TECHNOLOGY

SPACE & PLACE

November 2008

Mapping, monitoring, mash-ups and models

Tools and processes to help us understand, describe and communicate place

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TECHNOLOGY
SPACE & PLACE

The built environment, and the way that we plan for its development, touches our lives in every way. Life in Dubai centres on fast car-rides along wide highways to pepper-potted malls and hotel bars; in London, the ability to walk the messy streets of the West End to choose a coffee bar or a pub is, for me, the best reason *not* to live in Dubai – and I have a choice. Many don't. The ways in which place and space are used has an enormous impact on people's lives. It affects how we can move, work and play – even what we eat, and how prosperous we can be.

With half the world's population living in urban areas – up to 85 percent in developed countries – the problems and opportunities offered by city living need our greatest attention. Around the world, many individuals and organisations are devoting time and energy to understanding what makes cities and city dwellers tick, and exploring creative new uses for existing technologies as part of their analysis. Although it can do no more than scratch the surface, this publication brings together some of these initiatives, offering links and references to more detailed information, where possible.

Juliana O'Rourke

Contents

EDITORIAL
Juliana O'Rourke
juliana@rudi.net

Oliver Spratley
oliver@rudi.net

EDITORIAL ADVISORY PANEL
Noah Raford, Space Syntax
Chris Sharpe, Holistic City

PUBLISHER
Technology, Space and Place is published annually by
RUDI Ltd
(Resource for Urban Design Information)
359 Kennington Lane
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E: info@rudi.net
W: www.rudi.net

SPONSORSHIP AND ADVERTISING
John Mwanza, Development Executive
T: 0845 270 7894
E: john@rudi.net

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www.atkinsglobal.com
T: 020 7121 2581

CAD and design quality

CAD software can save time, enable rapid design updates and produce compelling visualisations. But at the start of the design process – before design decisions are fixed – CAD software can have a significant effect on design quality, for better or worse. By Chris Sharpe

We normally see results from urban design software right at the end of the process, once the design has been finished. Computer-generated presentation graphics such as detailed renderings, fly-through animations and virtual environments are now very familiar in the news and architectural magazines. However, it is earlier in the process – before design decisions are fixed – when CAD software can have a significant effect on design quality, for better or worse.

The computer is much more than just a tool because the interaction between humans and computers is so complex. Computers handle a huge amount of information very quickly, and the way that the software presents information to users and allows them to interact with it can subtely influence important design decisions.

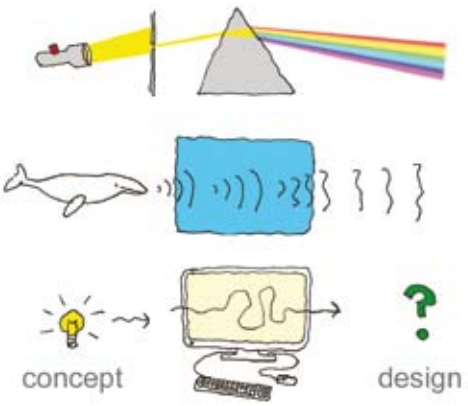
CAD software needs to be thought of as a medium which can change the design concept as it passes through it, in the same way that light refracts when it passes through a prism, or sound distorts when it passes through water. Today's software is extremely powerful and useful, but design teams have to work hard to stay in control of it.

Parametric modelling

Masterplans are large, they take a long time to develop, they are expensive, they require a wide consensus and, importantly, the design process needs to keep track of a huge quantity of complex information. For this reason, a more systematic and less intuitive design approach is needed, compared with many other forms of design. The computer is in an ideal position to help.

Parametric modelling means using design models which measure more than one aspect of a design at the same time. For example, in architectural design, Building Information Modelling (BIM) systems such as Revit or ArchiCAD don't just deal with lines and shapes – the software knows that a particular line is actually a wall, and stores information about the materials and thicknesses of parts of the wall. This means you can change one aspect of the wall construction, such as making the insulation thicker, and the revision will be updated throughout the building.

This principle can be applied to masterplanning very easily. During the masterplan design process, a lot of time is spent on numerical donkey work such as counting parking spaces, measuring floor areas, and calculating residential densities and the mix of residential units. New parametric city design and planning applications allow you to create a 3D model of the blocks, streets and spaces, and then automatically calculate all of the floor areas, parking space requirements, densities, costs, values and many other variables.



Parametric city models are extremely powerful because if you make a change to the spatial design, all information is updated immediately allowing the implications of design changes to be understood immediately. For example, you could change the mix of 'affordable' and 'market' housing, or adjust the street layout, or add storeys to a building, and then instantly see the impact on the viability of the scheme.

Evidence-based design

Success in creating new places depends on much more than just the spatial layout in the CAD model, and relies on many complex, less tangible qualities. Many of these are well outside the scope of software analysis, and computers are no substitute for human creativity, sensitivity and professional judgement.

Having said this, many aspects of the less tangible qualities can be broken down into measurable components, such as the 'Quality of Life' indicators developed by the Audit Commission over the last few years. Parametric urban design tools like CityCAD can instantly calculate things like the average distance from every dwelling in a masterplan to an area of green space, or the number of people living within five mins' walk of a bus stop. This type of analysis used to be very time-consuming, but parametric city design tools can do this instantly, informing the design process as it happens.

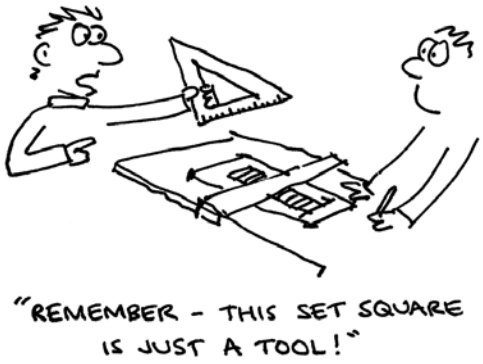
They can also help assess the sustainability performance of eco towns. Different assumptions about energy, water use, movement, waste management and CO_2 can be plugged in, and the total will be instantly recalculated as the design model is changed.

Parametric city models can be extended to analyse any aspect of the urban system, from traffic analysis to in-depth financial appraisals of long-term schemes, and allow design teams and the public much greater insight into how each variable affects others.

So what are the problems?

The first problem with using CAD software is that it encourages designers to commit to a high level of precision and detail early in the process, which in turn discourages changes to the design which in turn harms design quality.

(At the start of a project, a pencil sketch might be accurate to plus or minus 10m in some places, and by the end of it a building



might need to be constructed to within 10mm. The computer encourages millimetre accuracy right from the start.)

A second, and more subtle, problem is that software can encourage the creation of object buildings because software makes it easy to produce objects. This may be the right design solution in some places, but urban design is more often about creating streets and spaces defined by buildings. Most software does not allow us to 'draw streets and spaces'.

A third problem is that software can encourage designers towards generic solutions, because software makes it easy to copy and paste designs. However, copy and paste in itself is not the

problem – in fact it is often a good thing in urban design (The Royal Crescent in Bath is a successful example of copying and pasting a design). What matters is the quality of what is being copied and pasted.

The fourth problem is the segregation of urban design software products into categories, such as design, geospatial, traffic modelling, viability modelling and infrastructure design. Because of this, five or six detailed models might be made of exactly the same masterplan, representing not just a waste of resources but also a barrier to collaboration.

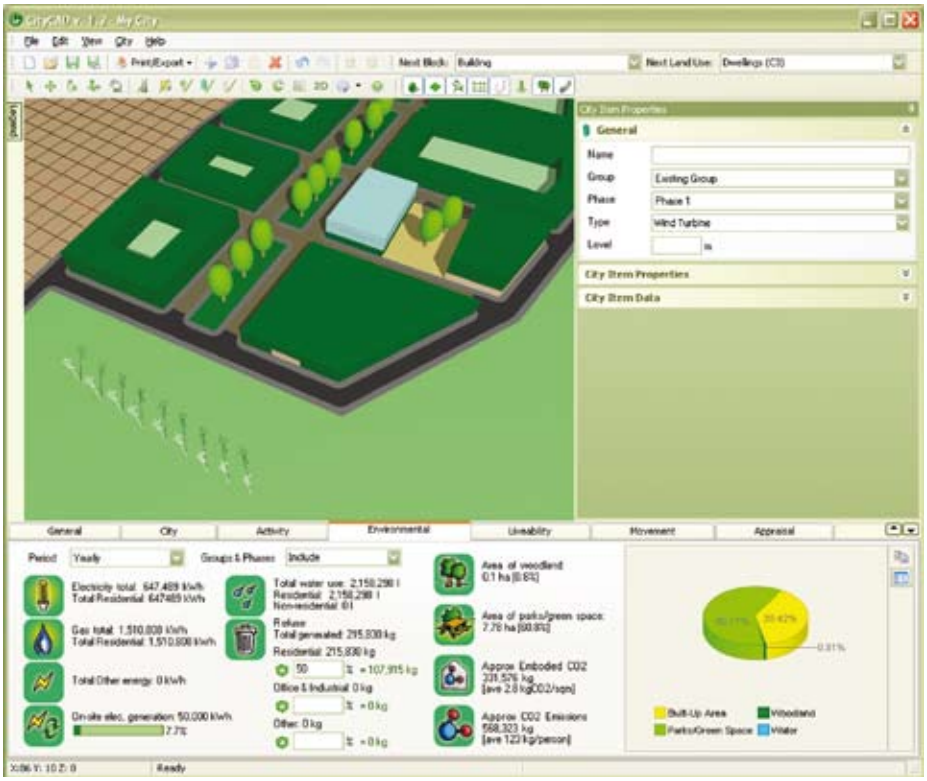
The urban design community is becoming expert at working together in a more collaborative, holistic way. The challenge for the software industry is to catch up with contemporary city design practice.

None of these 'problems' are reasons not to use software – only things that we need to be aware of in order to stay in control of the design.

Chris Sharpe
Director
Holistic City
www.holisticcity.co.uk

Leave the number crunching to the software

CityCAD was created for analysing concepts and layouts in the early stages of a masterplan



CityCAD was the first major CAD application to be released for the city design, planning and development community. It is a 'parametric' tool', meaning that if you change the design, then all design-related information is automatically updated. For example, if you add storeys to a building, or adjust the street layout, then all of the floor areas, residential densities, costs, values and energy use indicators are updated automatically and instantaneously.

In any urban masterplan, there is a huge amount of information to keep track of. CityCAD does all this number-crunching automatically, so the urban designer is relieved of tedious information management and is free to concentrate on design quality.

It is not a detailed architectural or engineering CAD program like AutoCAD or Microstation, and neither is it a larger scale GIS. It is a CIM (City Information Modelling tool) optimised for masterplans between one hectare and about 2000 hectares in size.

CityCAD can analyse a wide range of environmental and quality of life indicators and can estimate the carbon footprint of a development based on different density scenarios and assumptions about energy and transport use.

CityCAD Analysis can enable an informed and objective debate about proposals for eco towns, based on clear measurable criteria.

In addition to the purely environmental analysis, CityCAD makes it possible to calculate liveability and quality of life indicators that would have previously been too time-consuming.

CityCAD can calculate the average distance from a dwelling to an area of green space, or a convenience store, or a bus stop, or to the nearest health service; the number of people living within five mins' walk of a bus stop, helping to predict the viability of local public transport services, and urban design characteristics such as active frontages, graphs showing activity throughout the 24-hour cycle, and indicators such as the number of dwellings per entrance.

For latest news about CityCAD:
www.holisticcity.co.uk/latest

Pictures speak louder than words...

From slick computer graphics to 3D models, getting the right message across is a 'must-do' for the equitable development of sustainable communities

Before

After

During a recent regeneration project in London, a tenants group grew so frustrated with the incomprehensible information coming their way from design and regeneration professionals that they sent two tenants from the group to study on an urban design evening course. These two then became trusted 'translators' and advisors to the tenants.

Public engagement initiatives and research projects across the UK reveal that the public has valuable knowledge of place to impart, as well as the energy and initiative to participate. But in many cases, the public, as well as planners (increasingly engaged with policy and stakeholder management rather than design) and councillors, can be distracted by glossy graphics or a skillful computer visualisation. The problem is acute: so much so that graphics company Urban Graphics has produced two guides; *Graphics for Urban Design* with the Urban Design Group; and *Reading Plans, Drawings and Images* with Urban Design London, the second of which is to be an online guide to interpreting urban design images.

A recent planning skills research project managed by Julian Hart of Lancefield Consulting, with support from knowledge exchange programme UrbanBuzz, brought sustainability experts and academics from a range of disciplines together to critique recent planning applications in terms of detail. 'It has been a fascinating process,' says Hart. 'These are technical experts on the built environment, but none of them have day-to-day involvement in the planning process. From the first panel meeting, there was unanimous condemnation of the content of the submitted planning applications as "shallow". Many were described as little more than publicity material for proposed developments.'

Plans, drawings and images are used for a variety of purposes: they inform the design process; they communicate ideas to, and build the confidence of, stakeholders; they aid promotion, marketing and selling; and they enable assessment and validation of design schemes. Assessment and validation is a key part of the development process. Lack of clarity and understanding related to proposals can lead to poorly designed schemes actually being built. Yet effective assessment relies upon successful communication.

Traditional communication techniques, such as physical models, axonometrics, plans, elevations, perspectives and artist's impressions are familiar to professionals and public alike, although not necessarily well understood by the latter. Artists' impressions, in particular, can be prone to misinterpretation as they are frequently not accurate in terms of perspective and provide a visual guide only.

When it comes to 3D computer models, although some of these may be accurate (the 3D Glasgow urban model is accurate to 20cm and is used to showcase planning applications *in situ*, see page 11), in some cases many 3D models have been created for promoting and presenting purposes only. For these images to work, they must be presented with positive attributes; sunny skies; vibrant colours; energy and atmosphere; plenty of people; excellent landscaping etc. There are few 3D models simulating negative scenarios such as traffic jams in the pouring rain.

Computer 3D graphics images can be created with varying degrees of realism, and some are very accurate to real life proposals. However, they are only meant to be a representation or an impression; or to represent a virtual reality. They are rarely, if ever, precise indications of how a place will look. Many models have valid uses as analysis tools, however. Flooding, pollution, and light and shadow, amongst other variables, can be accurately modelled using computer simulation, with great benefits to those capable of interpreting – and presenting – the resulting data.

All artistic and computer generated images should be cross-referenced with measured drawings to fully understand and appreciate development proposals. All artistic image

Urban Graphics

Urban Graphics is a collective of creative designers and cartographers specialising in regeneration projects. We work throughout the UK with a wide spectrum of clients, for both the public and private sectors. Our work ranges from a single promotional document to the graphic design and illustration of a major regeneration project.
www.urban-graphics.co.uk

Before

After

Before

After

types can distort the truth and questions should always be asked of a 3D model in terms of its accuracy and relation to the final proposals.

The following considerations should help bridge the gap between 'virtual' and 'reality':
Aerial viewpoints are normally imaginary ones from the air or points not accessible by the public, although provide a good overview.
Eye-level viewpoints give a much better impression of scale and being within the development.
Weather conditions go a long way to make places look lively and energetic consider what it might look like in poor conditions.
Landscaping is an important part of making a place look attractive and inviting, although not always accurate.
Shadows cast on buildings appear differently according to the seasons.
Building materials can be replicated very closely which is of enormous benefit, although they can also be portrayed inaccurately.
Public realm is an important part of making a place look attractive and inviting. Always check that the paving; street furniture; and lighting etc is a part of the final specification.
Vehicles are not always shown at busy or congested times.
People are introduced to give a sense of scale and make a place look busy.
Artistic licence is always used to make these images more attractive and exciting.
In conclusion, 3D and computer generated images are an excellent way of communicating virtual realities, promoting schemes and are an integral part of the design process. However, remember that 3D models can also distort the truth.

Assessment and validation is a key part of the development process. Lack of clarity and understanding related to proposals can lead to poorly designed schemes actually being built. Yet effective assessment relies upon successful communication

Further information:
Graphics for Urban Design
Published by Thomas Telford, by Bally Meeda of Urban Graphics, Neil Parkyn and the late David Stuart Walton

Graphics for Urban Design provides an essential resource for practitioners, academics and students. It provides clear guidance on the understanding, commissioning and preparation of graphic presentations for urban projects.
www.thomastelford.com/books/

Reading Plans, Drawings and Images
by Bally Meeda of Urban Graphics
Esther Kurland of Urban Design London
Elspeth Timmans of Jigsaw Learning
www.urbandesignlondon.com learningspace

Understanding, describing and communicating 'place'

In the last 20 years, computers and technology have revolutionised the built environment sector. The impact of technology on all aspects of placemaking is enormous - affecting professionals, policy makers and communities alike

Computer Aided Design applications have advanced the creation and analysing of masterplan designs; 3D and virtual reality applications are changing the way that designs are presented and experienced; Geographical Information Systems (GIS) are transforming the ways that professionals and the public understand, describe and communicate about place.

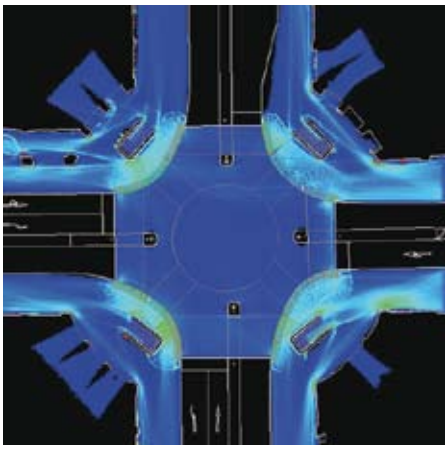
Web-based applications and mash-ups are enabling professional practitioners, policy makers and, where data is accessible, the public – to visualise complex information.

It is well known that the spatial analysis and visualisation of cholera in the 19th century was a turning point for epidemiology. When cases of cholera were mapped, a direct spatial relationship with certain water pumps was evident.

Today, spatial awareness underlies our understanding of much of the world around us. 'We are geo-aware in so many ways,' says Noah Raford, researcher at MIT and Boston representative of Space Syntax.

