

Next Generation NBN Lighthouse Specialised Track Ideas & Innovation Workshop #1

13 August 2009, 2:30pm – 5:00pm
Accenture Singapore





“Delivering Innovative Services on NGNBN”

Presented by

Brought to you by



Agenda



Thursday 13 August 2009

2:30 – 2:40: Welcome and Introductions

2:40 – 3:15: Will your partners today be your competitors tomorrow?

3:15 – 3:45: What services will consumers and businesses want on NGNBN?

3:45 – 4:00: Tea Break

4:00 – 4:45: Delivering innovative services on NGNBN

4:50 – 5:00: Closing remarks

Presenting Today....



James Chong
Business Development Director
james.x.chong@accenture.com



Jason Tan
Programme Director
jason-ct.tan@hp.com



Chew Tat Leong
National Technology Officer
tlchew@microsoft.com

Agenda



Thursday 13 August 2009

2:30 – 2:40: Welcome and Introductions

2:40 – 3:15: Will your partners today be your competitors tomorrow?

3:15 – 3:45: What services will consumers and businesses want on NGNBN?

3:45 – 4:00: Tea Break

4:00 – 4:45: Delivering innovative services on NGNBN

4:50 – 5:00: Closing remarks

NGN is more than a network with higher bandwidth

General overview of NGN ⁽¹⁾

A Next Generation Networks (NGN) is a packet-based network able to provide Telecommunication Services to users and able to make use of multiple broadband, QoS-enabled transport technologies and in which service-related functions are independent of the underlying transport-related technologies. It enables unfettered access for users to networks and to competing service providers and services of their choice. It supports generalised mobility which will allow consistent and ubiquitous provision of services to users.



To...

- Promote fair competition;
- Encourage private investment;
- Define a framework for architecture and capabilities to be able to meet various regulatory requirements;
- Provide open access to networks;

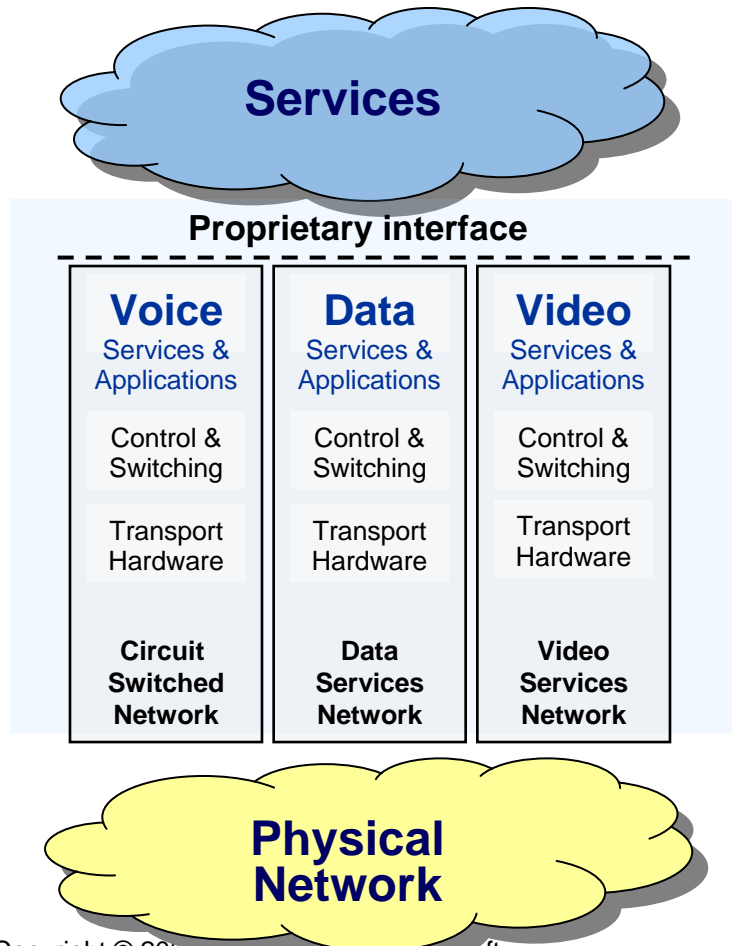
...while:

- Ensuring universal provision of and access to services;
- Promoting equality of opportunity to the citizen;
- Promoting diversity of content, including cultural and linguistic diversity; and
- Recognizing the necessity of worldwide cooperation with particular attention to less developed countries.

