InterPARES 2 Project
International Research on Permanent Authentic Records in Electronic Systems

Case Study Proposal
City of Vancouver Archives
Preservation of City of Vancouver GIS database (VanMap)
Focus 3 - Government

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February 2004

Description of project

VanMap is an extensive database of geographic data on the City of Vancouver maintained by the City's Information Technology Department. The data are supplied and updated on a regular basis by the Engineering, Planning, Social Planning, Permits and Licenses, Real Estate Services and other departments, and to a much lesser extent by external agencies such as the City of Burnaby, the provincial government and crown agencies, and First Nations groups. All of the data in VanMap are made accessible to City staff in all departments via the City's intranet. A subset of the data is also made directly available to the public via the City's website; however, the fundamental purpose of VanMap is to meet the needs of internal users in providing services to Vancouver's citizens and businesses.

For the end-user, the data in the GIS database and related systems is organized into about 100 layers of information in the form of maps. Users are able to view desired layers at various scales by zooming in and out, clicking on sections of the maps and manipulating a legend in the margin. Double-clicking on certain features produces pop-up reports generated by the GIS data. The data layers currently available are listed in **Appendix A** of this proposal. A special feature of VanMap is a set of orthographic (geometric aerial) photographs, taken in 1999 and 2002, which show realistic visualizations of every part of the City.

VanMap is used to support a variety of core functions of City departments, particularly related to zoning, development permit approval and other city planning activities; business license approval; emergency planning; water service and sewer management; utilities management; traffic control; designation of heritage areas; management of city-owned properties; street maintenance; and numerous other functions. VanMap is an interface that connects and integrates discrete departmental activities into a useable whole, and is the core of the City's e-government activity.

Most of the data are stored in a central Oracle database, and the rest is held in various departmental databases using other software. All the data are made accessible to the end-user by

three pieces of software: Autodesk MapGuide, which assembles the data into maps; MapGuide ActiveX Viewer, which provides access to the maps through a web interface; and ColdFusion MX, which is used to deliver reports on features of the maps when the user clicks on the features.

The data in VanMap are constantly being updated, with the frequency of the updates varying considerably, and interaction with the system by the end-user is dynamic and experiential. These features present significant conceptual and technical challenges relating to the need both to ensure that the City government can be held accountable for the way in which the data are used, and to preserve the authenticity of the data and the experience of accessing it in the form of interactive maps. Given that the database is regularly updated, how can we preserve VanMap in a form that will be useful to future researchers? (The suggestion has been made that a complete snapshot of the data be preserved every six months.) In addition, the data reside in an Oracle database and other proprietary systems. The possibility of migrating the data to a non-proprietary format using a standardized mark-up language such as XML could be explored as part of the case study. Assembling and viewing the data are also achieved using proprietary software formats (Autodesk MapGuide, MapGuide ActiveX Viewer and ColdFusion), and issues surrounding the long-term use of these programs need to be addressed.

VanMap also presents interesting challenges relating to security concerns and third-party privacy rights . As an example, BC Gas lines and BC Hydro high voltage transmission lines are excluded from the public version of VanMap for security reasons, and the City may in future decide to remove other layers, such as water transmission mains. Property owner information and other data are excluded from the public site in compliance with the *Freedom of Information and Protection of Privacy Act*. In addition, some of the data are supplied to the City by external agencies, which may retain intellectual property rights. These legal and moral obligations inherent in the creation, use and ultimate preservation of VanMap will need to be addressed.

Rationale for case study

VanMap falls within the scope of the e-government focus (Focus Group 3) of InterPARES 2, since it was originally conceived and continues to be used as a means of centralizing, streamlining and facilitating Vancouver's municipal government activities.

Specifically, this case study will be used to address the following InterPARES 2 research questions:

Domain 1

1.4 (a) Does the definition of a records adopted by InterPARES I apply to all or part of the documents generated by these processes? (b) If yes, given the different manifestations of the record's nature in such documents, how do we recognize and demonstrate the necessary components that the definition identifies? (c) If not, is it possible to change the definition maintaining theoretical consistency in the identification of documents as records across the spectrum of human activities? (d) In other words, should we be looking at other factors that make a document a record than those that diplomatics and archival science have considered so far?

