



INTELSAT.

Envision. Connect. Transform.

TERRY BLEAKLEY

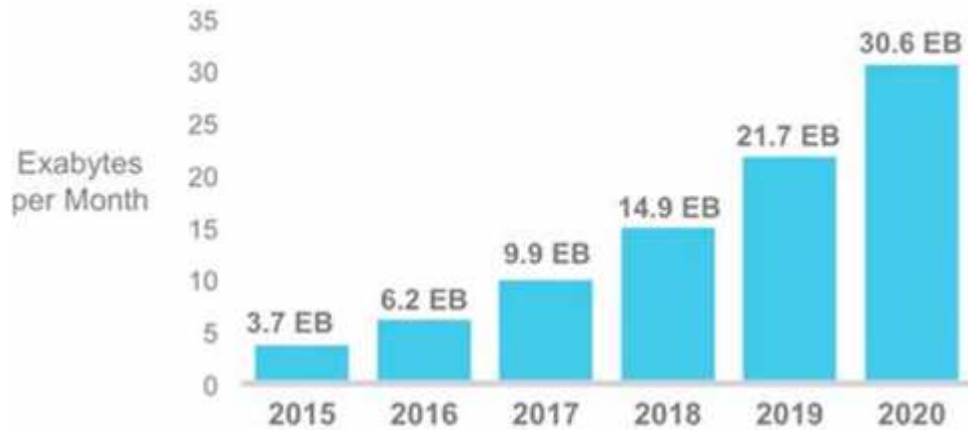
Regional Vice President, Asia Pacific Sales

Market Trends



Mobile Data Traffic Continues to Grow.....We All Know It!

53% CAGR 2015–2020



	M2M Module	=	7 X		(monthly basic mobile phone data traffic)
	Wearable Device	=	7 X		(monthly basic mobile phone data traffic)
	Smartphone	=	41 X		(monthly basic mobile phone data traffic)
	Tablet	=	113 X		(monthly basic mobile phone data traffic)
	PC	=	118 X		(monthly basic mobile phone data traffic)

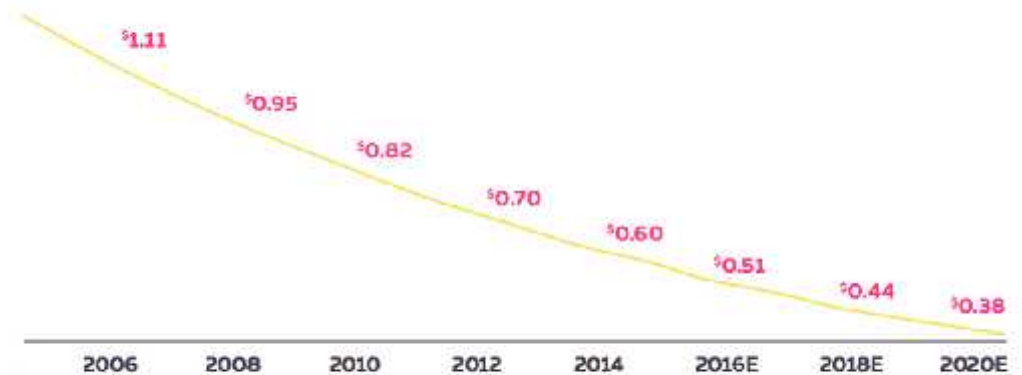
Device Type	2015	2020
Nonsmartphone	23 MB/month	116 MB/month
M2M module	164 MB/month	670 MB/month
Wearable device	153 MB/month	558 MB/month
Smartphone	929 MB/month	4,406 MB/month
Tablet	2,576 MB/month	7,079 MB/month
PC	2,679 MB/month	5,232 MB/month

Source: Cisco VNI Mobile, 2016

But What Else Will Be Driving Data Traffic Growth?



