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The mobile satellite company™

WBU-ISOG 2012

Bandwidth Optimisation on Inmarsat Satellites

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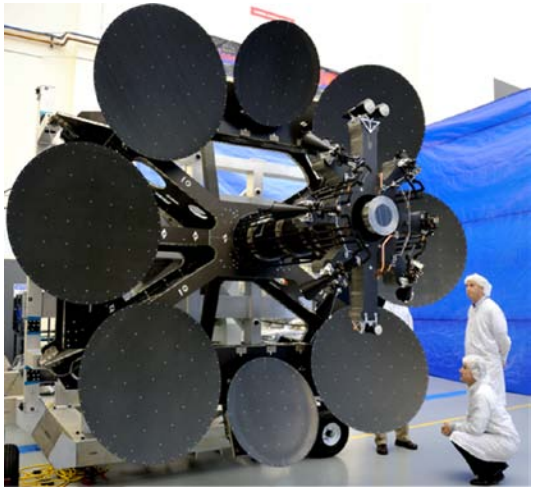
Major Developments

What is Inmarsat working on?

- L Band
  - Alphasat satellite scheduled to launch 2013
  - Improvements to modulation schemes (RAN 4.0)
  - Migration of fibre backbone from ATM to IP
- Ka Band
  - Inmarsat-5 F1 scheduled to launch Q3 2013
    - F2 and F3 to follow in 2014 providing global coverage
  - DVB-S2 based system
  - Significant increase in throughput
  - Major increase in fibre backbone capacity



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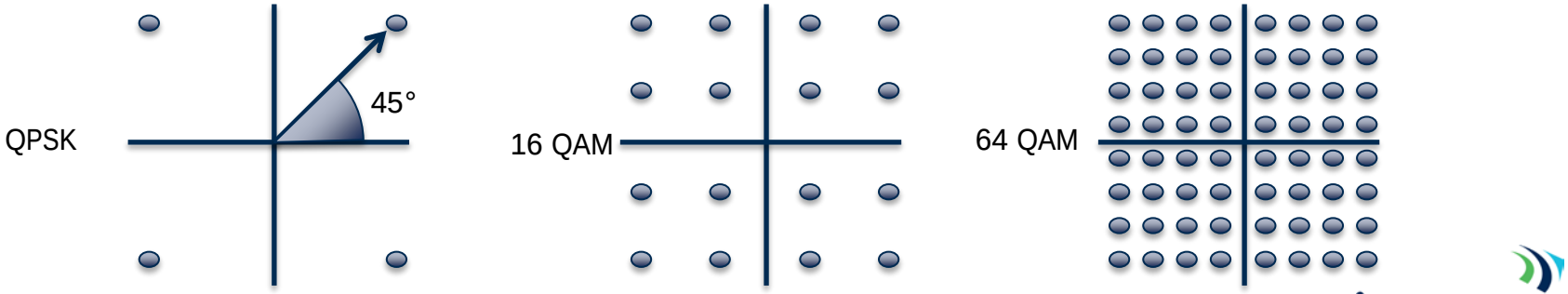
L Band Upgrades

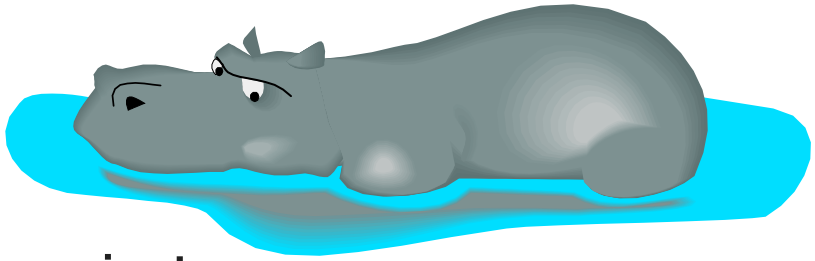
Advanced modulation techniques

- 32 & 64 QAM added to BGAN
  - Class 1 terminals extended to 650 kbps
    - New terminals, upgraded electronics – same form factor
    - Current BGAN uses QPSK and 16 QAM
      - X-Stream achieves close to 492 kbps (375 kbps guaranteed) using 16 QAM
    - HDR offers four times ‘bits per symbol’ with added coding to preserve quality
      - Higher rates possible with Alphasat

