

INMARSAT-4 and THE DAWN OF A NEW ERA IN MOBILE COMMUNICATIONS

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Presentation Summary

- **An Introduction to Inmarsat**
- **The Inmarsat-4 Spacecraft**
- **Benefits brought to existing services**
- **The mobile revolution – Broadband Global Area Network (BGAN)**

Inmarsat



“Today we are the leader in the provision of mobile satellite communications”

“We are focused on increasing the range and the capabilities of our service offerings to drive demand and open new markets”

A Brief History of Inmarsat

- 1979 Inmarsat created as an Inter-Governmental Organisation (IGO)
- 1982 **Maritime** Services launched globally via leased satellites
- 1989 8,000 Inmarsat terminals: **Land Mobile** services introduced
- 1990 **Aeronautical** services introduced
- 1990/92 Four **Inmarsat-2** satellites launched
- 1996/98 Five new **Inmarsat-3** satellites launched
- 1999 Inmarsat is privatised – no longer an IGO
- 2003 Regional BGAN **Land Mobile** service launched
- 2004 Inmarsat registered terminal numbers exceed 350,000

Inmarsat clearly remains the world's leading provider of Mobile Satellite Communications via an extensive range of products and services.



Who is Inmarsat today?

- **A central infrastructure provider and airtime wholesaler:** Inmarsat provides the satellites and central infrastructure to provide global mobile communications
- **A member of a strong global partnership:** With Land Earth Station operators, distribution partners and service providers who provide their customers with the many services on offer
- **Part of a manufacturing alliance:** Inmarsat works with a wide range of terminal and equipment manufacturers to ensure end-user needs are met with quality equipment



Recent Events

» **End-2003:** Inmarsat Ventures majority acquired by funds advised by Apax Partners and Permira – two of Europe's largest private equity investors

» **2003:** Service growth results in revenues exceeding US\$500 million

» **2004:** Extensive BGAN preparations make excellent progress across all parts of business

» **Q1/2005:** The first *Inmarsat-4* satellite is launched, part of a US\$1.5 billion programme for new satellites and services

swift⁶⁴



Inmarsat and KDDI

- » **Original Founding Member:** In 1979, KDD was a founder Inmarsat Council member
- » **Major Contributor:** Commercial and technical strength of significant proportions provided to Inmarsat over the years
- » **1999 Inmarsat Privatisation:** KDD became a key Shareholder
- » **2003/04 PE Buyout:** KDDI retains 7.5% ownership of Inmarsat
- » **BGAN Programme:** In 2004, KDDI/KMsat were selected as a Launch Partner for introduction of BGAN services
- » **KDDI** is the only DP based in Japan and has been selected as a launch partner for BGAN

The Inmarsat Satellite Network

- 9 satellites in operational service today
 - 5 Inmarsat-3s
 - 4 Inmarsat-2s
- 1 Inmarsat-4 satellite being tested in orbit and prepared for service
- Very high levels of satellite and system redundancy
- Spare I-3 satellite available for primary network, if required
- 94 satellite years without operational failure
- Greater than 99.99% average network availability over past three years



