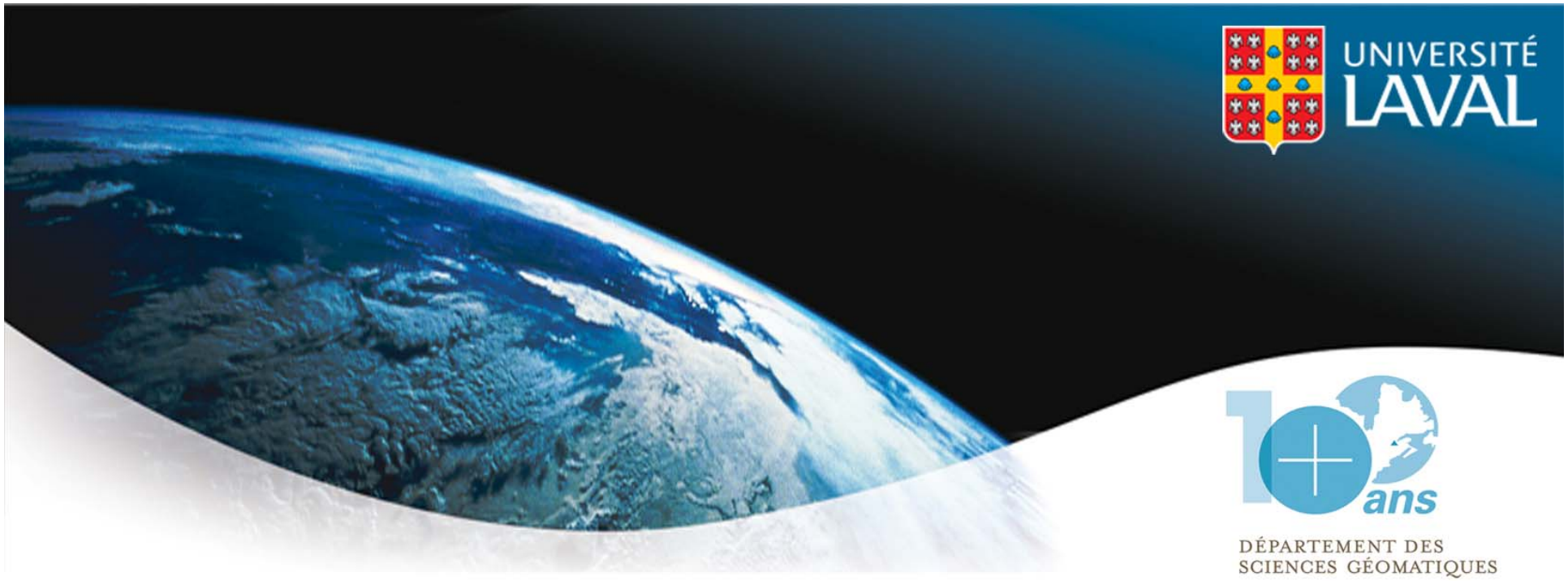

The EcoGeo Cookbook for the Assessment of Geographic Information Value

Elisabetta Genovese, Post-doctoral researcher, Laval University

Prof. Stéphane Roche, Project Leader, Laval University

Cross Atlantic Workshop on Economic Value of Geoinformation - GeoValue ´09
AGILE 2009, June 2nd - 5th, 2009

Objectives of EcoGeo

http://ecogeo.scg.ulaval.ca

General objective:

- to determine the economic value of GI.

Specific goals:

- **Literature review**: to analyse the existing publications concerning GI economic assessment;
- **The EcoGeo cookbook**: to develop a list of parameters and variables which need to be considered for evaluating GI;
- **The value chain for the geomatic sector in Quebec**: application of an evaluation model on a test-subsector of the value chain, to be inserted into the Socioscope visual tool.

Value chain

The value chain concept is :

- one of the most suitable approaches to assess GI value (studies of Krek and Frank, 2000; Longhorn and Blakemore, 2008), but also

- one of the most complex due to the number of variables and factors related to the production and dissemination of GI: context, attributes, timeliness, quality, accuracy, history…

Consequently --» a value chain dedicated to GI has still not been defined.

EcoGeo Cookbook

The EcoGeo Cookbook is

a framework that can be used by project partners and policy-makers to help determine the value of GI.

It aims to

identify, list and describe the most important variables and attributes relating to GI value identified in the literature (particularly by Krek, 2003 and 2004; Longhorn and Blakemore, 2008).

These attributes relate to:

– how GI is produced and used,
– the costs of GI production (e.g. transaction costs)
– the price definition.

Which value?

SECTOR	WHAT TO EVALUATE	VALUE TO WHOM	HOW TO EVALUATE
PRIVATE SECTOR	COMMERCIAL, MONETARY (EXCHANGE) VALUE)	The data owners and commercial vendors	Value to the first buyer is set to production cost recovery, profits margins, and return on investment (ROI).
		The data user	This type of value is typically reflected in the price that the consumer is willing to pay for the product or service offered
PUBLIC SECTOR	COMMERCIAL, MONETARY (EXCHANGE) VALUE	The data owners and commercial vendors	Financial value can also apply to public sector GI if use of the information helps deliver cost savings or aids in managing financial risk.
		The data user	Social GI has less quantifiable direct and indirect value to society resulting from the services offered by using GI data.
	SOCIO-ECONOMIC VALUE	The society as whole	Can include difficulties in evaluating elements such as better decision-making ability, quality of life, environmental health, etc.