'Everything knows its place in space. We have the geo web, the city web, we are house aware, city aware, nation aware, we have location based services, mesh nets and pervasive computing. These developments have exciting implications for planning and design.'

Ideas such as wiki cities, open source cities and real time cities (see page 35), together with augmented reality, where we are blurring the boundary between physical and virtual worlds, is opening up new possibilities. 'We've had building information models for a long time, and now city information models are coming online,' says Raford. 'We have parametric design, generative design, new levels of interoperability and printable buildings. We are entering a world of new and crazy possibilities which have the potential to transform how we sense, design, build, manage and interact in space.'



Pedestrian modelling using Legion at Intelligent Space

'There is opportunity to link and connect different types of spatial data in GIS, to understand the relationship between, for example, active frontages, natural surveillance and crime prevention, to understand the relationship between foot traffic on the street and rental value on the adjacent buildings'

Jake DeSyllas, Intelligent Space

A new interface

Increasingly, spatial analysis is being interfaced with demographic and other socio-economic indicators and value indicators, creating both correlations between behaviour and place and providing evidence-based forecasts of community infrastructure needs.

GIS has been around for many years but, thanks to internet applications and to the increase in the volume and type of data available, they now have a new lease of life. 'Local authorities hold increasing amounts of information in GIS,' says Alan Penn, Professor of Architectural and Urban Computing at The Bartlett School of Graduate Studies, University College London, and Director of the UCL VR Centre for the Built Environment. 'It is now possible to use your data and your GIS to answer questions that policymakers are very interested in.'

GIS, essentially a computer system for capturing, storing, checking, integrating, manipulating, analysing and displaying data related to location, can reveal hidden patterns, relationships, and trends that are not readily apparent in spreadsheets or statistical packages. In the right hands, this creates new information from existing data resources.

From crime maps to green zones, local authorities are using GIS to record and visualise city data that everyone can understand.

'The key to GIS is being able to integrate diverse datasets on small area geography,' says Professor Allan Brimicombe from the Centre for Geo-Information Studies at the University of East London.

Essentially, he says, the country is divided into administrative units which get smaller and smaller. 'At the right level, you can analyse the population, you can analyse what sort of living accommodation they have, how well off they are, how much crime takes place.

You can analyse how many burglaries there were in that small area. If you know how many properties there are in that small area, then you know what is the rate of the burglary per thousand properties and therefore the relative risk of one area as opposed to another.'

GIS can help to integrate all types of social, economic, physical and environmental data for detailed analysis. 'We analysts provide a kind of meso to macro view of the context in which any sort of development is going to sit,' says Brimicombe.

Understanding relationships

'There are lots of tools out there that urban designers can use for spatial analysis, but the foundation is GIS,' says Jake DeSyllas of Intelligent Space, Atkins. 'The reason is that there's now so much opportunity to link and connect different types of spatial data in GIS, to understand the relationship between, for example, active frontages, natural surveillance and crime prevention, to understand the relationship between foot traffic on the street and rental value on the adjacent buildings.'

Many large, proprietary GIS systems are expensive, but these days relatively inexpensive software that can handle the relevant filetypes is increasingly available. Google has revolutionised access to geo-referenced online mapping.

Software providers, for example Autodesk, are improving interoperability between CAD and GIS capability, although such moves also lock customers into a particular tool. 'But there are data formats that you can export from a CAD package or from a GIS package that are fully interoperable,' says DeSyllas.

'When we work with urban designers, we are often given CAD data. We bring this into GIS, run our analysis and put it back into CAD for the urban designers to use. It's still the case that a lot of fiddling about is required, but it's all doable.'

One result of this increased interoperability, says DeSyllas, is an addition to the already wide-ranging skills base of urban designers, with GIS and specialist spatial analysis skills becoming more important. 'People coming out of university now, typically if they've done an urban design or planning course, will come into contact with GIS. Anyone still studying should certainly get a handle on GIS and its potential,' says DeSyllas.

In future, masterplanning practices may well be looking to recruit geographers and social scientists that are fully trained in data and spatial analysis. 'The work that we do in pedestrian modelling requires a mix of people,' says DeSyllas. 'We hire technical people who have good GIS skills as well as people who have urban design planning and transport skills – the latter have more knowledge of the actual problems we work with. We put them together and the skills get passed between them.'

Planners, currently immersed in managing stakeholder aspirations and policy updates, will also work differently as new tools and techniques develop, says Professor Michael Batty, Bartlett Professor of Planning and director of the Centre for Advanced Spatial Analysis (CASA) at UCL. 'Large retailers ▶

The future of spatial information

Spatial information will become increasingly important to anyone with a conscious interest in 'place', says Chris Holcroft

History can teach us much about future trends. For example, the development of Computer Aided Design (CAD) has shown us that drafting tools have become devalued in the market place to the degree that inexpensive CAD software is freely available online.

The major CAD players have responded with diversification and movement up the solutions chain, developing sophisticated design software, the management of infrastructure lifecycles and introducing the idea of 'digital cities'. Yet will this shift be reflected as GI and GIS evolve? On occasion, we can be so preoccupied with technology that we forget that it is not what we are doing, but why we are doing it that is key.

All industries are prone to miss a trick. In the case of GIS, the power of the web wasn't really foreseen until mid 1990s. The internet has become a revolutionary data distribution platform, a distributed application platform and the enabler for 'neogeography'.

Positioning, meaning GPS and its equivalents, has changed the way we locate ourselves, collect geographic data and the frameworks upon which it sits. In terms of GIS itself, advances in processors, scanning technologies, digital transfer formats, data compression algorithms and interoperability standards have all been instrumental in moving GIS forward. The power of 'where' is increasingly relevant, and the need for integration of GI and GIS with other systems is key; we need to share and collectively work on data, and thus standards for interoperability are essential.

People will come across GI more and more. Things will need to be done better, with more sharing, easier system linkage and better data quality. The user in control, as suggested by neogeography, will be equally challenged by more centralised management of GI as systems become more far-reaching. A split between formalised professional solutions and consumer-driven ad-hoc ones seems likely.

The EU INSPIRE Directive will establish governmental spatial data infrastructures. We are additionally expecting the publication of a UK Location Strategy very soon. If anything, Government recognition of geographic information will increase by mandate.

Ten years from now, the process of capturing and managing spatial information will be as important as ever. Professional capability will not, and must not be, diminished. If misused, data can be dangerous and leave us misinformed.

Yet more consumers will be using spatial information, at times without realising the implications and limitations. The scenario of 'the GPS told me to drive into the river' will not disappear – it may well be on the increase.

An Ordnance Survey surveyor gathers data: Ordnance Survey©Crown Copyright

Chris Holcroft is Director, The Association for Geographic Information (AGI)
www.agi.org.uk

The EU INSPIRE Directive
http://inspire.jrc.ec.europa.eu/

'Local authorities hold increasing amounts of information in GIS. It is now possible to use your data and your GIS to answer questions that policymakers are very interested in'

Alan Penn, Professor of Architectural and Urban Computing at The Bartlett School of Graduate Studies, University College London, and Director of the VR Centre for the Built Environment

◀ use GIS to plan the best locations for their stores based on both land use and demographic and behavioural trends. Car dealerships do the same. The ideal location for a dealership is close to centres of car-seeking customers, whatever land use models happen to say.'

Online tools, for example mySociety's FixMyStreet, which enables the public to map street hazards on an online map, are also impacting on the local authority remit. An interface to FixMyStreet has already been developed by Michael Houlsby at East Hampshire Council, and is a good example of a public official taking an initiative to improve services for the public and his authority. 'Planners are in a very interesting intermediary role between lobby groups, political masters and the public. It's all part of the move towards e-government,' says UCL's Professor Alan Penn.

Multi- and interdisciplinary working is increasingly recognised as the only practical approach to the complex social, economic, environmental and physical forces that impact upon successful placemaking. However it seems as if this way of working faces worrying issues in terms of hardware and software compatibility and data access (see page 18).

Transport planners come out of the railway station

In terms of pedestrian movement modelling and design analysis, there are dedicated tools used by specialist pedestrian modellers like Atkin's Intelligent Space, and by analysis-led practices such as Space Syntax. Data from these analyses can be fed into the design process in the same way as other specialist analyses, for example noise and light assessments.

Intelligent Space uses tools that have been developed in-house alongside commercial packages such as Legian. 'I think that in the next few years there's going to be more and more tools out there, says Jake DeSallys from Intellignet Space. 'Pedestrian movement modelling is beginning to feature on more and more agendas and there's an opportunity for people to go out and create tools that others can use.'

Transport planners, who typically come from modelling focused backgrounds, are beginning to take pedestrian movements seriously outside of key areas such as railway stations. As urban designers move to embrace evidence-based modelling tools and analysis techniques, these moves mean that common ground is at last developing between the goals of urban designers – good public space that works for people – and what transport planners are trying to achieve, which is sustainable and integrated transport solutions.

Integration means a focus on the pedestrian because, in any integration between transport modes, people on foot will be key. Legion, for example, is planning to offer pedestrian modelling software that will integrate with most vehicle modelling programmes, and hopes to release programmes that will integrate both pedestrian and vehicle modelling with programmes that analyse urban space and existing 3D platforms – Legion envisages that citywide models will soon be possible. A complete model of pedestrian/vehicle movements in Manhattan might only be a year or two away, says Nick Connor from Legion. Legion is also working on a project integrating modelling with real time traffic management. All such initiatives rely on data gathering and Legion has, it says, collected 9.5 million data measurements from people around the world. Datasets collected from China and Asia reveal interesting differences in pedestrian behaviour, revealing potentially key cultural and social behavioural differences that need to be built in to future thinking.

The moves to link pedestrian modelling to easily visualised outputs are also driving change. Transport modelling software VISSIM is reacting to the pedestrian challenge by improving its pedestrian modelling capabilities, encouraged by the fact that its strengths at visualising complex traffic engineering data. Even the

transport planners have, it seems, realised the need to present their data to the public, and to decision makers, in more easily understandable forms.

As does the government: the latest DfT's NATA guidance and software tools will include an e-community to develop 'modelling techniques for smarter choices'. An internet-based forum will allow DfT to work collaboratively with the modelling community to develop new techniques for modelling. If effective, it says, we will extend the use of e-communities to the development of other areas of guidance, including cycling and walking schemes and the health benefits of increased physical activity in terms of transport.

The European 3D community gets together

The 2009 IMAGINA European 3D Community Event and awards, to be held in Monaco in February, brings together 3D experts and solutions from across Europe to present the latest thinking in 3D visualisation and simulation

The Architecture and Urbanism Awards

Imagina's Architecture and Urbanism Awards have proved very popular in recent years. Prizes are given in three categories:

Best film (promotion)

3D simulation technology in architecture, town planning, infrastructure or territory and landscape redevelopment

Best film (promotion)

3D modelling and simulation technology accompanying project development at analysis, study and conception phases

Best film (simulation)

3D simulation in a project which deals with architecture, town planning, infrastructure or territory and landscape redevelopment, focusing on the innovative nature of the 3D simulation technology employed and how this is used in the project

The Jury

Douglas Pritchard, Glasgow School of Art, UK; Frédéric Genin, ARCH, Monaco; Alvise Simondetti, ARUP, UK, (President of the Jury)

Olympic stadium, 2012: special award winner, 2007

Award winner (promotion), 2007

'In 2006,' says Laurent Puons, Imagina's director, '3D technology was just beginning to make inroads into the architectural sector. Today, it is part of every major architectural project. It enables us to imagine and construct truly extraordinary major projects, be they in Dubai, Shanghai, Russia, France or the UK. This year, Imagina will be devoting time to showcasing these major global architectural projects.

'It is clear that 3D is now not only a must-have technology, but also an industry that is achieving exponential growth. It is established as a major strategic tool helping with designing, visualising, decision-making and promotion.'

Imagina 2009 will present the latest 3D modelling and visualisation solutions for built environment professionals. 'Projects will be showcased in the Digital City Village, and during the two day-long conferences dedicated to urbanism and territory planning. 'Projects developed by Autodesk, Bionatics, Dassault and Bentley, as well as from cities and communities from across Europe, will showcase the latest 3D simulation technologies used for the preservation of existing landscape, for future design or for territory evolution management,' says Puons.

Of course, no exhibition worth travelling to fails to put on a great party, and Imagina is no exception. Bionatics is organising an evening party along with partner Virtuel City. There will also be opportunities for potential partners to take cocktails with the Bionatics team. Last year, there were more than 50 exhibitors and most will be returning in 2009. The Architecture and Urbanism sector is the fastest growing sector, reflecting the popularity of 3D visualisation and the increasing range of products and applications in use. Bionatics, for example, is organising a workshop on the theme of 3D & Sustainable Territory Planning. A total of 15 workshops and masterclasses will take place over the three days of the event.

Award winner, 2007

Imagina, 4-6 February, Monaco
www.imagina.com

Community maps using GIS

Community mapping projects create dialogue between planners, communities and policy makers. Community mapping facilitates bottom-up information gathering – but remember that the map itself is not an outcome

GIS for participation (GIS-P) focuses on people talking together through the use of maps, is being explored by a team at York University, led by Dr Steve Cinderby. 'The technical requirements of GIS analysis are still quite high, and I think it's unreasonable to ask communities to get involved in that kind of activity,' says Cinderby.

'GIS-P concentrates on incorporating and capturing local knowledge from photographs and local datasets via conventional focus groups, with a participatory mapping exercise to collect the collective viewpoint. We put this data into GIS for community use.' Working with a community in Sawford, the team collected data on the development of a 'health walk' for a riverside area. 'The community told us about their crime concerns, focused on a riverbank path where vegetation and undergrowth had grown up.'

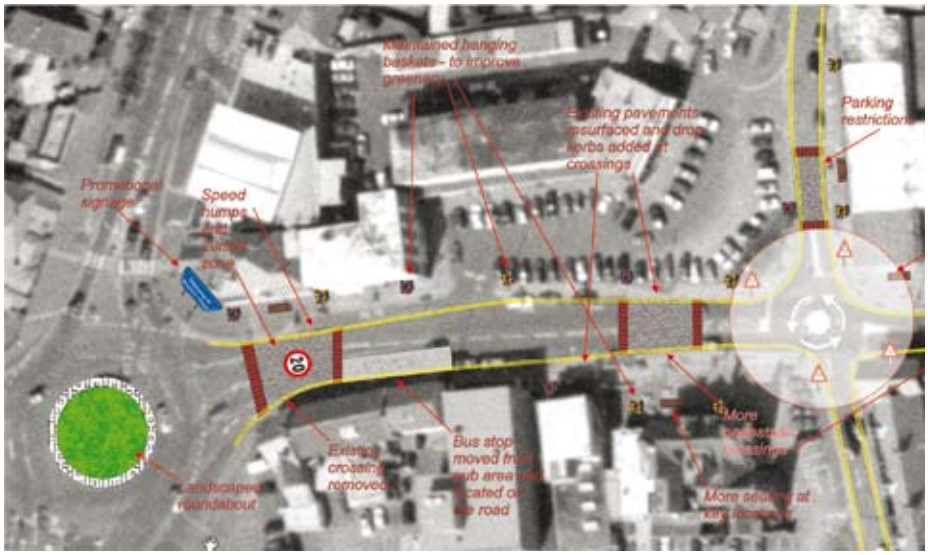
The spots that the locals considered worrying didn't, however, match reported crime patterns. Crime was reported – or logged – by the authorities along the nearby road network. The community knowledge was key to tackling the real issue of potential crime spots. Without community perceptions of crime being addressed, it was unlikely that the walk would be used by the community.

The second technique in development by the team is 'rapid appraisal participatory GIS', or RAP GIS. This is a development of the GIS-P method, involving going out into communities and creating maps 'on location' using one-on-one mapping with community members. Certain people won't attend focus groups, and this approach could help the authorities to capture input from hard to reach groups. It enables rapid scoping of a local area, albeit without in-depth discussion and dialogue, and with less control as to who participates.

GIS-P is also useful for collecting multiple views of space usage – different groups see a particular space very differently, as a mapping exercise with young and old people in the same city square revealed.

Similarly a mapping exercise in Bispham, Blackpool, identified a wide range of viewpoints how to develop the a car parking area (see below). In these cases, says Cinderby, we can use the GIS and visualisation techniques to help communicate those viewpoints to other groups and so help to inform the debate.

The researchers see these techniques as a move towards more equitable participation in the UK. 'Many of the mapping sessions that we've done are really consultations,' says Cinderby. 'The issues are of interest to local councils, or to different stakeholder groups. They're not coming from the community upwards. To me, that isn't real participation. But I think that using GIS-P approaches we can begin overcome these issues.'



Community noise mapping

The Mapping Change for Sustainable Communities project, based at UCL and run with support form the UrbanBuzz knowledge exchange programme, sprang from the idea that communities need to feel more connected to the changes happening across the Thames Gateway. Four communities across east London chose the issues they wished to map, ranging from history to antisocial behaviour to noise.

In one of London's noisiest areas, the Royal Docks, Newham, locals used their maps (above) to record and map noise levels. The Royal Docks is close to London City Airport (LCA), and local residents used noise meters to make more than 1,500 measurements of day and night noise levels. With the team's help, they collated these on their own 'noise maps', using a reporting system designed for them by UCL, community organisations London 21 and LSx, and biomapping artist Christian Nold (see page 14).

The data was analysed using a Geographical Information System (GIS) to produce noise pollution maps for the area. 'We didn't set out to be completely scientific, although we worked out a recording method with timed readings and survey sheets,' says London 21's Louise Francis. 'We wanted to bring in a more subjective side, to see how people felt about the noise. This was as important to the community – and to the local authority, as it turned out – as knowing the noise levels,' she adds. The noise map has been presented to the local authorities, who have agreed to investigate the matter.

