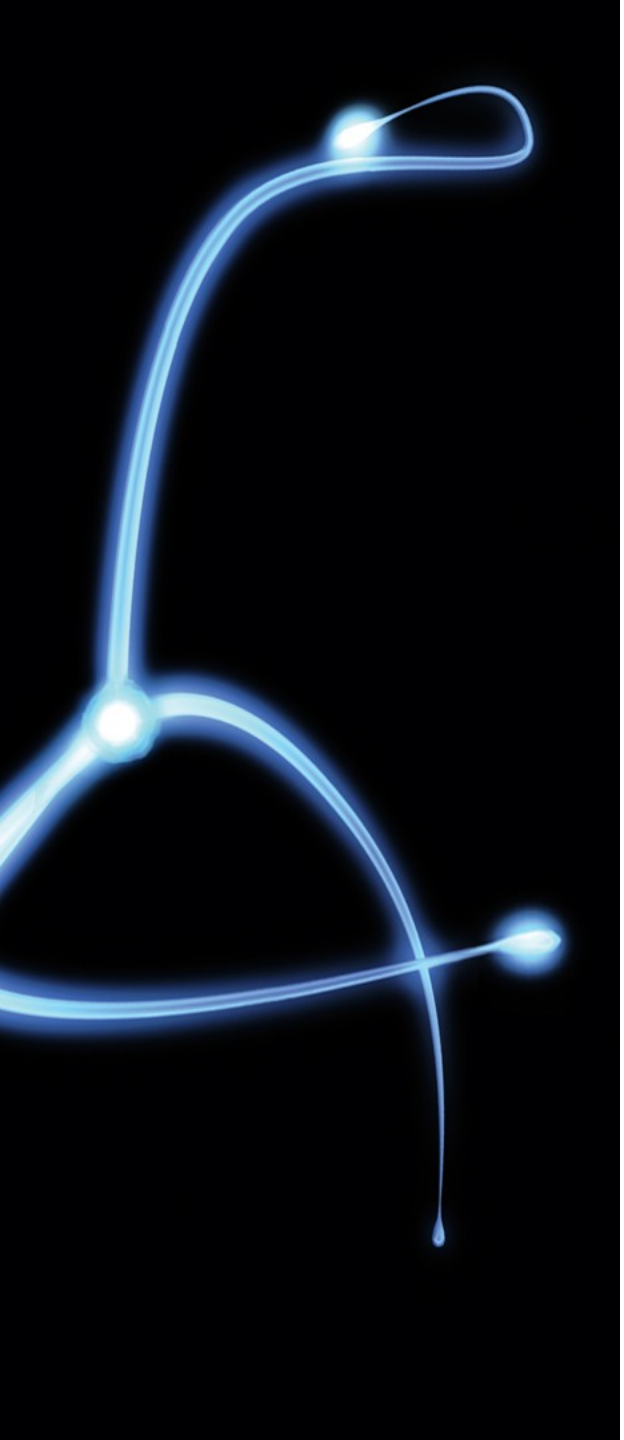

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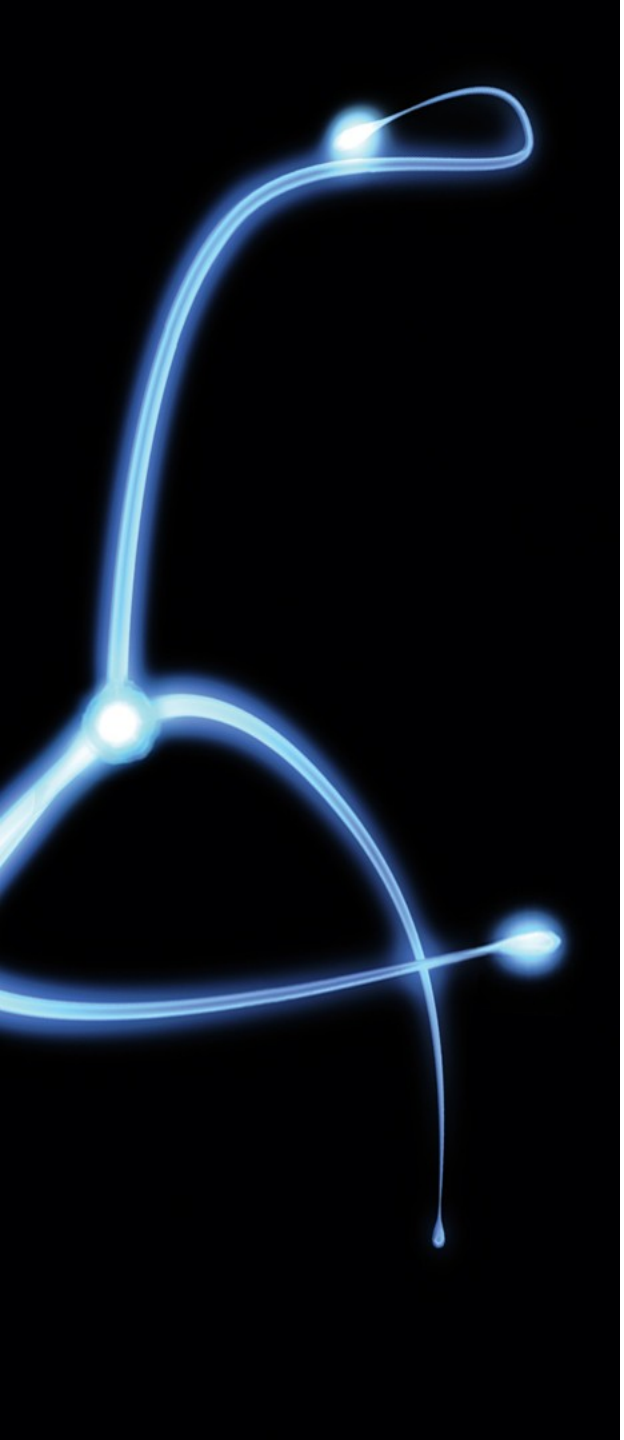
Development Dynamics in Mobile Broadband Satellite and Hybrid Wireless Applications

GVF MENASAT Summit @ Satellite MENA 2010

Dubai, March, 2010

Rashid Ahmad
Thuraya Telecommunications Company

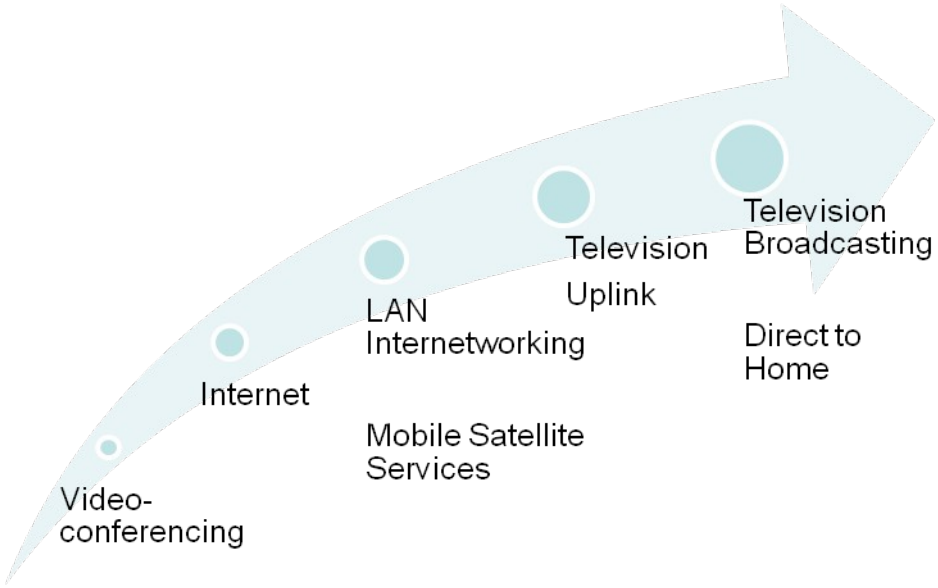


Contents

Evolution of broadband over satellite

Satellite industry has been continuously evolving

The customers, the applications they use and the bandwidth these applications demand have been driving the evolution of satellite industry



C, Ku and Ka band are widely used

Where is the growth

- 1.2 Mn broadband satellite users in 2008
- Expected to grow to 10.5 Mn users by 2018
- Approximately a total of 50 commercial GEO satellites ordered in 2008 and 2009
- Huge growth expected in Ka band with new systems and larger capacity
- North America, Europe and MENA key growth markets
- Key applications include digital broadcasting, satellite imagery for security and environmental applications.

