

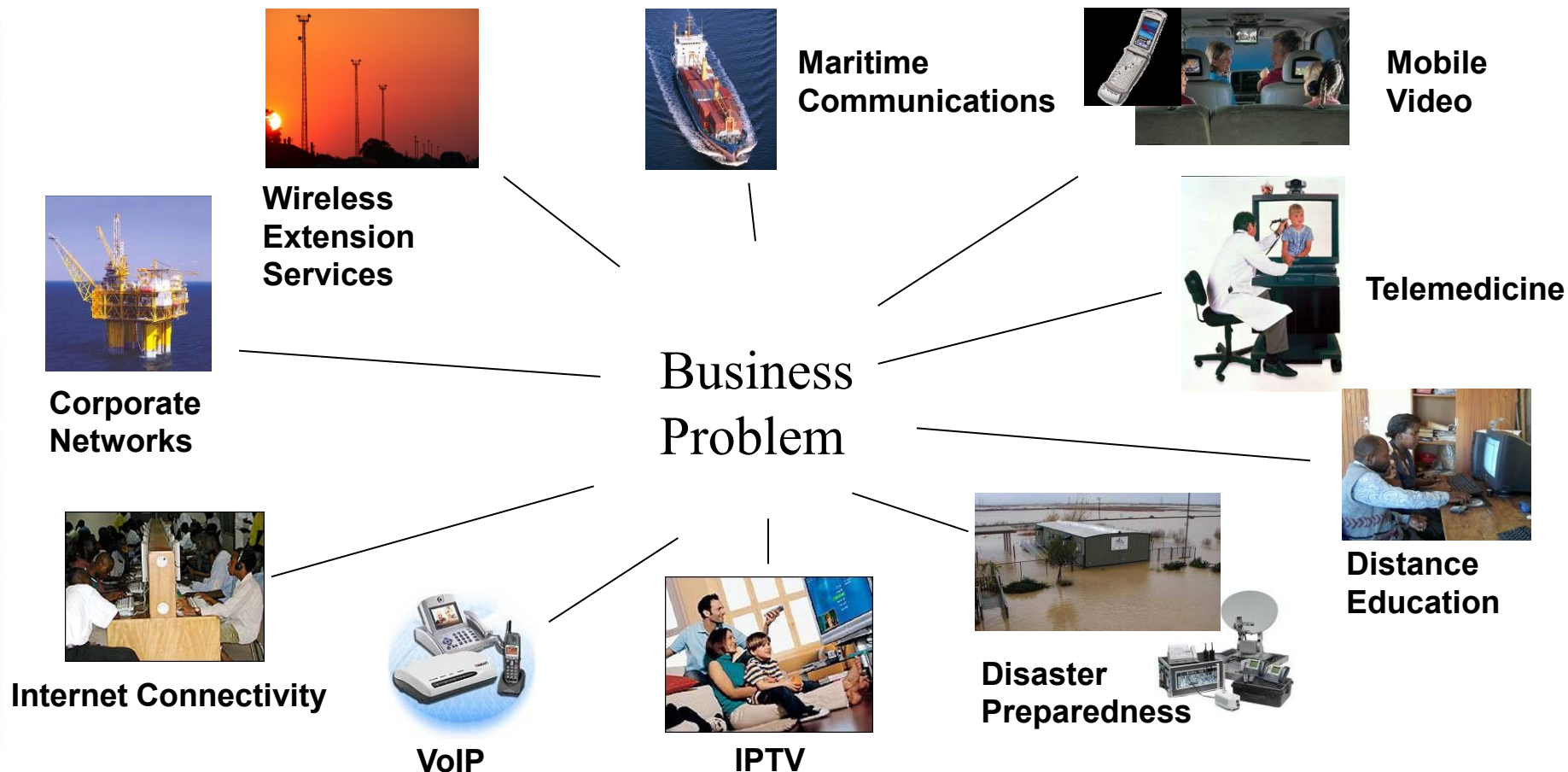
Connecting Africa

ITSO Training

Eldo Kurian
Senior Principal Customer Solution Engineer,
INTELSAT Africa



Leading Applications Driving Business Growth



Addressing Customer Requirements Across Leading Growth Applications



Fixed and Wireless Infrastructure

+35 Gbps*

12% CAGR

Leverages existing infrastructure

Higher efficiency allows further geographic penetration and data growth

Corporate Networks

+40 Gbps*

10% CAGR

Increased efficiency enhances broadband performance on existing satellite ground infrastructure

Energy & Maritime

+20 Gbps*

24% CAGR

Highly reliable broadband with high throughput on single global platform creates operating efficiencies for service providers

Government & Military

+38 Gbps*

12% CAGR

RPAs, other ISR requirements and COTM will benefit from higher throughput on existing hardware regardless of location

Media

48 Gbps*

5% CAGR

Custom high throughput beams for super headend distribution; micro beams for regional content



Growth projections from 2010 – 2020. Sources: Futron and NSR

INTELSAT.



