



Integration in Action

Rushmoor Borough Council shows that CAD and GIS interoperability can work

When Autodesk held a series of seminars for UK local government officers recently, over half of those asked cited the gulf between CAD and GIS as one of the major issues in their working life. One called it “the hard hats versus the bobble hats” – but it was clear that the divide had both practical and cultural implications and was the cause of much loss of productivity, inaccuracy and repetition.

Local authorities use geospatial data for a growing number of reasons; for monitoring the frequency of accidents, recording population trends, assessing school travel routes, managing traffic flow and parking, asset management and planning to name but a few. With many of these applications, geospatial information needs to be dovetailed with information about buildings and infrastructure, usually held in CAD.

This creates a technical stumbling block and costs money. In today’s competitive environment with shrinking budgets, it’s expensive to manage multiple types of software, convert data, synchronise systems and keep design and operations connected.

“At the moment, there are multiple approaches to the same problem,” one section manager told us. “Even if one discipline is doing the same thing, the same way, you’ve got 13 other ones doing things in different ways.”

Part of the problem lies in the niche nature of both systems. GIS is seen as sophisticated and experts tend to be highly-qualified and highly-specialist. Over the years, systems have become robust and refined. Users can take advantage of powerful, spatial databases, perform spatial analysis and generate compelling, intelligent maps.

However, it has always been a closed shop to engineers.

On the other hand, CAD experts consider GIS lacks the precision needed by engineers. CAD technology has developed dramatically too. Now, engineers have intelligent, powerful graphical tools at their fingertips which enable them to produce highly-detailed designs of buildings, bridges, machinery and utility assets – and analyse and test their performance.

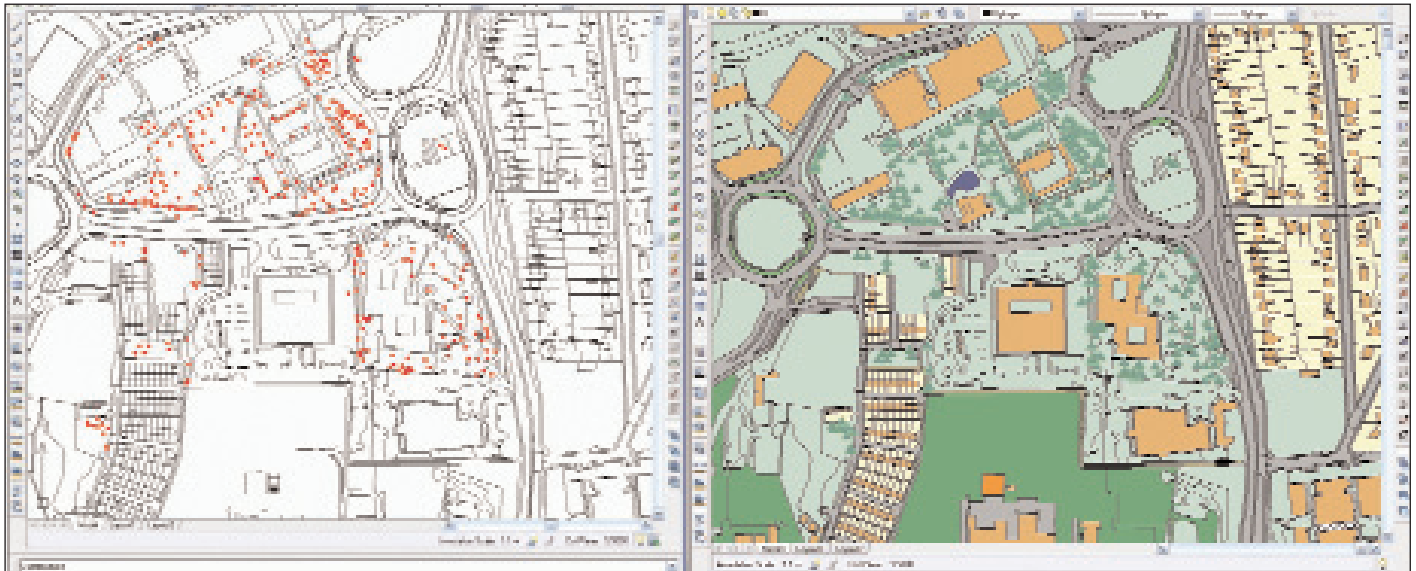
Historically there has always been a knowledge gap between the two. This is made worse by the fact that both tend to be departmentally-driven and often fall outside the corporate IT remit. Consequently each discipline can be surrounded by smoke and mirrors designed to deter anybody stepping into their well-protected territory.

