附件一 PTC 會議議程

2014 年 1 月 19 日

07.30 – 8.30	**PTC Membership Committee Meeting**				
08.30 – 11.00	**PTC Advisory Council Meeting**				
	Workshops, Roundtables & Industry Briefings (Morning)				
09.00 – 10.30	Submarine Cable Workshop: The Naked Truth About Submarine Cables!	Emergency Communications Workshop: The Brave New World of Synergistic Emergency Communications Technologies & Approaches	Satellite Workshop: The Death of Fiber: Why Satellite is the Most Relevant Technology	IEEE Cloud Computing and Communications Workshop	Workshop: Business Model Innovation – Levers & Risks for Growth
11.00 – 12.30			PITA（Pacific Islands Telecommunications Association）Workshop	Research Workshop: Government Policy	Industry Briefings 1
13.30 – 15.00	TeleGeography Workshop	The Rise of SDN Optical Networks: Has Automated Provisioning Arrived?	Satellite Roundtable: Commercial Mobility Demand – Expanding the Bandwidth Paradigm for FSS and HTS	Research Workshop: Government vs. Industry	Industry Briefings 2
15:30-17:00	Research Roundtable: *Multiple Facets of Digital Presence*	IPv6 Workshop: *IPv6 Goes Mobile*	Roundtable: *Technology for Emerging Market*	Workshop: *Evidence-Based Policy and Regulation – A Classic Conundrum for the New World*	

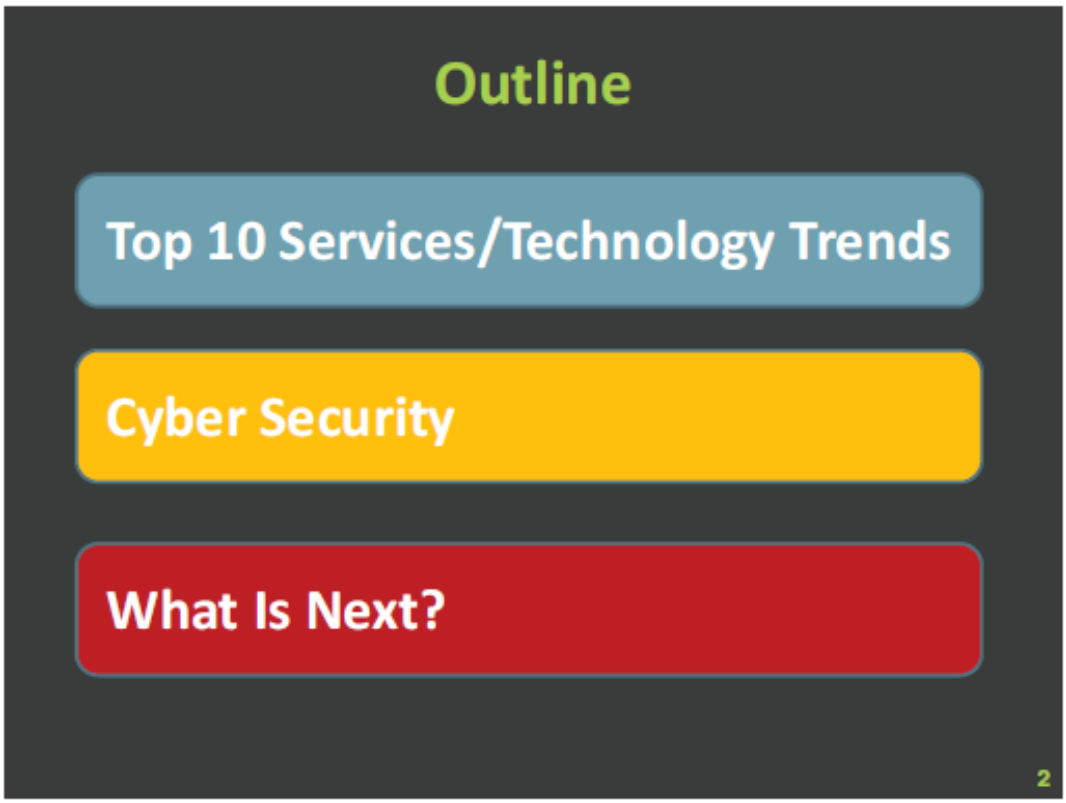
	Keynotes			
08.40 – 09.00	Power, Lasers, and Spectrum Will Be the Cornerstones of New Strategies in the Asia-Pacific Region			
09.00 – 09.25	The Power of Technology to Transform the Future			
09.25 – 09.35	The Importance of the Network for Global Cloud Services			
09.35 – 10.10	Business Drivers of Global Network Evolution			
10.10 – 10.30	Fiber Speed, Satellite Reach for the Pacific Region—A Reality Coming True! (Case Study: Telecom Cooks & O3b Networks)			
10.45 – 11.05	Data-Driven Innovation for Telecommunications			
11.05 – 11.40	Policy Challenges in the Asia-Pacific			
11:40 - 12:15	Technology Developments			
12:15 - 12:30	Telecommunications and Universities: Levers of Change			
	Monday Topical Sessions			
14:00 - 15:15	**Session 1:** Monetization and Revenue Models	**Session 2**: Legal, Technological and Business Issues in a Global Digital Environment	**Executive Insight Roundtable 1:** Carriers	**Executive Insight Roundtable 2**: New Strategies, New Business Models for Satellite
15:30 - 16:45	**Session 3: New World, New Satellite Technology Solutions**	**Research Topical Session 4: Information and Communication Technologies for Development (ICT4D)**	**Executive Insight Roundtable 3**: How Do ISPs and Telcos Make Their Money in Challenging Markets?	**Executive Insight Roundtable 4**: What Submarine Cables Can Do For You

2014 年 1 月 21 日

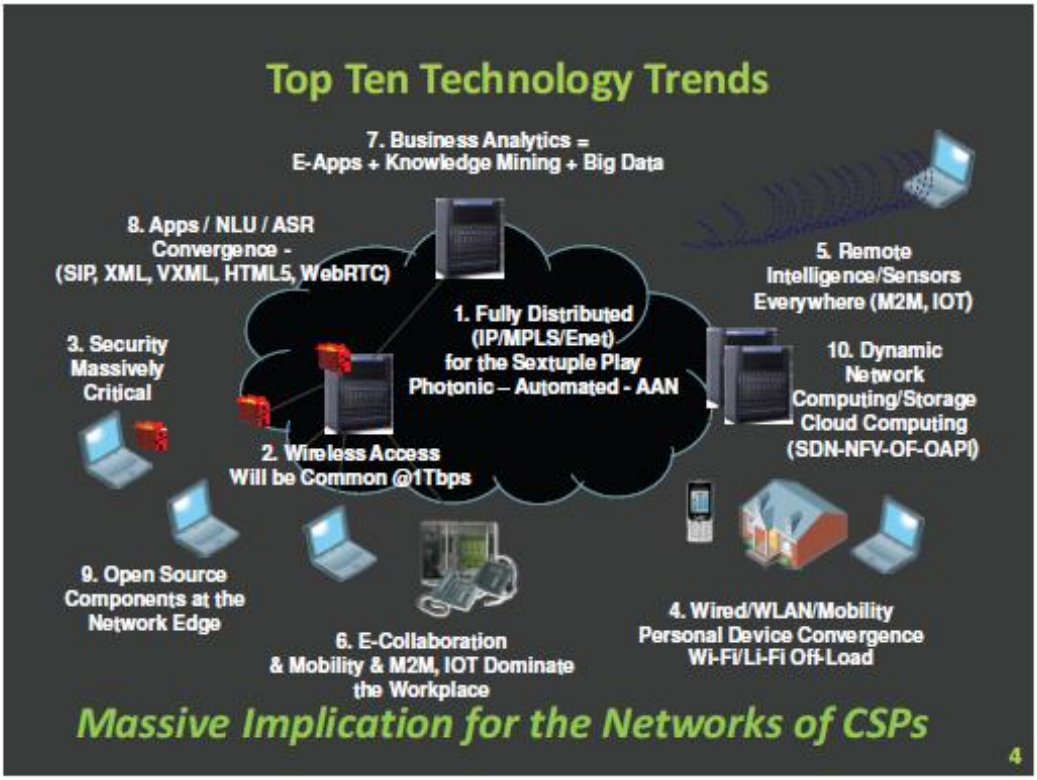
	Monday Topical Sessions				
8:30 – 9:30	**Topical Session 5:** Submarine Cable Developments- The New Norms!		**Topical Session 6**: PTC Young Scholars Presentations		
9:30 – 11:00	**Kenotes** ◆ **Mapping the Future of Networks and Clouds inside Equinix** ◆ **Laser Light Communications: Bringing the world the power of light** ◆ **The dynamic Internet** ◆ **Technology & Policy**				
11:15- 12:30	**Kenotes** ◆ **Competing with free: solutions to innovate, stay pertinent and be profitable with international voice communications** ◆ **Advanced netoworks** ◆ **How to win with gamification: what global business need to know**				
	Topical Sessions & Round Tables				
13:30 – 14:30	**Roundtable 5:** Technology and innovation	**Roundtable 6**: Infrastructure and services for NextGen computing	**Topical Session 7:** Service excellence in international telecommunications	**Topical Session 8**: New Business Models for Monetization	
14:45- 15:45	**Roundtable 7** Intercloud	**Roundtable 8** SDN/New network architecture	**Topical Session 9** Governance for a global resource with global implications	**Topical Session 10** Mobile/Mobility	**Topical Session 11** PTC young scholars presentations II
16:00- 17:00	**Roundtable 9** Capitalizing on change: IoT, cloud and big data		**Roundtable 10** Running out of capacity: A regulator's view on unlicensed, shared, dynamic spectrum solutions		

	Topical Sessions		
9:00–10:15	**Topical Session 12: Changing interconnection landscape: Need for new business models and policy?**	**Topical Session 13**: Cloud and big data	**Topical Session 14**: Broadband
10:30–12:00	**Kenotes** ◆ **The role of carriers in the new world** ◆ **The future of mobile is right-time experience: improving profits and engagement with analytics, big data and mobility** ◆ **Capital markets and invesments**		

附件二 「The power of technology to transform the future」

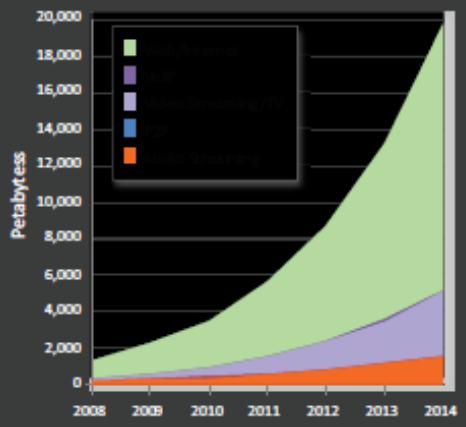



Services Of The Future
1. Doctors Inside You.....Predicting & Preventing heart attack
2. Tele Immersion.....Shared presence via simulated environment
3. Self Driving Cars.....Driverless Uber
4. Ambient Intelligence Services
..Manage our lives effortlessly via IOT
5. Smart Car/Building/City...Detecting population concerns
6. Privacy Services.....I am Cloaked
7. Super & Personal Clouds..Always-on, your content
8. Nano Bot Shot.....No more virus shots
9. Financial Planner.....I made you money today
10. Personal Assistant.....My trusted computer assistant
The Power of Technology to Transform the Future
3

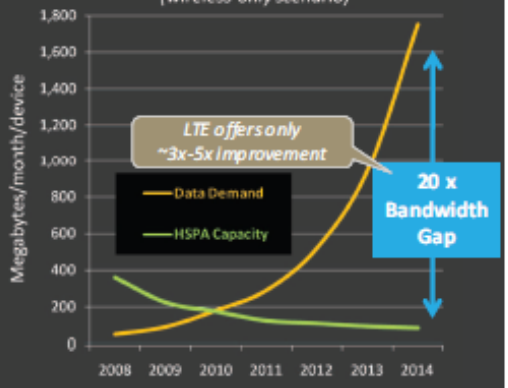

Top Ten Technology Trends
7. Business Analytics =
E-Apps + Knowledge Mining + Big Data
8. Apps / NLU / ASR
Convergence -
(SIP, XML, VXML, HTML5, WebRTC)
5. Remote
Intelligence/Sensors
Everywhere (M2M, IOT)
1. Fully Distributed
(IP/MPLS/Enet)
for the Sextuple Play
Photonic – Automated - AAN
3. Security
Massively
Critical
10. Dynamic
Network
Computing/Storage
Cloud Computing
(SDN-NFV-OF-OAPI)
2. Wireless Access
Will be Common @1Tbps
9. Open Source
Components at the
Network Edge
6. E-Collaboration
& Mobility & M2M, IOT Dominate
the Workplace
4. Wired/WLAN/Mobility
Personal Device Convergence
Wi-Fi/Li-Fi Off-Load
Massive Implication for the Networks of CSPs
4