GIS for participation
http://www.york.ac.uk/inst/sei/welcome.html

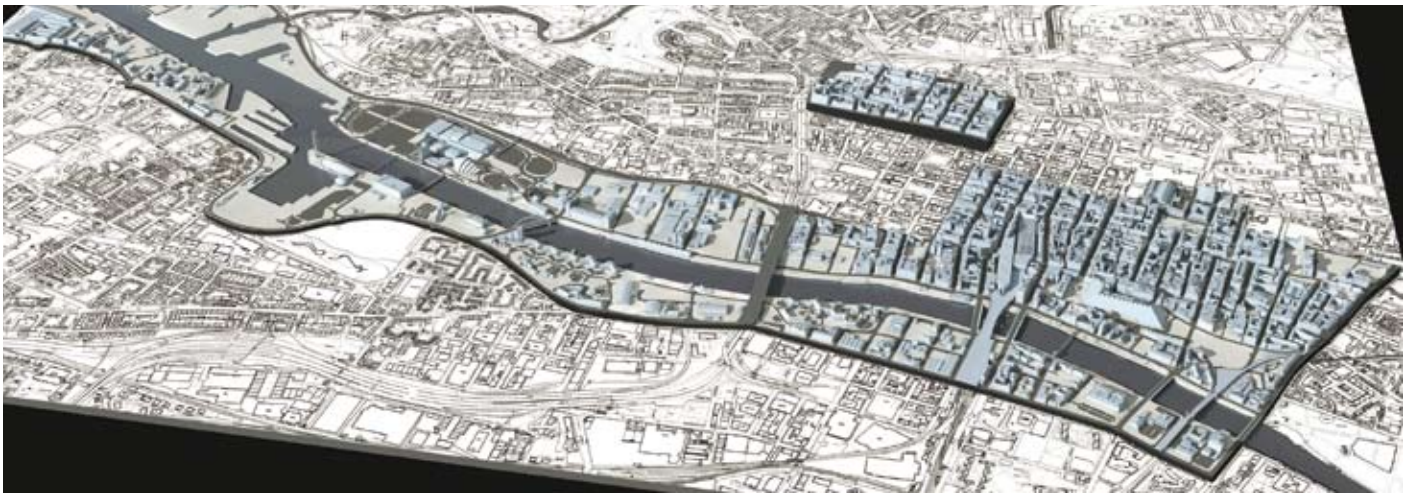
Mapping Change for Sustainable Communities
www.urbanbuzz.org

http://uk.youtube.com/user/uclurbanbuzz (videos)

http://communitymaps.london21.org/version2/includes/CommunityMaps.php

Model cities

Glasgow City Council has created a highly accurate, 3D digital model of the Clyde River Corridor to support development and e-planning initiatives – and is finding workable solutions to the many problematic financial, technological and maintenance issues associated with such projects



The exponential explosion of computer processing power is reaping dramatic and fundamental shifts in our approach to architecture, design and planning. Riding the crest of this technological wave, Glasgow City Council (GCC) conceived the creation of a 3D digital model for the city centre and River Clyde corridor. The project was awarded, following European procurement, to Digital Design Studio, Glasgow School of Art, and implemented by Development and Regeneration Services.

The model has been created through Lidar survey, scan data and on-site photography. It comprises three distinct components: a massing model, a photorealistic model with textured facades drawn to 20cm and an online model with both photorealistic and massing models. The transfer of such huge amounts of data is stretching technology to its limit, with powerful hardware required to run the model proficiently. The latest version seeks to address these issues by subdividing the model into 16 zones, so resolving access and navigation issues. Users can download software from the internet to view the model online, with a Mac-friendly version due to be introduced in 2009.

From inception in 2004, three years of work has seen the urban model, phase one, expand to its present scope of more than 1,200 modelled buildings, terrain, roadway and bridges across the city centre and Clyde corridor. Out of 4,000-plus planning applications processed each year, around 540 are contained within the area of the model.

Access to decision-making

The model is conceived for public use, and not only GCC staff and professionals. 'By putting the model online, and encouraging access in public libraries, GCC is intending to extend access to the whole decision making process of the planning system,' says Alistair MacDonald, Integrated Planning Services Manager and sponsor for the project at Development and Regeneration Services, Glasgow City Council.

'We wanted a tool that could enhance the understanding of the built environment and overcome the limitations of 2D drawings, currently used for assessing planning applications. 'The model will improve communication among planning officers, elected members, and architects, and will extend access to the planning system to members of the public.'

The potential range of applications of the model is enormous: flooding analysis, security management, transport studies and tourism. The functionality and performance of the online model is under constant development, with 3D visuals of proposed planning applications soon to be added to the website with a view to encouraging public comment.

'The interesting thing with the urban model is that it becomes this little time capsule so you can go back in time to Glasgow as of November 2005, so assuming this model carries on for years to come, we can keep coming back to the model and seeing how the city has evolved, which I think is very exciting,' says MacDonald.

The main issue the city is faced with is the constant updating of the model. GCC is intending to pilot a licence scheme around Christmas; third parties will be able to licence the data associated to the model and the revenue generated will be reinvested in the maintenance of the model, and therefore guarantee its sustainability over time.

Further details:
www.glasgow.gov.uk/urbanmodel

Changing our view of the world

Google Earth and Google Maps are more than new ways of viewing maps and images of the earth online. They have developed communities of enthusiasts who have extended both applications by creating new tools and adding content to the new global map – the GeoWeb. By Ed Parsons

Lewis Carroll of Wonderland fame, in *Sylvie and Bruno Concluded*, developed the idea of a fictional map that had the impossible scale of a mile to a mile, a publication very useful for sure because it showed the world completely, but with some issues of practicality. Today, thanks to computers and the internet, we are developing maps that are far removed from their traditional form. Although not quite the mythical 1:1 scale map of Carroll, these new maps are changing our view of the world around us, and the ways in which we communicate ideas about our shared environment.

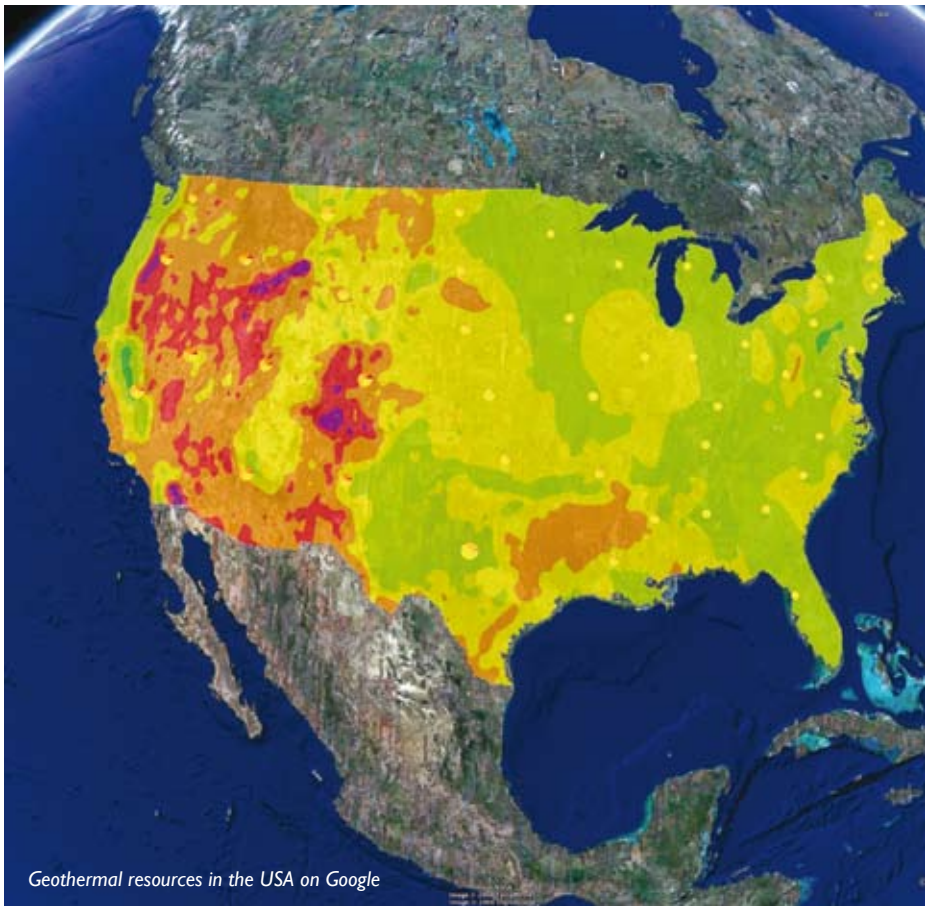
Behind every great internet application there is a great infrastructure. In the case of Google Maps, Google Earth and Google Maps for Mobile, there is a massive infrastructure of servers and high speed networks that provide access to one of the world's most comprehensive collections of geographic information, everything from the location of every Starbucks coffee shop to images of elephants migrating across the Serengeti.

This infrastructure, when connected to tools like Google Earth, has changed the way we view the world. Most of us can remember the first time we used Google Earth – the sense of wonder in exploring the planet at the click of a mouse – zooming straight to the view of our home from above, putting a familiar location within the broader context of the globe. Suddenly, the abstract notion of being able to look down on a home becomes a reality, thanks to satellite and aerial imagery taken from thousands of metres above.

Google Earth and Google Maps have developed communities of users and enthusiasts who have extended both applications by creating new tools and adding their own content to the new global map and creating the GeoWeb. The ability for an individual or organisation to add their own information to the map and share that information has had a truly radical effect on the way we think about maps, with some labelling this new movement 'neogeography'. It is not simply the locations of bars and restaurants that are being added to the maps – through the use of free and simple 3D modelling tools like Google Sketchup and the 3D cities programme, introduced by Google earlier this year, individuals and organisations are contributing 3D models of cities. This imagery from above and from ground level provides a truly interactive 'sense of place'.

Sense of place is an element that has traditionally been sacrificed by traditional cartographers producing paper maps. There, the nature of the medium requires that the complexity of a cityscape be reduced to a series of different coloured lines on the page. But, as Carroll suggested, we desire more from maps. Close your eyes and think of Times Square, New York or the Champs-Elysees in Paris ... you see a picture of a street scene, hear the sounds of carhorns and the smell of hot dogs. A 3D interactive map brings you one step closer to the real thing.

3D city models, combined with imagery and photographs, contributed by a global community because they provide that 'sense of place', are powerful tools for telling stories about our cities today. They can also be used to represent both potential future cities, by highlighting the planning process in a very inclusive way for, example, or to explore past development. Last year I worked with the City of Umea in Sweden to develop a planning consultation system using Google Earth with a 3D model of a potential new housing development. This was shared with the residents of the city who could them comment and make modifications to the design. Researchers at CASA, UCL, ▶



Geothermal resources in the USA on Google

world experts in the field, have developed a complete 3D model of London and used it to visualise the risk of flooding and the impact of the 2012 Olympics on the city, as well as the historic development of the financial district (see page 34).

Google has a mission to make information more accessible and useful to people, wherever they might be. Today, if we wish to better understand the world around us we are no longer limited to our computer screens. The next generation of Smartphones such as the Apple iPhone and the Google Android powered T-Mobile G-1, are powerful mobile computers which are location-aware, meaning that in the very near future we will be able to access the world's geographical information at the very same time as we're immersed in it, anywhere in the world. Perhaps we are not so far from Carroll's 1:1 map after all.

Ed Parsons is a geospatial technologist at Google

http://www.google.com/intl/en/sketchup/3dwh/

GPS, lie detectors and emotion maps

Christian Nold's biomapping projects use a combination of GPS, lie detector technology and Google Earth to create emotion maps of place.

Christian Nold is an artist and researcher with an interest in mapping the ways in which people feel about space and place. Biomapping participants, usually gathered together by Nold at arts or community centres, are briefed and handed a special biomapping device, designed by Nold, which combines GPS and galvanic skin resistance recording. A digital camera completes the kit, and off the biomappers go, requested to take an hour's walk around the local area, taking pictures as they go.

Back at base, the mappers hand over their devices and images. Nold quickly maps the walkers' routes on to Google Earth with each walker's series of jagged 'emotion' troughs and peaks clearly illustrated.

The rest, as they say, is magic. Encouraged and stimulated by seeing the feelings so graphically visualised, mappers are keen to talk about their experiences and feelings relating to place – likes and hates, memories, ideas for improvement. Nold takes down the information, later using the notes, digital images and the mapper's comments and drawings to create both online and, with the help of colleague Daniela Boraschi, beautifully drawn printed maps.

So far, Nold and his team have mapped many parts of London including Greenwich, Fulham, Brentford and Newham, as well as Stockport, Manchester, and San Fransisco, California. The Stockport project also involved developers in a bid to assess community aspiration in a regeneration zone.

Biomapping may not be hard science, and may not compete with the complex and megadata-driven spatial analysis tools used by commercial practices. Yet it definitely gets people talking and sharing views, and that has to be a plus in anyone's book.

The biomapping kit

Biomapper's route plotted on Google Earth

Brentford Biopsy data plotted on Google Earth

Find out more:
http://www.softhook.com
http://biomapping.net
A multimedia presentation of Christian Nold's work is available on the RUDI website
ww.rudi.net

Technology is powering a car-sharing revolution

Car sharing clubs are one of the business stories of 2008, in spite of the economic downturn and rises in fuel prices. USA-based Zipcar, launched eight years ago in Boston and operational across the US and in London, is showing us how technology-based sharing ought to be done

Using Zipcar, technologically designed on the essence of eBay-style trust, new members sign up to an account online, and make reservations as and when they need a car using a personalised credit card-sized smart card called a Zipcard. Once the card is activated online, personal reservations can be made in seconds online on via a mobile phone. The Zipcar is unlocked and locked by placing the Zipcard over the reserved car's windscreen reader. The next step is to extend the technology to service trip and expense sharing, as GoLoco, a company started by Robin Chase, founder and former CEO of Zipcar, is doing in the US. A system of alerts notifies potential riders when friends or interest groups are going places you may want to go. GoLoco technology works out the cost of the shared trip and debits each sharer's account.

Zipcar's custom-built in-house telematic's system enables it to provide its 250,000 members with real-time, online mileage recording and billing, an efficient service and support for companies looking to integrate with Zipcar's fleet management platform. The technology also allows members to rapidly search by vehicle, availability, model and price. Optional email-to-text telephone reminders are also available.

Architects of new build developments and eco towns are busy rethinking the ways cities and urban environments work. Within the mix, car clubs are making their mark in order to enable town planning and property developers to minimise the need for expensive parking infrastructure. Property developers must already consider car clubs as a result of section 106 agreements.

www.zipcar.com

Playing the low carbon transport game

Transport emission reduction targets can only be achieved through a combination of behavioural change, technological innovation and robust policy implementation. The development of a new online scenario testing 'game' highlights the options

A team led by Halcrow is working on the VIBAT project, which has outlined various policy pathways aimed at reducing transport CO_2 emissions. In the case of London, a target of 60 per cent reduction in transport-related carbon emissions by 2025 has been set, based on London's policy framework, and the team has 'backcast' from 2025 to the present day, outlining the steps that London planners, policy makers and citizens need to take from now on if the target is to be met.

A critical issue, notes the team, will be successfully communicating and selling future lifestyle choices to stakeholders and the public.

The team has developed an interactive computer simulation game for transport and carbon emissions called TC-SIM, which allows users to explore the policy pathways and their implementation at various levels of intensity; low, medium and high. The policy packages include both 'DIY' options such as choosing to walk or cycle, and policy interventions such as the introduction of road pricing regimes.

TC-SIM can be played in different user modes, and the idea is that scenario testing via the game will highlight the willingness of various sectors of the public, based on their perceived identities, to engage with the policy agenda.

TC-SIM has been developed with close cooperation from the GLA and TfL, along with support from UrbanBuzz. Testing the game's scenario-development capabilities, the game has proven remarkably useful in highlighting the scale of beaviour change needed from transpiort users and the necessary policy response. 'TC-SIM has great potential for raising awareness of complex issues and future lifestyle choices. It could be used in an educational framework, as an opinion surveying and voting tool, or maybe developed a free public tool,' says Halcrow's Robin Hickman.

www.vibat.org

Mind the gap: bridging the CAD/GIS divide

There are signs that the cultural gap between CAD and GIS is narrowing. In a recent survey, CAD and GIS users said they hoped for a solution that was joined up and open to all. The need for up-to-date – even real-time – information was also high on their wish-list

Driven by the growing use of the internet and the greater need for precise and sophisticated information for better informed planning, everybody wants to add a geographic element to their data.

This need is complicated by two factors. For geospatial data to provide real value, it needs to be used alongside other information – in particular, CAD data. Unfortunately, these two disciplines have evolved separately and are, traditionally, difficult to blend. On top of this, Land-Line® (which has been used by local government and other organisations for more than 10 years) by the Ordnance Survey, has been withdrawn. Its replacement, OS MasterMap® Topography Layer, offers many enhanced features and benefits including 'themed' information. However, the change brings a number of challenges, especially the accessibility of Topography Layer data from within AutoCAD, the industry standard automated drafting tool.

When Autodesk recently held a workshop for local government professionals, more than 50 per cent cited the gulf between CAD and GIS as one of the major issues in their working lives. In today's harsh business environment, it's too expensive to manage multiple types of software, convert data, sychronise systems and keep design and operations disconnected.

For several years now Autodesk has recognised that the key to solving interoperability issues is to develop software that bridges CAD and GIS – but which doesn't require either set of users to give up the tools they have been using for years. 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.

AutoCAD Map 3D brings CAD and GIS together by providing direct access to data, regardless of how it is stored. An extension to AutoCAD and complementing existing GIS implementations, it enables quick access, efficient editing and easy management of a broad variety of large geospatial sets, far beyond the capabilities of standard AutoCAD.

Because AutoCAD Map 3D is based on open data standards, users are able to work with virtually any spatial data available, an approach which offers more flexibility than the minimal

options in AutoCAD. Whether data is stored in DWG, DGN, Shape file, or other standard geospatial formats, the software can directly access and edit the data, removing the need for continual translation of data between systems.

Also, as it works seamlessly with Oracle, MySQL, SQL Server and ESRI ArcSDE, users can manage and store geospatial data as easily as they can create and edit it. This approach ensures data is far more accessible – by CAD users wanting to access geospatial data or GIS users needing a view of design data.

