

INTERNATIONAL EXPERTS SPEAK OUT

To Charge or Not to Charge

'To Charge or Not to Charge: A Framework for Proper Funding,' was the title of a challenging article written by P.A.J. van Oort and A.K. Bregt of Wageningen University, Netherlands, and published in GIM International in August 2010. Based on an extensive review of the literature, and acknowledging that there is no one-size-fits-all solution, the authors developed a framework for selecting proper funding models. Free access is identified as the predominant model, but in some cases charging is seen as both viable and justifiable.

The question of whether users should pay for geo-data produced by government and institutions has already fostered a long and heated debate, often spiced by contributions fully in favour or fully opposed to free access. From the outset, GIM International too has been a platform for the exchange of opinions (see, for example, the February 2003 issue). Acknowledging that there is no one-size-fits-all solution, Van Oort and Bregt developed a funding framework in which free access is the predominant model, but propound that in some cases charging is justifiable. With the present 'Invited Reply' focused on whether or not the proposed funding models are viable, we continue our pioneering role in the debate by publishing the personal views, vision and received replies from invited leading experts and practitioners: Dr Bastiaan van Loenen, Dr Marcia K. McNutt and Dr Allenka Poplin. The ruminations of Van Oort and Bregt culminate in a table summarising the ideal funding model for diverse cases (Table 1).

User Type	Production phase	Funding model
Government	Development of new PSI dataset: negotiating PSI product specs, testing by prime users	Data charging: data only accessible to prime users
	Production: PSI widely used within government and stable product specs	Free access (including updates)
	Development: changes in legally mandated tasks translate into new product specs, modifications to existing PSI production process	Data charging for post-processing
Companies	Development of commercial value-added products that incorporate PSI	Free access
	Production: commercially successful product has been developed and the company is making a profit out of it	Data charging
Non-profit	Development of PSI: negotiating product specs for PSI	Not applicable, only prime users have access
	Production: PSI widely used and stable product specs	Free access

Recent policy debates show a worldwide trend towards open access and reuse. Notable examples of open-access data are Landsat and CBERS imagery. Furthermore, many European public organisations are changing their restrictive policies into more open ones. This development, which is believed to be a fast-moving train that is difficult to stop, seems to be beyond the scope of Van Oort and Bregt. Although parts of their approach are similar to my proposals published in 2006, I would like to pinpoint four key issues.

Use Determines Value

The value of information comes from its use. The benefits of the use of Public Spatial Information (PSI) are difficult to quantify, as the authors stress. However, price and restrictions limit PSI use and services. Consequently, users may opt for alternative but inferior data, or even collect the same data themselves. OpenStreetMap would probably be less successful were road network PSI available for free and without restrictions on use, and hence attractive to more users.

Gratis Isn't Free

Free access (gratis) does not necessarily mean free use. Access is gratis to, among other applications, Google Earth and OpenStreetMap, but its use is often restricted due to prohibition on commercial reuse. This is an important nuance. If Van Oort and Bregt propose to allow commercial companies and government agencies access free of charge, they should also acknowledge the other side of the coin: that some users cannot use the PSI in the way they would like to.

Discrimination

A third key issue concerns policies discriminating between similar user categories. Van Oort and Bregt propose to charge successful companies and to provide others with free access. They suggest defining a successful company as one "making a profit". However, use of such a criterion would prompt every company to make sure it recorded trading figures in red. The distinction is also problematic from a competition law perspective, as many countries forbid policies discriminating between similar users. Our solution, proposed back in 2006, is to pay royalties based on total turnover, without discriminating between companies.

Always a Bill

As Longhorn and Blakemore noted in 2008, "There is no such thing as a free lunch". Van Oort and Bregt remain undecided about who, within the ideal funding model, should pay the bill when access is free; (reuse would, I assume, also be free). Clearly, government is imagined footing the bill. But the house of government has many rooms. To which room should the bill be addressed, and how to ensure that the room labelled 'budget' remains stable over time, or at least sufficiently so to maintain the quality users need? For example, the UK Ordnance Survey reported a financial loss whilst "freeing up" some of its datasets at the beginning of 2010. This brings us back to the

good old policy poles of cost recovery versus open access. Meanwhile, the PSI policy train runs on, picking up more and more PSI on its way towards free access and (re)use. Will this train allow our information economies to flourish in the long run, or will it overshoot its final destination?

The Landsat series of satellites provides multispectral, moderate-resolution imagery of Earth's land masses that represents a continuous record of natural and anthropogenic landscape changes dating back to 1972. The archive presently contains approximately 2.4 million images. Over its 38-year history, the funding model for Landsat has evolved from various attempts at cost recovery to the current web-enabled free access, making it an instructive example in addressing the question of 'to charge or not to charge?'

Failure

In the 1970s Landsat imagery priced at \$200 per scene was available to anyone, though computer technology limited data dissemination. In 1982 Landsat 4 was launched, introducing a more capable sensor; new images were priced at \$600 per scene, due to increased manual processing. It is unlikely that the volumes of scenes distributed and the prices charged led to the government achieving full cost recovery at that time. In 1984 Landsat was transferred from government to commercial ownership, with an attempt made to fully recover costs, including satellite development and operations. Prices ranged from \$3,600 to \$4,900 per scene. Sales of imagery dropped dramatically, with the majority of scenes purchased by the US Government. The attempt at full cost recovery was deemed a failure.

