10 Ways to Support Your GIS Without Selling Data

Bruce Joffe [1]
ODC project organizer
GIS Consultants
1615 Broadway, suite 415
Oakland, CA 94612
510-238-9771
GIS.Consultants@joffes.com

Controversy has been raging for over a decade on the appropriateness, legality, and effectiveness of public agencies selling their digital geodata. Recent discussions among professionals from both government and private sectors, representing a wide spectrum of opinion on whether public geodata should be sold or given away freely, have yielded some interesting experiences and useful advice on effective ways for public agencies to support their GIS operations.

Core Issue: Data Sales vs Free Access

As more local governments develop their maps into GIS-based, digital geographic information, more and more are receiving requests for their geodata from people outside of their own agency. They are discovering that beyond fulfilling internal agency needs, geodata is seen as a "strategic asset" and as a commodity. Many need to develop or to revise their data distribution policy. One of the central data policy issues is whether to charge the public for their data or to distribute it at no cost.[2] The significant legal, political, and economic reasons for selling public data or distributing it freely have been written and argued about for over a decade.[3] They may be summarized as "the public's right to public data vs a public agency's need to fund its GIS operations."

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[1] With special thanks and acknowledgment to the following contributors:

Wayne Bannister	bd Spatial	wbannister@bdspatial.com
Peirce Eichelberger	Chester County Assessors Office	peichelberger@chesco.org
Jim Girvan	Somerset County, MIS Division	girvan@co.somerset.nj.us
Kim McDonough	Metropolitan Planning Comm.	kim.mcdonough@nashville.gov
Dawn Robbins	Ventura County	dawn.robbins@mail.co.ventura.ca.us
Barry Waite	City of Carson	bwaite@carson.ca.us
Naomi Wexler	TeleAtlas North America, Inc.	naomi.wexler@na.teleatlas.com

[2] For purposes of this discussion, "free" or "no-cost" data means data provided at <u>no more</u> than the direct cost of distribution (e.g., staff time and materials used to reproduce the data from the agency's existing GIS database system).

[3] Two of the author's summaries of the issue may be found at:
To Sell or Not to Sell: GIS's Budgetary Dilemma. <u>GeoInfo Systems</u> magazine, September 1995, Advanstar Communications, Eugene, OR. (Also available at http://www.opendataconsortium.org/article_gis_data_sales_dilemma.htm)

- On one side, the truth is that access to public information is necessary to insure government accountability. The Freedom of Information Act (5 U.S.C. § 522) assures free public access for Federal data, and most states have laws that complement the principle regarding their state and local government data, as does California, for example, with its Public Record Act (§ 6250) that states:

  > "... the Legislature, mindful of the right of individuals to privacy, finds and declares that access to information concerning the conduct of the people's business is a fundamental and necessary right of every person in this state.. "

- The truth on the other side is that public agencies need to fund their ability to create, maintain, and disseminate data, and that geodata capture and maintenance are particularly expensive. The current economy has reduced tax revenues for local government, which, along with political impediments to raising taxes, have caused more than one GIS manager to say:

  > " ... Yipes! Our department was cut "

While other rationales are given for a government agency's sale of public geodata,[4] financial maintenance of GIS operations is the strongest reason used to justify abridgment of free public access to data. Funding for this public service can come through taxes, fees, sale of the data, or capturing the added value from the use of geodata. How effective have these methods been, and what is their prospect for the future?

Open Data Consortium project findings

This question was examined by the Open Data Consortium (ODC) project [www.OpenDataConsortium.org], funded by the USGS through the GeoData Alliance [www.GeoAll.net], in order to formulate a model data distribution policy for guiding local governments throughout the country. For six months, over 60 ODC participants

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GIS Data Sharing: Public Policy Supports and Impediments. Presented with Patrick DeTemple, Michael Stevens, Scott McAfee, Eric Waldman. ESRI International User Conference. July, 1999.