AVERAGE SENSOR COST FORECAST

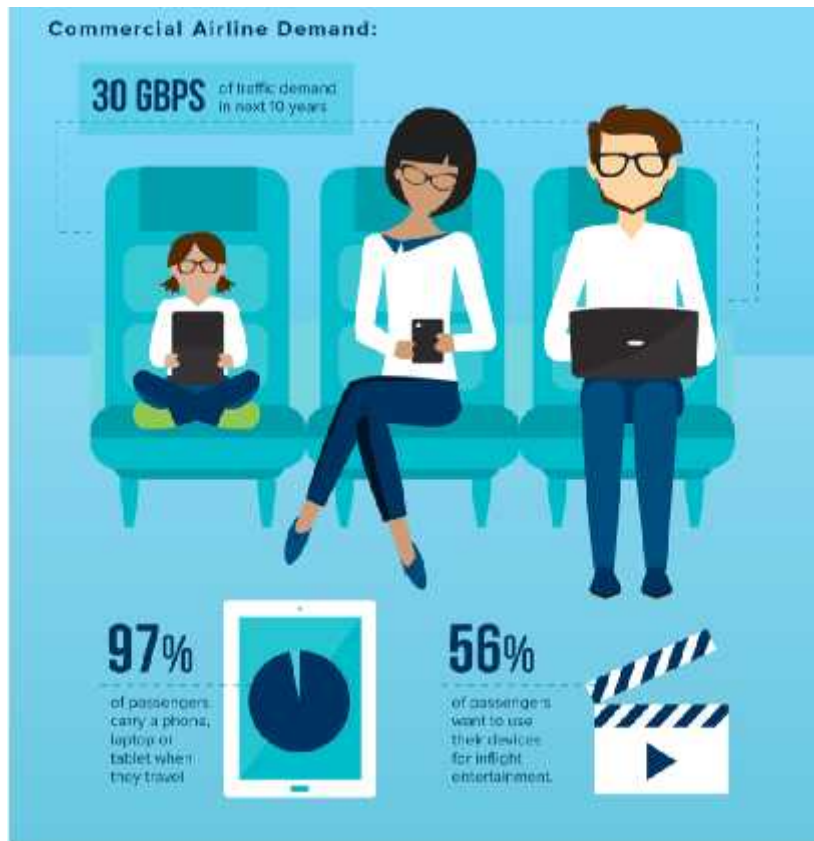


Source: Business Insider, "The Internet of Everything: 2015 [Slide Deck]," by John Greenough, BI Intelligence, April 8, 2015. <http://www.businessinsider.com/internet-of-everything-2015-bi-2014-12?op=1>

Both Consumer Demand and Internet of Things will Drive Data Traffic Growth

The Connected Plane

Consumer Demand



Internet of Things



The engines on a 787 Dreamliner generate 1 TB of sensor data a day



Source: Pedro Aragao

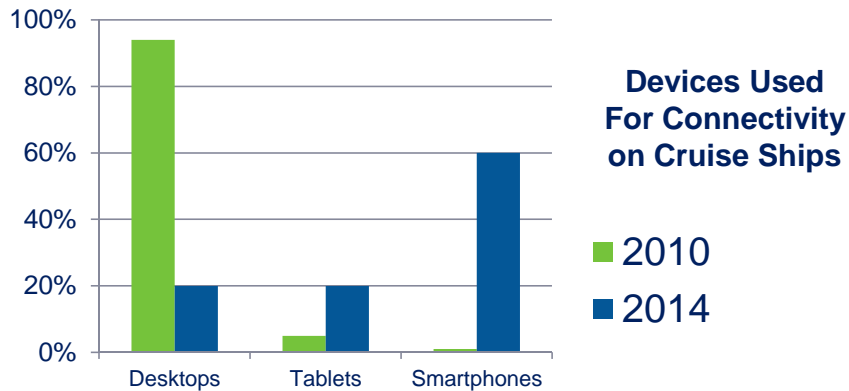
The latest Airbus A350 will generate 2.5 TB of sensor data a day

