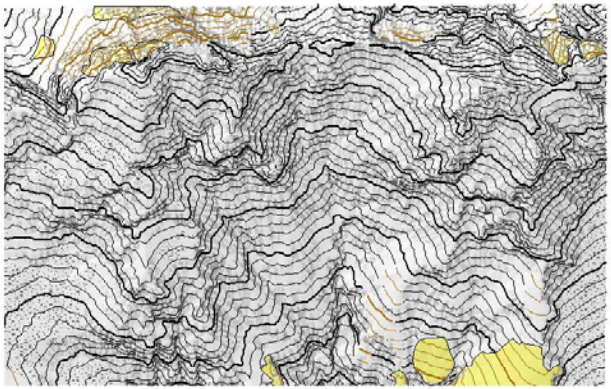
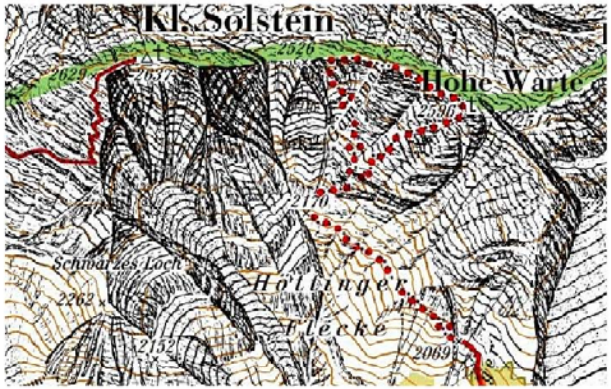
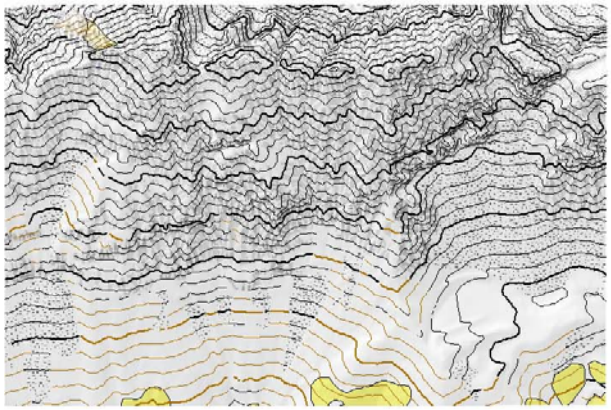
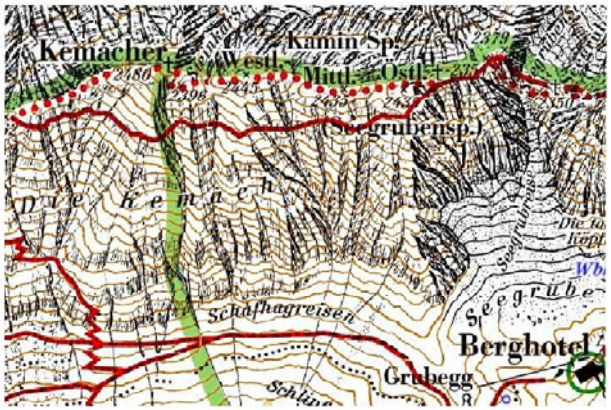
Research Group Cartography