Intelsat Epic^{NG} Value Proposition

Flexibility across All Applications



North America



Maritime +7 Gbps



Aero +4 Gbps

Europe & MENA



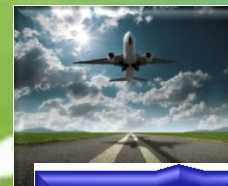
Enterprise
+23 Gbps



CBH +9 Gbps



DTH +18 Gbps



Aero +7 Gbps



Military +25



Maritime
+12 Gbps

Americas



Enterprise
+9 Gbps



CBH +6 Gbps

Sub Sahara Africa



Enterprise
+6 Gbps



CBH +19 Gbps

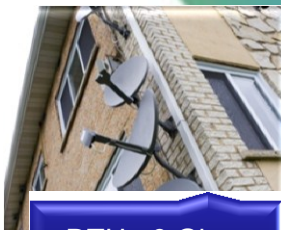
Asia



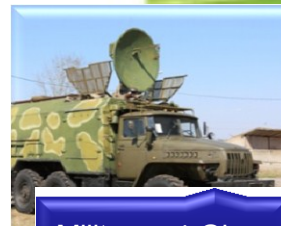
Enterprise
+14 Gbps



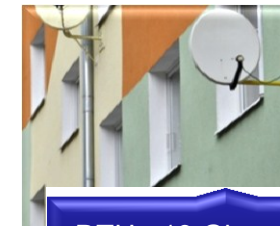
CBH +12 Gbps



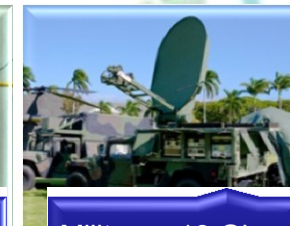
DTH +6 Gbps



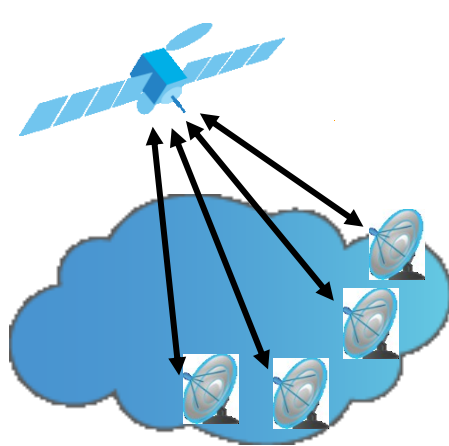
Military +4 Gbps



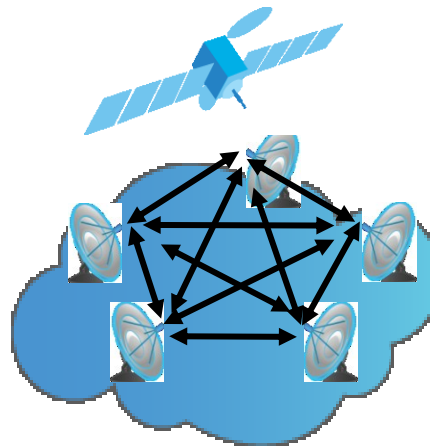
DTH +13 Gbps



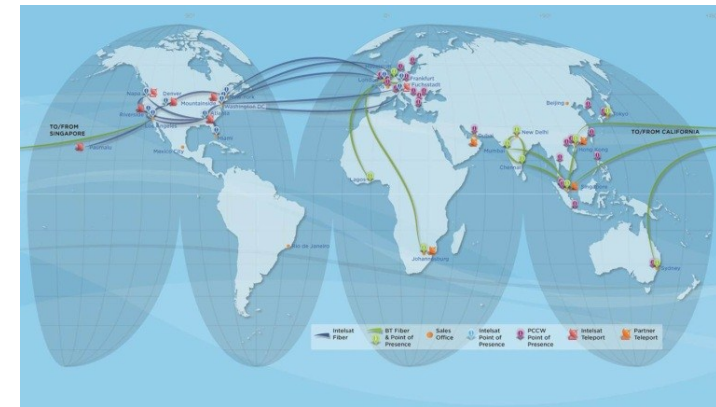
Military +18 Gbps



Star Topology



Mesh Topology



Terrestrial Network

Connectivity

- Multi-band capability
- Supports star, mesh & loopback topologies
- Integrated terrestrial infrastructure

Customer Applications in Four Sectors

MOBILITY



INNOVATIVE GOVERNMENT



MEDIA



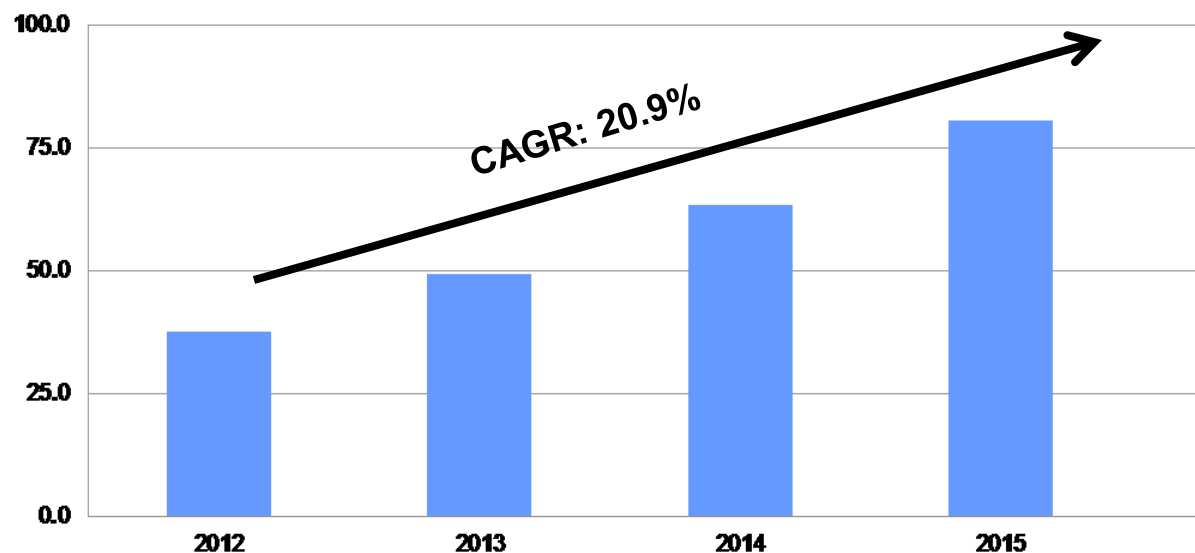
FIXED AND WIRELESS BROADBAND NETWORKS



SATELLITE & TERRESTRIAL INFRASTRUCTURE & SERVICE-SPECIFIC APPLICATIONS

Broadband Penetration & Speeds Increasing... Leading to an Explosion in IP Traffic

Global IP Traffic – EB per Month



Source: Cisco

- Global IP traffic is expected to more than double between now and 2015
- Global mobile data traffic will grow three times faster than fixed IP traffic

Mobile, Internet, & Population Statistics - 2011

Region	Mobile Penetration Level (% of Pop)	Internet Penetration Level (% of Pop)	Population (Millions)
Africa	55.7%	11.4%	1,100
Asia Pacific	79.4%	24.1%	3,900
Latin America	105.5%	36.2%	594
Middle East	104.4%	31.7%	277
Europe	131.6%	58.3%	820
U.S./Canada	95.6%	78.3%	347

Global internet usage through mobile devices, and overall demand for connectivity, drives demand for Intelsat capacity

Source: StatCounter – February 6, 2012

Connecting Rural Africa...



The Question is...

... is Africa ready to connect Rural Communities

Coverage

- 99.9% of Africa has access to Broadband coverage TODAY.

Connectivity

- <3% of Rural Africa is connected TODAY.

Converged Delivery Models

- Terrestrial
- Fiber/Cable
- GSM/3G/LTE
- Satellite

Desire and Investment

- Broadband Connectivity to Rural Africa is possible TODAY.
- Use of USF to fund Converged delivery solutions for Rural Connectivity projects is Required.