Working this way also makes it easier to deal with large scale mapping data. AutoCAD Map 3D enables users to access the data directly regardless of whether it is held in an Oracle database, a Shape file or ESRI ArcSDE. When the software is connected to a central store of Topography Layer data, accurate mapping is available across an entire enterprise, whether its users are CAD or GIS-based or a mixture of the two.

So, what key benefits can be achieved from CAD/GIS integration? Arguably the most important is the ability to support streamlined workflows. Rather than having to visit multiple departments to obtain information, CAD engineers can now integrate geospatial technologies – querying and some core analysis functionality – into their standard workflow.

They can then carry out core analysis functions before creating and designing an end product using familiar CAD tools.

Projects can be completed more quickly when an engineer can easily pre-populate a new design with current base map data – such as property lines, curb information and other associated data – from a central GIS. GIS specialists can use the powerful precision editor tools from a CAD system to more easily edit and maintain GIS data.

It seems this is a far better solution than two isolated disciplines working in tandem, duplicating work and wasting time, money and effort. It seems the CAD and GIS department might end up speaking to each other after all.

In 2007, Autodesk unveiled a prototype cityscape visualisation product created by Autodesk University's geospatial and media and entertainment teams. The aim is a visualisation of intelligent city models including data from architectural models, utility networks, transportation networks, asset management systems and more.

According to a press reports, 'Metropolis' was the 'hottest technology demo' at Autodesk's press event in February 2008. The combination of models, imagery, simulation, visualisation and potential analysis caught everyone off guard, gushed the media.

According to Brian Mathews, an Autodesk Labs vice president, Metropolis is a fusion solution, tying together building information management (BIM), geospatial, manufacturing and other data to provide a complete 3D visualisation environment. It can handle modelling and the simulation of sun and shadow, along with geospatial queries and underground analysis. Mathews commented that it is still tough to find complete 3D models to explore in the system yet, if it develops according to plan, it will enable designers and planners to view and access visual data alongside associated real-world data that can be analysed and queried.

Will imagery take over from the vector map?

New techniques for extracting the information held within images are the basis for 'automated' and cost effective approaches to spatial analysis. By Dr Katie Medcalf

Traditionally, imagery has always been used as a 'backdrop' to mapping and visualisation initiatives, and this is still a valid use for it; creating a context that people understand. However, technological advances and increases in computer processing capability are aiding professionals to extract data from images in new ways, enabling them to become an increasingly important source of key temporal and thematic information.

A classic example, says Dr Katie Medcalf, is the work of one London council that analysed imagery to calculate the size and production capacity of garden space in its area, and to work out how many street-based composting facilities it would need to service gardeners. Other applications could be mapping green roofs, or dead trees – or the illegal development of buildings.

Extracting information from images in this way can mean important time, efficiency and cost savings, says Medcalf. Environment Systems, for example, is approaching the end of a Wales-based habitat mapping project, originally carried out in the 1990s using traditional methods of field survey and digitisation. 'The original survey cost almost £10million but today, using information intelligently extracted from satellite and aerial imagery, the project costs have been reduced by almost 90 per cent.'

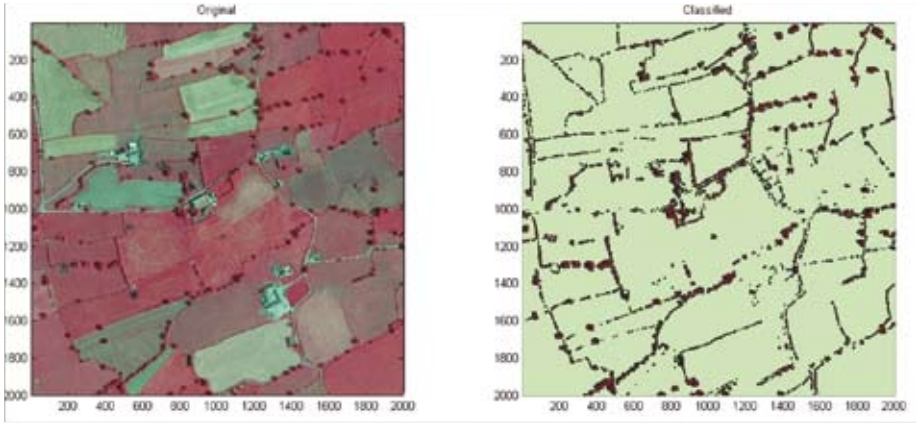
These new uses of imagery are posing a challenge traditional GIS-based thinking, adds Medcalf. 'No longer is it simply a case that vector maps are the state-of-the-art, obvious solution, and that raster maps are at best useful, if slightly fuzzy, images.'

Imagery has always contained a great deal of data and information – the real difference, and the driving force of this revolution, is that we are now able to extract this data and turn it into information. Visual interpretation is a well established technique that has, and will always have, its uses. But new techniques – image segmentation and automatic classification – are beginning to gain popularity,' says Medcalf. Having been used in research projects for some time, they are now becoming useful to the wider world.

Image segmentation works on the principle that jigsaw lovers use as they sort out red car pieces from green field ones. The computer is performing an automatic digitisation: dividing up the image based on the colour and texture of each of the pixels, and drawing a line around those that are similar. The key advantage of automatic digitisation is in creating a robust and well defined baseline that is needed as a prerequisite for monitoring change. For example, when boundaries exist that can be drawn in more than one way. This approach enables the creation of a robust and repeatable method – if new images are sourced, using the same segmentation rules will deliver a similar result.

With the image divided into polygons, automatic classification is possible. For simple data sets, for example thermal heat imagery, the computer can be taught to recognise buildings that are 'too hot'. For more complex classifications it will be necessary to introduce sophisticated algorithms, rule bases and possibly artificial intelligence.

Using segmentation methods to classify hedgerows



Many off the shelf programmes and GIS can handle this kind of classification, from images, with the creation of a query and the overlay of several datasets. It would be possible, for example, to ask a GIS to classify all buildings over a certain size and with more than three people living in them, assuming the relevant datasets to be available.

Automated classification can save time and money. Manual classification options can be very expensive and, in many cases, automated methods can pull out features with sufficient accuracy. Using segmentation methods, for example, it is possible to classify the hedgerows in an area. The costs and effort involved in such a job, if undertaken by traditional methods, would be prohibitive.

This new approach suggests a wide range of potential applications. In the case of infrared imagery, it is possible to differentiate between living and non-living vegetation, for example the difference between a wall and a hedge, and to focus on the living landscape. It is also possible to locate gaps and single trees. (see images, below left). This is a semi-automated method, says Medcalf. 'If you wish to add attributes about tree types, for example, and you do not have high resolution hyperspectral imagery, this data must be entered manually.'

Vector maps provide topology and precision, especially when large databases are used, as well as clarity when mapping subjective issues. They are, however, expensive to update. Raster imagery provides thematic and temporal information, but are typically less accurate. But, as the possibilities for extracting information held within imagery increase, a new world of cost effective potential resource is opening up; one that will be a major boon in helping us to map, analyse and so meet the demographic, land use and environmental challenges that lie ahead in a rapidly urbanising world.

Dr Medcalf works with Environment Systems, which specialises in the development and use of geographic information in the environment, agriculture, land and property sectors ***www.envsys.co.uk***

Data, data everywhere...

But much of it can't be used in the UK due to copyright or accessibility issues. Yet the popularity of web mash-ups, along with a new focus on social analysis using GIS, means that data owners are being encouraged to give it up…

Data is the lifeblood of social and spatial analysis. Across the UK alone, there are an infinite number of possible datasets that may – or may not, be useful or relevant to a particular analysis. These range from crime statistics to bus journey times to the number of new children attending a specific school. The National Digital Archive of Datasets (NDAD) alone provides online access to archived digital datasets and documents from UK central government departments going back to the early 1960s. Some datasets are easily accessible and free. Others, and frequently the most useful ones, are not.

Back in 2006, an article in *The Guardian*'s Technology supplement on data access led to the foundation of the Free Our Data campaign. The argument is simple: government-funded agencies such as the Ordnance Survey (OS), UK Hydrographic Office and the Highways Agency are government-owned agencies – with substantial parts of their income, up to 50 per cent in the case of OS, coming from the public sector. These agencies collect data on our behalf. So, ask the campaigners, why can't we get at that data easily?

MySociety is a charity that has been making online accessibility maps and other community-oriented websites, FixMyStreet, for example, for years. It has been grabbing data from Transport for London the hard way – screen scaping journey times to and from certain spots (in this case, the TfL offices in central London) and overlying these with say, house price data to create maps of where Londoners can afford to buy if they want to live within 45 mins of TfL (see images). MySociety co-founder Tom Steinberg knows that with easy access to data, he could do so much more.

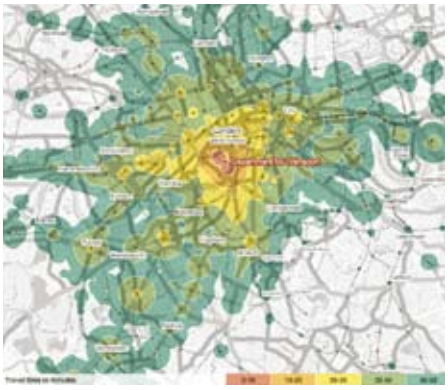
'The main problem is that the journey planning service providers don't actually own the data themselves – they get it all off other people like the bus companies and train companies. And all the contracts they had to sign to get this data said you can't use it for any other purpose. One example of a currently stalled, but entirely doable, project

(above) Travel times and house price map; (below) public trasport travel times to TfL offices: mySociety

is to get as many children to school by means other than the dreaded school run by giving parents customised maps of alternative transport options.'

Finally, in April 2008, government responded to the campaigners by launching a competition, 'ShowUsABetterWay', to find innovative ways of using the masses of data it collects. Many of the examples given as inspiration were based on MySociety initiatives.

The Power of Information Taskforce, headed by MP Tom Watson, offered a £60,000 prize fund for the best ideas, as well as opening up gigabytes of information from goernment agencies. Details of the winners, including a loofinder and postbox locator, are available from the www.showusabetterway.com blog



pages. Yet, as we went to press, the Power of Information Taskforce blog had posted an article about potential restrictions on the use of local authority data if it is deemed to be 'derived' from Ordnance Survey geographical data. 'The net effect of this,' it reads, 'would be to prevent people from combining some local authority data with Google Maps to produce the kind of new information services we have been promoting through the ShowUsABetterWay competition.'

Informing development

The use of geospatial data to inform and support planning and development strategy lies in the quantity and types of data that are now available, says Professor Allan Brimicombe of the Centre for Geo-Information Studies at University of East London. 'We've become data rich. When GIS started out in the '60s, and right through until the early '90s, we were data poor.' Now we can access satellite imagery that used to be the preserve of the few, he comments. GPS receivers are built into mobile phones. Huge amounts of data have been made available. The new focus is on how we use the data.'

One of the biggest problems that local authorities have is that everyone is working to different agendas and with different information sources. Data quality can be variable, and research projects have shown that local authorities collect data in a variety of non-compatible formats – and are frequently reluctant to hand their data over to researchers, even those working in accredited universities. With a coordinated approach to accessing and using public data, who knows what new ground could be broken in the analysis of what space and place means to wider communities?

Open Knowledge Foundation
http://blog.okfn.org/

The Power of Information Taskforce
http://powerofinformation.wordpress.com/

Show us a better way competition
http://www.showusabetterway.co.uk

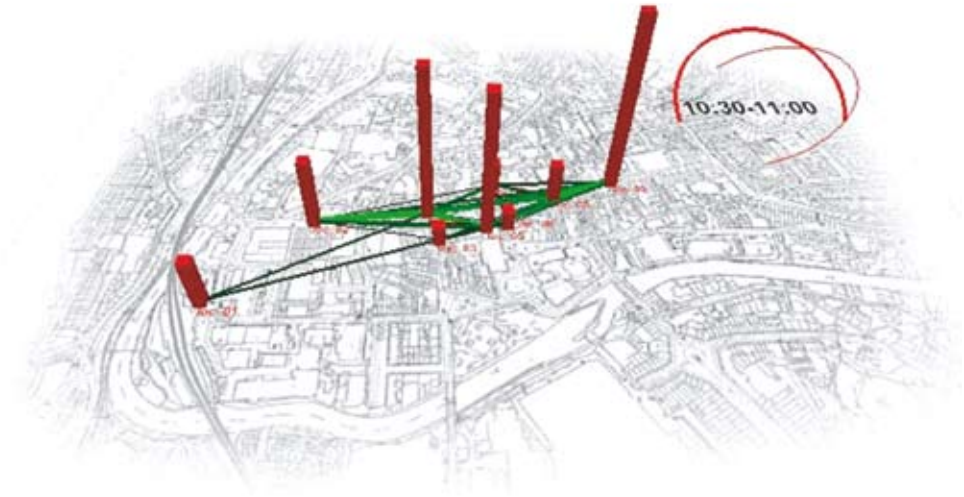
mySociety: pioneering re-use of public data
http://www.mysociety.org/

Bluetooth in the city

Many technological tools are useful in spatial analysis, imbued as they are with potential trackability and therefore definite relationships to space. Models of how people actually associate in space are of keen interest to a team of researchers working within the Cityware project in Bath, for example. 'We are using Bluetooth networks to record how people move about the city. We've been tracking Bluetooth phones continuously in Bath for 18 months, and we've constructed a network showing where phones have been logged over time, and which phones have been spotted in the same Bluetooth location at the same time. This gives us a statistical view of a network, over time, and of proximity of people to each other,' says project member Ava Fatah from UCL (the project was realised with the MSc Adaptive Architecture and Computation 2006-7 cohort).

Developing an understanding of the way that the city is structured and how people use and move in the city in real time is a key aim of the project. 'Can we understand the way that the City of Bath is used by people?' asks project partner Professor Alan Penn, also from UCL. 'We're not interested in who the people are. We're interested in where they are, and how the city brings them together and keeps them apart. Let's say we're an epidemiologist interested in the bird flu when it strikes. One of the things that's unknown in epidemiology logical models is how people actually associate in space.

We just don't know.' 'So we could take this network and try running an epidemic through it,' says Penn. 'If we release the virus in this location on such and such a day, and assume that people pass it on if they're in the same space at the same time with some probability, say 50 per cent, that you'll catch it, we can see what might happen. Does the infection rate grow, does it turn into an epidemic or does it just die out because the network is not connected enough to make an epidemic happen?



The image shows a dynamic visualisation of the digital flow and co-presence over six time sessions in nine locations in the city of Bath. Transparency indicates different time sessions. In making sense of our data, we relate the individual events to the patterns of presence and absence at a given scanner site. A portable computer was constantly recording the presence of Bluetooth devices within the Bluetooth range for 30 minutes across the nine sites

For more information, visit
www.cityware.org.uk

From forecast to performance: emissions data via an online platform

A team led by Aedas, working with the RIBA and a range of architectural practices, is creating a key evidence base for the management of carbon emissions. Engineers and designers are invited to share forecast and actual energy use data anonymously via an online platform.

Although buildings are responsible for more than 40 per cent of carbon emissions in the UK, 'architects don't really understand what carbon emissions mean,' says Judit Kimpian, Head of Advanced Modelling Group and Sustainability at Aedas. 'It's a major concern for the industry that few people collect data on how their "product" performs in use.'

The CarbonBuzz online platform enables architects and engineers to contrast design forecasts with actual energy use. Practices will be encouraged to manage and track their project emissions from design to operation, supported by easily accessible benchmarks and anonymous performance data from a nationwide pool of projects. Designers can make meaningful assessment of the energy use of their designs against benchmarks set by The Chartered Institution of Building Services Engineers (CIBSE). These provide sector-by-sector evaluations as a reference to how efficient a building should be.

Practices choosing to publish project data, including in-use energy values, on a year-on-year basis will be eligible for RIBA and CIBSE Carbon Conscious Practice recognition.

The RIBA CarbonBuzz platform is supported by the UrbanBuzz knowledge exchange programme, led by UCL.

For more information, visit:
www.architecture.com
www.aedas.com
www.urbanbuzz.org

Oxford Circus:

Communicating place through technology in public consultation

A team led by Atkins Urban Design has pioneered the co-ordination of a range of technologies, producing a built environment simulation demonstrating proposed improvements to Oxford Circus

Oxford Circus is one of the most congested spaces in the country. It is used by over 43,000 people and 2,000 vehicles per hour, forming part of 23 London bus routes. The tube station, accessed from the four stairways at the corners of the circus, is used by 230,000 people per day.

Atkins' Urban Design, Transport Planning and Pedestrian Movement (Intelligent Space) teams have been developing improvements to the Circus for the last year, using footway gains, resurfacing, de-cluttering and a radical diagonal crossing solution to improve this London landmark's sense of place and efficient use of space.

The simulation created by the project team is designed to help in communicating the improvements to both members of the public and a range of project stakeholders. To assist in communicating these proposals, Designhive, a specialist visualisation and animation company, were appointed. ▶

What do the project partners think?