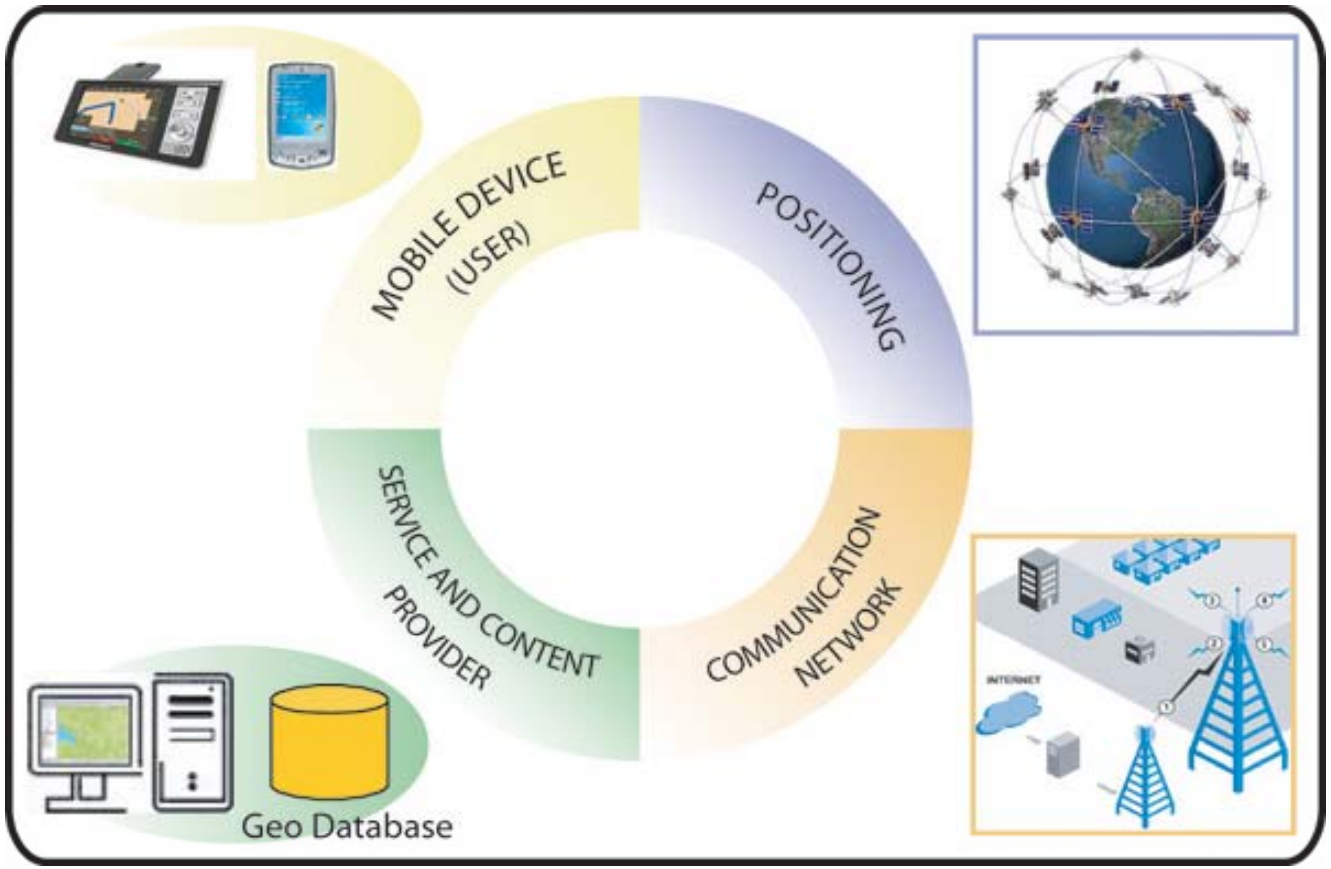






Towards supporting wayfinding

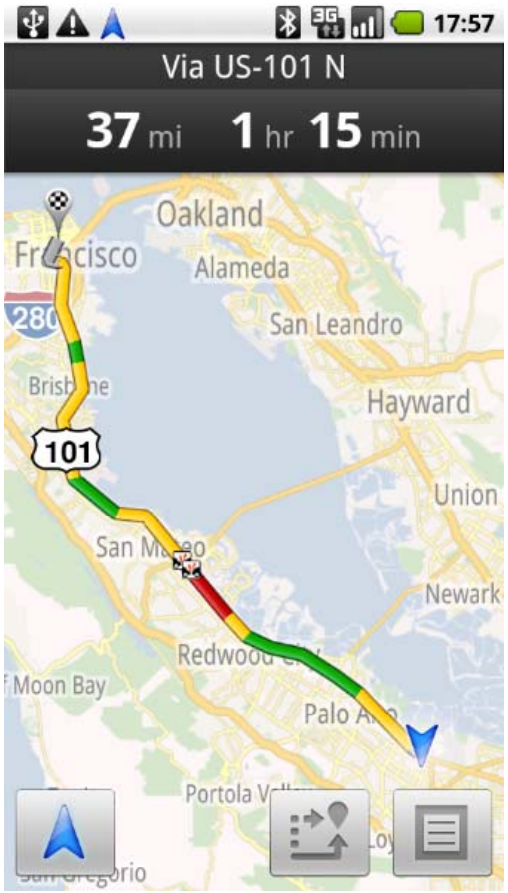
LBS components



1. Mobile devices
2. Communication Network
3. Positioning Component
4. Service and Application Provider
5. Data and Content Provider

Navigation

- Car navigation, pedestrian Navigation



Google Map Navigation

Wikitude Drive

Mobile guides

Nokia: Mobile Augmented Reality Applications

AR+Wikipedia=Wikitude

Location-based game

Geocaching: a worldwide game of hiding and seeking treasure.

