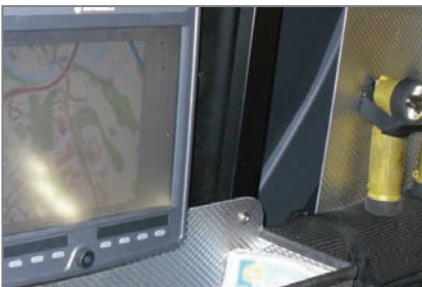


Safety First is the watchword for Strathclyde Fire and Rescue

If you are about to burst through a door and enter a burning building, you would really want to know what is behind that door - the layout of the building, the location of stairs and passageways, and anything inside that could cause a danger to you, or other people.



Top: Model of a Glasgow Department Store
Above: VDMS Screen at rear of Fire Appliance

That is precisely what Brian Sweeney, Chief Fire Officer for Strathclyde Fire and Rescue (SFR), thought several years ago, following a fire tragedy in a block of flats in Glasgow. Watching the then classic computer game, Doom, he wondered why the same ability to visualise a building's layout couldn't be set up to assist fire crews. Without delay he set up a department to produce the plans for high risk buildings to provide better support to fire crews within the Strathclyde area – actually 10 local authorities covering a vast 13,600 square kilometres – from Oban to Turnberry and including the islands of Islay and Bute. Indeed SFR is one of the largest fire and rescue services in Europe.

Much of the early work used surface based CAD software to create simple 3D architectural models of buildings from 2D plans supplied by the region's Fire and Safety Department. Finding this technology too cumbersome SFR decided to implement GRAPHISOFT® ArchiCAD®, which eliminated the need for multiple CAD software but, more importantly, its BIM (Building Information Modelling) capabilities provided accurate and co-ordinated data to increase clarity on SFR's touch screen VMDS system (Vehicle Mounted Data System).

When we started to look seriously at the problem, ArchiCAD offered higher resolution capabilities, better building tools and it was easier to use to manipulate the images we wanted. We were also able to discard a number of different software and keep the model within just one CAD application.

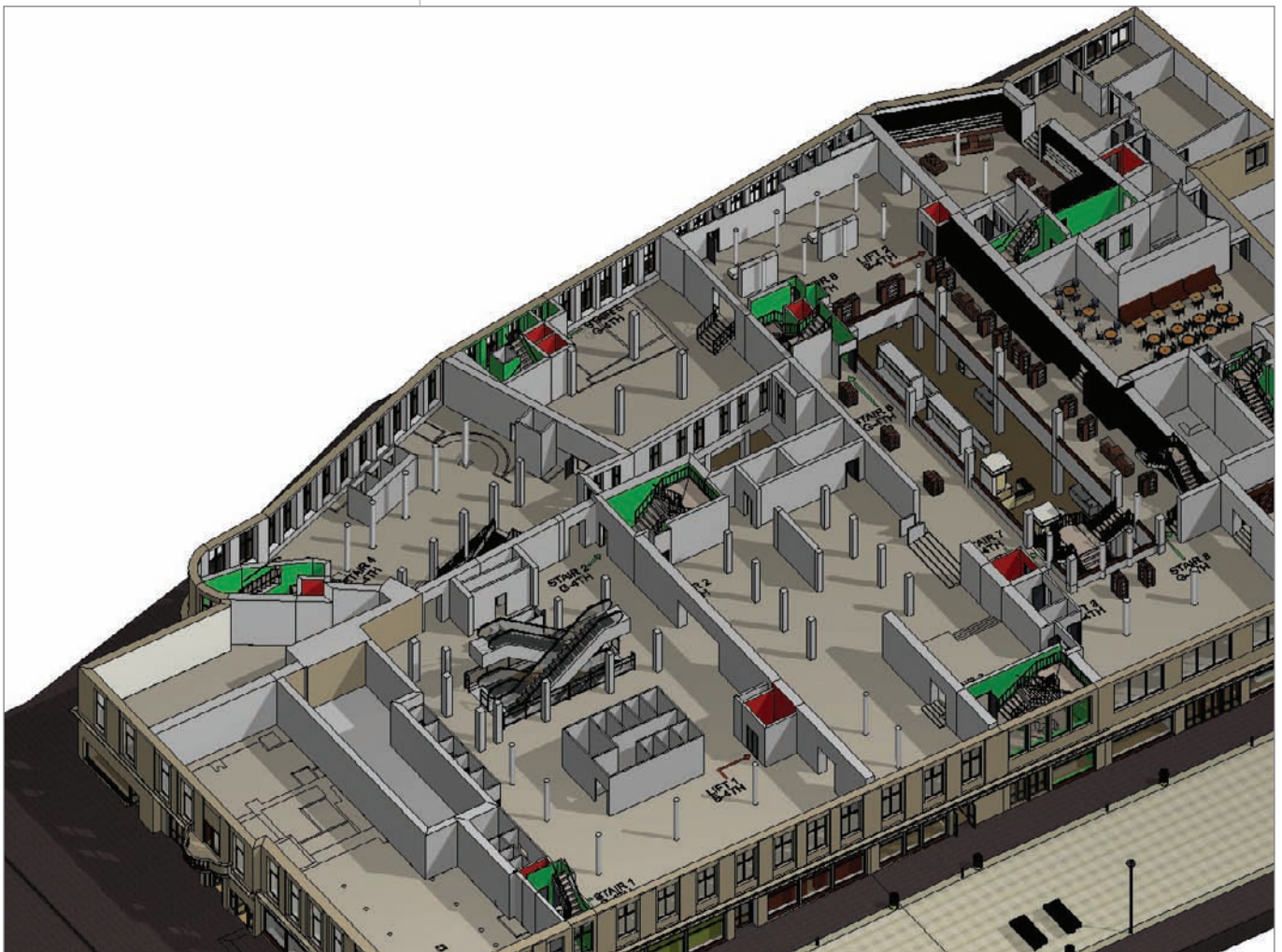
*John McNicol
Strathclyde Fire and Rescue*