Connecting Rural African – Sector Focus

Broadband Network Access Networks

- **Satellite Provides Affordable and Flexible Critical Network Infrastructure**
 - Limited CAPEX requirements
 - Investment in Access Equipment Only
- **Ubiquitous Broadband Connectivity**
 - 100% Markets/Populations Covered Today
- **Highly Reliable Networks** – “No Cable Cuts”
 - +99% Network Availability Rates
- **Flexibility Architecture**
 - Supports “thin route” Consumer Connectivity to “thick route” Commercial Applications.
- **Enables eGov Initiatives** to be delivered to the all size markets Today... Equally!
 - eSchools, eHealth, eGov/ICT, Cloud Services



But Satellite..... It's Expensive Right!!

Not really....

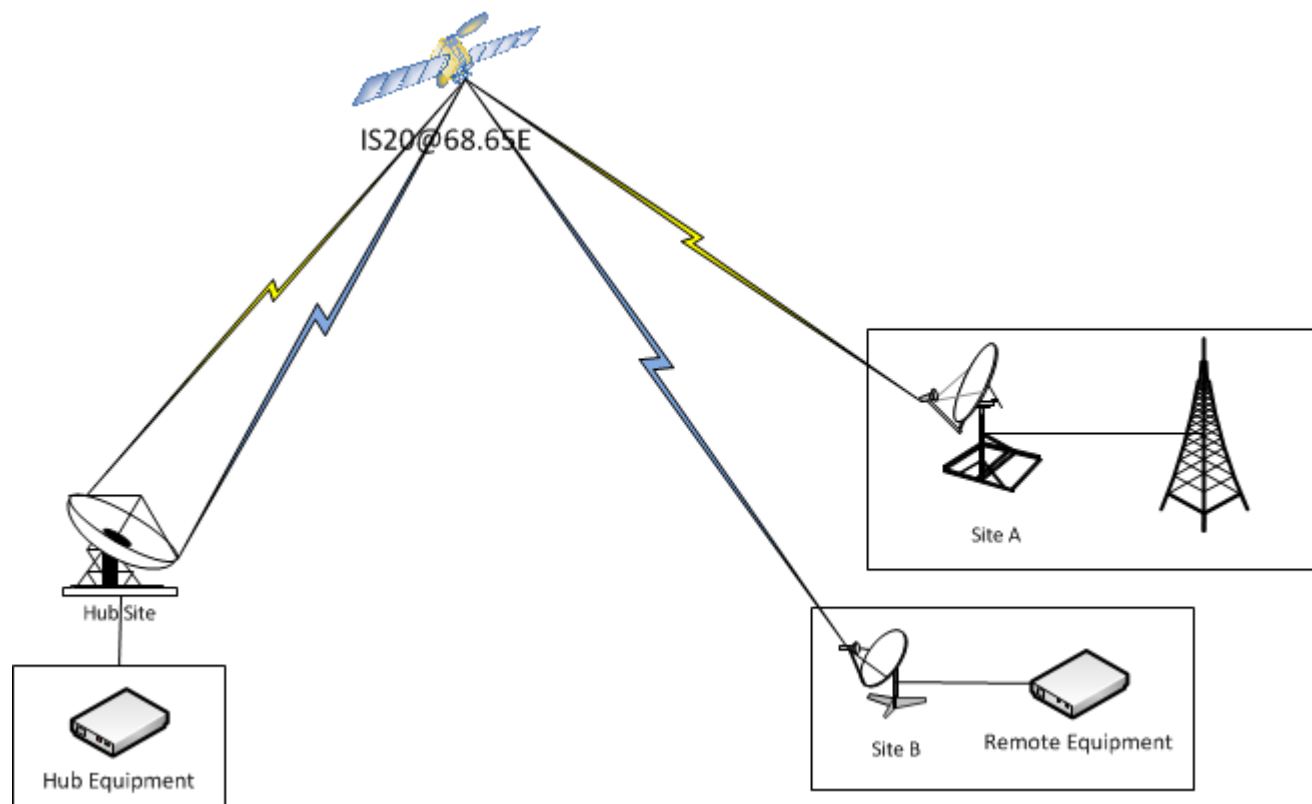
- **No Critical CapEx Infrastructure Investment Required.**
 - Satellite offers:
 - Scalable / Flexible Network Architecture
 - Ubiquitous Coverage
- **New Technology enables Significantly Improved Throughput & Efficiencies**
 - Cost of Delivered Mbps is Reduced
 - Total Cost of Applications / CPE prices reduced / Overall Deployment Cost Low
- **A Critical Component of a Converged Delivery Model**
 - Satellite enables countries to deliver Broadband to 100% of their population.
 - Satellite is complementary to other types of terrestrial and GSM delivery methods.





The Next Generation of Satellites

Trends in Satellite Communication



Trends in Satellite Communication

- **Equipment**

- Better processing power
- Improved Symbol rates to take care of larger transponders
- Improved filters (eg. Novelsat reducing carrier spacing to 5% compared to 40%!)

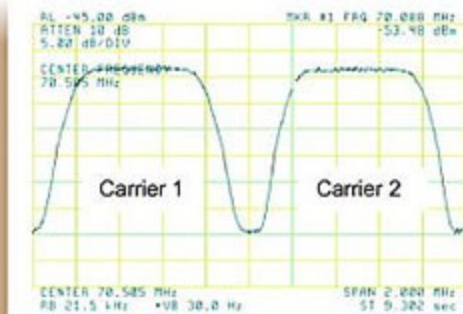
- **Space Segment**

- Carrier in Carrier (with DVB-S2 and ACM)
- Techniques (LDPC, 2D-16 state)

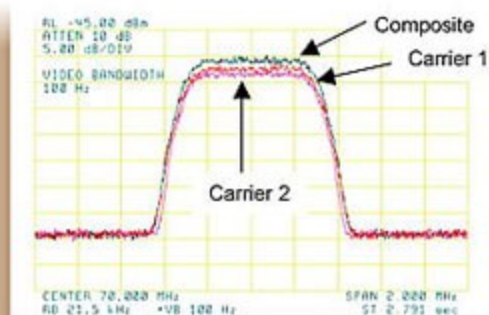
- **Satellite**

- Frequency Re-use allows for more cost-effective solutions
- Switching capability on satellite (EPIC)
- Payload sharing with defense (eg. Australian defense to use IS22 UHF payload on IS-22)
- Internet Routing in Space (eg. Cisco sends router to space using Intelsat-14)

