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WHITE PAPER

Smarter property management

When The Internet of Things meets smart asset management

Executive summary

The Internet of Things promises to radically alter how housing providers manage their assets. By receiving constant accurate information on the state of their stock, providers will be able to conduct repairs exactly at the point of need and ensure they prevent costly problems. But how far away is this reality and which areas of housing asset management are most likely to benefit first?

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Introduction

"If we had computers that knew everything there was to know about things—using data they gathered without any help from us—we would be able to track and count everything, and greatly reduce waste, loss and cost.

We would know when things needed replacing, repairing or recalling, and whether they were fresh or past their best. The Internet of Things has the potential to change the world, just as the Internet did. Maybe even more so."

Kevin Ashton, 'That 'Internet of Things' Thing', RFID Journal, 22 July 2009

Only a few years have passed since the statement above promised that The Internet of Things (IOT) might change the world. It may have sounded a little like science fiction back then, however the concept of using the internet to track our televisions, heaters, ovens and other assets, and to have these items tell us about their current status, is fast becoming a reality.

Already we are seeing everyday objects with network connectivity sharing data. Take the current trend in wristwatches which also act as pedometers. These feed exercise data into a fitness app which can be used to monitor how far you are pushing yourself on a run. In fact, many of us are already using IOT without even realising.

Currently less than one per cent of devices are connected to the internet, but according to Gartner, there will be nearly 26 billion devices on IOT by 2020. The point where a door, radiator or light fitting becomes a node on the internet is just around the corner.

In this white paper, we will explore the positive impact IOT could have on asset management for the housing sector; allowing providers to understand and manage their estates more effectively and better support their residents. We will also examine the need to prepare for its coming to ensure its benefits can be fully realised.

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Where are we now?

While we still have some way to go before the social housing sector has a stock of completely connected homes, implementation of some sensors has already crept in.

The use of basic motion sensors in homes for the elderly is becoming established, for example, but it is only recently that social housing providers with extra care facilities are making use of internet sensors rather than hard wired ones.

However, the use of these sensors has exposed concerns over privacy, with the idea of tracking individuals making some providers shy away from adopting similar technologies as they don't wish to be seen as 'Big Brother'.

Adopting sensors in asset management and maintenance may be a less contentious area for the social housing sector. At a recent housing conference, a straw poll of boiler manufacturers revealed that all the major players had some form of smart boiler technology in development. Delivery to market was reported to be 18 to 24 months away in most cases.

This news will make housing providers' ears prick up because, if they were to invest in just one piece of connected equipment for their estates, then boilers would be the perfect place to start.

A connected boiler can let the housing provider know of a fault immediately, communicating the details of any parts affected, much as car computers tell the mechanic what is happening under the bonnet. The difference is, no mechanic needs to plug a machine in to read the results.

The boiler will continually be 'phoning home' telling the housing provider whether it is OK or needs a new part.

This application of IOT technology would save a huge amount of administration, phone calls, and the possibility of multiple visits to the property in order to diagnose the issue and carry out repairs. With the Gas Access Campaign recently reporting that access difficulty alone will cost the sector £1/2 billion over the next 10 years, the potential savings for the public purse could be considerable.

Once this technology is proven to be reliable, it could even negate the necessity for physical gas inspections altogether, as the organisation managing the boilers could have a record throughout the year of the boiler performing within safe parameters.

If it could be proven that connected boilers are safe, a potential change in regulation could see housing providers save hundreds of thousands of pounds in annual inspection visits, as well as removing the sometimes thorny issue of rights of access to tenanted properties. IOT technology could also lengthen the life of boilers as maintenance becomes more effective.

For a provider with many thousands of properties, the savings begin to mount very quickly.

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Where could we go with this?

Apart from boilers, another likely area for housing providers to explore is that of humidity. Damp causes untold damage to properties. Unfortunately it is often too late before providers are informed of the damage so the costs to repair run into the thousands or tens of thousands of pounds.

