

The AGI Foresight Study - The UK Geospatial Industry in 2015

An Expert Paper



The use of Geographic Information Systems within the Financial Services

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Scope

The use of Geographic Information Systems within the Financial Services sector has the potential to transform the industry over the next decade. Indeed Gartner identifies GIS as having the potential to underpin growth and profitability of the banking and insurance sectors as well as engendering a far reaching shift in risk management. However, this transformation is not a foregone conclusion since the increased focus on capital management across the sector resulting from the Credit Crunch will undoubtedly impose constraints on investment amongst the existing players. Paradoxically these self-imposed constraints will propel the use of GIS and a number of other technologies to the centre of the stage, as more competition enters what is an already competitive arena, creating a battle for the future ownership and direction of the industry.

This paper explores how the development of the Financial Services sector and the growth of GIS are likely to be shaped and inter-twined over the next 10 years.

Current position

Historically even the leading players in the financial services sector have been slow to embrace the benefits of analysing risk from the geographic perspective. Where they have done so they have used specific packages or applications to detect fraud, to identify flood risks, to review the coverage provided by branch networks or to identify opportunities to target profitable prospects. Given that insurers are in the business of managing risk it seems strange that when cost effective integrated systems solutions are available to significantly improve risk management in so many areas of their business the rate of take up has been modest – particularly when the commercial benefits of streamlining core processes are significantly greater than the expected investment. Similarly the lending criteria employed by banks focus more on credit scoring metrics and the prospective borrower's underlying business model than they do on inherent risks affecting property assets, modelling expected demand and reviewing "go to market" plans geographically.

This is a situation which the provisions of Basle II did little to address despite placing an increased burden of responsibility on Regulators and Directors alike to improve capital adequacy and reserve management. Indeed it could be argued that this focus on adapting the behaviour of the leading banking institutions to re-structure their loan portfolios contributed to the subsequent toxic debt problems we have seen over the last two years. One view is that since the provisions of Basle II focus on capital management they emphasised the need for assets to generate an income stream – and, as such, one of

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the unintended consequences of the new world of capital management was to encourage bankers to find ways to reduce the proportion of underperforming assets held on their books.

In early 1997 the first derivative financial instruments appeared – namely credit default swaps. Initially the aim was to sell on the loans to third parties at a discount – to generate free cash flow. As time progressed the loans became bundled or securitised and credit derivatives were born. Today a typical credit derivative may contain up to 300 loan constituents consisting of a mix of AAA grade loans as well as AA AB and BB loans. Each constituent is secured against specific multi-national and corporate loans and the interest paid by the companies is used to provide an income stream to the holders of the securitised bond or derivative.

With the benefit of hindsight, the seeds of the sub-prime lending crisis were evident as early as 2005 and by mid 2007 geographic academic studies were profiling the demographics and the underlying problems faced by local economies as a result of increasing housing re-possession rates on the US western seaboard. Almost three years later, the fallout from these events has shaken the world's financial infrastructure to the core – with banks and pension funds having taken huge write downs of toxic assets or sold them on. Any steps that may have been taken to unbundle and value the individual constituents of a Credit Derivative Certificates have been low key. They have relied more on conventional banking and surveying disciplines rather than the use of GIS to track valuations spatially or to run scenario modelling exercises to forecast the prospective valuation of these assets, using additional data sets and principles derived from economic geography to assess risk. Perhaps this makes sense given the severity of the global economic crisis – since clearly the main objective has been to stabilise the financial system. But as the dusts begins to settle there are still relatively few signs of a new set of disciplines being employed to assess risk.

Analysis by Gartner demonstrates that the main reason for this reluctance to embrace the power of geography and GIS (and indeed other emerging technologies) is primarily because of the prevalence of legacy IT infrastructures across the Financial Services sector as a whole. Typically maintaining such systems has accounted for 90%+ of the available IT resource which is devoted to maintaining and managing legacy systems. Apart from inhibiting the development of new products and services Gartner suggests that even the most advanced Financial Service companies such as ING are still only able to free up 15% of their existing IT resource to develop new products / services and ways of doing things.

So, despite the fact that geography can be demonstrated to be of critical importance to a variety of disciplines which are involved in managing a modern financial services business, at present, there are no examples of a completely integrated geo-spatial data management being applied to all facets of the business within the banking sector.

