

Users Advance Open GIS

David Schell
President
Open GIS Consortium, Inc.
dschell@opengis.org
<http://www.opengis.org>

The Open Standards Imperative

The Web has convincingly demonstrated the extraordinary benefits of widely implemented, vendor-neutral, consensus-derived open standards. Recognizing this, readers of this magazine owe it to themselves and to those they serve to adopt open standards in their purchases of geospatial software, services and data. Anyone involved in such purchases ought to read the June, 2003 Delphi Group study, "The Value of Standards" (<http://www.delphigroup.com/research/whitepapers.htm>), whose cover page states:

There is a clear and sudden shift in attitudes towards software standards. The climate of economic constraint and risk aversion along with the mandate to integrate systems on both sides of the firewall has created a sea change in the sense of imperative to adopt software standards. In this climate, standards create liquidity -- the ability to leverage IT investment in unforeseen ways. In this groundbreaking study, Delphi gathered the responses of more than 800 end users, software vendors, and service providers to identify the current attitudes and expectations for software standards. The results portray a shifting landscape where standards will provide the foundation for long term advances in the way software is built, bought and deployed.

OGC is the developer and promoter of open specifications in the geoprocessing industry. Founded in 1994, OGC is a not-for-profit international industry consortium of more than 255 companies, government agencies and universities participating in a consensus process to develop publicly available interoperability specifications. OGC registered the trademark "Open GIS®" and OpenGIS® in countries around the world to assert the importance of open standards in geoprocessing and to protect these standards with a legal brand. The phrase "open GIS™" (with a small "o") is also an OGC trademark. A software vendor whose software implements interfaces based on OpenGIS Specifications can legally claim that a product "implements" these particular specifications. If the product has passed a conformance test for a particular OpenGIS Specification, the vendor can claim that its product "conforms" to that version of a specification and the vendor can use OGC's trademarks to assure buyers of the veracity of those claims.

When a vendor states specifically (in ads, marketing materials and sales presentations) which OpenGIS Specifications its products implement, that vendor is offering in good faith the real benefits of the industry's successful effort to solve users' data sharing and process sharing problems. OpenGIS Specifications have been agreed to and are supported by most of the geoprocessing software companies, including all the leading vendors. The vendors have implemented these standards in products to enable their customers to save money, save time and do things that couldn't be done before.

Open and Not-so-open

Today, openness means that software components from different vendors communicate through common, open interfaces that are standardized through industry agreement. This is quite different from a vendor publishing its proprietary software interfaces. That might have been described as "open" three or four years ago, but it is not "open" today. This is the age of the Web. Consensus interfaces trump proprietary interfaces because:

-- Consensus interfaces enable "one-to-many" interoperability, which is much more useful to users than one-to-one interoperability. In the one-to-one paradigm, a client system needs a separate interface for each vendor's server system. The big advantage of open interfaces is "build one, access many."

-- Vendors typically have engineering departments that work to extend and improve their software, so these vendors eventually, maybe frequently, change their proprietary interfaces, forcing dependent systems to change, perhaps without notice or opportunity for input. In contrast, the consensus process in a standards consortium like OGC gives integrators and application developers both notice and opportunity for input, and the process increases the level of continuity in new releases.

-- Integrators and application developers will spend more time learning how to use the proprietary interfaces of multiple vendors than they will spend learning how to use OGC's interfaces. With open interfaces, they can offer their customers a better variety of solution components, components that are better bargains because the vendors need to compete.

"Open and not-so-open" applies also in the area of XML encodings of spatial data and in the area of Web Services. The Web has become the world's distributed computing platform, and XML and Web Services are becoming key elements in most enterprise, government and consumer computing environments. OGC's Geography Markup Language (GML™), the only open standard XML encoding for spatial data, provides tools for semantic "information interoperability" as well as flexible communication, processing and display of geospatial data using browser-based software components. OGC Web Services (OWS) open up a whole new way for organizations to do geoprocessing. Users need to be sure that their vendors' XML and Web Services offerings conform to these OpenGIS Specifications so that their enterprises do not become stranded, separated from the main body of the Spatial Web.

