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No. 3 - Summer 2025

Addressing the Top-5 Global Challenges Facing ITS



Intelligent Transport Systems - Explained

Technologies to operate and manage transport infrastructure



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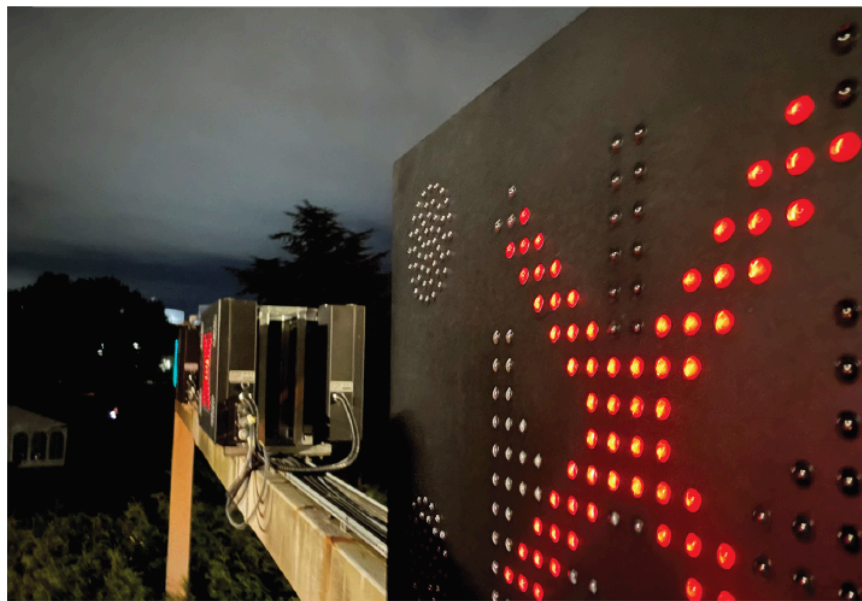
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WELCOME to

ITS EDGE MAGAZINE



Hey everyone!

Following on from our 2025 ITS European Congress special, this Summer edition of **ITS Edge** not only looks back at what happened in Seville, but also examines some of the themes which emerged from the congress.

In this edition, we have a couple of articles which tackle the issues which ITS faces, the first examines the Top-5 Challenges facing ITS and then we go on to look at Mistrust and Vandalism of ITS installations.

On a cheerier note, we are delighted to announce the winners of the **2025 @ITSNow Innovation Awards**. It is great to see some stunning developments and an ongoing theme of edge computing in ITS applications!

We also have articles looking at Connected, Cooperative and Automated Mobility (CCAM) and the underpinning Communications Technologies which are driving the adoption of these capabilities.

We finish this edition with our Technology Insight item for an episode from Season 4 of the @ITSNow YouTube Channel. In this, we have worked with the New Zealand firm **Countculture** to look at how they are poised to revolutionise collecting actionable Active Transport Data for Smarter Cities.



Find us online at: ITSEdge.org

See you next time,

Alistair



Navigating the Issues

ADDRESSING THE TOP-5 GLOBAL CHALLENGES FACING INTELLIGENT TRANSPORT SYSTEMS

Alistair Gollop examines the issues that challenge the effective use and deployment of ITS across the world.

The Intelligent Transport Systems sector stands at a pivotal juncture. Fuelled by rapid advancements in connectivity, artificial intelligence and sensor technologies, ITS promises a future of safer, more efficient and sustainable mobility. From optimising traffic flow and enhancing public transport to paving the way for automated vehicles and smart infrastructure, the potential benefits are transformative. However, the journey towards this intelligent transportation ecosystem is not without its significant hurdles. This presentation delves into the top five global challenges currently confronting the ITS sector, drawing insights from national ITS organisations worldwide and highlighting the critical areas demanding focused attention and collaborative action.

1 - The Looming Shadow: Cybersecurity in an Interconnected World

The increasing interconnectedness that underpins the very essence of ITS also presents one of its most significant vulnerabilities: cybersecurity threats. As vehicles, infrastructure and control centres become more digitally integrated, they simultaneously become more susceptible to malicious attacks. The potential consequences of a successful cyber intrusion within the ITS domain are far-reaching, extending beyond mere data breaches to encompass critical safety and operational disruptions. Imagine a scenario where a malicious actor gains control over traffic signal systems, creating widespread chaos and gridlock. Or consider the implications of a cyberattack on a fleet of connected vehicles, potentially leading to the manipulation of braking systems or steering controls. The risks are not merely theoretical; as evidenced by increasing reports of cyber incidents targeting critical infrastructure globally, the threat is real and evolving.

National ITS organisations are acutely aware of this challenge. In the United States, the Department of Homeland Security and

the National Highway Traffic Safety Administration (NHTSA) have issued guidelines and best practices for cybersecurity in the automotive sector. In Europe, initiatives like the European Union Agency for Cybersecurity (ENISA) are working to strengthen the resilience of transport infrastructure against cyber threats. Addressing this challenge requires a multi-faceted approach. Robust security protocols must be embedded into the design and development of all ITS components, from in-vehicle systems to roadside infrastructure and central management platforms. This includes employing encryption, intrusion detection systems and secure communication channels. Furthermore, continuous monitoring, threat intelligence sharing and rapid incident response capabilities are essential to mitigate the impact of any successful attacks.

Beyond technological solutions, fostering a culture of cybersecurity awareness across the ITS ecosystem is paramount. This involves educating stakeholders, from vehicle manufacturers and infrastructure operators to end-users, about the importance of secure practices and the potential risks involved. Collaboration between the ITS sector and cybersecurity experts is also crucial to stay ahead of evolving threats and develop effective countermeasures.

2 - The Data Deluge: Managing and Integrating the Lifeblood of ITS

Intelligent Transport Systems are inherently data driven. Sensors embedded in vehicles and infrastructure, cameras monitoring traffic flow and connected devices generating real-time information create an unprecedented deluge of data. This data holds immense potential for optimising transportation networks, improving safety and enabling innovative services. However, effectively managing, processing, analysing and integrating this vast and diverse data landscape presents a formidable challenge. The sheer volume of data generated by ITS can quickly overwhelm existing infrastructure and analytical capabilities. Moreover, the data often originates from disparate sources, utilising different formats, protocols and standards. This lack of interoperability can hinder the seamless exchange of information and prevent the realisation of a holistic view of the transportation system. Consider the challenge of integrating real-time traffic data from various equipment manufacturers and systems vendors from around the world and then try to use those with legacy installations used by highways, mass transit and municipal authorities, to provide accurate and timely information to travellers. The lack of globally standardised data formats and communication protocols can create significant bottlenecks and limit the effectiveness of such integrated systems.

National ITS organisations are actively working to address these data management and integration challenges. Initiatives focused on developing data standards, promoting data sharing agreements and establishing common platforms for data exchange are gaining traction. For instance, in Australia, Austroads is working on national specifications for data collection and sharing across different transport agencies. In Japan, the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) is promoting the use of standardised data formats for various ITS applications. Overcoming this challenge requires a concerted effort involving standardisation bodies, technology providers and government agencies. Investing in robust data infrastructure, developing advanced analytics tools and establishing clear data governance frameworks are crucial steps. Furthermore, exploring the potential of technologies like data lakes and cloud computing can provide scalable solutions for managing and processing the massive datasets generated by ITS.

3 – Laying the Foundation: Bridging the Infrastructure Gap

Many of the transformative promises of ITS, particularly those related to automated vehicles and smart infrastructure, are based on the existence of a robust and technologically

advanced transportation infrastructure. This includes not only well-maintained roads, but also the deployment of supporting technologies such as reliable communication networks, precise digital mapping, roadside sensors and dedicated infrastructure for electric vehicles and other sustainable mobility solutions. The current state of infrastructure readiness varies significantly across different regions and even within individual countries. While some urban centres may boast advanced traffic management systems and nascent deployments of connected infrastructure, many other areas still grapple with basic infrastructure needs. This disparity creates a significant hurdle for the widespread and equitable deployment of advanced ITS solutions. The deployment of automated vehicles, for example, requires high-definition maps with centimetre-level accuracy, reliable vehicle-to-infrastructure (V2I) communication capabilities and potentially dedicated lanes or corridors in certain environments. Additionally, the widespread adoption of electric vehicles necessitates a comprehensive charging infrastructure that is accessible and reliable.

