

# GIS & spatial analytics in housing



*Housing Technology interviewed experts in GIS and spatial analytics on why housing providers should be considering these technologies, how to use them and what to look out for...*

## How to start

Cross Keys Homes' GIS analyst, David Beswick said, "GIS software, spatially-enabled data and the appropriate technical skills are all vital, but the most important elements are executive buy-in and a clear vision to drive forward with GIS."

"We started with our grounds' maintenance function and the digitisation of our paper-based register of maintenance contracts. We bought large-scale mapping datasets from Ordnance Survey (OS) and title-deed polygons from HM Land Registry – these were uploaded to a web-based, hosted GIS, along with the freshly-captured grounds' maintenance layer."



"Using GIS, housing providers can gain a deeper understanding of their tenancies and housing stock than would be possible from manipulating spreadsheets or leafing through paper files and maintenance records."

Trevor Hampton, Director of Housing Solutions, Northgate Public Services

Northgate Public Services' director of housing solutions, Trevor Hampton, said, "If you want to use GIS, the first step is to geo-code all of your housing stock, either with latitude/longitude or x/y co-ordinates; this is key to enabling each asset or property to be individually identified."

"For housing providers within local government, OS provides mapping data at no cost but housing providers need to buy mapping data and the cost is calculated per tile, so if your housing is

concentrated in a specific area, it could be fairly economical but if your properties are widely dispersed, it's prudent to factor mapping costs into your budget. You can geo-code your properties in-house but if you have more than, say, 5,000 properties, turnkey mapping services are likely to be cheaper. You'll then need mapping software, either bought off the shelf from companies such as Cadcorp or Esri or free (up to certain levels) from Google Maps and other open-source alternatives."

## GIS benefits

Cadcorp's business development manager for housing, Fergus Craig, said, "GIS gives housing providers insights into their assets, responsibilities and tenants by enabling location information alongside other data. This is an additional level of information about their portfolio of properties that other systems can't provide. For example, a GIS can show a housing provider's land ownership and identify development opportunities."

Northgate's Hampton said, "Using GIS, housing providers can gain a deeper understanding of their tenancies and housing stock than would be possible from manipulating spreadsheets or leafing through paper files and maintenance records. For example, with a few swipes of a screen, housing staff can identify which properties generate high numbers of responsive repairs and what their associated rent arrears are, and analysis of, say, anti-social behaviour and tenancy over-occupancy can help housing providers understand the root causes and possible resolutions to tricky community issues."

"GIS can help tenants too – by overlaying additional data from agencies such as

health authorities, community programmes can be defined and implemented. With accurate and timely information on the issues affecting an area, housing teams can work with other agencies to tackle them and better protect their tenants and assets."

## Watch out for pitfalls

HouseMark's research analyst, Emma Holgate, said, "Like most digital solutions, GIS works best when applied to a specific business problem so it's important to be clear about what you want to achieve before diving into a complete GIS."

Cadcorp's Craig said, "In the past, GIS was implemented independently of other data sources and systems so it would quickly be running on outdated data. We strongly recommend that GIS implementations always include integration with asset, housing, CRM and other relevant systems to ensure that the GIS is always using current, dynamic data."



"GIS relies on high-quality data and often this is the biggest challenge for housing providers, particularly those still relying on non-digital processes."

Emma Holgate, Research Analyst, HouseMark

Cross Keys Homes' Beswick said, "Cost is an obvious potential pitfall – we were relatively conservative by procuring annual data licences for OS data and choosing hosted software and while this kept our start-up costs relatively low, it did lead to future restrictions. The copyright and use of OS or other third-party data needs to be fully understood because there are limitations and data ownership implications

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with their usage. The task of cleansing and spatially-enabling your data also shouldn't be underestimated. We spent a lot of time and effort digitising our assets and address-matching tenancy and property records to minimise the impact of this.



"A GIS shouldn't replicate other data sources; it should simply connect to what already exists within the organisation."

Fergus Craig, Business Development Manager for Housing, Cadcorp

"Overall, we formed the view that GIS is a corporate asset that transcends individual departments. Taking this approach allowed us to spread the burden of implementation across the whole business and eliminated issues with data sharing and 'siloed' thinking."



