New mobile satellite services: valuing spectrum assets

In 2008 we will start to see the first results of recent multi-billion dollar investments in new, more advanced MSS satellites in North America, with the launch of ICO's satellite scheduled for January 2008, and TerreStar's first satellite scheduled for launch in September. Both systems secured investments based on the promise of Ancillary Terrestrial Component (ATC) services, whereby the FCC has formulated a set of rules for MSS operators to re-use their satellite frequency allocations on terrestrial cell towers. Investors were attracted by the potential for a re-valuation of MSS spectrum, bringing it closer in value to the multi-billion dollar prices paid by cellular operators in recent FCC auctions. Indeed both ICO and TerreStar have made investor presentations indicating that if their respective 20MHz spectrum allocations were valued on the same basis as the Advanced Wireless Services (AWS) spectrum auctioned by the FCC in summer 2006, then their spectrum would be worth over \$4B to each company. While much of the AWS spectrum was bought by cellular operators, such as T-Mobile, Cingular and Verizon, for use in 3G cellular voice and data networks, ICO and TerreStar are adopting somewhat different approaches to differentiate their offerings. Specifically, ICO is proposing to offer a Mobile Interactive Multimedia (MIM) service, delivering mobile video and navigation services to cars and portable media players, while TerreStar is developing a two-way 4G network, supporting handheld voice and data services for government and commercial users.

This move to consider deployment of both broadcast and interactive services in MSS spectrum is part of a wider trend, following the recent success of satellite radio in North America, where XM and Sirius have gained 15 million subscribers in just over five years, and the development of the satellite-based TU Media handheld mobile video service in South Korea, which has reached 1.2 million subscribers after two years of operation. In Europe, competition for the 2GHz MSS spectrum band has already been joined between the SES-Eutelsat Solaris joint venture, which is seeking to provide handheld mobile video, and TerreStar Global, which plans a two-way satellite system offering similar voice and data services to its North American operation. ICO maintains a legacy claim to the European 2GHz spectrum, while we also expect Inmarsat to enter the fray with a rival European mobile video project.



In assessing the true value of MSS spectrum holdings, it is critically important to consider the potential return from an operator's proposed business model, since the discounted value of the operator's cashflows indicates how much its assets (including spectrum) are worth. A mistake often made in assessing spectrum values is to take a market price, for example from an FCC auction or a transaction such as Aloha's recent sale of its assets to AT&T, and simply apply it as a benchmark for the value of another wireless business. Even for the same application, incumbent cellular operators will place a higher value on spectrum than new entrants, because the incumbent is likely to have a lower cost of capital and will be able to deploy the spectrum across its existing network and customer base more rapidly than a new entrant, who will have to undertake a lengthy build-out and customer acquisition process. When different applications are considered, the business case is likely to look completely different and therefore the spectrum value can vary considerable. For example, a WiMAX business plan, which derives 80% of revenues from high speed data, will likely generate far less revenue per Mbyte than a 3G cellular business plan, which derives 80% of revenues from voice and SMS. Thus, even after adjusting for the greater efficiency and potentially lower cost of WiMAX equipment, the value of a MHz of spectrum for WiMAX applications is likely to be much lower.

The counter-argument from those who argue that the benchmark price is most relevant, is that any bidder who wants to be successful in an auction or other spectrum transaction would simply have to pay the going rate for spectrum, otherwise they would not be able to acquire the spectrum necessary to develop their business. The implication is that such an operator would be forced to accept a lower return on investment, but at some point, no (rational) operator is going to make an investment which will produce a loss. There is certainly some scope for operators to make more aggressive assumptions about business prospects, and this has clearly led even to experienced operators overpaying for spectrum in the past (the classic example being European 3G spectrum auctions in 2001). However, in general, bidders will drop out of an auction when they reach the point at which the spectrum price is equal to the value that can be generated from their business plan. Thus in the FCC's AWS auctions, we saw DirecTV and Echostar, who were considering deployment of a WiMAX network, exit from the auction when outbid by incumbent cellular operators planning to use the spectrum for 3G networks.

