Modern Cartography

Georg Gartner
Feldkirch 2012
Cartography? Is that still around?
Cartography?

maps are **perfect interfaces** between geoinformation and human users
Cartography?

Maps are perfect interfaces between geoinformation and human users.
Cartography?

maps are **perfect interfaces** between geoinformation and human users

maps are efficient **systems to structure** and order information by spatial component
Cartography?
Cartography?

cartography is about **efficient communication** of spatial information
Cartography?

efficient communication of spatial information to

answer space-related questions
Cartography?

efficient communication of spatial information to answer space-related questions support spatial behaviour
Cartography?

efficient communication of spatial information
to
answer space-related questions
support spatial behaviour
enable spatial problem solving (reasoning, planning)
Cartography?

efficient communication of spatial information to answer space-related questions support spatial behaviour enable spatial problem solving (reasoning, planning) support spatial awareness
Cartography?

- efficient communication of spatial information to
- answer space-related questions
- support spatial behaviour
- enable spatial problem solving (reasoning, planning)
- support spatial awareness
- by
- creation and use of maps anytime, anywhere
Cartography 2020?

creation and use of maps anytime, anywhere
→ real-time
→ ubiquitous
→ media-adequate
→ personalised
→ designed
Data acquisition and Sensors
Rapid Mapping, Real-Time Cartography
Real-Time Cartography (Live Trains)

Live train map for Birmingham New Street

Choose stations: Birmingham New Street

Data collected: Mon, 26 Sep 2011 13:00-19:00

What is this?
This map shows all trains currently on approach to a particular station. The yellow pins are stations (click for a local map of that station). The red pins are trains. The trains move in approximately real time, or rather quicker if you check the speed-up box.

How does it work?
Live departure data is fetched from the National Rail website, much like my timetable site, and then it does a bit of maths and magic.

Who did this?
Matthew Tranquilli. Formerly a civil servant, I'm now normally to be found working for mySociety, helping create and update various popular democracy and civic websites, like TheyWorkForYou and FixMyStreet. But I'm always open to offers for other fun stuff. :) I can be emailed at matthew@dracos.co.uk.

This site is not affiliated, associated, endorsed, or in any other way connected officially with the National Rail site. The train pop-ups contain links to the relevant page on National Rail; this page is not responsible for them, nor the collection of the train times.
Data acquisition and Sensors
automated map derivation
Data acquisition and Sensors
Crowd Sourcing
Data acquisition and Sensors
Crowd Sourcing
Crowd Sourcing
Collaborative Cartography
User-defined collaborative cartography

www.geocommons.com
Grassroot Mapping

BaseMaps


Nachteil: Gestaltung lesbarer und für den Anwendungszweck sinnvoller Grundlagenkarten ist eine komplexe Aufgabe.
Earth Viewer and Carto Search Engines
Mashups
Remaining Challenges..


Clustering-Tools sind mittlerweile vorhanden. Allerdings fehlen noch gute geographische Clustering-Lösungen (z.B. basierend auf Grenzen)
Location Based Services / Mobile Apps
Ubiquitous Computing
3D Modelling
Geo Media techniques
Geo data infrastructure
Modern Cartography?

Three Assumptions:
1. Cartography is relevant
2. Cartography is attractive
3. Cartography is modern
General Trends

Cartography is relevant

United Nations
Global Geospatial Information Management (UN-GGIM)
General Trends

Cartography is relevant

UN-GGIM Inventory of Issues

**Promote Geospatial Advocacy and Awareness** from data-centric ‘provider’ focus to a **spatially enabled ‘user’ focus** by government and civil society
General Trends

Cartography is relevant

UN-GGIM Inventory of Issues

Embracing Trends in Information Technology

  open source, crowd sourcing, SOA, cloud, data as a service
General Trends

Cartography is relevant

UN-GGIM Inventory of Issues
Promoting data sharing, accessibility and dissemination

base set of reference and thematic data, harmonized and free of charge
General Trends

Cartography is relevant

UN-GGIM Inventory of Issues

Assuring the quality of geospatial information

articulate specific role Governments have in providing quality, current and authoritative national geospatial information
General Trends

Cartography is relevant

UN-GGIM Inventory of Issues

Assuring the quality of geospatial information

Recognize the value and the limitations, of the recent emergence of crowd sourcing, open street map, and volunteer geographic information
General Trends

Cartography is relevant

UN-GGIM Inventory of Issues

Assuring the **quality** of geospatial information

Consider the **emerging use of modern mobile applications and visualization techniques** to communicate issues and solutions
General Trends

Cartography is relevant

UN-Committee of Experts on GGIM Future Trends

Future direction of data creation, maintenance and management

real-time, new methods (UAV), social media
General Trends

Cartography is relevant

UN-Committee of Experts on GGIM Future Trends

Uses of geospatial data

ubiquitous use might lead to better decision-making, require appropriate ethical standards
General Trends

