Presentation to ICASA on Importance of Satellite Services in the C-band

Jon Osler
Managing Director, Africa
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Satellites Provide Public and Private Entities Critical Infrastructure that Drives Economic Growth, Enhances Healthcare, Education and Access provides equal access to Broadband in areas that are Served and underserved by terrestrial services.

Satellite Applications Help Achieve Government Policy Goals and Business Objectives

Wireless Extension/Backhaul Services

Maritime Communications

Mobile Video

Corporate Networks

Telemedicine

Distance Education

Internet Connectivity

Aviation Services

TV Distribution (also DTT)

Disaster Preparedness

Satellite applications increase teledensity rates, provide distance education and telemedicine, enable broadband to rural areas, and more – many applications depend on C-band

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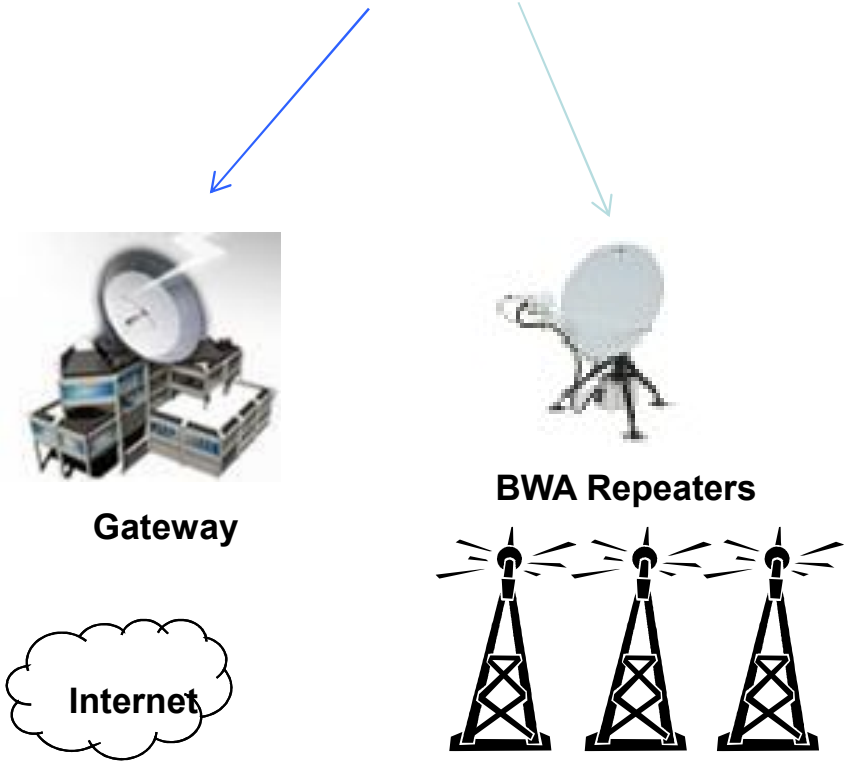
Satellite and Wireless Access Systems Are Natural Allies in Developing ICT Infrastructure

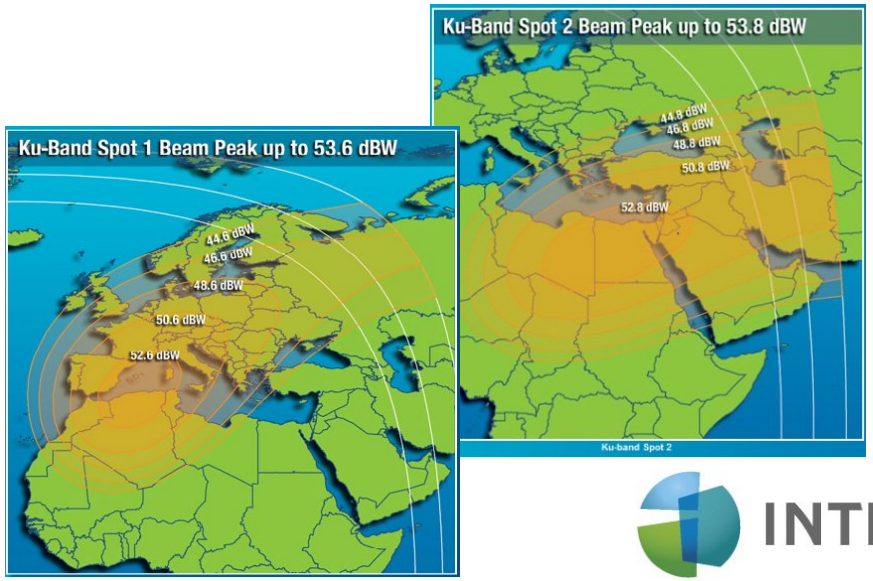
- Where there are inadequate terrestrial facilities to connect WiMAX/BWA base stations to the Internet backbone
- In thin route, rural and less densely populated communities
- Satellite can expand WiMAX/BWA network reach
- Similar to how cellular operators use satellites to connect to their base station towers



The benefits of C-band cannot be easily replicated in other bands (Ku- or Ka-band)

- C-band beams cover large geographic areas, and facilitate intercontinental and global communications
  - C-band allows for economically viable coverage of low density regions
  - C-band provides region-wide coverage at high availability rates, irrespective of rain zones

- C-band beams are much more resilient to rain fade than Ku- and Ka-band frequencies

