

State of the industry article

Dangerous geography to Local Authority GIS and much more in between
Geospatial marketer, and self-professed map geek, Faith Clark interviews Sam Tizzard, GIS & Data Manager at the London Borough of Harrow and AGI Council Member, about his love for geography and the role of the web, data and AI in improving service delivery for local communities.



Q. Where do you think your love of GIS comes from?

A. I guess you could say I have always loved geography, especially the dangerous bits. Go-to films when I was growing up included Dante's Peak and Twister; no serial killers for me or teen horror films, give me a good old natural disaster such as a volcanic eruption or tornado and I was happy.

This fascination probably shaped both my teen years and my choice of further education – with the Duke of Edinburgh exhibitions being a real highlight of my school years and the selection of a BSc in Natural Hazards at Coventry University followed by an MSc in Volcanology and Geological Hazards at Lancaster University.

Q. Some might say it's quite a leap from studying something which can cause mass loss of life and destruction over hundreds of square kilometres to managing spatial data about residents' bins?

A. And they would be right, however during my studies I discovered GIS – that magical fusion of geography and computers, and, as I chose more and GIS and Earth Observation modules, I realised that this was something I wanted to pursue as a career. With the option of being Pierce Brosnan's (aka Harry Dalton's) assistant not really practical I looked for something a bit closer to home.

GIS had really taken a hold in local government by this time so I started emailing Council asking for work experience. This paid off as the GIS Manager at the London Borough of Harrow was so impressed with my initiative in finding his email address that he invited me for an interview. And, as they say, the rest is history!

Q. You now occupy the position your mentor did when you first started how have things changed?

A. Yes that's right. Having progressed from a GIS Analyst / Technician, through the ranks to Senior GIS and Address Data Officer I am now honoured to be the GIS and Data Manager at the London Borough of Harrow. GIS at the London Borough of Harrow has evolved over the last 7 years. When I started our focus was to create and maintain the corporate spatial data engine and associated data sets. A large part of my daily duties was investigating address queries and using FME to automate processes and develop new more efficient methods of obtaining, manipulating and using data.

Now I would say that our focus has shifted. The work we do underpins the work of others both within the Council and beyond and it's this role as a 'facilitator' that, for me, is the true power of GIS.



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Q. Can you elaborate on this and perhaps provide some examples of what you mean?

A. Of course. If I boil it down, I would say there are three main aspects of or focus to the work we do within the GIS team at London Borough of Harrow;



Address Data - this underpins every customer interaction and service delivery across the council. I have always loved the phrase 'everything happens somewhere' and its widely used, not least by our partners and fellow AGI members GeoPlace. Maintaining and managing our Corporate Local Land and Property Gazetteer (LLPG) is not only fundamental to the Council and its residents it also feeds into the wider community as it is disseminated to emergency services, healthcare providers and other public sector organisations and made available to other users through the Ordnance Survey range of AddressBase range of products.

Corporate GIS infrastructure – at the London Borough of Harrow we are an Esri house, utilising as many of the vast array of tools they provide to help users more easily access data in order to make smarter decisions and make the Council more efficient. We have over 600 GIS users within the organisation ranging from our customer services staff who might simply look up an address or review a location on a map to Council officers who have created their own workforce deployment tools on ESRI software to help identify work that needs to be undertaken and assigned to help prevent and respond to flooding and even to managers who use our interactive dashboards to investigate and reduce incidents of fly tipping and other incidents around the Borough.

Data automation – this is more of a recent responsibility and you could say a bit of a move away from geography but we needed a way to bring together customer facing systems to reduce the need for frontline staff to manually enter data. We were already using an FME (Feature Management Extraction) supplied and supported by Miso for automated translation and analysis of spatial data and, as I have always believed in being flexible, I wondered if the same tool could be used as an ETL (Extract, Transform, Load) solution. This application of existing technology has saved the Council literally thousands of staff hours a year and the savings keep increasing.

Q. You've been at the London Borough of Harrow 10 years now, do you have any highlights from this time?

A. Ok well I guess the use of the GIS ETL Tool FME as a wider integration tool would have to be one because of the tangible results it has delivered, I would also say perhaps the migration of our GIS tools to the Microsoft Azure cloud environment. This was a great learning experience and a huge challenge but it showed me just how intertwined our GIS is with other Council systems.

Another milestone, and perhaps my proudest, was the partnership with Esri and Cyclomedia to create the first local government commissioned street level digital twin. A real buzz word in other sectors but simply put this was a combination of street-level imagery and LiDAR (Light Imaging Detection and Ranging) data to create a full 3D representation of the Borough from the street – similar to Google StreetView but with geographic accuracy of mm and the capability to interact with that highly detailed 3D model. This 'model' gives staff a 'virtual world' which they can view take measurements in, undertake analysis, and make smarter decisions, all from their desks, again saving many hours of staff time.

