

JANTIEN STOTER BRIDGES THE GAPS

Geoprofessionals Should Look Outside Their Own Box



Having specialised in 3D GIS, Jantien Stoter has already taken her next leap and is now studying the concept of 5D GIS. Meanwhile, she realises that there are still some gaps to bridge between technical sciences and practice. A highly technical person herself, she shares her views on which directions geoinformation professionals should be looking in to keep the field alive. She recently finished the first phase of a pilot on a 3D standard for The Netherlands' spatial data infrastructure involving nearly 70 stakeholders. The second phase is currently examining how to put the results of the first phase into practice. GIM International met up with her to learn more.

Can you tell us more about the main objective of the pilot on the 3D standard for The Netherlands' SDI?

While 3D-GIS techniques are quite advanced, we noticed that many public bodies are still reluctant to implement them, despite the very evident need - especially in highly urbanised areas. So we wanted to create awareness of the possibilities of 3D, both among specialists and non-specialists. 3D is not as difficult or expensive as people think. First of all, we wanted to show those merits of 3D and how the merits could be exploited. We succeeded in that objective. On top of that, we wanted to establish a standard for 3D data, since we knew that a 3D standard was needed to push 3D developments further - a 3D standard provides a solid base for implementation and innovation, by both governments and private industries. We accomplished that goal too.

Is your new 3D standard OGC compliant?

Yes, although initially the pilot participants were a little bit hesitant to comply to CityGML, the OGC standard in this particular field. We felt that there was still a considerable number of hurdles to overcome in order to implement this international standard within our existing 2D standards. We researched other standards in the domain of CAD and GIS as well, but identified the OGC standard CityGML as the best to adhere to.

Despite your decision to comply to this specific standard, what challenges are associated with the use of CityGML as the standard for 3D data?

Every standard is generic. Further agreements are necessary to assure optimal operability. In our case, we had a need for precise object definitions and geological descriptions of the subsoil. We also wanted to provide more clarity regarding when and how to apply the different levels of details. We have shared our experiences with OGC and we are actively contributing to the new developments around CityGML. The fact that the pilot network succeeded in becoming a valuable discussion partner for OGC was a great result for the whole process.

Are developments in the field of 3D in The Netherlands ahead of the game?

Since the concept of 3D is studied everywhere, lots of countries are quite far in terms of developing concepts. Two things make this pilot unique in the world: firstly, we were able to reach national agreement on a set of requirements, and secondly, we are building on top of our existing 2D models. The developed 3D standard integrates OGC's CityGML into a new version of the existing, semantically rich national 2D Information Model on large-scale (highly detailed) Geoinformation (IMGeo). IMGeo 1.0 contains 2D object definitions for large-scale representations of roads, water, land use/land cover, bridges, tunnels etc. Since the new version of IMGeo will be completely integrated with CityGML, this IMGeo 2.0 will also facilitate 2.5D and 3D geometries. This is a major step in supporting the practical use and reuse of 2D and 3D information and further developing from 2D data into 3D data in the future. In recognition of this achievement, the 3D pilot NL was awarded the first OGC 3DIM award!

Evolving out of the pilot you led, what could be a quick win for those countries that want to start implementing 3D?

It is easy to name two quick wins. Firstly, it is definitely very important to reach agreement with as many stakeholders on a national level as possible - research institutes, governments and commercial parties. 3D is still complex, which makes it risky for individual parties, both profit and non-profit, to take the plunge and invest in 3D data, techniques and applications. A broad collaboration creates a basic level of certainty for parties. Once there is national consensus on a generic 3D approach supported by a 3D standard, the risk diminishes. Secondly, by connecting to international developments and organisations such as OGC, you can tap into a useful source of expertise. Moreover, by complying to international standards, the choice of software will be wider in the end.

You've talked before about the technical gap - a gap between what is going on in practice in national cadastre and mapping agencies and other governmental bodies and the technological possibilities. How can we bridge that gap?

By organising and exchanging knowledge. This should be done at a national level; governments should avoid having every municipality or other lower-level public authority developing something for themselves. And by working together in using 3D techniques to identify specific needs. In our 3D pilot, we identified these needs through consulting and discussing with users on a regular basis, presenting them with our ideas for products or solutions and asking them what they thought of them. That clarified the link between practice and technology.

You are project leader within EuroSDR, the European organisation for Spatial Data Research. Is there enough interest in, and attention being paid to, geoinformation in the EU's large-scale digital projects?

It is not easy to make Europe sufficiently aware of the spatial component, and yet it is so important. EuroSDR, and also EuroGeographics, are working hard to put geoinformation on the digital agenda in Brussels. Therefore it is heartening to see the significant achievements being made, such as the INSPIRE directive, the considerable investment in Galileo (and ESA), the cadastral projects in 'new' EU countries and the EU-funded project of Land Parcel Identification System (LIPS) for data exchange in agriculture. But I have to admit, it is not easy.

Why is it so hard for the sector to convince Europe of the added value of geoinformation?

Geoprofessionals and their societies are not always as political as they should be to create maximum effect; they are often technicians who are used to reasoning based on the content rather than the politics. Also, I guess our field is not an easy sell. We are working on projects to achieve things that people assume are already possible. Take 3D GIS, for instance: outsiders find it hard to believe that it's still necessary to invest. Citizens, and probably policymakers too, are exposed to a lot of 3D material through mainstream applications in games and on the internet. How can we explain to them that the techniques used in games, for instance, are not advanced enough to be used in complex administrative/registration processes and research that we are all familiar with?

This is your chance to convince them, the policymakers, of the necessity of making investments in research and creating room for geoinformation in larger-scale, horizontal, digital projects!

Most information is related to location. If you succeed in bringing all the information about one location together, it's possible to make the right decisions based on the right information. Plans for large building complexes, multi-storey car parks and infrastructural projects often run up financial losses because geoinformation has not been part of the process. In addition, the major challenges of today's world - limiting carbon emissions, developing renewable energy and drinking-water resources, restructuring densely populated areas - can only be handled properly if the management and use of geoinformation receives sufficient attention.

Do geoprofessionals need to acquire better communication skills to promote the benefits of geoinformation?

Geoinformation specialists should be careful not to isolate themselves. Sitting in a corner, contemplating how special we are, is not the right attitude. If we are overtaken by other sectors with techniques that are even further developed than ours, we should consider them, engage in discussions with those concerned, and try to incorporate them. Google Maps is a prime example; they have shown that they can develop something that is impressive and that works as well! They have generated an enormous market, so we should make use of that. Geoinformation is a serving discipline. Without applications, we're nowhere. Geoinformation in itself is never a goal - it's a tool that we need to use as it fits.

One more thing. You've recently embarked on research to take 3D further to 5D. Can you explain?

I want to add two more dimensions to X,Y and Z, namely time and scale. It would be wonderful if you could have all the information on a location throughout time integrated into the model. That is one dimension. The other one, scale, is even more complex to grasp. Of course, the concept of scale is very well known to the geoinformation technologists, but integrating it as an extra dimension in combination with the others is a new idea. The Netherlands Organisation for Scientific Research gave me a grant to start a new research group on this topic. As you already mentioned, we've started the 5D research recently. It's exciting, and I will keep you posted.

(Image Courtesy: Guus Schoonewille)