[4] Prominent reasons for local governments to sell geodata include:
- Defense by cost-sharing consortia against "free riders"
- Feeling a proprietary value after the long development process
- Desire for "control" of "our" data
- Resistance to profiteer windfalls from public investment

Interestingly, taxpayer concerns lead to two, opposing arguments:
- "Taxpayers already paid for the GIS, they shouldn't have to buy it again," or
- "Taxpayer investment should be reimbursed"

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have been discussing data sales and other methods of supporting local GIS operations, along with the other issues that define a public data distribution policy.[5]

The participants, who self-selected from an invitation list of over 400 GIS professionals, represented city, county, metropolitan, and regional governments with a wide range of current data sales policies. State and Federal government agencies, universities, private sector consultants and data resellers were included as well. We met in bi-weekly teleconferences to discuss these issues in an open attitude of sharing experience and information, using active listening techniques, with the intention of formulating a policy model that represents the largest possible consensus of this representative group. During this process we learned two interesting facts:

1) Most government agencies that sell public data have not realized significant revenues; in many cases, they have actually lost revenues.

2) There are better ways of raising funds to support GIS operations.

Every local government GIS manager whose agency sells their data has told me that they would prefer to distribute the data freely, if there were another way to fund GIS operations.

Data Sales Effectiveness

The ODC participants shared the results their agencies have had from their data sales operations. Few have made money. None have raised significant revenues compared with their costs to maintain their GIS and geodata assets. Some have lost money.

• During the recent five year period that Ventura County sold their data for $ 1 per parcel. They raised $ 15,000 per year, compared with the annual cost of nearly $ 1 million to maintain a 10-person team that updates geodata and creates GIS applications. They have now lowered their price for the entire countywide geodatabase to $ 3,000, which includes quarterly updates, and have twenty annual subscribers, producing a revenue of $ 60,000 per year.

• Kern County didn't make any money selling their geodata, they now make all of it available for free on the web.

• Glendale was selling their data for $ 1 per parcel, and sold nothing.

• San Francisco (City and County) reports that it cost them more in staff time to sell their geodata than the revenues they received.

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[5] More information about the ODC project, as well as a review copy of the model Data Distribution Policy document may be obtained from http://www.OpenDataConsortium.org
    Other critical data distribution issues include: purpose, legal authority, data recipients and distribution methods, copyright and licensing, disclaimers, privacy and security restrictions, data update and metadata maintenance requirements.

- San Joaquin County said the revenues "didn't even come close" to paying for GIS in the county. Staff on Nashville's Metropolitan Commission opined that "map sales are a pain; none of us are set up to deal with it efficiently."

- Both San Diego and Los Angeles counties have reduced their geodata prices to one-tenth of their previous levels in an attempt to generate more sales. Several geodata managers in Los Angeles County are now advocating for free data. L.A. appears to be spending more on marketing data than it receives from sales, and sees data resale companies, like Digital Map Products, as adding value by offering on-line services to view and download L.A.'s data.

- California's Department of Fish & Game maintains the Natural Diversity Data Base which collects and distributes information about protected species and habitats for property administrators, natural resource stewards and regulators, and developers. Their success depends on the number of subscribers. Since reducing the subscription fee by a factor of 8, the number of subscribers has increased 3 ½ times.

- San Mateo County charges slightly higher prices to make copies of their maps than local reprographics companies charge, so that citizens will go to private service providers. They distribute their entire geodatabase freely, so that data resellers can provide GIS data products to their citizens, rather than having to expend County staff time to fulfill requests for data.

A study by KPMG Consulting, Inc in March, 2001, reported that "US agencies reporting data income had revenues equal to 2% of their expenses."[6] Surveying 33 government agencies in Canada, KPMG found that on average, the Federal government's costs of data dissemination break even with the fees generated, but for provincial and municipal governments, the net fee impacts were negative.[7] KPMG also cites a 1999 report[8] that found "cost recovery" was having the opposite effect on its stated goals:

- The consequences for businesses are higher costs, lower research and development investments, and threatened marginal products.

- The results for consumers are negative: higher prices and reduced products and services.

- The overall economic consequences are 23,000 fewer jobs, reduced economic output (by almost $ 2.6 Billion) and a lower gross domestic product.

Despite these experiences with selling geodata, many participants reported that the appearance of bringing in revenue, even if it was but a trickle of the cost of GIS

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[6] "Geospatial Data Policy Study" by Garry Sears, KPMG Consulting, Inc., Ottawa, Ontario, Canada, March 28, 2001, p. 18

[7] *Ibid.*, p. 12

[8] "Where Does the Buck Stop?", The Blair Consulting Group and Canadian Manufacturers and Exporters. Quebec, Canada, January 1999.

operations, created a very positive impression with highest-level budget approvers. A revenue stream, even perhaps at the expense of more valuable staff time, fostered credibility and protection from The Axe.