The Connected Ship

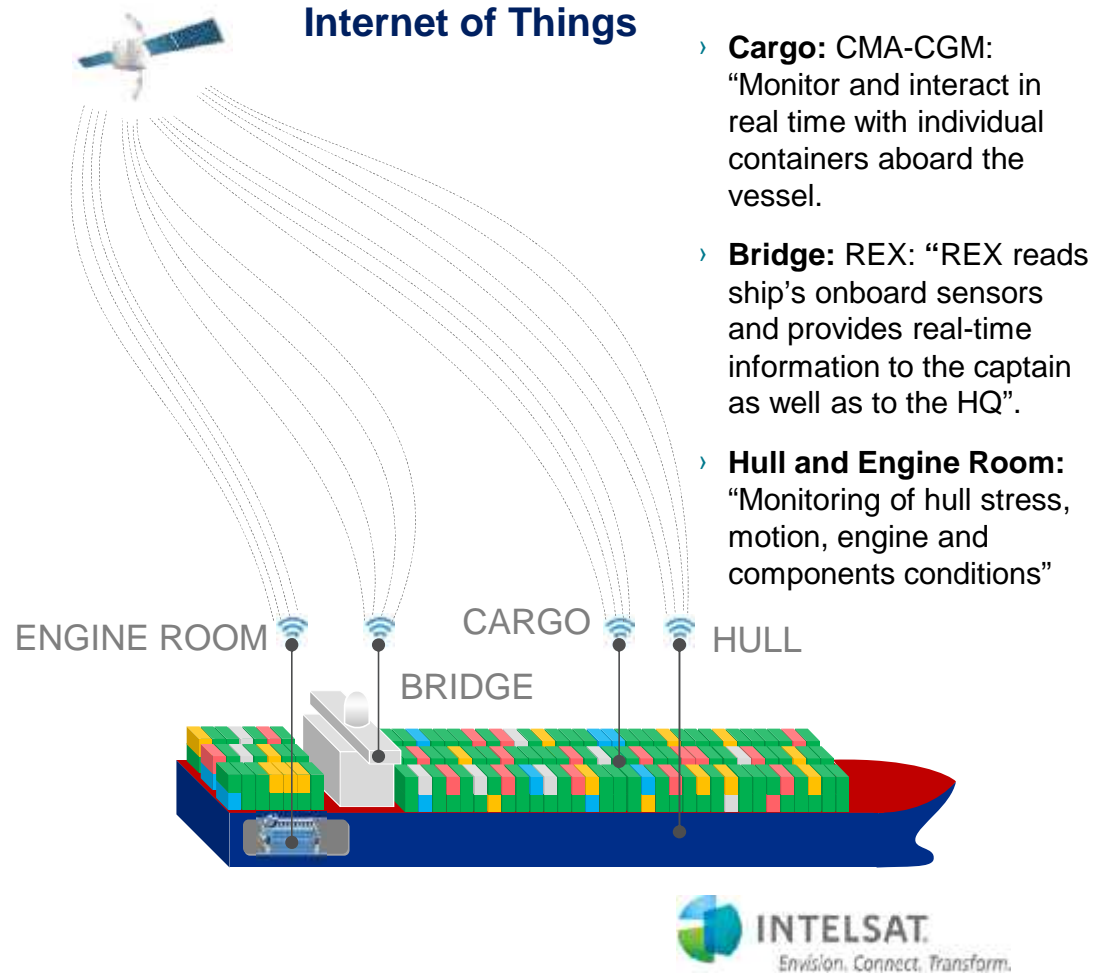
Consumer Demand



According to EMC(MTN), data consumption on the cruise ships it served increased 500% over a 2 year period (2013-2014)



Source: MTN Survey



The Connected Car

Consumer Demand

250 Hours Time a typical American commuter spends per year inside their car.

~50% Of all the car buyers wish to access their mobile applications when they are inside their cars.