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David Beswick, GIS Analyst, Cross Keys Homes

## Augmenting your GIS

Cadcorp's Craig said, "A GIS shouldn't replicate other data sources; it should simply connect to what already exists within the organisation. These data sources can then be overlaid with externally-sourced data from organisations such as OS for detailed map data and HM Land Registry for land titles."

Cross Keys Homes' Beswick said, "In housing, everything happens somewhere: a tenant in arrears lives at an address, fly-tipping can be assigned to a location, and repairs and maintenance can be attributed to a property. This data is invariably held in a plethora of disparate systems throughout the business. The key to maximising the benefit of GIS and gain invaluable insights is to be able to map these instances in a single view where the relationships between them can be visualised."

## Integration with existing systems

HouseMark's Holgate said, "GIS relies on high-quality data and often this is the



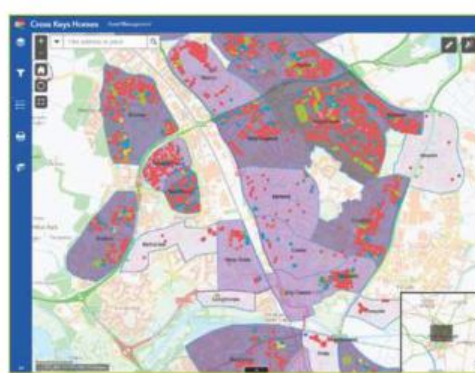
biggest challenge for housing providers, particularly those still relying on non-digital processes. One of the main benefits of implementing a full GIS with a specialist provider is that they'll have the technical skills and knowledge to guide you through any issues. Using your internal applications and data with GIS is still possible without that technical support but it's likely to be a longer and more manual process."

Northgate's Hampton said, "Integrating GIS into a housing provider's existing systems isn't complicated – GIS is inherently designed to be used in conjunction with different data sources and systems and most solutions provide APIs and a simple set-up wizard for getting started."

## Grounds' maintenance example

Cross Keys Homes's Beswick said, "The creation of our grounds' maintenance maps, which illustrate properties as more than just points on a map, has led to a considerable improvement of the accuracy of our grounds' maintenance contracts."

"This image shows how we've mapped tenant satisfaction data. By mapping this data, we can understand whether there are any specific pockets of tenant dissatisfaction which need to be addressed."



"We have created a number of other maps to support service delivery. This includes mapping to illustrate how our neighbourhood managers are working

across their patches, and mapping to show tenants' arrears by area using disparate data sets from our housing and asset management systems."

## Hiring GIS staff

Cadcorp's Craig said, "You don't need GIS-specific staff but it does help. We have many housing customers and about half of them have GIS-specific staff; those with a GIS manager have made wider and better use of the application, generating a larger return on their investment."



Cross Keys Homes' Beswick said, "While GIS suppliers can provide solutions which include technical and strategic consultancy around GIS, Cross Key Homes decided that they needed a dedicated GIS resource and champion to own and drive the solution forward."

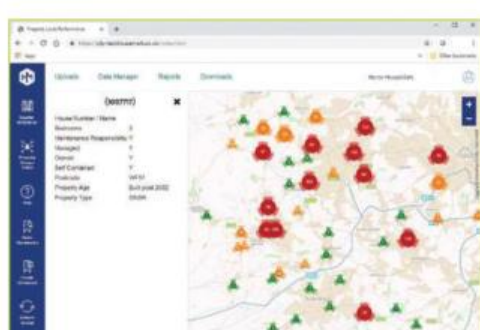
"That said, hiring GIS-specific staff isn't a necessity. With a clear scope and definable objectives, the use of GIS services from the supplier would fast-track its implementation but there does need to be someone in the organisation to own and take responsibility for managing the maintenance and ongoing development of the GIS or else it risks stagnating."

## The future of GIS

HouseMark's Holgate said, "GIS has percolated into almost every aspect of our daily lives, yet every 200 housing providers currently use it. Given the important link between housing and location, we expect GIS to become more and more embedded not only in asset management and development appraisals, but in every step of the performance monitoring and decision-making processes."

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Northgate's Hampton said, "GIS is definitely on the up; we are seeing a trend around GIS and spatial analytics becoming more deeply embedded in the planning and delivery of housing services. Advances in technology mean that GIS software is increasingly device agnostic and tools such as heat maps and 3D satellite views are more detailed than ever, making GIS and spatial analytics an important part of housing providers' technology infrastructure."

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