Satellite Control Centre



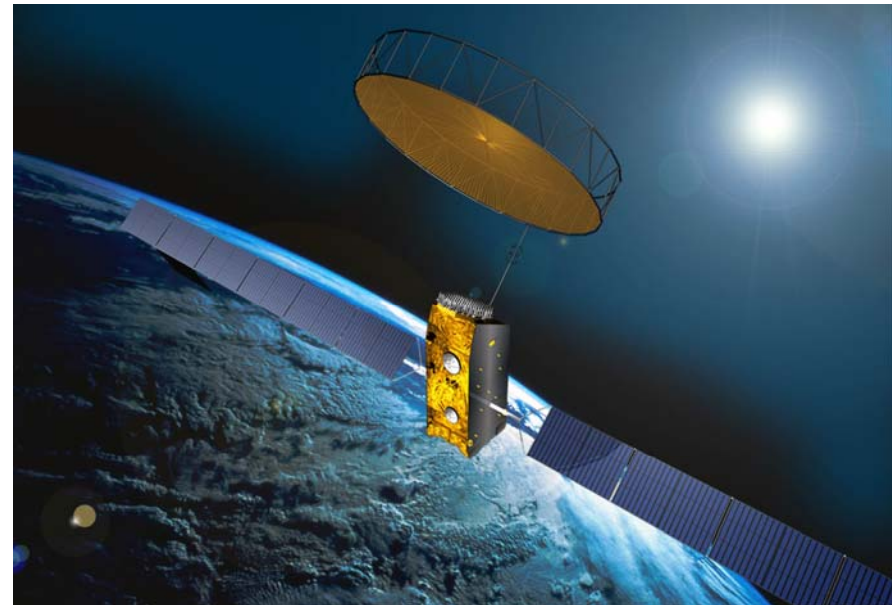
Network Operations Centre




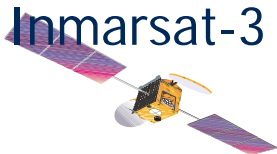
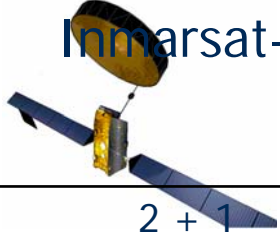
Inmarsat-4 Vital Statistics

The largest and most sophisticated commercial spacecraft ever built

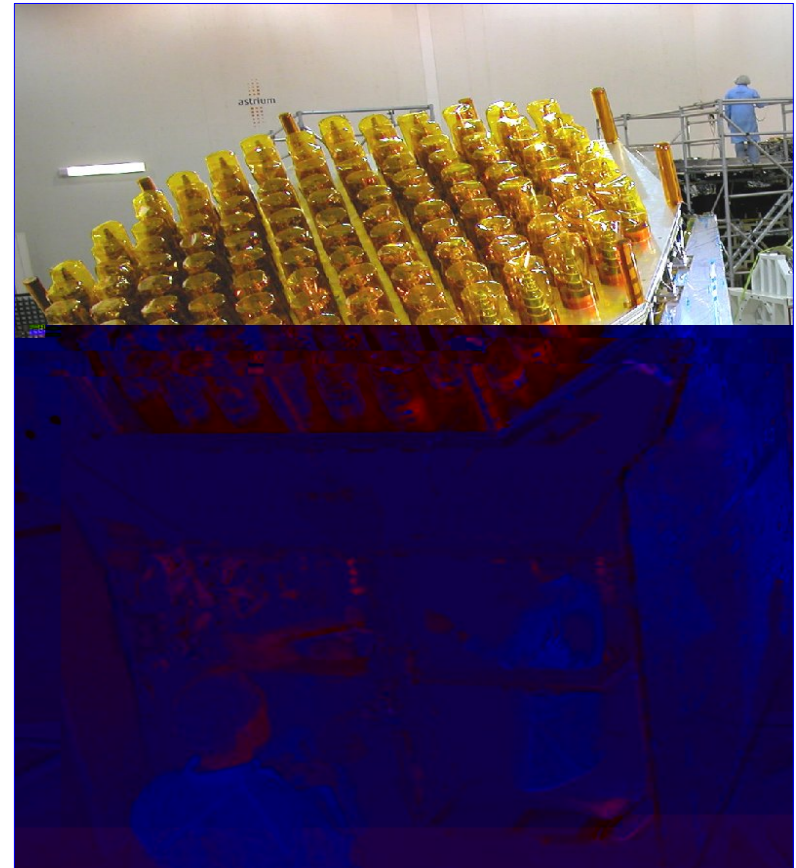