Attributes of GI value

ATTRIBUTES of GI VALUE	WHAT TO EVALUATE
Value of the location attribute in GI	For GI, the location attribute provides spatial context to the other attributes in the information package, thus increasing the value of the data for applications where spatial awareness is key (e.g. geodesy).
Time dependency value of GI	The value of certain types of GI may depend on whether it is real-time data or historical, e.g. the time related value of GI meteorological data used to prepare weather forecasts.
Adding value via information management and tools	The value of GI can be increased depending on how it is recorded, i.e. data formats (and standard) used and metadata made available. These have a direct impact on how the data can be disseminated and incorporated with other data sources (e.g. data and services integrator).
Value due to legal or other mandatory use requirements	In many legal jurisdictions, certain information is given an official or legal status for certain types of transactions, e.g. the boundary data in cadastral or similar land registration system (i.e. legal surveying). The certification component could also be a substantial value-adding element.
Value due to network effects	Some information has added value simply because it is used by large numbers of people (market size), e.g. online maps (Google map and others).
Value due to quality of an information resource	The factors related to the production and dissemination of GI are: context, attributes, timeliness, quality, accuracy, completeness, provenance, history (when the data was collected, validated, and updated) or the method by which it was measured.
Value determined by cost savings	Data relating to a given feature or phenomenon should be collected by one government agency and shared among other levels whenever possible. This reduces duplication in data collection and transaction costs.

Cost of GI products

COSTS OF GI PRODUCTS	WHAT TO EVALUATE	HOW TO EVALUATE
1. TRANSACTION COSTS	Transaction costs refer to the cost of measuring valuable attributes of what is being exchanged (measurement costs) and the cost of protecting rights, policing and enforcing agreements (enforcement cost).	We can evaluate measurement costs and enforcement costs.
1.1 Measurement costs	This includes the cost of: - searching for the information on possible data sellers or producers; -searching for the right datasets and acquiring information about the level of quality; -the cost of contacting possible providers.	We can measure: - the time required, - the number of people implicated (hours worked) - the economic value of tests and benchmarks.
1.2 Enforcement costs	Enforcement cost is the cost of protecting rights, policing and enforcing agreements.	- We can consider: - professional certification - legal costs
2. DATA COLLECTION COSTS	Data collection itself can be very costly and can represent a high percentage of the total cost of producing a dataset. It includes production and transformation costs.	The cost can be elevated because of the high cost of capturing data. Data collection can be inexpensive when there are established procedures and automated tools (e.g. GPS) to capture new data. Thanks to new technologies, data collection costs are generally falling.
2.1 Production costs	This involves the labor costs involved in capturing or measuring the data from the data sources.	The dataset producers are aware of the production costs and they are trying to cover them with cost-recovery pricing of their products
2.2 Transformation costs	The transformation cost is the cost of transforming resource inputs into the physical attributes of a product.	The transformation cost is transparent and relatively easy to determine.

Price definition

GI demand is characterised by the varieties of:

- information needs
- willingness to pay for the information.

Value pricing: the producer sets the price of the product based on its value to the buyer.

PRICE DEFINITION	WHAT TO EVALUATE	HOW TO EVALUATE
1 User's valuations and preferences	According to value pricing, the producer sets the price according to the buyer's needs and willingness to pay for certain properties of the product.	Metric conjoint analysis is used to analyze product preference data and simulate consumer choice.
2 Differences in market segments and market changes.	Value pricing can be successfully implemented to GI if the producer knows the preferences of the potential buyers and is able to segment them into different groups.	In order to set the price, potential buyers have to be divided into groups of users with similar sets of wants.
3 Product differentiation	Product differentiation is concerned with how the producer of GI offers its products in the marketplace, to make it more attractive to a particular target market.	Market characteristics of products which can influence the price are: - Differences in quality; - Differences in functional features or design; - Ignorance of buyers regarding the goods; - Sales promotion activities of sellers; - Differences in availability.
4 Avoid price dispersion	Price dispersion is a variation in prices for the same good and can be a consequence of value pricing.	Price dispersion measures include the range of prices and the difference between highest and lowest price. It may eventually disappear in the online market due to the reduced search effort.

Final evaluation

If we deduct the cost of the product → we have a measure of the net benefits of the GI.

For a private organization:
Revenues – costs = added value.
Expenditure by the end user – all costs incurred along the value chain = net benefits to the organization.

For the public sector: prices may be substantially below cost.
Final benefits → Intangible benefits have to be considered (complicated to calculate in monetary terms).

Conclusion and discussion

Conclusion

Next steps for EcoGeo:

- to define a value chain specific to the Quebec GI sector;
- to follow the generation of added value in the value chain using the cookbook framework;
- to apply an evaluation model on a test-subsector of the value chain, that will be inserted into the Socioscope visual tool.

We would really appreciate your comments and suggestions!

Thank you!