A geocacher can place a geocache in the world, pinpoint its location using GPS technology and then share the geocache's existence and location online. Anyone with a GPS device can then try to locate the geocache.

http://www.geocaching.com/iphone/

Social networking

Foursquare: check-in

Pedestrian Navigation

Master Plan

1 Sensor Fusion
2 Ubiquitous Infrastructure
3 Behaviour Modelling
4 Semantic Wayfinding
5 Landmark Taxonomies
6 Context-Awareness
7 Keyhole Effects
8 Communication and Interfaces
9 Pragmatic Wayfinding

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CLIENT

Navigation Guidance

Interaction & Annotation

Positioning

Modelling and Communication

User Tracking

Multi-sensor Fusion Model

Context-aware Route Calculation

Context-aware Route Communication

Gathering real-time information

Context Gathering & Reasoning

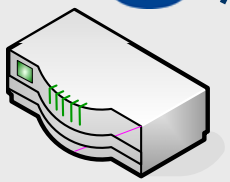
Data Mining & Analyzing

Accumulating historical data

Typology

Tracking/Interaction Database

SMART ENVIRONMENT



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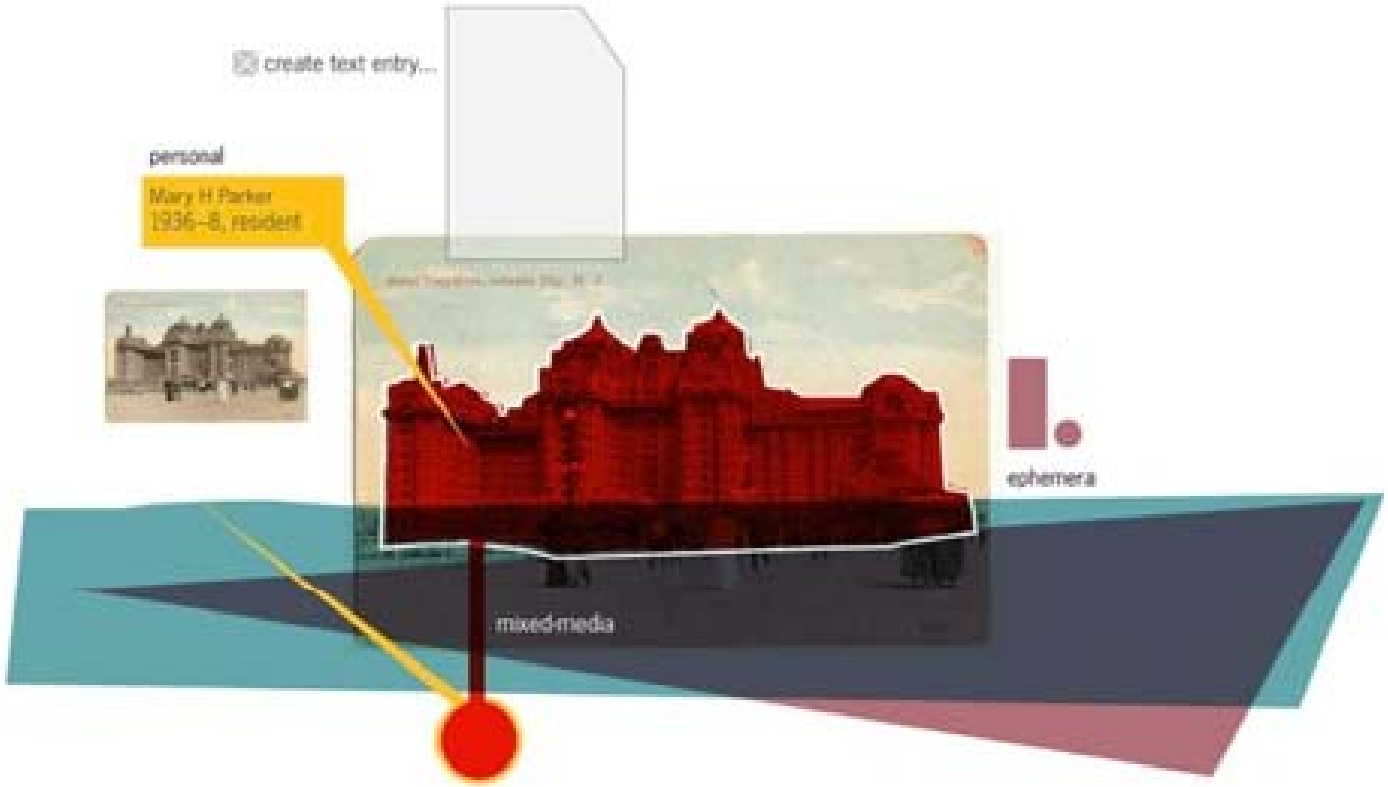
Data acquisition and Modeling

