BNA International

# World Telecom Law Report

International Information for International Businesses

Monthly News and Analysis on Telecommunications Law, Regulation and Policy from Around the World

Volume 8, Number 6 June 2005

# Focus

## The Road to 4G – a Lawyer's Perspective: Interview with Antony Corel LLM (UNSW)

*Antony Corel is a partner in the communications practice of the international law firm Squire, Sanders & Dempsey LLP (www. ssd.com). Since 1992 Mr. Corel's practice has focused on serving clients in the communications sector. He has been involved in a wide range of matters for private and public sector clients in Australia, Africa, Asia, Europe, and the Middle East. Having previously practiced in Australia and Hong Kong, Mr. Corel is now based in London. His e-mail address is acorel@ssd.com and his telephone number is +44.207.189.8117.*

***Question 1:*** *Although our readers will be familiar with 3G, I suspect that many will not be familiar with 4G. Would you please explain what 4G is?*

Regrettably, there is no straightforward answer. There are contrary views within the telecom sector concerning 4G. I suspect the reason for this is that there are effectively two competing thought streams – the traditional linear approach and the emerging technology-neutral approach.

Some see 4G as the next generation of cellular wireless that will eventually replace cellular 3G technologies now being introduced. 3G is now being evolved through incremental upgrades likely to see it branded 3.5G or super 3G in the foreseeable future. Consistent with this scenario, cellular 4G is not likely to be introduced until the cellular 3G evolutionary path has been exhausted. Whilst some support this approach, I believe too many fundamental changes have occurred over the last few years for this linear model to be successfully repeated.

My view is that the combination of new and emerging technologies such as UWB, Software Defined Radios, Mesh Networks, and rapidly evolving 802 series standards will usher in a 4G environment much sooner than traditionalists contemplate. I see this holistic environment as multi-dimensional and very dynamic. I think of 4G as a technology-neutral matrix into which a huge variety of standards and multi-task devices will be able to cooperate with each other. Internet protocol is the glue that is likely to make this happen. I see 4G initially complementing and gradually enveloping 3G, rather than simply replacing it.

***Question 2:*** *Given your response, I expect that planning for 4G roll-out is very preliminary and roll-out is a long way off. Is my assumption correct?*

I think you and your readers would be surprised to learn how advanced the planning for 4G really is in some places. Without a doubt the leading region is Northern Asia – and, in particular, Japan, Korea, and China in that order. Japan and Korea have been contemplating 4G

for many years now and China's interest is quickly gathering pace. Most interestingly, these countries are co-operating at many different levels, including conceptual planning at the Ministerial level, coordinating R&D efforts, and even planning new spectrum assignments. It has recently been reported that these three countries have agreed to allocate common spectrum for 4G. It is speculated that this allocation will be between 3400 and 4900 MHz. (*See* WTLR*, May 2005, page 5.*)

Although Northern Asia certainly appears to be leading the pack, there have also been developments in other parts of the world that indicate heightened interest in developing 4G plans. Technology vendors are pushing hard in the United States and are being supported by an increasingly liberal attitude of the FCC towards spectrum usage. U.S. companies I am aware of that are at the forefront of the 4G evolution include: Adaptix, Alvarion, Arraycom, Flarion, IP Wireless, Navini, and NextNet, to name a few.

When I first arrived in Europe (in 2003), it was extremely difficult to generate any enthusiasm for 4G. This attitude was understandable, given Europe's preoccupation with 3G over the last few years. Since 2004, however, the European Commission has instigated various studies that touch and concern advanced 4G planning. Supporting reforms are also in train. The United Kingdom has commenced spectrum liberalization that is focused on increasing the productivity of spectrum and permitting the market to decide best uses. Hungary has recently established a 4G R&D program and appears to be establishing closer links with Northern Asia. All in all, there is a great deal more happening in Europe on the 4G front than most observers would probably expect.

***Question 3:*** *Would you please elaborate upon the new and emerging technologies you have briefly referred to? How will these technologies be integrated into a 4G matrix?*

I think the most exciting technological prospects are wireless. WiMax, UWB, Software Defined and Cognitive Radio, Mesh Networks, and Radio Frequency Identifiers are the technologies I have mainly been following. I also think that IPv6 will be vital for a variety of reasons, the most important of which is creating a sufficient number of IP addresses to support innumerable machines and new devices, as well as every person on the planet. Likewise, other IP-based services, such as VoIP, IPTV, and IPCablecom, will also be important in the pursuit of ubiquitous ICT.

