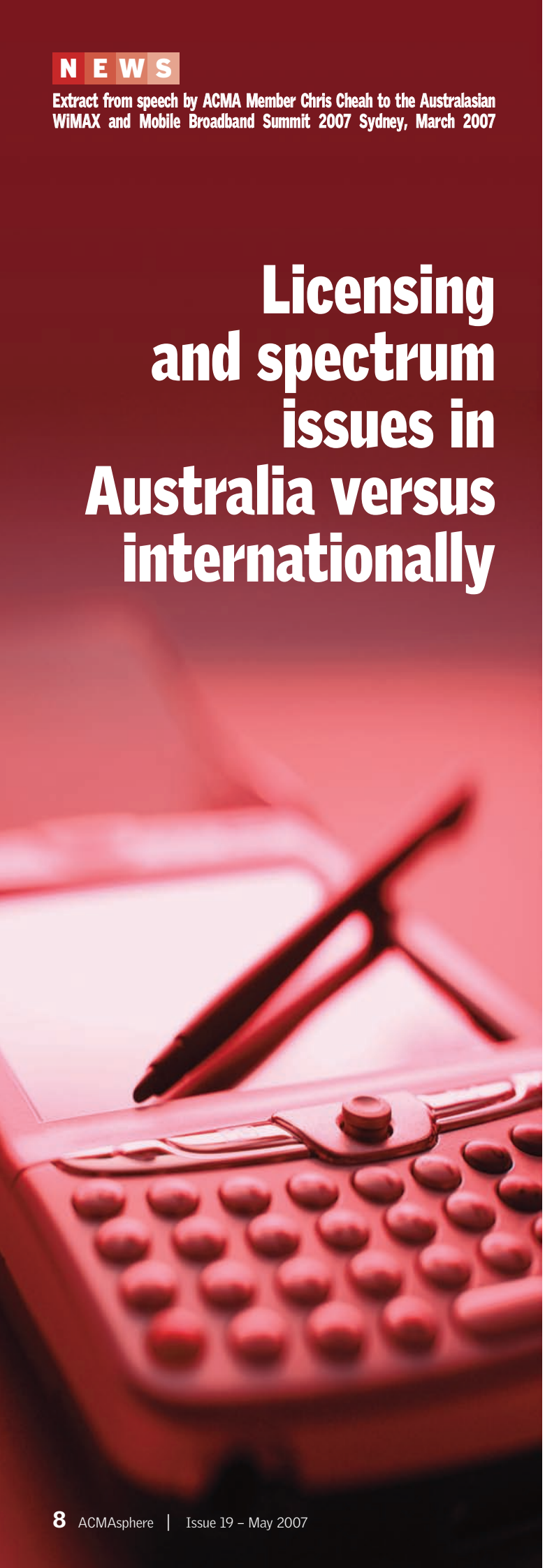
NEWS

Extract from speech by ACMA Member Chris Cheah to the Australasian WiMAX and Mobile Broadband Summit 2007 Sydney, March 2007

Licensing and spectrum issues in Australia versus internationally



WiMAX looks like being the first in a new wave of more efficient, high data rate technologies designed for a convergent world. ACMA—the converged regulator—is keen to support innovation as far as this is practicable and efficient and, importantly, optimise Australia's public interest.

When managing a resource like radiofrequency spectrum, it pays to have a longer-term perspective about technologies, markets and what it is we are trying to achieve, and the best ways of going about it, before looking at what pieces of spectrum should be made available for what purposes.

At a high level, ACMA's approach might be summarised as working with industry to help create an environment that fosters user confidence in 'the system'—and doing this in a way that is market friendly and pro-innovation, and still protects the community in the ways envisaged by parliament.

SPECTRUM MANAGEMENT AND INCREASING DEMAND

Those principles also influence our approach towards management of the radiocommunications spectrum. Our roles range from the 'town planner' who zones potential uses, to the allocator and sometime auctioneer of particular bands, to the enforcer and ultimate manager of interference disputes.

