

The Cybercartographic Atlas of Antarctica

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Presentation Overview



- ◆ Proposed Elements of the Atlas
- ◆ Technical Approach



Proposed Elements of the Atlas



Primary Elements



- ◆ Functionality
- ◆ Content



Functionality

- ◆ 4 Key Functional Modules
 - Atlas Browsing
 - Display and Simulation
 - Query
 - Analysis



Atlas Browsing

- ◆ Catalogue
- ◆ Sheet map browser
- ◆ Switching between different maps



Display and Simulation

- ◆ Manipulation of display parameters
- ◆ Interactive legends
- ◆ Animation
- ◆ 3D Display



Query



- ◆ Bi-directional query
- ◆ Keyword and Expression Query
- ◆ Fuzzy query



Analysis



- ◆ Perimeter and Area Calculation
- ◆ Volumetric Calculation
- ◆ Thematic Analysis



Content

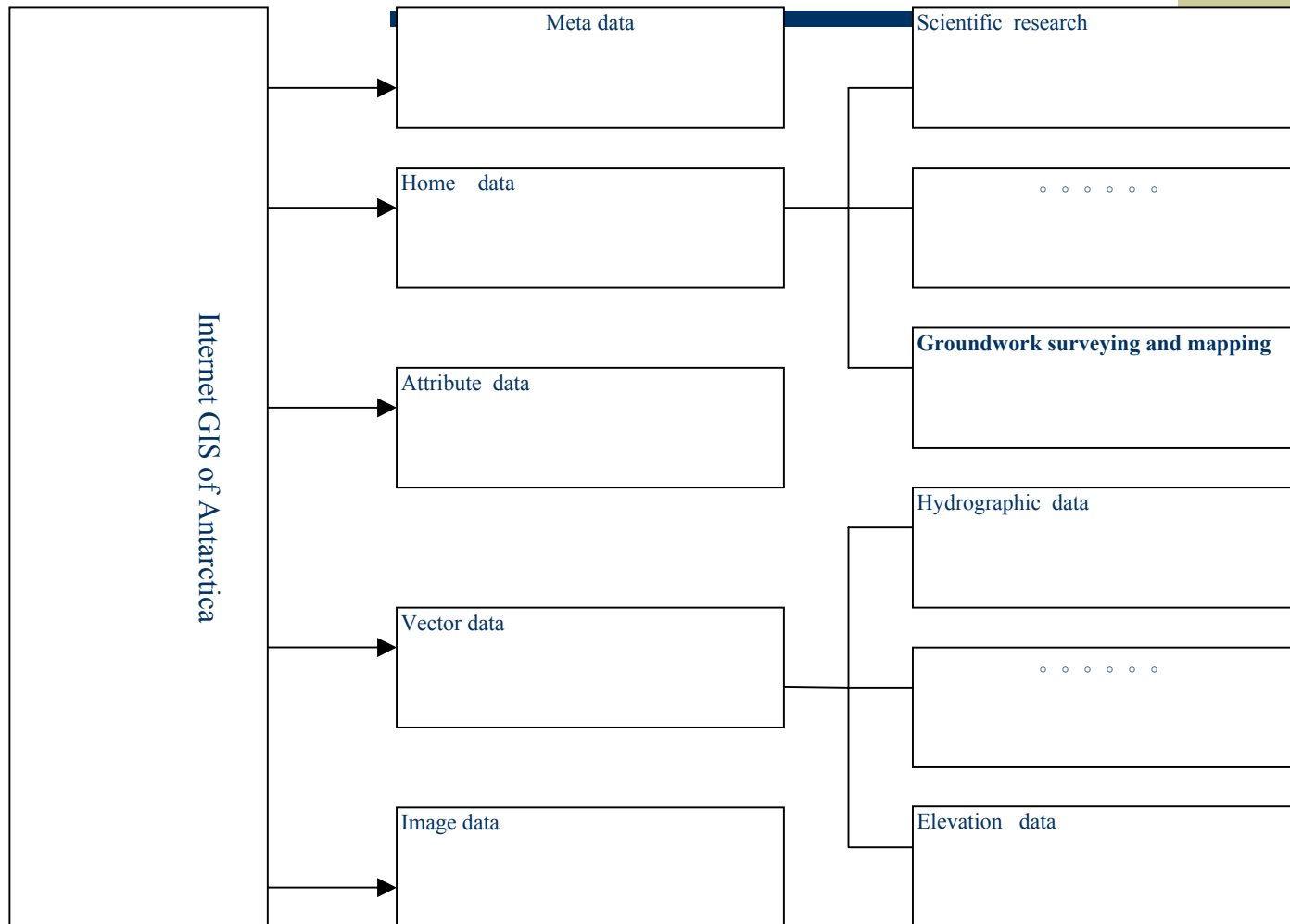


- ◆ Geo-spatial Data
- ◆ Multi-media material
- ◆ Subject areas

Geo-spatial Data

- ◆ Vector maps
- ◆ Raster data including satellite imagery
- ◆ Attribute data
- ◆ Large database
 - 90 GB – Physical, geological, meteorological
 - 40 GB - Geodetic Control, GPS, Metadata

Data Structure





Home Page Themes



- ◆ Scientific research