1.5 As government and businesses deliver services electronically and enter into transactions based on more dynamic web-based presentations and exchanges of information, are they neglecting to capture adequate documentary evidence of the occurrence of these transactions?

1.6 Is the move to more dynamic and open-ended exchanges of information blurring the responsibilities and altering the legal liabilities of the participants in electronic transactions?

1.7 (a) How do record creators traditionally determine the retention of their records and implement this determination in the context of each activity? (b) How do record retention decisions and practices differ for individual and institutional creators? (c) How has the use of digital technology affected their decisions and practices?

Domain 2

2.6 Are the conceptual requirements for reliability and authenticity developed by the UBC-MAS project and InterPARES 1 for administrative and legal records generated within databases and document management systems applicable to the records studied by InterPARES 2?

2.7 (a) Do the participants in electronic transactions have shared access to reliable and accurate information about the terms and effects of the transactions? (b) What would constitute reliable and accurate records of transactions in current electronic service delivery initiatives?

2.8 What would be the consequence of issuing guidelines for record creation on the nature of the records of each activity?

2.10 What technological and intellectual tools would assist creators to generate records that can be authentically preserved over time?

2.11 What legal or moral obligations exist regarding the creation, use and preservation of the records under investigation?

Domain 3

The team will attempt to use the findings of InterPARES 1 to develop a preservation model for the GIS data and the components required to view the data in the way intended by the creators of the VanMap. The model will be designed to address at least the following questions:

3.2 How do the preservation concepts, methods and models developed by InterPARES 1 for the administrative and legal records created in databases and document management systems apply to the preservation of the records of artistic, scientific, and government activities resulting from the use of the technologies examined by InterPARES 2?

3.4 What metadata are necessary to support appraisal and preservation of authentic digital records resulting from each activity?

Policy cross-domain research questions

4.5 What principles should guide the formulation of policies, strategies and standards to the creation of reliable, accurate and authentic records in the digital environments under investigation? (b) What principles should guide the formulation of policies, strategies and standards related to the appraisal of those records?

4.6 What principles should guide the formulation of policies, strategies and standards related to the long-term preservation of those records?

Description cross-domain research questions

6.7 (a) To what extent do existing descriptive schemas and instruments used in the sectors concerned with the focus areas addressed by this project (for example, the geo-spatial data community) support and inform requirements such as those developed by InterPARES 1? (b) Will they need to be modified to enable these sectors to meet these requirements, or will new ones need to be developed? (c) If so, what should they be?

6.8 (a) What is the relationship between the role of descriptive schemas and instruments needed by the creator and those required by the preserver to support the archival processes of appraisal, preservation and dissemination? (b) What tools are needed to support the export/import/ exchange of descriptive data between systems?

6.9 What is the role of descriptive schemas and instruments in rights management and in identifying and tracking records components, versions, expressions, performances, and other manifestations and derivative works?

Methodology

Studying VanMap and its process of creation, maintenance and use will be a collaborative project of InterPARES and the City of Vancouver. The team will include the following members:

Leader: Evelyn Peters McLellan, City of Vancouver Archives and Records Division, Archivist and InterPARES Focus 3 researcher;

Researchers: Luciana Duranti, Project Director; Catherine Miller, UBC research assistant; Eleanor Kleiber, UBC research assistant;

Liz Wright, City of Vancouver Archives and Records Division, Corporate Records Administrator; Andrew Power, City of Vancouver Archives and Records Division, Corporate Information Analyst; Sue Bigelow, City of Vancouver Archives and Records Division, Conservator;

Jonathan Mark, City of Vancouver Information Technology Department, Manager of GIS.

The following will be the key components of the study:
1) All available documentation of the systems involved will be gathered and analyzed. This will include policy, intellectual and technical documentation, with a view to gaining an understanding of why certain data are included in VanMap, which data are used to support specific City functions, what property rights and security issues affect dissemination and use of the data, what metadata is used, and what gaps exist in the documentation.