Source: "The Internet on Wheels and Hitachi, Ltd." by Hitachi

Internet of Things



The sensors on a 2013 Ford Fusion already generate more than 25 GB of data an hour which are analyzed by more than 70 onboard computers

Source: Ford Motor Company



Innovation in the Industry

These internet giants and entrepreneurs are investing heavily in the satellite Industry ...

A Space Race in Silicon Valley

Jan 2015 - Google and Fidelity invests \$1 billion in SpaceX satellite programme

Larry Page

Source: theinformation.com



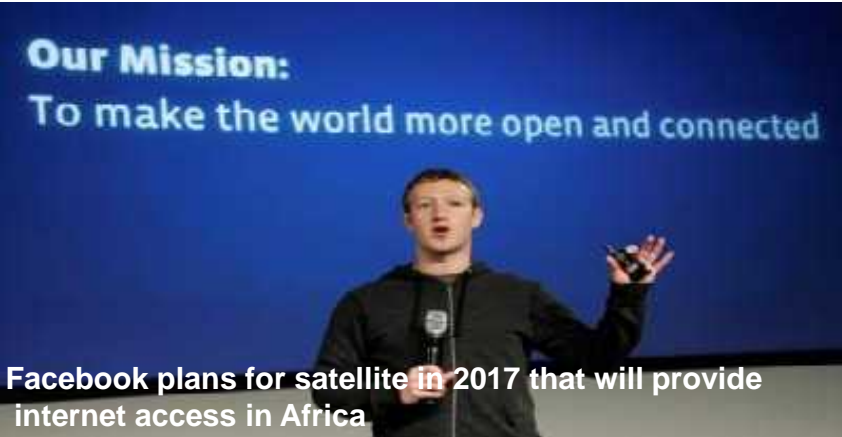
ELON MUSK
SPACE X
TESLA MOTORS

Plan to launch 4000 satellites into orbit by 2030



Jeff Bezos: Founder of Amazon

- Owns Space company BLUE ORIGIN
- Launched and landed rocket vertically for second time Jan
- Great Inversion



Our Mission:
To make the world more open and connected

Facebook plans for satellite in 2017 that will provide internet access in Africa



Richard Branson

- Virgin Galactic
 - Re-usable
 - Space tourist
- OneWeb
 - LEO satellite constellation



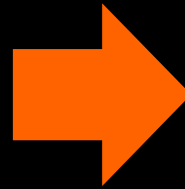
What has changed?

1. Redefining communication satellites



1. Redefining communication satellites

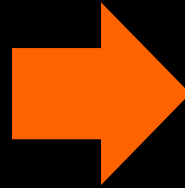
- › Frequency reuse
- › Concentration of power
- › Digital payload



- › More capacity
- › More throughput
- › Smaller antennas

2. Innovations in Rocket design

- › Space X (Musk)
- › Blue Origin (Bezos)
- › Virgin Galactic (Virgin)



- › More options
- › Re-usable technology
- › Cleaner/cheaper launches

3. New Satellite Constellations: OneWeb

First and only fully global, pole-to-pole high throughput satellite system

- › The OneWeb satellite constellation
- › 700 satellites (Constellation – 18 planes of 36 satellites)
- › Low latency (<30ms round trip delay)
- › Look angles > 57

Total Throughput of the system:

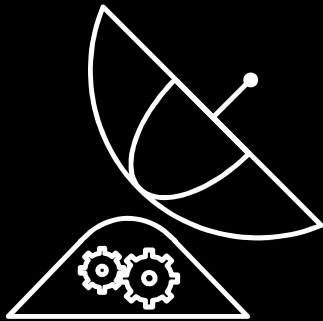
5 terabits per second



Credit: Airbus Defence and Space

4. Redefinition of the satellite antenna

- > Electronically Steered Antennas (ESA)
- > No moving parts
- > Ultrathin and light



- > Metamaterial
- > Passive array



- > Active phased array
- > Panels may be laid CONFORMABLY



So, concretely...
what is Intelsat doing?