National ITS organisations are playing a crucial role in advocating for and coordinating infrastructure investments. In Canada, Transport Canada is working with provincial and territorial governments to develop a national infrastructure strategy that supports the deployment of connected and automated vehicles. In the United Kingdom, the Department for Transport has launched initiatives to fund the development of smart infrastructure and charging networks. Addressing the infrastructure gap requires sustained and strategic investment from both public and private sectors. Governments need to prioritise transportation infrastructure upgrades and allocate funding for the deployment of ITS-enabling technologies. Collaboration with private sector partners can leverage their expertise and resources to accelerate infrastructure development. Furthermore, exploring innovative financing models and public-private partnerships can help bridge the investment gap.

4 – The Quest for Harmony: Achieving Standardisation and Interoperability

The ITS landscape is characterised by a diverse array of technologies, systems and vendors. While this innovation is a driving force behind the sector's progress, the lack of universally accepted standards and protocols can create significant challenges for interoperability. When different systems cannot communicate and work together seamlessly, the potential benefits of ITS are significantly diminished. The lack of globally harmonized communication protocol standards for V2V, V2X, and V2I technologies presents significant hurdles. These differing standards across regions create interoperability issues, preventing vehicles and infrastructure from different manufacturers or countries from communicating seamlessly. This fragmentation limits the scalability and effectiveness of these technologies, hindering their widespread deployment and public acceptance.

Without universal standards, the potential safety and efficiency benefits of connected and autonomous vehicles cannot be fully realized on a global scale. National and international standardisation bodies are actively working to address these interoperability challenges. Organisations like the International Organisation for Standardisation (ISO) and the European Telecommunications Standards Institute (ETSI) are developing standards for various aspects of ITS, including communication protocols, data formats and testing procedures. In the United States, SAE International (formerly known as the Society of Automobile Engineers) plays a key role in developing industry standards for the automotive and related sectors. Achieving true standardisation and interoperability requires a collaborative effort involving industry stakeholders, research institutions and government agencies. Promoting the adoption of open standards, developing common testing and certification procedures and fostering a culture of >

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collaboration across the ITS ecosystem are crucial steps. Furthermore, embracing modular and open architectures in ITS system design can facilitate integration and reduce vendor lock-in.

5 – Navigating the Ethical Maze: Privacy and Societal Implications

The pervasive data collection and analysis inherent in ITS raise significant privacy and ethical concerns. The ability to track vehicle movements, monitor driver behaviour and collect personal information necessitates careful consideration of data protection and individual rights. Moreover, the deployment of advanced ITS technologies, such as automated vehicles, raises complex ethical dilemmas related to safety, liability and algorithmic bias. The collection and use of vast amounts of transportation data, while offering significant benefits for traffic management and safety, also creates opportunities for misuse and potential erosion of privacy. Ensuring the anonymity and security of personal data, establishing clear guidelines for data access and usage and providing individuals with control over their data are paramount.

vehicles and other advanced ITS technologies. Addressing these challenges requires a multi-disciplinary approach involving legal experts, ethicists, policymakers and technology developers. Establishing clear legal frameworks for data privacy and security, developing ethical guidelines for the design and deployment of ITS technologies and fostering public dialogue about the societal implications of intelligent transportation are crucial steps. Transparency and accountability in data handling and algorithmic decision-making are essential to build public trust and ensure the responsible development and deployment of ITS.

Charting the Course Ahead

The challenges outlined above are not insurmountable, but by acknowledging these and fostering a spirit of collaboration, innovation and proactive problem-solving, the global ITS sector can navigate these complexities and realise its full potential. National ITS organisations, acting as catalysts and conveners, have a vital role to play in driving progress in these critical areas.



The deployment of automated vehicles introduces a new set of ethical challenges. In the event of an unavoidable accident, who is held liable – the vehicle manufacturer, the software provider, or the owner? How should automated vehicles be programmed to make ethical decisions in complex situations, such as choosing between two unavoidable collisions? Addressing these ethical dilemmas requires careful consideration and the development of clear legal and regulatory frameworks.

National ITS organisations are grappling with these privacy and ethical concerns. Many are working on developing guidelines and best practices for data privacy in the transportation sector. Governments are also beginning to explore the legal and regulatory implications of automated

Addressing cybersecurity threats, mastering data management, bridging the infrastructure gap, achieving standardisation and navigating the ethical maze are not merely technical or logistical hurdles; they are fundamental prerequisites for building a future of intelligent, safe, efficient and sustainable transportation for all. ***“The journey ahead demands vigilance, collaboration and a steadfast commitment to addressing these challenges head-on”.*** Only then can the transformative vision of Intelligent Transport Systems be fully realised.

➤ To see the accompanying video, scan the QR code or go to:

<https://youtu.be/5u-4hWpcrl8>



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Seville Shines: A Resounding Success for Clean, Resilient and Connected Mobility at the ITS European Congress 2025

Alistair Gollop rounds up what happened at the ITS Congress in Seville #ITSSeville2025

The historic city of Seville, renowned for its vibrant culture and forward-thinking spirit, recently played host to the 16th ITS European Congress from May 19 to 21, 2025. Organised by ERTICO – ITS Europe, this flagship event proved to be a pivotal gathering, uniting over 3,000 experts, innovators and decision-makers from more than 70 countries to advance the critical agenda of “Clean, Resilient and Connected Mobility.” As the dust settles on three days of intense dialogue, groundbreaking demonstrations and unparalleled networking, the key takeaways from Seville offer a clear roadmap for the future of intelligent transport systems across Europe and beyond.

From the outset, the Congress, with strong political backing evident through the presence of José Luis Sans, Mayor of Seville, Fernando Grande-Marlaska, Spanish Minister of the Interior and Rocio Dias Jimenez, Minister of Development, Territorial Planning and Housing Andalusia Regional Government, underscored the urgent need for collaborative action. The message was clear, achieving truly sustainable, adaptable and technologically integrated transport solutions demands a concerted effort from all stakeholders.

A Confluence of Innovation: Key Themes and Achievements

The comprehensive programme of over 150 sessions, featuring more than 500 speakers, delved deep into the Congress's overarching theme, showcasing how digitalisation and sustainability are intrinsically linked within the ITS landscape. Several key areas emerged as central to the discussions and celebrated achievements:

1. Connected, Cooperative and Automated Mobility (CCAM) Deployment Takes Centre Stage

One of the most prominent narratives woven throughout the Congress was the tangible progress being made in the deployment and integration of CCAM. Sessions explored the complexities and successes of real-world CCAM pilots, addressing everything from regulatory frameworks and data sharing to public acceptance and ethical considerations. A significant highlight was the focus on cross-border CCAM collaboration, demonstrating Europe's commitment to seamless, interoperable automated transport. The discussions moved beyond theoretical concepts, showcasing concrete steps towards making automated vehicles a safe and integrated part of our transport networks.

2. Emergent Technologies: The Power of AI, 5G and Data Analytics

The transformative role of emergent technologies was undeniably a driving force of the Congress. AI-driven traffic management, real-time analytics and the crucial need for a harmonised EU data exchange architecture for seamless Mobility as a Service (MaaS) deployment and micromobility integration were recurring topics. Experts showcased how AI-supported predictive models are improving operational resilience, while the widespread adoption of 5G infrastructure is paving the way for ultra-reliable, low-latency communication essential for next-generation ITS applications. The discussions underscored the critical importance of robust data governance and the development of common data spaces to unlock the full potential of these technologies.

3. Resilient and Safe Mobility for Today and the Future

In an increasingly complex world, the resilience and safety of mobility systems are paramount. The Congress dedicated significant attention to these aspects, with sessions tackling challenges related to system complexity, cybersecurity threats and the climate impact on transport infrastructure. AI's role in supporting predictive models

for improved operational resilience was a key focus, as was the emphasis on enhancing safety strategies for vulnerable road users. The importance of richer data on cycling (covering not only flow but also safety and social impact), highlighted a growing recognition of inclusive design in transport planning.

