

A Connection to Tomorrow

A whitepaper exploring the future of technology and communications in real estate

Prepared by Hyperoptic with SAY Property Consulting and Applied Futurist, Tom Cheesewright.





Hyperoptic is collaborating on projects with over 200 house builders, social housing providers and councils. When we can come together, we can deploy full fibre remarkably quickly and at no cost to them. Let's continue to tear down these barriers to the benefit of all.

Dana Tobak CBE, CEO of Hyperoptic



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Introduction

Dana Tobak CBE,
CEO of Hyperoptic



When I founded Hyperoptic in 2011 with Boris Ivanovic, it was based on the premise that fast, reliable broadband was becoming as important to quality of life as water, gas and electricity. The world was quickly changing, and people recognised the increasing role that internet access was playing at work and at home.

For some this meant freeing themselves from the constraints of being tied to the office to carry out their work. For others it meant they had access to a wealth of high definition content on demand. The common denominator? Rock solid, fast, reliable broadband. The invisible world of infrastructure was about to become a lot more prominent.

In becoming the UK's largest gigabit broadband provider and best in class for day-one connectivity, our partnership with the property industry has been critical. Eight years on, we decided to undertake one of the largest research studies of its kind to understand the changes and trends in the industry.

We commissioned Say Consulting, together with Applied Futurist, Tom Cheesewright, to conduct in-depth interviews with some of the most influential people in property and polled over 200 industry experts. In addition, we conducted research with One Poll to ask 2,000 homeowners and renters their expectations regarding their homes.

The findings reached some unequivocal conclusions.



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Fast, reliable broadband is a necessity

Broadband is now considered as important as water, gas and electricity.

Both the property industry and public agree. Some 86% of the public claim that having a decent connection in their property is important to them whilst 64% said they would be put off by a home with a slow internet connection. Overall, over half (54%) say they are more likely to purchase or move into a property with a good internet connection.

This feedback is reflected by the property industry, with 60% of respondents rating reliable, fast, fibre connectivity as critical and the fourth utility. A further 32% defined it as a key attractor for buyers and renters.

Henry Pethybridge, Director of WiredScore Home, provided an interesting example of the importance of connectivity: *"When the water went down at a development in Leeds, they didn't get any communication from tenants for six hours. When the internet went down, they had complaints from tenants within two minutes."*

64%

said they would be put off by a home with slow broadband



When it comes to house hunting:



Expectations are changing rapidly

Over a third of the public (35%) stated their priorities have changed over the past five years when it comes to house hunting. The internet is at the heart of this.

Digital infrastructure is now, in some cases, even more important than physical amenities. Three in 10 (30%) stated they want to be close to a train station, a third sought a corner shop and over a quarter (27%) desire a post box nearby. However, the numbers are even higher for digital infrastructure, with more than three quarters believing broadband speed is now an essential for homebuyers, and 86% claiming having a decent connection in their property is important to them.

Some 64% said they would be put off by a home with slow Wi-Fi, and two in five have even gone one step further and decided against a property due to discovering the area had poor access to broadband. Overall, over half (54%) said they are more likely to purchase or move into a property with a good internet connection.

Because of this importance, we found that homemovers are increasingly doing their research beforehand, with over a quarter saying they have actively researched the broadband speed of an area before moving to a new house. However, many are frustrated – some 40% do not

think there is enough information available on the quality and speed of internet services in a potential new home. As a result, three in five would like to see a traffic light system introduced to explain broadband connection when house hunting, similar to an energy performance certificate.

There is a stark warning from inside the property industry. Jon Di Stefano, CEO, Telford Homes stated the reality of the situation: *“People wouldn’t even tell you they want fast Wi-Fi now because they just expect it and if it doesn’t have that, you’re in trouble.”*

Kate Davies, Chief Executive of Notting Hill Genesis, puts it like this: *“Everyone expects fast broadband on the day they move in. Everyone is online, even the poorest. We didn’t have that expectation. The people not using the internet are mainly elderly people over 85.”*

WiredScore describes the situation even more drastically: *“You literally can’t do anything without the internet. The average person’s heart rate increases to the same heart rate as when you’re watching Jaws when the internet goes down!”*



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The property industry is moving at a mixed pace with technology

Many in the property industry are frustrated with the speed at which the sector moves overall. Some 62% described the industry as being slow or very slow to introduce technologies – including fibre optic broadband and smart energy saving devices.