Pervasive Content = Bandwidth Crunch

Global Mobile Network Data Traffic



HSPA network capacity and data demand
forecast per device for an incumbent 3G operator
(wireless-only scenario)



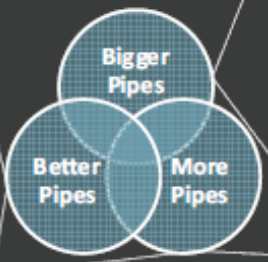
Mobile Data Demand is Exploding Due to Pervasive Content, Leading to a Looming Wireless Bandwidth Gap

5

Solving the Bandwidth Crunch

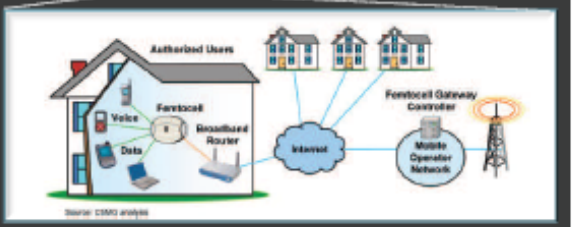
Invent spectrum-multiplying solutions that enable optimal data usage and a richer multimedia experience

Compression (3-5X), caching, local content routing, streaming UHDTV media (1/2 Cost and Opex), mobility



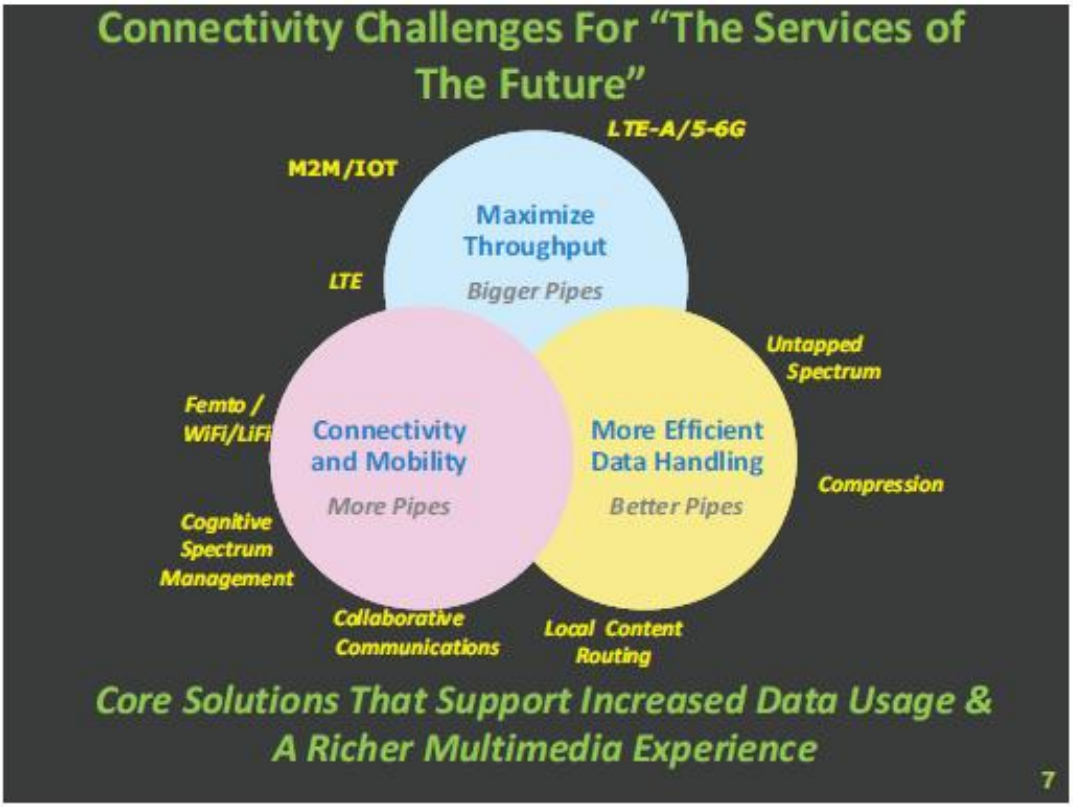
Push Shannon's Limit - More Bps/Hz (5 – 10X)

Maximize throughput at cell edge, uniform coverage, Smart Cell



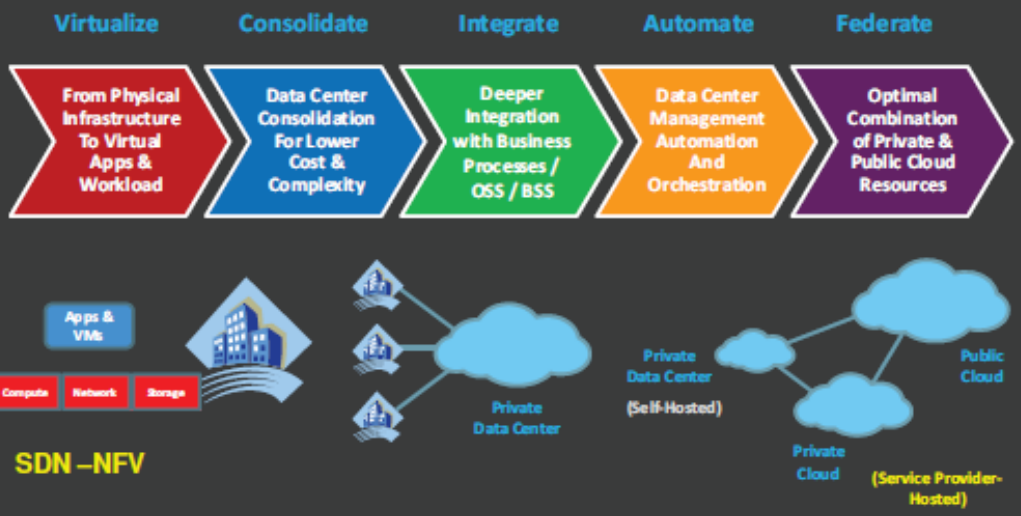
Inventions for efficient bandwidth utilization across Tier 1 networks

6


Connectivity Challenges For "The Services of The Future"
LTE-A/5-6G
M2M/IOT
LTE
Maximize Throughput
Bigger Pipes
Untapped Spectrum
Femto / WiFi/LiFi
Connectivity and Mobility
More Pipes
More Efficient Data Handling
Better Pipes
Compression
Cognitive Spectrum Management
Collaborative Communications
Local Content Routing
Core Solutions That Support Increased Data Usage & A Richer Multimedia Experience
7


Cloud: Global Impact
Virtualization – Servers, Storage and Networks
facebook
Social, Political and Financial Considerations
8

Data Center Evolution



From Physical Silo's To Network-Based IT-As-A-Service & Anything-As-A-Service (XaaS) Compounded with Big Data

9

Outline

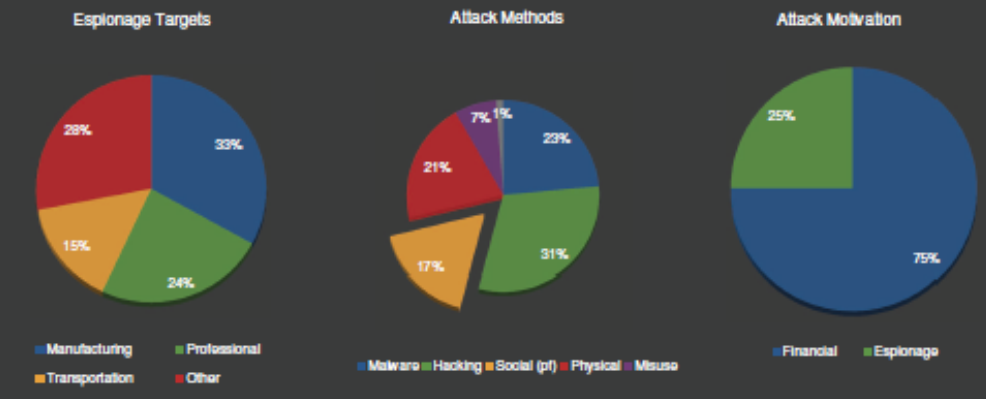
Trends: Data, Services & Networks

Cyber Security

What Is Next?

10

Threat Velocities are Sophisticated



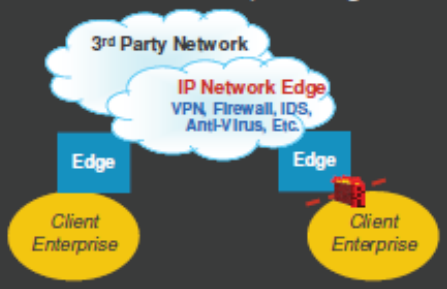
- Nearly 70% of attacks were discovered by external parties
- 700% increase in mobile malware on smart phones
- 66% of breaches were discovered months after the attack (156 day avg)

Security Is Broken Across Enterprise & SPs

11

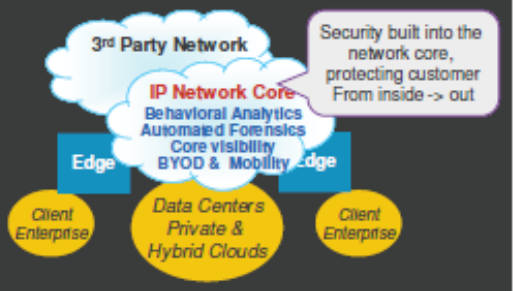
Security shifted from Perimeter to Network

Current State of Industry
"Distributed Enterprise Edge Security"



- Security Investment at Edge
- IDS, Firewalls, Anti-Virus, Anti-SPAM Deployed by Customer
- Inefficient, Expensive, Non-Holistic
- Legacy SIEM, Log Management

Network "Intelligence and Analytics

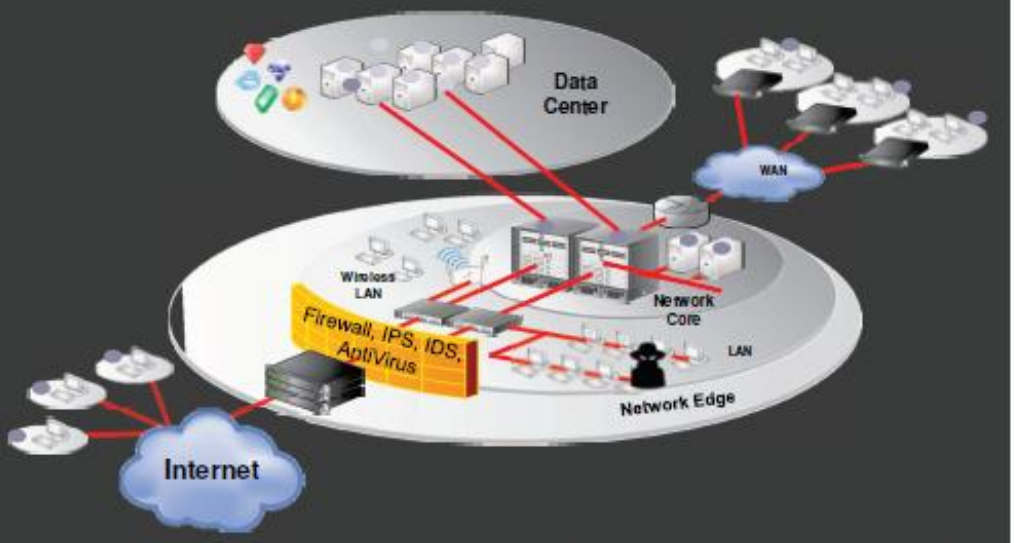


- Continuous Machine Learning
- Smart Packet Inspection
- Behavioral Big Data Analytics
- Total Cost of Ownership (TCO) Improvement

Attacks enter into the core of the network and no longer through the perimeter Causing Broken Security Model within Enterprise

12

Once inside a Threat Actor must move Lateral



Behavioural Analytics will Become Golden Thread For Cyber Security Detection in 21st Century