Existing desire line crossings

'The Oxford Circus proposals are a complicated mix of solutions that address issues of pedestrian and traffic movement as much as urban design. The animation explains these issues in a much more understandable way than two-dimensional drawings'

Peter Bourne:
Development Manager, The Crown Estate

'Developing the animation based on real life technical information, for example VISSIM and LEGION, resulted in the end result being an excellent communication tool for the purposes of the public consultation, and helped to really bring our vision to life'

Farrah Hassan-Hardwick:
ORB Project Manager, Westminster City Council

'The Oxford Circus proposals represent a vision for London with pedestrians gaining from the latest modelling and design techniques. This is a real and very positive example of TfL, WCC and landowners working together to deliver a high quality and innovative design'

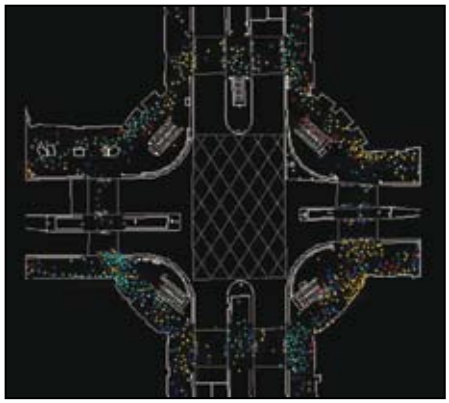
Scott Lester:
Head of Responsive Delivery Team,
Bus Priority Team TfL Strategy

'One crucial benefit of the Oxford Circus proposals is that they will dramatically enhance the first, ground-level impression of London's West End and make arriving in the West End a far better experience for the 250,000 people coming through Oxford Circus each day. The animation is a key tool in representing these changes'

Richard Dickinson:
Chief Executive of New West End Company

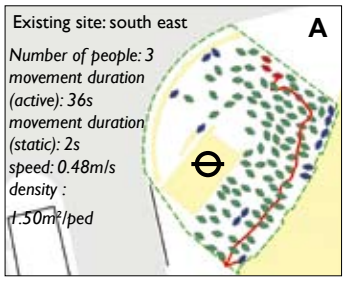
Proposed diagonal and direct crossings

Existing site conditions

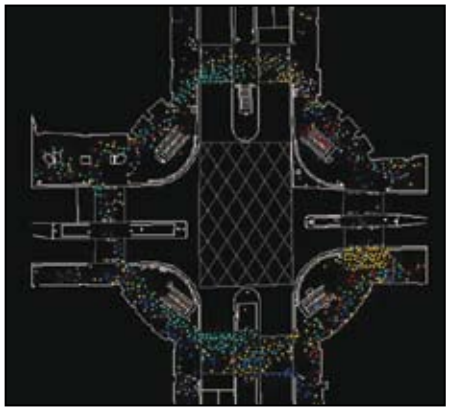


Pedestrian waiting phase

Footway sections between the tube entrances and buildings becomes very congested

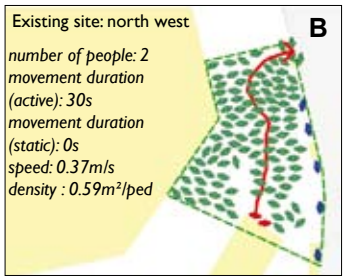


The space available cannot be utilised due to the position of the tube entrance and the guard railing



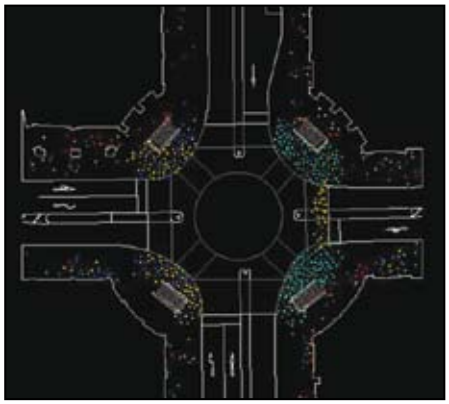
Pedestrian crossing phase

The presence of guard-railing concentrates pedestrian movement on crossings, leading to a congested environment



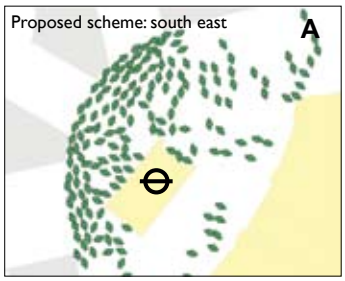
The congestion is present on all sides of the circus affecting the speeds and comfort of people's journeys

Improved conditions under proposed layout

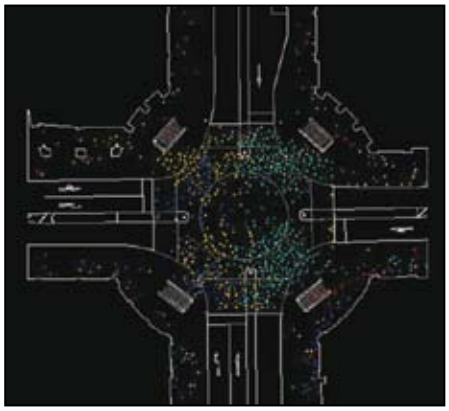


Pedestrian waiting phase

Room for pedestrians to circulate behind the tube entrances while people are waiting to cross around the kerb line

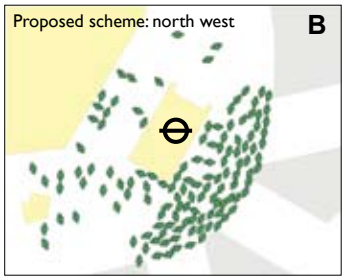


The presence of the diagonal crossings relieves congestion between the tube and the building façade



Pedestrian crossing phase

The implementation of the diagonal crossings means that people can use all of the available space to cross the road. This results in shorter and more direct journeys



Available space for pedestrians queuing along the kerb edge has been maximised

Once Atkins had completed the complex task of developing and testing the two dimensional VISSIM (traffic) and Legion (pedestrian) models, Designhive took the data and devised a method of reflecting it in a 3D Studio Max model of the proposals. Combining the models in the simulation in this way makes the finished product particularly compelling, and is among the first times this technique has been used. 'This really stretched our creative and technical capabilities,' said Janine Tijou, Designhive's Commercial Director. 'Building in the traffic and pedestrian simulations was particularly rewarding.'

A particle-based system was used to model the pedestrians, running seven different layered simulations controlling 5,000 virtual people to match up to the data produced by Atkins Intelligent Space. When the final simulation was rendered, the 'particles' were replaced with animated people, programmed to walk while the points were moving and idle when the points stopped for traffic signals.

The end result is a simulation that is difficult to distinguish from a real piece of video footage, and that has the added benefit of being based on the technical models developed to test the proposals prior to their implementation.

Public consultation is all about the communication of ideas and proposals to a lay audience in a way that is accessible, engaging and believable. In this respect, the work commissioned for Oxford Circus makes a major contribution the placemaking process.

Paul Fraser is an urban designer and chartered landscape architect with Atkins Ltd

Creating actionable insights from spatial data

GIS analysis at The Centre for Geo-Information Studies, University of East London, is creating evidence-based forecasts for community infrastructure planning

The Centre for Geo-Information Studies at the University of East London focuses on key aspects of spatial data analysis. Led by Professor Allan Brimicombe, the Centre is pioneering projects that are providing key evidence bases for urban development and planning policy across the Thames Gateway.

Several projects are in progress: new, up-to-date and accurate estimates of population and demographics modelled by the Centre are underpinning social infrastructure planning. The collation, geocoding and mapping of anti social behaviour data is locating and facilitating a detailed 'space syntax' analysis of specific urban environments, with the aim of furthering our understanding of the broader links between antisocial behaviour and the social and physical environment. Alongside this, the Centre's maps and models are informing the policy development of the NHS Healthy Urban Development Unit (HUDU).

'I like to think about landscapes,' says Professor Brimicombe. 'There's a landscape of poverty out there. There's a landscape of residential clustering. There's a landscape of accessibility to a GP or to a park. These landscapes may be social, cultural or physical. We bring these out into the open and map them. Policy makers and designers can then base their strategies on our data.'

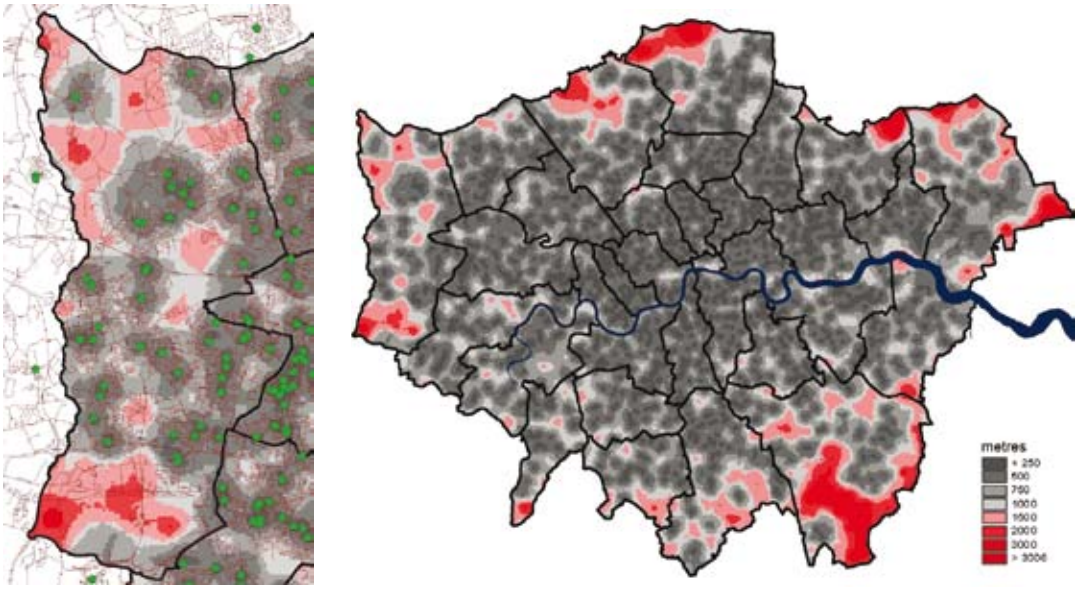
The recent rise in the availability of data is key to the new interest in GIS-based analysis, says Brimicombe. 'The challenge is to be able to analyse that data into what we'd call actionable insights.'

The power of information, he adds, does not lie in the information itself. 'The power lies in how data is presented, so that we can identify opportunities or actions that need to take place. The presentation, very often in map format, gives strong indications as to what needs to be done, and where. And the ancillary material that we produce, graphs and tables relating to data displays at certain times of the day or month or on specific days of the week, is also very important.'

This, of course, is where social scientists and geographers come in. They possess the skills for mining and georeferencing large databases – and for sourcing and accessing datasets. Knowing what questions to ask, and what datasets are available on top of the client's data, is key to creative data analysis. Brimicombe and his team have expert knowledge of the rapidly developing 'data map' of Britain.

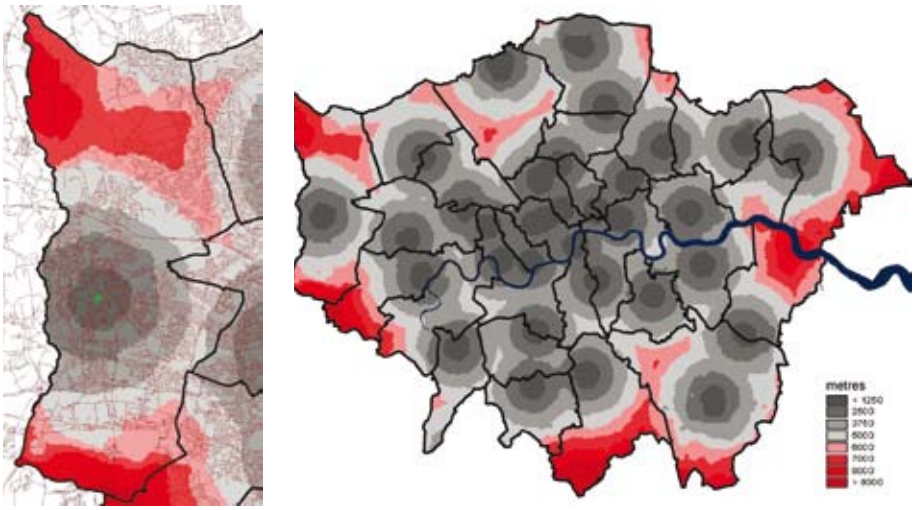
The skillset at UEL is particularly relevant to urban development and infrastructure planning. 'We have worked with crime data, deprivation, population, health, pollution and accessibility to specific amenities. We're multidisciplinary. All we need is some clues from our clients as to what it is they'd like to find out. When it comes to the outputs, we work with the client again because they're able to interpret the data we provide in terms of what it means for planning, for health infrastructure provision or for community safety. There's nothing we can't analyse, as long as the data is there.'

Working with HUDU, The Centre is carrying out a novel spatial analysis of accessibility to health and health-related services with the objective of informing the planning policy for social infrastructure provision at the level of the Primary Care Trust (PCT). The study area is Greater London, with the analyses carried out at the highest practical resolution, the census Output Areas (OA) of which there are 24,140 in the study area. The study focused on access to GP surgeries, dental surgeries, pharmacies, opticians, A&E, general hospitals and bus stops (as an example of access to the public transport network).



Access to GP surgeries: (left) and (right) average weighted distance approach for LB Hillingdon and Greater London respectively (base data Crown Copyright)

The base data for the analyses came from a number of sources. Nationally compiled data on the location of GP surgeries, dental surgeries, pharmacies and opticians were downloaded from the Office of National Statistics (ONS) neighbourhood statistics web site, addresses of NHS general hospitals and A&E services were sourced and geocoded by the team, boundary data and postcode data came from Ordnance Survey (OS) and road centreline data from Bartholomew (Harper Collins). The maps produced are very much decision graphics in that they readily lend themselves to decision support.



Access to A&E; (left) and (right) average weighted distance approach for LB Hillingdon and Greater London respectively (base data Crown Copyright)

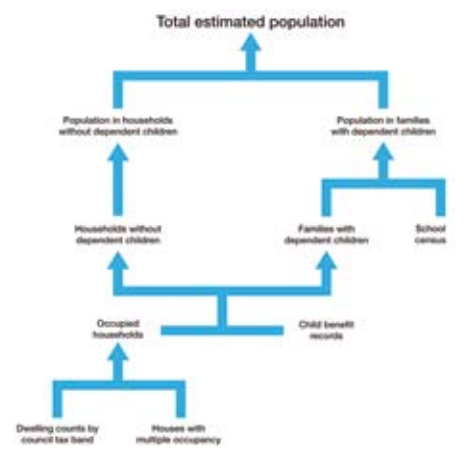
A new approach to estimating populations

The Centre for Geo-Information Studies has been leading a project named Evidencing Adaptive Sustainability (EASY), which has involved developing a new approach to estimating populations for small area geographies. EASY, funded by the UrbanBuzz knowledge exchange programme, has used quality administrative datasets to evidence demographic, social and cultural change by small area geographies with the aim of promoting the use of such evidence in the planning of social infrastructure.

The reasoning behind EASY is that sustainable communities are not static entities, but need to evolve in response to changes in social, economic and political environments. In particular, the provision of services and opportunities (through social infrastructure) needs to change in response to changes in community demographics. On this premise, such demographic changes need to be evidenced in a timely manner.

The study area for building and testing the models has been the 11 boroughs of the London Thames Gateway region. The unit of modelling is the Lower Super Output Area (LSOA). The purpose of the models is not to replace, or compete with, either the ONS mid-year estimates for LSOA or with the GLA estimates for Wards. These new models provide a different view with which to triangulate population change and should be able to provide up-to-the-moment estimates when using the latest datasets.

There is a separate model for each borough. The data sets used are: dwelling counts by council tax bands, multiple occupancy, child benefit records and school census data (PLASC). The data sets have been sourced from central agencies such as the ONS rather than from individual boroughs



(above) The EASY model; (below right) Percentange change in population across Thames Gateway London boroughs by SLOA, based on EASY model

in order to ensure consistency in data robustness across the study area.

'There are some fundamental differences across official statistics,' says Brimicombe. 'Our purpose is not to say that any particular source of official statistics is inadequate, but simply to say that we have a new view.'

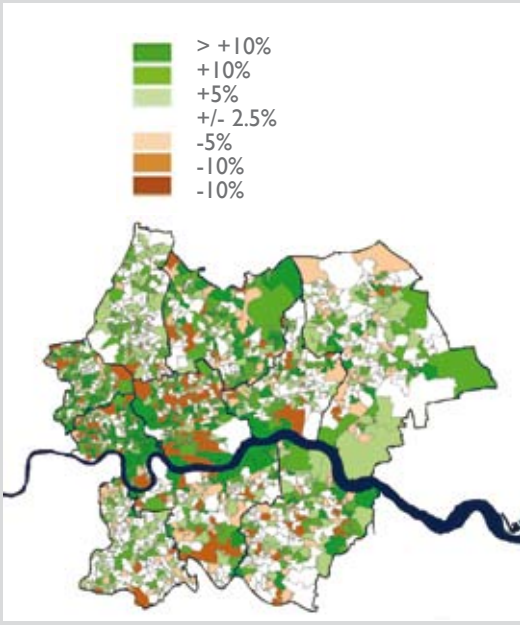
What's hanging in the balance, he adds, is accurate population estimates on which to base social infrastructure planning.

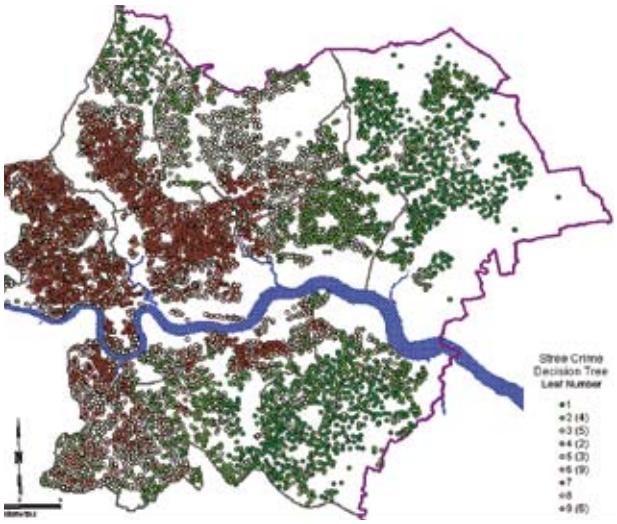
The Community Infrastructure Levy comes into play next year, alongside the current Section 106 arrangements (planning agreements that encourage developers to provide community benefits).

Revenue for boroughs is best accessed via a social infrastructure plan based on evidence-based population projections. The stakes are high. Every individual unaccounted for equates to approximately £1,700 per annum, according to one PCT manager. Roughly speaking, if Office of National Statistics (ONS) projections are around 15,000 people short, a PCT could lose £25 million a year.

'Robust evidence comes from attention to data quality,' says Brimicombe. 'A particular strength of the Centre in its approach to data integration and analysis.'