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Although the provisions of Solvency II in the Insurance sector have taken a long while to become the central concern of the various senior management teams, the indications are that the lessons from the banking sector have been learned. What's more, a combination of necessity and opportunity are gradually ensuring that geography is becoming a key component in the risk assessment process and that the long awaited change – which places geography at the heart of the insurance business - is beginning to take shape.

Anticipated changes

The UK floods in 2007 provided the catalyst which created encouraged the insurance industry to adopt a more integrated approach to reviewing risks from a geographic perspective, following a succession of costly hurricane catastrophes in the USA in the previous year. However, although the Pitt Report highlighted the need to change the way in which risk was evaluated it did not focus on the full range of commercial benefits of applying Geographic Information technology to risk management.

Rather, the combination of the losses sustained by the insurance industry and research such as that conducted by Citibank in 2007 which highlighted that the long run rate of return achieved in the insurance sector (c12%) was consistently under-shooting the 15% long run rate of return that had been generated by the FTSE 100 & Dow Jones index resulted in the realisation that investment in the insurance industry was relatively unattractive to pension fund managers / large investment houses. More recently Milward Brown's annual survey of the value of the leading global brands which was recently published in Marketing highlighted that insurers as a category had suffered the biggest decline in the value of their brands over the last year – more so than banks and car manufacturers – adding to the pressure on the senior management teams within the industry to act. Over the last two years the focus has shifted to improving capital management structures and eradicating the cyclical erosion of capital attributable to overly competitive market pricing in order to improve underlying returns.

Traditionally, local knowledge and underwriting skill have carried the day, but relatively few insurers can claim to excel in all the disciplines needed to create the level of transparency and professionalism that will be required to demonstrate the highest levels of proficiency in capital management as a new world dawns.

So what's required is a method of handling and managing data that enables a clear picture of the levels of risk assumed to be profiled and communicated, whilst making it clear where there are high levels of accumulation – and to do so in such a way that is completely automated. On their own spread sheets, risk profiling tools and conventional data warehousing solutions all fall short – they solve some – but not all - of these requirements. In other words, what's required is an integrated solution which links core business processes with the ability to summarise the way things look in the real world.

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Today, the most robust and comprehensive capital management solutions are built around Geographic Information Systems which are linked to fully automated core transaction processing. This technology provides the method of linking all the components of an insurer's core business process.

A number of the major insurers have now adopted GIS technology to identify potential risks, but the benefits of mapping technology go far beyond identifying areas that are subject to flood or subsidence. These include:

- Pricing and assuming risk geographically
- Tracking geographic accumulations and identifying proximate risks
- Tracking location based risk as a basis for risk profiling and portfolio management – providing a logical approach to structure capital allocation and capital management
- Streamlining claims handling delivering lower costs by automation and better fraud detection
- Improved reporting including the rapid calculation of exposures
- More pro-active risk mitigation strategies – including targeted sales and marketing activity

So, the benefits created by GIS technology extend far beyond just mapping floods – the reality is that geography provides the framework to improve end to end business process and that Geography is the heart of a modern insurer's business.

Collectively this creates an Enterprise wide GIS approach which utilizes location based systems to deliver practical benefits. For example:

- Automating core business process – enables large volumes of data to be processed – whilst reducing costs.
- Consistent profiling of risks assumed – creates a clear picture of capacity – both geographically and across sectors.
- Modelling risk scenarios – enables potential actions / mitigation strategies to be devised.
- Tracking accumulation and capital utilization in real time meets the needs of Directors and Regulators alike.
- Pro-actively targeting growth opportunities - working with brokers – generates new sales.
- Marketing is used to target and profile new prospects to maximise sales opportunities.
- Sales are maximised - working within specified re-insurance caps.
- The costs of doing business are as low as possible – and as many processes as possible are automated.
- Business is priced appropriately.
- Risks are minimised and accumulations are managed effectively.

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The result is that Enterprise wide location based systems are already transforming core business processes for some of the UK's leading Insurers - providing strong business benefits to core process - sales, costs and profitability.

Add in improvements in tracking, presenting and reporting exposures – and what was once the preserve of experts is increasingly becoming a core discipline for insurers. High speed, high volume automated risk assessment – which considers an array of risks, manages accumulations and does so in a way which maximises profitability is no longer a dream, it's a reality and what's more it's also a necessity to meet the rapidly evolving demands of the capital management disciplines imposed by regulators and endorsed by shareholders alike.