13

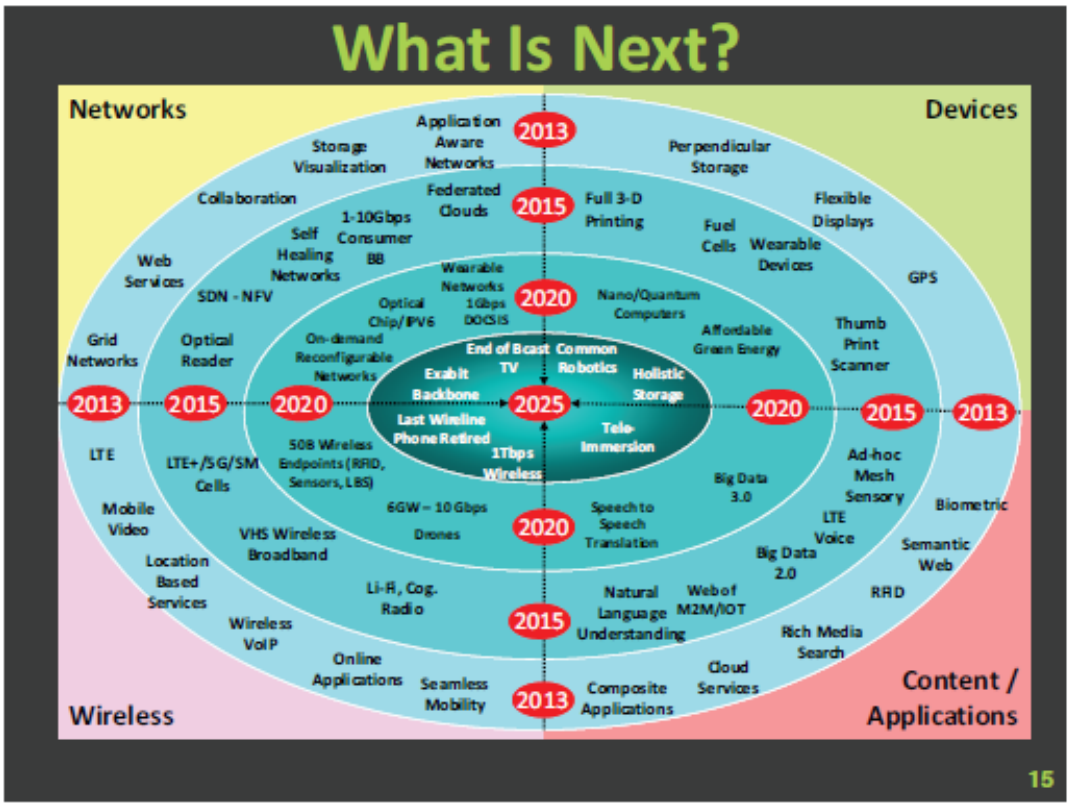
Outline

Trends: Data, Services & Networks

Cyber Security

What Is Next?

14



The Power of Technology to Transform the Future

Opportunities & Challenges for Next-Decade Services

Dr. Hossein Eslambolchi

Pacific Telecom Council '2014

附件三「Commercial mobility demand-expanding the bandwidth paradigm for FSS and HTS」

Satellite Roundtable
Commercial Mobility Demand – Expanding the Bandwidth Paradigm for FSS and HTS

PTC '14

19 January 2014

Christopher Baugh, President

NSR NORTHERN SKY RESEARCH

About NSR

NSR is a Global Leader in Satellite Market Research and Consulting

Founded in 2000, NSR specializes in analysis of growth opportunities across the satellite industry

Extensive Client Research, Consulting and Advisory Services

Multi-Client Reports on Various Satellite Topics

NSR's expert consultants are located globally and possess over 140 years of combined industry experience.

www.nsr.com

"Holistic" approach to research enables NSR to anticipate trends with a higher degree of confidence and precision than the competition and stay ahead of the curve.

PTC '14

Speakers

Pierre-Jean Beylier, CEO, SpeedCast, *Hong Kong, SAR China*

Terry Bleakley, Regional VP, Asia-Pacific Sales, Intelsat, *Singapore*

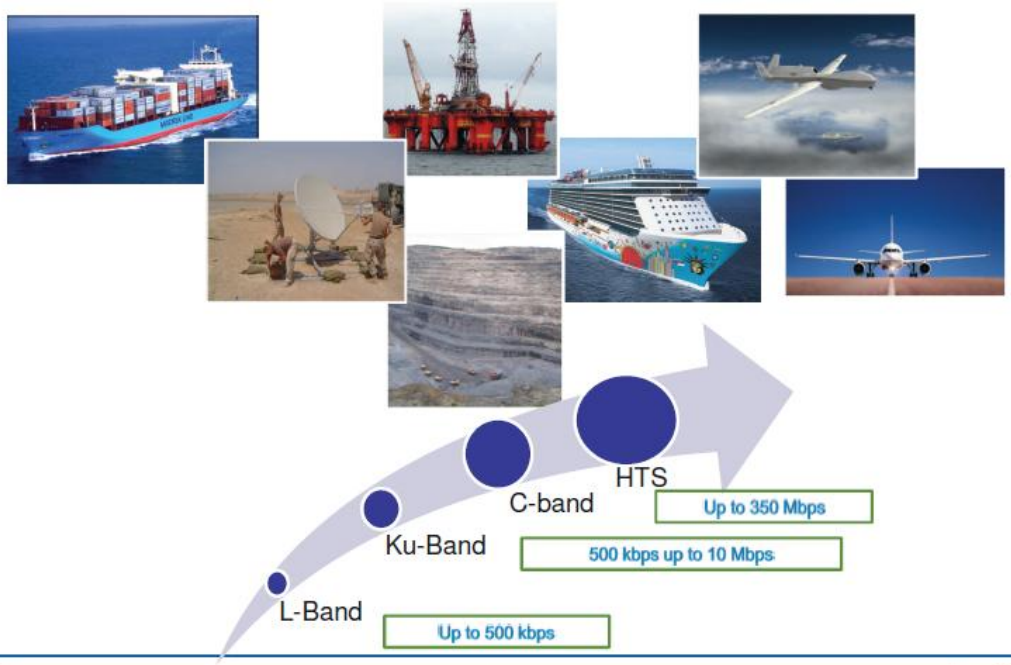
Todd Hill, Direct, Product Management and Capacity, Global Communication Services Business Unit, Panasonic, *USA*

Scott Sprague, CCO, NewSat Limited, *Australia*

Tian Seng Tan, Director, Satellite Capacity Management and Business Development, SingTel Satellite, *Singapore*

PTC '14

FSS/MSS Trends Mirror Terrestrial Connectivity



PTC '14

HTS & Mobility: From Regional to Global

2012

Source: ViaSat

2012

Source: Eutelsat

2014

Source: TBS

2015+

Source: Intelsat

2013/14

Source: O3B Networks

2013/14

Source: Inmarsat

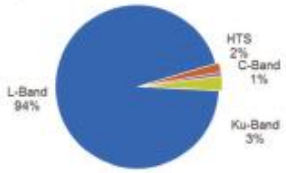
- 5 out of 6 HTS mobility value proposition offer regional coverage
- Key areas of demand: airline corridors, cruise ships and shipping lanes, offshore platforms, government and military

PTC '14

Which Frequency for Which Platform?

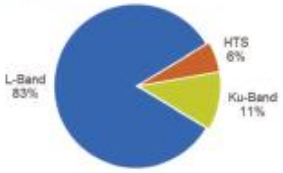
- From an equipment standpoint, **L-band units will be majority of all platform markets:**
  - Maritime: 94%
  - Land-Mobile: 93%
  - Aeronautical: 83%
- **Form factor** usually smaller, **reliability** and **price** point caters to wider application set

Maritime Satcom In-Service Units by Frequency Band, 2022



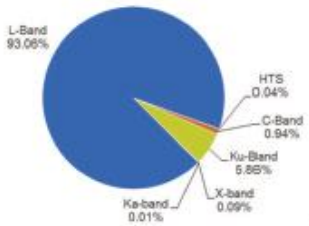
Source: NSR

Aeronautical Satcom In-Service Units by Frequency Band, 2022



Source: NSR

Land Mobile & Handheld In-service Units, by Frequency 2012



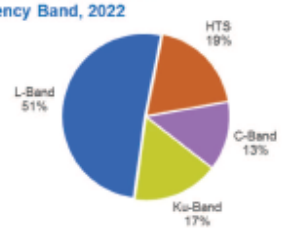
Source: NSR

PTC '14

What About Revenues?

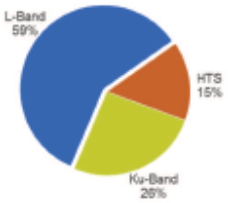
- Majority of revenues on all mobility platforms come from **L-band**
- However, other frequency bands grow their shares faster:
  - **Maritime Ku-band**: 17%
  - **Land-Mobile Ku-band**: 14%
  - **Aeronautical Ku-band**: 26%
- **HTS remains niche** and does not gather more than 19% of total revenues by 2022

Maritime Satcom Retail Revenues by Frequency Band, 2022



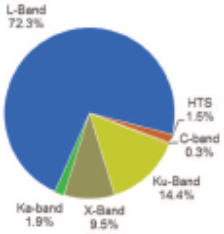
Source: NSR

Aeronautical Satcom Retail Revenues by Frequency Band, 2022



Source: NSR

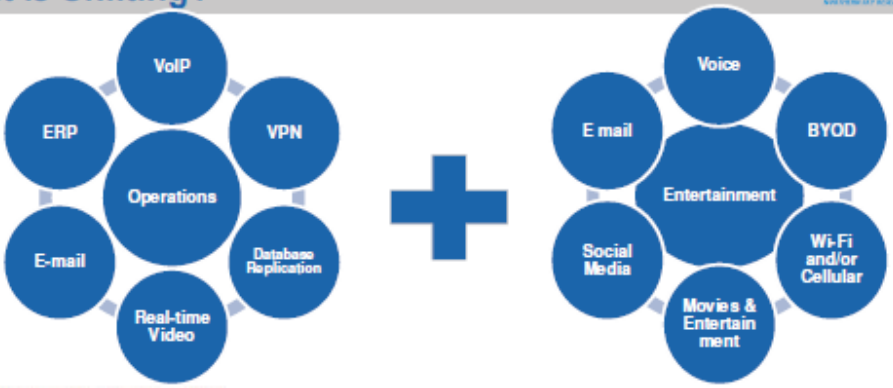
Land Mobile & Handheld Retail Revenues by Frequency, 2022



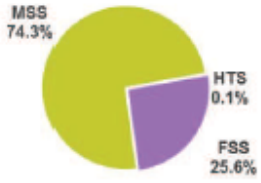
Source: NSR

PTC '14

What is Shifting?



Mobile Satcom Retail Revenues, 2012

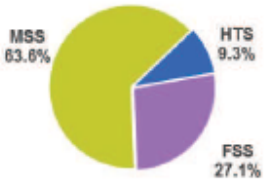


L-Band : - 10.7%

Ku-Band: +1.5%

HTS: +9.2%

Mobile Satcom Retail Revenues, 2022



More Bandwidth to Enable More Applications

Source: NSR

The Bottom Line

Questions to Consider???

- Where is **actual future demand** for mobile satcom in the Pacific?
- How can we **expand** the satellite mobility pie?
- **Cheaper Bandwidth** OR **Integrated Solutions** OR **BOTH**?
- What is the future for **service providers**?
- Is **HTS** the key to future growth?
- What effect will **O3b** and **Global Xpress** have?
  - *Main market for Global Xpress in Asia in short term?*



NSR

Global in Reach. Local in Knowledge. Bottom Line Analysis.