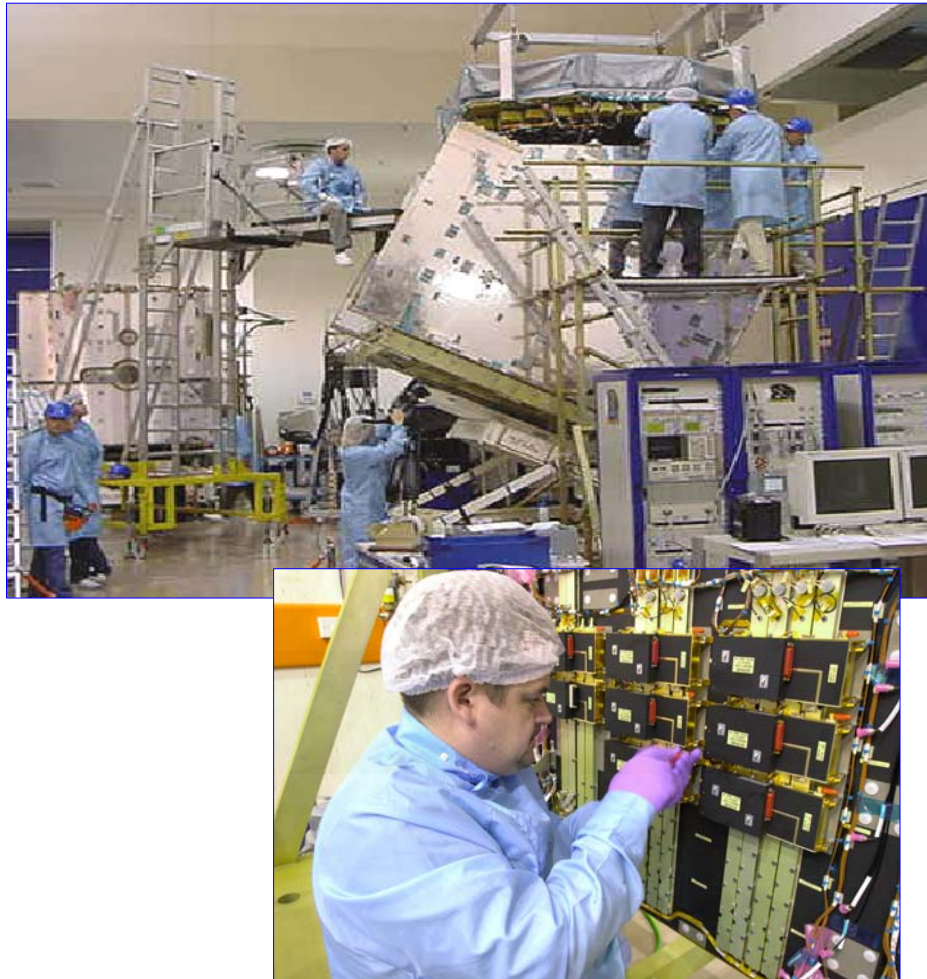
- Dry Weighed Mass 3340 kg
- Launch Mass of 5.959 metric tonnes
- 15 kW (BOL) DC power, of which ~9 kW is for the Payload
- Key dimensions:
 - Body 7 m x 2.9 m x 2.3 m
 - Solar Array span: 45 m
 - Body to reflector span: over 18m
 - 9 m aperture reflector
 - 2.5 m feed with 120 elements