Euroconsult 2009 report

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L-Band as Enabler

L-Band services are very critical for a variety of user segments

L-Band Mobile Satellite Services enable users to effectively build and complete their network to meet their regional as well as pan regional needs

Market Segment	Typical Challenges
Media 	How to be the first one to broadcast the breaking news? How to escape the congestion trap? How to equip the field reporters with lighter and more powerful communication devices?
Government 	How to communicate with small robust terminals? How to orchestrate rescue teams using different communication devices? How to ensure confidentiality and interoperability?
Oil & Gas 	How to have a reliable and dependable communication network in the harsh challenging environment? How to ensure very fast deployment of communication network?

ThurayaIP - the leading mobile satellite broadband terminal

Product Features and Capabilities

Power packed, light, compact, portable and very user friendly terminal to meet varying customer requirements – 4th generation Hughes terminal

ThurayaIP Product Features

- Upto 444 kbps bandwidth on StandardIP
- Upto 384 kbps bandwidth on StreamingIP
- Light weight (1.3 kg)
- Robust (IP 55)
- Ethernet interface (RJ45)
- USB interface
- WLAN connectivity
- Plug and Play
- No software installation required

ThurayaIP Advantages

- World's first Mobile Satellite IP modem to support 384K Streaming service
- Flexible uplink / downlink StreamingIP bandwidth feature ensures huge cost savings
- No congestion in hot spots
- Control on costs through cost effective and efficient usage plans
- Antennas suited for land, maritime as well as vehicular applications

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Situations to manage in disaster relief

Disaster management

Destruction and disruption of telecommunications services always hampers rescue operations after a natural disaster

- 2003 Iranian earthquake in Iran killing at least 30,000 people
- 2004 Tsunami in Asia killing 230,000 people in 11 countries
- 2005 Hurricane Katrina in the US claiming more than 1800 lives
- 2006 Tsunami off the south coast of Java killing 730 people
- 2007 Cyclone in Bangladesh causing over 2000 deaths
- 2008 Earthquake in Sichuan China killing at least 68,000
- 2009 Floods in Queensland and the fires in Victoria

All have something in common

The destruction and disruption of telecommunications services, following the disaster, severely hampered the efforts of relief workers all of whom arrived on scene with different means of communication that were not interoperable between different agencies.

Challenges for Governments

- Effectively manage disasters is a key element in good governance
- Sound preparation to respond to disasters
- Source scattered information on the ground from various sources to get the big picture and take the right decision
- Coordination and information sharing in the field for multiple agencies and teams to orchestrate disaster relief efforts effectively

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Thuraya NettedComms

Efficient hybrid wireless application

Thuraya NettedComms is a hybrid solution for communication within pre-defined user groups integrating different telecommunication technologies (Sat, GSM, PSTN & Radio)

NettedComms Schematic

Features

- A unique government solution that enables you to talk instantly to a pre-defined group of users at the press of a single button.
- Integrates different communications technologies (Thuraya Sat, GSM, PSTN and Radio) into a coherent IP- based network for reliable voice communications.
- Uses leading edge Voice over Internet Protocol (VoIP), providing a flexible solution that is modular and easily deployed over fixed or satellite networks.

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Thuraya Lease

Thuraya Lease Overview

Dedicated capacity service specially created for government/military users to minimise the limitations of existing systems allowing “follow me lease” and flexible bandwidth allocation.

