

# Informed Omnivore

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## **ABSTRACT**

This project proposal presents Informed Omnivore, an exploratory analysis tool for visualizing the size and growth of the Canadian organic food industry. A goal of this application is to provide consumers with the information necessary to make informed choices when buying organic food. This proposal contains a description of the domain, task, and data, followed by a planned information visualization solution. The proposal concludes with a related work section and an overview of the author's personal expertise and motivation.

## **DESCRIPTION**

The proposed information visualization application, Informed Omnivore, will address information within the agricultural domain, specifically with regards to organic food production.

The application will support the task of exploring an agricultural landscape, providing the user with information such as food type and production levels at provincial and regional scales. The goal of this task is to create informed consumers, allowing them to make sustainable and healthy food choices.

Preliminary sources of data for this application will be adapted from two sources: the Canadian 2006 census of agriculture [10], and recent organic food production data published by Canadian Organic Growers [7].

Secondary tasks and sources of data are discussed in the future work section.

## **PROPOSED SOLUTION**

The proposed implementation will permit a provincial and regional geo-spatial exploration of the Canadian organic food industry, displaying a variety of food types along with current and historical production levels. Data published by Canadian Organic Growers [7] contains detailed

information of this nature at the national and provincial levels, while the census data contains information at the scale of townships or counties [10].

The application will likely contain several linked primary and secondary panels or views. A main cartographic panel will include interactive navigation controls for panning and zooming. A food type panel will contain a categorical list of food items. Several secondary panels will contain relevant production level information based on region and food type selected, and will allow for comparisons to be made between selections in the primary panels.

These panels will support filtering and brushing interactions, such that filtering by food type will highlight regions in the cartographic view which produce the selected type of food(s). Selecting a region will conversely highlight food types grown in that region in the food types panel. An example of this is given in the following scenarios of use, and is illustrated in the attached design sketches (see Figures 1 and 2).

## **Scenario of Use**

A typical scenario of use for Informed Omnivore is determining what organic food types are grown in the area local to the user, and comparing production levels between these food types. A user navigates the national map by panning and zooming the cartographic panel, and selects a province (see Figure 1). The subset of organic food types produced in this province are highlighted in the food type panel (or, conversely, food types not produced in this province are filtered out). The user may now compare provincial production levels of the highlighted food types by selecting them; corresponding data will populate the secondary data panels. The user also has the option to drill down farther by selecting the regional view of a province; the process of locating and selecting a region is then

repeated within the scope of an entire province.

Another likely scenario is the action of selecting a food type and finding out where it is grown, then comparing production levels between provinces and regions (the converse of the first scenario, see Figure 2). A user wants to investigate provincial and regional production levels of organic green beans; this food type is selected in the food types panel. In the cartographic panel, provinces which produce this item are enabled or highlighted; selection of a province will correspond with provincial production level data populating the secondary panels. Further analysis at the regional level is possible by selecting the regional view of the cartographic panel (shown in Figure 2). A single region is highlighted, with its corresponding production data shown in the secondary panels. A user may discover that green beans are scarce this year in one region, but plentiful in another region.

### **Proposed Implementation Approach**

Informed Omnivore will be implemented in Adobe Flex 3.0 [3] using the Flare visualization toolkit [11] and the ESRI ArcGIS API for Flex [5]. The FlexBuilder 3.0 plugin for Eclipse will be used on a Macintosh platform. Flex applications are cross-platform, and can be run in any web browser with the Adobe Flash player installed. Flex applications can also run on the desktop when Adobe Integrated Runtime (AIR) is installed.

### **Milestones**

The following project milestones break down the implementation into weekly time-slices:

- **Week 1** (11/02-08)
  - configuration of flare toolkit, ArcGIS API; complete tutorials / study sample applications
  - compile / format census + COG data
  - create medium-fidelity wireframes based on design sketches (see Figures 1, 2)
- **Week 2** (11/09-15)

- implement geo-spatial navigation
- implement food-type panel
- **Week 3** (11/16-22)
  - deliver project update presentation
  - implement regional and provincial highlighting and selection
- **Week 4** (11/23-29)
  - populating geo-spatial view with data
  - implement linked filtering and brushing controls
- **Week 5** (11/30-12/06)
  - implement secondary views and controls
- **Week 6** (12.07-13)
  - code freeze
  - prepare final presentation / report
- **Week 7** (12.14-16)
  - deliver presentation / complete report

### **PREVIOUS & RELATED WORK**

This section provides a backdrop for Informed Omnivore, from both academic and non-academic perspectives.

