

Technology and Innovation

My Transport Vision – Emily See

“We are on the cusp of a revolution in transportation” (CIHT Futures). As I begin to think about my transport vision I come back to this sentence stated by CIHT Futures at the start of this challenge and what it truly means for me at this stage in my career. Technology and Innovation in the transportation sector have been highlighted as incredibly important to transforming the way we live and work by the industrial strategy. Working within an innovative technology company who are committed to building a Britain fit for the future I am often frustrated with the lack of innovation within local highway authorities.

Britain has a rich transport history, however in the 20th century we stopped investing in transport and its workforce (Transport Infrastructure Skills Strategy). For those young professionals who have made it into the sector they can often be considered inexperienced and are not given the opportunity to input their fresh innovative ideas into the business they work in.

This CIHT Technology and Innovation Challenge is a chance for young professionals to make change within the profession with the support from CIHT. The transport vision I have can be summed up with a concise statement:

To see innovative technologies utilised in local highway authorities.

Often, we hear that local authorities have budget and resourcing issues. Having worked with many local authorities in the UK this may be the case to some extent, however it is made worse by authorities not using their existing budgets and resources in the most efficient way. There is a huge drive for innovation in the industry with papers written such as the Industrial Strategy 2017, Highways England Innovation, Technology and Research Strategy and the Transport Infrastructure Skills Strategy. Although these documents highlight the need for innovation and funding for infrastructure, they're focus is on the strategic networks rather than on the local roads. Local roads are used by the UK's population on a daily basis and are critical for the population to live and work. Despite the drive with these documents and despite steers from the government, local authorities are still not making progress with innovation.

To understand why local authorities aren't utilising innovative technologies and ideas it is important to understand the challenges they face. They can be divided into 5 categories:

1. Change

Any innovation in local authorities often brings about change, often resulting in disruption and stress to the authority. For this reason, any change is undertaken as a last resort and only considered when there are major milestones such as change in contract. Change is critical for private companies to continue to compete in the market, keep up to date with the industry and is also a major way to make efficiency savings. The same pressure is not felt in the same way by local authorities and therefore there is no drive for change.

2. Resource

With regards to resource there are two main challenges. The first being that some local authorities do not have enough staff to implement innovative ideas and keep up to date with business-critical work. For this reason, day to day activities consume the working days and innovation gets put to back burner. The other challenge facing local authorities are that the UK workforce are largely made of professionals who have been in the industry for their entire careers, some having been in the same authorities for most of their career. This can often mean that any changes are not only difficult to get implemented, but to also to get backing in the first instance.

3. Cost

Innovation is not costly, it starts with an idea that grows to support business to thrive, produce efficiencies and streamline processes, however to get the benefits there is often an upfront cost. Local authorities have tight budgets that they must manage to maintain a safe and serviceable network and therefore the upfront cost of innovation are often too high to justify, despite the long term benefits they will get.

4. Politics

Local authorities often have to deal with pressure from the public and council members which result in short-term fixes such as pothole repairs, rather than the long-term solutions. The short-term repairs wanted by members provide poor value for money and often undermine the structural integrity of the asset. Despite these negative impacts local authorities continue to face pressure for short-term fixes, leaving innovation on the back foot. The Highways Maintenance Efficiency Programme highlighted the need to gain support from senior decision makers however this is only highlighted a local authority level. Senior decision makers within the government also struggle to appreciate the importance of long term solutions, which may be why local authority members are struggling to see the benefits.

5. Existing Technology

Often local authorities feel that by using the system they have always used they will continue to provide the service they have always provided, and that there are not upfront costs or training required for existing staff. These technologies are often outdated, having been first developed decades ago. Newer technologies are also often daunting for the older generations who have always used the same system.

Why do I want to see local authorities utilise innovative technology?