And while both CAD and GIS teams may pay lip service to integration, CAD experts think that they should “own” any integrated solution and vice versa.

However, current IT trends in recent years are at last influencing the situation. For example, enterprise-style application such as electronic document management systems and SAP are encouraging management teams to think about information in a holistic way and this mood is forging a path for further integration and centralisation.

Consequently, there are signs that teams are putting their fears aside and an increasing number of organisations are putting a joined up single source of mapping data onto their wish list – even if this involves CAD and GIS teams working as one department.

But, to do this, GIS and mapping functionality must be brought



into the precision data capture, creation and maintenance tools offered by a CAD environment. And GIS must be able to access and work with object based design information stored in CAD drawing fields such as DGN and DWG without losing precision through data conversion.

One local authority pioneering the single source model is Rushmoor Borough Council. Situated around 35 miles from London, the borough comprises the two Hampshire towns of Aldershot and Farnborough.

Home to a number of well-known global companies, to the Army at Aldershot, Farnborough Aerodrome (site of the Farnborough International Airshow) and cutting edge research facilities, the borough is a bustling and thriving area serving a population of around 91,000 – a good mix of business people, residents and service personnel.

There is, therefore, a big call for the council's geospatial data for a complete range of applications from looking after the council's public buildings and traffic planning to monitoring noise levels from aircraft flying in and out of the aerodrome.

However, the council's problem was one of sheer diversity. Because of the way that geographical systems had grown within the authority, there were a number of different, separate systems. ESRI ArcSDE was a key part of the strategy, but other parts of the organisation used other software including AutoCAD Civil 3D. This meant that data could not readily be swapped between departments. Plus, developments in one area were not necessarily updated in the data sets of other departments.

In all it held around 400 active spatial data sets and had around 250 users wanting access to this information. It's no surprise that the council's aim was to move to a position where every user could con-

Sponsored By:

Local Government Regional Workshops The Offshore Environment and Marine Spatial Information

- Tuesday 30 September – Cambridge
- Wednesday 1 October – Pulborough
- Friday 3 October – Exeter
- Tuesday 7 October – Hull
- Wednesday 8 October – Newcastle
- Thursday 9 October – Lancaster

Focusing on Local Government and NGOs' increasing involvement in marine spatial planning and management.

Exploring the use of GIS and marine spatial information to help secure better business efficiencies and improved decision making.

For more information and registration contact
 E: events@seazone.com
 T: 0870 0130 907
 W: www.seazone.com

FDO regardless of the format – Graham Stickler, 1Spatial

The Open Source Geospatial Foundation (OSGeo) introduces itself on its website, with the words: “The Open Source Geospatial Foundation has been created to support and build the highest-quality open source geospatial software. The foundation’s goal is to encourage the use and collaborative development of community-led projects.”

This kind of collaborative development has resulted in a number of OSGeo projects and 1Spatial have made use of several of the resulting technologies. The open source technology most widely utilised by 1Spatial is FDO (Feature Data Objects) Data Access Technology. FDO is an Application Programming Interface (API) for manipulating, defining and analysing geospatial information regardless of the format in which it is stored. FDO supports a variety of geospatial data sources as well as reading additional format libraries such as the Geospatial Data Abstraction Library (GDAL/OGR).

1Spatial has utilised this FDO technology to enhance the usability of its Radius Studio product. Radius Studio is a platform that facilitates the integration and quality control of geospatial data by checking those data against defined business rules. It enables users to rapidly analyse scattered geospatial data to establish its operational purpose and facilitate its reuse by providing data mining, rules-based conformance checking and data cleaning capabilities.

