OGC Standards in Teaching Interoperability

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In 1994, the history of OGC started with campaigning for interoperability of Geographic Information Systems (GIS). Then, at the end of the nineties, web-based services and mobile location-aware services came up—something also coined *Small GIS*—requiring the integration of spatial data and operations across the web. Currently, we are experiencing a phase exploring geosensor networks, and we are witnessing the advent of virtual globes, ubiquitous positioning, and community generated content. These are changing the industry fundamentally. These developments open the door to completely decentralized services that might interact and interoperate in an ad-hoc manner—such that Duckham[1] recently attempted to debunk the hypothesis that GIS are here to stay at all.

We witness here an impressive dynamic. Clearly the dynamic is facilitated by a seamless integration of data, operations and platforms that in such a heterogeneous environment can only be provided by standards. Interoperability brings a revolution not only into the established world of geographic information systems and spatial data infrastructures, but also of our way of thinking about geographic information. The dynamic induced has people talking about a *neo-geography*[2], and it also puts teaching of GIS programs into perspective.

So what are the challenges for education and training in this dynamic environment? Although much progress has been achieved at the technical and institutional levels over the last 20 years, interoperability is not an established field: it has not yet built up a persistent body of knowledge, which is apparent in the lack of textbooks or course materials. Universities recognizing this dilemma formed the OGC University Working Group, and some initiatives for sharing course ideas and materials now exist. However, the individual education environments and programs are different, and the perspectives on spatial interoperability vary significantly between, for example, Software Engineering[3], Artificial Intelligence, Spatial Cognition and Geomatics.

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[1] At the Spatial Sciences Institute Victorian Region Open Meeting “Spatial Mythbusters” from 17 July 2008
[2] http://platial.typepad.com/news/2006/05/what_is_neogeog.html
[3] See, e.g., the OGC Column in the September 2007 issue of GIM.

At the University of Melbourne, teaching interoperability concepts is long established in its Geomatics program. Subjects dedicated to integrated spatial systems, distributed spatial computing or spatial data infrastructures balance already traditional GIS subjects. I expect this trend to grow, also pushed by demand in the spatial professions. Teaching interoperability is research-led: lecturers' credibility relies on their activity in this area. (Our research has contributed to several OGC initiatives so far). Problem oriented components provide hands-on experience with OGC and other relevant specifications and standards, and classroom components provide background information and theoretical knowledge on standardization challenges such as conceptualization and semantics of geographic reality or its digital representations, integrating the ontologies of information communities, and policy and economic frameworks of data integration and sharing. Admittedly, due to the fast pace of progress maintaining these subjects it is unusually expensive and demonstrates a clear commitment to excellence in Geomatics. Graduates from the University of Melbourne are qualified to face the challenges of interoperability towards ubiquitous spatial computing and information, and they have the skills to explore, acquire and adopt new technologies quickly.