Our spectrum management activities are governed by the *Radiocommunications Act 1992,* which requires us to try and maximise the overall public benefit, be responsive and flexible in meeting the needs of users, and encourage efficient radiocommunications technologies. ACMA tries as far as practicable not to pick winners. We try to be informed of developments, but in an enabling kind of way, and to be smart about it.

One of these developments is voice over internet protocol (VoIP) and the question of how voice may play out over mobile platforms—how the market and applications level technologies might evolve. What happens when voice is but a feature on a set of communications applications in the next generation of the operating system, and users no longer think of voice communication in the way we traditionally think of phone calls?

Many of the other spectrum-user communities ACMA interacts with—defence, meteorology, geosciences and space sciences—are also experiencing rapid technological change. And if that weren't enough, the government has made it clear that getting broadband out in regional areas is a priority. It is interested in supporting market-based solutions via various funding programs such as HiBIS, Broadband Connect, and most recently, the Broadband Guarantee. Wireless ISPs play an important role in this, and their business models and technological solutions can vary widely. ACMA is also trying to find ways of meeting these developments.

What all this means for ACMA is that we are facing rapidly growing demand for spectrum in many areas. How do we deal with this in an intelligent and responsible way that respects the new uses, while also recognising the legitimate needs of incumbent users?

On the supply side, there are new technological developments offering the prospect of much more efficient use of the spectrum. They include smart antennas, cognitive and software-defined radio, spread-spectrum technologies of different types, and new forms of coding and compression. The rub is that to extract some of these benefits may require new ways of managing the spectrum resource including new ways of sharing it.

IMPLICATIONS OF WIRELESS SPECTRUM ALLOCATION METHODS

In Australia, we require licensing of all spectrum use through class licences, apparatus licences and spectrum licences. Wireless broadband is a jigsaw with some bits of each.

A **class licence** is a general authorisation (not issued to an individual user and no licence fees) to operate equipment in particular bands (often called 'unlicensed' bands in the US). Class licensing is an efficient, effective means of spectrum management for limited interference devices that can coexist without the need for individual frequency coordination for interference management purposes. A wide variety of devices are operated under class licences—in particular, in the industrial, scientific and medical bands at 900 MHz, 2.4 GHz and 5.8 GHz, which enable some important wireless data access systems like WiFi and Bluetooth, as well as radiofrequency identification (RFID) stock control and monitoring. The class-licensing approach has contributed to an environment that fostered the development of the technology, making these devices cheap and widely available.

Apparatus licences are generally issued for particular equipment and uses. They cannot be granted for longer than five years and, with some limited exceptions, do not offer tenure. They generally operate under an administrative pricing arrangement such as annual fees. Generally, these fees are based on a view of both spectrum scarcity and actual need, partly with a view to giving spectrum users an incentive to find more efficient ways of using their spectrum. Quite a lot of spectrum for wireless access is currently apparatus-licensed, as is much of the spectrum being considered for wireless mobile broadband in Australia and overseas.

Spectrum licensing is a more overtly market-based approach. Spectrum licences tend to have well-defined rights and obligations, but give the holder technology flexibility. They provide tenure for up to 15 years. Licensees can deploy devices anywhere within their licence area, as long as the devices are compatible with the core conditions of the licence and the technical framework for the bands. Spectrum licences are generally tradeable, can be 'sub-let' by the owner to other users and are typically auctioned by ACMA. Topical examples are the licences held by both Unwired and Austar, which are spectrum licences bought by those companies when WiMAX was not the hot topic it is today.

The WiMAX profile bands of 2.3–2.4 GHz and 3.4–3.6 GHz are already mainly available under spectrum licensing, with some apparatus licensing in regional areas. In addition, access to the 5.8 GHz band is available under class licensing. In all these bands, there is a great deal of flexibility to deploy any technology that complies with the frameworks. The only drawback in the class-licensed 5.8 GHz band is that uncoordinated operation makes it difficult to maintain or guarantee service quality.