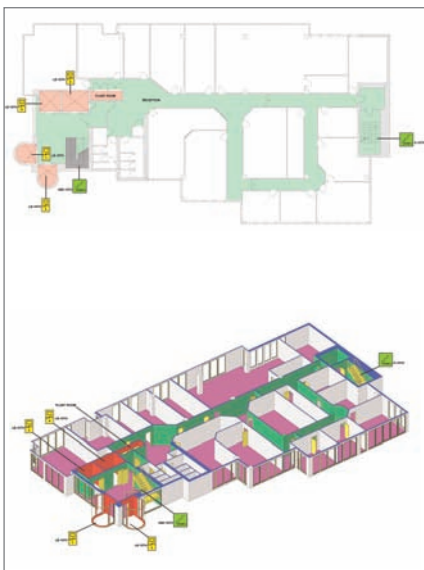
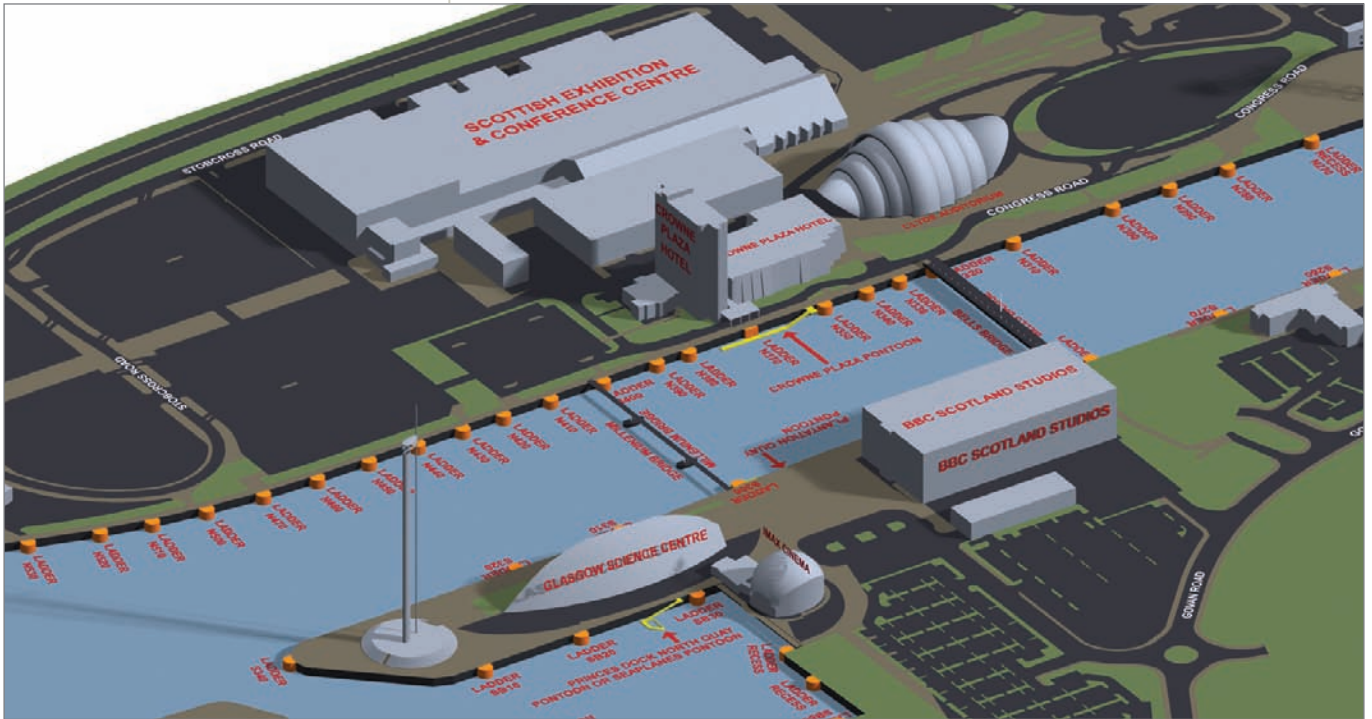
The BIM models that SFR produce are regularly updated, and stored on hard disk on each of 200 fire appliances. To date this includes 7,800 buildings and 26,000 plans. Called out to a fire, a Mobilisation Summary triggers each operation in the fire vehicle, enabling the crew to upload the appropriate building views and plans to the display. If the crew see an item which might prove dangerous to the operation – a symbol, perhaps, showing a specific chemical storage container – they can bring up detailed operating procedures for dealing with the hazard.

