

# Looking at Where Value Comes From - Esri User Conference 2015



Opening events, Pete Wilkinson, Esri's head of customer success, urged us to use the downloadable event app. Alas, he later had to apologise for some of its shortcomings within the rambling floors and halls of Westminster's QEII centre.

Handing over to Esri CEO Stuart Bonthron, the day began in earnest. In a wide-ranging introduction to the day, he argued that business needs to transform rapidly in the face of climate change; and GIS has a role to play. Ahead of us was learning about topics as diverse as air pollution, story mapping for Crimestoppers, endangered biodiversity, Ireland's new water authority, how Westminster was using GIS to work out the best location for building new primary schools, Network Rail's National Aerial Survey (which was to win a prize later in the day), how Scottish Power is using augmented reality on

mobile devices and how the NHS can better manage A&E admissions if they knew where they came from.

## Expand But How and Where?

By way of an entrée to all these geo stories Erwin Rademaker from the Port of Rotterdam told us about how GIS was being applied across the board to a mini city covering 105 square kilometres that accepts a container ship on average every six minutes. The challenge for Rademaker and his colleagues was, what do you do if you have to double your throughput by 2030 but have no space left in which to expand?

The answer of course is to apply geospatial information management in the form of ArcGIS, integrated and available to all across 35 departments. A Smart Port data object model of 1,500 layers, developed over many years, was reduced to ten core objects and a brief to make access to all information no more than three clicks away. The system contains a vast range of information from lease details of warehouses and other infrastructure, to bathymetry, environmental data ('smell emissions') and even a key wall modelling element.

Rademaker assured us that the system was so simple that even a child could use it. Hmm. . . he's obviously not met some of the children I have who seem effortlessly to master technology much better than most adults. Nevertheless, to prove his point Rademaker and his colleagues unleashed their own children on the system one Saturday morning to test it. It came through with flying colours.

## Working with the Wounded

There followed a presentation from Victoria Nicholson on behalf of the Esri sponsored charity Walking with the Wounded (patron HRH Prince Harry), whose work is about getting ex-servicemen and women back into the workplace.

It may come as a surprise to learn that there are currently some 72,000 veterans in the UK needing support in one form or another, the damaged survivors of Britain's various wars over the last 40 years or so. They range from amputees to the mentally scarred. Alas, many have ended up in the criminal justice system (8 – 10% according to Nicholson). They are supported by some 2,200 military charities in addition to Walking with the Wounded. The latter's skillsets include people as diverse as an equine therapist.

The charity raises awareness of its activities through high profile events like trekking across Antarctica or the latest venture, a 1000 mile walk across Britain. Nicholson was at pains to stress that these events are paid for through sponsorship and all money donated by the public goes directly to the charity's day-to-day work.

## It's Where the Value Comes From

Charles Kennelly is Esri's chief technology guru and his presentation along with colleagues looked at how smart mapping driven by ArcGIS Online was providing some very rapid analytics. Starting from a map of the world Kennelly was only two or three clicks away from locating all the capital's docking stations for Boris bikes by linking the map data to a simple csv file. But as he reminded us, "spatial analysis is where the value comes from" in GIS.

ArcGIS Online now has over 120,000 accounts and nearly 400,000 users. Esri also hosts the biggest repository of maps in human history. Requests for base mapping is currently running at 1.25 million a week; that's a lot of people around the world getting the geospatial message. Kennelly assured desktop users that ArcMap and ArcGIS would continue, though ArcGISPro is where the development will

occur, a core part of which is apps. Recent improvements focus around open source, templates for the Builder app and better API's.

## GPS for those Indoors

GIS analytical tools can now deal with extreme granularity of data, even inside buildings yet the data we use is just the tip of the iceberg. Sensors like mobile phones can help fill in that missing chunk below the surface.

Tracking people indoors has been quite a challenge and a number of companies have been devoting much cash and energy to it. GPS is of course not the answer, even if "GPS for indoors" is a simple way of explaining the technology to Joe public. Sarah Lewin, technical research manager, demoed an indoor tracking app developed using compass and mobile phone technology. Her Harry Potter inspired Marauders' Map of the QEII centre tracked four colleagues around the building successfully, including the creation of a geofence as a "danger zone". She was enthusiastic about it supporting BIM. Not so sure about that. Whilst possible for facility owners, takeup of that feature is a long way off. Let's get them used to using and maintaining BIM first.

A much more relevant application came from her colleague Alice Duff who showed how it could be applied to a hospital, in this case an imaginary one, where nurses were tracked during their day to see whether the pharmacy was in the best location. It was not too difficult to see that it wasn't and by referring to hotspot mapping a better location could easily be seen, reducing journey times.

## A Giant Clock Just Ticking Away

Next, Esri's Tim Welch promised "80 minutes of GIS magic". His first offering came from Vodafone's Fraser King, who argues that a mobile phone network is basically a giant clock as everything is timestamped. He spoke about how real-time mobile location and anonymised data enhances spatial analytics. Getting it in the right place for a new retail store development can make  $\pm 15\%$  on the return but getting it in exactly the right location is the bigger opportunity for analytics, he thinks.

Turning to the topic of Big Data, King showed the problem through a map circle drawn around the Holborn area of London in which in the space of a week there are 74 million "events" involving 1.4 million identities. Unsurprisingly, a heat map showed a hot cluster of activity around the underground station. Only mobile phone technology can track the myriad journeys and occupancy of buildings within that circle to enable analysis.