A 3-layered model is one of the key characteristics of an NBN

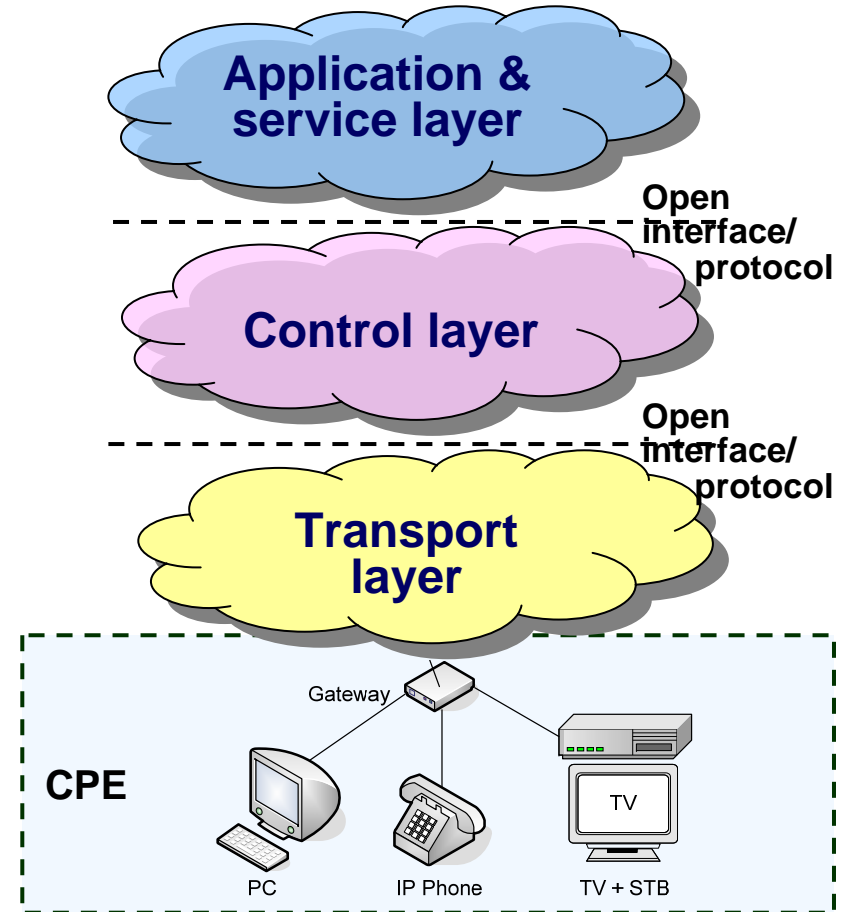
From vertical implementation...

Proprietary, vertically integrated networks with coupling to network elements...