Collaborative Filtering

Augmented Reality and Social Media



Behaviour modelling

	Cluster 1	Cluster 2	Cluster 3
Gender	f: 40% m: 60%	f: 36% m: 64%	f: 67% m: 33%
Age	~ 30	~ 35-40	~ 30-35
Duration of observation	~ 5 min	~ 10 min	~ 23 min
Speed	~ 1.2 m/s	~ 0.6 m/s	~ 0.2 m/s
Number of stops	almost none	1.4	3.6
Duration of stops	7 sec (max. 1 min)	2.5 min (max. 8 min)	4.7 min (max. 17 min)

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Semantic Wayfinding

Urban area in situ experiments in Vienna and Salzburg, oral descriptions of environment and possible actions

Ski touring

additional experiments for comparison

- SemWay
  - "Gehen Sie an der Felsformation links vorbei im Tal hinauf."

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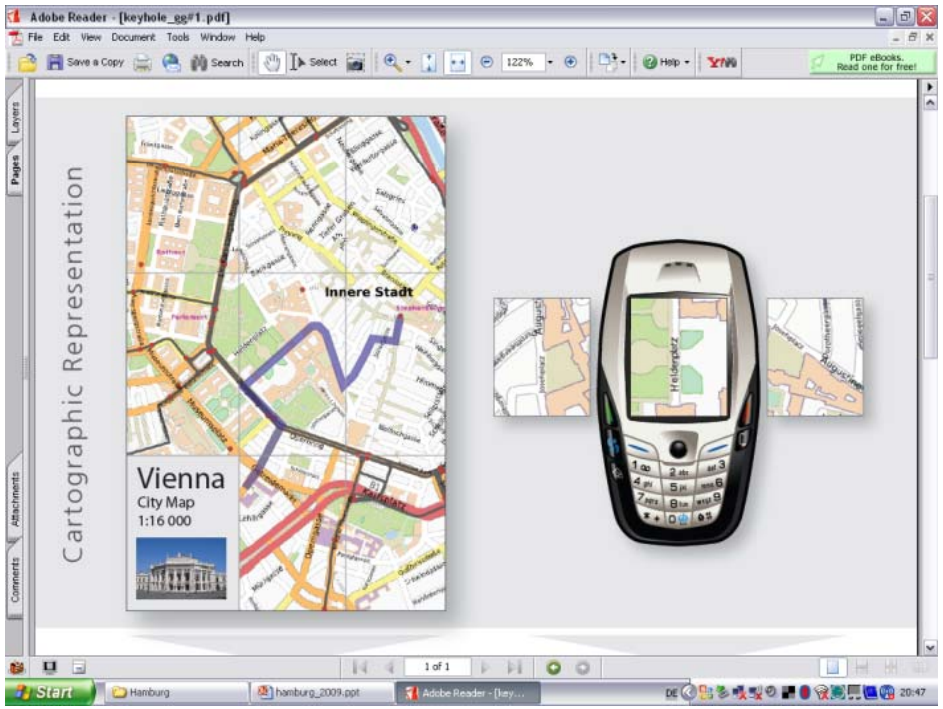
SEMWAY

..engineering the semantic dimension

Ways2navigate

Keyhole Problem



FemRoute, Fem2Map

How do the psychological route qualities attractiveness, convenience and safety depend on the context of use?

