Archiving Cybercartography

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Overview

• GCRC
• Cybercartography
• Cybercartographic Atlas of Antarctica
• Archiving and Preservation
• Discussion item
Geomatics and Cartographic Research Centre
Geomatics and Cartographic Research Centre

- Cybercartography
- Archiving and Preservation
- Global Map
- Indigenous knowledge and Science
- Northern Research
- Open Source
- Nunaliit Cybercartographic Atlas Framework
Cybercartography
Cybercartography

- "The organization, presentation, analysis and communication of spatially referenced information on a wide variety of topics of interest and use to society in an interactive, dynamic, multimedia, multisensory format with the use of multimedia and multimodal interfaces"
  
  (Taylor 1997)

Reflection of the Changing Nature of Cartography
7 Elements of Cybercartography

• Multisensory and multimodal
• Uses multimedia formats (e.g. Web 2.0, mobile devices)
• Interactive, engages the user in new ways - user-centric, Cybercartographic "users" can become "creators".
• Part of an **information/analytical package** & the Cybercartographic Atlas Framework provides an organizational approach for the emerging products and processes of the Web 2.0 era of social computing.
• Compiled by teams of individuals
• Is applied to a **wide range of topics and responds** to societal demands including topics not usually "mapped"
• **New research and development partnerships** among academia, government, civil society and the private sector

**Holistic concept** informed by the interaction between theory and practice. While the **map is considered central** to cybercartography, the notion of **geographic narrative** underpins the concept. Map and associated media can help to tell stories about people, places, space and society.
Cybercartographic Atlas of Antarctica
Cybercartographic Atlas of Antarctica

- An emerging, highly interactive atlas and scientific artifact that renders distributed data (e.g. maps, sensor observations, research) from myriad scientific organizations and disciplines
- Facilitates discovering, utilizing, presenting and distributing existing information and data about Antarctica to a wide variety of users
- Part of Antarctic Spatial Data Infrastructure (AntSDI)
- Merging with International Polar Year projects
- Watch http://gcrc.carleton.ca
Emerging AntSDI Data Services

- Web Map Service
- Web Feature Service
- Web Coverage Service

- Gazetteer
- Catalogue Service
- Feature Catalogue
- Sensor Observation Service and related
- Semantic Web services (e.g. formal ontology registry)
Interactive, Interoperable, Multimedia Atlas

- Video: Animation: Source: NASA Scientific Visualization Studio / Video courtesy TV2 Danmark
- Visualization
- Video
- Animation
- Interactivity
- Graphs
- Tables

### Mean October Ozone at Halley

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</tbody>
</table>
Research Focus: The Use of Sound

Sovereignty related Conflicts

You may have noticed that on this map the territorial claims of the United Kingdom, Argentina and Chile overlap in the Antarctic Peninsula region (between Atlantic Ocean and Weddell sea). The United Kingdom uses the historical argument (Byron's exploration) to claim its part of Antarctica, while Argentina and Chile use the geographical argument (their proximity to the peninsula). It is in this contested area that sovereignty related conflicts have been most prominent in the history of the region.

The years following the second world war saw a flurry of scientific station building activity by Britain, Chile and Argentina as well as some tensions between these nations. In 1948, armed warships were sent to the region by Britain and Argentina. In 1952, shots were fired by Argentinean troops over the heads of U.K. personnel while they rebuilt Hope Bay station which was destroyed by a 1948 fire. The sub-Antarctic islands region has also seen conflict related to these claims. The Falklands-Malvinas war of 1982 is a recent example of disputes related to sovereignty claims in the South polar region of the globe.

These disputes are conveyed through this map using audio files of vocal narrations triggered by moving your mouse over contested areas on the map. The function of vocal narration is to highlight the tension...
Nunaliit Cybercartographic Atlas Framework

1. Content Map
   - Divide content into topics as desired. Nest where appropriate.

2. Choose maps, tabular data, multimedia and text.

3. Add in Copyright Info & Other Metadata

4. Compiler
   - Process XML document. Turn "associations" defined by author into behaviours and styles.
   - Render out to a variety of formats and/or interfaces.

5. Save as an XML Document using the Atlas Framework schema

6. JOIN objects with each other and features on the map.

For the Web - DHTML, JavaScript, and SVG

Other output formats? Canned Flash, CDROM, DVD, PDF, Book, ???

http://nunaliit.org
Antarctic Science/Policy Community Participation
Organizations Associated with Atlas Activities

Scientific Committee on Antarctic Research
• Canadian Committee on Antarctic Research
• Standing Committee on Antarctic Geographic Information
• Joint Committee on Antarctic Data Management
• Antarctic Treaty Secretariat

International Polar Year
• IPY Data and Information Service
• IPY Knowledge Organization Group
• Other IPY science and education and outreach projects
Community Data Management Issues

- Exchange of digital geographic data (formats, projections, semantics)
- Establishment and adoption of standards (metadata, data, semantics)
- Placenames (authority - locational vs. political)
- Harmonization of metadata schema
- Data and metadata harvesting
- Data service stability and persistence
- Data volume
Community Archival Issues

• Authenticity
• Defining ‘record’ vs. ‘product/publication’
• Establishing and preserving context
• Capturing and ‘packaging’ a distributed environment
Current Research - Establishment of Context

Semantic Model
• Vocabulary
• Taxonomy
• Ontology
• ‘Folksonomy’
• Geospatial application schema

Semantic tools
• Content analysis
• Concept mapping / spatialization
• Inference engines
Archiving and Preservation
“New technology-mediated, distributed work environments are emerging to relax constraints of distance and time. These new research environments are linking together research teams, digital data and information libraries, high-performance computational services, scientific instruments, and arrays of sensors. In many cases these emerging environments for knowledge work are essential, not optional, to the aspirations of research.”

NSF 2007 Cyberinfrastructure Conference

- Open Standards
- Proprietary Platforms
- Open Source Software
- Patent Pools
- Information and knowledge commons
- Collaborative research projects
- Open access publishing
- Cross-licensing
- Cross-sector technology transfer
- Simplified enabling licenses
- Access management systems
GCRC and Participation in Preservation Fora

- Canadian Digital Information Strategy: Strategy Development Committee
- Library and Archives Canada (LAC) Trusted Digital Repository (TDR) familiarly known as the Digital Loading Doc
- National Consultation on Access to Scientific Research Data (NCASRD)
- National Data Archiving Consultation Resource Group for Social Science Data
- Canadian National Committee for CODATA (CNC/CODATA) Task Group Preservation of and Access to Scientific and Technical Data in Developing Countries
- OGC Preservation Working Group
- InterPARES 2
  - Case Study - Cybercartographic Atlas of Antarctica
  - Generals Study on Scientific Data Portals
Discussion

• Can the Cybercartographic Atlas of Antarctica be a test case study for an OGC Preservation Working Group Project?

• Can the Nunaliit Cybercartographic Atlas Framework be expanded with open and interoperable standards and specification preservation tools?

• Can the Nunaliit Cybercartographic Atlas Framework be used as a way to visualize data in an archive, as part of an access strategy?