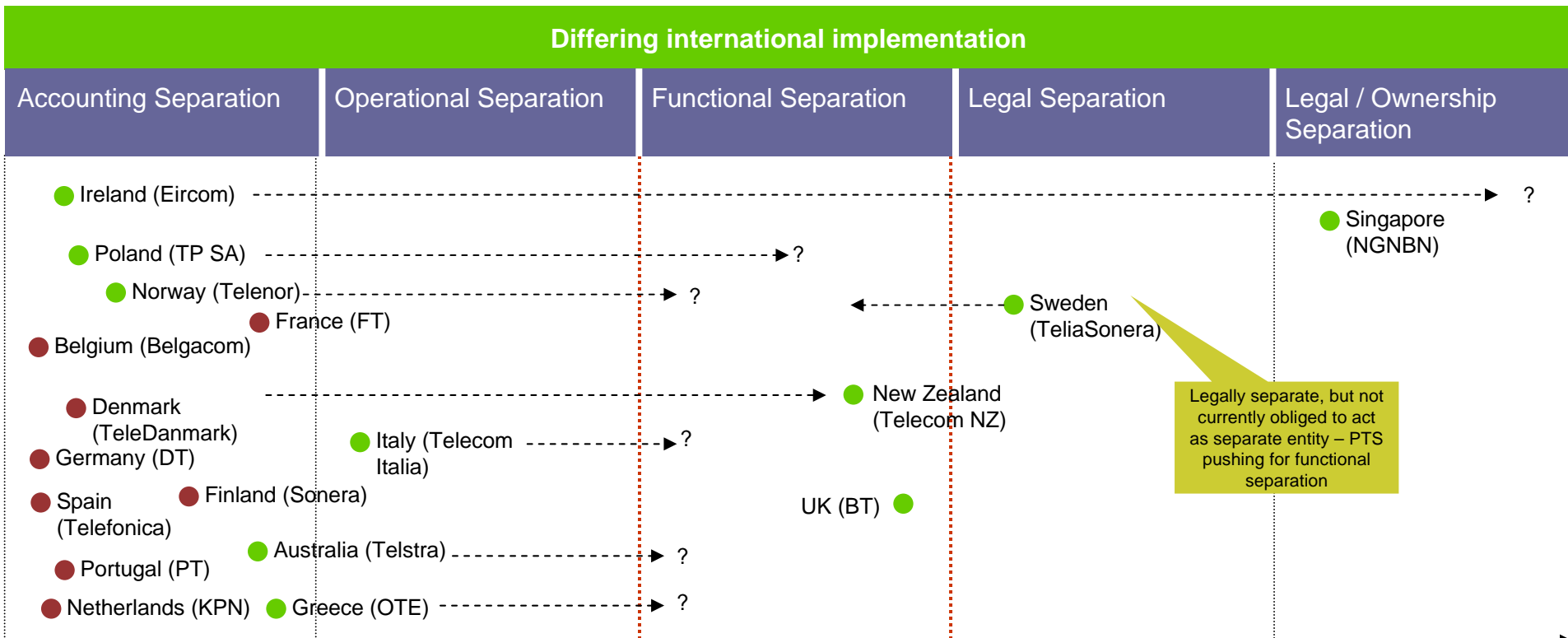
...to layered networks

Horizontal layers with open standards and interfaces, with clear separation of access, transport, services, customer network...



Government regulators have responded to NGN in varying degrees

International experience with vertical separation



Legally separate, but not currently obliged to act as separate entity – PTS pushing for functional separation

Drivers for separation

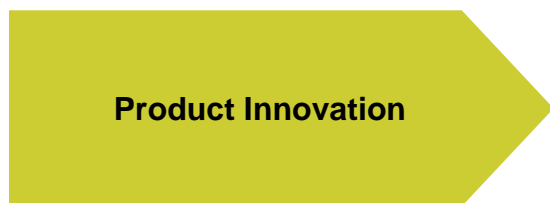
- Level of broadband penetration – low penetration will force regulators to act – e.g. high penetration in Denmark means no problem to solve
- Level of competition exerted from substitutes, particularly cable – e.g. see high penetration in Netherlands
- Extent to which government favours intervention

- No moves to functionally separate
- Moves to functionally separate

What's different in NGNBN

	Current S'pore Broadband Infrastructure	NGNBN	
Structure	<ul style="list-style-type: none"> • Facilities-based competition • Monolithic monopolies 	<ul style="list-style-type: none"> • Services-based competition • Regulated monopolies for infrastructure 	} Structural Impact
Access to Consumer	<ul style="list-style-type: none"> • Owned by incumbent infrastructure owners • Other have to lease access from incumbents 	<ul style="list-style-type: none"> • Service provided by RSP or QP, independent from infrastructure owner • Access is open 	
Technology and Speed	<ul style="list-style-type: none"> • Cable (StarHub) and DSL (SingTel) • Up to 100Mbps 	<ul style="list-style-type: none"> • FTTH – GPon and Active Ethernet • 100Mbps initially, ramping to 1Gbps 	} Service Impact
Quality of Service	<ul style="list-style-type: none"> • Best effort • Guarantee possible, but requires control of end-to-end infrastructure 	From OpCo: <ul style="list-style-type: none"> • “Class A” : Real Time • “Class B” : Near Real Time • “Class C” : Mission Critical • “Class D” : Best Effort 	