4. Societal Aspects of Mobility

Inclusive and User-Centric Solutions: Beyond technological advancements, the Congress placed a strong emphasis on the societal dimensions of mobility. Discussions revolved around how mobility systems are becoming increasingly attuned to the diverse needs of users, with technologies evolving to be more stable and scalable. The critical importance of behavioural data and inclusive design took centre stage in many discussions, reflecting a commitment to ensuring that smart mobility solutions benefit all citizens. The InclusiveSpaces project, for example, brought vital discussions to the forefront, showcasing assistive crossing technologies that have significantly improved autonomy and safety in pilot studies.

5. Green Shifts and Sustainable Transport

Accelerating the European Green Deal: The theme of "Clean Mobility" resonated deeply throughout the event, with a strong focus on aligning ITS developments with the ambitious goals of the European Green Deal and the Sustainable and Smart Mobility Strategy. Sessions explored the benefits of electric vehicles, particularly ultra-compact Battery Electric Vehicles (BEVs) and discussed strategies to support their widespread uptake. The Congress highlighted how local and regional advancements in ITS can directly contribute to broader European ambitions for a more sustainable transportation future.

The ITS Arena: A New Hub for Practical Deployment

A standout feature of this year's Congress was the introduction of the ITS Arena. This brand-new interactive space within the exhibition hall provided a dynamic forum for thought leaders, public authorities and industry innovators to engage in real-time discussions focused on practical deployment. With over 20 sessions and more than 100 speakers, the Arena proved to be a central point for dynamic cross-sectoral exchange, bridging the gap between high-level presentations and technical implementation. It was a tangible demonstration of how ideas are being transformed into actionable solutions.

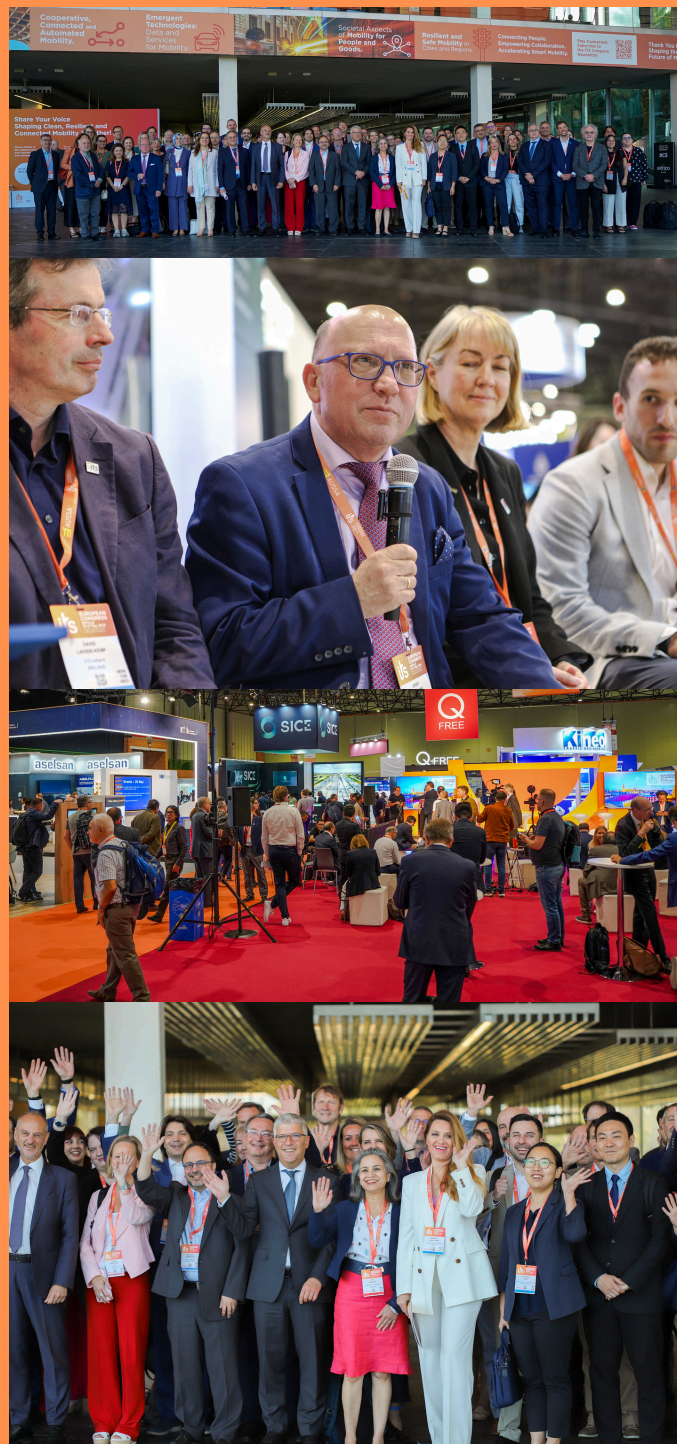
Forging Partnerships and Looking Ahead

The ITS European Congress in Seville was not just about presentations; it was a powerful catalyst for collaboration. Supported by over 14 commercial partners and welcoming more than 50 associations and 23 ITS National Partners, the Congress fostered extensive networking opportunities. Notable events like the Welcome Reception and the exclusive ERTICO Cocktail provided ideal settings for building relationships and strengthening alliances across the mobility ecosystem. The "Future of Mobility Summit of Cities and Regions" further demonstrated a shared commitment to accelerating the deployment of safer, smarter and more sustainable mobility solutions in urban areas, with a focus on initiatives like the City Moonshot.

From a British perspective, Intelligent Transport Systems UK (ITS UK) significantly championed British innovation. Their core activity was hosting the UK Pavilion, a collaborative effort with the Transport Technology Forum (TTF), LCRIG, and Transport for West Midlands. This pavilion showcased 12 UK suppliers' cutting-edge solutions to a global audience. ITS UK also fostered networking through receptions and led a "Meet the Nationals" session, facilitating connections and knowledge exchange among European ITS associations. A major focus was promoting the upcoming ITS World Congress in Birmingham in 2027, generating excitement for the UK's next large-scale hosting of a major ITS event. Their participation reinforced the UK's prominent role in driving future intelligent transport systems.

What's Next?

As the 16th ITS European Congress drew to a close with a comprehensive closing ceremony, Chief Rapporteur Prof. Eric Sampson offered a rousing call to action. His message was clear, the path ahead demands urgency, cooperation and collective purpose.



The success of intelligent transport systems lies not just in exchanging ideas, but in co-creating real, scalable solutions that deliver on the promise of fairer, safer and more sustainable mobility for all.

Seville 2025 has unequivocally reinforced Europe's commitment to resilient, digital and sustainable mobility. The Congress delivered actionable insights and meaningful dialogue among all sectors of the mobility ecosystem, setting a compelling agenda for the rapid and effective deployment of intelligent transport systems across the continent. The journey to a cleaner, more resilient and truly connected mobility future has gained significant momentum and the outcomes of Seville will undoubtedly resonate throughout the industry for years to come.

ITS Now would like to take the opportunity to thank ERTICO for our Official Media Partner collaboration, and we are delighted to confirm that we'll be back for the next European ITS Congress, which will be in Istanbul, Türkiye in 2026.

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Unveiling Tomorrow's Journeys: The 2025 @ITSNow Innovation Awards Shine a Light on Intelligent Transport's Evolution

The future of mobility isn't just arriving; it's being meticulously crafted, refined and deployed by a dedicated ecosystem of innovators. Nowhere was this more evident than at the 2025 Traffex Exhibition, held on the 21st and 22nd of May at the Coventry CBS Arena. As the presentations from the conference theatres and the conversations of delegates talking to exhibitors and catching up with friends from across the highways sector, the anticipated @ITSNow Innovation Awards were once again being quietly judged from the exhibitors at the event.

Now in their fourth year, having commenced their journey of recognition in 2022, the @ITSNow Innovation Awards stand as a crucial barometer for progress in Intelligent Transport Infrastructure. They celebrate organisations that aren't merely refining existing solutions but are actively pushing the boundaries of what's possible in the operation and management of our road network. These awards cast a wide net, acknowledging not only the new technological systems and equipment that capture the imagination but also the myriad of ancillary aspects that underpin and support the seamless operation of ITS infrastructure, ultimately enhancing the management of the road network and mobility as a whole.