The only circumstances in which such a premium to a business plan-based valuation would be applicable, is when there is a clear exit option, via sale to an operator (such as an incumbent cellular player) who can re-use the spectrum in a higher value application. The recent Aloha sale of its 700MHz spectrum holdings to AT&T is an obvious example, where the spectrum could be readily



repurposed and combined with spectrum acquired in the upcoming auctions, and the value of the spectrum to AT&T vastly exceeded any value that could be realistically be created from Aloha's existing mobile TV business plan.

Returning to the value of MSS spectrum, the first consideration is therefore whether this "exit option" is readily available to MSS players such as ICO and TerreStar. Simple re-use of MSS spectrum in a terrestrial cellular network is certainly constrained by the FCC's rules on ATC, which require terrestrial use to be ancillary, with no terrestrial-only subscriptions and all devices being satellitecapable (unless a separate specific showing of "substantial satellite service" is made). While the very large satellites being built by TerreStar and MSV are potentially capable of supporting handsets with only a minimal burden from the size and cost of the components necessary to access the satellite service, concerns over these technical issues may cause some terrestrial operators to shy away from engagement with MSS providers. More importantly, potential partners who may consider exploiting MSS spectrum to develop a new wireless venture have much less security than if those companies were to use terrestrial options such as AWS or 700MHz spectrum (which have been readily available via FCC auctions in recent years), because leading cellular operators are already building out networks in those bands, and would certainly be willing to acquire additional spectrum if the new venture was unsuccessful, whereas they could not easily make use of MSS spectrum in these circumstances. Finally, the sheer quantity of spectrum held by operators seeking to exploit ATC (including ICO, TerreStar, MSV and Globalstar) which totals roughly 100MHz even excluding Inmarsat and Iridium's holdings, is likely to make cellular operators reluctant to endorse this new spectrum bands as an alternative to their existing spectrum holdings, which are worth tens of billions of dollars and whose value could be undermined by such a sharp increase in supply. Only if faced by a clear and present threat from a new network operator deploying services in the MSS spectrum are cellular operators likely to respond and buy up MSS spectrum as a defensive measure.

For all these reasons, the value of MSS spectrum is therefore largely dependent at present on the value that can be created from the business plans of each operator. With satellite radio and mobile TV providing more concrete examples of how MSS can successfully deliver consumer applications, it is clear that there is a strong motivation for MSS operators to consider this path. However, it is unclear whether these applications will support high spectrum valuations. The history of XM and Sirius, who made cumulative losses of over \$3B each in the five years to June 2006 is a cautionary lesson that despite the companies' success in acquiring subscribers, their overall financial return to investors has been negative. In particular, if multiple players enter the handheld mobile TV market (as seems likely



in Europe, if Inmarsat moves forward with a project similar to the SES-Solaris venture) then the returns to all parties may be negatively impacted.

Nevertheless, the history of interactive MSS services, as shown by Iridium and Globalstar in the late 1990s, is even less encouraging, and so TerreStar and MSV have a lot to prove. These operators are hoping to ensure that mandates or contracts are provided from the federal government to incorporate satellite capabilities into equipment for first responders, so that communications can be maintained in a disaster situation. This market alone will not be sufficient to support either operator, and both are developing terrestrial networks in Washington DC and other cities to demonstrate their capabilities for commercial providers. TerreStar and MSV are looking to adopt a wholesale approach in the commercial market, whereby partners will be secured to develop and resell their services. However, it is hard to find an example in the terrestrial wireless market of any network operator that has been able to establish a successful pure wholesale business model without a retail brand of its own.

The next few months will therefore be key for the new MSS operators. If they can secure prominent partners who can reassure investors that major contracts and mass market distribution channels are in place, then funding for their commercial service launch should be accessible, even in the current more testing financial climate. However, if these partnerships are not forthcoming, then mergers or restructuring between the operators may be a more likely outcome. Nevertheless, with several satellites now almost ready for launch, the capabilities of these new MSS networks will significantly change the MSS market in either scenario.

This article is extracted from our new report on "ATC, satellite radio and other hybrid MSS networks: business cases and spectrum valuations" published October 2007, which explores these issues in more detail, developing business cases and deriving spectrum valuations for all of the leading proposed broadcast and interactive MSS networks, including ICO, TerreStar, MSV, Solaris, TU Media, XM and Sirius.

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