

GIM INTERVIEWS MATTY LAKERVELD, BENTLEY GEOSPATIAL CENTER OF EXCELLENCE

Interoperability and Integration between CAD and GIS

Bentley is offering a new software environment for managing spatial data, saying "Unlike a GIS, which requires data to adhere to a strict relational data model, Geospatial Management gives spatial context to drawings, maps, models, images, and business documents in their original intended form". We interviewed Matty Lakerveld, director of the Bentley Geospatial Center of Excellence to give some hints on the benefits of this environment.

Everyone today is talking â€˜geospatialâ€™™. What happened to CAD and GIS?

CAD focused on the creation of data, and GIS was about the use of data, such as analysis, presentation and mapping. Today CAD packages are moving towards GIS, whereas GIS packages have incorporated CAD functionality. So there has been an increasing overlap. In the last decade, raster formats have become increasingly important, and raster and vector formats have become fully integrated. They are now being used simultaneously. Furthermore, support for different data formats and coordinate systems traditionally used within the field of GIS is now also available in CAD. â€˜Geospatialâ€™™ is the new term to cover this whole domain. It ranges from professional acquisition in the field to consumer applications like positioning via mobile phones and car navigation. What has become important is the ability to manage all this data in an efficient way, use it in a GIS, and publish the data on many channels such as internet and mobile phones. Both the workflow and technological domain have become much broader: data is made available to larger domains, such as an office environment and SAP systems. We see spatial information becoming a part of enterprise information systems. That is what geospatial is about.

Where does Bentley focus: on the creation of data, i.e. the CAD side or on its use, the GIS side?

Bentley has always been on the data-creation side but is currently shifting towards maintenance and data integration; thatâ€™s why we offer a solution for the management of geodata. We are advocating the idea of an information life cycle covering the whole process from acquisition to maintenance of the data. We support this life cycle with all data in native format, supporting Oracle, ESRI and SAP databases, as well as file-based data. With that we have all data spatially indexed. Bentley has translated this vision into Geospatial Management architecture, which is in essence a spatially indexed information management environment. This means that every file inserted into this environment is stored in a large database, ranging from office documents like Word and Excel files to CAD drawings.

Editorâ€™s Note: It seems that Bentley, despite its strong focus on existing customers, has delivered a rather generic technological foundation for enterprise-level spatial data infrastructure (SDI). To reshape the description quoted in the introduction, the solution may be called an â€˜infrastructureâ€™™ and the literal definition of the SDI concept paraphrased from the global SDI cookbook. â€œBentley Geospatial Infrastructure provides a basis for spatial data discovery, evaluation and application for users and providers at all levels of an organisation. The word infrastructure is used to promote the concept of a reliable, supporting environment, analogous to a road or telecommunications network, that, in this case, facilitates the access to geographically-related information using a minimum set of standard practices, protocols, and specifications.â€ (Source: www.gsdi.org)

Are geodatabases included?

Only file-based data is inserted into the managed environment. Everything at database level is managed using a connector strategy. Meanwhile, no changes are made to the data, neither to the files nor to the connected databases. For example, this environment offers the possibility to overlay a shapefile, an Oracle spatial database and an ESRI ArcSDE database, to edit any of these, and to write the results back in the original format. This means that on the data side, this architecture is very open. At the front-end we offer products that make editing possible but also read and write about fifty native vector and raster file formats, including ESRI shapefiles and Auto-CAD files. It is also possible to publish vector, raster and tabular database info to the internet, including data from Oracle and ESRI spatial databases. In short, it is our strategy to place an inter-operability and integration layer between the CAD and GIS environment.

Is there also support for the data management cycle?

Yes. Our architecture supports configurable workflow management. The workflow is managed by forms whereby status changes are triggered by e-mail, which is sent to the persons required in the workflow. In these e-mails references are made to data in the Geospatial Managed Environment, which means no data copies ever float around. Everything is presented spatially and we make use of the locking mechanisms of ESRI or Oracle spatial. So the user can check out a file to take it outside on a tablet PC, make adjustments in the field, come back to the office and commit these changes via an e-mail-based approval process.

Please explain the terms "Geospatial Explorer"™ and "XML Feature Modelling"™.

Geospatial explorer is an intuitive 'geospatial view' on all documents and geospatial data. All data is presented using a map viewer, either in a Web environment via a browser, or via a Windows application. One of the nice features is to index office documents spatially by dropping them on top of a geodata file. In Geospatial Explorer the Word document now belongs to this same location. This can be very useful in project organisations. If a user wishes to draw or edit object-based instead of file-based, something has to be arranged to make this happen. This is where XFM comes in. It is an XML object description within the Bentley DGN version-8 file format. Although XML is not specifically intended to be a native data store, it is our preferred choice for standardised data exchange. This is because we want to communicate at object level within our architecture. For this communication we have chosen an XML message format. To shift to an object-oriented communication with ESRI and Oracle Spatial we needed something to define, store and exchange objects, and that is XFM. The result is the possibility to work object-based from Micro-Station workstation.

Customers may prefer to use Oracle Spatial as the data store rather than Bentley DGN files with XFM.

Yes, this is indeed legitimate if you are a new client. XFM can be seen as a tool for existing clients to start working in an object-oriented way. Our starting point is that we are not specifically good at data analysis or visualising complex data relations, but that we are very good at creating and maintaining data and making this possible. We consider this a good market because the problem of data maintenance is a given fact; it is a real problem within organisations. However, it has not always been regarded as such.

<https://www.gim-international.com/content/article/interoperability-and-integration-between-cad-and-gis-2>