#### **Academic Work**

Inspiration for proposed and future functionality in Informed Omnivore is drawn from visualization applications containing geo-spatial navigation and multiple linked views. Improvise [12] is one such exploratory visualization tool which combines coordinated queries between linked views, and a customizable approach to displaying time-series data. It has also been used to track geo-spatial patterns over time [13], which is similar to the intent of the this proposed application. GeoVista Studio [6] is also an exploratory geovisualization tool; its strengths include dynamic queries and filtering across multiple views, and the use of bivariate map displays. For performing detailed geo-spatial comparisons in Informed Omnivore, displaying bivariate maps may prove to be a viable solution.

### **Other Tools**

The ESRI ArcGIS API for Flex has been used to create many interesting geo-spatial visualizations. An example of which is featured on the Tour de Flex website, allowing users to find tax lots by sale price [2]. This is an example of regional selection highlighting and comparison, which will be essential to the interaction in Informed Omnivore.

This proposed application also draws from efforts to map local organic food producers or farmers markets. A popular approach includes using the Google Maps API [8].

### **PERSONAL EXPERTISE**

The author is inspired by Michael Pollan's book *The Omnivore's Dilemma: A Natural History of Four Meals* [9], in which Pollan investigates the American “industrial organic” industry. He argues that the organic food industry is not a sustainable source of food the large American population, given the size and location of the organic food supply, the demands of the population, and the process of shipping organic food over long distances.

The idea for Informed Omnivore was conceived out the author's curiosity regarding the present state of the Canadian organic food industry, mainly out of concern and skepticism, but also with respect to the trend of eating locally [1], and whether it is feasible in some regions.

It should be noted that the author does not have any academic background in agriculture.

### **Technical Expertise**

While the author does not have a strong programming background, the author has some experience using Adobe Flex. Over the course of a 16-month internship placement, the author used Flex for creating user interface components in a software engineering project. The author has also used Flex for an undergraduate thesis project, as part of an experimental setup for measuring cognitive abilities while exercising.

The author does not have any previous experience with the Flare visualization toolkit nor with the ArcGIS API for Flex.

### **FUTURE WORK**

This proposal focuses on the primary task of exploring and comparing provincial and regional organic food production levels. However, a well-crafted implementation may allow for secondary tasks and data sources to be added later in a modular fashion.

Secondary tasks may include the investigation of sales information for organic food, or comparing the costs of infrastructure and shipping. The latter of which may present an interesting opportunity to incorporate techniques for visualizing geographic movement data [4, 13].

Initial data for Informed Omnivore is restricted to Canadian sources. Adding international sources of organic food production data will allow users to make comparisons between countries, and potentially track the movement of organic food across national borders.

