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PRICING VERSUS AVAILABILITY OF SPATIAL INFORMATION

0. ABSTRACT

Among official data producers there are two philosophies in selling and making data sets available. One is for selling at high prices and restrictive rights for the use of data in order to get as much as possible revenue from the user. The other is offering data sets at moderate rates and granting unrestricted rights of use in order to stimulate the way into the information society. Conflicts may arise from these two points of view when different data sets should be based one on the top of the other. Losers are the economy and the citizens lacking the complete information.

1. FIRST STEPS OF GI

For nearly two centuries Geographic Information exists only out of small scale topographic maps, large scale cadastral maps and thematic maps of different kind.

Area covering surveying and mapping were considered as tasks of a state, performed on the one hand for military purposes and on the other for better taxation of land. So these first topographic maps, based on a central network and mainly established in the 18th century, were in many countries set up by military surveying. Because of that in many countries coordinates of control points and even the topographic maps were regarded as state secret. A philosophy which partly lasted well up to the recent past.

Cadastral mapping, topographic mapping and the establishment of a central net were regarded as state expenditures which led to the opinion that the sale prices should cover only reproduction costs and not production costs. The same opinion was predominant with geological and statistical maps.

Not until the recent past a new view came into question on the pricing and selling of geographical information. Resulting from lowered funds government agencies were trying to reduce production costs and to rise selling prices in order to make the users pay. An we are now at that state of affairs.

2. ECONOMIC CONSIDERATIONS

A GIS consists of hardware, software and data. The cost of a GIS is the sum of acquisition and maintenance of these components within a certain space. The main cost is that of data and keeping data up to date. Users often do not understand that only such data which are permanently kept up to date are valuable for them.

The cost of hardware is roughly the double acquisition price. The lower the price, the lesser is usually the service offered. In that case one has to add the cost of a skilled person to get it to work.

Software costs are very much purpose oriented. That means, is it possible to run a GIS with a simple system which requires less personal training or only with a high sophisticated system which takes a lot of it?

As already mentioned, the most expensive part of geographic information is the collection of data. Cost of data collection are composed to a large extent of the cost of personnel but, as well on the topographical shape of the area to be recorded and the density or granulation of the data needed. Personnel costs come up to the double of the net wages a person receives. There are some additional personnel costs which cannot be estimated but may exist in reality. Such could be lower productivity caused by resistance to and not being familiar with new technology.

Generally speaking, the trend is that spatial information is growing rapidly. But, rising costs could affect users in an unfavourable way making them unwilling to pay the costs for it.

3. THE CURRENT SITUATION

3.1 The Market

Usually are geographic information systems introduced by the public sector. Because the public sector is often operating as a monopoly of information, its rules are not that of the market. In many countries one can buy certain GI data only from a public agency.

The public sector is not free in its decisions because its services are regulated by law or decree. So are the prices charged by the public sector not based on the real cost of data collection and in this way not market oriented. Much of the information produced by government agency seems relatively cheap, but, this is not always the case with geographic information products.

Information products are in its nature different from other goods, because

- production causes high cost, reproduction is very cheap,
- different users can use the same information,
- the owner of information can sell it and will still remain a user.
- Information products benefit from its use, goods wear out through use.

The price of goods competing on the market follows from supply and demand. This is not the case with the information market. Maps, cadastral and spatial information of the same area cannot be produced by many agencies or companies, competing on the market. For instance, it would be an enormous waste in data collection if several companies would collect topographical data of the same municipality in the same kind and offering these data on the market.

The market rule that cost usually fixes the price is not applicable to spatial information. The cost for the first map produced is high, all additional copies can be produced at low cost. Of course the price can be appraised out of production cost, divided by the estimated numbers of maps expected to be sold. But, it is normally unknown how much copies will be sold. An alternative could be to find out what the market will bear.

3.2 The Selling-Price

There are three general philosophies for determining the price to charge for spatial information:

- Cost-based pricing, based on fixed and variable costs of production and handling;
- Demand-based pricing, where the price is based on what people are actually prepared to buy;
- Competition-based pricing, which depends on what other producers of the same product or service are charging.

In the traditional information business the price is set based on the cost of collecting and maintaining data, divided by the small number of certain clients. This leads to high prices.

One argument in favour of keeping the price low is that low-cost dissemination maximises the use of information. If it is inexpensive, more people will use it.

Let us have a look on the public sector: On the one hand is the purpose that governments collect information to support their functions and to fulfill their tasks. For that government uses taxes paid by its citizens. When a citizen now asks for public data, he has contributed his share and therefore the selling-price should be low. On the other had, the government is responsible to act in a most efficient way which means to recover costs if possible. Regarding that, governments should sell their data at the highest price possible. A solution, considering three kinds of information could be found as follows: Information about citizens' obligations should be financed by the government. Information about citizens' rights and about official

matters can increasingly be user paid. Other types of information, such as spatial information can be mostly user paid.

Two additional arguments: Only few people and commercial firms have the expertise to use public data for economic activities. They should pay for that higher prices. And, selling data at a cost recovering price forces the users to consider what data they really need.