Smart sensors to measure humidity already exist and, while they are not expensive, the price is likely to drop still further in upcoming years.

A humidity sensor would be able to report back to the housing provider when a property is becoming damp. This should allow for timely intervention before Environmental Health become involved, or the damp damages the fabric of the building.

If a housing provider is able to track a trend of increasing humidity within a property they can investigate it and determine whether there is a problem within the house itself, such as ill-fitting windows, or whether it is tenant behaviour that is the cause.

In a similar way, heat sensors could flag up a problem where a property is not being heated to a good level – which in turn can lead to damp. If a tenant is not heating the property sufficiently, this could be because of other factors such as fuel poverty – they may be heating only one room, for example, to avoid large energy bills.

Receiving accurate data from sensors will allow housing providers to monitor households that appear to be struggling and work proactively with them before someone becomes ill or a property becomes damaged.

Sensor technology could be a vital tool in protecting the vulnerable too – in particular the elderly. With an increasingly aging population, the pressure to keep people in their own homes as they get older will increase.

Examples where IOT is being harnessed include care facilities, where sensors unobtrusively monitor that the occupant is moving about, that they have opened the fridge, or have cooked a hot meal. What if an elderly person has not gone to bed for 48 hours or the television has been on for more than 12 hours?

These kinds of changes to normal behaviour trigger contact from the housing provider or nominated family member to ensure that the person is not in need of any help.

Imagine...
The maintenance worker of the future

The use of sensors could also be increased to improve the efficiency of property maintenance.

A boiler or oven could 'dial home' to request a part that is wearing out. The part is automatically ordered via smart asset software, which makes sense of all the data coming in.

The part is then delivered directly to the property or maintenance worker.

When the worker arrives at the property – a block of flats – the property senses his arrival from wearable sensors in his identity badge, puts that information together with the boiler's request to be fixed and allows the worker in through the security door to complete the job.

As he leaves he uses the sort of contactless technology we see on Oyster cards to confirm he has carried out the maintenance task.

There is no need to fill in endless forms or even update mobile working devices. Instead, this information would pass automatically into the back office systems via IOT.

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The bigger business benefit

We have already touched upon how internet enabled sensors in the home could help housing providers combat the threat of damp and maintain boilers. However, there are many other ways in which this technology will help to save money.

Most importantly, it will give housing providers an accurate picture of their estate – not just a snapshot.

Most housing providers are forced to take a sample of their housing stock upon which to base their spending decisions because physically visiting each property can be prohibitive in both time and money.

This method may never be completely accurate – houses of the same style and age can vary dramatically in condition depending on any number of factors.

If a provider decides to damp-proof all of its 1930s terraced houses thanks to inspections that found damp in 9 out of 10 of the sample properties, it is a hugely expensive exercise. But by having sensors in every home, they may see that the problem is smaller than expected and they only need to damp-proof half their homes that are close to a river, saving hundreds of thousands or even millions of pounds.

Being armed with the true picture puts the housing provider in control, allowing for better planning, better purchasing and better decisions when it comes to placing tenants.

If, for example, you are presented with a tenant that has a high likelihood of becoming fuel poor, it would be more sensible to place them in a property that is cheaper to heat and has no problems with humidity.

Insurers and lenders will also appreciate the fact that housing providers can prove a more detailed knowledge of the state of their stock.

We know that insurance companies are particularly interested in proven early warnings for water leaks. Water damage can be more costly to repair than fire damage, because it can go unnoticed for a relatively long time. Therefore, having your asset protected by a humidity or water sensor could result in a lower premium – times that by several thousand properties and the savings could be significant.

Lenders would also be more willing to lend at more favourable terms to housing providers who could provide an accurate assessment of their housing stock, with proven methods for maintaining them, to ensure their longevity.

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How do we do it?

It seems inevitable that the most effective way to introduce smart devices into housing stock will be via new builds. This will be far less costly than trying to retrofit older properties – although it is inevitable that retrofitting will happen once the benefits on new builds are shown.