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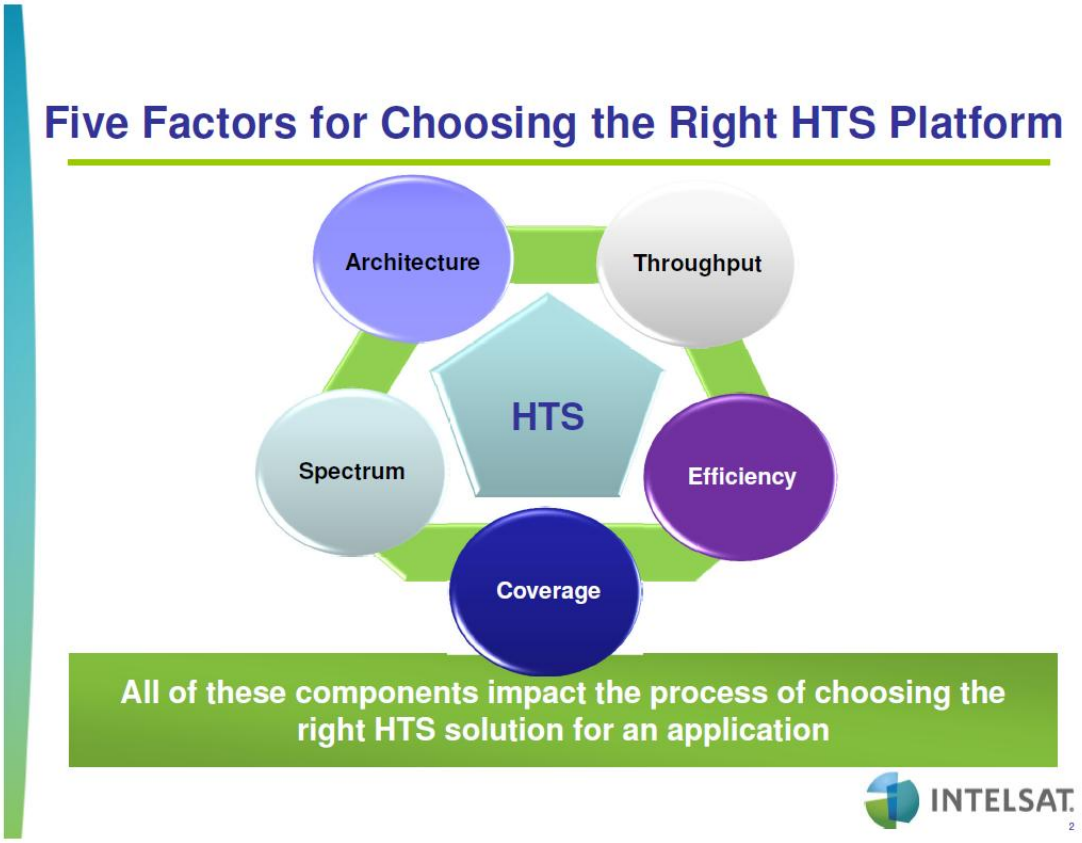
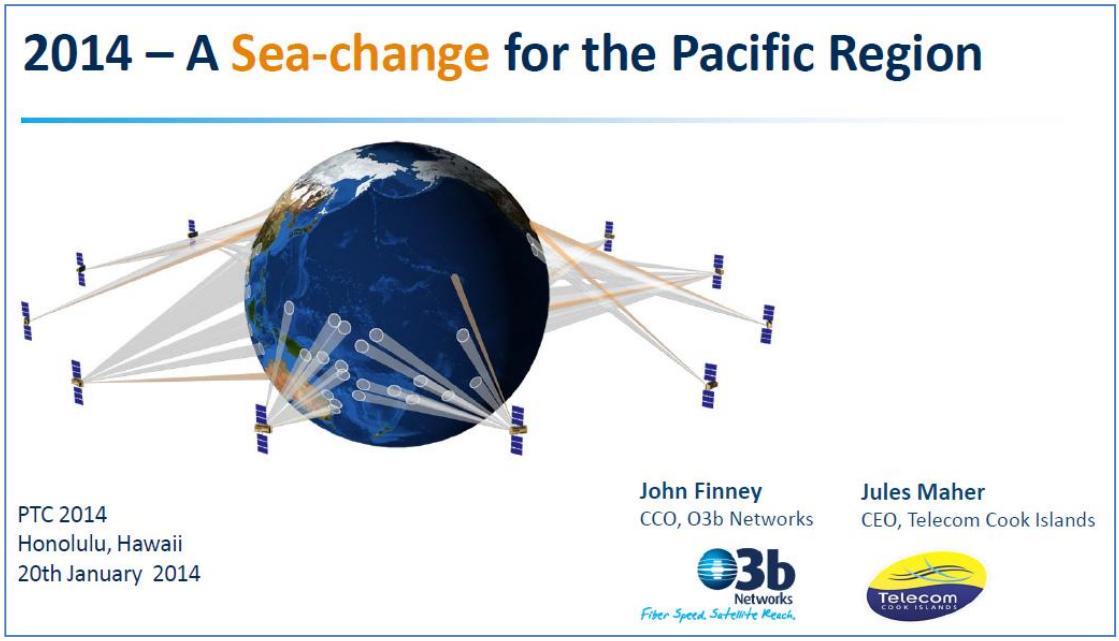
附件四 「The power to choose: high throughput on the horizon」



附件五 「2014 – A sea-change for the pacific region」



What if we could change the Status Quo?

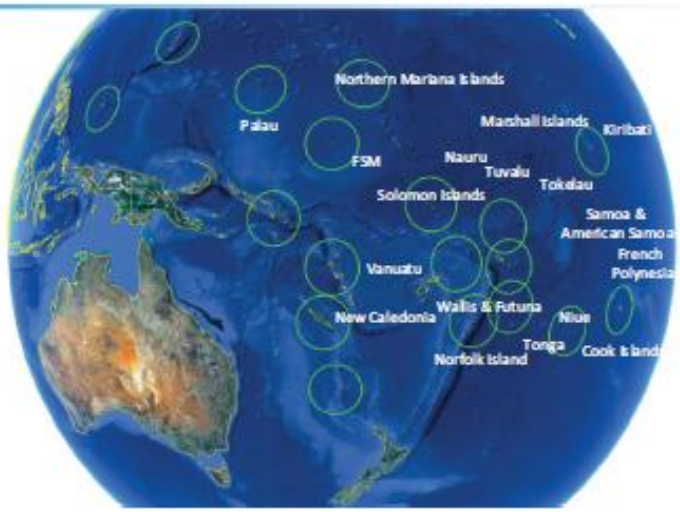
If I had access to a large amount of affordable, low latency bandwidth, how would this change the way I do business?

- Which operations could I perform **remotely**?
- What **new applications** could be enabled?
- What **new customer segments** could I serve?
- What **new business cases** could I close?

The Cook Islands – Our Broadband Vision

"To connect and empower all our dispersed communities to fully participate in National Development"

A new design to solve a long-standing regional challenge

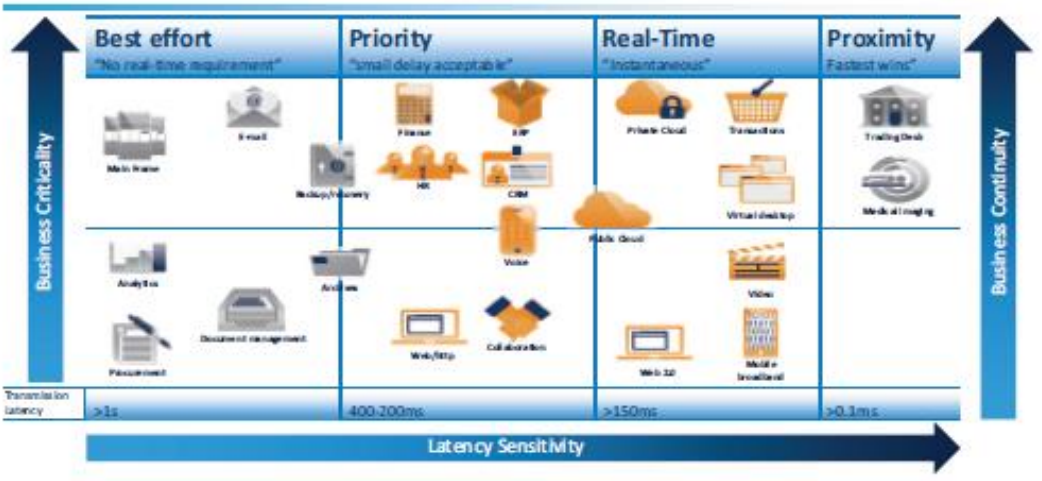


Resulting in the most advanced Satellite Trunk Service

- High Speed Internet Service
- Unique System Capabilities
- Carrier's Carrier SLA Approach
- Value Added Services
- Integration & Maintenance

9

New opportunities in local business - enabled



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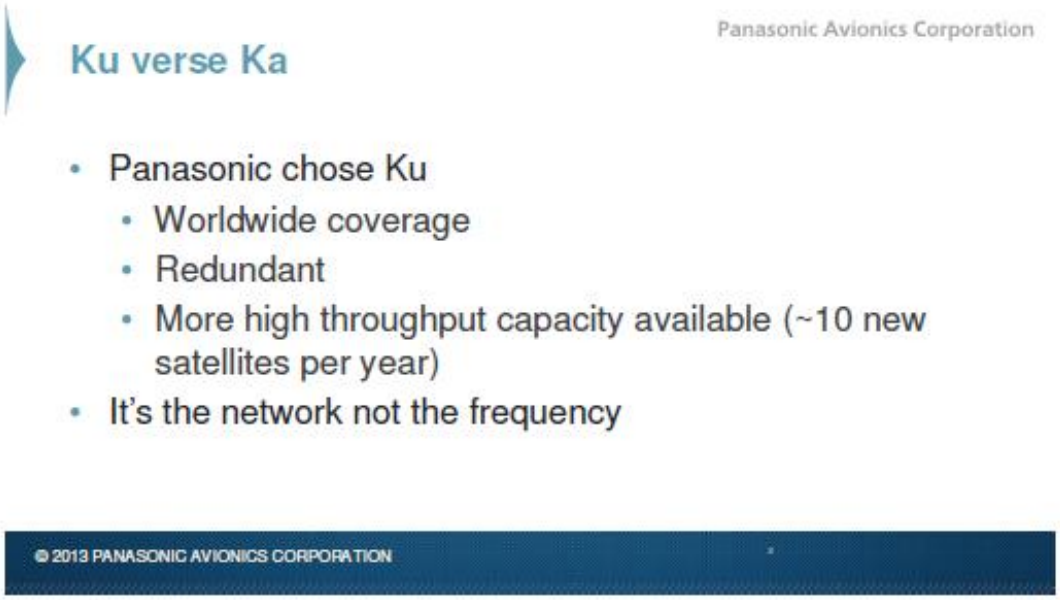
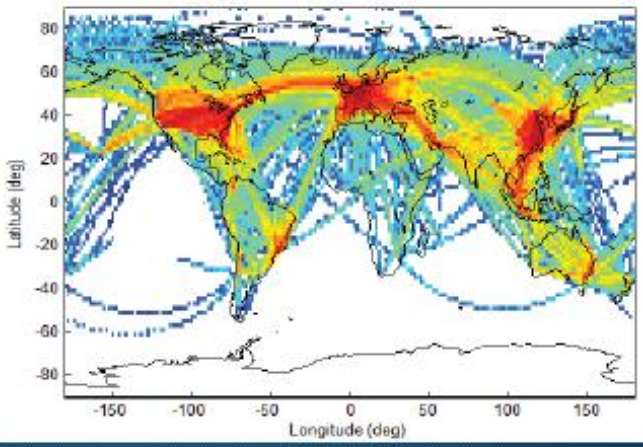
附件六 「HTS Aero broadband service」



Panasonic Avionics Corporation

Global Satellite Network

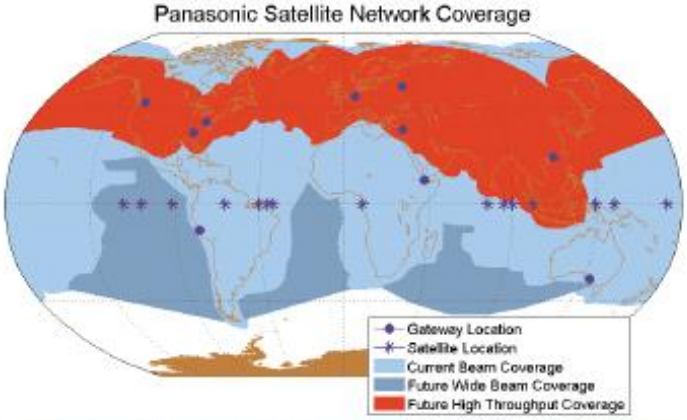
- Commercial flights are truly mobile
- Density is similar to cellular network
- Homogeneous resources is not efficient



