

## David Schell Speaks

# Open Geospatial Consortium

*As a founder of the OpenGIS Foundation (OGF), the OpenGIS Project, and the Open GIS Consortium, later re-christened the Open Geospatial Consortium (OGC), David Schell is a true visionary and a pioneer in the work field of spatial information.*

By Remco Takken

**I am glad we have this opportunity to discuss the current state of our industry. I understand you would like to clarify some issues that were mentioned in the 1Spatial article we published in Geoinformatics 5-2007. I think you feel that some of the complex issues you raised were not precisely stated and need some additional explanation. Maybe that's where we should start.**

I, too, am very glad we have a chance to do this interview. Yes, I would like take this opportunity to clarify some of the statements that were attributed to me in the coverage of my 1Spatial speech in your last issue. I'm afraid that in trying to summarize what I said for the article many of my ideas were reduced to 'one-liners' that did not do justice to the

complex issues I discussed and I want to correct any possible impression that what I said was meant to be critical or confrontational.

**The article, for example, mentioned your concern with the issue of 'liabilities' that could arise from the use of spatial information. Could you explain what you mean by 'liabilities' and what sort of problems you had in mind?**

Yes. My meaning concerned the growing popular use of spatial data and online maps -- that it is inevitable that situations will arise where someone's naive confidence in widely used but 'uncertified' or informally compiled data results in loss of life or property. When people develop and publish such maps in an informal, ad hoc, almost conversational fashion, they are most of the time not thinking of this. Publishers of map data, both recreational and professional, are finding their markets growing rapidly, and some customers are using that data not only for entertainment activities but for serious planning, assuming that the data can be 'fit for purpose' and totally reliable, even if the data is not intended nor tested by a credible authority for life critical projects.

I was surprised that the conclusion of the article seemed to suggest that I am concerned only about the part played by OGC standards in this regard -- referring of course to the fact that interoperability standards play a part in preserving the reliability of data across

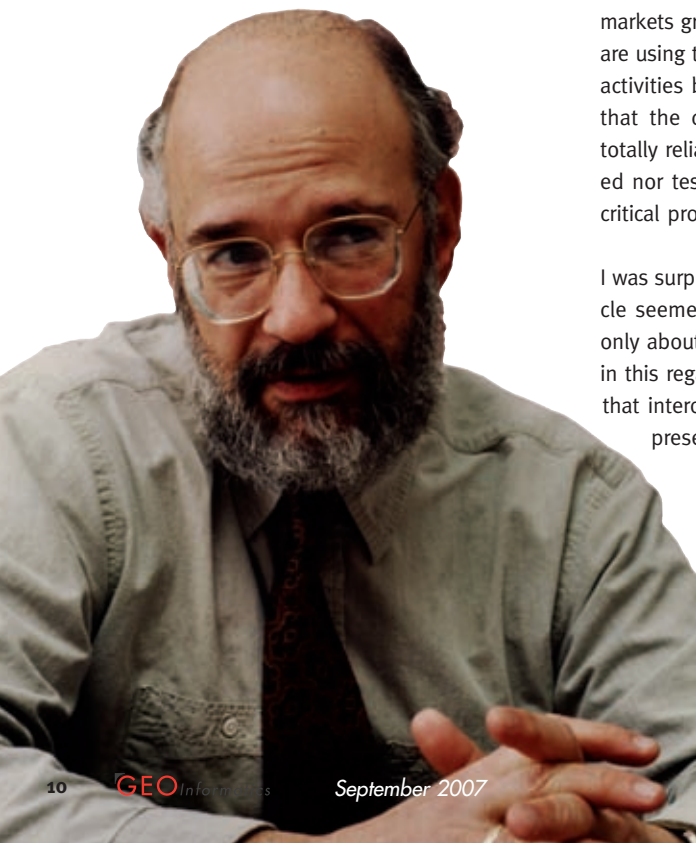
*David Schell: "it is inevitable that situations will arise where someone's naive confidence in widely used but 'uncertified' or informally compiled data results in loss of life or property."*

applications in the web. In fact, the potential legal liabilities I was talking about are an industry-wide issue, which to my knowledge has not yet been adequately addressed.

My main concern is that providers of software and data typically are not required to warrant their products, and frequently provide disclaimers which essentially amount to 'buyer beware'. But the problem is that it is no longer practical to think such disclaimers can continue to make suppliers or their customers invulnerable to liability in cases involving serious consequences. This is all complicated of course by the many ways in which value can be added to spatial data. The OGC's Geo Rights Management Working Group and Data Quality Working Group will bear in positive ways on this problem, but there is no panacea, and it would be good to see wider discussion of the issue. In a very real sense, we are all in this together. If I did indeed refer to "all hell breaking loose over this issue" I would not have been referring to myself or to the consortium -- I would most definitely be referring to the much greater visibility of spatial data as mapping enters the IT mainstream, and the fact that standards of usage and best practices which have traditionally been understood between suppliers and users will almost certainly become less clearly understood with the result that the quality of both data and spatial services will become less professional and perhaps less reliable.