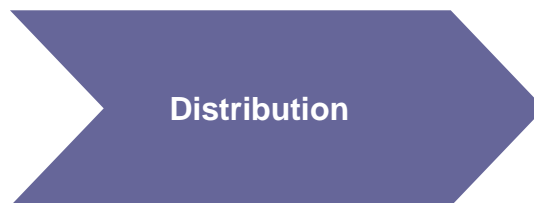
Virtually all Industry value chains have three distinct parts ...



Design, Develop and Commercialise new products & services

Key Attributes:

- Creativity
- Design
- Speed of innovation



Build & operate the distribution and operational infrastructure

Key Attributes:

- Coverage
- Reliability, Availability, Stability
- Efficiency



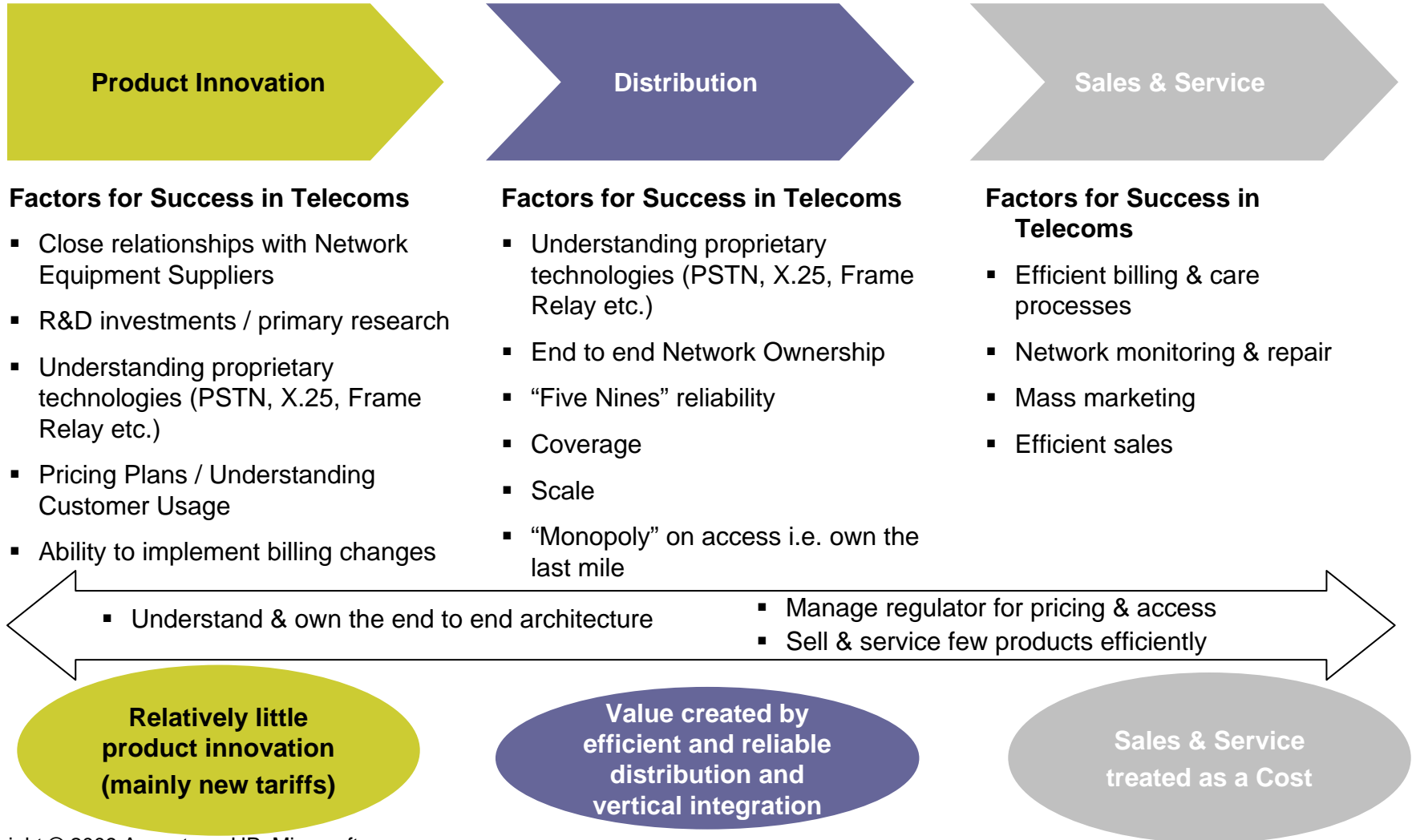
Identify, attract, service and build relationships with customers