- ◆ Groundwork surveying and mapping
- ◆ Stations information
- ◆ Online help

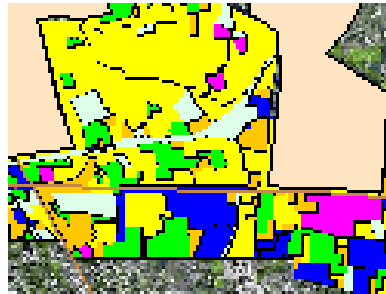
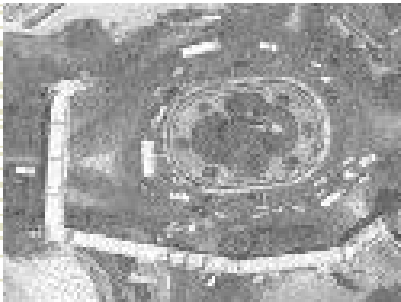
Data Processing

- ◆ Conversion to a standard geographic coordinate system possible and may be required
- ◆ Standard elements of spatial data accuracy are being considered i.e. positional, logical consistency etc.
- ◆ Data revision strategy being developed

Methods of Data Representation

- ◆ Imagery
- ◆ Dynamic maps – time series analysis i.e snowline variation over time
- ◆ 3D map browsing – zooming, panning, rotating.
- ◆ 3D terrain fly through/animation

Different Rendering Styles for Same Space





Multimedia Content

- ◆ Text
- ◆ Pictures
- ◆ Video
- ◆ Audio

Suggested Data Layers

- ◆ Water system: Coastlines, lakes, rivers, unmelted ice areas, ice shelf data
- ◆ Island maps: Boundaries, buildings
 - Water systems + Islands = base framework
- ◆ Elevation data
- ◆ Geodetic control stations
- ◆ Placenames



Suggested Subject Areas for Investigation



- ◆ Seabirds
- ◆ Vegetation such as Lichen or Moss
- ◆ The Impact of Human Activity in the Antarctic Ecosystem