EmoMap

Considering the emotional perception of space in navigation systems for pedestrians

Project goals

1. Gathering relevant parameters from pedestrians for creating an *emotional layer* of Vienna
2. Contributions via VGI to an open online database - **OpenEmotionMap.org**
3. Using collected data for improving/personalizing pedestrian navigation

Hypothesis

- The strength of emotional attachment for a particular landmark, place or space embedded in memory, by an individual, influences our structuring of space, thus our “identity building” and “well being”

Concept

applying crowdsourcing methods
using state-of-the-art tools/social media

correlate with psychological findings

Evaluate (focus groups, CF)

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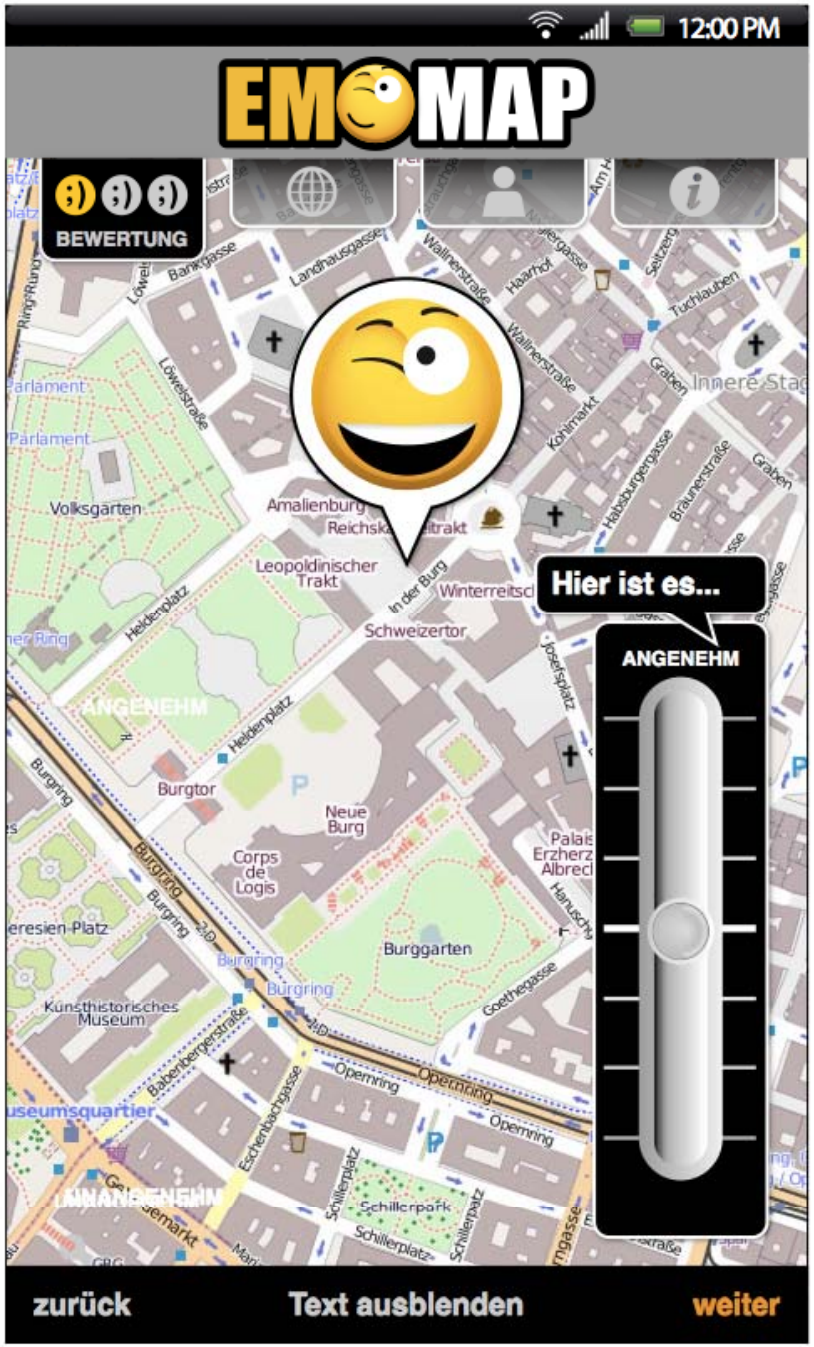