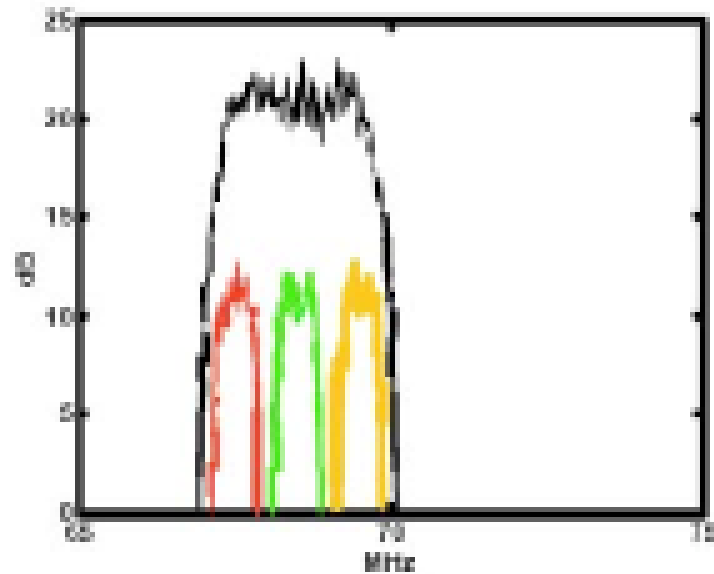
Carrier in Carrier



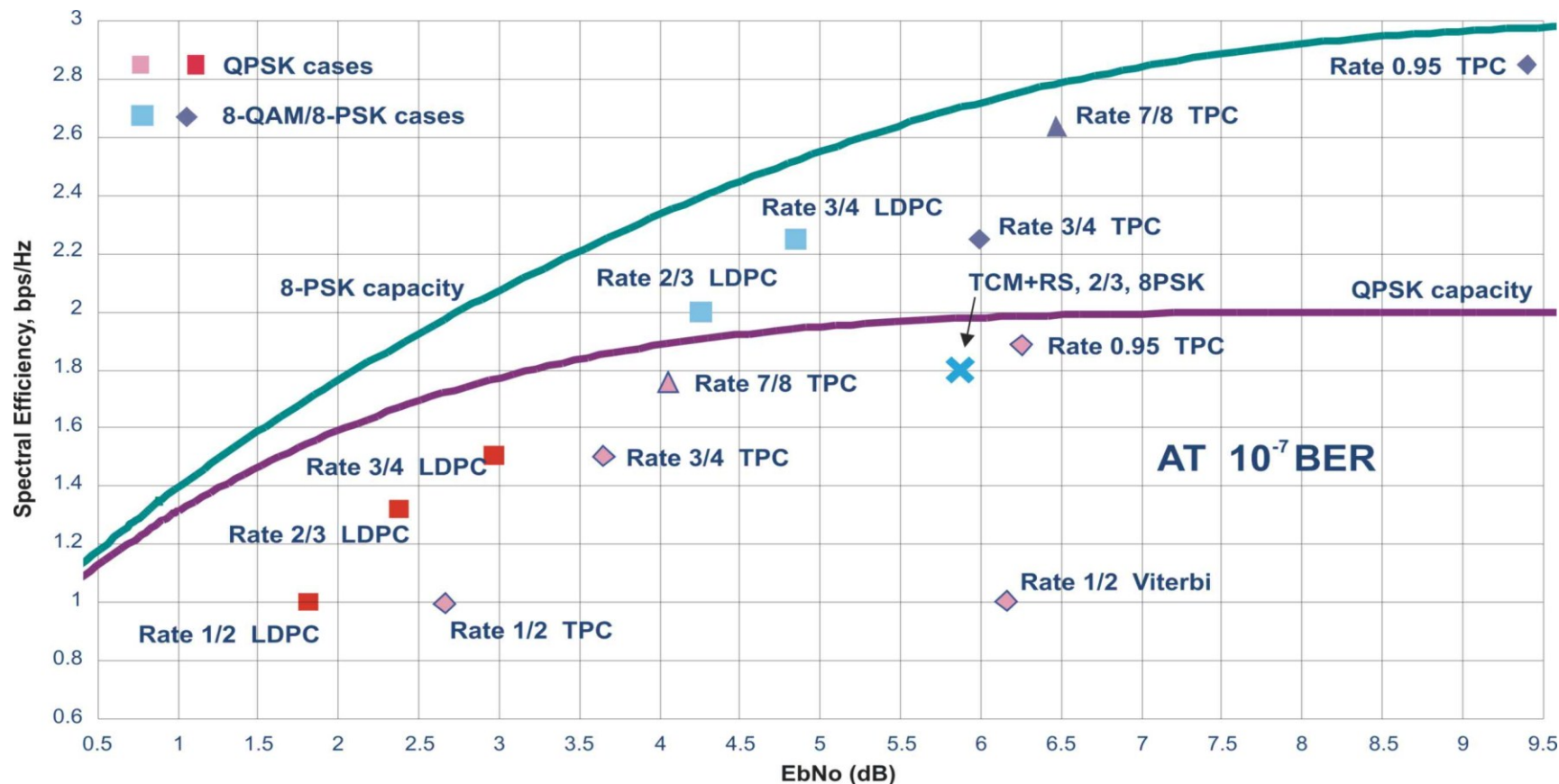
Without DoubleTalk Carrier-in-Carrier



With DoubleTalk Carrier-in-Carrier



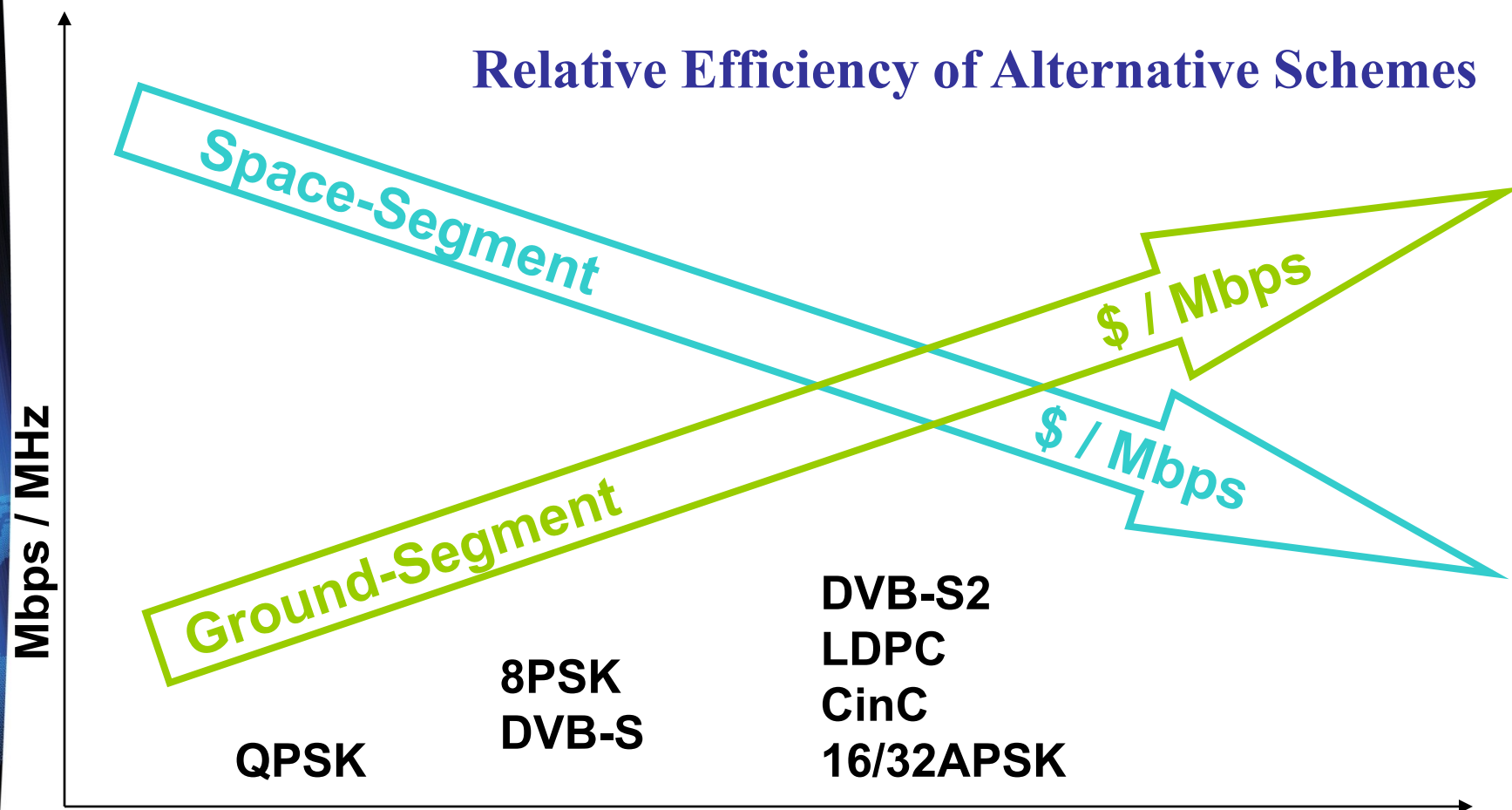
Spectral Efficiency vs. Eb/No



Which Network is Best for My Network?

Total Cost of Ownership (OPEX Vs CAPEX)

Relative Efficiency of Alternative Schemes



Cost of Deployment