This is despite the fact that two thirds (66%) of those in the property industry describe the internet as the most important technology of the last hundred years.

Whilst many house builders, social housing providers and councils are powering ahead with pioneering, full fibre deployments, overall the picture is mixed. WiredScore provides digital connectivity rating services and works with residents and property owners to understand the issues. Henry Pethybridge, Director of Home, puts it like this: *“We went to speak to renters and learned that you shouldn’t underestimate how bad the issues with residential connectivity are. Around 85% of tenants had experienced issues in the last year based on our research, which is extraordinary given how important connectivity is. The internet is thought about as a utility, so you can see why people are getting so frustrated. It makes sense that some of the research we’re seeing suggests this is now the number one requirement on people’s lists when they’re looking at a property.”*

Our interviewees gave some pointers as to why the picture might be mixed and there does appear to be some innate conservatism in the industry, as is to be expected from people responsible for capital intensive projects with high health and safety risks and very long lifespans.

Chris Grigg, CEO of commercial property company British Land puts it like this *“Companies – our primary customers – have been relatively modest in their demands. Maybe they have had low expectations. Maybe they have been willing to solve those problems themselves. Historically we would prepare the buildings to a basic level and then the companies, particularly the large ones, would fit them out themselves. Partly as a lack of vision and partly as a lack of being asked, connectivity often lagged behind what you could expect in your own home. And that’s really bizarre when you think about it. As technology develops, our customers’ needs evolve – and as landlords we need to respond. Businesses now expect a certain quality of infrastructure in their buildings, and we work hard to provide that.”*

WiredScore points further to a potential schism between the responsibility of residential property owner and tenant: *“The big issue that we see is residential landlords not taking responsibility. Connectivity is a service that is being provided into the building by others, but it is a critical part of the landlord package. Without any ownership of this issue the technology won’t be kept up to date. In terms of specifics. We see a multitude of sins. It’s almost too difficult to describe. As soon as you lift the lid there are all sorts of issues, there are landlords doing some great things and really pushing the boundaries but there are some landlords who just aren’t.”*



Network specifications are changing and there is scepticism about whether 5G can fill the gap

The first 5G services were launched in the UK last year, with many suggesting that they could become part of the internet experience within the home or office.

However, those within the property sector are highly sceptical of this. Anna Strongman, Managing Partner, Argent LLP, stated that: *"People expect good connectivity, whether that is Wi-Fi, broadband, or mobile. And you can't always achieve all of those. For example, some forms of modern building construction block good mobile reception. In some regeneration sites, there is a limit in terms of the number of masts available."*

Simon Webb, Head of Professional Services, Workspace Group, agrees: *"Modern building methods and materials, (like metal, concrete and glass), don't allow mobile signals to penetrate. So, landlords like us are having to put in mobile boosters to give coverage. If you have fibre, then you can add 5G micro sites across the building. There is an issue with the rooftop macro sites. The new legislation is not favourable for landlords and they don't see a benefit to having a site on their roof because the site doesn't support the people inside the building, it benefits those all around. It is left up to the landlord to invest in distributing the signal around the building."*

In the view of WiredScore, the issue is that expectations of connectivity continue to change: *"If you take internet speeds 10 years ago, 100Mbps would have been out of the question. Now gigabit [1000Mbps] is becoming normal. Fibre is the technology we see as being able to transmit the greatest quantity of data. But it all depends on how it is used and installed. From our perspective, the vast majority of wireless connections need an awful lot of wire. 5G is going to drive demand for much more fibre to power the connection. In a building, the higher radio frequencies of 5G naturally have lower penetration. Tall buildings or those clad in insulated glass are going to need in-building 5G hubs. It's not 5G replacing fibre, it's the opposite."*



Whilst the precise date is currently in flux, the government has a vision that every home in the UK will have access to full fibre from 2025.