Inmarsat Satellites

	Inmarsat-2 	Inmarsat-3 	Inmarsat-4 
No. Satellites	4	5	2 + 1
Coverage	1 Global Beam	7 Wide Spots 1 Global Beam	228 Narrow Spots 19 Wide Spots 1 Global Beam
Mobile Link EIRP	39 dBW	49 dBW	67 dBW
Channelisation	4 channels (4.5 to 7.3 MHz)	46 channels (0.9 to 2.2 MHz)	630 channels (200 KHz)
S/C Launch Mass	1500 kg	2050 kg	5959 kg
Solar Array Span	14.5m	20.7m	45m
Voice (4.8kbps)	250	1000	18000
M4 (64 kbps)	N/A	200	2250
BGAN (432kbps)	N/A	N/A	>600 channels
Navigation Payload	No	Yes	Yes

Inmarsat-4 payload



F1 and F2 Spacecraft in Assembly



Fully integrated



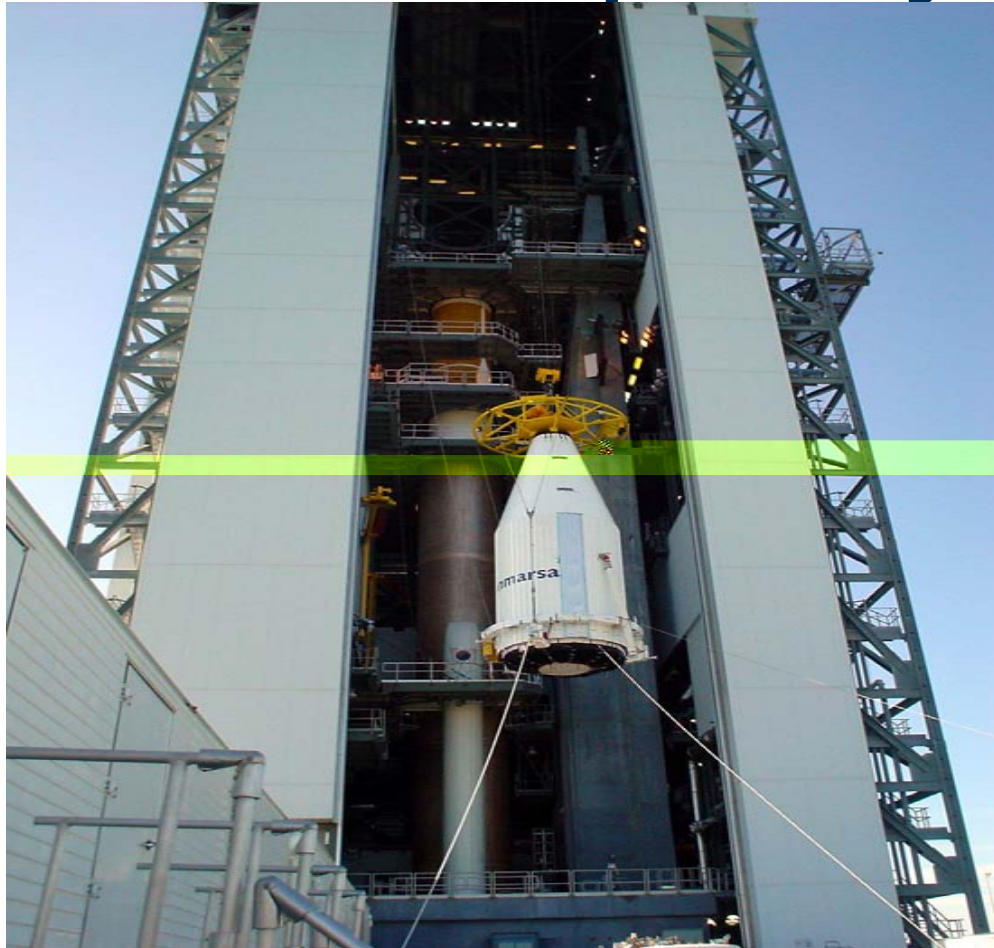
Spacecraft Encapsulation into Atlas Fairing



Moving the spacecraft at Cape Canaveral (an early morning trip)



