



## An Irish expert's perspective on the value of academia to the development of standards

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DR FLAITHRÍ NEFF OF THE TECHNOLOGICAL UNIVERSITY OF THE SHANNON



# NSAI

## Electric vehicle study underscores value of academia to standards

*An interview with Dr Flaithrí Neff of the Technological University of the Shannon (TUS)*



Electric vehicles (EVs) help reduce our reliance on fossil fuels, but it's not always easy for pedestrians, cyclists and other vulnerable road users to register their presence.

Newer EV models emit synthetic sounds which don't always cut through background noise. This can be true even though those synthetic noises – known as Acoustic Vehicle Alerting System (AVAS) – technically comply with existing standards.

Keen to address this risk and influence the tightening of relevant standards, the National Disability Authority (NDA) issued a call for research into AVAS through Research Ireland's Public Service Fellowship Programme. This programme provides funds for researchers to work with public service organisations.

The NDA is Ireland's independent statutory body with a duty to provide evidence-informed advice and guidance to government on disability policy and practice, and to promote the adoption and application of a universal design approach across all sectors.

### Expert insight into EVAS challenges

Audio technology and acoustics expert Dr Flaithrí Neff of the Technological University of the Shannon (TUS) successfully applied to carry out the research. Having been involved in standards over many years, he was keenly aware of some of the challenges around international standards relating to AVAS.

*“Electric vehicles may be standards-compliant, but what is produced is generic sound that doesn't always give pedestrians a heads-up in time.”*

That's not the only issue with AVAS, he says. *"Many standards are based on textbook acoustics data, not up-to-date psychometric testing with user groups. In reality, there are huge complexities and subtleties in human hearing between different user groups."*

Not only that, he adds, academic studies have also shown that the sounds made by conventional combustion engines seem to give far more signals to our hearing systems than existing AVAS systems.

### **Marrying standards knowledge with research**

Under the mentorship of the National Standards Authority of Ireland (NSAI) Standards Team, Flaithrí had become increasingly involved with national and international standards development since completing his PhD. He became Head of Delegation for MPEG (Motion Picture Experts Group) standards in Ireland, for example.

### **Building data-based insights for the NDA**

Flaithrí says the research fellowship was instrumental in connecting him as an academic with a public sector body – the NDA – that continually looks at standards in terms of their practical applied impact and how they are implemented for user groups.

*"It was clear in this case that different pedestrian groups weren't always represented in the standards development process,"* he said.

He surveyed pedestrians with visual disabilities and a control

group of people without any visual impairment. *"We found significant distinctions between them,"* he says.

Pedestrians with visual disabilities emphasise detection and safety a lot more over aesthetics. Their experience interacting with EVs has been primarily negative. Pedestrians with sight, talked more about the aesthetics of AVAS sounds and less about detectability. Both groups talked about being surprised by oncoming EVs, more so than petrol or diesel cars.

### **Direct impact in real-world applications**

As a member of multiple national and international standards committees relating to audio, acoustics and intelligent transport, Flaithrí says he has often seen the benefit of having academics involved in the process.

*"Getting involved in standards development has a direct impact in real-world applications. It's a gateway to apply academic research. There is a lot we can contribute to improve people's lives."*

Overall, Flaithrí says his involvement in standards discussion and development has been invaluable, even though it is not yet seen as a core metric in academia.

*"JTC1\* is the parent committee over a lot of our subcommittees and it's inspiring to observe the level of interaction there from Ireland and how a small country like ours really punches above its weight on standards. I'm very happy to support the standards work of the NSAI."*

\*ISO/IEC JTC 1 or Joint Technical Committee 1 is the international body responsible for developing information and communication technology (ICT) standards.

**+ Have your say: Would you like to contribute to the development of standards? NSAI encourages Irish organisations, businesses and experts to get involved. Join a technical committee, as Flaithrí did, or read and comment on draft standards through NSAI's Your Standards, Your Say platform.**



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