2) InterPARES research assistants will then conduct interviews and meetings with members of the GIS project team, key personnel in the departments contributing to the project, and possibly personnel from external agencies supplying data to the City for use in VanMap. The interviews will be designed as much as possible to obtain answers to the questions contained in the InterPARES 2 document "23 case study questions that the researchers should be able to answer at the completion of their investigation." The interview tapes will be transcribed by the research assistants.

3) Another round of interviews of the same individuals will be conducted in order to refine and complete the results obtained from the first round of interviews. These interviews will also be transcribed by the research assistants.

4) The team will produce a draft report based on the results to date.

5) The team will meet to create activity and entity models representing VanMap characteristics and the process of creation and use of VanMap. It may be possible also to replicate part of the GIS database for hand-on study of the records and testing of preservation strategies by InterPARES researchers. However, the research can be conducted on-site at the City of Vancouver Archives if necessary.

6) The team will write its final report, including models, for submission to InterPARES.

Timeline

An information meeting involving all the team members has already occurred, with the Director of the City of Vancouver Archives and Records Division also present. Following approval of the case study proposal at the InterPARES meeting in Los Angeles in February 2004, the project will commence at the beginning of March.

March - April 2004	Accumulation and analysis of documentation.
May - Aug. 2004	Interviews.
Sept. 2004	Completion of draft report addressing "23 case study questions" and submission to Focus Group 3 of InterPARES.
Oct. - Dec. 2004	Modeling.
Feb. 2005	Submission of final report to InterPARES.

Appendix A

Layers contained in VanMap

360 Networks Duct
AT & T Cables
AT&T Manholes
BC Gas
BC Hydro High Voltage Transmission Lines
Bikeways
Block Outlines
Building Footprints
Business Improvement Areas
Building Lines
Business License Sites
Cadastral Boundaries (property/lot lines)
Central Heat Pipe
City Boundary
City-Owned Properties
City Projects
Contour Lines
DCL Areas
Dedicated Fire Protection System (DFPS) Hydrants
Dedicated Fire Protection System (DFPS) Mains
Dedicated Fire Protection System (DFPS) Valves
Distribution Box
Distribution Duct
Dog License Sites
Dog Off-leash Areas
Downstream Inverts
Downtown Street Lighting
Facet Grid Layout
Facet Grid Polygons
Film Office Work Areas
Grow Operations
GT Duct
GVRD Trunk Sewers
Heritage
Hooked Sites
Land Purchase Fund
Lanes
Local areas
Lot Numbers
Multiple Buildings
Non-City Streets
Non-Market Housing
Novus Duct
Orthophotos
Parks
Parks Fund
Peat Areas
Pole, Downtown Street Lighting
Pop-Growth 91-96
Private Encroachment
Private Streets
Property Addresses
Property Address Number
Property Information
Property Dimensions
Property Endowment Fund
Property Use Inspection Districts
Protected Licenses
Public Art
Public Housing Fund
Public Places
Public Streets
Public Street Names
Reference Streets
Right-of-Way Widths
Road Closures
Sewer Mains
Sewer Manholes
Shaw Cable Duct
Shaw Cable Pole
Shore Lines (1999) and Seashore Lines (2002)
Split Zones
Street Furniture
Street Intersections
Street Operations District Foreman's Areas
Subdivision Categories
Survey Control Monuments
Telus Box

Telus Duct
Telus Pole
Telus Stub
Tie Lines
Traffic Circle
Traffic Counts
Traffic Signals
Transmission Duct
Under Construction
Upcoming Projects
Upstream Inverts
View Cones
Water Bodies
Water Distribution Mains
Water Hydrants
Water Hydrant Labels
Water Large Valves
Water Large Valve Labels
Water Pressure Zones
Water PRV Stations
Water PRV Station Labels
Water Transmission Mains
Youth driven organizations
Zoning Districts (with CD-1 numbers and thematic mapping)