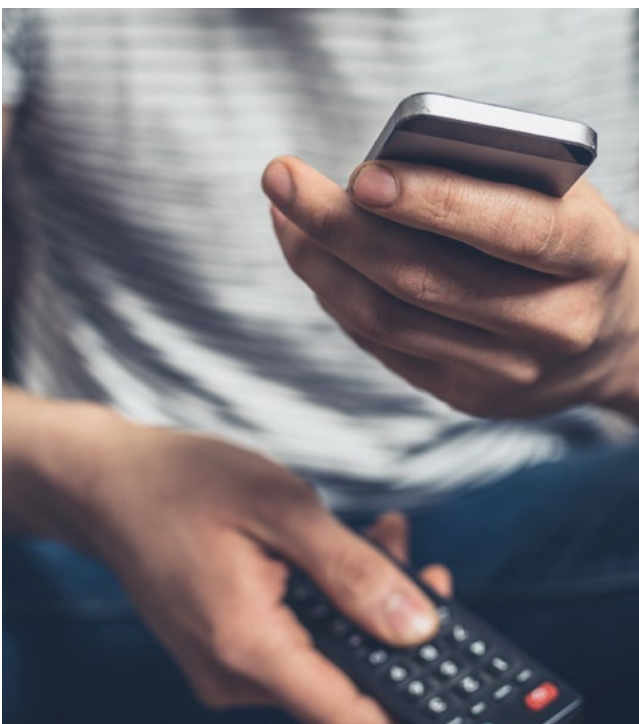


In conclusion

When I founded Hyperoptic, there were many that questioned why full fibre was needed and if gigabit broadband would ever be required. Fast forward nine years and, to quote WiredScore, it's 'becoming normal'.

The property industry is one that by its very nature is characterised by long-term planning and, to some extent, taking educated 'bets' on what the future may hold. Full fibre broadband is one of the safer educated guesses that the sector can make. Whilst the precise date is currently in flux, the government has a vision that every home in the UK will have access to full fibre from 2025. Hyperoptic alone is on track to pass 5 million UK homes by 2024.

There is a widespread misconception that the biggest barrier to deploying full fibre is finance. Instead, it is largely to do with planning and coordinating the wayleave process. Hyperoptic is collaborating on projects with over 200 house builders, social housing providers and councils. When we can come together, we can deploy full fibre remarkably quickly and at no cost to them. Let's continue to tear down these barriers to the benefit of all.



A Connection to Tomorrow: Exploring the future of technology and communications in real estate

Tom Cheesewright,
Applied Futurist



Twenty years ago, at the peak of the dotcom bubble, it would be hard to believe that we were perhaps underestimating the impact that the internet would have on our lives.

The internet has proved to be a transformative force on our physical, cultural, political, and economic landscapes. It is the foundational platform for the largest companies in the world¹. It is the delivery platform for most of our media consumption². It is increasingly the primary platform for political influence, both legitimate and malign. It is the target of endless criticism from those concerned about its impact on youth. And it has rewritten the rules of commerce, reshaping our high streets in the process.

It would be easy to look backwards and believe that we are at the end of this cycle of transformation. So much has happened already. But we are only in the middle years of what future historians may recognise as a 100-year-long connected computing revolution. We know this because if we look around today, we can already see the signs of where the internet goes next.

For most of its existence, the internet has been confined to a purely digital world, bounded by the glass walls of our screens. Over the last decade though, it has started to break out and establish itself alongside us in the physical world. This extension has taken place in two directions. First, what has always been physical started to become digital. The price of adding connectivity and basic intelligence to every day devices has collapsed to well under £1 and is diving ever further downwards. Previously dumb objects in our home can suddenly become smart: lightbulbs, vacuum cleaners, washing machines, plug sockets, stereos, televisions. Pursuing this trend, it is easy to see tables and chairs, cupboards and clothes, even baths and toilets, gaining some basic sensing and intelligence and the means by which to share what they learn.



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Large items too have become smart. Smart drones are now undertaking commercial deliveries, rolling through the streets of Milton Keynes³, or flying through the air of Christiansburg, Virginia⁴. Autonomous vehicles are slowly becoming a reality, more capable with every software upgrade.

At the same time, previously digital items are becoming increasingly physical. Our interfaces with the digital world are starting to become more natural, more human. First there were smart speakers and voice assistants, now in over a fifth of UK homes⁵. Next comes mixed reality, with Apple's next big launch rumoured to be smart glasses. Mixed reality will be a paradigm shift for our interactions with the digital world. Sensors and cameras will digitise our physical world and make it easy for smart machines to understand. Using these sensors, machine learning systems will be able to identify everything we interact with, from the clothes we wear to the things we eat and assist us based on that information. Then there is the interface: imagine the physical world overlaid with a photorealistic virtual people, creatures, and objects. Interacting will be less about tapping keys on a keyboard, or stabbing fingers at a screen, and more about rich and subtle communication with a semi-permanent digital world.