**Another issue I know you want to clarify concerns the relation of Google's KML to OGC's standard for GML. Google has positioned KML to be a major enabler of popular mapping on the Web, and Google has recently joined the OGC. Could you comment on the meaning of this relationship and on the future of KML and GML in general?**

Yes, I think the OGC-Google relationship is very important, and there is no question that we share an interest in creating a coherent and productive standards environment for information and application interoperability that provides a basis for industry-wide sharing of geospatial information. The issue I have with the phrasing in the article is that I did not say, "We better integrate GML with KML."



'Integrate' is the wrong word to use here – its not a question of integration. The proper word is 'harmonization'. And I am not in the habit of dictating to the members. I did say that Google has joined the OGC and we are pleased with that, and we have - almost everyone has - an interest in the harmonization of these specifications for the purpose of developing efficient and consistent market practices. The two encodings are largely complementary, so we don't expect major difficulties. But the requirement to harmonize such specifications is entirely a member issue. I think it would be a good thing – but I am entirely ready for the market to do what the key players think is best. Oh, and in relation to this it was stated that Microsoft had joined OGC when in fact my comment related to our discussions with Microsoft concerning their obvious interest in this issue, as they are very likely to wish to participate in the harmonization process to ensure an industry-wide standard of this sort.

**I believe you did say that you were concerned that the industry was moving so fast.**



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That's true. When the market is developing very fast – when it is exploding as it is now with thousands of new developers and millions of consumers, there's a danger that because of commercial pressures there won't be enough time to develop standards before the market is populated again with non-interoperable products.

Different companies naturally tend to put forward different technology approaches for profit, and we all know that profit doesn't always wait for an orderly standards process, so 'stovepiping' develops. Our present situation presents challenges, the kind of challenges that it has taken us 15 years to overcome in evolving the GIS market from its proprietary business models to participation in an open environment of Web services. I'm not at all pessimistic, but I think that one of our greatest challenges is to motivate technology users and providers to be concerned enough about this issue to stay engaged in the standards process, no matter how long it takes to deal with the accelerated change we are experiencing. With the new wave of consumer mapping coming into the market – characterized by lightweight processes, different objectives and a focus on advertising and consumer issues – we face the challenge of integrating a new style of development and geospatial processing into a thirty year tradition of a highly focused and intricate technology shared by the major GIS companies as well as the research establishment. The concern I expressed actually dealt with the requirement

for building on the richness of that tradition in creating the new environment of lightweight spatial processes which characterize the new markets – a concern that I link back to the issue of liability and the need for people to be able to rely on the accuracy of their data products. There are two different cultures to consider which are now characterized on the one hand by traditional GIS professionals and on the other by fast-moving mashup enthusiasts. The challenge for the Consortium is to embrace and help enable the new style of development while maintaining the value that's already been produced.

### You referred to the GIS market as a 'boutique market'?

The GIS market was, in its beginning, a relatively small, specialized market for a very particular group of application developers and researchers that had not yet come into the IT mainstream – this sort of market is often, and non-prejudicially, called a 'boutique market'. The point is that today's market for geospatial information is not the sort of 'specialty' market that it was in the 80s, when spatial information was only accessible by means of proprietary commercial applications or by government and university research laboratories. Now we have the Internet, and a much larger world-wide market of open resources. Of course the pioneers of the geospatial field characterized and promoted the market in the beginning. It's in the nature of things no matter what you call it, and it was a closed market. The point is that we now live in a world of open standards and active sharing of services and data – one that is getting to be so large and diverse that it definitely no longer serves just the needs of a few specialty shoppers.

### So, looking forward now and taking a wider view of things, what would you say will be the main purpose of the OGC as we look at the future of geoprocessing in general?

The OGC serves as a clearinghouse, or an organisational backbone for those interested in geographic information. Its primary 'raison d'être' is to ensure that spatial information is used freely. By that I don't mean without

pay, but in a barrier free, easy, accessible way in the IT-community.

Actually, although from me it may seem like a contradiction in terms, it may be best not to emphasize standards development exclusively when talking about the work of the OGC. Our goal is not just making standards, but to help create successful business models that make the use of geospatial information ubiquitous. Clearly the standards that we develop are a key component of getting to a successful business model. But standards are transitory; they change with the evolution of technology. It is much better to refer to OGC as an organization dedicated to the reconciliation of user requirements with the development community – standards are the vehicle for ensuring that the two cooperate and work together efficiently.

In fact, a key reason for the existence of the OGC is to provide a forum in which competitive organisations that have a very significant interest in the development of the geospatial market can meet and discuss issues that affect the user community. They have the opportunity, in a civilized and socially responsible context, to develop norms of behaviour and best practices, governing all uses of spatial information in a responsible way – a way that serves the public interest.