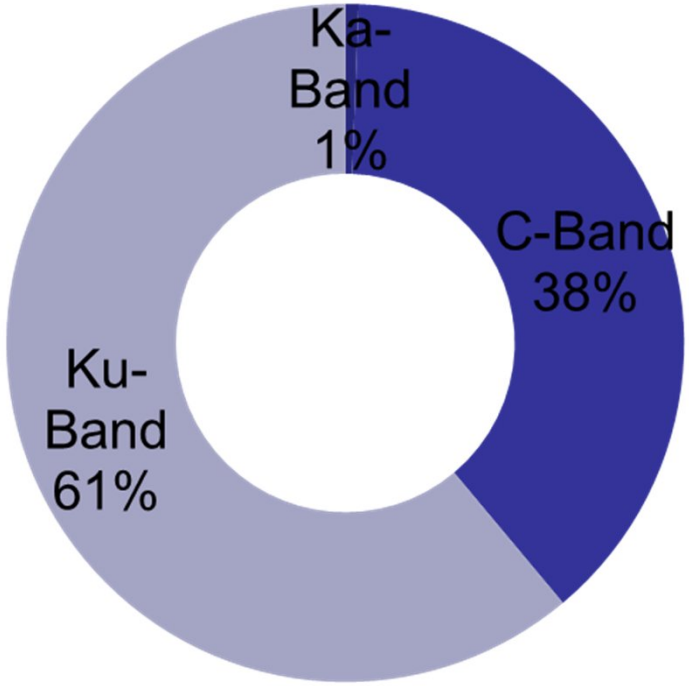


C-band Satellite Capacity in Context

- **The satellite industry has invested heavily in providing C-band capacity to Africa and continues to do so**
- **Of Intelsat's satellites alone 21 are providing C-band capacity over Africa**
- **Both C- and Ku-band capacity is in high demand over Africa and the fill rate of existing satellites is very high**

Global
Distribution of 36 MHz Transponder-equivalents per Band, Nov. 2011

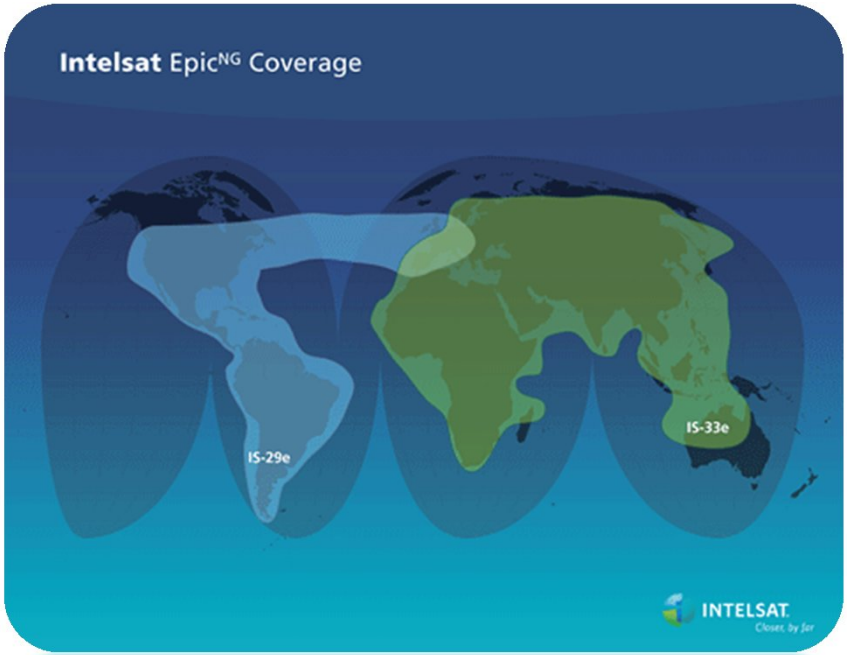
Total TPE 5,642



Source: NSR

Satellite Innovation in C-band

- **New high-performance satellite platforms will combine C-, Ku- and Ka-bands wide beams, spot beams, and frequency reuse technology to support broadband, media and mobility solutions**
  - **High performance and lower cost per-bit**
  - **Wide beams and spot beams in the same band for broadcast and high-throughput applications**
  - **Frequencies can be aligned to region and application-specific requirements**
  - **Supports open architecture and backward compatibility of network infrastructure**
  - **Forward compatible as ground technology advances**
  - **High throughput, efficiency and reliability enables smaller mobility-friendly terminals and benefits data-centric services like cellular backhaul**



Illustrative Concept

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The Uncertain Benefits of Terrestrial Wireless Broadband Systems in C-band

- C-band spectrum is much higher in frequency than the spectrum bands typically considered “prime property” for terrestrial mobile services
- The lower frequency radio waves transmit over longer distances and penetrate walls and buildings with much less attenuation, resulting in lower deployment costs
  - Fewer base stations at the lower frequencies are needed to serve a given area
  - This means that a terrestrial carrier in lower frequencies can build a nationwide network at much lower cost than a carrier operating at higher frequencies
  - Because of the higher cost structure, carriers operating in higher frequency bands would be at a competitive disadvantage relative to their rivals in the lower bands
- Therefore, it is less than clear that a nationwide mobile network could be competitively deployed in the C-band

=> Current deployment in and usage of existing frequency bands (including the 3400-3600 MHz) by terrestrial wireless services should be studied before looking for additional frequency bands for IMT/BFWA.

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Conclusion

- Critical satellite services are provided in C-band to South Africa
- Satellite bands in both C- and Ku-band are already being used heavily
- The benefits and characteristics of C-band for satellite services cannot easily be replicated with other bands, mainly Ku- or Ka-band
- Innovations in C-band allow for even higher frequency efficiency and throughput
- The demand for and suitability of C-band for terrestrial wireless services has yet to be proven
- Terrestrial wireless services should first start using assigned frequency bands before pursuing bands extensively used by existing services

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