Future scenarios

Over the next 10 years the insurance industry is expected to attract a new wave of investors keen to exploit niche positions within the insurance market. The success of Shelia's Wheels in the motor sector and the growth of Ace and Brit within the property market (each delivering cumulative annual growth rates in excess of 150% / annum as a result of specialisation and the ability to design bespoke sector specific industry solutions unencumbered by the burden of legacy systems) has paved the way. The expansion of retailers into the financial services sector – keen to exploit the power of their brands and willing to use web technology to support these initiatives – will force the current monolithic insurance providers to segment their portfolios and to use their capital more effectively to drive sales and profit growth. All the indications are that the new contenders will aim to assume pan European / global branding – underpinned by web based technology.

The banking sector is likely to see a similar series of developments – although business may take the form of outsourced IT infrastructures and a variety of affinity brands welded around the core systems of what are essentially aggregator cum central service providers. This has certainly been the experience in the credit card industry with franchises such as MBNA and Virgin based almost wholly on outsourced infrastructure. This is a trend which is set to expand.

In both markets a new breed of operators will emerge to meet these needs – embracing GIS as a core technology to minimise risk and to maximise capital returns cost effectively. The ability to analyse historic data using a variety of data mining techniques (including spatial analysis) will be vital to enhance long run profitability, as will be the ability to co-ordinate response to customers, using risk assessment profiles, loss management services and integrated customer management tools.

So Gartner's vision of the financial sector driven and underpinned by GIS technology may well turn out to be a realistic view of the future, although a combination of the need to invest in IT, the relative ease of starting from scratch using web enabled technology, the need to ignore the constraints of legacy systems and rise of outsourced systems providers as well as the emergence of retailers and pan

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European / global brands – all point to the fact that change will be driven by a new breed of providers rather than the existing incumbents.

For many in the industry this might be perceived as a threat. In fact the opposite could be the case. After all, the UK insurance market is relatively well capitalised and hence well positioned to provide a robust and structured response to the requirements of the Regulators. The reality is that demonstrating compliance with enhanced standards is likely to be a core requirement to re-establish trust and stability across the financial services sector generally. Accordingly, a structured process of review and actions to focus on the comprehensive implementation of all facets of Solvency II could mark a rise in the fortunes of the UK insurance market relative to offshore competitors, not least because pressure from the Regulators and shareholders alike is going to force the insurance industry as a whole to adopt more efficient capital management disciplines. To be effective there will inevitably be a focus on standards, compliance and transparency. To a degree, achieving this will require investment in upgraded systems and processes, but outsourcing is also likely to be an attractive alternative

The net result will be the rapid evolution of the industry's business model and core processes – using automation to transform the cost base, improving compliance and transparency. One of the key elements that will transform the way insurers and bankers work will be location.

Summary of the five key points

- Geography is an integrating discipline which has huge benefits to offer the financial services sector but to date take up has been surprisingly slow.
- Capital management disciplines promoted by Basle II and Solvency II will ultimately involve the use of enterprise wide GIS solutions to underpin core business processes designed to improve the assumption / pricing and pro-active geographic management of risk and accumulations – using location as one of the prime determinants of risk – driven by the demands of shareholders and regulators alike.
- These capital management disciplines will force the adoption of new portfolio management techniques and business modelling disciplines in both the banking and insurance sectors – with the emergence of new specialists to serve specific European and global markets, employing best in breed technology to stay at the forefront of their sector. The ability to analyse historic data using a variety of data mining techniques (including spatial analysis) will be vital to enhance long run profitability, as will be the ability to co-ordinate your response to customers – typically through arrays of pre-packaged customer management services.

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- A new breed of market entrants will emerge to exploit structural weaknesses of the legacy IT infrastructure of existing players in the financial services sector. These entrants will seek to exploit their brands, embrace new technologies to manage risk more effectively and will focus on effective capital management disciplines first and foremost, using technology such as GIS to maximise returns
- The structure of the financial services market in the UK is likely to be supported rather than challenged by these new disciplines – and the adoption of new technologies such as GIS - which will enable the transparent end to end review of core processes.

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