Satellite Trends – Ka band Satellites

- **Frequency Re-use allows for more cost-effective solutions**
 - Frequency range of 30/20 GHz
 - Spot beams with good EIRP and G/T
- **Ideal for consumer applications**
- **Provides high throughput**



Satellite Trends

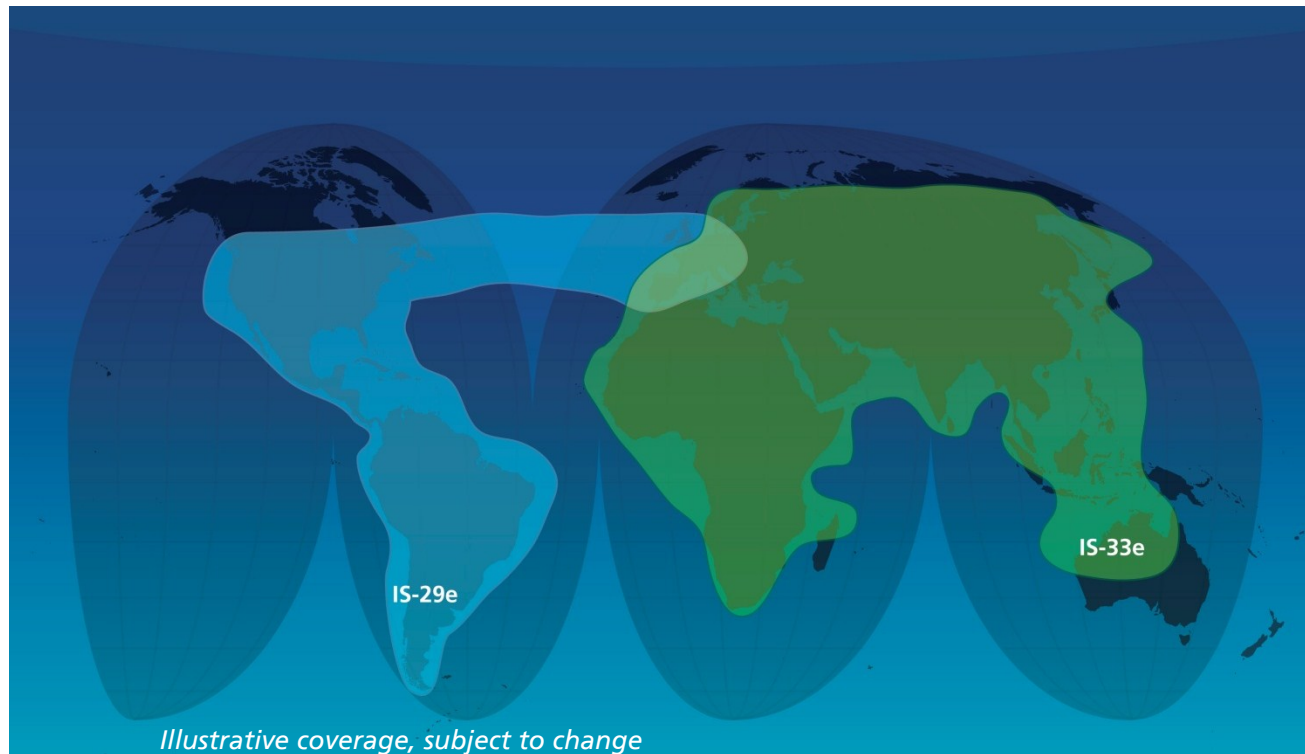
- Frequency Re-use allows for more cost-effective solutions
 - Intelsat EPIC (C, Ku and Ka band)
- Switching capability on satellite