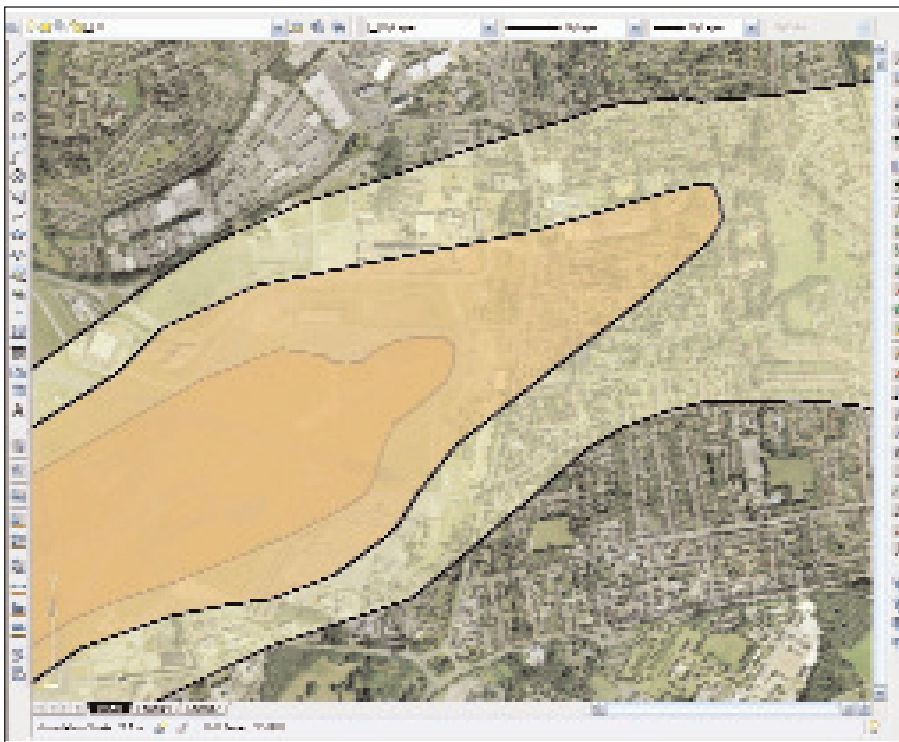
This solution is simple to deploy as the embedded FDO enables Radius Studio to access and analyse multiple native data formats without translation or duplication. As a result, the solution delivers

significantly enhanced value-for-money to organisations, ranging from data management consultancies to the largest geospatial dependent organisations. The analysed data can then be used in integration projects where spatial data in different formats is fed into an Oracle database, which generates a single corporate repository of accurate, accessible data that can be considered ‘one source of truth’.

With FDO, Radius Studio can reach geospatial data in various formats without having to extract it, meaning the solution offered can extend beyond a single repository, offering 1Spatial customers a large degree of flexibility.

FDO is not only useful from the customer’s point of view but also has direct benefits for 1Spatial; Steven Ramage, 1Spatial’s Business Development Director said “Spatial data is complex and developing spatial data solutions is time-consuming. However, one developer integrated FDO into our solution in only about three weeks. For customers, it’s simple and seamless. They can start improving data from multiple sources quickly, and that advantage is helping us to reach new customers.”

1Spatial’s CEO, Mike Sanderson believes that the true value of open source technology lies in the community that develops around it. He also believes that such technology can make a valuable contribution to the development of a knowledge economy “Particularly in the context of the EU and the INSPIRE Directive, sharing source code can make an effective contribution to the development of a knowledge economy to the benefit of all involved.”



connect to this data, confident that they were working with the most accurate, up-to-date, spatial information available.

The key to this lay with software which provides a bridge between CAD and geospatial information. Further by conforming, where possible, to the evolving Open Geospatial Consortium (OGC) standards it provides a simple and efficient way to share information dynamically, allowing each user to work with the tools that suit them best.

The solution was delivered without any major upheaval. It was simply a matter of establishing the correct connection to the main GIS datastore, then rolling it out across all the CAD workstations in the council.

Now, users of both AutoCAD and the council’s ESRI GIS share a common data set. Each one maintains access to their preferred tools

and way of working, but now they are all working with the same single map information based on the Ordnance Survey MasterMap for the area.

How each officer uses the data depends, of course on the task at hand. The underlying OS MasterMap data can be combined with aerial photography and then the appropriate geospatial data added on further layers. This could be noise contours or monitoring data for environmental health – or it could be road markings or planned new building access for the highways department. Whatever the application CAD and ESRI data work seamlessly together, thanks to Autodesk’s Feature Data Objects (FDO) technology.

“The key point is that everyone is looking at the same information,” says Richard Greaney, Rushmoor Borough Council GIS officer. “This goes a long way to eliminating errors. It is also a big efficiency saving in GIS management. Keeping multiple systems up to date meant multiple data loads. Now we just update once; everyone looks at the same central data.”

He reports that it has also boosted collaboration. Previously CAD users – for example building control, estates and traffic – were isolated from

GIS users. Now they are part of the same user group. The council is actively encouraging them to promote the data they are creating to other users, particularly as they get used to the powerful way that GIS can help them.

And the evidence is that the dreaded swallowing up of either CAD or GIS by the other just hasn’t happened. Instead each department finds the blending of the two has opened up horizons presenting new opportunities for the future.

“This is just the start of our potential geospatial/CAD usage. And, most important of all, the users are happy with the set-up. They see this new approach as a positive step,” concludes Greaney.

Dominic Jukes, Autodesk