Industry and InfoVis
A One-Project Perspective

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Outline

- Information Visualization Toolkit
  - Members
  - Scope, Problem, Goals, Questions
  - Approach
  - Information Design
  - Visual Design

Project Members

- ## New Media Innovation Center
  - collaboration between industry, academia and government
  - focuses on the research, development and commercialization of new media technologies and applications
- ## University of Victoria
  - Research professor, grad student, coop student
- ## IBM
  - Project manager, business analysts, IT architect, developers, designers

Research Scope

- The web is a powerful medium to enable consumers to *browse*, *explore*, *search*, and *understand* information

- The web has exposed vast information resources that although powerful, can *overwhelm*, *threaten* and *confuse* consumers

- Visualization techniques can help individuals to *abstract*, *customize*, *manipulate* and *understand* the information being presented

Research Problem

- Although many companies are turning to information visualization techniques in their website designs, the resulting web pages are often *disappointing, frustrating* or *difficult to use*
- These failures may be due to
  - a lack of understanding of the appropriateness of the techniques to the information being visualized or task being supported
  - inadequate time to implement and refine the sophisticated techniques because of time-to-market pressures
- Successes are often custom built and thus are difficult to *change*, *extend* or *reuse*
- The reasons why certain tools succeed (or fail) are often not clearly understood by other designers

Research Goals

- The main goals of the project are twofold:

  - Develop a ***theoretical framework*** to help classify the appropriateness of visualization metaphors and methods for various cognitive tasks

  - Describe how to implement a ***practical toolkit*** from which a web meta-designer can customize and build an application by selecting from a set of reusable and customizable components

- Assumption: Effective use of the practical toolkit will require a deep understanding of the theoretical framework to ensure usability of the resulting application

Research Questions

1. Which information visualization techniques can be used on the web effectively?

2. Can effective information visualization techniques be successfully deployed for low band width Internet users?

3. Will the information visualization components be portable to hand held devices? How can we exploit the extra advantages of a secondary hand held device?

4. How can we make the visualization components customizable?

Research Approach - Phase One

✓ Select a sub field of visualization applications to narrow the focus for the project (Map exploration)

✓ Review and evaluate existing websites and other map tools to extract interesting metaphors and widgets to be composed within the map tool

✓ Explore information visualization research for new metaphors and widgets to be composed within the map tool

✓ Design and build a preliminary prototype of the map explorer for a specific domain

Research Approach – Phase Two

- Evaluate the prototype using real users and real tasks

- Develop a theoretical framework to describe and classify the appropriateness of the visualization metaphors and widgets for the identified tasks and scenarios

- Extract a set of reusable components from the prototype that should be made available to a meta web designer

- Build and evaluate a new map application using the meta design toolkit
  - This last step will help us to evaluate the viability and effectiveness of both the toolkit and the theoretical framework