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Q. You've mentioned how your work has brought you into contact with other AGI members, but how did you get involved with the AGI?

A. I originally got involved with the AGI as part of the Early Careers Network before I even started at the London Borough of Harrow as I guess I thought that would be a good way to get a break and start my geo-career. Their webinars and peer support, with information on starting out in the geospatial sector, were incredibly helpful.

After that I'm slightly ashamed to say I got swept up in the world of work with so much to learn, try, play with and build so I didn't really engage either with the AGI or the wider industry for a couple of years.

It was the AGI event GeoCom that brought me back into the geospatial community; I realised I had spent, and still have, my whole career at the same place and I guess I was curious. I got chatting to some of the Directors after the event about how the AGI strives to build an ever bigger and stronger community of geospatial, how it has a remit to advise and lead and what was involved in being a Director.

This really appealed to me and I realised it was a real opportunity to experience aspects of the sector that I didn't interact with in my day job, work alongside talented people from beyond my own network and also give something back to a community that I still very much wanted to be a part of and help grow. So, I volunteered for Council and, as they say, the rest is history!

Q. Being part of the AGI gives you a wider perspective on the geospatial sector. What do you think has changed during your time and what impact has this had?

A. I refer back to my love of the phrase 'everything happens somewhere'. Obviously not all spatial events are as significant or important as others for example knowing the precise location of every blade of grass on a football pitch isn't likely to change the outcome of a Watford vs Norwich match, but, the fact that every blade of grass has its own, unique, location still fascinates me.

So, even though my time in the working world is relatively short I have, I believe, seen some massive changes and shifts in the geospatial sector. Specifically;

Move to web – better availability and more cost-effective computing power has allowed us to build and mapping solutions beyond specialist teams and even with members of the public who, in turn, are far more map savvy due to online mapping portals such as Google and Bing, apps such as Strava and Sat Nav tools. I anticipate and really hope this trend continues as it allows us to more effectively communicate, be more efficient in our service delivery and better engage with our customers – even to the point where they can self-serve in some situations. Don't get me wrong, I think there will always be a need for high-end, powerful desktop GIS but this will be reserved for the most complex and resource intensive processes and tasks.



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Access to data – more frequent revisit rates and increasingly higher resolutions mean that Earth Observation data has really come into its own in the time I have been working in the geospatial sector. For high-end applications, solutions such as Bluesky's MetroVista 3D mesh models have huge potential to change the way we visualise and understand urban environments and for more reactive situations the ability to task a drone, via a web page, to capture data which is delivered within days is game-changing. Other sensors, including the mobile devices we are increasingly inseparable from and in-car units, are also contributing to the availability of data helping to make informed decisions based on real-time updates as well as contributing to open data platforms helping democratise mapping and encourage others to build on the work already done.

Artificial Intelligence (AI) – machine learning algorithms have become increasingly complex and more readily available for spatial analysis and there is even a range available on Esri's Instant Atlas. This move towards automated analysis is increasing, whether you like it or not, and as technology advances, skills develop and availability increases we are likely to see far more applications within the sector such as enhanced feature extraction and classification. I see generative AI as having potential to improve efficiency, for example sourcing information, building datasets or writing code, GenAI has this power freeing up resources for more valuable and specialist work. I have heard it described as another tool you can add into your toolbox to help make your undertaking of simple tasks easier.

However, it is still early days and different parts of GenAI will mature at different rate, for example, It's much easier for ML to understand text and code than images, and in turn images are easier to interpret than maps. While the potential for efficiency gains is massive, I believe a human will always be essential in the process: to ask the right questions, validate the outputs, and ensure that the results truly address the problem that is trying to be solved. I think it may take time before the full potential of GenAI is realized and seamlessly integrated into our everyday work, particularly in our field of mapping and spatial data. But the direction is clear: as the technology advances, GenAI's role in enhancing productivity and enhancing spatial analysis will only grow.

Q. Those are pretty significant changes, in a relatively short space of time. What do you think the next five years has in store?

A. It's really difficult to predict and anticipate what's coming next, in such as fast-changing environment. However, I do think that that is where the AGI has such an important role to play. Being able to see and reach across different parts of the sector with contributions from every type of company and organisation, in every part of the UK, and beyond, means the AGI has an unrivalled resource of knowledge, ideas and skills that can be used to better predict and respond to future changes and challenges.

Just a few examples of the unique positioning of and activities by the AGI include our newly re-enforced relationships with other member and professional organisations, for example the Royal Geographical Society, the British Cartographic Society and the Chartered Institute of Civil Engineering Surveyors, and outreach surveys including the recent and fantastic AGI Foresight Report which mirrors a lot of my views of the future around the role Geospatial has to play in helping resolve crises that arise, upskilling of the workforce and less need for simple manual tasks and pivoting towards a more real-time data approach, things that are already happening but I see continuing to accelerate with time.