This Centre is also working on key projects within the Thames Gateway London Partnership (TGLP) Crime and Design Project. The Crime and Design Project aims at developing a set of principles, or a 'theme guide', that can inform the development of safe and attractive communities as a goal of regeneration. The links between crime, urban design and the fabric of the built environment are complex and often very local in nature. ▶





▶ The Crime and Design Project, (see map above) aims to determine variables that reflect the urban structure within which crime takes place. Using a complex system of factor analysis that takes sets of variables such as geocoded incident data, the 2007 IMD, measures of mixed land use, residential density, ethnicity, employment and educational status, key information about the population and the locality can be mapped against recorded criminal behaviours. This model predicts the rate of street crime for specific areas.

The Centre for Geo-Information Studies offers:

- short-term consultancy with rapid turn around of data analysis and knowledge extraction
- bespoke training and CPD in all aspects of geo-information systems, data infrastructures and data analysis
- contract research working to a clients specific needs to develop information solutions
- Knowledge Transfer Partnerships with client organisations to focus on novel or improved products and processes that give the client a new competitive edge
- MPhil and PhD degrees for individuals who wish to validate and improve their research skills through a novel investigation that results in creativity and a new contribution to knowledge

Professor Brimicombe's book, Location-Based Services and Geo-Information Services, will be available from Wiley from February 2009

More detailed information on the Centre and its work can be accessed at: http://www.uel.ac.uk/geo-information/

There are further case studies and multimedia presentations available on RUDI: www.rudi.net

Details of the UrbanBuzz-funded projects can be found at: www.urbanbuzz.org

3D modelling above and below ground

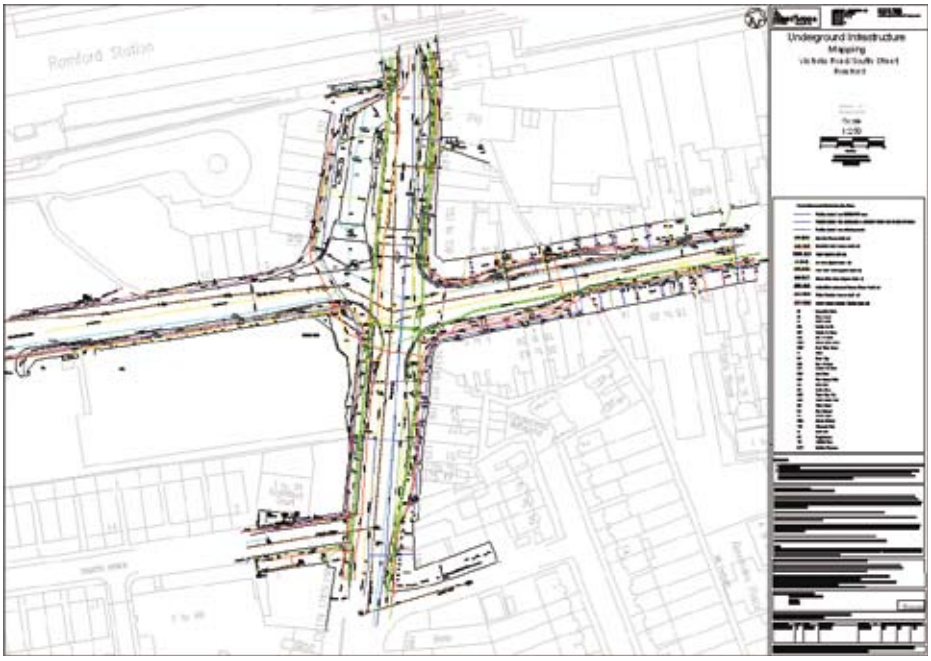
Access to a growing volume of data and an enviable toolkit is helping surveyors to compile an accurate picture of development sites – both below and above ground. By Martin Berry

One of the principal challenges of urban design is to ensure that any new scheme 'fits' with our inherited legacy. To some, the emphasis on the concept of 'fit' will be biased towards physical appearance, how the physical attributes can aesthetically enhance or sympathise with that which already exists. To others, including the humble surveyor, the concept of 'fit' has more quantitative connotations. Thankfully this latter genus benefits from an increasing volume of data and an enviable toolkit – the real challenge is making sense of it all and ensuring that the right mix is employed in making that informed decision.

As premium urban space becomes increasingly rare and valuable, it is worth considering just how congested things are below our roads and footways. Several centuries of infrastructure, from sewerage networks to high bandwidth fibre-optic data, sprawls beneath our feet. These networks are taken for granted but, without them, our cities would cease to function. The passage of time, the implementation of different systems and the churn of administrators are but a few of the factors that contribute to our incomplete knowledge of exactly where and how these subterranean networks reside. Small print on the various owners' plant maps tends to disclaim any responsibility for accuracy and currency of such.

Laser scanning: providing accurate 3D models

Clearly every design needs a starting point and an end vision. As surveyors, we strive to provide the most accurate picture of the starting point, both above and below ground. The topographic survey provides a clear definition of the space in which the designer has to work. A measured building survey provides an accurate model of existing



structures – physical connectivity, access ways and right to light data, all of which help with the planning approval process. Underground infrastructure mapping helps to avoid the unmoveable, to quantify the moveable and to facilitate new scheme connectivity.

As a surveying practice, we were recently retained to provide quality control services to an ongoing urban development. It was only during the piling process that it became clear that the design team had not fully considered the information within the topographic survey – several of the proposed pile positions fell within the adjacent petrol station. Furthermore, it was only after the development of a rather intricate and expensive pump drainage scheme that the team discovered existing adjacent capacity within a 50-year-old gravity sewer. In this highly illustrative case, it was simply the starting point that lacked definition. Our primary recommendation for future projects was to ensure a comprehensive, accurate and integrated survey of the existing site; both above and below ground.

There have been great technological advances in the surveying equipment available over the last 10 years. Terrestrial laser scanning and close range photogrammetry have revolutionised our ability to 3D model the above ground environment. Ground

Subsurface imaging with ground penetrating radar

penetrating radar and associated radio location techniques have allowed us to 'peer' underground like never before. The availability of spatial data increases at an unstoppable pace. Computing power allows us to analyse and communicate data at amazing speed.

Integration of these various data and techniques can provide us with the complete stating point picture. Inherent respect for accuracy in the data acquisition and management process ideally positions the surveyor in responding to this challenge.

Martin Berry is the director of Landscope Engineering
www.land-scope.com

Rome can be (re)built in a day...

CityEngine, a procedure-based 3D city creation system capable of generating large urban environments '10 times faster than previous solutions', is making waves across the digital design community

The main application of CityEngine, according to creator Pascal Mueller, is the efficient design and creation of urban environments. 'We offer a flexible pipeline and therefore the user can decide if he or she wants to lay out the street network in the CityEngine, or model it manually in an application such AutoCAD and import it into CityEngine for further visualisation.'

For urban planning, says Mueller, CityEngine's strengths lie in the both its procedural design tools and on its fast creation of visually appealing models.

The user can create (or import) different planning scenarios and apply rules that create a visually appealing model, which can then be visualised in applications such as 3D Max.

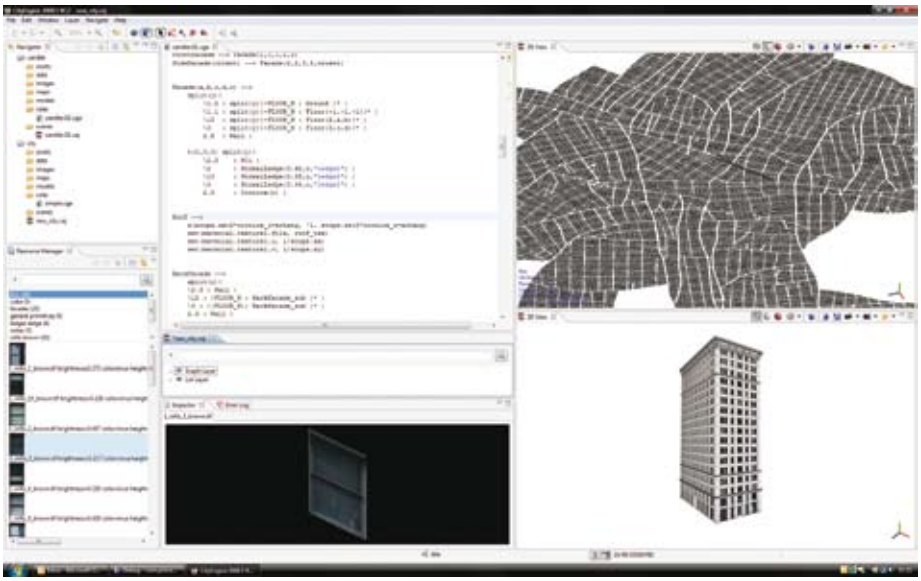
'CityEngine is mainly suited for the creation of impressive 3D animations and promotional imagery to promote projects, and for the pre-visualisation of different scenarios.'

Models can be updated 'almost' in real-time, says Mueller. So-called attributes can be defined in the rules, resulting in a parametric modelling interface. Changing these parameters results in revised visualisations within seconds.

Evaluation tools are not supported – yet. But it is possible, for example, to import mass models generated in applications such as Revit and carry out analysis in this way, says Mueller.

There are also prototypes in which adjacency influences and traffic simulation can be included in the generation process, but this is not included in the current release of the CityEngine. 'We intend to publish these findings soon,' says Mueller.

CityEngine is available in an 'install and play' format. While the urban design tools are intuitive, the shape grammar scripting that underpins CityEngine requires a learning curve of about a week, says Mueller.



The CityEngine founder is also behind the creation of the CyberWalk, the world's first omni-directional platform. It enables users to explore virtual environments via head-mounted displays by walking in any direction. Using CityEngine, ancient Rome has been recreated in a digital reconstruction project that may well be one of the world's biggest computer simulations.

Rome Reborn aimed to create both virtual and physical models in order to spatialise and present information and theories about how the city looked in 320 AD. The project was part of a research initiative at the University of Virginia. The CyberWalk was used with the model to let people stroll around ancient Pompeii. There are now plans to insert a version of the model into an online virtual world such as Second Life so that more people can access it.

Bernard Frischer, University of Virginia, sees virtual worlds as a key educational tool of the future, especially for the study of ancient civilisations. To truly understand a civilisation, scholars need to immerse themselves in that world, he told *The Times* newspaper. 'By transacting in the ancient currency and abiding by the rules of engagement of the day will come a deeper understanding of the way ancient peoples may have interacted, how they settled disputes, how riches were amassed and dynasties formed.'

Further information:
www.procedural.com/cityengine.html
Rome Reborn project
visit www.romereborn.virginia.edu
and
www.siggraph.org/s2008/attendees/newtech/2.php

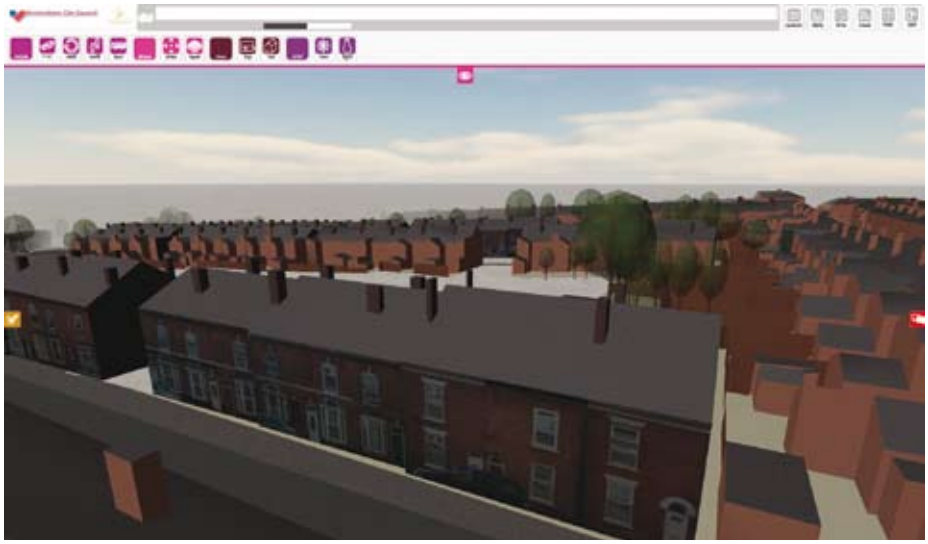
Can communities plan? Yes we can…

Slider Studio is bridging the gap between architecture and the computing disciplines. It has created a virtual world for testing, progressing and communicating new housing delivery concepts

Three architects and three computer scientists make up the Slider Studio team, which makes focused use of technology to help deliver housing, urban design and community buildings. The RIBA-chartered practice was founded in March 2005 by architect Michael Kohn, previously a director at Edward Cullinan Architects. Michael was joined by Estonian architect Renee Puusepp in June the following year, the two having completed the MSc Computing and Design course at University of East London (UEL) together. The team is based at the Knowledge Dock, UEL, ideally placed between an architecture school and a computing school.

One of Slider Studio's innovative initiatives is Enabled Self Procurement (ESP), an idea for embedding sustainability into community design by giving its future residents much greater input into design, build and planning options. Essentially, it means bringing together an 'enabling' developer, a set of community-wide design codes and a series of customisable 'pattern books' for individual home designs. To test and progress the ESP concept, Slider Studio created bespoke virtual world software called YouCanPlan.

The 3D simulation enabled by the software enables users to explore a virtual development community. There's online chat for the use of potential 'neighbours' the developers and contractors, a 'shop' from which to select customisable pattern book house designs, and a 'project management centre' that counts the cost of individual choices and feeds back on environmental decisions.



The team is currently developing a new version of YouCanPlan for online community consultation around a housing-led regeneration in Lozells, Birmingham. Working in collaboration with Axis Design Architects for Birmingham City Council and Urban Living, the new platform has been configured to allow direct uploads from designers, moderated by the Lozells project manager. A new feature supports resident surveys, enabling residents to feed back comments to project officers online. The Lozells project software will be launched early in 2009, and will be publicly accessible from www.youcanplan.co.uk

Recent developments in virtual environments such as YouCanPlan will shortly be followed by a TSB-funded project for an architectural virtual environment, coupled with a project management database called StickyWorld. Slider's team is collaborating with Edward Cullinan Architects, Make, HTA and Scott Brownrigg, with support from UEL, to develop online 3D project collaboration software, to be released in beta form in 2010.

Slider Studio was initially set up to deliver independent computational design services to London's premier architects, using the CAD programming skills taught at UEL. Its earliest commissions included work for Make architects, working on applications for envelope design.

Slider Studio is a registered member of the Bentley Developer Network, and is skilled in customising MicroStation and other mainstream CAD packages in order to develop project specific plug-ins and functionality improvements. Additional specialisms in front-end site appraisals for housing and mixed use developments are being developed through the practice's software-assisted *sitecapacity.com* service.

Further information:
www.sliderstudio.co.uk

Site Capacity
www.sitecapacity.com
The supporting software called HIM Toolkit (Housing Information Modelling Toolkit) was developed in VBA for MicroStation

Enabled Self Procurement:
www.esp-sim.org

YouCanPlan:
www.youcanplan.co.uk

YouCanPlan was developed with the support of UrbanBuzz:
www.urbanbuzz.org

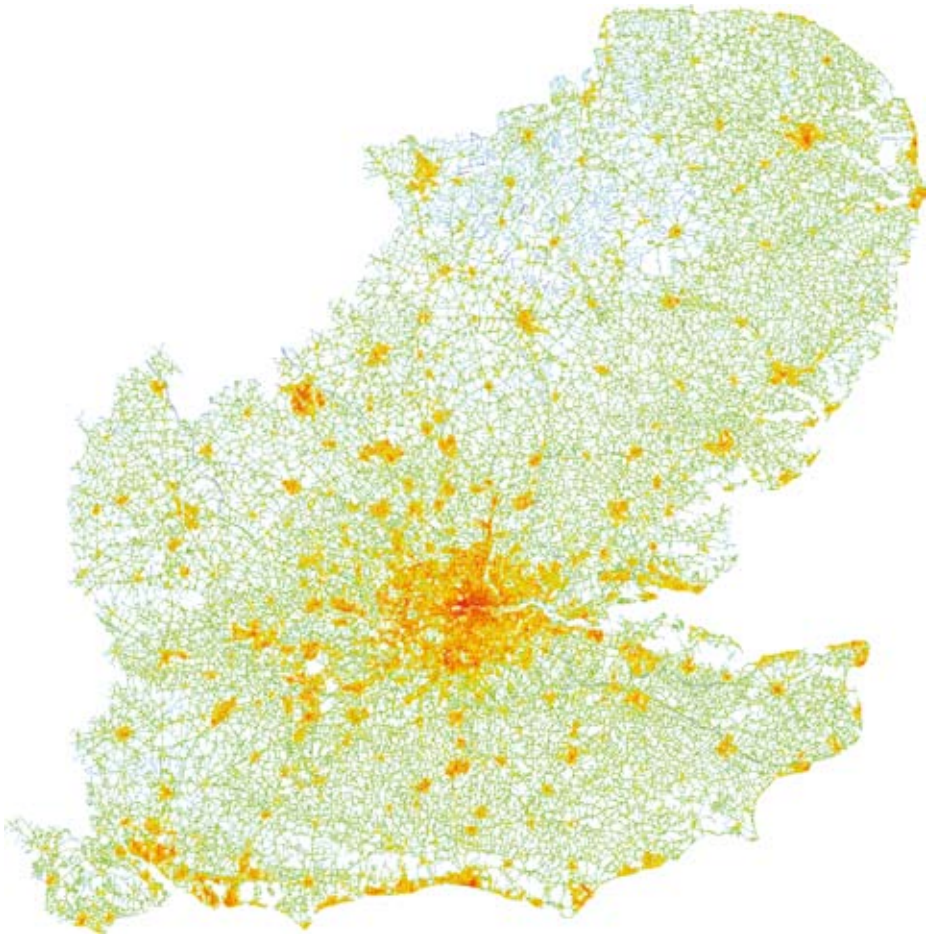
For a multimedia presentation on the ESP concept, visit RUDI's multimedia section
www.rudi.net

The socio-economic value of urban layout

A team led by Space Syntax has developed a set of GIS-based computer tools to quantify and monetise the socio-economic benefits of urban layout. This new urban layout evaluation programme is able to overcome the barriers preventing layout factors being considered in economic appraisals. By Christian Schwander

Urban layout, and its effects on social, cultural and economic aspects of community, is an intangible asset, difficult to visualise and measure during the planning and design process. Although methods of quantifying and measuring the relational properties of urban layout within its context have been developed by researchers at UCL and other institutions, and used successfully within the new planning process, only a handful of Local Authorities and Regional Development Agencies make use of them.