This year, as ever, judging the award was a demanding task. Beyond the sheer ingenuity of the proposed solutions, a key element to the judging criteria was the environmental benefits that each piece of equipment or system offered. In an era where sustainability is paramount, understanding the ecological footprint and potential for positive environmental impact was as crucial as the technical specifications. The intricate tapestry of technologies currently employed to manage and operate our road network is already vast. With the accelerating digitisation of mobility, this intricate web is set to become an even more intrinsic and ubiquitous element of moving goods and passengers from A to B. The @ITSNow Innovation Awards serve to highlight the pioneers leading this transformative charge.

After rigorous deliberation and detailed assessment of the entries exhibited at Traffex, we are delighted to announce the winners of the 2025 @ITSNow Innovation Awards.

The Gold Standard: AGD – AGD352 Multilane Radar

Taking home the coveted top honour for 2025 is AGD with their revolutionary AGD352 Multilane Radar. This product truly lives up to the accolade of a "game changer" for above-ground detection technologies. While its name suggests a "multilane" capability, its true power lies in its astonishing 110° of coverage. This expansive field of view means that, in most typical scenarios, a single AGD352 unit can effectively cover two full approaches at an intersection, significantly reducing the hardware footprint and installation complexity.

The AGD352 boasts incredibly accurate tracking, a critical feature for efficient traffic management. Furthermore, its advanced filtering capabilities ensure reliable performance even in the most challenging and busy urban environments, where clutter and false readings can often plague less sophisticated systems. What sets the AGD352 apart even further is its proactive design, future-proofing it for developing standards in the UK. This foresight ensures that investments in this technology will continue to deliver value as the regulatory landscape evolves.



The comprehensive detection capability offered by the AGD352 is truly transformative. Imagine a scenario where a complex signalised cross-road type installation, which might traditionally require multiple radars for each approach, could now be managed with potentially just two AGD352 units for the entire junction. This translates to substantial savings in equipment costs, installation time and ongoing maintenance, while simultaneously delivering a more robust and reliable detection system. The AGD352 is a clear testament to AGD's commitment to pushing the boundaries of intelligent transport infrastructure.

Silver Lining: Yunex Traffic – Yuttraffic awareAI

Securing a highly commendable second place is Yunex Traffic with their Yuttraffic awareAI. This is more than just a product; it's a comprehensive detection platform poised to fundamentally alter our approach to data acquisition for traffic systems. The awareAI system leverages up to ten simple HD cameras, paired with a compact 4U processor unit conveniently mounted within the controller cabinet. The true innovation here lies in its use of edge processing, which allows the system to deliver real-time detection events to the host controller via reliable volt-free contacts.

One of the most exciting and increasingly vital features of awareAI is its promise to significantly enhance capabilities for active transport modes. As cities strive for more sustainable and liveable environments, the accurate detection and management of pedestrians and cyclists become paramount. Yuttraffic awareAI is set to provide a new level of insight and control in this critical area. Beyond active transport, the system also generates a vast array of standard data metrics, making it an invaluable tool for traffic engineers. This wealth of readily available data will empower engineers to make more informed decisions, optimise traffic flow and improve overall network performance, solidifying awareAI's position as a truly impactful solution for modern traffic management.

Bronze Brilliance: Innovation Factory – Detercam AI

Rounding out the top three and demonstrating impressive innovation in a different but equally crucial domain is Innovation Factory with their Detercam AI. These small, self-contained, battery-powered camera units are designed to capture activity within an impressive 60-meter distance. Crucially, each unit features onboard edge processing, enabling it to provide an immediate and effective audible and flashing light deterrent for a wide range of scenarios. Further enhancing their utility, the units are equipped with 4G communications, allowing for remote viewing of captured events, providing valuable intelligence and situational awareness.

The versatility of Detercam AI is truly remarkable. These units can be strategically deployed to deter animals, such as deer (or even more exotic creatures like elephants, if the need arises!), from straying onto roads or railways, preventing potentially hazardous incidents. Beyond animal deterrence, Detercam AI offers solutions for tackling other pervasive issues, such as graffiti or metal theft. The ability to autonomously detect and deter these activities, coupled with remote monitoring capabilities, presents a significant leap forward in safeguarding infrastructure and public spaces. Innovation Factory has delivered a smart, adaptable and highly effective solution that addresses real-world challenges with intelligence and immediacy.

Looking Ahead

The 2025 @ITSNow Innovation Awards have once again provided a compelling glimpse into the future of intelligent transport. From revolutionary detection systems that promise to simplify and enhance traffic management, to platforms that unlock new insights into active travel and ingenious solutions for infrastructure protection, the breadth and depth of innovation on display were truly inspiring. As our road networks become increasingly digitised and interconnected, the spirit exemplified by this year's award winners will undoubtedly be the driving force behind safer, more efficient and more sustainable journeys for us all. The future of mobility is being built, piece by innovative piece and the @ITSNow Innovation Awards proudly showcase the architects of that exciting new reality.



< To see the accompanying video, scan the QR code or go to:

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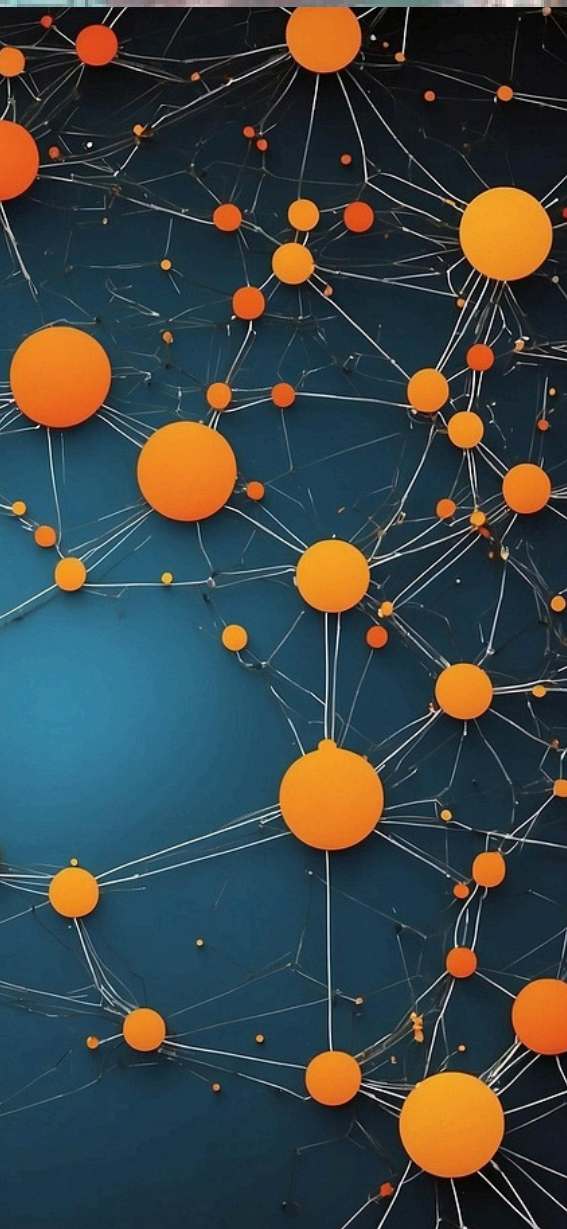
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From Pilots to Permanence: CCAM Deployment Takes Centre Stage in a New Era of Mobility

The conversation surrounding Connected, Cooperative and Automated Mobility (CCAM) has fundamentally shifted. The speculative haze of what might be possible has cleared, replaced by the stark, tangible realities of deployment. Across the globe, the theoretical has given way to the practical, as the intelligent transportation sector moves beyond isolated trials and accelerates towards integrating CCAM as a cornerstone of future mobility. This pivotal transition, marked by both significant progress and formidable challenges, signals a new chapter for our transport networks, one defined by collaboration, data and the complex interplay between technology and society. In this article, **Alistair Gollop** looks at the progress which is being made in this area.



One of the most prominent narratives woven throughout recent global transport congresses has been the tangible progress being made in the deployment and integration of CCAM. Sessions have moved beyond blue-sky thinking to explore the complexities and successes of real-world CCAM pilots, addressing everything from regulatory frameworks and data sharing to public acceptance and ethical considerations. This pragmatic approach is essential as the industry grapples with the intricate task of embedding automated vehicles into our existing, and often unpredictable, transport ecosystems.