To enhance visualisation a unique colour scheme has been developed to make the system more effective – red, purple and green – which has proved to be very visible and clear under the street light conditions that crews often have to work in. The team has also put great emphasis on increasing the level of symbology attached to the models, highlighting hazards, and producing consolidated models that include the civil infrastructure and surrounding buildings.

Under the leadership of John McNicol, the SFR CAD team are now looking at other ways of displaying the models – such as incorporating them into 3D PDFs, or enabling them to be viewed, in real time, with GRAPHISOFT BIMx – a virtual building explorer. BIMx also increases the value of the models as they can be used pro-actively to help train firefighters, or to enable crews to familiarise themselves with buildings, such as sports stadia, prior to major events.

Below: Glasgow Department Store – Ground Floor Detail





Top: Access Points on a section of the River Clyde
 Above: Plan and 3D views highlighting egress

Having models of major structures in the very large Strathclyde area also opens up other options, such as accident enquiries with the ability to support Inquests with information from the model. Typically, accompanied by photos, fire service investigators are able to show what damage has been done and how this was likely to have been caused.

SFR has continued to add more symbology and colour, has enhanced building plans and model definitions, and has added materials such as glass and timber where appropriate. Buildings can also be split into sections, roofs removed, and unnecessary detail obscured to ensure fire crews can focus easily on important information.

Riverside Project

A major feature of Glasgow is the River Clyde, which, following hundreds of years of shipbuilding and international trade, has many large and important structures along its banks. To improve access to the area, SFR have modelled 30 major structures and access points along 4 kilometres of the river, including ladders to the river and moorings. This was done very quickly using Ordnance Survey maps and SFR information, with the buildings being mass-modelled using ArchiCAD and then available for general viewing with BIMx.

This public access is in contrast to more sensitive buildings, such as HM Prison at Barlinnie, which is not covered by VDMS, but SFR has a model of this facility which, very sensibly, is only accessible on arrival at site.

Faster and Friendlier

Asked why SFR use ArchiCAD exclusively for the development of their fire appliance based system, John McNicol said, “When we started to look seriously at the problem, ArchiCAD offered higher resolution capabilities, better building tools and it was easier to use to manipulate the images we wanted. We were also able to discard a number of different software and keep the model within just one CAD application.”

