



M1.3: Mobile Television

PTC Conference 2007

Tim Farrar

January 15, 2007

Background on TMF Associates

- Telecom, Media and Finance Associates, Inc. (“TMF Associates”) was founded by Tim Farrar in 2002 to provide technical and financial analysis of satellite and telecom ventures
- Tim has over 14 years consulting experience across the telecom and satellite industries, having worked for leading technical and strategy consultancies in both the UK and US. He has an M.A. and a Ph.D. from the University of Cambridge, UK. Between 1999 and 2002, Tim conceived, founded and led the operations of Analysys Consulting in the US, developing a multi-million dollar stream of consulting business and establishing one of the pre-eminent global strategy consulting practices in the satellite sector
- Tim has worked on both ‘traditional’ satellite applications and a wide range of new developments, such as broadband and mobile satellite systems and Internet trunking. Over the past decade he has worked with many leading players, including Inmarsat, Intelsat, Teledesic, MSV and Globalstar



Unique experience in Mobile Satellite Systems

- TMF Associates offers a unique breadth of expertise across the mobile satellite sector. Tim has worked with most of the major players, including operators (Inmarsat, Globalstar, MSV and others), distributors, equipment manufacturers and investors for more than a decade
 - over the last two years we have worked extensively on developing and analyzing business cases for new hybrid MSS-ATC networks, including both broadcast and interactive applications
 - a particular focus has been on learning the appropriate lessons from the failures of the previous generation of MSS systems
- We publish detailed research on the MSS sector, including recent reports on Ancillary Terrestrial Component (ATC) technology and the Market for In-flight Passenger Communications
- Tim is also President of the Mobile Satellite Users Association (MSUA)

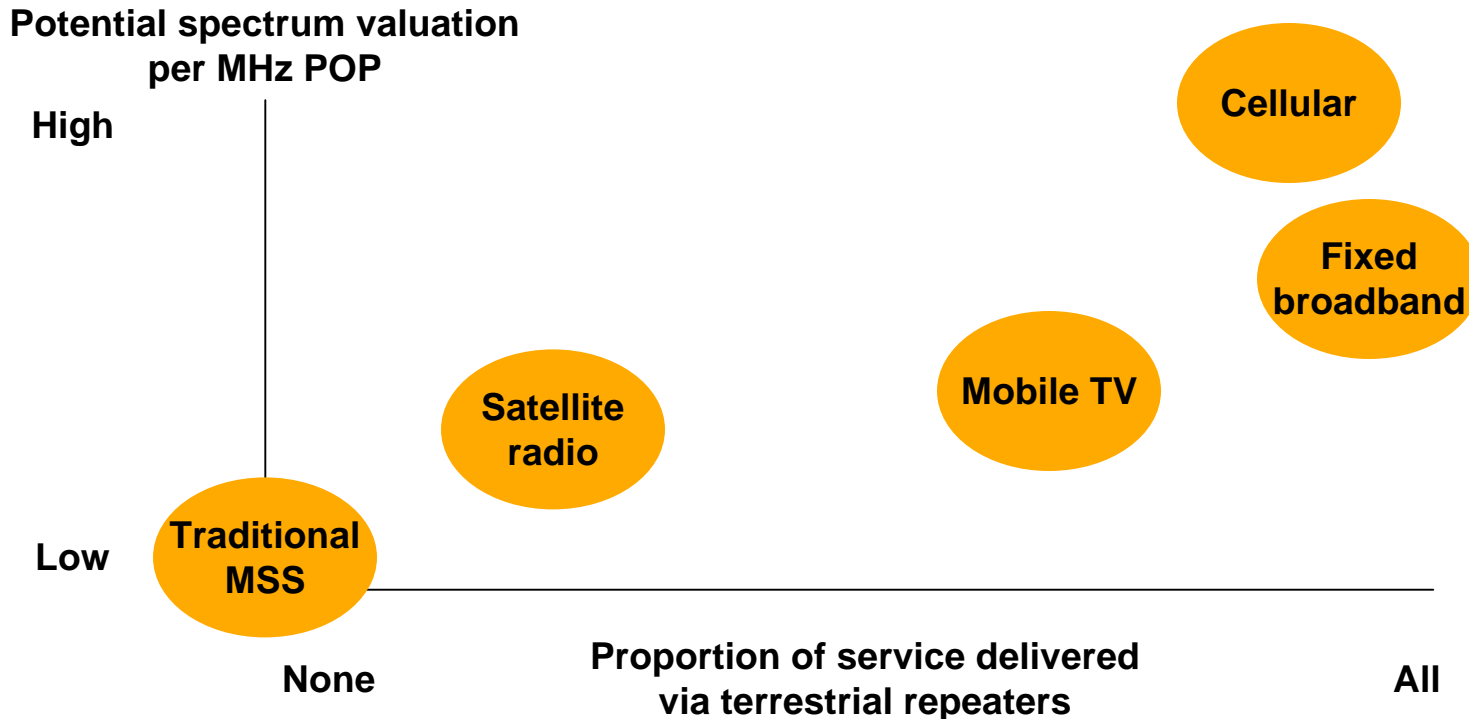


Mobile TV providers may have difficulty obtaining timely spectrum allocations in some regions

Analog TV	DAB	UMTS-TDD	MSS	4G
700MHz	1.4GHz	2GHz	2.2GHz	2.5GHz
Delayed switchoff?	Existing services?	Modest allocation?	Regulatory issues?	Other services?