Providing rapid activation of
point-to-point routes
with scalability and fiber
economics



Intelsat Epic^{NG}

A high-performance, next-generation satellite platform that delivers global high throughput technology without sacrificing user control of service elements and hardware



Intelsat 29e (IS-29e)

Intelsat 33e (IS-33e)

All-Region Coverage

- Layered approach with existing fleet
- C-, Ku- and Ka-bands



High Performance Satellite Platform

High Capacity

High Efficiency

High Throughput

High Performance

Multi-band

Resilient and Secure

Open Platform

Backward Compatible

Flexible

Complementary Overlay

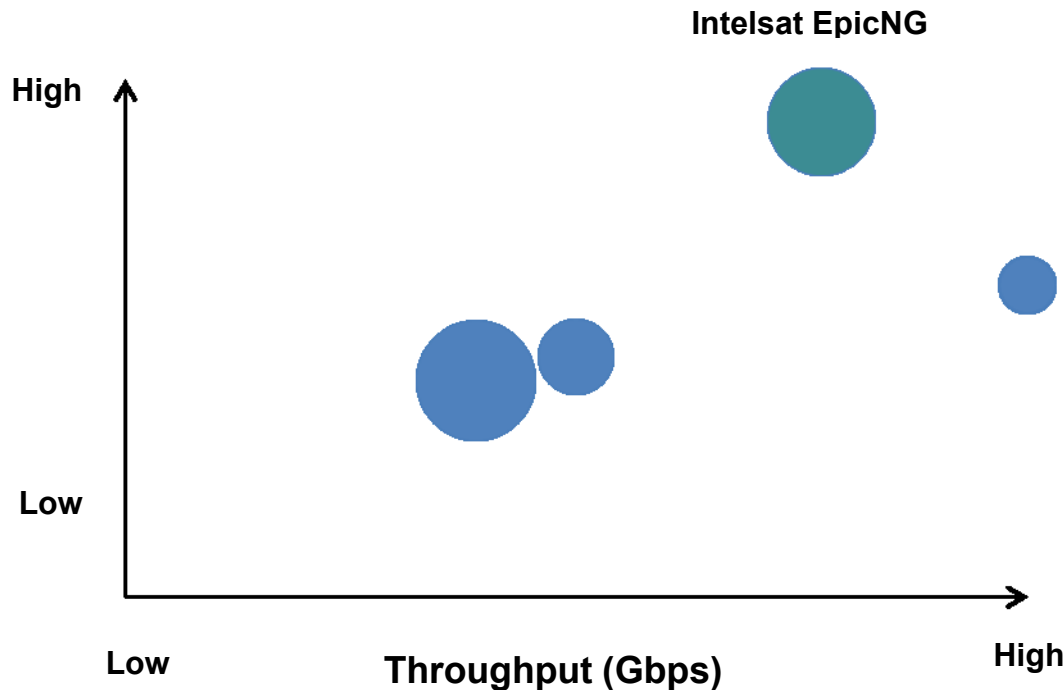
All-region Coverage

Lower Cost of Ownership

Intelsat Epic^{NG} Value Proposition

Performance, Efficiency, Throughput

Efficiency (bps/Hz)



- Consistently high performance and efficient over a wide coverage area
- A step-change in performance while maintaining compatibility with current satellite systems
- Throughput optimized for every supported application
- Lower cost per bit and open architecture provides lower total cost of ownership

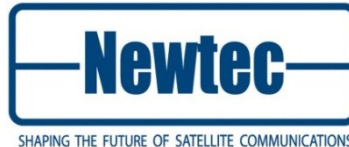
Intelsat Epic^{NG} Value Proposition

Open Architecture



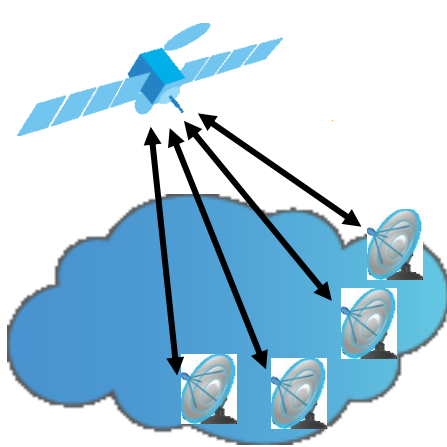
Open Architecture

- Backwards compatible with existing terminal infrastructure
 - No need to re-invest in terminal infrastructure
 - Freedom of equipment & manufacturer choice
 - Lower total cost of ownership
- Customer equipment and control