Sat behind this world of experiences is the hard reality of the technologies that underpin it, but also the challenges that we face in building, heating, powering, and maintaining our homes. Someone must provide the infrastructure to power it all. And we must consider the interaction between these technology trends and our wider reality. How does technology intersect with issues of climate, poverty, housing shortages, and political turmoil?

All these issues are addressed in this report, a combination of foresight and commentary drawn from the minds of a range of leaders in the field of residential real estate, technology and tomorrow. This is all backed up by some research into the attitudes of the wider industry to current and future technologies in the home.



1 https://www.forbes.com/global2000/list/#header.marketValue_sortreverse:true

2 <https://www.emarketer.com/content/uk-time-spent-with-media-2019>

3 <https://medium.com/starshiptechnologies/hello-robot-28b9b73787bf>

4 <https://techcrunch.com/2019/10/18/alphabets-wing-begins-making-first-commercial-drone-deliveries-in-the-u-s/>

5 <https://voicebot.ai/2019/10/11/over-20-of-uk-households-have-smart-speakers-while-germany-passes-10-and-ireland-approaches-that-milestone/>

In the detail: The last 20 years, and the next 20



Introduction

In order to gather a wider range of views for this report, we supplemented our interviews with a survey of 228 professionals from across the property sector. We wanted to understand how the rest of the industry perceived the biggest challenges facing the residential property sector over the last twenty years, and what challenges they saw for the future. And we wanted to understand attitudes to technology, in the industry and in the home.

Of the 228 professionals surveyed, advisors and consultants were the largest group (26%), followed by developers (19%) and operators (18%). The remainder were made up of lawyers, contractors, agents, housing associations and planners, with a few proptech firms as well (7%). By role, the survey base was dominated by leaders, with 39% describing themselves as 'director, partner or CEO', and 25% as 'manager'.