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App

- Android Platforms
- OSM
- GPS location
- downloadable from cartography.tuwien.ac.at

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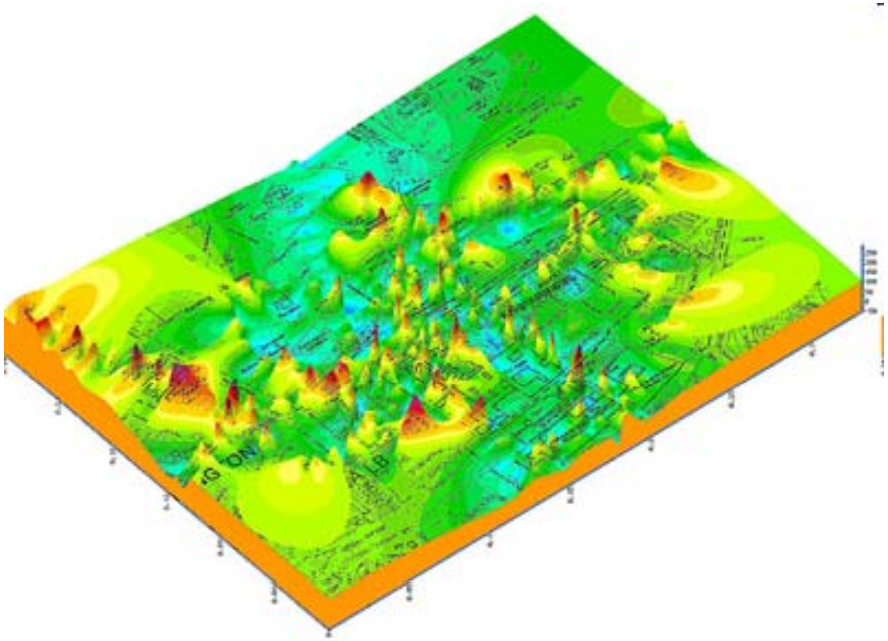

Openemotionmap.org

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mission

the **world authorative body** for cartography and geoinformation science

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mission

world authority means

national and affilate members

represented at UN bodies and other

international organisations

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Aims

- Understanding and solve world-wide problems using cartography
- Informing about environmental, economical, social and spatial information through mapping
- Promote professional methods, techniques and solutions
- Global forum on cartography
- ..

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Commissions

Commission on **Art and Cartography** Commission on **Atlases** Commission on **Cartography and Children** Commission on **Cartography in Early Warning and Crisis Management** Commission on **Cognitive Visualization** Commission on **Data Quality** Commission on **Digital Technologies in Cartographic Heritage** Commission on **Education and Training** Commission on **Generalisation and Multiple Representation** Commission on **Geoinformation Infrastructures and Standards** Commission on **Geospatial Analysis and Modeling** Commission on **Geovisualization** Commission on **GI for Sustainability** Commission on the **History of Cartography** Commission on **Map Design** Commission on **Map Production and Geo-Business** Commission on **Map Projections** Commission on **Mapping from Remote Sensor Imagery** Commission on **Maps and Graphics for Blind and Partially Sighted People** Commission on **Maps and Society** Commission on **Maps and the Internet** Commission on **Mountain Cartography** Commission on **Neocartography** Commission on **Open Source Geospatial Technologies** Commission on **Planetary Cartography** Commission on **Theoretical Cartography** Commission on **Ubiquitous Mapping** Commission on **Use and User Issues**