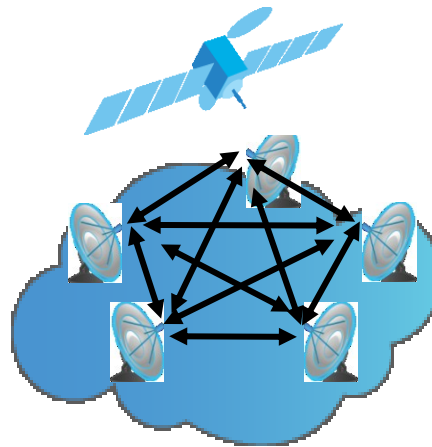


Intelsat Epic^{NG} Value Proposition

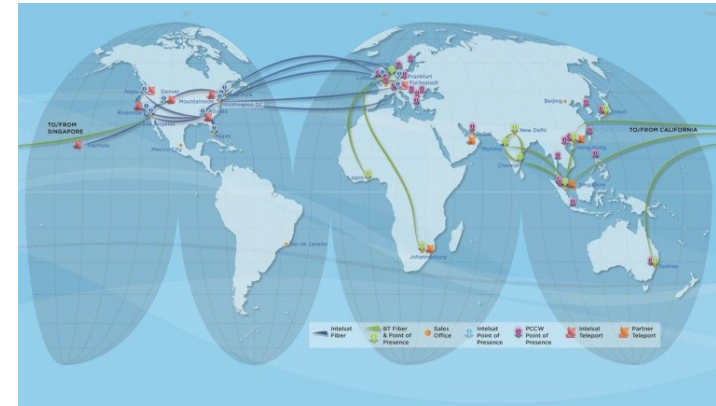
Connectivity



Star Topology



Mesh Topology

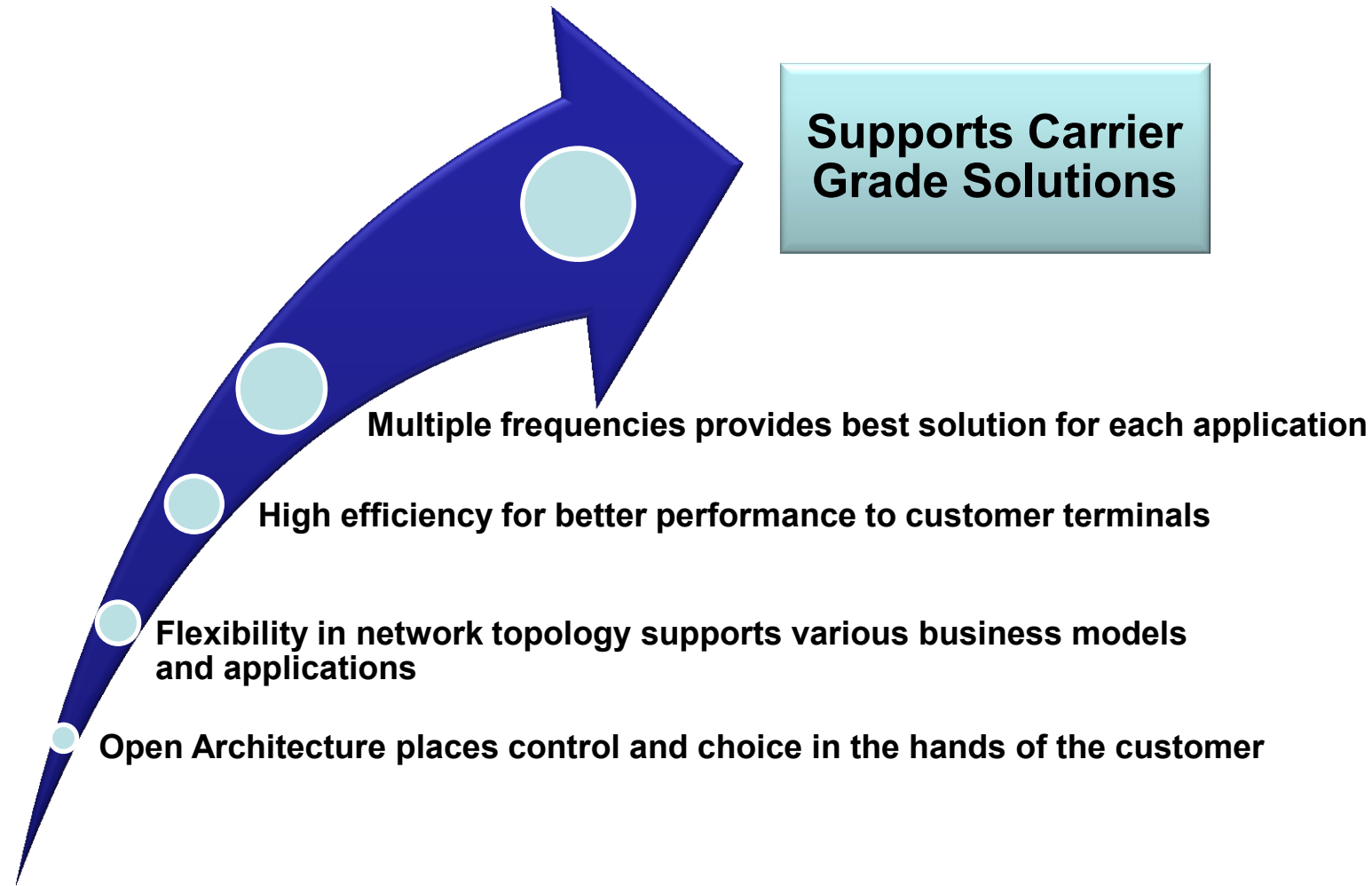


IntelsatONE Terrestrial Network

Connectivity

- Multi-band capability
- Supports star, mesh & loopback topologies
- Integrated with IntelsatONE terrestrial infrastructure

Intelsat Epic^{NG} Carrier-Grade, High Performance, High Throughput Platform



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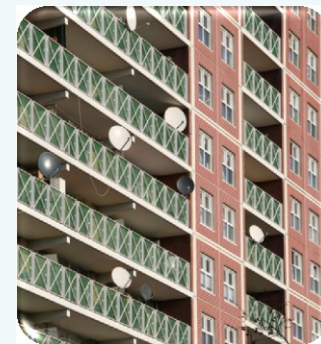
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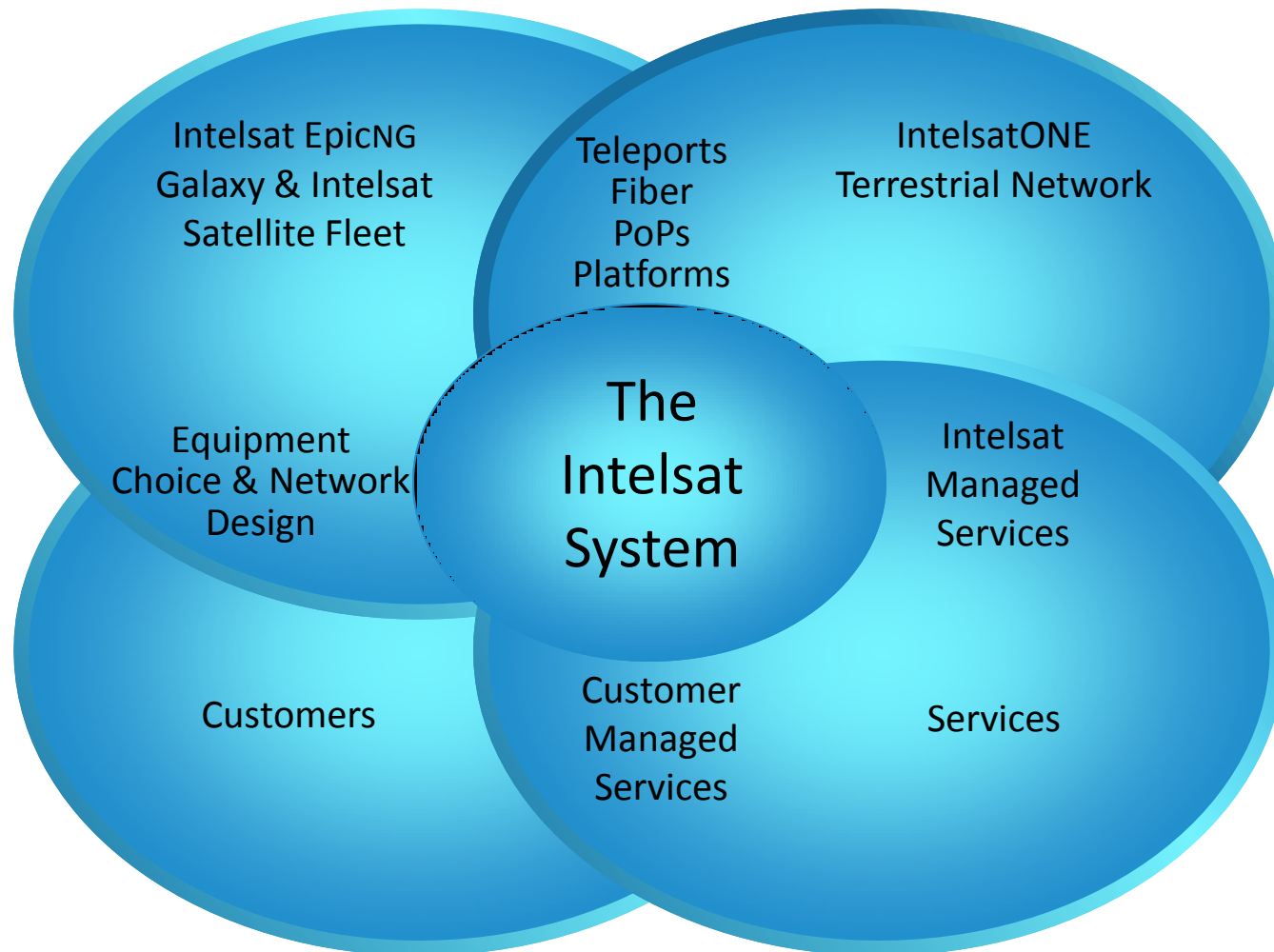
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Custom high throughput beams for super headend distribution; micro beams for regional content