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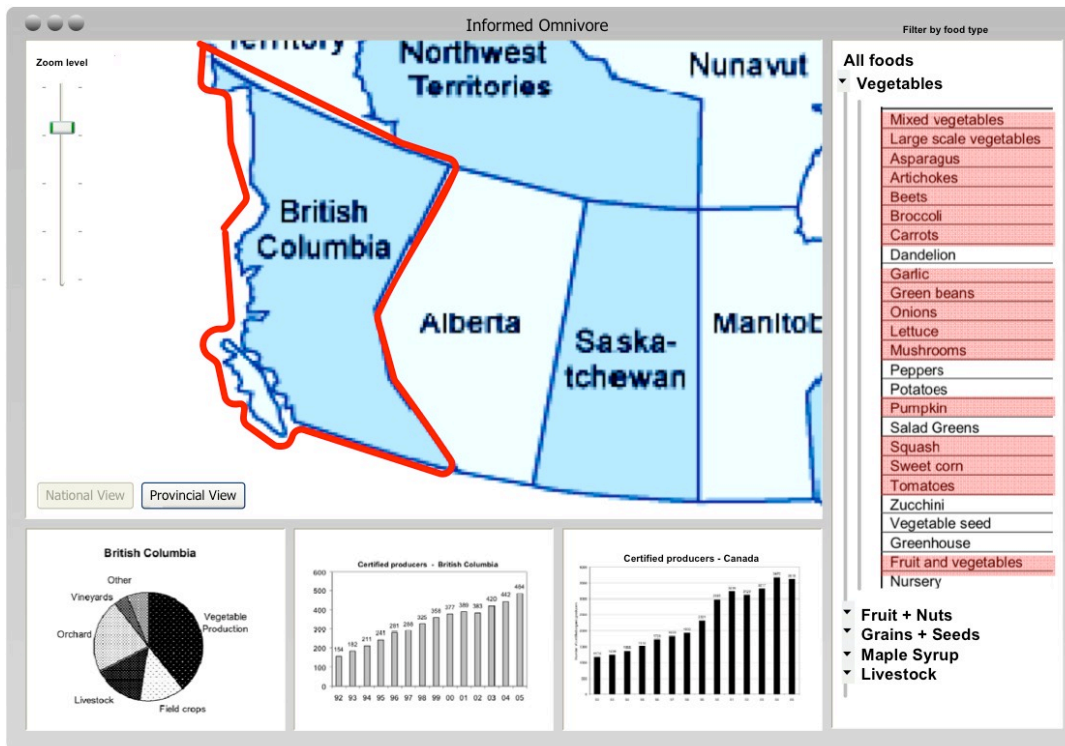


Figure 1: a province is selected (top left); food types are highlighted (right), corresponding provincial production rate data is displayed (bottom)

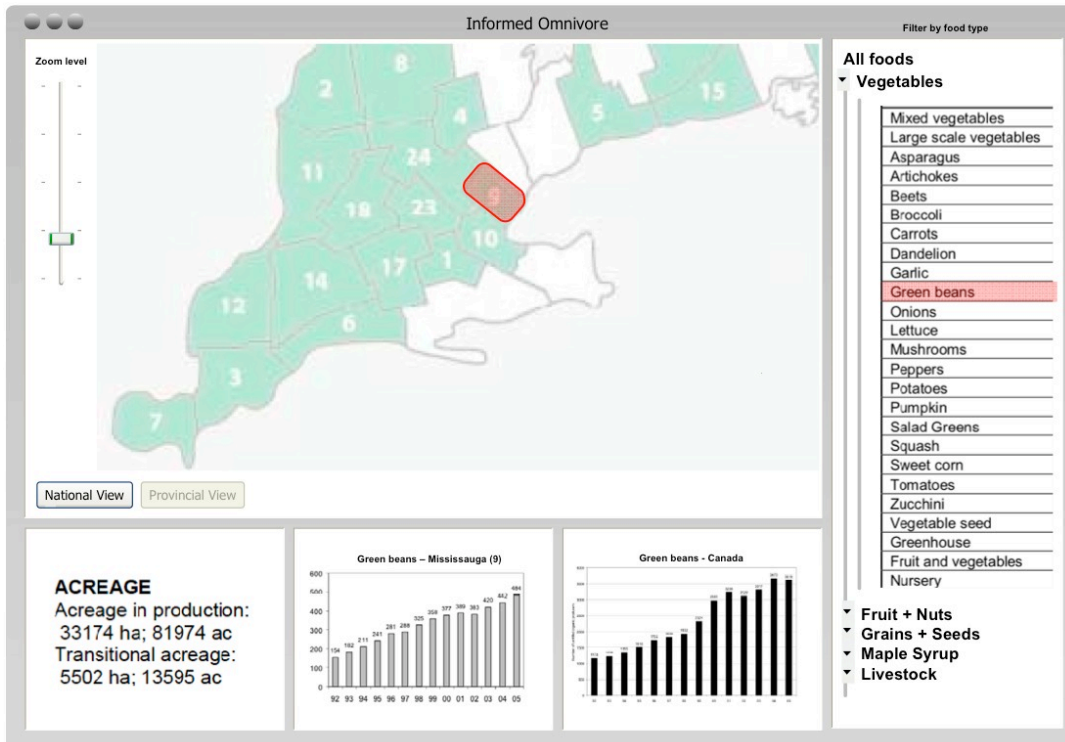


Figure 2: a food type is selected (right), several regions are highlighted in green, and a single region is selected (top left); corresponding regional production rate data is displayed (bottom)