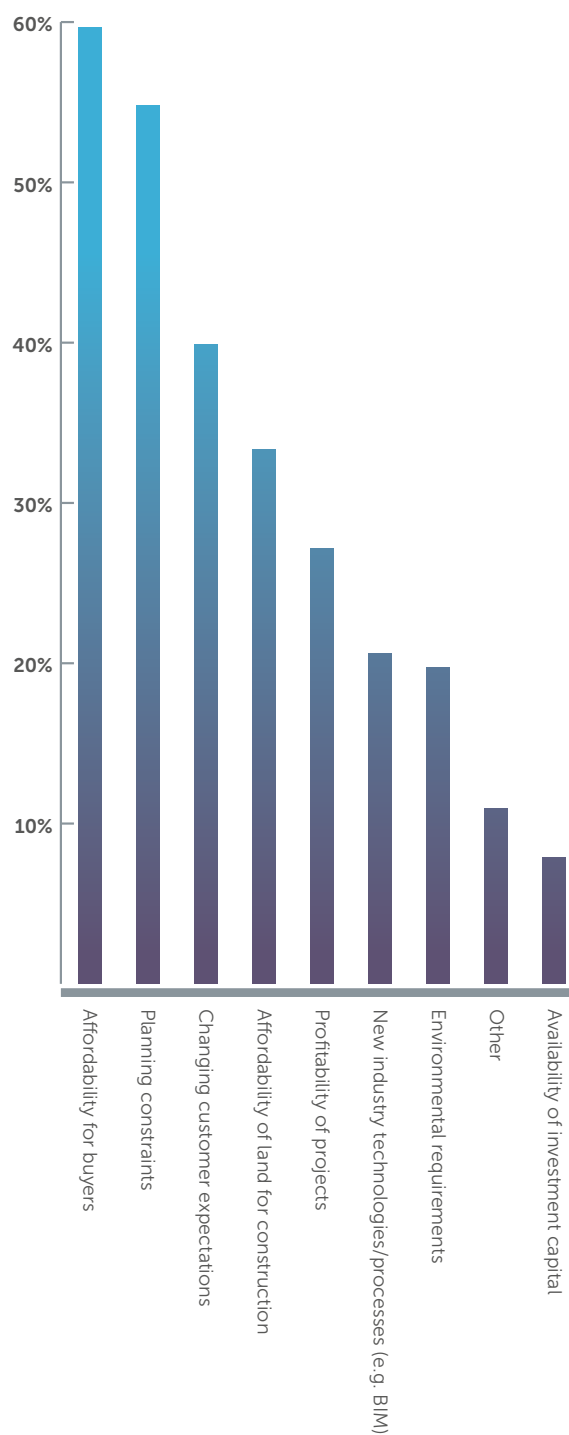


The biggest challenges of the last twenty years

The first question we asked our survey base was about the greatest challenges of the last twenty years. Here the respondents were quite divided on which was the greatest challenge. Affordability for buyers in the face of inflated house prices and the continuing failure to build enough new homes narrowly took the number one spot. This was closely followed by planning constraints, an issue that is hard to disentangle from that of house prices and the slow progress in meeting building targets.

Changing customer expectations took third place, with the affordability of land in fourth. Profitability of projects came in fifth. This demonstrates the diverse picture of the industry from a financial perspective, with some developers struggling while others have had record years. Perhaps surprisingly low on the list, given the scale of conversation about them in the industry, was the introduction of technologies such as BIM. Environmental requirements also captured a small share of the vote. In last place, below even people's additional contributions, was the availability of capital, something that has not been a big issue for the industry in this time of low interest rates and investors desperate for better returns.

Of the answers that people contributed, the largest proportion by far referred to excessive or unclear regulation and 'government interference'. This was followed by the rising cost of construction and a slowness to adopt new construction technologies – two issues that are perhaps not unconnected and may point the way to a future of construction.

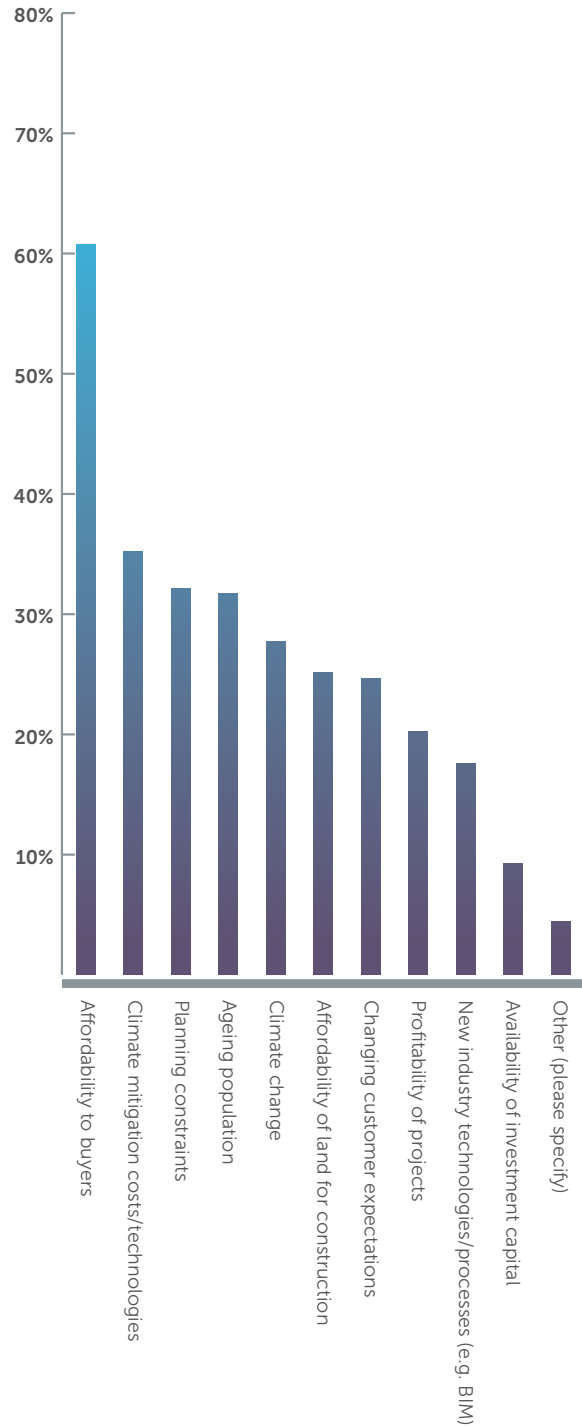


Future challenges

We asked our respondents to identify the greatest challenges of the next twenty years and here the response was much clearer. In the list, we separated the challenge of climate change from the costs and technologies associated with its mitigation. Each scored highly, with mitigation receiving votes from 35% of the base and direct effects receiving 28%. Together these would rank as the industry's number one concern for the next 20 years – a reversal of their analysis of the last 20. Perhaps this is a topic for the sector whose time has come, though some might say a little belatedly.