Key Attributes:

- Customer Relationships & knowledge
- Bundling & Pricing
- Responsiveness
- Service Oriented

... which in telecoms has historically been most efficiently provided by a vertically integrated operator

Historic Factors for Success in Telecoms Value Chain



Technology and Economic forces are changing the game, lessening the advantages of vertical integration ...

	Old Factors for Success	What's Changing	New Factors for Success
Product Innovation	<ul style="list-style-type: none"> Close relationships with Network Equipment Suppliers R&D investments / primary research Understanding proprietary technologies (PSTN, X.25, Frame Relay etc.) Pricing Plans / Understanding Customer Usage Ability to implement billing changes 	<ul style="list-style-type: none"> Technology standardisation IP everywhere VC Investment Skilled resources in developing economies Regulatory pressure on open access 	<ul style="list-style-type: none"> Time to market Ability to attract & retain talent and ideas Close ties with innovation “zones” & partners <p>Advantage from breadth of innovation & speed to market</p>
Distribution	<ul style="list-style-type: none"> Understanding proprietary technologies (PSTN, X.25, Frame Relay etc.) End to end Network Ownership “Five Nines” reliability Coverage Scale “Monopoly” on access i.e. own the last mile 	<ul style="list-style-type: none"> Volume of IP traffic Increase file size (voice to video) New spectrum availability Uptake of WiFi / WiMax 	<ul style="list-style-type: none"> Scale Manage video traffic / large files Ability to transition to new technology <p>Advantage from scale and ability to exploit new technology</p>
Sales & Service	<ul style="list-style-type: none"> Efficient billing & care processes Network monitoring & repair Mass marketing Efficient sales 	<ul style="list-style-type: none"> More complex service mix across IT and Communications More complex services Multiple service providers Greater individualisation of products Regulatory pressure on open access 	<ul style="list-style-type: none"> Breadth of service offerings Personalised & bundled marketing Manage IT & Communications integration complexity <p>Advantage from broad scope of offerings and customer intimacy</p>

... allowing new players to exploit their advantages in specific parts

Product Innovation

Examples:



Google

facebook



Distribution

Examples:

QUALCOMM



Sales & Service

Examples:



Industry Changes they are exploiting:

- Standard networking and development technologies e.g. IP, Java
- Access to Venture Capital investment
- Skilled resources in developing economies
- Open access to networks
- Individual developers (user generated content and applications)

Industry Changes they are exploiting:

- Internet distribution economics, especially for large video files, compared with PSTN / private data circuits
- Wi-Fi adoption in PC and mobile devices
- Spectrum auctions

Industry Changes they are exploiting:

- Increased complexity of the digital home
- Increased complexity of devices
- Interoperability of networks
- Regulatory pressure to open up networks for MVNOs

