Smarter property management

When the Internet of Things meets smart asset management

Capita

Executive summary

The Internet of Things is already changing how social housing providers manage their assets.

By receiving constant accurate information on the state of their stock, they can conduct repairs exactly at the point of need and prevent costly problems. But how far away is this in real terms and which areas of housing asset management are most likely to benefit from it first?

Introduction

More than a decade has passed since the statement on the right 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 for these items to tell us about their current status and health, has now become a reality.

Already we're seeing everyday objects with network connectivity sharing data. Take the current trend in smart watches that also act as fitness devices and ECG heart monitors. These feed exercise data into a fitness app that monitors how far you are pushing yourself on a run. In fact, many of us are already using IoT without even realising.

Back in 2018, there were **7bn IoT devices**. That reached **26.66bn in 2019**, and currently **127 new IoT devices** are connected to the web every second. Lights, radiator thermostats, tumble driers, refrigerators and boilers are already connected to the internet,

In this whitepaper, we will explore the positive impact IoT is having on asset management for the social housing sector, allowing providers to understand and manage their estates more effectively and support their residents better. We will also examine the need to prepare for the future to ensure its benefits can be fully realised.

> "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

Where could we go with this?

Another area that social housing providers are exploring is humidity. Damp causes untold damage to properties, both new and old. Unfortunately, it's often too late when providers are informed of the damage so repair costs run into the thousands or even tens of thousands   of pounds.

Smart sensors to measure humidity already exist and their price has dropped significantly over the last few years. They are often combined into multi-function sensors with the ability to monitor other factors such as temperature, carbon monoxide and smoke. Coupled with extended battery life and multiple communications options, they are now within easy reach of social housing providers.

A humidity sensor could tell 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 building's fabric.

Imagine...

If a social housing provider can track a trend of increasing humidity within a property, it can investigate and determine whether there is a problem within the house itself, such as ill-fitting windows or poor ventilation, or it's tenants' behaviour that's the cause.

Similarly, heat sensors could flag up a property that's not being heated to an appropriate level – which can lead to damp. If a tenant is not heating the property sufficiently, this could be because of 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. By coupling this with data from smart meters, a housing provider can create a fuller picture of what's going on at a property.

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.

Places where IoT is being harnessed include care facilities, where sensors unobtrusively monitor people's movements, that they have opened the fridge or 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 all right.

Where could we go with this?

The maintenance worker of the future

The use of sensors could also 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 that's coming in.

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

> **When the engineer arrives at the property – a block of flats:**
>
> It **registers their arrival from wearable sensors** in their identity badge.
>
> **Connects that information** to the boiler's request to be fixed.
>
> A**llows them in through the security door** to complete the job.

As they leave, they use the sort of contactless technology we see in Oyster cards to confirm that they have carried out the maintenance task.

> **There's 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.

The bigger business benefit

We have already touched upon how internet-enabled sensors in the home could help social housing providers to 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 social housing providers an accurate picture of their estate – not just a snapshot.

Most social housing providers are forced to take a sample of their housing stock to base their spending decisions on because physically visiting each property can be too expensive and time-consuming.

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 its 1930s terraced houses thanks to inspections that found damp in 9 out of 10 of the sample properties, it's 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 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, purchasing and decisions about placing tenants.

If, for example, you're presented with a tenant who is highly likely to become fuel poor, it would be more sensible to place them in a property that's 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.

How do we do it?

It seems inevitable that the most effective way to introduce smart devices into housing stock is via new builds. This is far less costly than trying to retrofit older properties – although it's inevitable that retrofitting will happen once the benefits for new builds are shown.
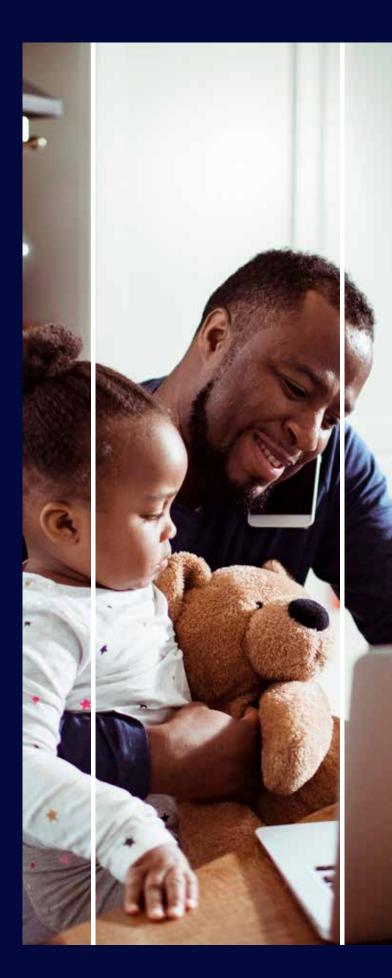
Those planning new builds should consider the logistics of introducing sensors for heat and humidity at the outset and discuss this with their construction specialists.

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 and not provide the appropriate outcomes.

One area that needs to be considered early on is internet connectivity, because, without it, none of these devices can function. This is a consideration in many new builds anyway but the development of IoT redefines connectivity as a necessity rather than a luxury.

And with more than 10 million adults in the UK reported by Ofcom to be on the wrong side of the digital divide, with poor or no internet access, here's a fantastic opportunity to open up their access at the same time as making their property more efficient.

How do we do it?

How do we cope with all that information?

There is no doubt that IoT generates a vast amount of data. Some of it will be incredibly useful and some less so. One of the biggest challenges facing social housing providers will be setting the parameters for gathering that information so that they 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 social housing provider has 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 into the cloud, and how will that data be transformed usefully before it gets back to head office?

Also, how long should a social housing provider wait before acting as a result of the findings? If a humidity sensor has shown that damp in a property has risen over a week, is this sufficient to trigger a reaction – or would it be necessary to act more quickly? And can this process be automated using workflows in the housing management system?

The most logical place to facilitate 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 can provide a dashboard of information to the social housing provider, which can then drill down and create customised reports focusing on the different property types, sensor data and tenant information to build up a complete picture of what's happening within its housing stock. It will then be able to make sound decisions about how to manage it.

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 which ones will become part of our way of life.

IoT is not a passing phase – it's a way of using technology to be more efficient. It's 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 those involved.

Social 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's 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 those residents' and your properties' wellbeing will take away some of the guesswork, reduce the time taken to investigate problems and dramatically reduce the cost of fixing them.

The connected home is already a reality in many areas. British Gas, Google, Honeywell and others have introduced systems that allow residents to switch on their heating before they get home, for example. Many of these go even further by using machine learning to automatically build a heating profile for the property based on residents' behaviour (using motion detection and Bluetooth LTE technology). They also use the OpenTherm communications protocol to allow more gradual heating and cooling, thus increasing efficiency and improving boiler life. Aga even has a connected cooking range, which starts cooking dinner before you get home.

As time passes, the technology behind IoT will get cheaper and cheaper, so it's no longer the domain of the wealthier sections of society. Social housing providers need to watch it very closely and factor smart asset management in to their investment plans now if they want to maximise the benefits – because we're not talking about years here – we're talking about months.

About Capita

Capita works with councils and social housing organisations throughout the UK. We provide software solutions to help organisations to deliver technology-enabled efficiencies and excellent customer service.

Supporting the housing sector with smart asset management, we offer OneAssets, a solution specifically tailored to meet the ever-important need for efficient asset management within social housing. OneAssets 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.com.

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