The industry has continuing grave concerns about affordability. In fact, 61% of our respondents picked this as one of their three greatest challenges. Planning constraints are expected to remain a headache for 32%. The ageing population concerns a similar number.

Of those who opted to contribute an answer, policy and regulation are expected to remain challenging. Others highlighted the growing problem of skills shortages, again as pointed to by our interviewees.

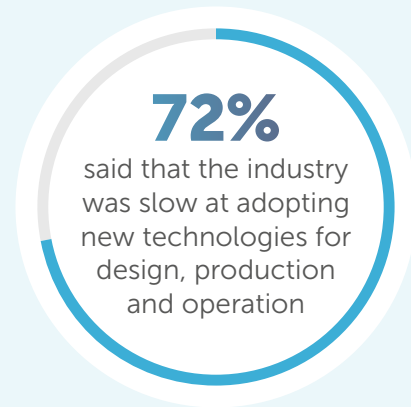


Technology adoption

We asked two questions about the adoption of technology. The first was about the use of technology by the industry and the second was about the introduction of new technologies into the home. In answer to the first question, respondents were very critical. 72% said that the industry was either slow or very slow at adopting new technologies for the design, production and operation of real estate projects.

Our interviewees gave some pointers as to why this might be. There is some innate conservatism in the industry, as is to be expected from people responsible for capital intensive projects with high health and safety risks and very long lifespans. There has also been a failure on the part of technology providers to properly map their solutions to the industry's needs. Nonetheless, given the challenges of growing supply with a contracting skills base, technologies that can take some of the friction out of design and construction may be critical in the future.

With regards to the introduction of new technologies into the home, whether fibre optic broadband or energy saving technologies, the respondents were more generous. Still though, 62% would describe the industry as being slow or very slow to introduce these technologies. 28% said that technologies had been brought in as and when they were viable.