I believe that these technologies are worthy of mention because they promote efficiencies on a number of levels. In short, they should positively contribute to the achievement of the "anything, anytime, anywhere" objective. Many argue that such technologies disrupt existing business models. That is probably true, but that, by itself, is not a valid argument to prevent or delay the introduction of more efficient technologies and services. Clearly, a major challenge for policy makers and regulators will be to encourage investment in and deployment of these new technologies without significantly undermining confidence in existing investments. Investors and operators thrive on certainty. An uncertain regulatory environment is more likely than not to have a material adverse impact upon valuations and investment sentiment. Where the planets of fact align, I would not rule out the prospect of compensation claims in the future.

***Question 4:*** *What would be the basis for a compensation claim? What sort of impact would this have upon a market?*

Never underestimate the creativity of lawyers! Seriously, it is impossible to provide a generic answer as each case will depend upon the facts and the laws of the relevant jurisdiction. Although I cannot accurately predict the reactions of existing wireless operators, I can imagine most will be actively considering the impact of these technologies upon their operations. If these technologies enter the market and deliver as promised, there is a real prospect that they will adversely affect revenues and/or valuations of some existing mobile operators. Those operators will, however, have a variety of options available to them to minimize any adverse impact. I suppose the critical issue for valuations is that relevant operators are cognizant of the threat and have, or are developing, a plan to deal with that threat. Options might include a compensation claim where the facts and the law support such a claim. Hong Kong and Singapore might be cited as examples – when both governments compensated fixed-line carriers for ending their exclusivities earlier than provided for in their respective licenses. More realistically, I would expect most strategies to encompass the possibility of licensing disruptive technology, acquiring new market entrants or entering into strategic partnerships. Personally, I see the opportunity for some fixed-line operators, devoid of mobile operations, to renew themselves and get back into the mobility game.

***Question 5:*** *You previously gave us a synopsis of how different regions around the globe are preparing for 4G. Looking at individual countries would you say some are in a better position than others to implement a 4G environment?*

The world's economies and regulatory frameworks are not homogeneous. Some jurisdictions will have a greater ability to adapt than others. Although this is a hallmark of more advanced or sophisticated jurisdictions, it is also true of developing jurisdictions that have the political harmony to push through necessary reforms. This is a very important issue for investors when assessing risk levels.

I expect that many developing economies will see an opportunity to "leap-frog", and perhaps this is possible, if the necessary building blocks are in place or there is the will and ability to put them in place. I can certainly see the numerable advantages of not replicating expensive infrastructure models if a better mousetrap has been invented. What I see as unavoidable, however, is putting in place crucial building blocks such as: the removal of entry barriers, the removal of bottlenecks, the creation of independent regulators, the creation of laws and regulations that maintain effective competition, and rigorous enforcement of such laws and regulations. If these foundations are lacking, real progress is probably unsustainable.

One of the most important sectors that remains to be reformed and liberalized is that of wireless – more specifically, radiofrequency spectrum. Spectrum is arguably one of the last examples of a centrally planned and controlled market that still exists in the majority of global economies. I believe that reform is crucial to achieving the commonly stated goals of achieving market efficiency, promoting innovation and stimulating economic growth.

***Question 6:*** *Why is reform and liberalization of radiofrequency spectrum so crucial?*

I can only see the demand for mobility increasing, exponentially. I think it is a societal trend that will continue to push the boundaries of spectrum usage. Although I understand that spectrum is ultimately a finite resource, it can clearly be used much more efficiently and this is the beauty of many of the new and emerging wireless technologies. In short, the market should decide the best use of available spectrum.

The reason I place such a great emphasis on spectrum reform and liberalization is that it is a viable way to stimulate economic growth and to cater to growing wireless mobility demands. If you look at the enormous stimulus that liberalization of telecom and media services has had over the last decade or so, and is continuing to have, you should have an inkling of the potential of these new technologies and the services that I expect they will inspire. It is also a troubling time because no one can predict with any certainty what effect this will have upon relevant markets.

The current system of spectrum regulation is a legacy of yesteryear. Put simply, what is commonly known as the "command and control" system is a substantive barrier to market entry and retards technological innovation. In most economies, the standard method to enter the wireless market is to bid for a license, the most useful of which are usually restricted and highly priced, or to acquire the holder of an existing license. The bidding process commonly requires substantial investments in license fees in addition to normal capital expenditure. As we have seen, some times this process can get out of hand. The focus of spectrum reform and liberalization is making the whole process much more efficient and supporting effective competition in the wireless market. One method that has been successful in some places is the MVNO model. What we are looking at, however, is much deeper reform.