Capturing the Value of Geodata

Through deliberations among the ODC project participants, agreement was attained on several competing principles. We agreed that public information is a necessary component of open government and the democratic process. We also agreed that public agencies need funding to develop, maintain, and distribute their geodata. Importantly, the participants recognized that the value of geospatial data is realized through its usage, and that widespread distribution and use of public geodata benefits the entire jurisdiction as well as the government agency responsible for that geodata.

The key to resolving the "free data vs fee data" controversy, therefore, will be found by capturing the value of the geodata, its value both to the public and to the governmental custodian. Since GIS data creates more value the more it is used, capturing that value will motivate local government to distribute it as widely and as inexpensively as possible. How, then, can local government – the creator, maintainer, and "steward" of local geodata – actually "capture" that value?

While sharing their experiences and intentions for data policy, the ODC participants uncovered 10 productive methods of supporting their GIS operations that do not include selling public geodata. They are organized into four categories:

- Revenue produced from existing taxes
- Revenue produced from service fees
- Cost Savings
- Internal Budgeting

These methods, listed below, do not include the cost savings accrued through multi-agency, cost-sharing or data-sharing cooperation. While such actions result in hugely significant savings in the cost of <u>creating</u> and <u>maintaining</u> geodata, they do not derive from the actual <u>usage</u> of the geodata.

<u>Revenue Produced</u> **- from existing taxes**

1) Allocate a portion of the **increased revenues that come from increased economic activity and new economic development** to GIS operations.

    Cities and counties know that information about available land, buildings, zoning, transportation, environmental conditions, support facilities, ownership and property value is critical to attract investment for economic development. Many have discovered that putting their data on the wwWeb has captured interest and activity from investors as far away as Asia and Europe, because their local information is as close as the nearest computer.

    - The cities of Ontario, Vallejo, San Francisco, Rancho Cucamonga, Tucson and Honolulu report increased economic activity after creating web-based

Economic Development applications that enable anyone to query their data for property with specific qualities of interest.[9]

√   Vallejo reduced its retail vacancy rate by 46%
√   Rancho Cucamonga reduced its retail vacancy rate by 44%
√   Tucson reports a return on investment of $ 400,000 in the first two years

•   The city of Carson, CA, observes that they receive more money from taxes after the opening of a new 7-11 store than they would from data sales.

•   In Ohio, the cities of Cincinnati, Cleveland, and Columbus made their data freely available after a new auto factory located in a competing city that freely provided its information. The company completed its on-site review in just one day because the data had been easily acquired and pre-analyzed.

Increased economic development generates jobs, sales tax, property tax, and many other revenues to local government. Currently, the increased revenues go into the General Fund. A portion of these increased revenues could be, should be allocated to maintaining the geodata operations that helped bring the new economic development to town. Accounting procedures could be modified to include a heuristic estimate of the percentage of new revenues that can be attributed to the availability of accurate, up-to-date geospatial data, and that portion could be specifically allocated to maintain GIS operations.

2)   Allocate a portion of the increased **revenues that have come from a more accurate determination of facility locations for taxation purposes**, or from the geoanalysis of under-taxed property assessments, to GIS operations. (Bounty fee)

GIS data and geoprocessing enable the precise determination of which special districts, city, and county that facilities such as cell phone towers, point-of-sale businesses, and property parcels are located in. Most jurisdictions have complex and frequently-changing boundary lines, and each jurisdictional boundary may have a different tax rate. GIS-based analysis can determine location much more accurately than postal address, and has resulted in a significant revenue increases, for example:

•   Orange County, FL, increased revenues from cellular telephone franchise fees by using GIS to determine which cell towers were in their tax jurisdiction. The postal address put some towers in other counties. They now collect an **additional** $ 650,000, every year.

•   Los Angeles County **recovered** $ 3 million in sales tax after geo-analyzing the location of point-of-sale businesses which were mis-located by their postal address. By performing the geo-analysis in-house, they saved **an additional** $ 375,000 a year that had gone to external data analysis services.