Intelsat Epic^{NG} – Delivering High Throughput Today



Summary of What's Different About Intelsat Epic^{NG}

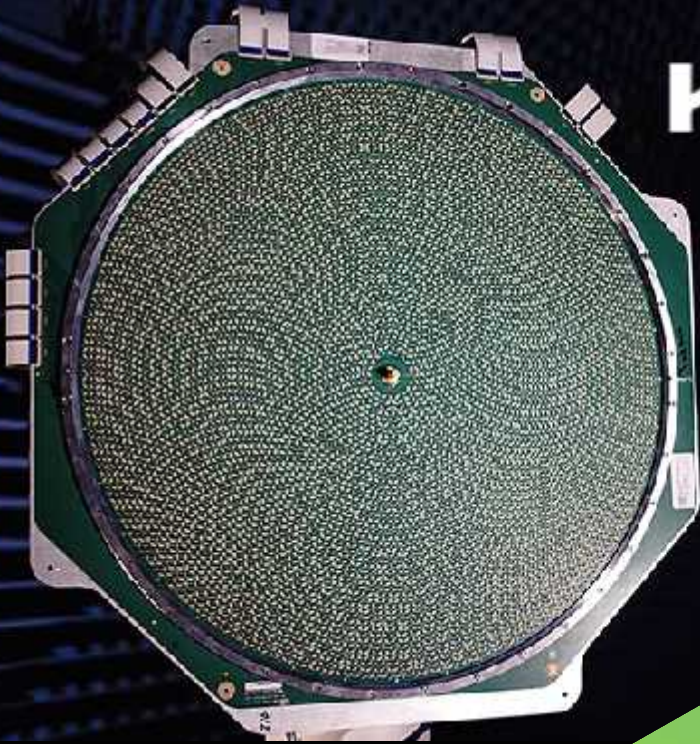
Intelsat Epic^{NG}

- Multiple satellites for redundancy & scalability
- Wide and spot beams combined
- Multi-frequency
- Flexible connectivity between all beams
- Guaranteed bandwidth
- High availability/High Efficiency
- Open architecture
- Designed for enterprise services

Other HTS Systems

- Single HTS satellite in given region
- Spot beams only
- Single frequency band
- Fixed (*user beam connects to one gateway*)
- Best effort bandwidth
- Pre-defined service levels
- Closed architecture
- Designed for consumer services

KYMETA™



**Access
Technology**



PHASOR

Kymeta for The Connected Car



Kymeta/Intelsat solution will be designed to deliver 1 TB of data per month to each car



OneWeb

First and only fully global, pole-to-pole high throughput satellite system

- › Complements Intelsat's geostationary orbit ("GEO") satellite services
- › Enables coverage over the Earth's poles and in urban canyons (Look angle $>57^\circ$)
- › Provide global Ku-band high throughput coverage over certain great circle routes, such as via the North Pole
- › Low latency ($<30\text{ms}$ round trip delay)