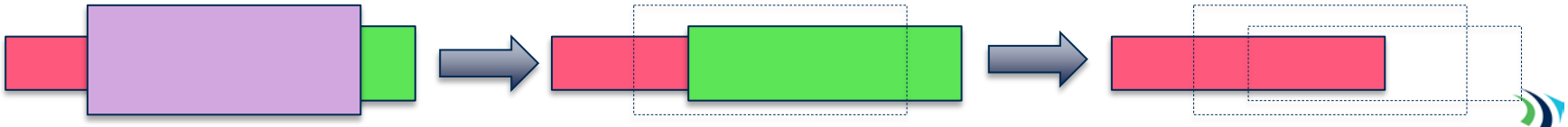


L Band Upgrades

Multi User Detection (MUD)



- Ability to demodulate ‘carrier on carrier’
  - Uses advanced coding techniques
  - Users allowed to burst at same frequency at same time
    - Demodulator detects and demodulates strongest signal
    - Demodulated signal subtracted from input
    - Next strongest carrier demodulated
    - And so on
  - Four fold frequency reuse achieved in commercial system
  - Currently limited to Low Data Rates (<64 kbps)
  - Future advances to higher rates possible



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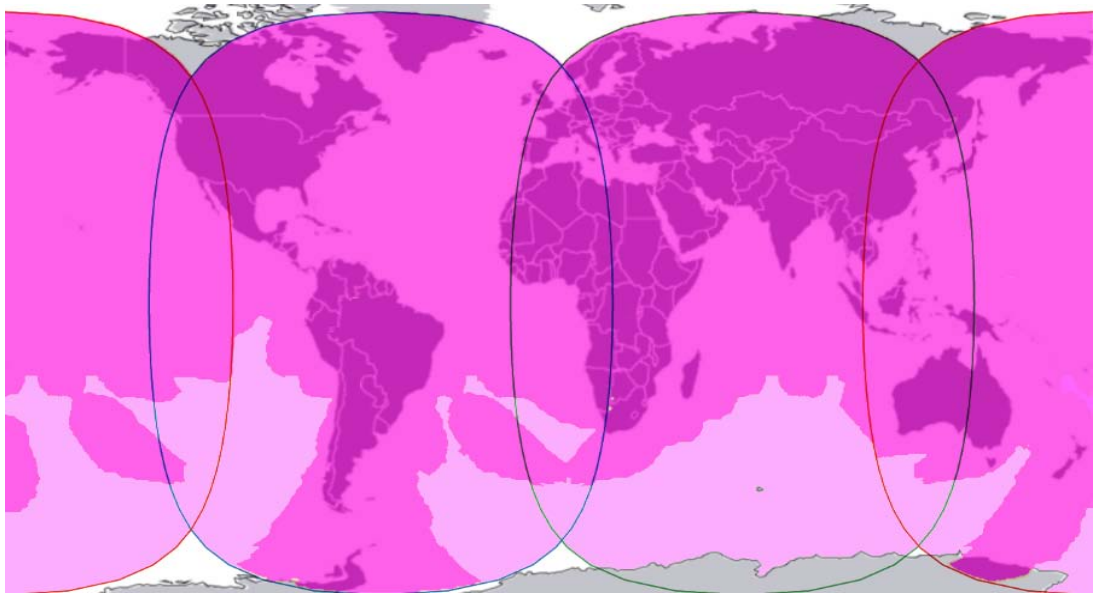
Global Xpress

Inmarsat moving to Ka Band

- Global Ka Band ‘on demand’ services in 2014
- iDirect based waveform
  - Small mobile/transportable terminals
  - High throughput

GX service available over at least 99% of the coverage area

Extended GX coverage via GX steerable beams



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Thank You

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