•   Using GIS to identify properties with certain characteristics and proximity to Disneyworld, Orange County identified condominium owners who were

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[9]   See http://www.gisplanning.com

renting their units informally for tourist accommodations without paying the required resort tax. Tax **revenues were increased** by $ 700,000 in a single year, and continue to come in at the new level **every year**.

More accurate assessment and collection of existing taxes increases the revenue to local government without raising the tax rate. It makes current taxation more fair to all the citizens. Usually, the increased tax revenues go into the General Fund. A portion of these increased revenues could be, should be allocated to maintaining the geodata operations that helped identify previously under-taxed properties. Accounting procedures could be modified to assign a percentage of such increased tax revenues specifically to maintaining GIS data and operations.

3)   Allocate revenues from **specific taxes and fees** for services that rely on the collection and maintenance of accurate location-based information.

Land records maintenance and management relies heavily on accurate geodata. GIS greatly improves the efficiency of land records operations, and if built as an enterprise resource, the investment in GIS brings benefits to many other operations as well.

- California's so-called "Sec. 818" program allowed county governments to allocate property tax and recording fees to the "modernization of land records." San Mateo County's Assessor saw this as an opportunity to develop a consistent, countywide GIS-based parcel map to make tax assessment more efficient.   These funds, approximately $ 800,000 over three years, substantially financed development of the County's GIS.

- Chester County, PA, instituted a $ 5 per-parcel property transfer fee to create a "Uniform Parcel Identifier" which became the foundation of the County's GIS basemap and its emergency dispatch system. The fee is but a tiny part of a typical property owner's transfer costs, and has not engendered any political opposition. It has raised $ 696,000 for GIS operations in 2002.

4)   Allocate a portion of the **funding for specific programs** to GIS data collection and maintenance.

Homeland Security and emergency preparedness are the current focus of special-funding programs from Federal and state sources (i.e. taxes), as had been flood control and sewer improvement programs prior to 9-11. All of these programs require accurate and up-to-date basemaps that not only show local facilities, but also show relationships to nearby facilities and environments, such as watersheds, infrastructure, and public buildings.

While a small portion of these programs typically is allocated to "data collection," a small increase in the investment by far-sighted officials has produced an enterprise-wide GIS base for many local governments.

- Somerset County, NJ, Planning Division received grants for "Smart Growth" and Strategic Planning, which required the use of GIS data in support of

model forecasting. Some of those grant monies were used to develop data attributes for their enterprise-wide GIS.

- Alameda County, CA, used NPDES storm-drain pollution control funds to map the storm drainage and watershed system, which essentially built a county-wide GIS basemap.

Performance of these programs and projects could and should include financial support for ongoing geodata maintenance and GIS applications that increase their efficiency.

Revenue Produced - from service fees

5) Usage fees and subscription **fees for customer-specific on-line applications** can help support GIS operations.

- Six Southern California counties license their geodata to Digital Map Products[10] which redistributes it via web-based query applications and data sales to subscribers. The counties receive a substantial portion of the subscription revenues. Other companies are similarly licensed as well.

- The city of Carson is developing an on-line property locator application for a 15-city consortium, to be maintained on a subscription-fee basis by realtors.

6) Sell **geoprocessing and management services** to other agencies.

The City of Carson, CA, has developed GIS capabilities far in advance of many of their neighboring cities. They are now proposing to manage a data maintenance consortium for these cities, saving them the time and the cost of developing their own in-house expertise, and enabling each city to focus its GIS resources on their own specific projects. This service will help support Carson's GIS department.

Cost Savings

7) Allocate a portion of the **increased savings that come from geospatial analysis** of public service programs to support the GIS department's geodata and operations.

- Los Angeles County's court system started **saving** $ 300,000 per year in mileage payment to jurors and witnesses after using GIS to calculate the most direct distance.

- Another county's Health and Human Services department began using GIS to cross-check the location of recipients of health and welfare services and **eliminated 7% duplicate or fraudulent addresses** in the first year.

- The City of Visalia used GIS to plan the location of new fire stations based on specific requirements for response time to populated areas. The analysis enabled them to reduce the number of planned fire stations while also

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10   See http://www.digmap.com

reducing the overall response time. In addition to the **cost saving to the city**, the fire insurance **cost to many of its citizens was reduced**.