A mind boggling number of millions of dollars held in place by ropes



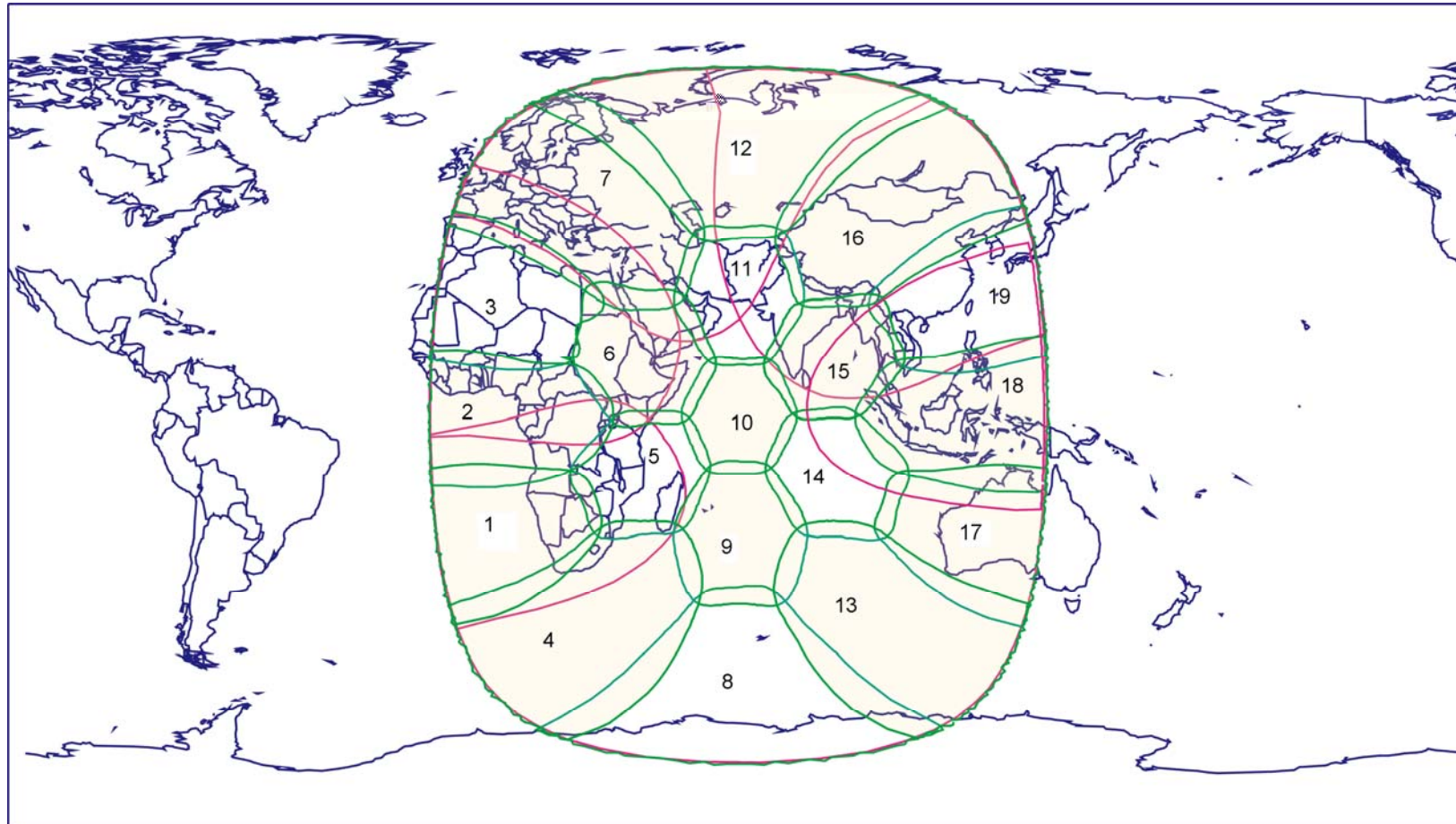


...and finally
on top of the
Atlas V
second
stage!