This move towards deployed reality is most evident in the proliferation of large-scale, long-term pilot projects. In Europe, the Horizon Europe research and innovation funding programme is a key driver, supporting initiatives that test the mettle of CCAM in diverse urban and rural environments. For instance, projects are underway to deploy automated shuttle services on public roads, providing first and last-mile connectivity and offering a glimpse into a future where mobility is more accessible and on-demand. These pilots are generating invaluable data, not just on the performance and safety of the vehicles themselves, but on their interaction with pedestrians, cyclists, and human-driven vehicles. They are stress-testing the robustness of the V2X (Vehicle-to-Everything) communication that underpins the 'Connected' and 'Cooperative' elements of CCAM, a critical component for ensuring situational awareness and enabling cooperative manoeuvres.

A significant highlight of the current landscape is the intense focus on cross-border CCAM collaboration, demonstrating Europe's commitment to seamless, interoperable automated transport. The vision is for a connected transport network where a freight platoon can travel from Rotterdam to Riga without technological or regulatory friction. Achieving this requires unprecedented levels of standardisation and harmonisation, a challenge being tackled head-on by bodies like the CCAM Association. The establishment of European Automated Driving Corridors and large-scale cross-border testbeds are concrete steps towards making this vision a reality, fostering an environment where innovation can flourish across national boundaries.

However, the path to widespread CCAM adoption is not without its obstacles. The regulatory landscape remains a complex and fragmented tapestry. While nations like the UK have passed legislation such as the Automated Vehicles Act to create a legal framework for self-driving vehicles, a globally harmonised approach is still a distant prospect. This patchwork of regulations creates uncertainty for developers and can act as a brake on the scaling of CCAM solutions.

Furthermore, the spectre of public acceptance looms large. Recent studies indicate that a significant portion of the public remains wary of autonomous vehicle technology. High-profile accidents, even those involving lower levels of automation, can disproportionately damage public trust. Building this trust is a multifaceted challenge. It requires absolute transparency from the industry on the capabilities and limitations of the technology, robust cybersecurity measures to protect against malicious attacks, and a clear ethical framework to govern the decision-making of autonomous systems in dilemma situations. The industry must proactively engage in a dialogue with the public, moving beyond purely technical discussions to address the societal implications of this transformative technology.

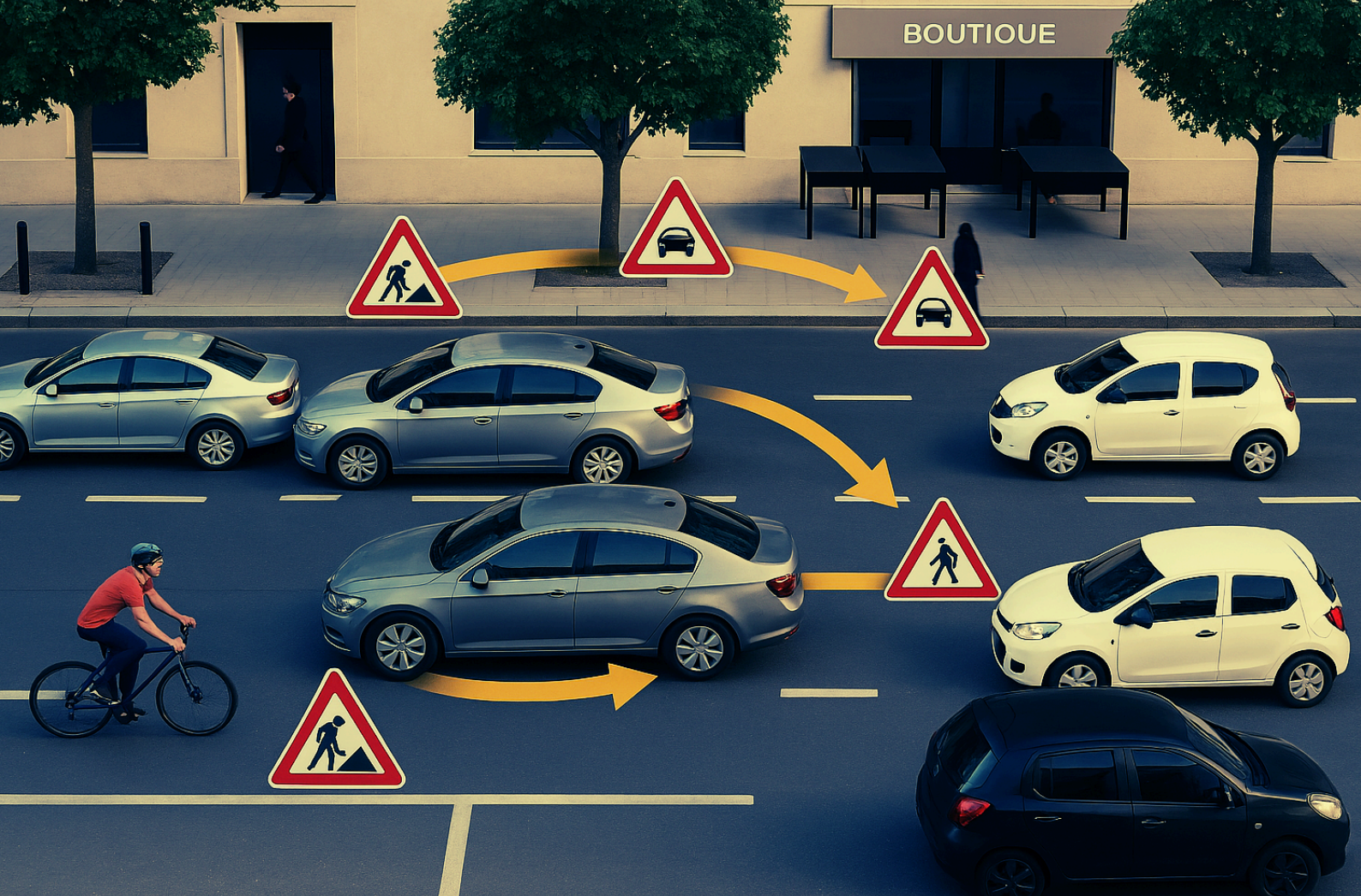
Beyond public perception, a host of technical and operational challenges remain. Ensuring the reliability and resilience of sensor technology in all weather conditions, the development of fail-safe operational systems, and the management of the vast quantities of data generated by connected vehicles are all areas of active research and development. The 'cooperative' aspect of CCAM, which relies on seamless data exchange between vehicles and infrastructure, also raises critical questions about data privacy, ownership, and security.

Looking ahead, the trajectory of the CCAM sector is one of increasing integration and intelligence. The fusion of on-board sensor data with information from the wider transport network promises a paradigm shift in traffic management, enabling predictive and adaptive responses to congestion, incidents, and demand. The development of sophisticated digital twins of our cities and transport networks will allow for the extensive and safe testing of new CCAM services in a virtual environment before they are unleashed onto our streets.

The ultimate success of CCAM will hinge on its integration into a broader Mobility as a Service (MaaS) ecosystem. An automated shuttle will have a limited impact if it operates in a silo. Its true value will be realised when it is seamlessly woven into a multimodal journey, allowing a user to plan, book, and pay for a trip that might also involve a train, a shared bicycle, and a walking route, all through a single interface. This level of integration is essential for creating a user-centric, sustainable, and efficient transport system for the 21st century.

The CCAM segment is at a critical juncture, the initial excitement of a futuristic concept is being tempered by the sober realities of real-world deployment. The challenges, from regulatory hurdles and public acceptance to technical complexities and ethical dilemmas, are undeniable. Yet, the momentum is equally undeniable. Through concerted collaboration, ambitious pilot projects, and a steadfast focus on solving the practical problems of today, the intelligent transport sector is laying the foundations for a future where automated mobility is not just a technological marvel, but a safe, integrated, and indispensable part of our transport networks. The discussions have indeed moved beyond theoretical concepts, showcasing concrete steps towards a connected and automated future that is now firmly on the horizon.





DSRC v 5G

A Crossroads for CAV / CCAM in ITS and Mobility

Alistair Gollop looks at the issues achieving connectivity with traffic.