Information Design
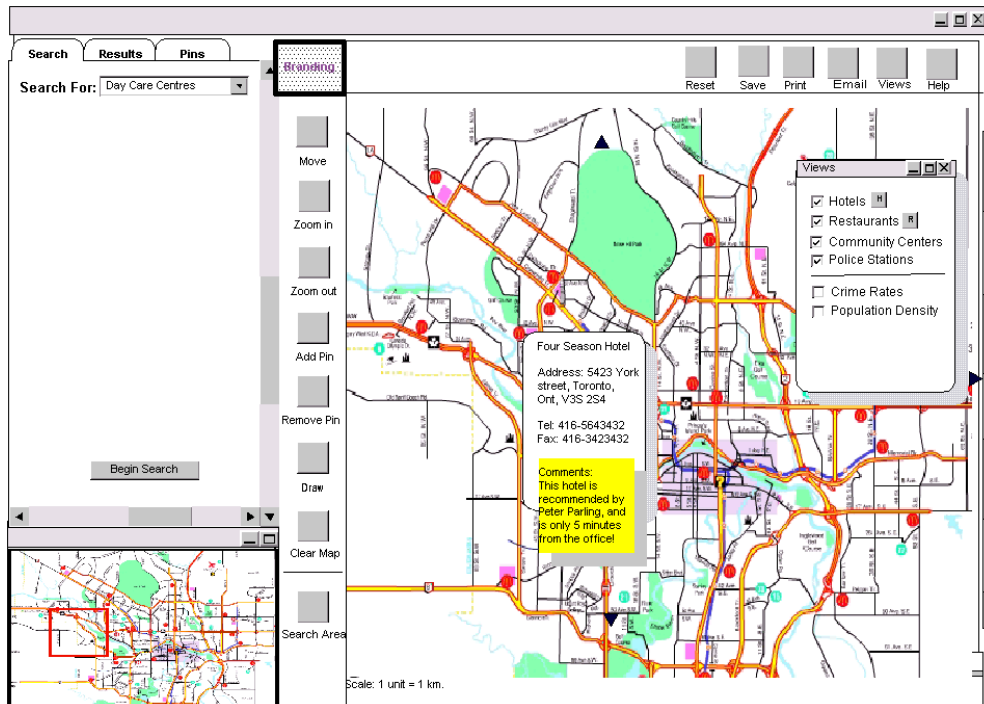
- ✓ Information Design
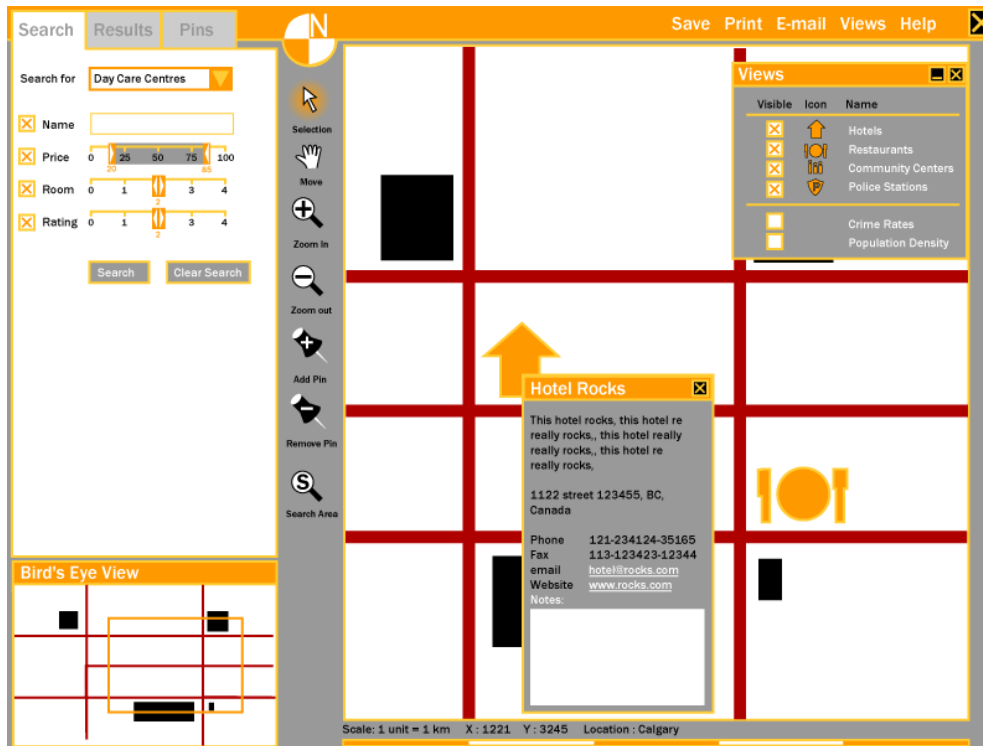 - ✓ Completion of information design prototype

- ✓ Main Features included:
  - ✓ Main Map: Zooming, Panning
  - ✓ Data Points: Rich meta data
  - ✓ Attribute Explorer inspired search
  - ✓ Birds Eye Map

Information Design

- ✓ Borrowed some ideas from the Attribute Explorer

- ✓ Challenge to integrate the concepts of saving search results and managing books (pins)

Project Accomplishments: Visual Design

✓ Visual Design

✓ Prototype completed
   in visual illustration tool

✓ Transfer of design concept into Flash

✓ Completed a prototype

Observations

- Information Visualization has a role to play in today's software
  - Industry is still learning
  - Industry is still making mistakes
- A little InfoVis education goes a long way
  - Project member 'caught on' to fundamental concepts quickly
  - A complementary skill set to designers