Inm-4 vs. Inm-3 Coverage - IOR

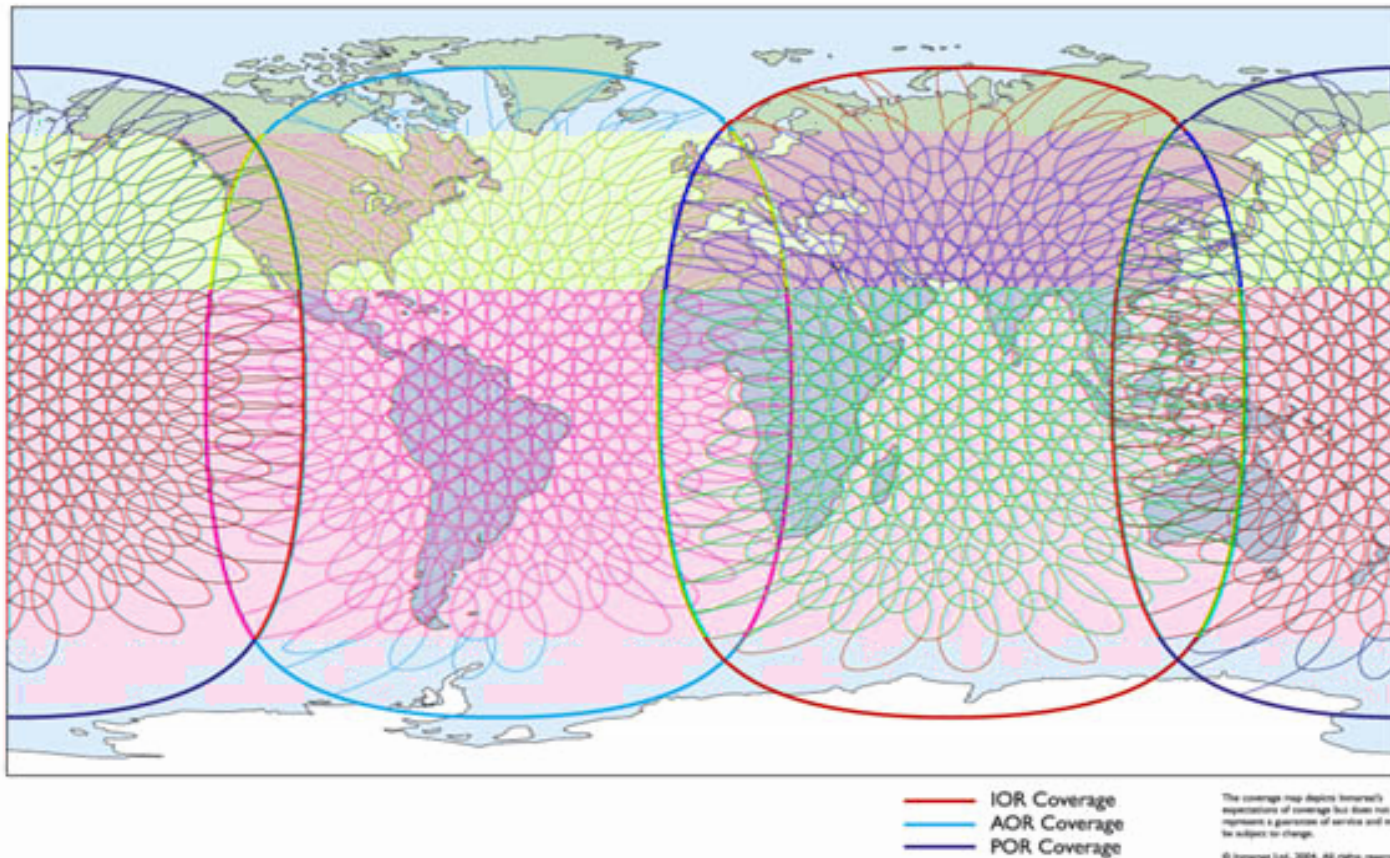


I-4/BGAN Worldwide Baseline Coverage

F2 Spacecraft
53°E

F1 Spacecraft
64°E

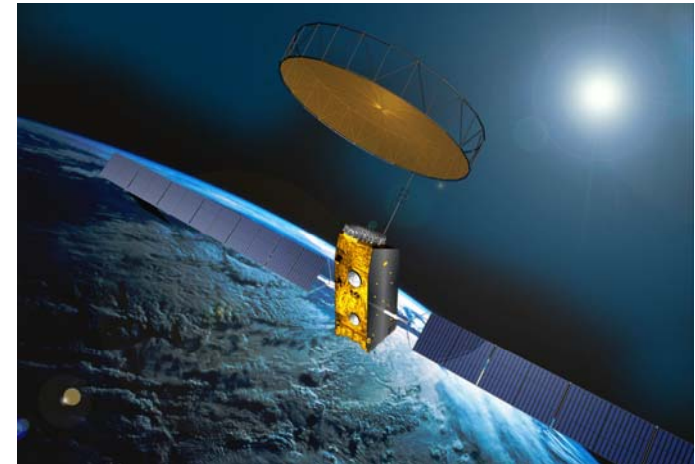
F3 Spacecraft
178°E (tbc)





What the I-4 Programme Represents

- I-4 represents a new era for Inmarsat
- Reinforces Inmarsat's commitment and it's position as the world leading satellite communications provider
- I-4 enables Inmarsat to offer more affordable satellite communications than ever before
- Opens up access to broadband to new geographical and industry markets
- The I-4 satellites will propel a whole new generation of broadband mobile satellite services into the market