The Benefits to Consumers of Open Standards

The benefits of adopting OpenGIS Specifications are like the benefits of adopting standards in other IT domains. Delphi Group study respondents ranked benefits as follows in response to the question, "Which of the following do you believe to be the single greatest benefit offered by approved standards in software development?"

- 1) Increases the value of existing and future investments in information systems (30%)
- 2) Allows the portability of data (26%)
- 3) Decreases the long-term cost of ownership for applicable software investments (12%)
- 4) Expands choices for software vendor alternatives (9%)
- 5) Enables vertical industry segments to unify trading practices (7%)
- 6) Provides a benchmark for software design (5%)
- 7) Enables approval of projects otherwise threatened by concerns over proprietary system lock-in (5%)
- 8) Enables leverage of existing skill-sets (i.e., does not require proprietary training) (5%)

It is likely that a survey of users and providers of geoprocessing technology would produce a similar ranking. The benefits of OpenGIS Specifications from the standpoints of users, data providers, vendors, third party software providers and integrators can be found at <http://www.opengis.org>.

In the Delphi Group study and in OGC, it is remarkable, and heartening, to see that vendors value standards as much as users. Nevertheless, buyers of geoprocessing software, data and services need to know what they are buying. A buyer needs to learn what the standards enable in order to evaluate the vendors' offerings.

What a Buyer Needs to Know:

At a minimum, before buying GIS (or remote sensing, Web mapping, facilities management, civil engineering, surveying, or other geoprocessing software), a buyer should be sure the sales person explains which OpenGIS Specifications are implemented in that software, and what they enable. Most vendors who offer products that implement OpenGIS Specifications and products that conform to these standards keep an up-to-date list of their "implementing and conforming products" on <http://www.opengis.org/testing/product/index.php>. To become familiar with the specifications and how they are used in designing a user organization's geoprocessing architecture, buyers should read the OpenGIS Reference Model (ORM) (<http://www.opengis.org/info/orm/>).

When several vendors are competing for a significant piece of business, the buyer can put together a pilot study to test interoperability. The buyer provides a list of requirements and perhaps data and a list of data sharing partners (active or potential) and invites the vendors to demonstrate how their software products interoperate and how they interoperate with the systems of the buyer's data sharing partners (assuming those systems have open interfaces). Such exercises provide a good opportunity to talk with data sharing partners about interoperability priorities.

Now that many OpenGIS Specifications are completed and many products implement them, OGC is working with its technology provider members to make the benefits of interoperability known to users. The Consortium's focus has necessarily been very technical up to this point, but, in cooperation with vendor and integrator members, the OGC staff is devoting more time now to education and outreach:

- The free "OGC User" email magazine highlights application stories that show how agencies and companies large and small are using products that implement OpenGIS Specifications to save time and money, reduce risk, and do things they couldn't do before. (See <http://www.opengis.org/ogcSubscribe.php>).
- OGC staff, consultants and members provide planning studies to help users plan procurements for open systems.
- New conformance tests and conformance branding logos have been developed to make it easier for everyone to know which products conform to OpenGIS Specifications.
- The public can attend official training classes developed by OGC and the Institute for Professional Education (IPE).
- And there's a wealth of information at <http://www.opengis.org> and <http://www.opengis.org/ogcNetwork.htm>.

This is an exciting time for users of geoprocessing technology. Just when IT budget constraints are at the worst point in decades, in a time when risk must be avoided and inter-organizational IT integration is imperative, the market is offering easily tailored, high performance implementations that work together across a global network that's already in place, at the lowest cost in history.

If you have questions about Open GIS or suggestions on other things OGC might do to help the user community to "buy open," please contact us.
OpenGIS, Open GIS, open GIS, Geography Markup Language and GML are trademarks of OGC.

-- end --