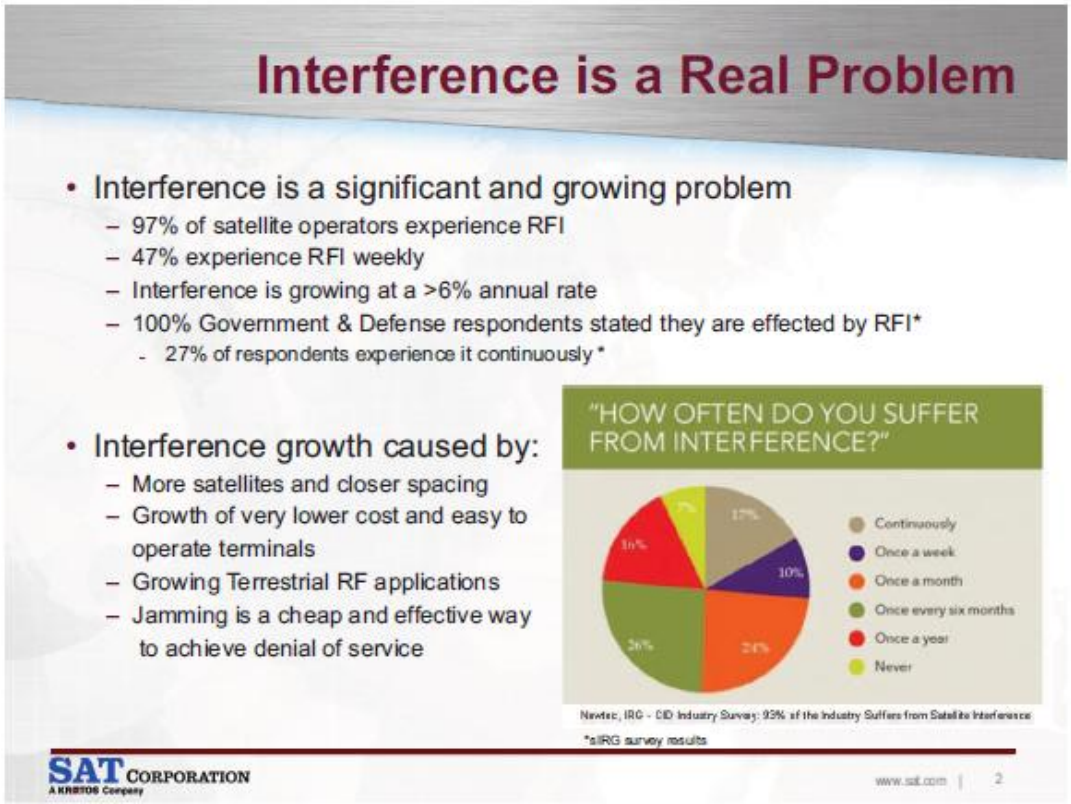
Panasonic Avionics Corporation

High Throughput Capacity

- Add high throughput spot beams in 2015/16
- Covers 83% of flight route with HTS
- Wide beams continue to offer great service and coverage

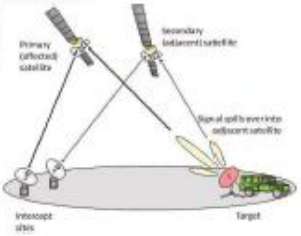


附件七 「New technologies for RF interference mitigation」



Current Process to Resolve Interference Issues

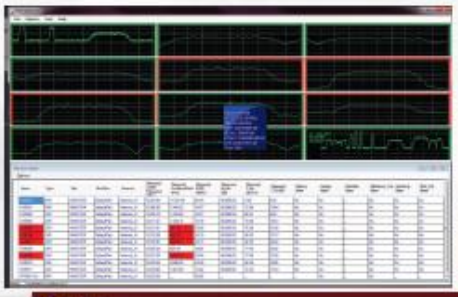
- Effective mitigation of RF interference requires:
  - Knowing that you have interference:
    - Rapid **DETECTION** of the interference event
  - Knowing what signal is causing the interference:
    - **CHARACTERISATION** of interfering signal and event
  - Knowing where the signal is coming from
    - **GEOLOCATION** of the disrupting signal



95% of the time, Monics signal characterize is all that is needed to resolve an interference issue!

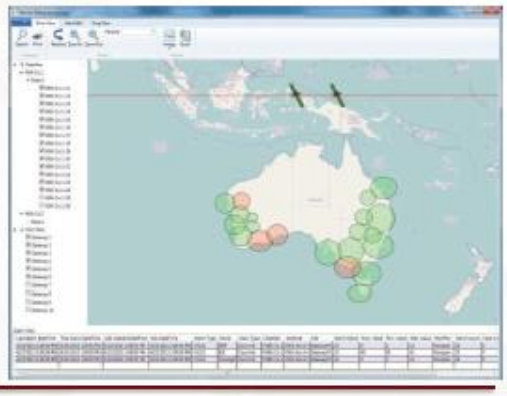
RF Interference Mitigation Leadership: By The Numbers

- Kratos' SAT Corp responded to the need to detect, characterize, and geolocate interference with Monics® and satID®
  - Most technically advanced, and widely used products in the world for interference detection, characterization, and geolocation
  - **~90%** of the world's largest satellite operators use SAT Corp products
  - Deployed in **57** countries
  - **Only** global service provider of managed SATCOM NetOps Services



The Problem

- Customers still want more:
  - These products are great and they solve most of our problems, but…
  - Sometime they are still not enough
  - We need a way to work through interference



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A KRATOS Company

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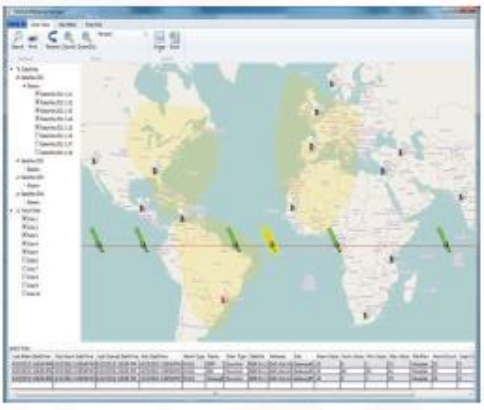
Next Step: Mitigate the Impact of Interference

- Use Interference detection and characterize information to effectively mitigate interference at the receiver
- Goal: Cost effectively enable end customer's service to continue in presence of interference



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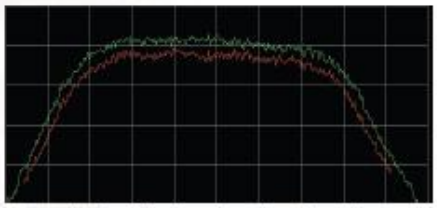
Types of Interference

- Two primary types of interference
  - Predictive (e.g. CW/unmodulated signals)
    - Equipment failures and radars
    - Overt jammers
  - Non-predictive (e.g. modulated signals)
    - Adjacent satellite interference
    - Human error
    - Covert jamming



Example of matched waveform jamming. The interferer (RED trace) is effectively stopping all communication on the affected carrier (GREEN trace).

- Different methods are required to mitigate techniques
  - In some cases multiple methods are required

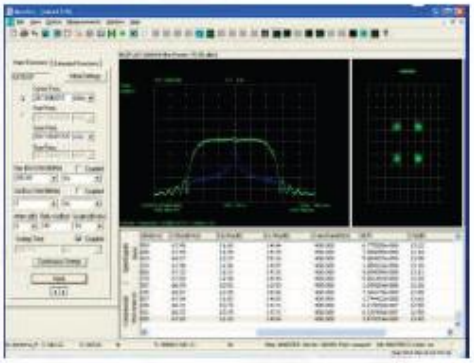
Primary Methods for Interference Mitigation

- Signal Cancellation
  - Using Monics algorithms, extract interfering signal, characterize it, and regenerate it in opposite phase, while equalizing for gain, frequency, & phase
  - Can use feed forward (with delay line) or feedback techniques
    - There are limitations on the feedback capability
- Signal Separation
  - Unique algorithms separate out two signals that occupy part of the same frequency space.
    - SAT's algorithms in Monics do this on a snap shot basis
    - New algorithms developed to produce a receiver that separates the signals and provides two outputs, main signal and residual signal
    - Residual signal being defined here as the interfering signal

*Patents pending on interference mitigation techniques

Predictive Signal Cancellation

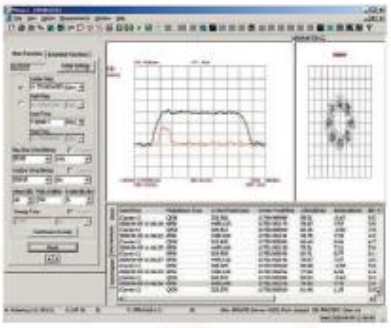
- Our predictive technique removes the predictive signal
  - Regains SNR of desired carrier
  - Allow the link to close
- >20dB of cancellation
- Firmware loop automatically corrects for amplitude and frequency changes
  - Including tracking sweepers



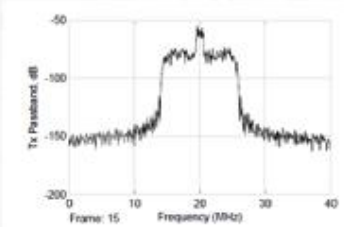
- Enhancing algorithms for other predictive modulations types, including radar

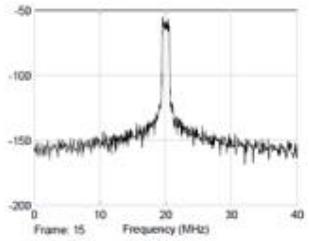
Modulated Signal Cancellation

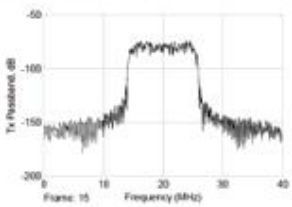
- Monics detects and characterizes modulated interfering signals
- Passing signal through a delay line allows a cancelling signal to be generated and fed forward to cancel the interference
- Latency of system is expected to be much less than 100msec
- Will remove/separate carriers of various modulation types
  - BPSK, QPSK, OQPSK, 8PSK, 8QAM, 16QAM, 16APSK, (32APSK & 64QAM - TBC)



Cancelling Modulated Signal







Compromised signal

Monics separates out the interference

Feed forward provides sufficient cancellation to successfully increase signal MER for successful demodulation

Solution Architecture

- Interference Mitigation technology is firmware based, enabling a varied of architectures:
  - Stand-alone box level solutions
    - To add to existing or new systems
  - Board level solutions
    - To embed into existing and new systems
  - Chip and firmware level solutions
    - To fully integrated into new systems

Schedule for Real Time Interference Removal

- Demonstration are available upon request
- Completed product, as a stand-alone solution (box and board level), will be available starting in Q2 2014
  - Will be able automatically to detect interference
  - Characterize type of interference
  - Mitigate the interference using the appropriate technique
  - And notify the operator of the interference