Societal Value

With the launch of Landsat 7 in 1999 the US Government resumed responsibility for the programme. Landsat scenes were sold at the cost of reproduction, about \$600. Sales peaked in 2001 at an average of nearly four hundred scenes per week. However, users felt the cost was still too high to fully exploit the scientific value of the imagery. In October 2008 the US Government web-enabled the entire Landsat data archive and began providing the data for free over the internet. During the first year, nearly 22,000 scenes per week were provided to users in 184 countries; in this, the second year, distribution is approaching 40,000 scenes per week. Today scientists and educators are the largest community of users; their studies of long-term landscape change are crucial to understanding global change. Studies are underway to estimate the value of web-enabled Landsat imagery to the US economy. Preliminary results indicate the societal value returned from free distribution of imagery exceeds the cost of developing and operating the satellite, and far exceeds cost recovery. Such capabilities are better considered part of society's infrastructure, along with capabilities such as the internet and GNSS. The discussion over whether or not to charge for geo-information, how much to charge, to whom and in which instance, is a very relevant topic. Van Oort and Bregt aim at finding an ideal funding model, which would seem an ambitious endeavour.

Additional Issues

Indeed, it is very ambitious, and as a result their proposed scheme for the ideal charging model is not quite complete; additional issues have to be clarified. For the user type 'government' they suggest paying for a service that is still under development and providing free access once development is complete. Why would one want to pay for a service that is not yet completely developed? For the user type 'companies', it is proposed commercial value-added products be made available free of charge. What company would invest in value-added products that are free of charge? Who would or should cover the cost of value-adding activities? Development of value-added services requires investment, and a private company has to find ways to recover such outlay. If a private company gives free access in the initial development phase, this will make it very difficult, if not impossible, for them to reach a profit-making phase. Such types of solution seem far removed from corporate reality. Free access for the user type 'non-profit' would appear rational and reasonable. However, it is unclear why potential users of PSI datasets, such as NGOs and researchers, would have no access during the development phase. I would suggest involving them in defining the product specifications so that geo-information producers can better understand the potential needs of users of geo-information.

Value for Users

One of the main remaining issues, and one crucial for a successful geo-information market, is how to generate products that are used and valued by the potential users. What are the characteristics here? Besides the user types and production phases mentioned by Van Oort and Bregt there are other parameters, such as quality and time of delivery, that influence the value of geo-information to the potential user and with this their willingness to pay. Additional efforts are required to better understand the characteristics of the value of geo-information products to users. A smart geo-information product and price differentiation would potentially lead to increased sales and use of these products in new vertical markets. Pricing based on value of a certain characteristic to the potential user is, in my opinion, the most promising strategy, and one which would help self-differentiate users and their willingness to pay for geo-information.

Fast-moving Train

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38-year Experiment

Dr Marcia K. McNutt, director of the U.S. Geological Survey, is a distinguished scientist and administrator and the fifteenth director of the USGS. Her research has ranged from studies of ocean island volcanism in French Polynesia to continental breakup in the western United States to uplift of the Tibet Plateau.

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User Value

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Concluding Remarks

The question 'To Charge or Not to Charge' emerged in the late 1980s, when governments all over the world began privatising a great many of their activities, including postal services, utilities, public transport and mapping agencies. At that time centrally planned economies were relentlessly collapsing, which proved by induction the superiority of the free market economy. Indeed, for two decades such economies flourished as never before, but the weaknesses of unbridled capitalism inevitably surface eventually. This moment arrived a couple of years back, when we experienced almost viscerally the effects of neo-liberalism, manifested through consecutively softening laws controlling the highest corporate management and those steering the ships sailing through the virtual world of money. We still are undergoing a painful stage of recovery which may take another two decades. This sounds pessimistic, but I do not consider it to be so.

Commercialisation involves defining the product, determining the costs of production and marketing and setting a competitive price. The latter adjective, 'competitive', conceals the crux of all discussions. Where there is just one single product offered by a single vendor, how can there be competition? Geo-information is not a product like bread, butter, trousers, and cars, offered by a plethora of manufacturers and vendors. Geo-information belongs to the family of commodities that do not fit into the category of goods for which general marketing theory is valid. Geo-information never came into existence to make a profit, or to relieve the national treasury of necessitous government. Geo-information came into existence to support good governance and to sustain, and possibly augment, the wealth within society as a whole. No such thing exists as an optimal economic model for pricing and funding of geo-information. All depends on national and local conditions.

The main task is to find the best model in a situation within which parameters lie beyond the control of either producer or consumer. The above replies convincingly underpin this conclusion. Van Oort and Bregt are right to acknowledge that there is 'no one-size-fits-all' solution. However, their cost-recovery models, based on user types and production phases, appear too one-dimensional and fail to include all the aspects determining value in terms of production costs and fitness for a diverse group of users.