Already implemented in some countries or scheduled to soon commence, specific reforms include: permitting licensees to transfer their licenses, to lease rights under their licenses – to facilitate temporal sharing – providing certain conditions are met, to change the use of their license which might include the adoption of new technology, and for the private sector to manage radiofrequency spectrum usage.

***Question 7:*** *Are there any examples of the reform and liberalization of which you speak?*

To date, there are only a handful of examples. But the list is growing. What is noticeable, however, is the absence of any major Asian country from the list of spectrum-reform pioneers. Given that Northern Asia is in many respects leading the development of 4G technologies, I would have expected that they would also be in the leading pack of spectrum reformers. It might simply be the case that internal plans have not yet been made public.

New Zealand is a world leader. Australia, the United States, and the United Kingdom have also made significant starts along the reform path. So too have Guatemala and Ireland. The European Union has already issued a directive that provides for reform and liberalization in individual Member States, which are provided some flexibility to implement customized solutions.

In the United Kingdom, Ofcom has recently announced its plans to liberalize up to 72 percent of spectrum under its control. These plans include allocating a further 200 MHz of unlicensed spectrum. Spectrum trading is now permitted on a limited basis and the regulations will eventually be applied to mobile spectrum, once the market and the regulator have obtained experience with less valuable spectrum.

In Australia, the ACA is now gauging interest in private management of radiofrequency spectrum. I think this is the tip of the iceburg.

***Question 8:*** *We have talked a bit about the importance of spectrum reform and liberalization. But is 4G more than wireless alone? Are there any other issues or trends that have caught your eye?*

I believe that 4G is more than just cellular wireless and, yes, there are quite a number of other issues that merit discussion. One of the tools that I use to identify issues is to first identify market or technological trends. For me at least, a trend will spark ideas as to what is or might become an important issue of policy, regulation, or law. In a 4G world, you should not limit yourself to the communications and media sectors. You really need to look further afield, to health, transport, education, defense, and other sectors, to fully appreciate what is transpiring and how the "big picture" fits together.

Amongst the trends that I have identified as most interesting are: the drive towards network and IP centricity; a heavier reliance upon open architectures; the migration of Internet business models to the wireless medium; and the emergence of an ever more diverse range of multi-function devices, sensors, and new human interfaces. From a policy, regulatory, and legal perspective, these trends will in some cases require optimization of existing frameworks and in other cases development of substantially new frameworks or something in between, depending upon the sophistication of the starting point. Each of these trends raises specific operational issues.

I foresee a mix of current and emerging issues. Some issues such as VoIP and, in particular, regulation or non-regulation of IP-based services, will need to be resolved for us to move toward what I expect to be an IP-dominated culture. Issues such as data protection and privacy have already received extensive attention in many countries. The scope and breadth of such issues will, however, need to be thoroughly re-examined given the likely proliferation of networked sensors including RFIDs, telemetric, and biometric devices. Digital Rights Management should remain a hot topic, particularly the protection of such rights against unauthorized use or distribution. We have already seen the necessity of the music industry to morph in order to maintain relevance in today's rapidly evolving content market. Although many consumer devices now hitting the market place focus on musical content, I fully expect that the inclusion of other content is not too far away. I suspect there will be enormous changes in the media and entertainment sector and how they do business.

***Question 9:*** *Perhaps now would be an opportune time to share with us your views on the media/entertainment sector and how a 4G environment might affect that sector, from a regulatory or legal perspective.*

In my view the media sector was bound to remain secular until such time that the principal ingredients of convergence could take root. With the advent of digitized content, broadband is a natural partner and wireless broadband the perfect conduit for our increasingly mobile society. We are now witnessing increasing broadband penetration in many places and predictions are for a steep increase. Mobile wireless broadband technologies

should exponentially hasten this trend and will be the key to facilitating true convergence, namely TMT fusion.

The culture of the media-entertainment sectors has always been very different from that of telecom and technology. This is probably because of the focus on content creation, its protection and distribution. Increasingly, the traditional monarchical status of content (i.e. that content is king) is being challenged. The new content democracy is most evident in the recent transformation of the music industry. I believe that "fused" devices offering multiple functionality and access to an infinite variety of content (like iPod) are a peep into the near future.

