

# The AGI Foresight Study - The UK Geospatial Industry in 2015

## An Expert Paper



### Future uses of GIS by Retail by 2015

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The vision for GIS use, expectations of use and usability from the retail GI community are many and varied. The nature of the applications of GIS within the industry, even within one company, are such that while one department may be deep in gravity modelling and customer geo-segmentation another is embroiled with routing systems being thoroughly, dynamically, integrated with the customer facing website. Consequently, I will attempt a high level overview of GI usage by 2015 rather than become ensnared in the minutia.

One long term GIS strategy would be to bring the various different GIS programs currently operating into a single homogenous whole, hopefully bringing the best of each platform across. Currently Tesco operates in Smallworld and MapInfo environments and there is a vision to provide a homogenous platform for use and development. The high-powered users want functionality, adaptability and depth of geoprocessing capability. The non-expert users are largely looking for an intuitive, mobile system that has built in (or request able developed) functionality to answer their standard spatial queries. These two approaches are both deliverable by an expanded and homogenous GIS base, with one level available producing forecasting models with set protocols (a black box) systems activated by just pushing the 'big red button', and the deeper level allowing exploration of the data and the user developing their own insight techniques, potentially showing new results and generating new ways of working from the same original data.

The big thrust by 2015 will be into mobile working, which will likewise be served by the two aforementioned approaches. Due to the large data loads expected of Tesco mobile GI users a central data repository utilised through periodic updates rather than live feeds is envisioned, with an integrated toolset and multiple editing paths recorded and versioned to ensure quality and appositeness of data. Googlemaps has done much to heighten the expectations of end users and at the bare minimum this level of fluid interactivity functionality would become standard for all GI applications.

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To step beyond into 2015 should see the creation of integrated workflows, utilising an enclosed GIS with seamless interactivity and interoperability between standard programs such as Excel, Access and the GIS package. Integrated web tools allowing for remote usage and manipulation of the data without having to have the full GI system installed on the operators machine would free up the data and the utilisation of the data, allowing for rapid and up to date dissemination of core business data to all facets of the business, without having to wait for the weekly, monthly or quarterly summation reports to be generated. The live data, filtered and shaped by GI enabled processing technology and pushed out to web mashup with existing mapping and user generated content would allow for a personalised yet homogenous vision of the data. As data and visualisations become more tailorable to the individual end user, through web feeds or updated derived data fed into a black box GI system, then the “message” of the data can be disseminated widely and freely, with control of the level of data available being set by provider. The growth of availability of accurate and up-to-date geographically reference data will see a shift in use and perception from standard business intelligence, often shockingly non geographical, to a geographically enabled, cognisant and active community of GI end users; users perfectly capable of performing simple queries and investigations through the suite of web tools available to them. Updating themselves on the current state of their own particular fiefdoms, without having to turn to the GIS experts, in turn freeing them to delve deep into the data and develop and investigate beyond all current measure.

Graphical reportage and GI dashboards will become *de rigueur* at all levels of the business at all associated with data, and with an enhanced sense of place and interconnectivity, existing synergies can be further exploited and new nodal networks and efficiencies oriented and created to serve the industry and the customer, who ultimately underlies all efforts and analysis for the retail industry.

In terms of data sources, new sources will be available by 2015. Rivals to the Ordnance Survey are already beginning to emerge, and as OpenSource mapping becomes more reliable and robust this also will become integrated into the data available to retail GI users, initially as a supplement and then potentially stand alone once/if the data is proven to be reliable. The existing high price of locational data is being challenged by organisations such as the Demographic User Group, who have fought to raise the profile and demand for cheaper, quality data. These overpriced sources will be impacted by an

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increasingly competitive marketplace, with new offerings undercutting the old hegemonies of the Ordnance Survey. There will still be room for companies to offer value added data but the base data will become increasingly accessible and interoperable with other datasources. Increased data exchange between data providers along with enhanced interoperability schema and metadata creation would go a long way to solving much of the repetitious map work that currently goes on. Greater granularity in customer information and segmentation, enabled by embedded geodata elements, will allow for wild and exciting interpretations and analyses of the customer profiles, matching movement to will, location to desire and helping to model every expectation of every customer in a dynamically, visually, representable way.

Almost every facet of data in the retail industry has a spatial component; the potential for customer behaviour mapping is enormous. The distribution network is mapped and made more efficient using existing routing software set to optimise the network should a node (distribution centre) drop out. A customer database enviable by governments already exists (and has in recent years been used to map ethnicity in the years between censuses). Within this database a wide range of customer data exists, every single bit of it spatially located. The shop floors are mapped out by aisle, by module, by shelf and by position on the shelf. Increasingly radio frequency identification is used in warehouses and on the shop floor to locate goods and now we are seeing the rise of mobile phone apps performing the same function as satnavs. Soon you will have a TomTom app for inside the store to guide you to your item, just as you do in the car to direct you to the supermarket.

I have tried in the previous paragraph not to engage too heavily in hyperbole and while I may have failed I do hope I have conveyed (despite having barely skimmed the surface) the sheer richness available to the GI user and the potential to make appropriate levels of that same richness available to enhance the daily lives of employees at all levels in the company. The warehouse worker searching for pallets using an arm mounted GPS enabled RFID tracking pipboy. The dotcom driver informed on route, time, location and customer details. The new store architect envisioning the necessary space on his tablet PC, utilising embedded web toolsets to implement design standards and investigate the nodal connections of the potential site to the distribution network while at the same time visualising the customer segmentation and a decaying geographically weighted gravity model (for example) around the store. The company

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head basking in the real-time map feed showing profit and performance of each of their stores projected onto a suitably awe-inspiring plasma screen.

In summation, the year 2015 will see an integrated GIS platform, served and serving data from a variety of standardised data structures. Users will be able to interact with the data on several levels: simple web investigation; mobile integrated GIS with preconfigured toolsets and data supplied from a central repository; and deep level investigation and development with GI users empowered to delve deep into the wealth of data creating new tools and approaches as appropriate for the task at hand. Dissemination will be key to the GI strategy of the future, empowering and enabling traditionally non-GI fluent users to access, visualise and investigate for themselves simple tiered data pertinent to their sphere of the company. Data will be from a variety of sources, some customer created, some bought and others sourced from open sources allowing a flexibility of use and dissemination not easily available at present.

Business Intelligence and Location Intelligence are only now starting to correlate and communicate for much of the industry and the growth and insight available is phenomenal. The next 5 years are going to be exciting for retail GI.

There are however caveats to that excitement. Retail is made up of mostly large and often stubborn businesses and affecting any kind of change can be problematic and time consuming. There is often a high degree of resistance to change and the worth of new technologies can often be difficult to prove. Much of the technology and approaches I have described are already available and implemented in the wider world. There is currently a degree of inertia to the retail industry, with antiquated systems and ways of working serving increasingly savvy and technologically powerful customers, many of whom are linked into social networking and with increasingly high geographical expectations. Getting to the current level enjoyed by cutting edge firms for many businesses will be the work of the next five years and will necessitate high level influencing and constant proving of the worth and the value added by GI work. It is only by enhancing the revenue and reducing costs that GIS will gain favour. It is only through the actions of passionate GI advocates and champions that the wider, less obviously revenue oriented benefits will begin to be reaped.

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