- Ubiquitous satellite coverage for mobile broadcast applications has proven to be attractive in several markets
 - existing satellite radio services in the US (XM/Sirius) have seen rapid take-up
 - S-DMB in Korea has now achieved ~1M subscribers
- Additional regulatory flexibility for Mobile Satellite Services creates the potential to develop new hybrid satellite/terrestrial mobile TV networks
 - the widespread availability of MSS spectrum at 2GHz (1980-2010/2170-2200 MHz outside North America) presents an interesting opportunity for hybrid networks, particularly in Europe, where CGC regulations are now being finalized

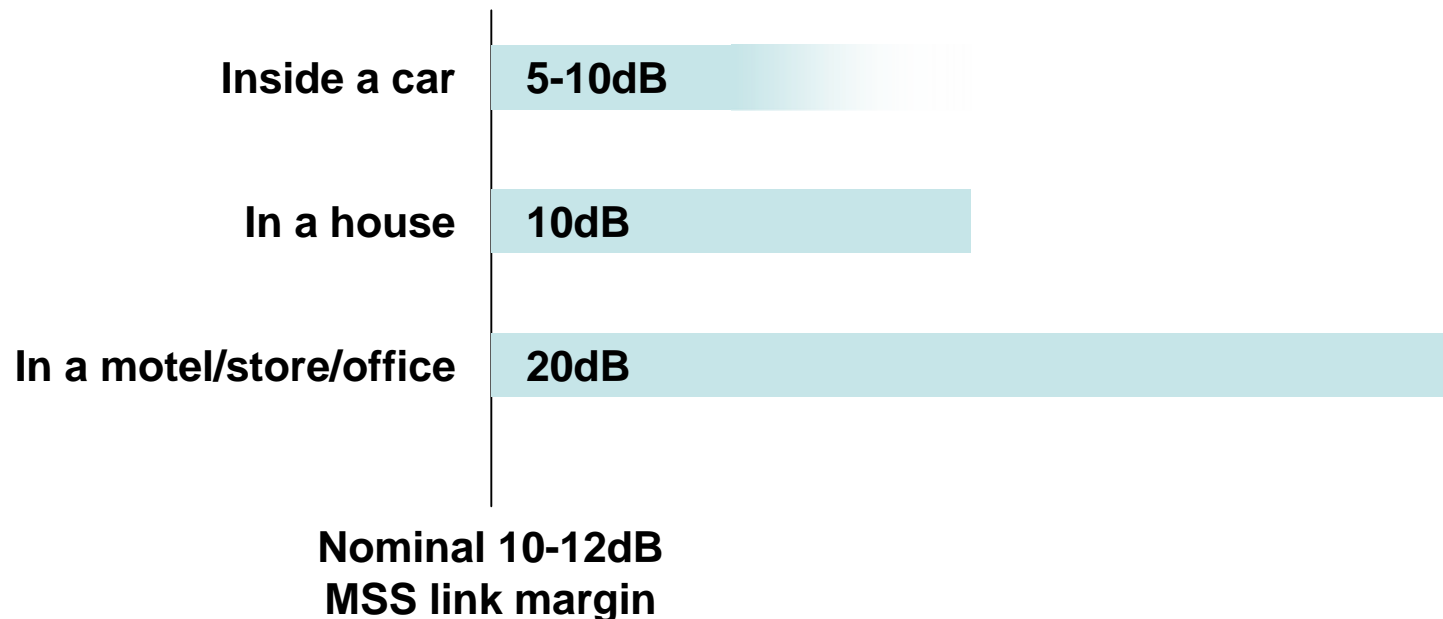
Mobile TV may not be as dependent on terrestrial repeaters as other 'ATC-type' services



- The value of Mobile TV spectrum is also generally expected to be lower than that of two-way cellular spectrum and so potentially presents less opportunity for spectrum arbitrage
 - both factors may help to limit objections from cellular operators who have often paid substantial sums for their licenses

However, the utility of the satellite component ultimately depends on the usage environment

Additional margin required for “reliable” satellite coverage



- Broadcast applications have an advantage over two-way MSS services because latency is less of a problem and so they may use more powerful coding/caching to create sufficient margin to overcome brief outages (e.g. when driving under trees)

Source: Goldhirsh & Vogel (1998), TMF Associates estimates



Contact us

Tim Farrar
Telecom, Media and Finance Associates, Inc.
3705 Haven Avenue, Suite 113
Menlo Park
CA 94025

Tel: +1 650 839 0376

Cell: +1 650 642 5195

Fax: +1 650 839 0375

Email: tim.farrar@tmfassociates.com

Web: www.tmfassociates.com