Broadband Global Area Network

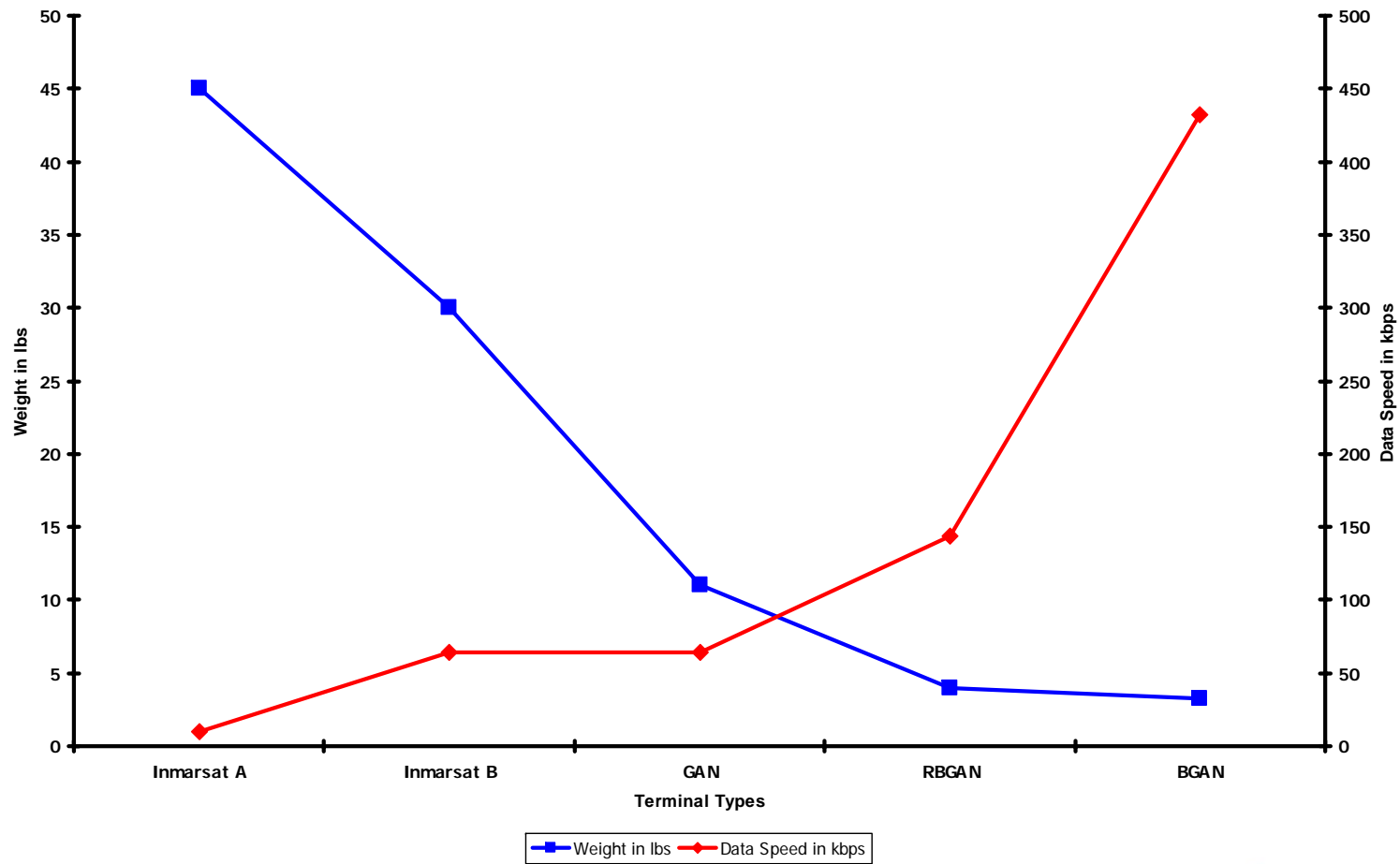
Enabling Business Everywhere with a Global 3G network

- **High quality voice**
 - One number, accessible globally
 - Supplementary Services (3G Network)
 - E.g. Caller ID & Phonebook, voice-mail, call re-direct etc.
- **ISDN data – 64Kbps**
- **IP Data – up to 432 Kbps** (shared channel)
- **SMS** (short message service)



Broadband for a Mobile Planet™

Lighter Terminals, Faster Speeds



An initial range of 4 terminals

				
Size	A5+	A5	A4	A4+
Weight	1 – 1.25 kg	< 1 kg	1.5 kg	2.2 kg
Manufacturer	Add Value	Nera	Thrane & Thrane	HNS
IP Data	216/72 Kbps	216/72 Kbps	432/144 Kbps	432/432 Kbps
CS Data	-	-	3.1kHz audio	64 Kbps ISDN
Voice (4kbps)	Yes	Yes	Yes	Yes
Interfaces	USB RJ11 (Voice) Ethernet Bluetooth (Voice)	USB Ethernet Bluetooth (Voice)	USB Ethernet Bluetooth (Voice)	USB RJ 11 (voice) RJ45 Ethernet WiFi
Environmental	IP 42	IP 44	IP 44	IP 55

Applications

- Video Conferencing
- Video streaming
- Remote-LAN
- Messaging
- Internet / www.
- Location Based Services
- Global extension of existing 3G applications
- Often require a high degree of integration

BGAN is designed to support

- All main computer operating systems
 - Windows 98se/2000/XP
 - Mac OS 10.1 onwards
 - Linux
- VPN
 - Cisco / Nortel / Netscreen / Checkpoint
- Email
 - POP3 / SMTP / IMAP
- H.323 based applications