Dedicated bandwidth: Available on demand in chunks of 64K upto 384K per terminal

Follow-me-lease: Coverage extends from Europe to Australia in more than 140 countries. Covers all the major military hotspots. The user can roam throughout the contracted satellite footprint, with availability not limited to a spot-beam

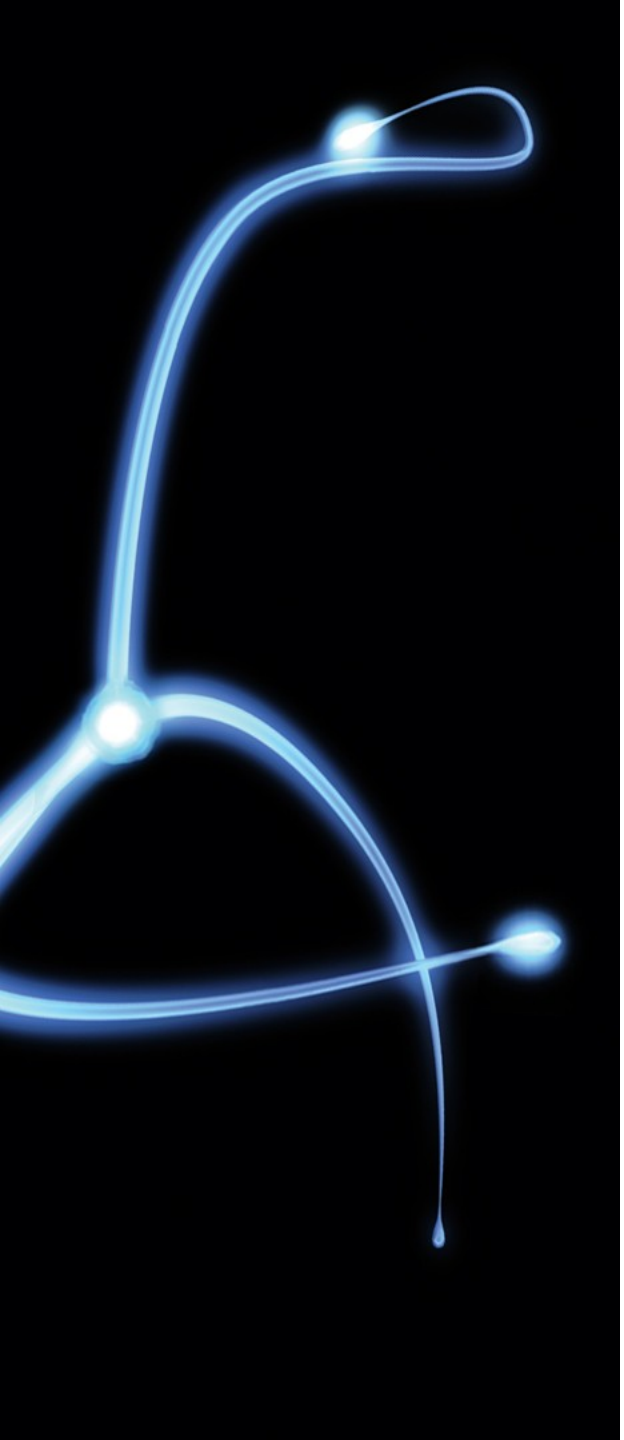
A5 size terminal: High beam power means smaller user terminals – critical for military use. Dynamic allocation ensures immediate allocation of satellite resources for the customer.

Flexible: The user can add any number of terminals to a lease. Each terminal can be provided the bandwidth from 16 K to 384 K depending upon the requirement of the customer.

Conclusion

Thuraya – Enhancing your reach and network

- While there have been considerable developments in the broadband satellite industry and associated hybrid wireless applications, significant developments are still expected especially in the Mobile Satellite Services arena.
- Huge growth expected in Ka band with much larger capacity and introduction of new systems
- L-Band MSS have been complimenting the FSS by effectively addressing the gaps in the delivery of existing satellite solutions.
- Thuraya can complement the broadcasters, enterprises and consumers by offering satellite broadband connectivity which can be easily integrated with their hybrid wireless solutions, whenever and wherever they require.



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