Credit: Airbus Defence and Space

OneWeb First Round Investors

FIRST ROUND INVESTORS

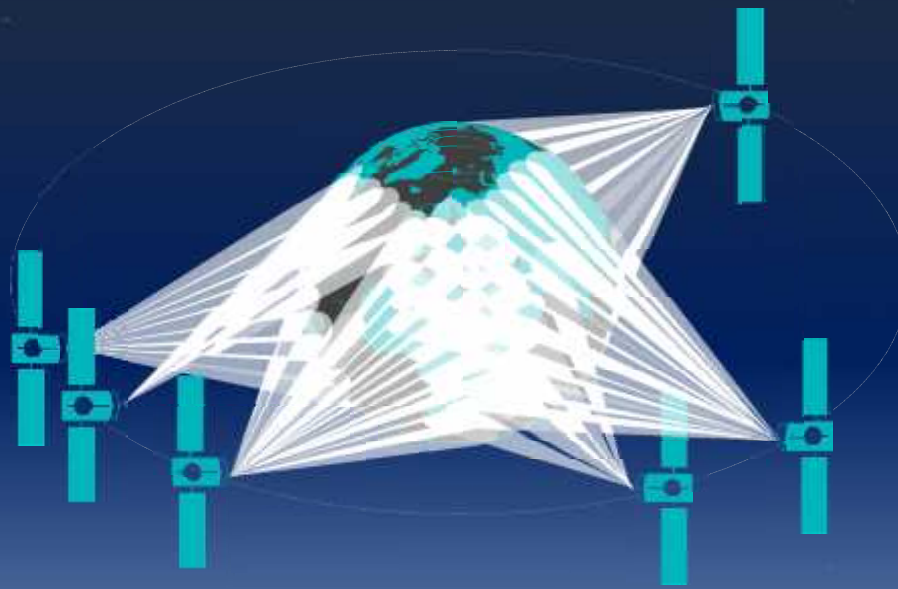


From left to right: Dean Manson, Stephen Spengler, Richard Branson, Sunil Bharti Mittal, Greg Wylter, Tom Enders, Paul Jacobs



- > Global coverage
- > 50+ satellites
- > Terrestrial network

Global fleet network



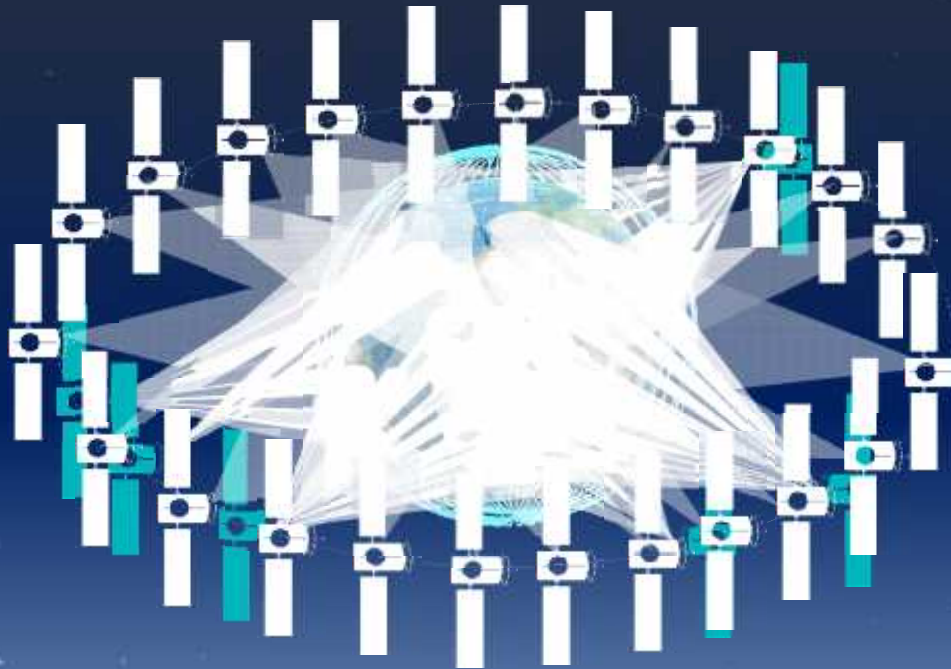
7 Epic^{NG} satellites by 2020
and counting



The OneWeb LEO constellation:

- › Is fully interoperable with the Intelsat GEO fleet
- › Provides another network layer with global satellite capacity
- › Adds further scale in availability and satellite network redundancy

INTELSAT + INTELSAT Epic^{NG} + OneWeb
ACCESS FOR EVERYONE



Delivering
Performance, Economics, Accessibility.



THANK YOU