## London Calling

London is arguably the most dynamic and iconic of cities. It is growing at the rate of an equivalent of a tube train full of people every week (I had to let six such trains go by at King's Cross that morning before I managed to squeeze into a tiny spot). The city constantly draws them in from all over the world and every generation or so reinvents itself. Managing traffic flows around the capital is a major headache but one Alan Bristow, director of road space management for TfL, is well up to. Driven by the Olympics in 2012, GIS and Esri's ArcServer platform has been an enabler to transform the management of London's roads. But in addition to traffic management, TfL has the target of reducing fatalities and accidents by 40%.

## Water, Water Everywhere But. . .

From one of the world's busiest cities, we moved to Ireland, a land of rivers, lakes and rain. Except no one's done very much for years to harvest and conserve this bounty. The republic was the only country in the EC where citizens got their water for free from their local authority, a policy doubtless driven by my opening lines. But with Ireland enjoying boom times through the noughties to the crash in 2008, the politicians didn't think too much about where the water was going to come from for all those new estates. With the network crumbling up to 40% was being lost through leakage from a system of which 50% was 80 years old or more by 2012 there was a full-blown crisis with many areas having to boil water and Dublin consuming 99% of the water available to it.

The answer was to create a brand new water authority for the country to manage and relieve the local authorities which had hitherto been responsible for both supply and the network. But alas time was up for the freebooting water consumers. They're now all getting water meters and bills.

Paul Ahern from Irish Water explained how in less than a year they had created an enterprise GIS built around a single data model to include not only the assets but the country's four million domestic customers. Although much of the data came from the existing local authority suppliers it was in 11 different formats just for water; wastewater added a further 10.

The system is also driving the crews responsible for maintaining the network. Mobile devices tell crews where they will work that day instead of calling them to report for duty at the office to receive their work schedule. Meanwhile, 400 call agents are available to deal with all those new customers receiving their first bill in a country which has only very recently begun to adopt postcodes and where only 40% of addresses are not unique.

## Security Drives GIS at Sellafield

Sometimes it can be easier to start afresh from scratch as Irish Water has had to do, than try to graft a new system on preexisting ones. Ian Wildig is responsible for a GIS to manage assets at the nuclear plant of Sellafield. Dating back to the 1940s when it was a munitions factory, Sellafield is a site with several other headline names attached to it. Until just over a decade ago it was commonly known as Windscale on which site Calder Hall, the world's first commercial nuclear power station, began contributing to the national grid.

The site is two miles wide by a mile deep and some 14,000 people work there. Each unit within the site manages its own data, consequently said Wildig, "finding historical data is very difficult". GIS has only been used since 2006 when it was first applied to land parcel management. Since then security has become a major driver following Japan's Fukushima nuclear power station catastrophe of 2011.

## Last Roundup

The final plenary session of this informative day saw awards made in various categories including one for the best presentation of the day. Alas, GiSPro was not present for that but we shall try and bring you something in a future issue on Marko Sala's GIS – creating our future for Network Rail.

The day ended with a presentation from MapAction volunteer Vickie White on the charity's work to date this year: the Vanuatu typhoon, the Ebola crisis and now the earthquake-prone Nepal. A busy few months but as Vicky concluded, "We don't know how many lives we saved but we made a difference".

The final series of presentations came from Charles Kennelly and his team; this time on the theme of "ArcGIS – the road ahead". The big news is that 3D is going to be rolled out across the entire platform very soon and the integration of big data analytics is also expected soon (2015/16).

## Sweet Spot

There are some pretty clever things being done with GIS these days and the conference is always a showcase for them. For me, Kennelly's SWEET project (developed independently by Esri UK) is right up near the top. Although only in beta, his team have been driven by the Pareto principle (or the 80 – 20 rule) and the laws of simplicity which begins by saying, subtract the obvious. Kennelly demonstrated through a simple interface uncluttered by icons, menus and windows, how much smoother, quicker and scalable vector map tiles are on mobile devices – just 2Gb for the whole of the US compared to the terabytes of data needed for raster maps. Meanwhile, his colleague Daniel, a freshly-minted graduate, demonstrated "100 great geo-sites", which he has created for the British Geological Society. This is a glorious celebration of the human and natural world's creations in the UK and Ireland. Go to it: <https://www.geolsoc.org.uk/GeositesHuman>

## Exhibition

Amongst the exhibitors. It was good to see faithful GiSPro supporters Leica Geosystems. Their GIS expert Nathan Ward was busy demonstrating the latest data capture Xeno technology. Another good supporter of ours is Blue Sky with a prominent spot to grab delegates as they emerged from the plenary room. Old acquaintance John Allan has recently joined GeoSpock, a cloud-based scalable app for location describing itself as, "The search engine for the physical world".

NavTech, of course, is no more, having been bought by Nokkia but now rebranded as "here". I chatted to Tuni Baraka, a lovely bubbly young lady whose heritage is Tanzanian but who grew up in Sweden! Their mapping is several orders of magnitude better than Google's and high-resolution imagery captured by their survey vehicles is good enough to calculate dimensions of features like doorways and openings. Good for planners and developers.

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<https://www.gim-international.com/content/article/looking-at-where-value-comes-from-esri-user-conference-2015>

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