附件八 「Policies for the Internet of Everything」

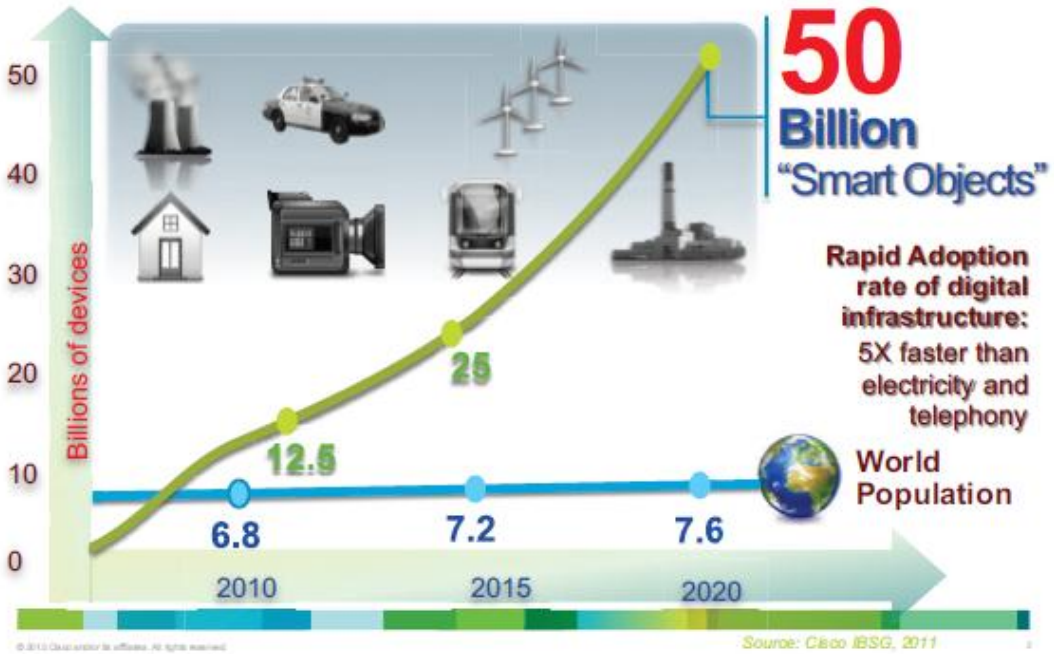
Policies for The Internet of Everything

Robert Pepper

Vice President, Global Technology Policy

21 January 2014

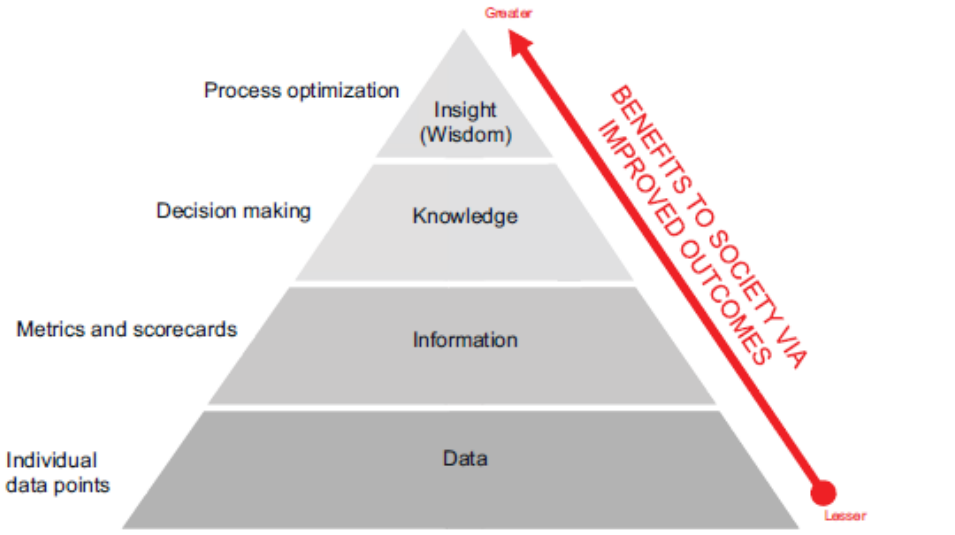
The Internet of Things is Already Here



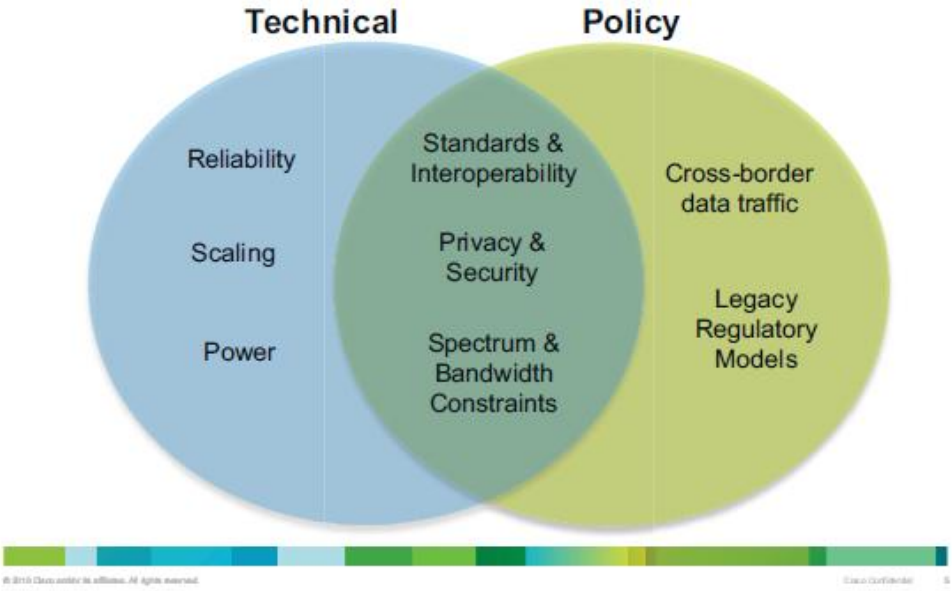
The Internet of Everything

The Internet of Everything brings together **people**, **process**, **data** and **things** to make connections more relevant and valuable, turning information into actions that create new capabilities, richer experiences and unprecedented economic opportunity for businesses, individuals and countries

Data To Insight

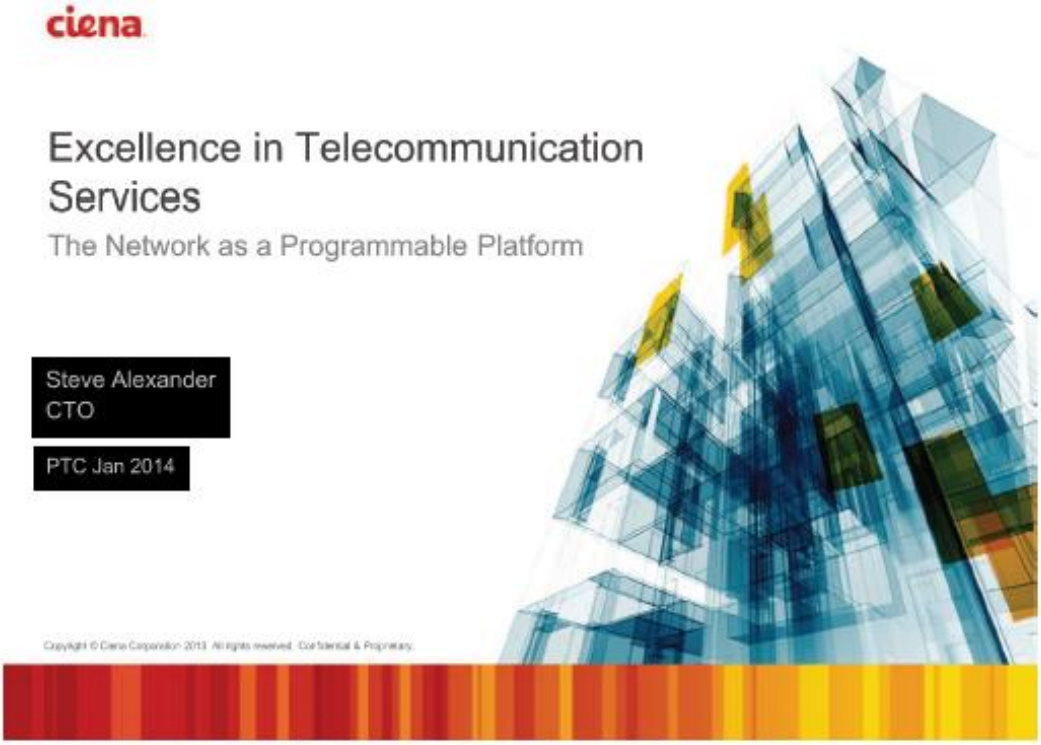


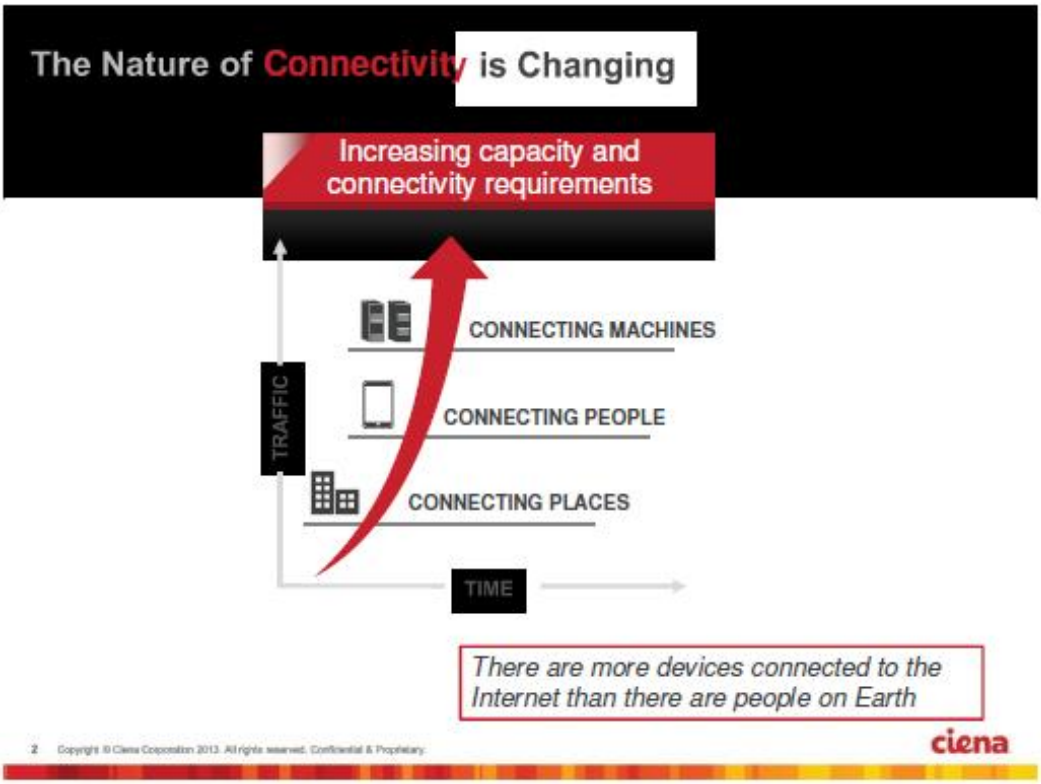
Internet of Everything Policy and Technical Issues



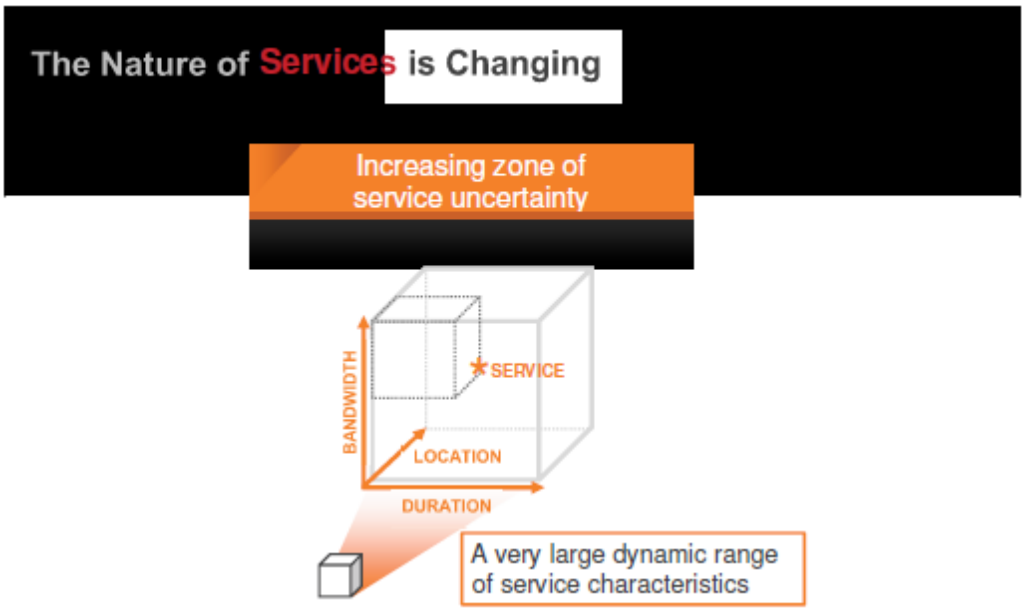
Thank you.