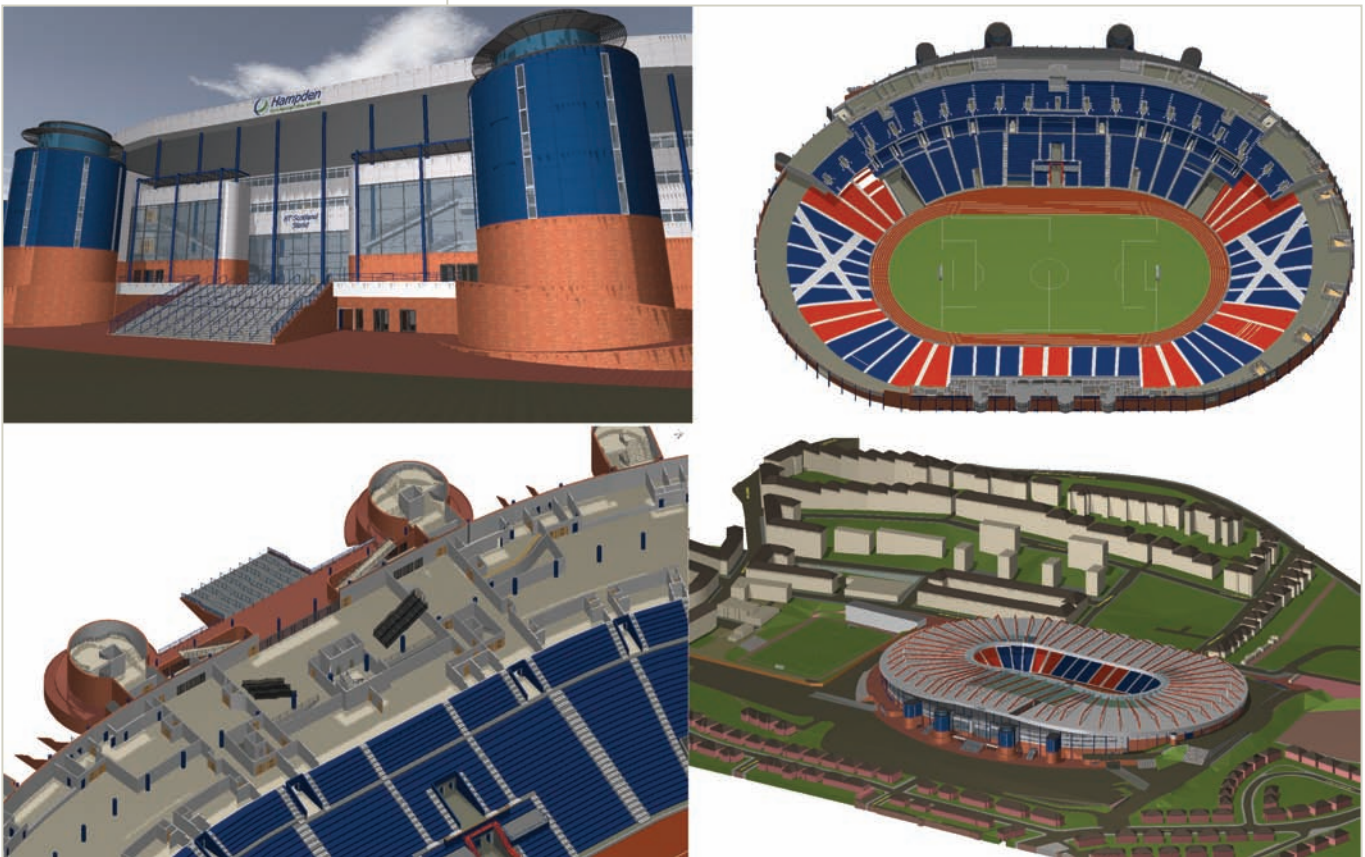


Strathclyde Fire and Rescue visit:
<http://www.strathclydefire.org>

Looking into the future, John explained that having access to BIM models of much of Glasgow will enable them to do much more – such as predicting the spread of fire, using CFD and other tools, or to develop fire fighting tactics, using software like Cinema 4D linked to the models. This will add further to the information base of Glasgow and its infrastructure and which can be shared with other public services.

It's re-assuring to know that as a progressive fire and rescue service Strathclyde saw the advantages of BIM many years ago. This has given SFR the ability and time to build up a comprehensive repository of information about how best to tackle, and increasingly predict the course of, fires in buildings, stadiums, and even ferries. For SFR 'safety first' means equipping fire crews with the best information to protect both the public and their own fire fighters.

Below: Planning for Major Events – Hampden Park Stadium



GRAPHISOFT®

About Graphisoft

GRAPHISOFT® ignited the BIM revolution with ArchiCAD®, the industry first BIM software for architects. GRAPHISOFT continues to lead the industry with innovative solutions such as the revolutionary GRAPHISOFT BIM Server™, the world's first real-time BIM collaboration environment, and the GRAPHISOFT EcoDesigner™, the world's first fully integrated building energy modeling application. GRAPHISOFT's innovative solutions have fundamentally changed the way architects around the world design and collaborate.

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