Cartography is relevant

UN-Committee of Experts on GGIM Future Trends

Legal and Policy Development

issues of increasing demand for free and open access
privacy challenges
legal status of national spatial data infrastructures
General Trends

Cartography is relevant

UN-Committee of Experts on GGIM Future Trends

Skills requirements and training mechanisms

shift from a niche to wider populace
Cartography is attractive

<table>
<thead>
<tr>
<th>API</th>
<th>Popularity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Google Maps</td>
<td>47%</td>
</tr>
<tr>
<td>Flickr</td>
<td>11%</td>
</tr>
<tr>
<td>YouTube</td>
<td>9%</td>
</tr>
<tr>
<td>Amazon</td>
<td>7%</td>
</tr>
<tr>
<td>VirtualEarth</td>
<td>4%</td>
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<tr>
<td>Ebay</td>
<td>4%</td>
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<tr>
<td>411Sync</td>
<td>3%</td>
</tr>
<tr>
<td>YahooMaps</td>
<td>3%</td>
</tr>
<tr>
<td>Del.icio.us</td>
<td>3%</td>
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<tr>
<td>Yahoo</td>
<td>3%</td>
</tr>
</tbody>
</table>
Cartography is attractive
Cartography is modern
Strategies

- Education
- Research
- Cooperations
Education

International Masterprogramme „Cartography“
TU München, TU Wien, TU Dresden
International Master Cartography
MODERN CARTOGRAPHY

Augmented reality

thematic mapping

Visual Analytics

LBS

map and art

3D, data analysis

map perception

data matching

maps in web 2.0

Knowledge Discovery
Research
ICA Research Agenda (www.icaci.org)

Geographic Information
Metadata and SDI
Geospatial Analysis and Modelling
Usability
Geovisualisation
Map Production
Cartographic Theory
History of Cartography and GI Science
Education
Society
Research Areas for the next years

Modern Cartography requires integrated interdisciplinary approaches computer science, communication science, human-computer interaction, cognitive sciences, law, business, geoinformation science for human-centered application developments by applying engineering tools
International Cartographic Association
International Cartographic Association
mission

the **world authoritative body** for cartography and geoinformation science
International Cartographic Association

mission

world authority means
  national and affiliate members
  represented at UN bodies and other
  international organisations
International Cartographic Association

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
- ..
International Cartographic Association
Instruments: Publications
International Cartographic Association
Instruments: Map Exhibitions
International Cartographic Association
Instruments: Children Map Competition
International Cartographic Association
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
International Cartographic Association
Commissions

International Cartographic Association

Commissions

International Cartographic Association
Outreach and Capacity Building

Hands-on Workshops
most recent at Cuba, Iran, New Zealand, South Africa, Tunesia, Germany
Hands-on Workshop on OSGeo WebMapping for UN at Vienna

Seminars
most recent: Cartographic Generalisation Istanbul, Heritage Gent..

Symposia most recent: Service-oriented Mapping, Vienna
ICA- OSGeo MoU
Key aims

• Aim 1 – Establishing research and training opportunities in open source GIS
• Aim 2 - Provide worldwide learning platform
• Aim 3 – Build teaching and research infrastructure worldwide
Aim 1

Establishing research and training opportunities
Training programs in Open Source GIS

Latest News

30/07/2010

- The materials & results are available. All documents have been published on this website [Materials Tab].

21/07/2010

- The Summer School in pictures. The image gallery is already available on Flickr.

- Project materials & results. All materials and results of the Summer School will be published on this website soon.

- Materials & Illustrations from the Ecole Central de Nantes. The documents presented at Girona are available on OrbisGIS' website.
Aim 2 - Provide a global learning platform
Aim 3 – Build teaching and research infrastructure worldwide

Open Source Geospatial Lab founding meeting at UoN

June 2010
Open Geo Labs

Africa
# University of Pretoria, South Africa
# Regional Centre for Mapping of Resources for Development (RCMRD), Kenya [process of being established]
# University of Ghana, Ghana [process of being established]

Europe
# University of Nottingham, UK
# University of Girona, Spain
# University of Southampton, UK

South America
# Federal University of Paraná, Brazil
# São Paulo State University (UNESP), Brazil [process of being established]

North America
# North Carolina State University, USA
# University of Massachusetts Amherst, USA [process of being established]

Asia
# UNMC, Malaysia
# Universiti Teknologi Malaysia (UTM), Malaysia [process of being established]
gvSIG Batoví: an educational resource for Plan Ceibal

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aanguix@gvsig.com

https://gvsig.org/web/home/projects/gvsig-educa
International Cartographic Association
UN endorsed International Year of the Map 2015

ICA endorsed by UN-RCC
Global Activities
International Cartographic Association
Instruments: Conferences

International Cartographic Conference
August 2013, Dresden, Germany
www.icc2013.org
International Cartographic Association
Instruments: Conferences

International Cartographic Conference
August 2015 Rio de Janeiro, Brasil