The money saved by using GIS did not go to these agencies' GIS departments. It was used in other ways by the services departments, or it remained in the General Fund to be spent for other purposes. Internal accounting procedures should be changed to identify these savings with GIS so as to allocate a portion towards the ongoing maintenance and operation of this valuable geodata.

8) Allocate a portion of the **increased savings** that come from **coordinated management of public works infrastructure and facilities** to GIS operations and data maintenance.

   - San Jose uses GIS to coordinate the priority assigned to maintenance projects for sewer, water, storm drains, and streets. Preventing multiple digs and repairs on the same street is **saving 5% of their capital improvement budget** - approximately $ 700,000 per year.

   - Another city canceled the planned purchase of an $ 85,000 street sweeping machine after using GIS to route its existing machines more efficiently.

   - Palo Alto used GIS with their high-accuracy elevation data to reconfigure flood risk boundaries. Some citizens received the benefit of **lower flood insurance costs**. Others, who were required to modify the construction of their homes, were **saved from ruin** when two 100-year floods occurred in a three-year period.

The money saved by using GIS did not go to these agencies' GIS departments. Internal accounting procedures should be changed to tag these savings to GIS so as to allocate a portion towards supporting its ongoing operation.

Support from Internal Budgeting

9) Allocate a **portion of each department's operating budget** to support GIS services.

   - Ventura County has implemented an "Internal Service Fund" practice in which each of the County's 32 agencies pays for a negotiated level of GIS services, based on their perceived benefit to the agency. The Geographic Information Officer meets regularly with departmental managers to assess their satisfaction and need for basemap updates, technical support, applications, map production projects, and web-based services that support their duties and functions. The departmental managers have been willing to pay the GIS department for the value they perceive from these services, which now accounts for 80% of the costs of the County's GIS operation - $ 800,000.

   - The water department in the city of Lomita has funded nearly the entire GIS operation from its need to create inventory maps. They report that the benefits from "simple" GIS applications, such as water valve closure notification, have been worth the investment.

- The cities of Anaheim, and Palo Alto, also funded their GIS operations from utility rates. The benefit from current and accurate basemaps for maintaining infrastructure inventory more than balances the cost of the GIS, while also being used for non-utility municipal functions. A relatively insignificant part of the utility rate structure, GIS support has more political acceptance than if it were a municipal tax.

There are many success stories in which one or two departments carry most of the GIS cost for the entire city, or, (as in the case of Ventura County) all the departments willingly contribute their fair share to maintain the GIS.

10) Allocate a portion of the Agency's **general fund to enterprise-wide** GIS services.

There are some organizations where departmental financing of GIS is contentious. Consensus exists that the Agency needs GIS - but, a "don't take it from my budget" attitude prevails. Strong leadership from top management can resolve this frustration by making GIS an enterprise-wide responsibility, to be budgeted <u>before</u> departments fight over their own slice of the pie.

- Pima County, AZ, started its GIS development with a $ 5 million capital improvement bond, thereby building an enterprise system as a coordinated, master-planned effort.

- The cities of Fremont, Palo Alto, Roseville, and Visalia developed, and continue to maintain, their GIS operations as enterprise-wide services, supported as line items from the General Fund.

The Value is in the Usage, not the Data

Local governments are seeing more and more financial benefits accrue from the use of GIS data, both to their organizations and to the citizens in their jurisdictions. As accounting mechanisms are put in place to allocate a portion of those benefits back toward the ongoing support of GIS operations and the maintenance of their geodata assets, fewer agencies will need to sell their data. There will be fewer access barriers between the public and their government's public information. The following actions are recommended in order to achieve this objective:

1) Recognize that the value of geodata is realized through its usage. The more it is distributed, the more it is used. The more usage, the more value.

2) Change governmental accounting practices to identify and measure the <u>revenues</u> that come from GIS-based information and analysis.

3) Change governmental accounting practices to identify and measure the <u>savings</u> that result from NOT spending money, due to geospatial analysis.

4) Allocate a portion of these benefits back to support the GIS operations that made them possible.

One ODC participant, a stalwart advocate of selling his county's data to users who were not taxpayers or citizens of his county, asked during our deliberations, "why should a national map company have free access to our data when they sell digital tourist maps for profit?"

"And when those tourists use our maps to guide their vacation," the data reseller answered, "where do they go to spend their money?"