Technical Approach



Software

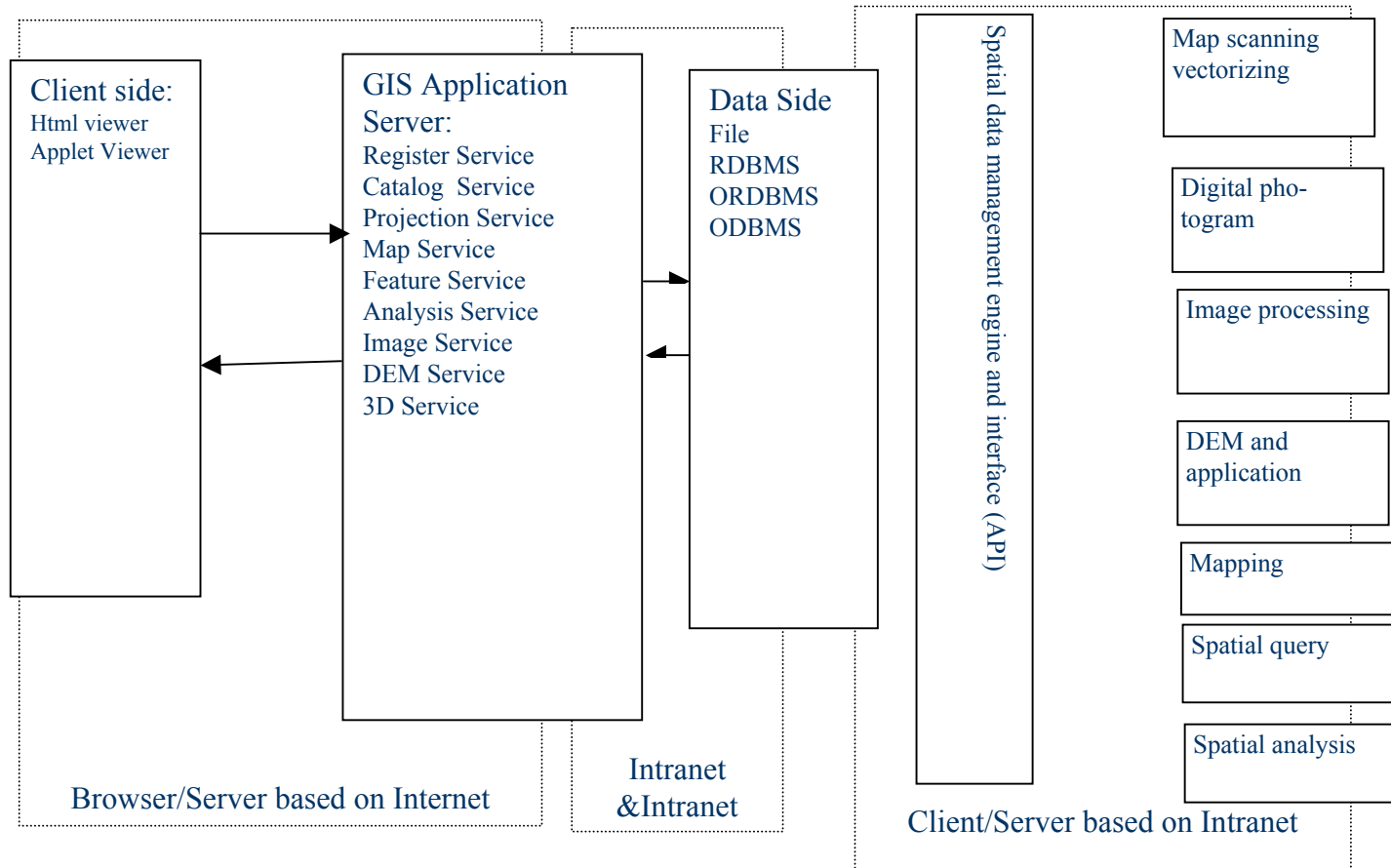


- ◆ GEOSTAR GIS
- ◆ Extensive functionality
- ◆ Based on an approach that uses the latest object-oriented methods

GeoStar GIS

- ◆ Software developed by Wuhan University
- ◆ On-line functions include:
 - ◆ Vivid virtual 3D relief flying
 - ◆ Making Color relief map
 - ◆ Data representation using various media
 - ◆ Display and cruise based on vector and raster map,
 - ◆ Defining communication net and the best path query
 - ◆ Attribute query
 - ◆ Display, cruise and zoom of alterable scale vector and raster maps
 - ◆ Linkages of hot words, multimedia information and map
 - ◆ Navigation function by connecting with GPS.

Technical Architecture





Programming Approach

- ◆ Server side applications programmed using JAVA 2
- ◆ Multi-platform (Microsoft, UNIX)