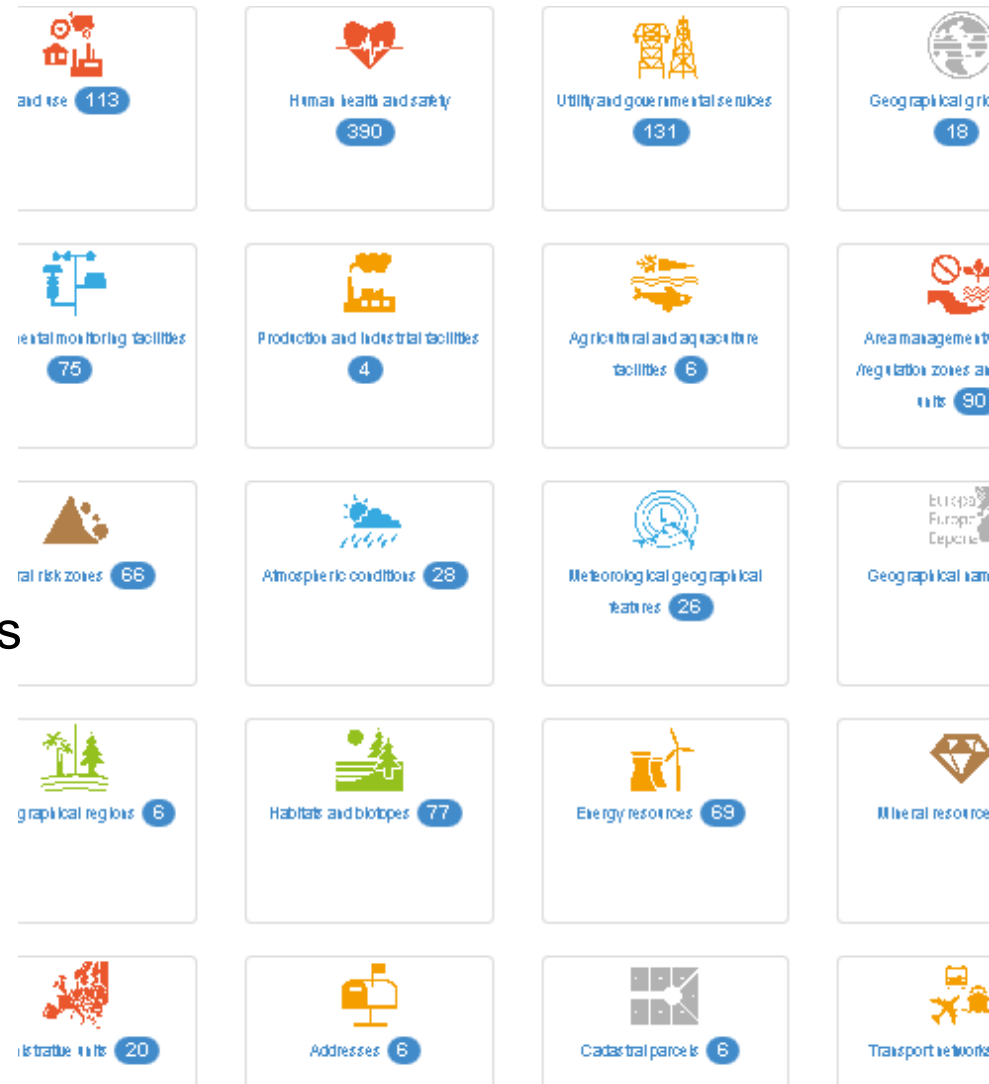


Statistik Austria 2004



# SOMAP for Regional Sciences Conclusion

- Evaluation of **source aggregation** is needed
- Support of SDI sources for the **statistical model/location assessment** have to be considered precisely
- Common cooperation /**consensual steps** of methods in regional sciences and Cartography/GIScience are needed urgently













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