The evolution of Intelligent Transport Systems (ITS) and Cooperative, Connected, and Automated Mobility (CCAM) hinges critically on robust and reliable communication technologies. For years, Dedicated Short-Range Communications (DSRC), primarily based on IEEE 802.11p, was the frontrunner for Vehicle-to-Everything (V2X) communication. However, with the advent of 5G cellular communication technologies and their promise of ultra-low latency, high bandwidth and widespread coverage, the landscape has shifted, creating a contentious debate about the optimal path forward. This article explores the challenges DSRC faces in CAV/CCAM applications when compared with 5G, and crucially, what competitive edge DSRC might still hold in this rapidly evolving segment.

The DSRC Promise: A Paved Road Less Travelled

DSRC, or ITS-G5 in Europe, was designed specifically for V2X communications, operating in the 5.9 GHz spectrum band. Its foundational strength lies in its direct communication capabilities: vehicle-to-vehicle (V2V), vehicle-to-infrastructure (V2I), and vehicle-to-pedestrian (V2P) messages are exchanged directly between devices without relying on cellular networks. This "ad-hoc" nature offers inherent advantages for safety-critical applications. DSRC boasts low latency (typically in milliseconds), essential for real-time collision avoidance, emergency braking and other safety messages where every millisecond counts. Its maturity, having undergone extensive testing and standardisation for over a decade, is another significant factor. A large DSRC ecosystem has been developed, with ready products and interoperable solutions. Furthermore, DSRC's ability to "see around corners" (Non-Line-Of-Sight or NLOS communication) is a key advantage, facilitating communication even with obstructions, and it is optimised for high mobility, operating effectively at speeds up to 500 km/h with a communication range often exceeding 1 km. Its built-in security and privacy mechanisms, designed specifically for vehicular communication, offer strong protections with minimal computational overhead.

The 5G Ascendancy: A Broader and Deeper Network

Enter 5G, the fifth generation of cellular technology, and its V2X counterpart, Cellular V2X (C-V2X). Unlike DSRC's direct communication model, C-V2X offers a hybrid approach, encompassing both direct communication (PC5 interface, similar to DSRC) and network-assisted communication (Uu interface, leveraging the cellular network). This dual capability is a major differentiator.

The advantages of 5G for CAV/CCAM are substantial:

- **Massive Bandwidth and Throughput:** 5G offers significantly higher data rates (up to 10GB per second) and throughput potential, crucial for advanced autonomous driving features like sharing high-definition sensor data, real-time local map updates, and coordinated driving manoeuvres. This capacity far exceeds DSRC's capabilities.
- **Ultra-Low Latency:** While DSRC boasts low latency, 5G aims for even lower latencies (1-5 milliseconds), which is paramount for the most demanding autonomous driving functions where instantaneous decision-making is vital.
- **Wider Coverage and Scalability:** Leveraging existing and expanding cellular infrastructure, 5G promises broader coverage, including rural areas, and inherently supports a far greater number of connected devices per square kilometre (potentially 1 million). This scalability addresses a key limitation of DSRC, which can suffer from congestion in dense traffic environments due to its fixed bandwidth.
- **Network-Assisted Services:** The V2N component of C-V2X allows for cloud-based services, remote vehicle control, predictive maintenance, and efficient traffic management systems, offering a richer suite of applications beyond basic safety messages.
- **Interoperability and Ecosystem:** 5G's broader interoperability within the wider smart city and IoT ecosystem makes it an attractive investment for cities and industries looking for multi-purpose connectivity solutions. The 5G Automotive Association (5GAA), a strong consortium of automotive and telecom giants, further drives the adoption and standardisation of C-V2X.

The Challenges DSRC Faces

Despite its historical advantages and dedicated design, DSRC faces significant hurdles in the evolving CAV/CCAM landscape:

- **Spectrum Reallocation:** In some key markets, notably the United States, portions of the 5.9 GHz spectrum previously allocated exclusively for DSRC have been reallocated for unlicensed Wi-Fi use, severely limiting DSRC's dedicated bandwidth and casting uncertainty over its future deployment.
- **Lack of Widespread Deployment:** While standardised for a long time, DSRC has struggled with widespread deployment. Automakers have been hesitant to incorporate DSRC without assurances of broad adoption across the industry and substantial roadside unit (RSU) infrastructure. The cost and logistical challenge of deploying RSUs on a mass scale, estimated to be hundreds of millions or even billions of pounds and taking up to 15 years, remains a significant barrier.
- **Limited Scalability for Advanced Use Cases:** While sufficient for basic safety messages, DSRC's fixed bandwidth struggles to meet the high data throughput requirements of more advanced cooperative driving and autonomous vehicle applications, such as sensor sharing and high-definition map updates.
- **Competition and Industry Momentum:** The strong industry push behind C-V2X, particularly with the backing of major cellular and automotive players, has shifted the momentum away from DSRC in many regions. Many countries, including China, are heavily investing in cellular-based V2X technologies.
- **Backward Compatibility Concerns:** While next-generation DSRC (IEEE 802.11bd) aims to improve performance and maintain backward compatibility, the fundamental incompatibility between DSRC and C-V2X creates a fragmentation issue, posing challenges for widespread adoption and interoperability in a mixed environment.

DSRC's Competitive Edge: Niche Strengths and Complementary Roles

Despite the formidable challenges, DSRC is not without its competitive edge, particularly in specific use cases or as a complementary technology:

- **Direct, Decentralised Communication for Safety:** DSRC's peer-to-peer nature for V2V and V2I communication makes it highly reliable for safety-critical messages. It doesn't rely on cellular network coverage or availability, which can be crucial in areas with weak or no cellular signal, or during network outages (e.g., during disasters). This directness bypasses potential bottlenecks and single points of failure inherent in network-centric approaches.
- **Proven Technology for Basic Safety:** For foundational "Day 1" safety applications like forward collision warning, intersection movement assist, and blind spot warning, DSRC has been thoroughly tested and proven. Its simplicity and dedicated spectrum (where available) make it an efficient solution for these immediate safety enhancements.
- **Lower Overheads for Basic Messages:** For transmitting small, frequent safety messages, DSRC can be more efficient and have lower computational overheads compared to a full cellular stack.
- **Resilience and Robustness:** DSRC's design, derived from Wi-Fi, has shown resilience to physical obstacles and extreme weather conditions, and it can operate at high speeds, making it robust for dynamic vehicular environments.
- **Cost-Effectiveness for Localised Deployments:** For highly localised V2X applications, such as electronic toll collection or specific intersection safety warnings where a few roadside units suffice, DSRC can be a more cost-effective deployment than building out a comprehensive 5G infrastructure purely for V2X.
- **Potential for Hybrid Architectures:** Rather than an "either/or" scenario, a hybrid approach could leverage the strengths of both. DSRC could handle immediate, safety-critical V2V/V2I communication, while 5G provides the broader V2N connectivity for infotainment, advanced mapping, and cloud services. This layered approach could offer the best of both worlds, ensuring both robust local safety and extensive network-enabled functionality.

Two Worlds Living Together?

The competition between DSRC and 5G for CAV/CCAM applications is a microcosm of the broader technological shifts in the ITS and mobility sectors. While 5G, with its superior bandwidth, scalability, and network-centric capabilities, appears poised to dominate the future of advanced autonomous driving and connected services, DSRC retains a significant competitive edge in its core strength: direct, reliable, and low-latency communication for immediate safety-of-life applications.

The question isn't necessarily about outright replacement, but rather about optimal integration and complementary roles. As the debate continues, and with the ratification of next-generation DSRC protocols like IEEE 802.11bd, the future of intelligent transportation may well lie in a judicious blend of both technologies, where DSRC provides the foundational, peer-to-peer safety layer, and 5G unlocks the vast potential of a fully connected and cooperative mobility ecosystem. The industry's challenge will be to navigate the standardisation complexities, overcome deployment hurdles, and foster an environment where both technologies can contribute to safer, more efficient, and smarter roads for all.

> To see the accompanying video, scan the QR code or go to:

https://youtube.com/shorts/19cEcrO_C2U






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The Unseen Barriers: Why ITS Technologies Face Public Mistrust and Vandalism

Intelligent Transport Systems (ITS) and mobility applications are designed with a singular, overarching goal: to enhance safety, efficiency and sustainability on our road networks. From smart motorways with their variable speed limits and incident detection, to real-time traffic apps and automated enforcement cameras, these technologies are developed to prevent incidents, reduce congestion and improve journeys for everyone. Yet, despite their clear public benefits, a significant minority of people view these systems with suspicion, hostility and in some cases, outright vandalism. Alistair Gollop delves into the complex reasons behind this profound mistrust and the destructive behaviour that often accompanies it, examining the underlying fears, misconceptions and societal factors at play.