Regulators need to take a fresh look at the media and entertainment sector. A very good example of leading-edge regulation in Asia for the mass-media sector is the competition code developed by the Media Development Authority in Singapore. It grapples with many relevant issues including control over and access to content, and is an excellent basis for further evolution. The U.K. regulator is now contemplating radical changes to support future funding of public broadcasters. Ofcom has recognized the likelihood of a proliferation of mobile broadband devices and wants to ensure that important public programming remains accessible to the broadest possible audience.

***Question 10:*** *What are the issues facing policy makers and regulators? Can you give us some insight as to how public-sector decisions will affect the private sector?*

In one form or other competition remains the biggest issue. The challenges that regulators face, however, will vary according to the sophistication of their economies. Many developing economies are still grappling with introducing competition, managing that process, and eliminating basic entry barriers such as foreign ownership restrictions. In advanced economies, the criterion for assessing the effectiveness of competition appears to have shifted away from the number of competitors in a given market to the sustainability of competition in that market with a focus on facilities. The added complexity of technological neutrality needs to be woven into this matrix.

In the context of 4G, arguably the most important decision to be made by regulators is how to introduce and support spectrum liberalization. A concurrent issue is the licensing of emerging technologies such as Ultra Wide Band, WiMax, and Software Defined Radios. I think these types of technologies merit consideration and introduction if they can positively contribute to relevant economies by increasing efficiency and productivity. One example of the difficult spectrum decisions now facing regulators in Europe is how to allocate 2.5GHz – whether it should continue to be reserved for 3G expansion or whether the market should be allowed to decide how it will be used.

With regard to competition law, substitutability will probably be an important issue – will new products and services constitute a new market; are they substitutable for other products and services; how should wireless markets be defined? The answers to these questions will decide how these technologies are treated. Whether or not VoIP should be regulated in the same way as traditional voice services, or at all, is also a major issue and a pointer for what is likely to be a wave of IP-based services. Wireless interference is also likely to occupy an increasing proportion of a regulator's day.

***Question 11:*** *You have briefly discussed the necessity of regulatory frameworks to evolve to support the 4G concept and the technologies that are likely to flourish in the next few years. What are the implications for existing licensees and new market entrants?*

Existing entry barriers such as spectrum will ease and should gradually disappear. Specific licensing is also likely to disappear and be replaced by simplified authorization processes. Class licensing or authorizations are likely to become generic, fusing a multitude of activities now conducted under distinct licenses or authorizations. Productivity in the communications and media sectors should benefit as a result.

The traditional mobile business model would appear vulnerable in an evolving 4G environment. I expect that mobile operators will suffer increased competition from traditional fixed line operators deploying new wireless technology, from new mobile operators that might include MVNOs, and ultimately from new technologies such as WiMax. I also foresee they will come under more pressure from regulators to reduce charges: notably termination and roaming charges. Their primary challenge will be maintaining profitability and the value of their core assets – the spectrum allocated to them and their centralized infrastructure.

Regulatory intervention might also be in the cards where regulators are not convinced that competition is effective in a given market. A recent example of this is the joint dominance finding made by ComReg in Ireland. How well mobile licensees fare will depend ultimately upon their ability to adapt. If they fail to do so, they could be marginalized.

Policy makers and regulators are taking a cautious approach to spectrum reform. There is an element of the unknown and a touch of nervousness. Places like the United Kingdom are very much testing the waters before immersing themselves. I am confident, however, that opportunities will open up for new market entrants. The timing of the opportunities is more difficult to predict. Before the whole process is accelerated, the expeditionary steps must be judged to be successful.

***Question 12:*** *We have discussed 4G in the context of the public and private sectors, but what about consumers?*

I think the biggest challenge for the majority of consumers is to understand the personal impact of the latest technologies – holistically rather than individually. Many consumers often lack the time or inclination to do anything but superficially contemplate how new products and services might affect them. Many make benign assumptions or are simply unaware of the growing pervasiveness of new technologies – particularly their collective effects. Regulators will probably spend an increasingly disproportionate amount of their time dealing with consumer protection, unless some of this responsibility can be delegated to third parties through co-regulatory or self-regulatory measures. Public education should be a key focus.

The effects of increasing exposure to electromagnetic radiation, the increasing potential for electronic stalking, third parties gaining access to and profiting from personal information, and rights to copy and record for personal use copyright material – these are just some of the issues that consumers would probably be most concerned about if they were aware of the issues.

In the near future I foresee that the use of pervasive technologies such as RFIDs and location devices might require an affirmative opt-in from consumers to ensure that they are mindful of the potentially adverse consequences of use or participation. These types of issues might not be caught by existing regulatory safeguards unless authorities are particularly vigilant.