A solution to get correct prices could be a market differentiation, when possible. Out of a complete package of spatial information can be offered:

- a cheap standard edition, selling at low price to many users with restricted demand;
- a medium professional edition with more value, selling at medium price;
- and the full package to the few users who can handle it to a large extent at their advantage, selling at high price.

The users should always be asked if they want to pay for something they do not really need.

4. LEGAL ISSUES INFLUENCING

4.1 Property

Spatial information is an intellectual and not a physical property. In many countries there exists legal protection of intellectual property by laws on property, copyright, patent and fair trade. These matters are new areas in traditional legislation and are dealt with very different in various countries.

As well contracts may restrict the buyer to use the data in a certain way or forbid to resell the data or to keep the data as a secret. But, it is not advisable to restrict the user extremely because it is not easy to prosecute the user not observing the contract.

Most national agencies own the property right to data they collect and maintain. The U.S. is the exception to this rule. The U.S. federal agencies do not own their data which means their data are available at low cost of reproduction. In most other countries national agencies charge closer to market price for data which means high prices. U.K. government sells their data on the basis of nearly full cost recovery.

Internet is not a lawless territory. Everything that is forbidden elsewhere, is also forbidden there. The one who downloads property from Internet and starts using it illegally, is responsible for this. But, it might be impossible to find out where a violation has happened.

The EU Database Directive grants publishers, as opposed to authors, exclusive property rights to the electronic databases they produce and went into effect in January 1998.

Finally regarded, the influence of property right is very predominant on the pricing and the availability of spatial information.

4.2 Copyright

Traditional copyright protects products of art from being copied. If a product, like a map, is following standards, no copyright could be claimed.

In many countries, compilation of facts is not protected by copyright. Where compilation is protected, it is the compilation and not the use of facts. But, maps are not just compilation of facts. They are the result of a careful generalisation of facts and are presented in a carefully designed kind. So maps are usually regarded being protected under copyright unless a government has made legal exceptions or waived its right to such protection.

Copyright applied to data is a new development and is up to now not common. Existing legislation in EU is uncertain as long as it has not been tested by the courts.

There is a growing need to develop modern copyright. For the public sector which produces maps and data there are two main reasons for that:

- governments are all cutting costs and looking for possible sources of income;
- the technological developments make, what was a satisfactory protection in the analogue world, it unsatisfactory in a digital age.

Finally may be said that protection by copyright is usual in order to provide national mapping agencies for their efforts and their digital and analogue products. But, the danger is that high level of charges may reduce the use of these products. Up to now there is no danger because most national mapping agencies are content with a modest cost recovery. The rest is payed by the taxpayer. So the influence of copyright on selling-prices is moderate.

4.3 Liability

The supplier of data may become liable to a user who suffered damages using these data. Responsibility does not depend on whether selling the data or giving them away for free. Moreover, liability does not depend on a contract between the provider and the user. Despite the fact that many contracts exclude liability, most laws forbid that the seller excludes liability completely. So liability can usually merely be minimised. Laws generally state that data providers and users should be liable only for those damages they had a duty to prevent.

A delicate situation in liability originates when a map is used for a purpose other than that which the producer had in mind. This happens for instance when a small scale digital map is blown up to be used for large scale application, for which it is not suited at all. No database will ever be suitable for all potential purposes that users may desire, nor will the accuracy of data meet the needs of all possible users.

Being exposed to liability may have an unfavourable impact on whether businesses and agencies will be willing to share spatial data and whether they will be willing to offer spatial data for sale and under what circumstances. Liability exposure has an unfavourable influence on availability of data.

4.4 Privacy

Detailed databases on all individuals of a community, their property and their habits is now a reality. Electronic technologies ranging from GPS to Internet enable the widespread linking and tracking of information on individuals. Businesses want to know much more about their clients.

Different nations are taking different approaches to protecting personal information privacy. In some countries, government is allowed to compile extremely detailed information on the lives of individuals. Especially secret services execute an area covering surveillance of email and Internet communication and monitor mobile telephone conversation. Other countries impose privacy protection measures across both government and the private commercial sector.

Can we expect that privacy laws will have a greater impact over time on our ability to sell, trade or disseminate spatial information? The answer is no! Individuals and businesses highly esteem the advantages of more efficient electronic devices, much more than the disadvantages of lost privacy. Privacy is going to be minimised by Internet, mobile telephones, credit cards, GPS and the possible combination of that media. This electronic network allows that every individual can be registered permanently as well as in its location and behaviour.

5. OUTLOOK AND CONCLUSION

How to solve the problems caused by the antagonistic points of view “Low selling-price and unrestricted rights stimulating broad dissemination” versus “High selling-prices and restrictive rights in order to get as much as possible revenue from the user”?

One solution could be differentiation by quality. Many users having restricted demand will need only a cheap standard edition at low price. Semi-professional users will need better quality and so an edition with more value, selling at medium price. Professional users can be offered the full package selling at high price.

A second solution could be to differentiate between the kind of users. Commercial users, who can handle information at their advantage, are expected to pay the full price, non-commercial users could be charged at low prices.

A third solution could be differentiating according to the producer of data: Spatial systems produced by governments' agencies should be free or at low cost selling-price made available to the tax-paying citizen. Data of systems, ordered by clients and produced by businesses could be sold at high prices covering cost and profit.

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