The Roots of Suspicion: A Cocktail of Fears and Misconceptions

The mistrust towards ITS technologies is rarely consistent. Instead, it tends to stem from a range of factors, often amplified by a lack of understanding and fuelled by misinformation.

1. Privacy Concerns and Surveillance Fears

At the heart of much public suspicion lies the fear of surveillance. Many ITS technologies, particularly those involving cameras (e.g., ANPR for traffic monitoring, average speed cameras) and data collection (e.g., journey time monitoring through Bluetooth or Wi-Fi detection), can be perceived as intrusive. In an era of heightened awareness around data privacy, the idea of the "state" or large corporations constantly tracking movements can trigger deep-seated anxieties about civil liberties. While the data collected is typically anonymised or used for specific, legitimate purposes like traffic management, the public often lacks a clear understanding of these safeguards. The perception of being constantly watched, rather than safely guided, can breed resentment.

2. A Perceived Loss of Autonomy and Control

For many drivers, the act of driving represents a degree of freedom and independence. ITS, with its automated controls, mandatory speed limits (e.g., smart motorways) and prescriptive routing advice, can be seen as eroding this autonomy. The feeling of being "told what to do" by a machine, rather than exercising personal judgement, can lead to a sense of disempowerment. This is particularly true for technologies that directly intervene or enforce behaviour, such as speed cameras, which are often viewed as revenue generators rather than safety devices, irrespective of statistical evidence to the contrary.

3. Lack of Transparency and Education

A significant portion of the public remains unaware of the intricate workings or even the exact purpose of many ITS technologies. When new systems are introduced, the explanations provided by authorities can sometimes be insufficient, overly technical, or fail to address common public concerns directly. This knowledge gap creates fertile ground for speculation and misunderstanding. Without a clear narrative explaining why a particular technology is needed and how it benefits the individual and the wider community, suspicion can easily take root. The "black box" phenomenon – where technology operates without clear explanation – can breed distrust.

4. Conspiracy Theories and Misinformation

In the age of social media, misinformation can spread rapidly and widely, often unchallenged. Fringe conspiracy theories linking ITS technologies to broader governmental control agendas, "15-minute cities," or even health risks can gain traction amongst vulnerable segments of the population. These narratives, no matter how unfounded, contribute to a pervasive sense of mistrust and can solidify negative perceptions of ITS.

5. Historical Context and Negative Associations

Some ITS technologies have become synonymous with negative experiences or perceptions. For example, the term "smart motorways" in the UK has become highly contentious because of concerns about their safety without hard shoulders. This negative association, even if specific to one type of technology, can cast a long shadow over the public's view of all ITS initiatives, fostering a general distrust of any new "smart" infrastructure.

The Leap to Vandalism: From Suspicion to Destruction

While mistrust might manifest as grumbling or online criticism, for a minority, it escalates to active vandalism and equipment damage. This destructive behaviour is a significant challenge, incurring substantial costs for repair and replacement, delaying the benefits of the technology and potentially compromising public safety. The reasons for this escalation are multi-layered:

1. Expression of Frustration and Powerlessness

Vandalism can be an extreme manifestation of frustration. When individuals feel unheard, ignored or powerless in the face of perceived technological overreach, breaking equipment can become a destructive outlet for their anger. It's a tangible act of defiance against a system they feel is imposing upon them.

2. Retaliation Against Perceived Injustice

If ITS systems, particularly enforcement technologies, are viewed as unfair, discriminatory or solely profit-driven, individuals might see vandalism as a form of retaliation. The act of damaging a speed camera, for instance, might be perceived by the perpetrator as "fighting back" against what they consider an unjust fine or an oppressive system.

3. Influence of Online Echo Chambers and Group Mentality

Online forums and social media groups can create echo chambers where negative perceptions of ITS technologies are reinforced and amplified. In these environments, acts of vandalism might even be celebrated or encouraged, fostering a group mentality that legitimises destructive behaviour as a form of "resistance". The anonymity of online platforms can embolden individuals who might otherwise hesitate.

4. A Misguided Sense of Public Service

In some extreme cases, individuals who vandalise equipment might genuinely believe they are performing a public service. They might view themselves as "activists" or "freedom fighters" protecting others from what they perceive as harmful or intrusive technologies, despite the actual safety benefits these systems provide. This warped sense of righteousness may justify their destructive acts.

5. Simple Criminality and Opportunism

It is also important to acknowledge that some acts of vandalism are simply opportunistic criminal behaviour, not necessarily driven by specific anti-ITS sentiment, but by a general disregard for public property or a desire to cause mischief. However, even in these cases, the underlying public negativity towards ITS can make these acts less condemned by segments of society, implicitly providing a degree of justification.

Bridging the Divide: Rebuilding Trust and Fostering Acceptance

Addressing the profound mistrust and preventing vandalism requires a multifaceted approach focused on education, transparency and genuine public engagement:

- **Proactive and Clear Communication:** Authorities must move beyond simply announcing new technologies to actively explaining their purpose, benefits and safeguards in plain, accessible language. Visual aids, case studies and clear FAQs can help demystify complex systems.
- **Emphasise Safety and Efficiency:** Reiterate and demonstrate how ITS technologies directly contribute to preventing accidents, saving lives and reducing journey times. Quantifiable data and real-world examples are crucial.
- **Address Privacy Concerns Head-On:** Be transparent about data collection practices, anonymisation techniques and how data is protected. Emphasise that personal tracking is not the objective.
- **Community Engagement and Dialogue:** Establish channels for public feedback and genuine dialogue. Listen to concerns, address misconceptions directly and involve communities in the planning stages of new ITS deployments.
- **Visible Benefits:** Ensure the benefits of ITS are tangible and visible to the public. When people experience smoother commutes, fewer accidents, or better information, trust naturally increases.
- **Consistent Enforcement and Messaging:** For technologies like speed cameras, maintain consistent enforcement principles and messaging that clearly link their presence to accident reduction, not just revenue.
- **Combat Misinformation:** Develop strategies to proactively counter misinformation and conspiracy theories circulating online, providing credible and accessible counter-narratives.

The mistrust and vandalism directed at ITS technologies are not merely random acts. They are symptoms of deeper societal anxieties about privacy, control and the pace of technological change. For ITS to truly achieve its transformative potential, the industry and public authorities must do more than just innovate; they must also prioritise building public understanding, fostering trust and demonstrating unequivocally that these intelligent systems are indeed for the safety and benefit of us all. Only then can we move beyond suspicion and towards a future where technology truly empowers our journeys.



> To see the accompanying video, scan the QR code or go to:

<https://youtube.com/shorts/UnXk3ldc-04>

TECHNOLOGY INSIGHT

THE COUNT POD: REVOLUTIONISING ACTIVE TRANSPORT DATA FOR SMARTER CITIES

As our urban landscapes continue to evolve, facing the dual pressures of burgeoning populations and the urgent call for climate action, the allocation of street capacity has become a critical debate. Active transport modes (walking cycling and the burgeoning array of micro-mobility options), are no longer niche alternatives but essential components of a sustainable urban future. Yet, while our cities boast comprehensive detection infrastructure for vehicular traffic, strategic insight into the movement patterns of these crucial non-vehicular modes remains surprisingly fragmented. The complex dynamic interactions of pedestrians and cyclists are notoriously challenging to quantify, but this data is invaluable for urban planners transport authorities and businesses striving to create more efficient, safer and greener environments. The enduring challenge however lies in gathering this information effectively affordably and crucially without infringing on public privacy.

This is precisely where New Zealand company **Countculture's Count Pod** system emerges as a truly ingenious and transformative solution. At its heart the Count Pod is a sophisticated edge AI sensor, engineered for remarkably easy and flexible deployment. Let's delve into why its unique edge computing architecture and ultra-low power operation are poised to be genuine game-changers in the realm of active transport data collection.