Commercial WiMAX interests—including Australian interests—are working within the International Telecommunication Union (ITU) to have the WiMAX 802.16 standard included in the IMT-2000 family of standards. Should they be successful, all the bands currently identified for IMT-2000 (such as 850 MHz, 900 MHz, 1800 MHz and 2100 MHz) will also become candidates for WiMAX, significantly increasing the possible number of profile bands.

OPENING UP NEW BANDS: WHAT ARE THE ISSUES?

Developing a longer-term strategy for a potential new wave of demand for wireless data access has been one of the major tasks for ACMA's spectrum planners. ACMA held a seminar in February specifically dedicated to wireless access services (WAS) and a more general radiocommunications conference in December. Before each, we released discussion papers on WAS and consulted widely with users and potential users of those bands. We hope to make a decision on these bands in the next 12 months or so.

The **1785–1805 MHz band** is suitable for wireless access services in regional and remote areas. Although the available bandwidth is relatively small, the spectrum is lightly used and is considered ideal for alleviating short-term demand in regional and remote areas. We will design the technical framework to minimise the effect on adjacent spectrum-licensed services, and incumbent licensees in the band will not be required to relocate.

The **2500–2690 MHz band** is fast becoming a globally-harmonised band for wireless access services. It is identified internationally for IMT-2000 (the global standard for 3G wireless communications) and is also a WiMAX profile band. In Australia, the band is being used for electronic news-gathering applications by free-to-air television broadcasters, who see it is an important part of their ability to provide comprehensive and high quality news and media coverage. Having suitable arrangements to continue to meet this need will be an important part of any decision to reconfigure this band.

The **3575–3710 MHz band** is another suitable candidate for wireless access. Although incumbent services may limit the opportunity for new services to offer Australia-wide networks, the band provides an opportunity for operators who wish to deploy services in specific areas. In Australia, the band is used mainly for fixed point-to-point services (mostly by Telstra) and extended C-band fixed satellite services. Were this band to be made available for wireless access services, we would need to develop suitable arrangements for incumbent earth stations and existing fixed point-to-point services.

From an international perspective, this band is next to the WiMAX profile band (3.4–3.6 GHz), and is part of the band that the WiMAX Forum has defined as the 3.5 GHz band (3.4–3.8 GHz). The ITU is also considering it as a candidate band for the future expansion of next generation mobile phone networks—a decision will be made at the World Radiocommunication Conference later this year.

Two other bands may be of interest. The first is part of another WiMAX profile band around 4.9 GHz. From this year on, the **4940–4990 MHz band** will be released gradually for provision of public protection and disaster relief services. The band will be restricted to emergency services, such as police, fire and ambulance as well as defence and other special agencies, and will not support transport, infrastructure or any form of industrial use.

The second is the **2010–2025 MHz band**, a globally harmonised band for IMT-2000. Late last year, when ACMA auctioned this band, there were no buyers. We are investigating why this happened, and considering what we should do with the band now. We value your input.

Finally, the government is yet to make decisions about what will happen with the so-called 'digital dividend' when analog television is switched off in Australia, freeing up hundreds of megahertz of prime spectrum.

WHAT'S NEXT?

It has become increasingly clear that we need to find ways of looking at changing patterns of spectrum demand and use, because lead times are long, decisions are becoming more contentious, and decisions we make now may have far-reaching effects on decisions we will want to make in the future. The Department of Communications, Information Technology and the Arts is currently examining our regulatory tool kit of licences and related tools, including how they leave us placed for the future.

ACMA's planning engineers have begun a project to help us estimate the demand for spectrum on a service-by-service basis up to 20 years into the future, to give us an overall view of spectrum bands and competing requirements of the various services. The project will also develop strategies for how this demand may be met and which bands are most suited to each service. The project will explore current spectrum-sharing mechanisms and the emergence of new technologies such as cognitive radio.

These challenges are important to Australia's economic future and ACMA is doing its best to genuinely foster innovation for ourselves and in the markets we are there to support. To do that we need your help—there has been frank and lively discussion at our own forums and at this conference, and I like to think a robust debate signals a healthy sector.

The full text of Mr Cheah's speech is on the ACMA website at www.acma.gov.au (go to Home > About ACMA: News & media centre > Speeches).