There are many documents which outline why innovation and technology are critical for managing infrastructure. For my transport vision there are two key documents that have inspired me:

1. The UK's Industrial Strategy

One of the most important documents for our sector that was produced this year was the UK's Industrial Strategy. It sets out a long-term plan to boost the productivity and earning power of people throughout the UK. Two of the five foundations outlined in the strategy are key to my transport vision:

- Ideas– the world's most innovative economy
- Infrastructure – a major upgrade to the UK's infrastructure

A big part of both these foundations is in increased investment toward research and development in the sector. The white paper highlights that one of the lessons learned by the government in this regard is 'governments cannot do this on their own, instructing and planning but never listening or consulting' (Industrial Strategy White Paper, 2017). Another important challenge highlighted in the white paper is to 'put the UK at the forefront of the artificial intelligence and data revolution'. A data-driven economy is described as 'a digitally connected economy that realises significant value from connected, largescale data that can be rapidly analysed by technology to generate insights and innovation'. Historically data has not been recognised as critical or an asset to be managed however this white paper has started the revolution to put data at the heart of decisions. Despite the forward thinking within this document it fails to focus on the local highway authorities who are the foundation of the country and maintain the highest proportion for road in our country. These are also the authorities who are struggling the most and need further support.

The Industrial Strategy has set out the importance of innovation and infrastructure to our country's future it however there is another document which helps us to understand what change is needed to support technological innovations.

2. State of the Nation 2017: Digital Transformation

This document highlights that “digital transportation is a more cost-effective way of adding value to infrastructure than traditional approaches” and that smart, innovative infrastructure will enable optimal operation of key infrastructure. Although there are three main themes within this document the one that most relates to my transport vision is productivity. The section of the document highlighted how digital transformation can help overcome the challenges to infrastructure productivity. Again, although this document highlights how critical it is for infrastructure to invest in innovation it neglects the difficulties faced by local authorities and does not offer any support, incentive or guidance on how to do this at a local level.

Reading these documents highlights the revolution that is happening in the UK and what benefits it will bring to the industry. My vision wants to see local authorities be part of this exciting change rather than watch others succeed while they remain struggling.

What technologies can support local highway authorities?

Big data and the Internet of Things are becoming buzz words in the industry and look to provide authorities more detailed and reliable data. As the papers discussed above it is critical for the infrastructure industry to embrace the new digital and technological revolution however for local authorities it has got to not only support their minimum legal obligation but also offer savings, both financial and with regards to resource.

Authorities currently use several systems to manage their highway network. Recently there are companies who have invested in bringing these systems together to provide a single asset management system. Not only does this offer efficiencies when purchasing the system but also means the ability to share data across the highway service is improved and the efficiencies gained by streamlining processes greatly improve the level of services authorities are able to provide.

Coming from a technology company I feel that authorities need to consider what system is fit from the future and not just for the present. There are systems on the market which do this however there is often cost, and lack of support issues are some of the challenges faced by local authorities.

This is where I see the CIHT Futures supporting me on my vision.

How can CIHT Futures support my vision?

CIHT is the most well recognised body within the local highway authority sector leading the voice of the profession in all areas. By developing this award, it has also given a voice to the younger professionals who are looking to make a difference in the sector. Part of submitting our transport visions is also to determine how the CIHT Futures can support the profession in making the changes.

I believe that local highway authorities need further support when it comes to implementing innovative ideas. I also believe that there should be great pressure for local authorities to begin taking on these technological challenges because the rewards outweigh the risks. Leaving the decision solely with local authorities has proven inadequate due to challenges highlighted above and therefore if it is left under their control innovation will continue to struggle.

With the influence held by the CIHT they could support the changes in behaviour needed at a senior level to embed a long-term approach to technological innovation. One way in which they could do this is by holding an event for senior decision makers to explain their role in transforming the sector through innovation and offer support and expert advice as to how to go about this change.

Gaining the support of local authorities will greatly benefit the industry and how local authorities perform, however it is not the only way for CIHT to support. They also need to raise their voices to the government and help them to understand how local highway authorities need the greatest support to ensure the rest of the country succeeds. Rather than focus only on the top down they need to consider the benefits of support the countries aspirations from the bottom up. If the CIHT can support the Top-Down and Bottom-Up approach the entire country will be able to support our countries ambition of innovation and improved infrastructure.