Beyond Traditional Constraints: The Power of Low-Power Edge Computing

Traditional traffic monitoring systems often demand complex expensive infrastructure. Imagine the significant upfront investment required for running mains power to remote locations, or the complexities of integrating with disparate legacy systems. The Count Pod fundamentally redefines this model. Engineered to operate on an incredibly low power budget (less than 6 watts, to be precise), it unlocks a wealth of deployment possibilities previously considered impractical or cost-prohibitive.

Consider the ability to install these sensors in locations where mains power is simply unavailable, or where the cost of trenching and cabling is prohibitive. Count Pods can be entirely battery-powered and efficiently recharged via compact solar panels, rendering them truly autonomous and environmentally friendly. They can even intelligently tap into existing street lighting networks for overnight charging, further slashing installation costs dramatically, especially compared to comparable neural network-based systems that require mains power to operate. This ease of deployment facilitates faster rollouts and broader network coverage, ultimately leading to a more comprehensive and granular understanding of mobility patterns across an entire urban area. Furthermore, the absence of a need for expensive GPU-heavy rack-mounted servers dramatically simplifies the underlying infrastructure.

The Magic of Edge: Privacy-by-Design and Data Efficiency

The brilliance of the Count Pod extends far beyond its power efficiency. The real innovation lies in its cutting-edge edge computing capabilities. Instead of continuously streaming raw video footage to a central server for analysis – a process that is inherently bandwidth-intensive costly and most significantly fraught with privacy concerns – the Count Pod processes the video data directly at the source, on the device itself. It leverages a powerful blend of advanced AI and Countculture's proprietary background subtraction algorithms to accurately identify and classify objects such as pedestrians, bicycles and e-scooters. This on-device processing is pivotal for several compelling reasons.



To see the accompanying video, scan the QR code >
or go to: <https://youtu.be/WNB1jcfGNJ0>



Firstly, it drastically reduces the amount of data that needs to be transmitted over the network. Only the essential information – accurate object counts and journey data – is securely sent to Count Central, Countculture's cloud platform, via a 4G network connection. This minimizes bandwidth usage, leading to substantial cost savings.

Secondly, and perhaps most critically in today's privacy-conscious world, this edge processing ensures that no raw video data is ever stored or transmitted off the device. Once the analysis is complete the video stream is immediately deleted. This inherent "privacy-by-design" approach is a monumental advantage, directly addressing public concerns about surveillance and data security. Countculture's system is meticulously designed to extract meaningful insights without collecting any Personally Identifiable Data (PII), fostering trust and enabling wider public acceptance.

From Raw Data to Actionable Intelligence: The Count Central Platform

So, the Count Pod efficiently gathers data with a focus on privacy. But what kind of insights can we truly glean from this information? The collected data – comprising counts classifications (pedestrians bicycles e-scooters, with the capability to even distinguish between public and private e-scooters) speed and zone population – is seamlessly fed into Count Central. This intuitive user-friendly cloud platform is accessible from anywhere, providing a centralised hub for analysis and visualisation.

Count Central offers a comprehensive suite of pre-built dashboards, thoughtfully tailored for various applications. Transport professionals can effortlessly monitor operational programmes, while economic development teams can gain invaluable insights into downtown visitation patterns. The platform's true power lies in its flexibility: users can easily create and configure their own custom dashboards, saving time and allowing them to precisely focus on the specific metrics that hold the most relevance for their stakeholders.

Imagine the capability to visualise micro-mobility usage on interactive maps, analyse trends in tables and charts broken down by mode, and even export this data to Excel for deeper analysis – all with a simple click. The platform also empowers users to compare different time ranges, filter data by day of the week, and even overlay environmental data like rain and temperature to understand how these factors influence mobility patterns. This contextualisation provides a richer more nuanced understanding of urban movement.

Beyond simple counts, Countculture's system offers more granular and sophisticated insights. It can anonymously estimate the age and gender of micro-mobility users, providing invaluable demographic data to assist transport professionals in designing truly inclusive infrastructure accessible to everyone. Speed data offers crucial safety insights, particularly in shared spaces where pedestrians and cyclists or e-scooter riders interact. The zone population feature allows for precise monitoring of queuing, pedestrian density in specific areas, car park occupancy and even bicycle parking utilisation – offering a holistic view of spatial dynamics.

Addressing a common challenge in traditional counting systems – overcounting due to back-and-forth movement – Countculture has implemented a clever "Multiple Crossing Elimination" feature. This ensures accurate counts even in complex scenarios where traditional zone placement might struggle, guaranteeing data fidelity.

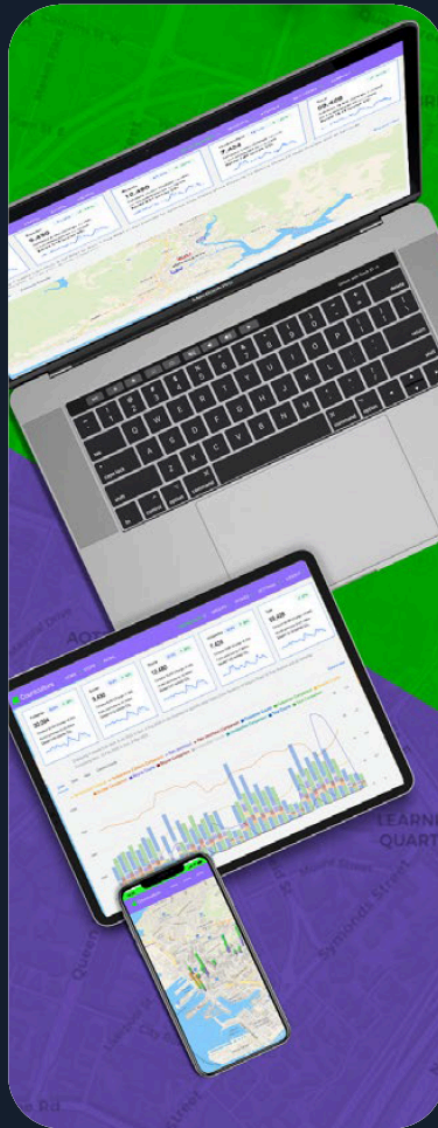
The Countculture Count Pod system represents a compelling and essential solution for active transport and micro-mobility monitoring. Its innovative combination of low-power edge computing enables easy flexible and cost-effective deployment, while its sophisticated AI algorithms extract meaningful actionable data without compromising public privacy. This technology genuinely empowers urban planners and transport authorities with the accurate real-time insights they need to build smarter safer and ultimately more sustainable cities for the future.

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Technical executive working with companies (typically at C-Suite level) in the UK and abroad, to provide advice and guidance for product localisation and segment appropriateness, industry engagement, strategic introductions and technical business development support.

- Technical representation to clients, regulators, contractors and the public
- Technical product compliance/application assessments and advice
- Training and product documentation, video product guides

Consultancy Services

I provide a broad range of consultancy and advisory services relating to ITS and Traffic Signal infrastructure for both Clients and Suppliers.

- Feasibility and strategy reports
- Technical due diligence, capability and suitability assessments
- Advice on technology implementations and regulatory requirements

Project Management

My role is to identify and then deliver the 'vision' for a project, often in the face of adversity, whilst maintaining a strong team culture (irrespective of organisation and geographic spread) by using my collegiate management style.

- Technical liaison with clients and regulatory authorities
- Management of technical design and specification teams
- Stakeholder engagement

Design

I have an extensive specialist knowledge of traffic systems which is used to devise and deliver practical and economic solutions with innovative designs to improve capability, safety and efficiency.

- Initial Options Assessments
- Preliminary and Detailed designs
- Equipment specification

Audits

As a freelance consultant, I can undertake independent design audits for clients or as an extra resource for consultancies undertaking design work.

- Design checks
- Specification checks
- Report checks

Inspections

I undertake a variety of different inspections relating to equipment supply, construction compliance to project designs and for existing/legacy installations.

- Factory Acceptance Tests (FAT), Site Acceptance Tests (SAT), Commissioning
- Installation oversight and inspections
- Assessments of existing equipment installations

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ITS now .org

ITS Now exists to provide informative and educational resources about Intelligent Transport Systems (ITS), and should be of interest to technology practitioners in highways and mobility, along with people working in other engineering disciplines and for anyone who has an interest in transport generally.

Resources include our website - **ITSNow.org**, YouTube channel **@ITSNow** and **ITS Edge** magazine, along with our original books and articles on a broad range of related topics.

Intelligent Transport Systems - Explained



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