### You have spoken in the past of "demystifying GIS". What does that mean and why is it important?

That's right. We want to demystify GIS. We want people to understand that information about space or location is a necessary dimension of any kind of information processing. It's very unfortunate that for so many years there was resistance to breaking down the barriers around the GIS market. For a long time, the GIS market seemed to enforce the idea that there is an exclusive relationship between data type and application. This made



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it impossible for GI and its various data types to be used more generally both to grow a healthy and robust business community and to improve conditions for the benefit of mankind. The non-interoperability that was perpetuated by this situation contributed significantly to society's lack of preparedness for getting and delivering the full benefit of spatial information in dealing with such critical life threatening issues as climate change, disaster preparedness, and agricultural development. For years it was 'non-interoperability' that was the reason for the artificially high price for spatial data and services, and the resulting high cost of building complex systems that require efficient accessibility and usability of spatial information.

### What are your views on national governments' role in providing geospatial data?

If the OGC has done one thing to be proud of, it has been the democratisation of the spatial information process. The OGC has promoted the creation of an open market process that prevents the growth of limiting, monopolistic tendencies involving some of the most vital data on which people's lives depend.

Some kinds of data and information should be funded by the public sector, because they are so fundamental to public issues and the welfare of mankind. And I do think, to a degree, that spatial data should be looked at as a necessary commodity, like water. There's such a great dependency on it. The creation and maintenance of spatial information should be viewed by governments as the same kind of investment as any other infrastructure on which people depend, like any other government service which is provided for the safety and the welfare of its citizens as a result of informed policy making.

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#### Do you think that governments are now in general meeting this challenge?

In many cases, commercial opportunism and the lack of good government policy regarding these issues have prevented an appropriate assessment of the infrastructure value of spatial information services, and this has done an injustice to people around the world. The result of this condition is that there is extensive disagreement about the state of the world's natural resources and climate, and a dangerously inadequate capability to assess much of the world's aging built infrastructure. With poor geospatial information it's difficult for policymakers to come to an agreement on solutions regarding maintaining a well-ordered society, which could otherwise be obvious.

#### But with INSPIRE and other programs, don't you find that this is changing?

Yes, the situation does seem to be improving. But geographic information resources are still, in my opinion, generally under-funded by government, although more policymakers are beginning to take notice of the requirement for abundant, easily discovered, easily evaluated, easily accessible, and easily used geospatial information. The Web has been very helpful in forcing the review and modernization of information systems in government agencies around the world, and the idea of loosely coupled open systems has gained

widespread acceptance. Such systems require, by definition, that subsystems connect through open interfaces. And this, of course, is what the OGC has been demonstrating for more than ten years with surprising success. In Europe, INSPIRE calls for the use of OGC standards. The Canadian Geospatial Data Infrastructure, a program shared by multiple agencies, is based on OGC standards throughout. In Great Britain, the Ordnance Survey's OS MasterMap supports distribution as GML. The US Census lists TigerGML as a future Census Bureau product, the US national data portal (The National Map) is based on OGC standards, and OGC standards are written into the US Federal Enterprise Architecture. There is widespread adoption of OGC standards in Australia. GML is specified in electronic-Government Interoperability Framework (e-GIF) best practices in the UK, New Zealand, Denmark and Hong Kong. There are many others, and the list keeps growing.

#### You began by speaking about new and difficult challenges in the industry. What would be the role of universities in meeting these challenges?

I think it's incredibly important. Now that information about space and time is easily provided as a dimension of any kind of information processing, we are on the verge of something truly exciting. Building on rapid advances in bandwidth, CPU speed, miniaturization and storage capacity, extraordinary

things are happening. You see it in consumer devices like the iPod, in Web services, in online virtual reality games and in all sorts of places. The issue for academia is to understand and lead the convergence of these technologies with spatial technologies.

In my view, this should be seen as a new science. The rapidly emerging convergence of modeling, semantics, high performance computing and geospatial technologies is delivering new modes of understanding and inquiry that need to be codified and brought together in a supportive academic environment. Without a concerted global effort of this sort, we will miss the opportunity for the fullest possible use of geospatial data and services in the rapidly evolving ICT environment.

#### Doesn't the OGC provide such a supportive environment?

Standards developers must, by definition, seek "common denominator" approaches, approaches that are 'as simple as possible' for good practical reasons. However, this goal frequently runs counter to the need to have standards that are 'as complex as necessary' to maintain rigor in scientific specialties. The world faces difficult challenges that depend on science and decision support being radically empowered by information and communication technologies that have a full measure of spatial enablement. The standards world, the commercial world and the academic world need to work together to make this so.

#### Thank you. We've covered a lot of ground today! I look forward to our next interview.

You're welcome. Thank you for the opportunity to bring these issues to your readers.

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