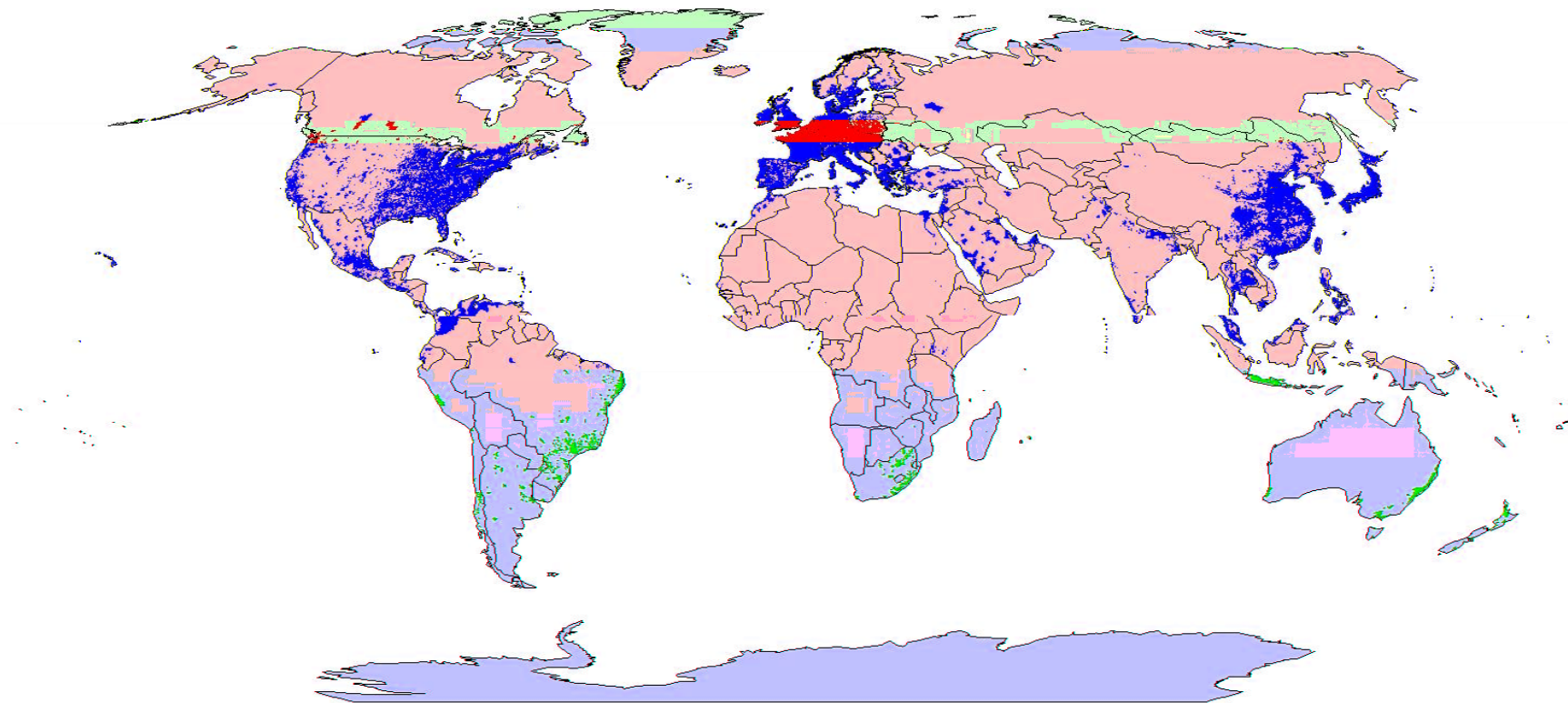
What are the trends in mobile data?

- Increase in use of mobile devices
- Increase in mobile working
- Increasing need to connect to corporate networks from anywhere
- New need for seamless, high-speed mobile data solutions
- Any application, any device, any place

- Incomplete coverage
- Lack of reliability
- Low bandwidth

Source: Gartner Group

High-speed terrestrial mobile data coverage will be far from ubiquitous



Forecast high-speed terrestrial mobile data coverage, 2010 (Source: Analysys)

I-4 / BGAN Key Benefits

- Coverage*** 85% of world's landmass with 2 satellites, covering 99% of world's population
- Reliable*** Dependable, peace of mind communications. 24/7 customer service.
- High Speed*** Replicate your office environment on the move.
- Flexible*** 3G Reliability. Integrated solution for voice, data and video. Supports IP and circuit-switched applications. Single/multi-user environment.
- Simple*** Easy to set up, use and support. Consistent user experience worldwide.
- Rugged*** Designed for challenging climatic conditions.
- Secure*** Fully encrypted to DoD Standards giving secure access to corporate VPNs.



A spectacular launch to pave the way for a revolution in mobile satellite communications!

Inmarsat-4 and BGAN

BROADBAND FOR
A MOBILE PLANET™