In a recent project, a team led by Space Syntax has identified themes in which the impact of urban layout has been scientifically proven, and where tangible spatial design, social and economic indicators for the performance of layout can be found. A new layout value tool calculates these indicators on the basis of simple Ordnance Survey maps. A set of GIS-based computer tools has been programmed by Space Syntax to calculate the indicators using available spatial and statistical datasets (Ordnance Survey, Office of National Statistics). The tools can quantify and monetise the socio-economic benefits of urban layout. Five key themes, oulined below, were identified for further analysis in the development of the indicators.



I-VALUL has developed a layout value map of the greater south east to be used as spatial context for the layout valuation process, either to assess the value of urban layout in existing places or to test the impact of new development onto the surrounding area

The value of property security

Based on the analysis of burglary patterns over five years in a London borough, Professor Bill Hillier and Oezlem Shabaz at UCL identified four major layout factors that contribute to safer places. One of these factors reducing burglary risk is the existence of a residential culture, which can be measured by the number of dwellings per street segment.

The value of urban centres

Paved with Gold (CABE/Buchanan 2007) showed that the impact of street design on the economic impact of 10 London high streets was complemented by a strategic layout component. It shows that successful urban centres have particular spatial features, for example significantly smaller urban blocks and higher accessibility streets that distinguish them from their context. Importantly, this enables us to distinguish spatial effects and compositional effects.

The value of residential property

Analysis carried out by UCL and Savills Research on more than 100,000 dwellings in a London borough showed that the distribution of residential property values, measured by council tax band data, follows a clear spatial pattern. A concentration of higher value properties is found at globally integrated places, where locally integrated places tend to have lower property values. Savills Research showed that tax band trends are in line with property sales.

The value of public realm design

Based on the recently completed public realm improvements in the Walworth Road in Southwark, a before and after assessment of the detailed public realm has been carried out comparing the results of the Pedestrian Environment Review System (PERS2) with the spatial layout analysis. The case study also suggests a way to capture the health impact of a more pedestrian-friendly street layout through higher physical activity rates.

The value of personal security

The same research shows that several spatial factors reduce the risk of street robbery, including the relationship between sufficient movement rates resulting from an integrated spatial layout and residential culture measured by dwellings per street segment.

This project, known as IVALUL, has been supported by the UrbanBuzz knowledge exchange programme:
www.urbanbuzz.org

Further findings from the project will be made available soon. For more details, please contact:
a.chiaradia@spacesyntax.com
c.schwander@spacesyntax.com

3D City Models incorporate all of the important massing elements of buildings and are available in four levels of detail:

/1 - BLOCK HEIGHT
Basic models to ridge height without roof details.

/2 - INTERMEDIATE
Basic roof structures, terrain surfaces, road networks and tree models.

/3 - HIGH
Detailed roof structures (dormers, chimneys and parapets), terrain surfaces, road networks and tree models.

/4 - TEXTURED
Detailed models further enhanced with aerial imagery to create a photo-realistic, interactive environment.

Applications for the 3D City Model service include:

/ Masterplanning
/ Architectural visualisation
/ Public Consultations
/ Telecommunications - line of sight studies
/ Navigation
/ Environmental studies
/ Emergency planning
/ Physical architectural modelling
/ Media - entertainment events planning
/ Volumetric calculations
/ Light studies

The models are easily updated and buildings can be manipulated and replaced with newer schemes.
All models are user friendly and are available in the following formats: DWG/DXF/DGN/3DS/SKP/KMZ/SHP/STL/

City Vision Networks provides detailed and comprehensive services which include:

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/ Full exhibition/Centre design
/ Full public consultation work including questionnaires, reports and surveys
/ Verifiable views - planning consultation work

1 City Vision Southampton/3D Model
© City Vision Networks

City Vision Southampton/Public Exhibition - 5.5x4m model
www.cityvisionsouthampton.org.uk
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2 City Vision Southampton/Animation
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3 City Vision Southampton/Public Exhibition
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Making space for mapping place

The Centre for Advanced Spatial Analysis (CASA) at UCL works with emerging computer technologies in relation to geography, space, location and the built environment

CASA's GeoVUE initiative is developing new kinds of virtual urban environments (VUEs) that can help users to make sense of cities. There's little that CASA won't tackle, from virtual reality to online maps – all tools that are gaining popularity amongst everyone with an interest in place. The rise of neo-geography – defined by CASA's Dr Andrew Hudson Smith as 'the re-emergence of the importance of geography in a Web 2.0 world' – is enabling more and more people to 'map' their own place information in and onto computer and web systems that mirror the real world, and to visualise this information using easy to share channels.

Virtual London is a 3D computer model of the city inside the M25, originally developed with the intention of helping Londoners to visualise what is happening to their city. 'We've been working on the Virtual London project for years,' says Professor Mike Batty, CASA's director. CASA completed the project back in 2004 for the GLA, says Batty, at which time GLA planning professionals wished to use the model in-house, but didn't have the necessary software to run it – an issue typical of the 'lab versus real world' gulf that academics are finally beginning to get to grips with. Then Google Earth came along to solve this problem, says Batty, although

CASA's Virtual London 3D model

we still couldn't put the model into the public domain due to licensing issues with Ordnance Survey (OS). The model has been placed centre stage in the 'free our data' campaign supported by *The Guardian* during recent years. 'There are enormous software and data copyright issues with OS data and geo-info supplier Infoterra,' comments Batty.

'We can display Virtual London, but we can't put it where any member of the public can interact with it,' Batty told the paper. 'Public money funds it, yet 'public' copyright keeps it shut away.' Even the mighty Google failed to pay OS off and free the model, with OS refusing to accept the one-off fee offered by Google for the right to use its data. But at least the professionals have access: the local authorities in London have OS licenses, and the relevant Infoterra data was bought by London Connects for the GLA area, the model could be delivered to each of the 33 London boroughs as a Google Earth product.

Although Virtual London was created with public participation in mind, this is not really happening because 'our clients aren't really in a position to know quite what to do with it', says Batty. But CASA can do lots of things with it themselves. 'We can flood it to 5m deep. If the Greenland icecap melted, then this shows what London would be like.'

Working with King's College and the London Air Quality network, we've layered a variety of pollutants across the 3D surface, which is much more evocative than looking at a map.' In the coming months, as the Government's Power of Information Taskforce seeks to smooth the rocky road to free data access, it is hoped that the model will be able to do much more. 'It could play a key role in assessing the impact of tall buildings, or of major planning schemes. Anything involving change to the city can be recorded in the model to produce a simulation of what would happen in reality,' says Batty.

Gmap creator

Dr Andy Hudson Smith, CASA's research director, is a man on a mission to make online mapping more user-friendly and information-rich.

'We created GMap Creator as a shared resource for maps,' says Hudson Smith. 'It's a freeware application that enables users to create any map and overlay it on the Google Map base.' 'GMap Creator basically points to your map and pulls it in and you allows you to share it. We do this because of copyright. If you've used Ordnance Survey data in your map, and we load it on our server, then we're liable. This way, we can get round that issue.'

Using GMap Creator isn't rocket science, but it takes some know-how and it isn't something that everyone can easily do. 'It's not quite like YouTube, which almost everybody can use to put a video online,' says Batty. 'There are many educational issues to be raised in terms of using these technologies.'

A place for maps

'We really want to create maps that can be shared and compared,' says Hudson Smith. In an example of what is possible, and working with Radio 4, CASA is behind a participatory 'crowdsourcing' experiment. CASA's MapTube platform is being used to survey the public and to map ways in which the credit crunch is affecting people across the UK. The map is updated every hour with information entered by users. 'We wanted to make software that lets you put your maps online, alongside other people's maps,' says Hudson Smith. 'MapTube also enables the mixing and matching of data-sets. There's so much information out there, and this means that organisations don't need to rely on the information they have in-house.' In a Web 2.0 world, adds Hudson Smith, data is everything. It is the key to knowledge and understanding. Without data, spatial analysis simply would not exist.'

For more details on these and many other research projects, visit the CASA website at ***www.casa.ucl.ac.uk***

The latest ideas and applications from CASA and others are discussed on the neogeography blog Digital Urban: ***www.digitalurban.blogspot.com***

Dr Hudson Smith *has recently produced a guide and 'how to' book,* ***Digital Geography****, covering urban visualisation, mapping and virtual worlds in a Web 2.0 context*

Real time, SENSEable cities

Real time data from existing city networks is creating an interface between people, technology and the urban environment

Computers, says Assaf Biderman, Associate Director, SENSEable City Lab, Massachussetts Institute of technology (MIT), are making their way out of their home, out of the office and into the streets. They are increasingly present in our pockets, street lights, traffic lights, urban furniture and infrastructure. 'There's a blanket of increasingly dense interconnected computers covering cities,' says Biderman. 'This allows us to extract and put back information at specific locations. So we thought, why not apply the thinking that's behind human computer interaction to cities?

The idea is look at how we can embed technologies in cities, and at how embedded technologies can help us understand them. There are two main avenues that are relevant to planners with respect to this work.

The first one is the collation of 'real time' information about what's going on in the city from the standpoint of public transportation, pollution, events, emergencies, mobility of people and mobility of tourists.

'With this information, we can begin to allocate resources more efficiently,' says Biderman. 'From the infrastructure manager's standpoint, this information adds value to planning. On the other hand, we can aggregate this data and then study and make longitudinal studies that look at the data over time. This gives us new insights and numbers to put behind our observations or assertions that, so far, have been qualitative about cities.' For example, he suggests, what is the distribution of public transportation vehicles versus the distribution of pedestrians? Or what is the movement of tourists through the city over time, and does it tally with the location of tourist services?

Long term planning

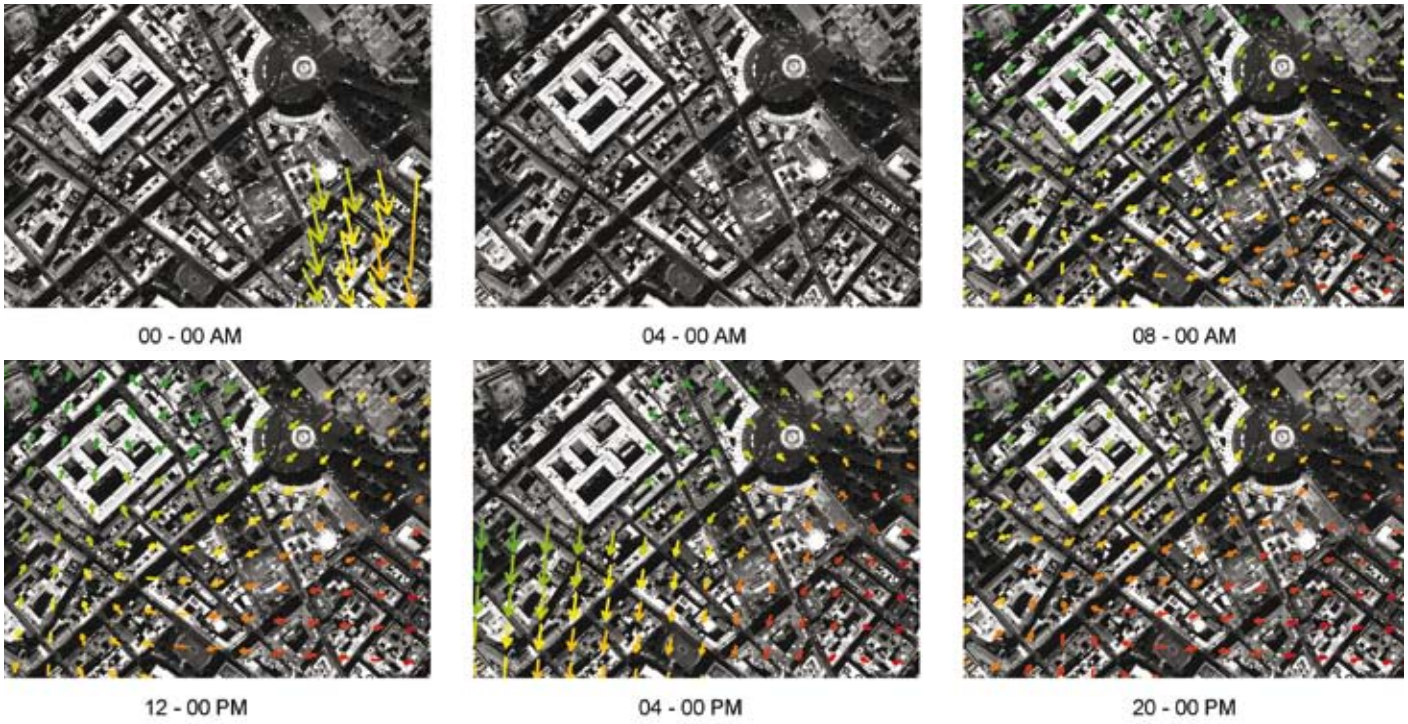
Data that has been aggregated over time can be used for long term planning, says Biderman. 'In the longitudinal studies, if we create datasets about a place that describe different things, for example, the mobility of people through cell phone networks, land use, transportation or energy consumption, we can start understanding correlations between these things over time, relationships that were previously difficult to analyse.'

Data collection was previously much less responsive. For the purpose of transportation planning, designers used to – and still do – send people to the street corners to count pedestrians. We also conduct censi every 10 years. But, says Biderman, cities are changing much faster than any survey could track. So this new kind of frequently updated survey or 'sensor' can be useful for planning.

Focusing on emerging city infrastructures, designers could make use of all manner of embedded technologies to understand the dynamics of real-time networks in cities. 'We could electrify every piece of pavement, or put sensors everywhere. But this is neither scalable, sustainable nor cost effective. So we find large, pervasive infrastructure networks that can help us understand something about these types of dynamics,' says Biderman. 'We partner with service providers, for example mobile phone network providers, energy or rubbish collection services and transportation services. These people manage networks that are computerised for network management.' Biderman and his team take the data that is produced as 'junk' on the network, and use it in order to understand city dynamics.

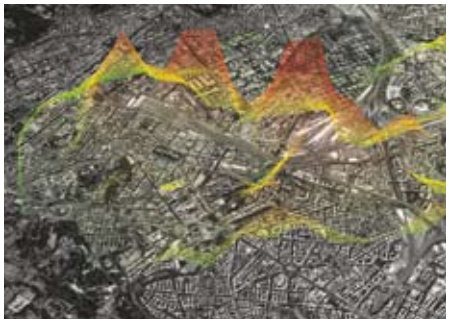
RealTime Rome

One project, RealTime Rome, involved taking information from Telecom Italia about the consumption of bandwidth on cell phone towers – one file every 15 minutes. This anonymous information had a relationship to what people are doing in a specific place, and how many people were there at any given moment. The data was superimposed onto other datasets such as the distribution of taxis and buses in the city of Rome. The idea was to gain an understanding of supply and demand and, through the aggregation of data, to look at relationships between cell phone usage and land use.



The movement dynamics of mobile phone users at different times of a day in neighbourhood scale

Each place has a calling signature that relates to its usage patterns. Biderman's team produced call usage graphs for the entire city of Rome, along with similar land use graphs. In traditional planning approaches, land use is looked at statically – the function of place doesn't really change rapidly over time. Yet in a city like Rome, the graphs revealed stacked land uses showing how places are used in multiple ways throughout the day night. The analysis is developed using data on places with similar calling behaviour, correlated with land use data for the same place. It revealed very particular calling behaviour at sports events, at retail service areas and in business



Mobile phone users around the Termini train station visualised as a three-dimensional interpolation

areas. In some cases the team found a 90 per cent correlation between cell phone use and defined land use. 'This suggests that, rather than relying on small sample sizes and censi every 10 years, we can gather data for a few hours or a few days and assume which type of activities are happening in given places in the city at different times. This could translate to design interventions,' says Biderman.

Of course, designers and planners aren't going to be using these approaches any time soon. 'It will take time for this type of message for understanding places to become commonplace. Administrators cane take a long time to adapt new methods. What we're engaged in, and the key role of academia, is to propose new methods, undertake analysis, share data with colleagues and validate the analysis. We take it a step further and by partnering with and exposing them to the possibility inherent in this type of technology. We can have an impact on policymakers – a project in Amsterdam involving the creation of real time sensors for water rise response indicators is now moving towards commercial development.'

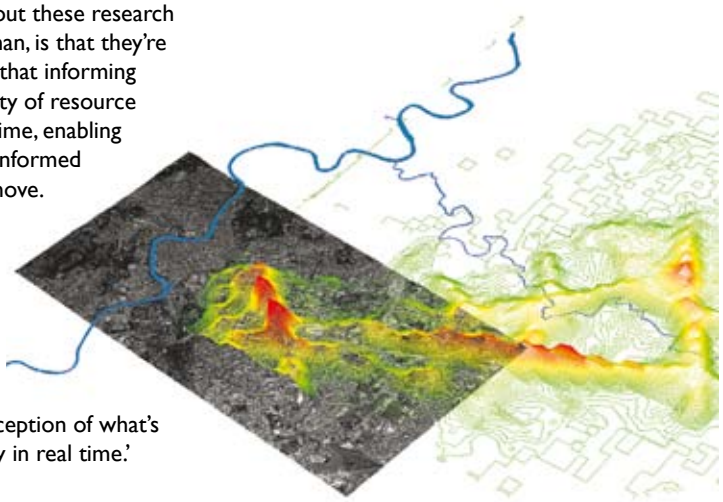
The other key point about these research approaches, says Biderman, is that they're bottom-up. 'We believe that informing people about the visibility of resource around the city in real time, enabling people to make better informed decisions, is a positive move. It's not only the city that can be actuated in a new way through real time information, but also the people who can actuate the city by having an improved perception of what's going on around the city in real time.'