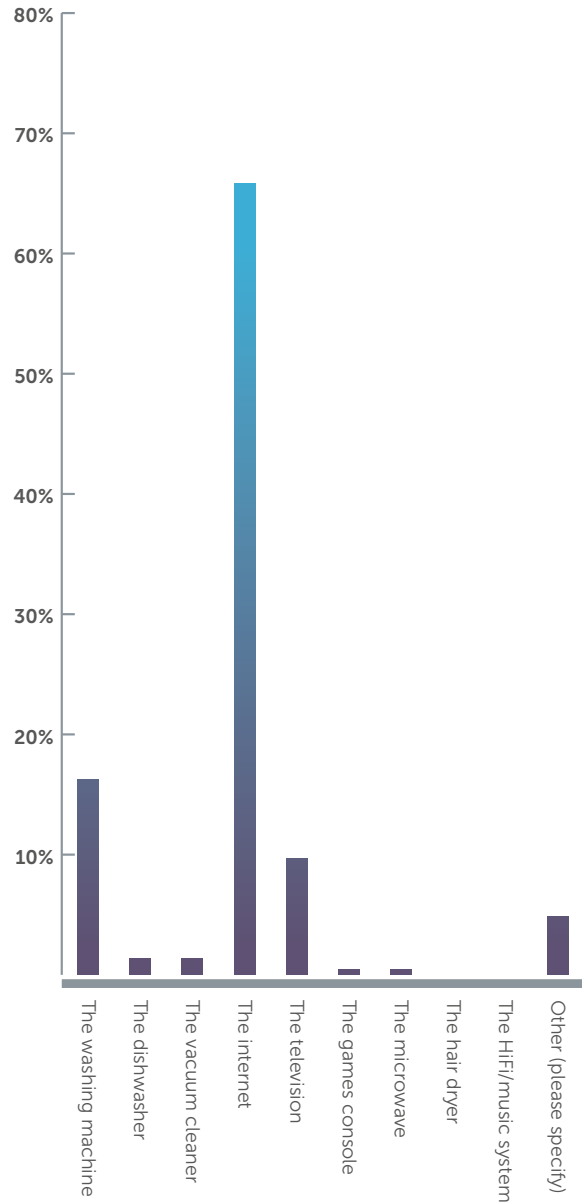


Connectivity in context

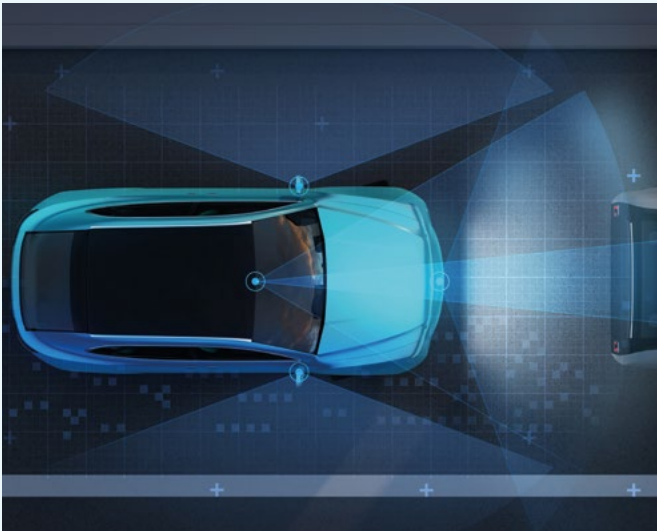
To understand just where our respondents placed connectivity in importance, we asked them more broadly about the most important technologies of the last hundred years. The answer was, overwhelmingly, 'The internet', with 66% of the votes. The washing machine took a distant second place with 16% of the votes, and the television third with 10%.

Offered the chance to suggest other answers, people mostly selected central heating and hot water. It is easy to forget that even though this technology has been around for a couple of hundred years, it was still a luxury item until relatively late in the last century.

Asked about the internet and the importance of reliable, fast, fibre connectivity specifically, 60% of respondents rated it as critical and 'the fourth utility'. A further 32% defined it as a key attractor for buyers and renters. 7% called it nice to have and only one person responded that it was not the responsibility of the real estate sector.



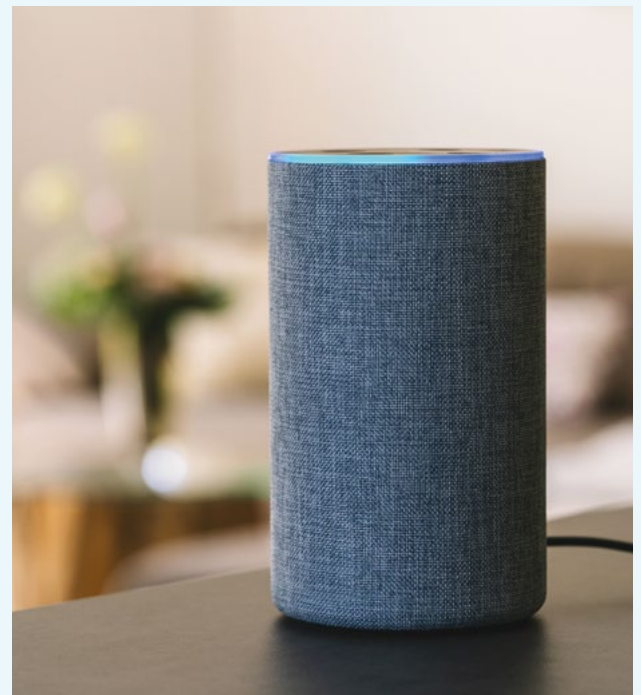
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Tomorrow's technologies

Looking beyond the internet, we asked our base whether the technologies that stand to transform the built environment over the next two decades inspired excitement or fear. Robot home assistants to handle the cleaning were top of the list when it came to excitement. And perhaps surprisingly, autonomous vehicles engendered the most fear – though they were still marginally more a source of excitement (54% vs 46%).

We gave respondents the chance to suggest other technologies that most excited or scared them, and the results were fascinating. Many highlighted the possibilities of a truly integrated smart home that responds to personal needs and helps to manage the home's climate footprint. Sixteen people independently raised their privacy fears over voice-based home assistants like the Amazon Echo and Google Home series. They talked about their 'spying capabilities' and described them as 'scary as hell'. *"The listening software spooks me,"* one respondent said. Clearly there is a long way to go with privacy concerns about voice technology, with cameras also presenting a source of much concern.