附件九 「Excellence in telecommunication services」





The Nature of Services is Changing



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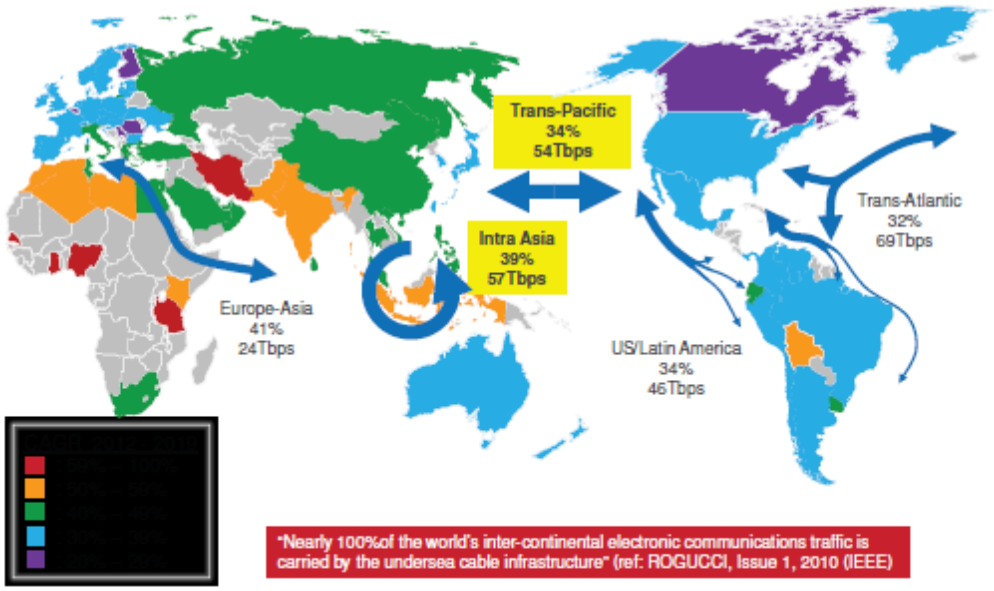
Bandwidth Growth Continues

2012 – 2019



*Nearly 100%of the world's inter-continental electronic communications traffic is carried by the undersea cable infrastructure" (ref: ROGUCCI, Issue 1, 2010 (IEEE)

Reference : Global Bandwidth Forecast Service, Telegeography, 4Q2012

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Capacity & Costs often Misaligned with Business Needs

Challenge to manage growth

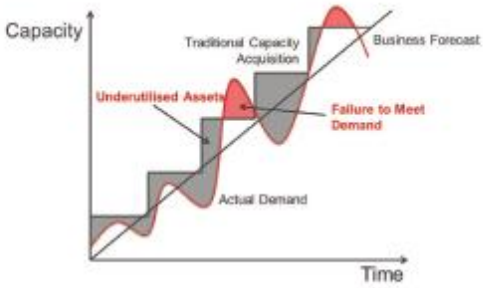
15 petabytes of new data are created everyday

90 percent of today's digital data has been created in past 2 years (IBM)

Total data center capacity will **increase by at least 30% in the next five years**

* Data Center Knowledge, Dec 2013

Existing offers



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Applications Drive User Behavior

BEHAVIORS

All kinds of users are more networked than ever before, and that requires an on-demand experience

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The Emerging Model for Service Excellence is On-Demand

- Efficient workload mobility
- Backup acceleration
- Advanced Business Continuity solutions
- User requested "Bandwidth Boosts"
- Application driven "Bandwidth Boosts"

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SDN
Changing the consumption model

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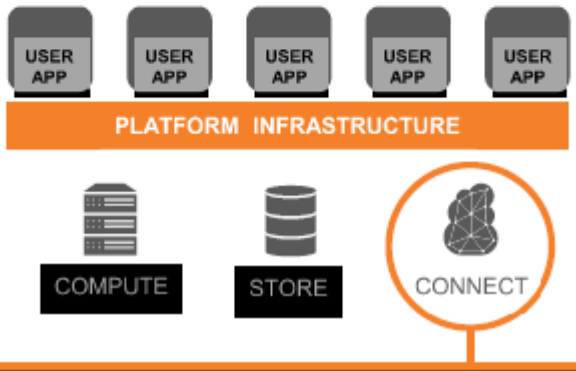
SDN

Create a virtualized, performance-on-demand ecosystem

Rethinking infrastructure as a platform…



…Requires a fundamental re-architecting of the network

SDN and NFV

	SDN	NFV
Virtualize:	Networks	Dedicated appliances and software that provides network functions
Primary forum:	Open Networking Foundation (ONF)	European Telecommunications Standards Institute Network Function Virtualization Industry Specification Group (ETSI NFV ISG)
Deliverables:	SDN standards and best practices	Platform requirements
Driven by:	End-Users (including major carriers)	20+ of the world's largest carriers
Dependent upon one another?	SDN does not depend upon NFV	NFV does not depend upon SDN, but NFV is enhanced by SDN

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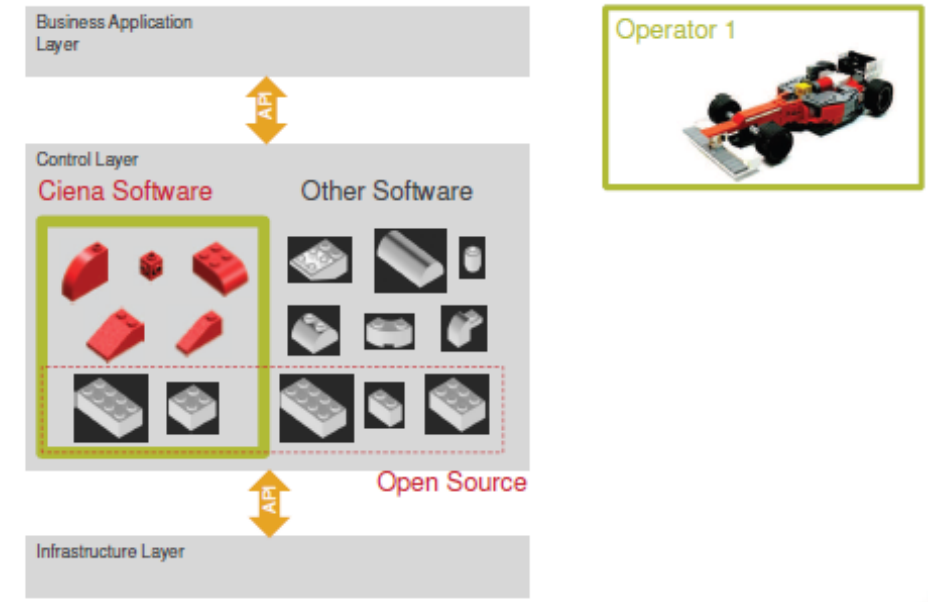
Operator Differentiation via “Lego block” Openness



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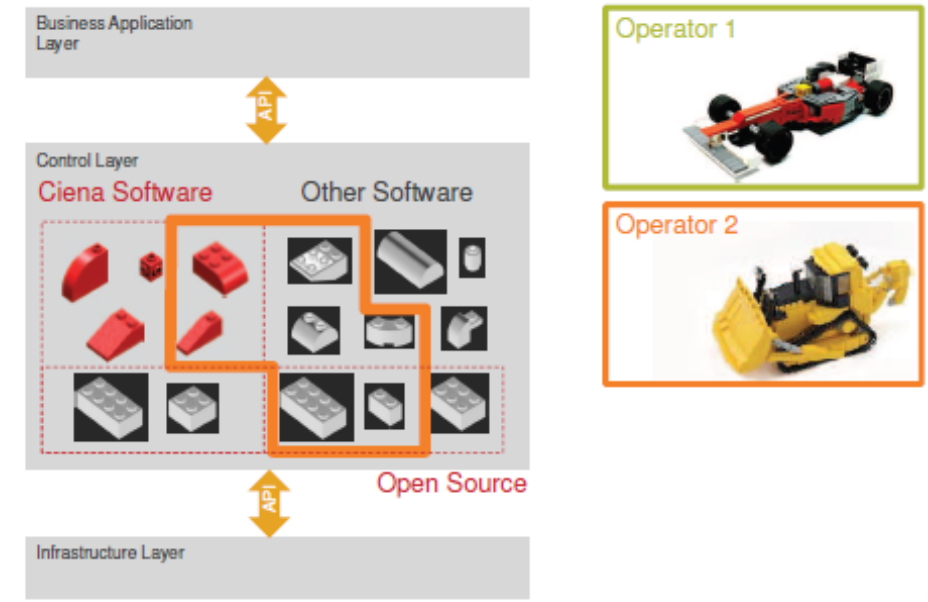
Operator Differentiation via “Lego block” Openness



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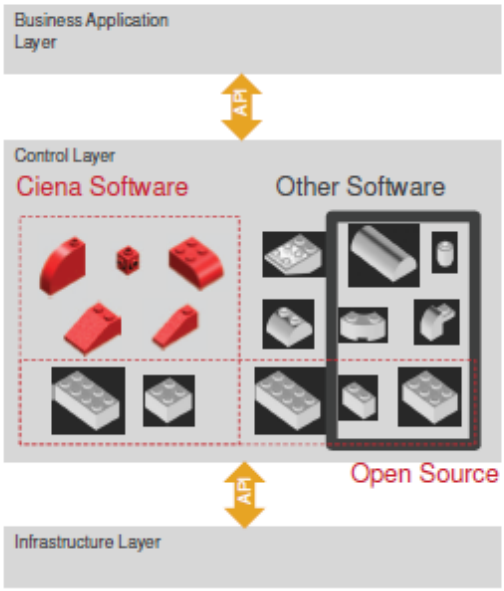
Operator Differentiation via "Lego block" Openness



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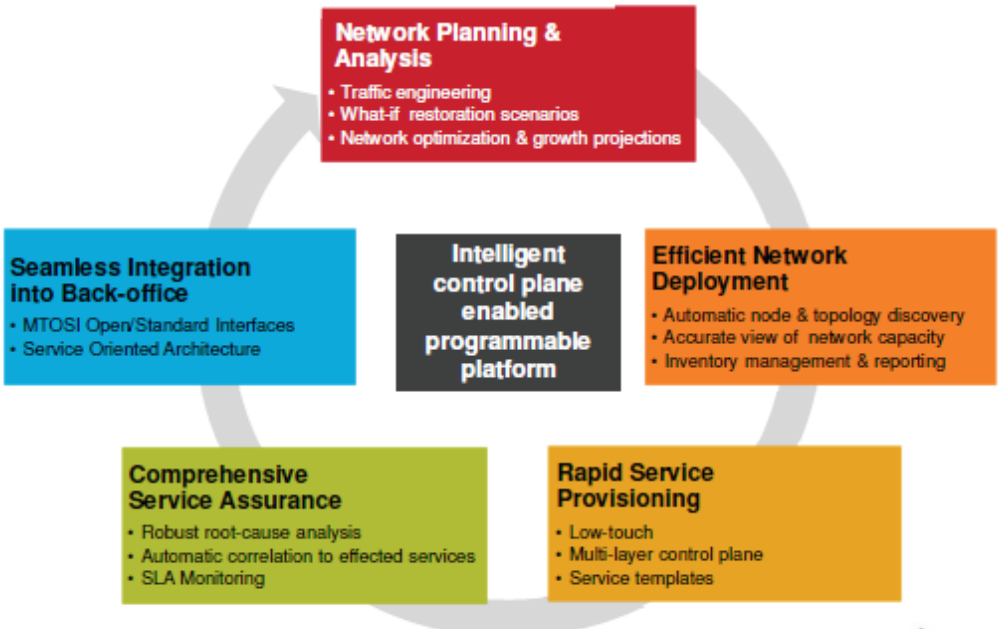
Best Practices Operations Lifecycle



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How will the Changes Impact Submarine New Builds?

Embracing an Open Global Architecture

Coherent SLTE and Dispersion-Uncompensated Submarine cables will enable unprecedented capacity, and PoP-to-PoP spans >12,000 km.