Real time city navigation is certainly a heart-warming thought, and could enable us to impact more efficiently on the city network without having to totally change it.

With access to good data on city conditions, knowing that the best route from place A to place B is by walking 10 minutes in a particular direction, taking a subway and then switching to a bus – all of which we could synchronise based on real time knowledge. Yes please!

For more information on this and other projects run by the Senseable City Lab, visit: ***http://senseable.mit.edu/***

For a video overview of the real time concept from MIT's Noah Raford, ***visit www.rudi.net***



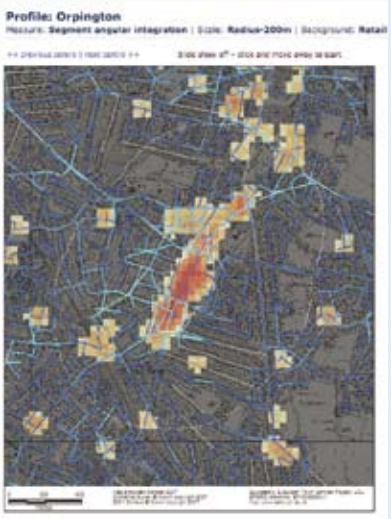
GIS-based analysis uncovers the diversity of our suburbs

The Towards Successful Suburban Centres project, based at UCL, is one of several academic projects that are integrating socio-economic data with information about the layout of urban areas. Dr Muki Haklay is a senior lecturer in Geographic Information Science in the Department of Civil, Environmental and Geomatic Engineering, University College London, and the director of UCL Chorley Institute – an interdisciplinary research centre working to 'spatially enable' research.

Dr Haklay and his team are using GIS and spatial analysis techniques to support designers and planners by developing new techniques to analyse data on the factors that have, over time, made suburban town centres successful and vibrant. 'Using GIS with combined modelling and mapping techniques, we can create a holistic view of place, including taking a historical look to see how specific places have developed and stood the test of time,' says Haklay.

The suburban centres project has, says UCL researcher Sam Griffiths, effectively put an end to the notion that conventional suburbs are residential enclaves. 'Our analysis is revealing the scale of socio-economic diversity in our suburbs,' he says. 'There a wide range of commercial and business-related activity going on above and behind the high street,' he says. 'Traditional data sources do not reveal these types of activities, and so they are effectively invisible.' The project data, however, is illustrating to what extent suburban town centres are commercial and business destinations in themselves.

Speaking at a recent seminar, Dr Haklay outlined a view that many urban designers and masterplanners also hold: the need for multi and interdisciplinary working when dealing with place. Looking at a typical image of streets and people, he says, 'architects and urban designers tend only to see the buildings and the spaces. Social scientists and geographers see only the people. We need to bring these views together.'



Orpington town centre analysis: radius-200 refers to the linearity of each segment in relation to all other segments within 200 metres. Red lines (high values) indicate relatively shallow lines which are integrated. Blue lines (low values) indicate relatively deep lines which are segregated

Spotting spatial hotspots: centrality

A key thrust of the work at The Human Space Lab, Polytechnic of Milan, has been the importance of centrality. Multiple Centrality Assessment (MCA) has been developed using urban design principles and the physics of complex systems. The Lab's Spatial Hotspotter tool, based on MCA, uses sets of GIS-based procedures and tools to analyse networks of streets and intersections

Research led by the Lab's Sergio Porta over the past few years has explored centrality via Multiple Centrality Assessment (MCA); a set of GIS-based procedures and tools. MCA has been developed using the principles of urban design and the physics of complex systems.

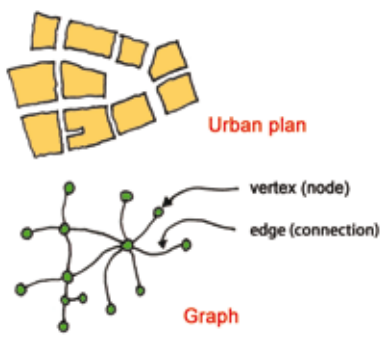
The Lab's Spatial Hotspotter tool, based on MCA, enables designers and planners to map spatial centrality by analysing the network of streets and intersections as represented by the road centreline between nodes graphs familiar to transport planners.

After geo-referencing in a GIS, sets of algorithms calculate a range of centrality values (closeness, betweeness and straightness) to each node in the system. The output is a set of colour-coded maps like those shown below, representing centrality values (hot spots are red, marginal spots are blue).

A 'central' place has many special features: visibilty, accessibility, and a greater probability to develop as an urban landmark and a social catalyst. The potential of an urban area to sustain community retail and amenities is a key factor for achieving social cohesion. Such an area requires self-surveillance, liveability, local economy vibrancy, cyclist and pedestrian friendliness and visual landscape diversity. Being key to all these attributes, centrality emerges as one of the most powerful determinants in the hands of urban planners and designers.

Brief introduction to graph theory

In mathematics and computer science, graph theory is the study of graphs; mathematical structures used to model relationships between vertices (nodes) and edges (connections between nodes).



It can be used in urban design to assess the layout of streets and other spaces – how well connected a place is, or how legible a street layout is.

Centrality – a measure of how import a node is relative to other nodes in the same graph. There are several different types of centrality.

Degree centrality – this is a measure of the number of connections a node has.

Betweenness centrality – nodes have higher 'betweenness' if they occur on more paths between other nodes.

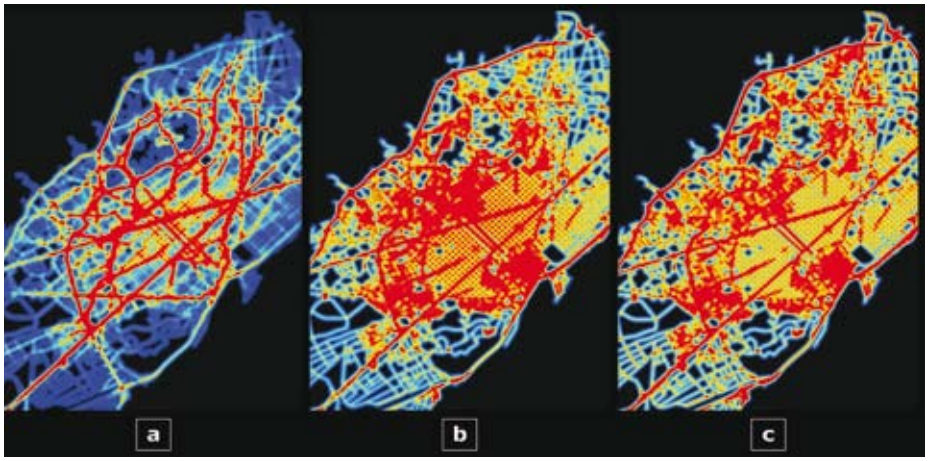
Closeness centrality - this is a measure of how close a node is to all other nodes.

Eigenvector centrality – this is a measure of how important a node is, based not just on how many other nodes it is connected to, but how important those other nodes are (this principle is used by Google to rank how important web pages are in search results – if a page is linked to by an important website then it will appear higher in the listings than a page linked to by a less important website).

The MCA analysis has added two more:

Information centrality – this indicates how critical a node is to the overall system by measuring the drop in efficiency of the whole network if the node was removed.

Straightness centrality – this measures how much the real paths that connect each node to all other nodes diverge from a straight path.



Street centrality in itself might be misleading if not combined with a measure of street spatial concentration – the number of streets that you can reach in, say, 400m. This important factor is captured by a measure of density – the density of street centrality that actually matters, more than street centrality alone

Further information:
http://www.humanspacelab.com

Visit ***www.rudi.net*** *for a multimedia presentation form Sergio Porta, Human Space Lab, plus more detailed papers on MCA and U-transit*

A personalised urban transport service via a mobile phone

The U-Transit concept proposes an integrated, personalised urban transport service that can be requested through a mobile phone at any time, and from any place in a city

The idea of U-transit is that users log in to a 'smart assistance' user interface and request travel to a specific destination. The U-Transit system will then plan a journey, using a combination of GPS-enabled shared taxis ('U-vans') as well as guided bus and light rail services as required.

When requesting travel, users are presented with a suggested route, and quoted a price for the journey, which they can accept or reject. If they accept, then a 'U-Van' will be instantly despatched to their location. Billing is done automatically to a user account when they arrive at their destination.

U-Transit could easily be implemented using today's technology. It does, however, raise a few questions.

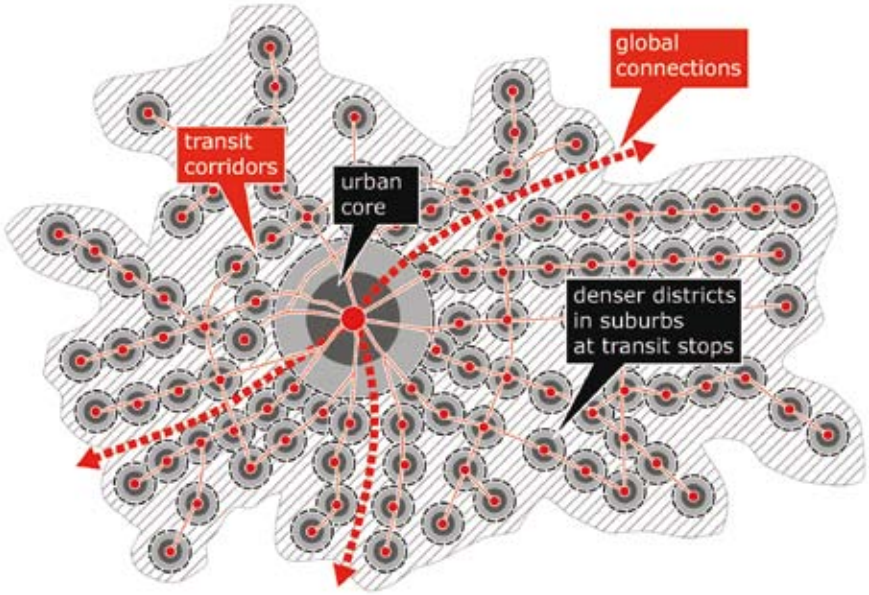
The system obviously needs a critical mass of 'U-Van' taxi vehicles to make it practical, and to keep waiting times down. The proposal suggests that the U-Transit service would be a public transport monopoly in any urban area. From a UK perspective, it is difficult to see this happening politically, and a more likely scenario might be a payment and journey-planning network to which existing taxi, bus and rail companies could subscribe. (Initially this would mean a parallel system for taxis, where passengers could choose whether to pay a premium to keep a taxi for themselves, or whether they wanted to 'open up' their journey to other users of the system.)

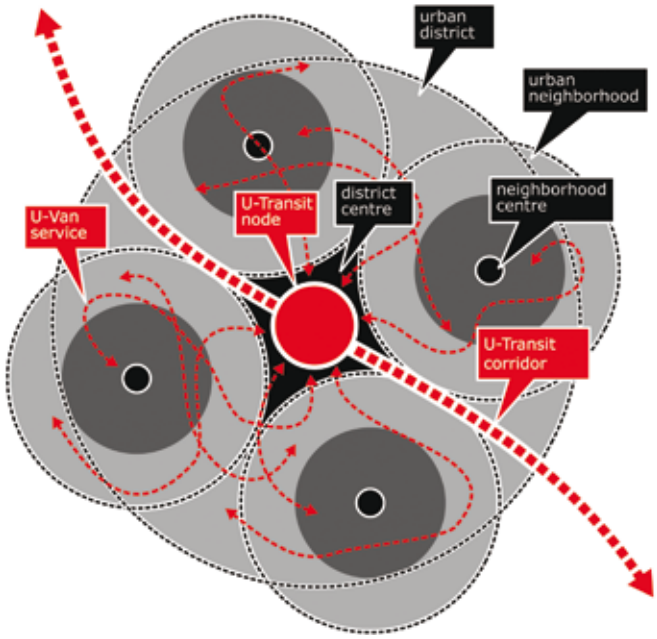
The concept is for a 'ubiquitous' transport system where nobody has to wait, but if longer waiting times occur there are questions over how passengers would be prioritised. A simple first-come, first-served approach is one way – alternatively priority could be given to women travelling alone at night, for example? Should people be able to pay a premium for priority service?

What if two passengers in the same 'U-Van' changed their minds and wanted to go to different destinations? Would there be 'U-Van rage'? Should it continue to the original destination, or should there be some system for assessing the urgency of the new travel requirement (a medical emergency should obviously take priority)? Could a premium be paid to immediately change the direction, leading to destination bidding wars.

Overall, it's a fascinating concept. At first, the idea of U-Transit only seems appropriate for new or rapidly growing urban areas, but the technology involved isn't that new, and the system could have wide application in existing urban areas. U-Transit is basically a clever synthesis of taxi-sharing with public transport timetables and journey planning software, and has the potential to make travelling much easier.

U-Transit proposals: http://www.humanspacelab.com





Streamlining the design cycle

Creating new ways of exchanging knowledge and data between planners, policy makers, urban designers and computational designers

The Smart Solutions for Spatial Planning project, led by University of East London's Paul Coates and Aedas's Christian Derix, is taking existing geographical and social data (GIS and social infrastructure models) for two London boroughs and demonstrating new ways in which computational generation and analysis tools can explore urban and social trends. The aim is to support the development of digital design processes between planners, policy makers, urban designers and computational modellers. This involves creating new ways of formatting and sharing data to speed up the design cycle.

SSSP hopes to provide a fast link between policy proposals and quantifiable outcomes in the form of digital masterplans, enabling local authorities to analyse planning applications more effectively, and developers to quickly develop and test a range of scenarios.

The team has plugged in GIS data, social infrastructure planning data (from the 2001 census and Index of Multiple Deprivation, or IMD), urban design best practice and planning policy guidance to create urban development simulations for case study sites in east London.

'Using the computer you can change things quickly and easily' says UEL's Paul Coates. 'We're bringing the development of masterplans into a digital workflow.' Digital masterplanning requires us to look afresh at how and why we do things, says Christian Derix, Aedas.

'We can do one thing with concrete and another with plastic. With pencils, we can draw in 2D. With computers, the model can generate smart designs based on key parameters. Planners tell us they would welcome the idea of being able to test scenarios while they are creating and developing planning policy frameworks.'

The new digital tools will explore accessibility, pedestrian mobility, density, urban structure and block generation. 'We're creating digital processes to improve the speed and flexibility of masterplanning at the urban block scale,' adds Derix.

'We have tried to break down the barriers between planners, developers, architects and urban designers. These groups don't share data easily. If you make it easier to move data around, then you could get through the design cycle much faster.'

Further details:
http://wiki.uelceca.net/sssp
p.s.coates@uel.ac.uk

Pedestrian Network Connectivity modeller: The user sets a distance and time for the application to find weak links within the network of routes, and propose new links. Essentially, it helps to improve the connectivity and accessibility within the network – automatically

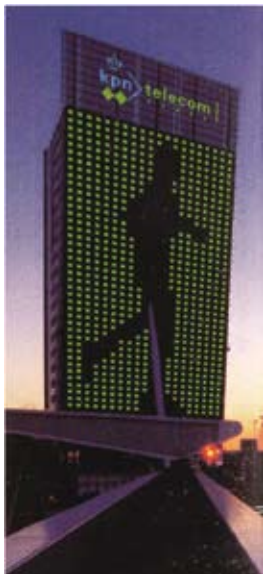
Digital media and big urban screens:

digital wallpaper or cultural exchange?

As large urban screens appear on buildings, on streets and in our squares, we need to explore the ways in which they affect our experiences of public space

Big screens are appearing in squares and on building facades across the UK, courtesy of the BBC and partners in the run up to 2012. Both the screens and the content they display take many forms – news, sport, local information and, of course, commercials. The Commission for Architecture and the Built Environment (CABE) has accused the London Olympics organisers of plastering the country in 'digital wallpaper' and turning it into an 'outdoor Currys' after it emerged that many of the 400-inch screens would not be temporary, as originally suggested. CABE says that the screens should be steered towards new buildings and spaces in areas where digital media play a positive role.

A big screen is 'much more than a massive telly in an open air living room' says the BBC. This is certainly true – they're also used to great effect for interactive games based on movement recognition. A camera on top of the screen picks up and shows people moving in the square, and software such as that designed by ICDC (International Centre for Digital Content at of John Moores University, Liverpool), shows objects that interact with people's movements. These are projected – for example, players kicking a virtual reality football around the square, rather like a giant Wii Fit. Yet CABE remains sceptical. 'This is not urban regeneration,' said Sarah Gaventa, director of CABE Space. 'If it is going to work, funding needs to be earmarked for physical improvements to the spaces for which screens are proposed, and for proper curating to ensure the cultural programme is high quality.'



Others agree that to fill their great potential, screens need closer sctrunity. 'The use of these screens will bring new ideas and challenges for city regulators, artists, architects, urban designers, producers, broadcasters and advertisers,' says UCL researcher Ava Fatah gen. Schieck. 'We are just beginning to understand their potential for public information, art, performance, events and community engagement. We need to see more negotiation between commercial, public and cultural interests.'

There is currently very little information in the public domain relating to the set-up of big screens, says Fatah. Who can put up a screen? What policy and regulation governs the content on show? How loud or bright they can be? 'I've been trying to collect information about the screens in 'Live Sites' 2012, and it's very difficult to contact the officers concerned, or to track down the planning applications or consents.'

Beginning a dialogue, and creating a debate, between the parties concerned is the key driver of a project known as SCREAM, led by UCL and supported by UrbanBuzz. 'We're creating a database of those working in this area,' says gen. Schieck. 'We will hold workshops to bring artists, planners and local policy makers together to debate and discuss the issues. We need to understand how screen technology can be implemented and to establish potential funding models.'

Energy efficiency and consumption is also an issues as we move towards a low carbon society. Recognising this, manufacturers such as Philips are already researching low energy screens, potentially part powered by renewable technologies.

Further information
International Urban Screens Association (IUSA)
www.urbanscreens.net

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Reg number 05399861 Knowledge Dock Centre, 4 University Way, London, E16 2RD

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