Closing Comments

**Debra Yudolph, Partner at Say Consulting
and Deputy Chair of Notting Hill Housing**

It's very clear throughout this research that the importance of fast, reliable connectivity is well understood by both the Property Sector and the wider public. The results are overwhelming; the 'internet' is recognised as the most important technological innovation in the past 100 years – and connectivity is already the fourth utility.

It's less apparent if the Property Sector is prepared to invest in the infrastructure to provide fibre broadband for their customers, or to push forward with new technologies to provide a broader range of technological innovation.

When asked, our respondents focused on how fibre broadband can benefit their customers, and the pros and cons of greater investment in smart home technology. However, they didn't reference the wider benefits that can be achieved through greater investment in new technologies, such as BIM for asset management to achieve new levels of operating efficiency, sustainability and gains in building longevity.

The research shows there are two fundamentally different approaches from within the Property Sector as to how to deploy technology. On one hand you have those that say, despite the potential promise of so-called 'proptech', a truly compelling solution or 'killer app' has yet to emerge. These respondents don't see the business case for laying down infrastructure to enable the next generation of smart technology, believing broadband that's 'good enough' for existing residents or tenants, is sufficient.

Then there are others, who may agree with some elements of the first argument but are adopting a 'build it and they will come' approach nonetheless. They would maintain that investment in full fibre infrastructure lays the ground for future innovation and the technological demands of generations to come. It also means residents and tenants today get a far superior online experience. In fact, they would argue fibre broadband is already a unique selling point when it comes to selling or renting homes and offices.

There is plenty of evidence which suggests justifiable caution on the housing sector when it comes to technology – and that it's not sitting on its hands but instead awaiting the next innovation. Kate Davies, Chief Executive of Notting Hill Genesis, said: *"I have a view that proptech has been the slowest to get off the ground.*

It has been much slower than fintech for all sorts of reasons. We have looked at a lot of stuff and a lot of the solutions just aren't good enough. There are loads of solutions around buildings and geography – lots of small things. But I don't think we want lots of small things. We want big things that can help us manage 46,000 homes. You need solid technology to do that."

Jon Di Stefano, CEO, Telford Homes, agrees: *"There's no real investment in smart home technology yet. We just haven't got to the point where you're making the investment in that, certain that the people who move in are going to want it. Some companies are putting Google's systems in some of their flats, but you've got to know that that is going to be the best technology for the next few years. For the moment we just switch the lights on with a normal switch. If you're in a five-bedroom house I can see you might want to control things from an iPad, but in a one or two bed flat..."*

And there are still barriers to overcome with residents in terms of smart technology. Anna Strongman, Managing Partner, of Argent LLP, says: *"There are a lot of conversations about technology in the home, but beyond good connectivity, I'm not sure how residents feel about smart homes. Some people really love it and some people just want a light switch. Some love to turn the heating on when they are at work but it's not yet a driving factor in the sales process. Some people love it, but others don't."*

Yet I would echo the view of WiredScore, in that consumers fundamentally want choice. Some will want smart devices and others are yet to be convinced - but ultimately all these new devices, as well as the ones they use now, work better with fast, reliable connectivity. And it's critical to plan ahead, as WiredScore states: *"Looking to the future I really think the two key things are capacity and flexibility. Landlords need to make sure that they are investing in the underlying digital infrastructure. It's incredibly important that there is a level of resilience built in from the ground up."*

If we assume that the underlying digital infrastructure is the new norm in the Property Sector, then we can all start to push innovation. This will accelerate the financial, experiential and environmental benefits broader technologies can offer our industry, while simultaneously providing current customers and tenants access to the fast, reliable broadband they crave.



Consumers fundamentally want choice. Some will want smart devices and others are yet to be convinced but ultimately all these new devices work better with fast, reliable connectivity.

Debra Yudolph, Partner at Say Consulting



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This report is based on research conducted by Hyperoptic, Say Consulting and Applied Futurist, Tom Cheesewright. Together they conducted in-depth interviews with 6 senior professionals in the real estate industry, polled over 200 industry experts and conducted research with One Poll to ask 2,000 homeowners and renters their expectations regarding their homes.