Flexible, profitable monetization enabled with SDN international mesh networking

But this is only possible if wet plant providers embrace an **open architecture**

TRANSFORMING THE NETWORK STARTS WITH MAKING IT OPEN

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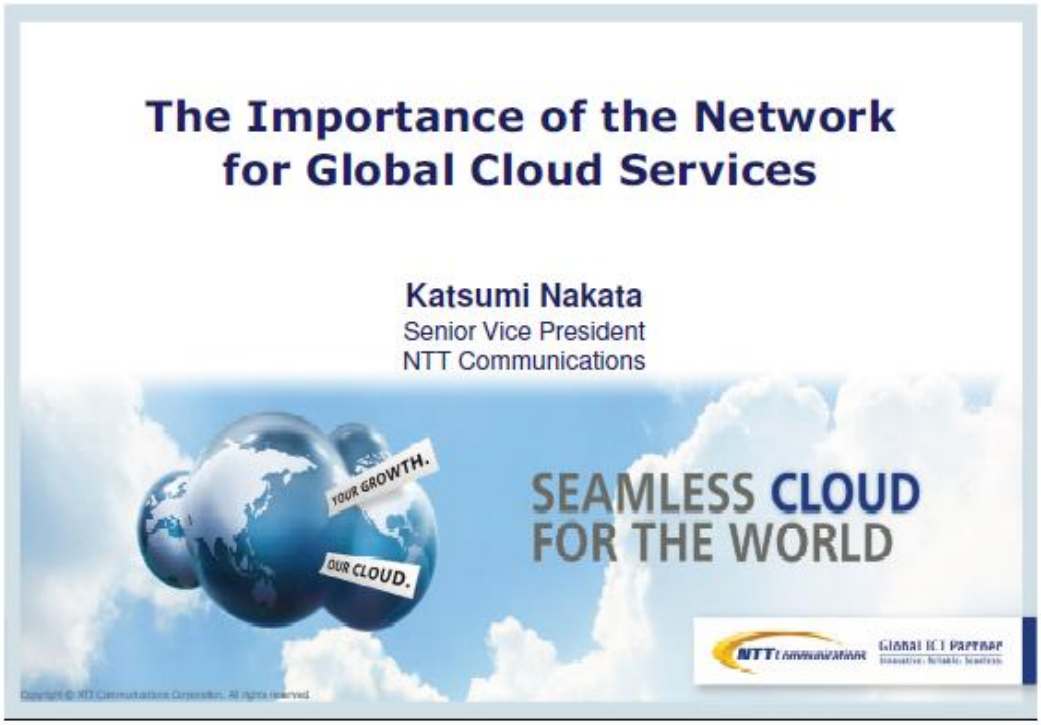
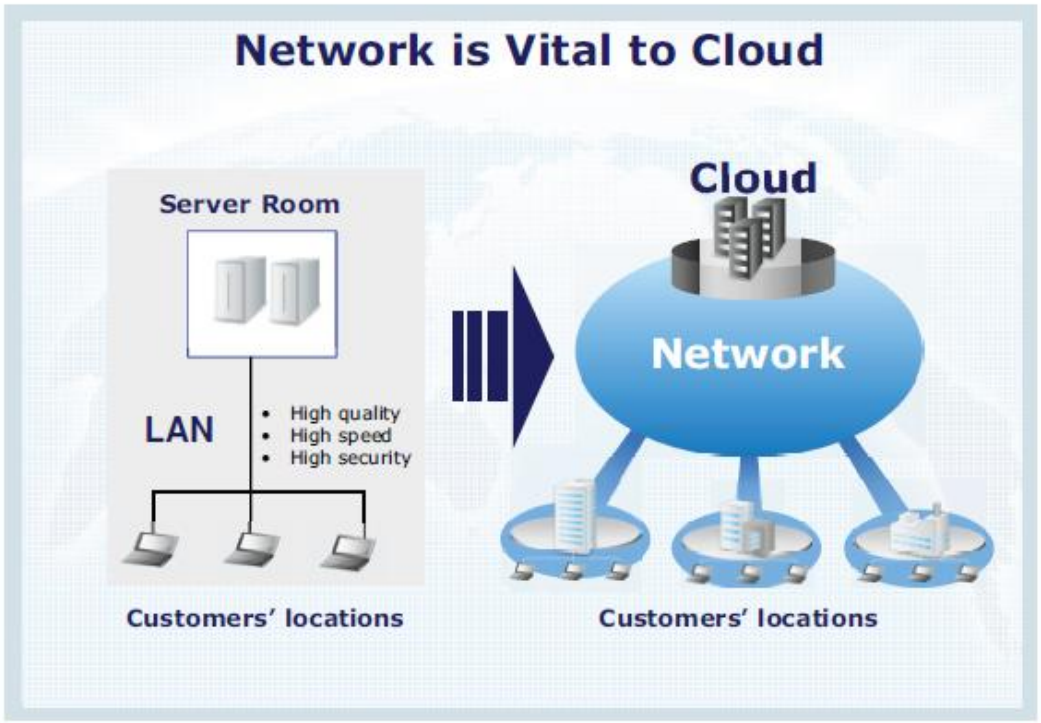
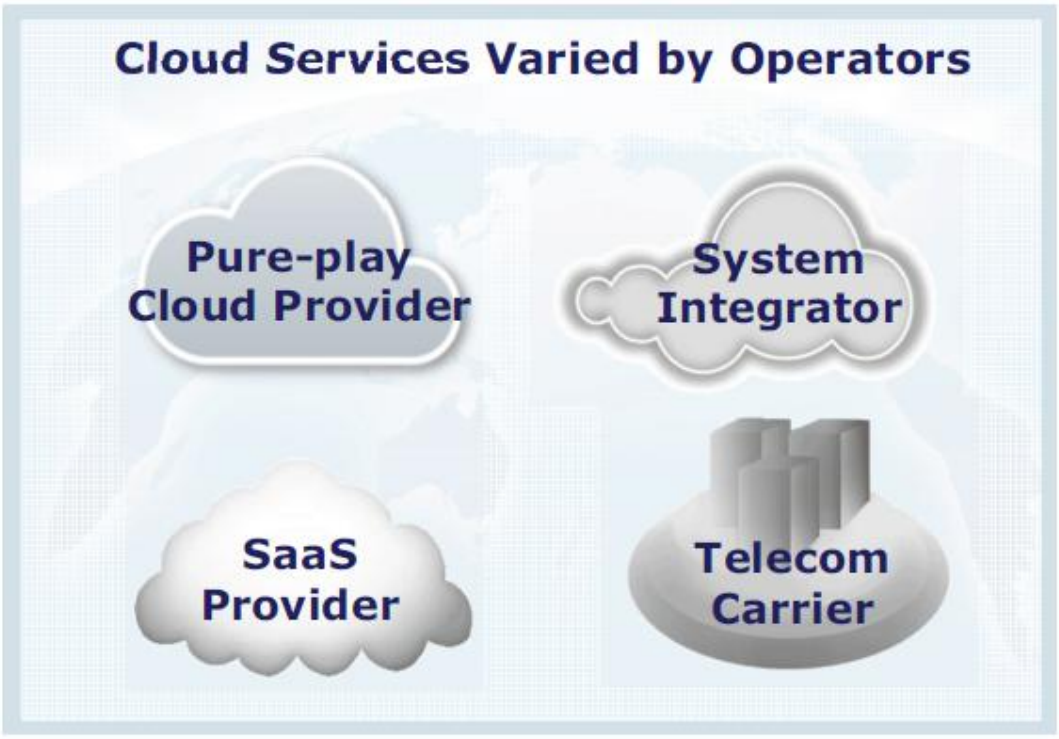
Thank you

附件十 「The importance of the network for global cloud services」



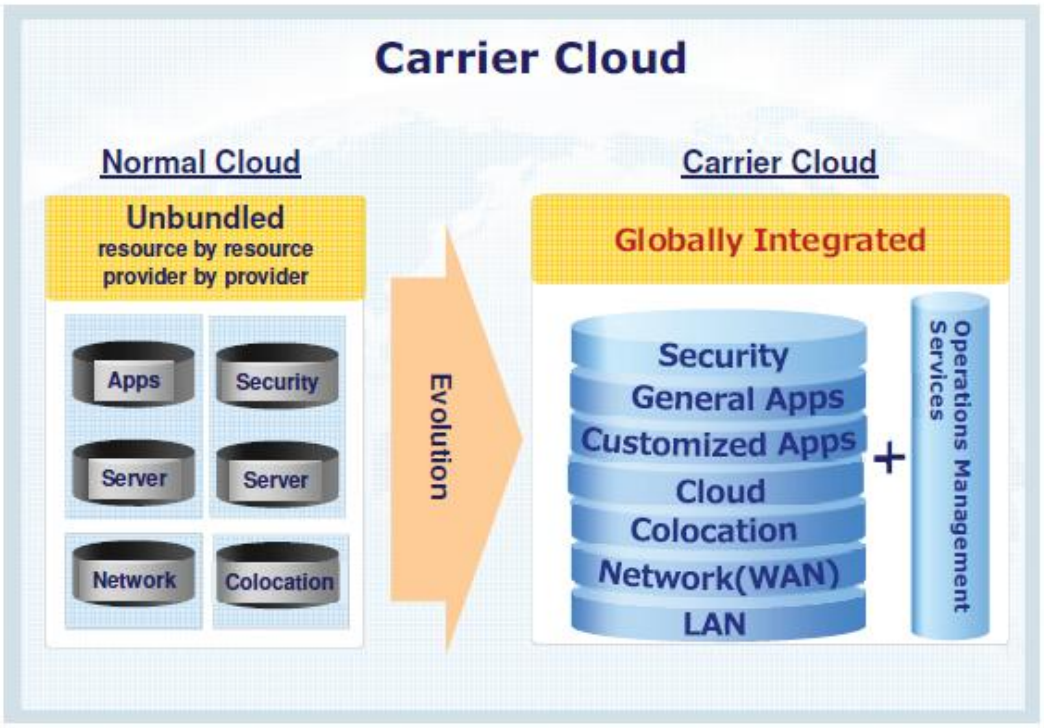


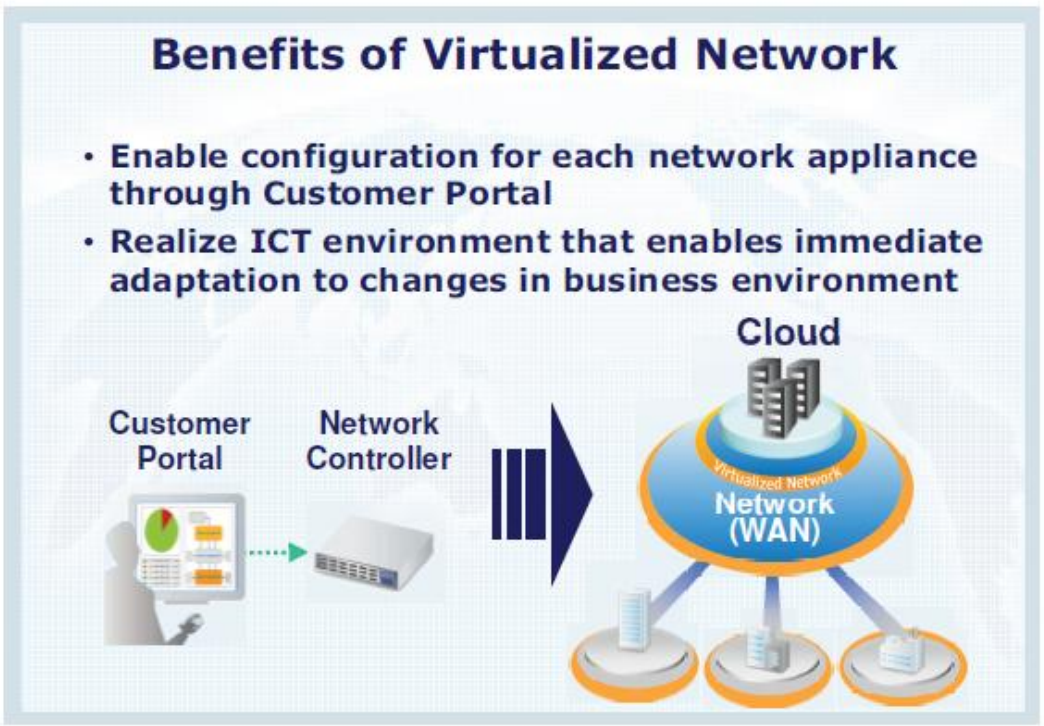


Cloud with the strength as a telecom carrier

"Carrier Cloud"

- High quality and reliable Cloud directly-connected to global network
- One-stop operation and maintenance of Cloud and Network


Carrier Cloud
Normal Cloud
Unbundled
resource by resource
provider by provider
Apps
Security
Server
Server
Network
Colocation
Evolution
Carrier Cloud
Globally Integrated
Security
General Apps
Customized Apps
Cloud
Colocation
Network(WAN)
LAN
+
Operations Management Services


Benefits of Virtualized Network
• Enable configuration for each network appliance through Customer Portal
• Realize ICT environment that enables immediate adaptation to changes in business environment
Cloud
Customer Portal
Network Controller
Virtualized Network
Network (WAN)

usage scene

- Realize connections without having to change the existing network designs
- Enables end-users to connect anywhere with multi-devices