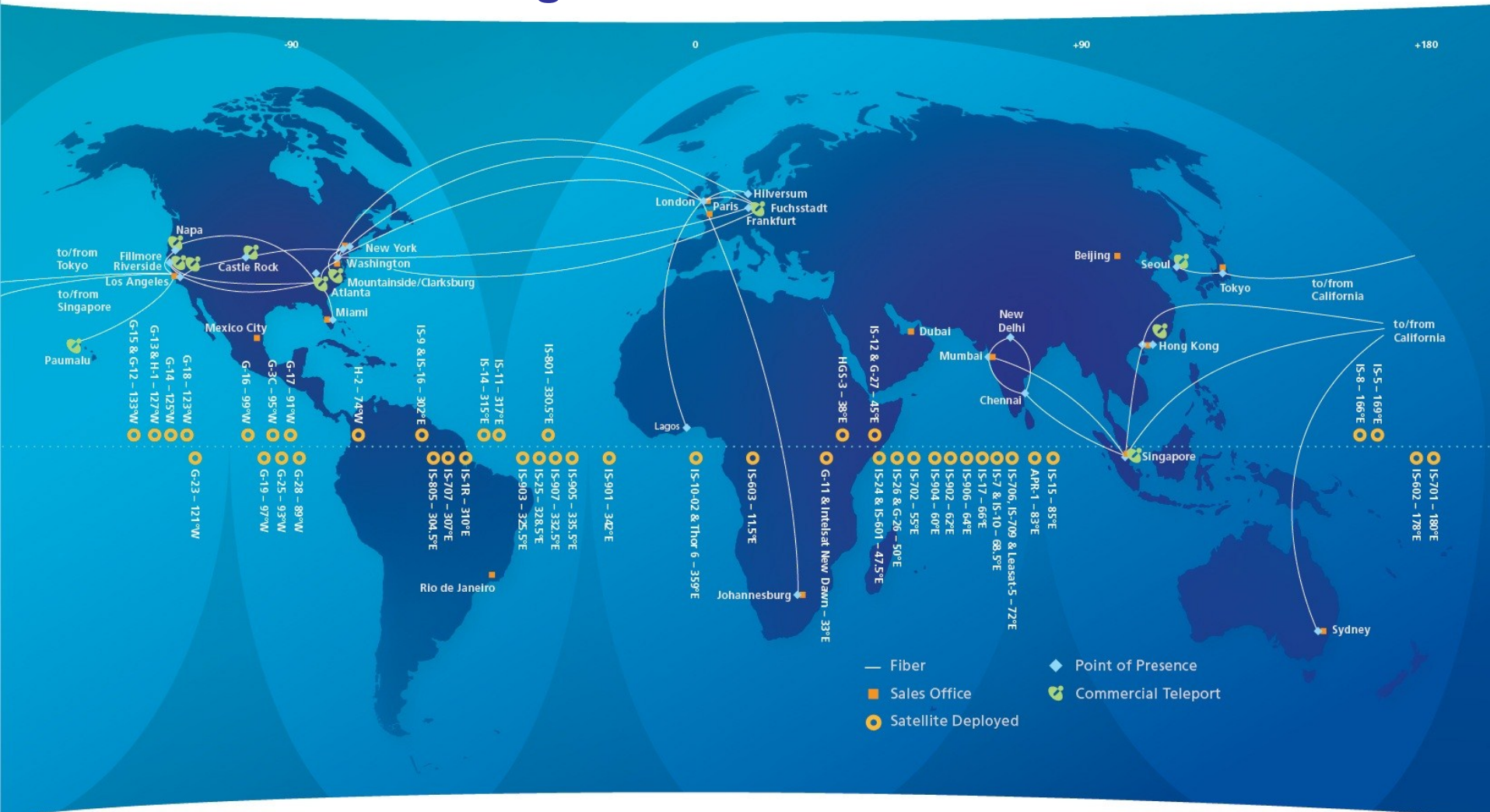
Growth projections from 2010 – 2020. Sources: Futron and NSR

The Intelsat System to Enable Customer Growth



How Intelsat Connects Rural Africa...

... with the Largest Satellite Network in the World



53 Total Satellite - 23 Satellites Covering Africa
\$2.5B Fleet Investment Program for Africa (5 New Satellites)
Operate 50,000km of Fiber / 8 Global Teleports





INTELSAT Delivers

MORE...

CHOICES

Fiber Connectivity

Satellites

EXPERTISE

GLOBAL RESOURCES

24x7 Operations

Regional Focus

Managed Services

DVB-S2 & MPEG-4
Video Platforms

True Broadband

Global Access

OU CAPACITY

Teleports

MOBILITY