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Digital switchover boost for broadband

New possibilities: Prof Linda Doyle, director of CTVR, a telecommunications research team based at Trinity College Dublin, and Tim Forde, research fellow TCD, at the conference, Filling The White Spaces, at the Science Gallery at Trinity College yesterday.Photograph: Eric Luke

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IN JUST UNDER four weeks' time Ireland's analogue system will switch off and the much anticipated digital switchover will happen.

While this will spell the beginnings of a new viewing experience for TV audiences, the switchover is also generating new possibilities for the telecommunications industry.

A workshop yesterday at Trinity College Dublin, organised by CTVR, a telecommunications research team based at the college, sought to highlight the possibilities the switchover will generate.

Led by Prof Linda Doyle, the team has been spearheading research in this area in Ireland for more than three years and is also involved in a EU research project on the topic, CogEU.

As Prof Doyle explains, the switch from analogue to digital means that unused white spaces surrounding the new digital signals of the Saorview system will be up for grabs.

"What will happen on October 24th is that whole chunks of the spectrum will become empty. It's a fantastic opportunity.

"Spectrum is a valuable resource, and it's rare that so much readily usable spectrum becomes free. In a sense, finding unused spectrum is like finding new oil reserves."

In Dublin alone, there will be about 180MHz of unused spectrum after the switchoff. This compares with the 135MHz currently allocated to all of the 3G operators collectively and the 129.6Mhz currently allocated to all of the GSM operators.

Regulators in Ireland have not yet brought forward legislation on the issue, though a trial and test period is currently under way.

While other European countries are also gaining extra spectrum after the switchover, Ireland is particularly well-placed to capitalise on the newly available frequencies.

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Ireland's small population means that there are not the same demands on spectrum space that exist elsewhere. Also, the country's geographic location and status as an island mean it doesn't run the risk of impinging on other country's borders, allowing greater experimentation to take place.

So what are the main applications of these new white spaces that are becoming available around the new Saorview model?

One of the main uses is in the field of wifi, and particularly increased broadband connectivity. With wireless systems becoming more and more essential for all aspects of everyday life and the uses of wifi becoming more sophisticated, the demand for faster and richer systems is endless.

"The new spectrum coming on stream will be particularly well-placed to respond to this demand," Prof Doyle explains. "The frequency becoming available is particularly good quality. It allows waves to go further, and go through buildings."

This opens up major possibilities for rural broadband penetration, as well as the provision of wifi in densely populated places. Large hotspots will now only need a few wifi hubs, rather than hundreds dotted around a small area.

The other main application is in the field of machine-to-machine (M2M) technology. Dr Tim Forde, a research fellow at the CTVR centre, says the field of M2M technology is a burgeoning one.

"The idea of machines communicating with each other is emerging as a major area of focus in telecommunications. This could be the fridge communicating with a shopping centre, or the garage door communicating with the car. There are upward of 50 billion devices in the world, and they need spectrum in which to communicate. "

Yesterday, a range of companies from around the world which are already developing systems and applications for this spectrum showcased some of their work in the Science Gallery at Trinity College.

Among them was US company Adaptrum, which was formed in 2005 in Silicon Valley and has been researching and developing technologies to unlock previously unused radio spectrum in the US.

Its TV band white space device was approved by the Federal Communications Commission in April, and it is to begin a commercial trial of the new device in Nottoway county, Virginia, a rural area which is currently underserved by broadband, targeting rural schools and households.

It also plans to introduce a second generation TV white space system later this year that will offer the same or better functionality but will also be optimised for cost and large-scale production.

British company Neul has also developed technology to enable the use of TV white space spectrum. Focused particularly on the projected trend towards automatic communication between machines, it has developed one of the first products that allows networks to operate safely and legally within TV white space, and which has been certified by the FCC.

As Prof Doyle explains, one of the key aims of the white spaces workshop is to show that devices such as these do work and can be deployed without generating interference, the fear of which is one of the main barriers to development in the area.

In terms of the application of the newly available white space TV spectrum in Ireland, she sees a major possibility for commercial opportunities, as well as earlier stage research.

The companies in attendance yesterday ranged from major mobile communicators such as Vodafone, Meteor, Imagine, semi-state bodies such as the ESB and the RTÉ, and smaller players such as technology companies Benetel and Vilicom.

While many of the larger companies are looking at ways of accessing this new resource, smaller SMEs are exploring opportunities to develop new products and devices, from radios to antennae, that could be used with the new spectrum.

Ireland has a particular opportunity to spearhead new kinds of research and innovation in this field," says Prof Doyle.

"Lack of interference with other borders means that Ireland is well placed to try something different with the spectrum. There is room to challenge existing research and take calculated risks.

"Ireland has the opportunity to establish itself as a spectrum playground. We should see where that takes us."