Those planning new builds should consider the logistics of introducing sensors for heat and humidity at the very least and to discuss this with their construction specialists.

There will need to be an analysis of where best to place the sensors within the housing stock and this will vary significantly depending on the layout and style of home. Placing a heat sensor near a cooker or a humidity sensor too near a shower room will clearly skew the readings.

One area that will certainly need to be addressed is internet connectivity, because without it, none of these devices will be able to function. This is a consideration in many new builds anyway but the development of IOT redefines connectivity as a necessity rather than an add-on luxury.

And with up to 30 per cent of tenants in social housing reportedly on the wrong side of the digital divide with no internet access, here is a fantastic opportunity to open up their access at the same time as making their property more efficient.

How do we cope with all of that information?

There is no doubt that IOT will generate a lot of data. Some of it will be incredibly useful and some less so. One of the biggest challenges facing housing providers will be how to set the parameters for gathering that information in order to get the most from it.

The overriding aim will be to get the right data to the right person, at the right time and in the right way.

As each housing provider will have different ways of working, the data policy will need to be flexible. The frequency of reporting will need to be considered – how many times will the sensor transmit its findings back to head office?

Also, how long to wait before taking action as a result of the findings? If a humidity sensor has shown that damp within the property has risen over a week, is this sufficient to trigger a reaction – or would it be necessary to act more quickly?

The most logical place to house this intelligent management of data is within asset management software, which already hosts information about the property and manages the standard workflow rules for an organisation.

This could provide a dashboard of information to the housing provider, who could then drill-down and create customised reports focusing on the different property types, sensor data and tenant information in order to build up a complete picture of what is happening within their housing stock. They will then be able to make sound decisions on how to manage it.

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Conclusion

"The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it."

Mark Weiser, 'The Computer for the 21st Century', 1991

Sometimes we all wish we had the benefit of hindsight – if only we had made that investment at the right time, when we could have maximised our returns. Playing catch up is always a more costly, frustrating process.

Those who invest wisely are those who can look at the trends and see which ones are likely to be passing and those that will become part of our way of life.

IOT is not a passing phase – it is a way of using technology to be more efficient. It is about knowing when something isn't working before it breaks, so we can either repair it or replace it at a time and price that suits us, with minimum disruption to anyone involved.

Housing providers have traditionally had to manage large estates of properties by relying on experience, guesswork and worse case scenarios.

It can be hard enough to know what is happening to the boiler or pipes of a house you are living in, never mind managing thousands of properties, lived in by even more thousands of tenants, many of whom may be among the most vulnerable people in society.

Having the support of smart asset management to ensure the wellbeing of those residents, as well as the wellbeing of your properties, will take away some of the guesswork, reduce the time taken to investigate problems that arise and dramatically reduce the cost of fixing them.

The connected home is already a reality at the top end of the market. British Gas and Google have introduced systems that allow residents to switch on their heating before they get home, for example, and Aga even has a connected cooking range, that starts cooking dinner before you get home.

As time passes, the technology behind IOT will get cheaper and cheaper, so it is no longer just the domain of the wealthier sections of society. Housing providers need to watch this area very closely and factor in smart asset management to their investment plans now if they want to maximise the benefits – because we are not talking about years here, we are already talking about months.

About Capita

Capita's software services division works with 98 per cent of councils and over 200 housing organisations throughout the UK. We provide software solutions to help organisations deliver technology enabled efficiencies and excellent customer service.

Supporting the housing sector with smart asset management we offer OPENAssets, a solution specifically tailored to meet the ever-important need for efficient asset management within social housing. OPENAssets features everything needed to fully manage a wide range of assets, featuring asset registry, asset management surveys, mapping, financial reporting, and much more – all mobile-enabled and self-service ready to best suit each organisation's needs.

If you would like to know more, please email us at cssenquiries@capita.co.uk.

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