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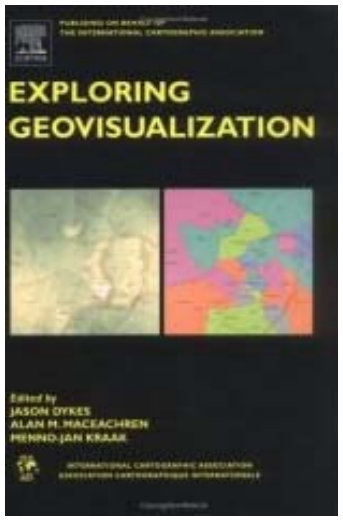
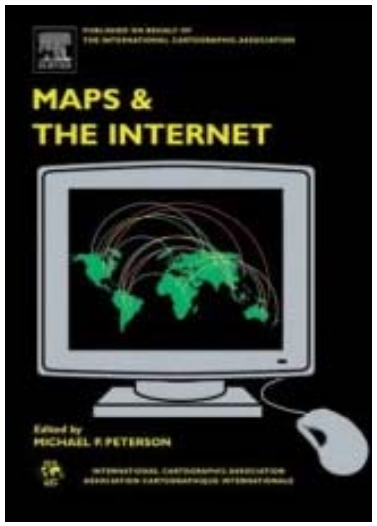
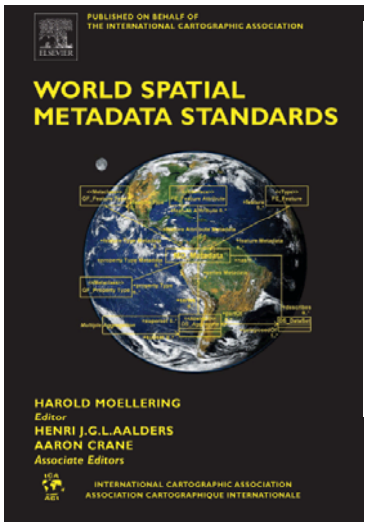
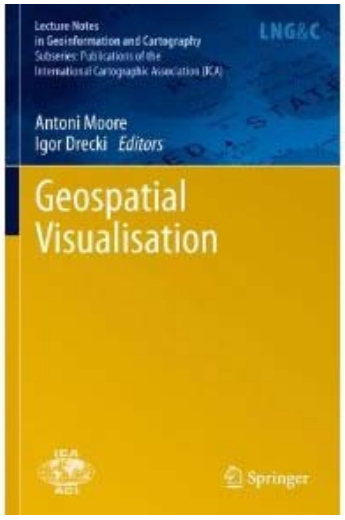
Instruments: Publications









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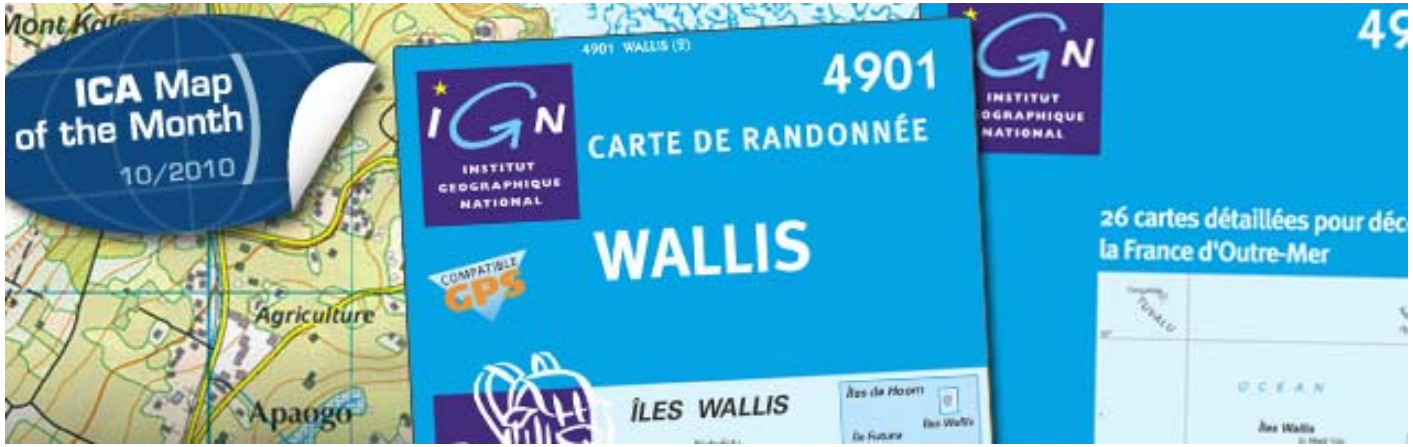
Instruments: Maps (Exhibitions, Awards)



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Instruments: Research Agenda

Geographic Information
Metadata and SDI
Geospatial Analysis and Modelling
Usability
Geovisualisation
Map Production
Cartographic Theory
History of Cartography and GI Science
Education
Society

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Instruments: Conferences

International Cartographic Conference

August 2013, Dresden, Germany

www.icc2013.org

2013 FROM POLE TO POLE

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Instruments: Conferences

International Cartographic Conference

August 2015 Rio de Janeiro, Brasil

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