This value chain fragmentation parallels the experience in other industries as they mature from “end to end” to “dis-integration” states

Industries shift from companies with integrated proprietary solutions to multiple companies across the value chain

Stage 1: “A Tight Fit” – End to End

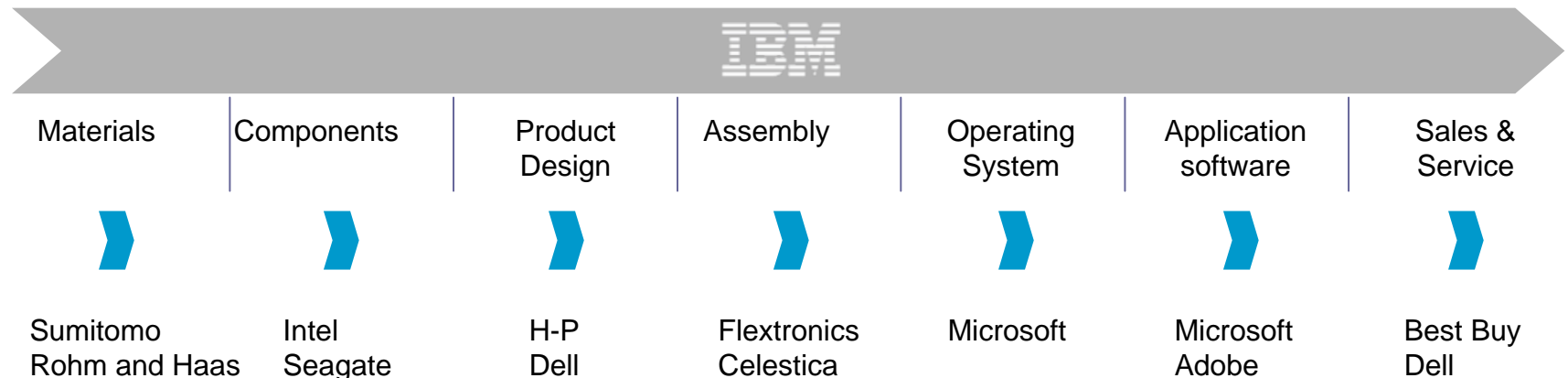
- Innovators push technological frontiers
- Proprietary architectures
- Large, vertically integrated companies
- Value is in products for end users



Stage 2: “Going to Pieces” – Dis-Integration

- Performance overshoots needs of mainstream customers
- Standardised architectures
- Disruptive companies enter and displace incumbents by delivering flexible, customised and cheaper products
- Value shifts from end-use products to the components which still have technologically *interdependent* internal architecture

Example: PC Industry has fragmented to multiple specialists ... same pattern has occurred in media, automotive and other industries



Source: Derived from “The Innovator’s Dilemma” Clayton Christensen and “Skate to Where the Money Will Be”, Christensen, Raynor and Verlinden in Harvard Business Review 2001

Each part has some distinctive characteristics for success

Product Innovation

Distribution

Sales & Service

Economics

- Speed is key. Early market entry allows a premium price and large market share

- High Fixed Costs; high volumes required to achieve low unit costs
- Capacity management and on / off-net traffic drive costs
- Economies of Scale are key

- High cost of customer acquisition / retention makes high share of wallet important
- Economies of scope i.e. multiple services

Culture

- Employee Centred
- Look after the “creative stars”

- Cost focused
- Process driven
- Stress predictability and efficiency

- Customer Centred
- Highly service oriented

Competitive Levers & Dynamics

- Attract & retain talent
- 3rd party collaboration
- Many small players / low barriers to entry
- “Cloud Computing” as transaction platforms

- Scale
- Consolidation
- Multi-service networks
- Few large players / High barriers to entry

- Scope of services provided
- Customer understanding
- Pricing models
- Bundling & Integrated Products
- Personalisation

Key Metrics

- Time to market
- Product Profitability
- R&D as % of revenue
- % revenue from new products
- % time engineers spend on new product development

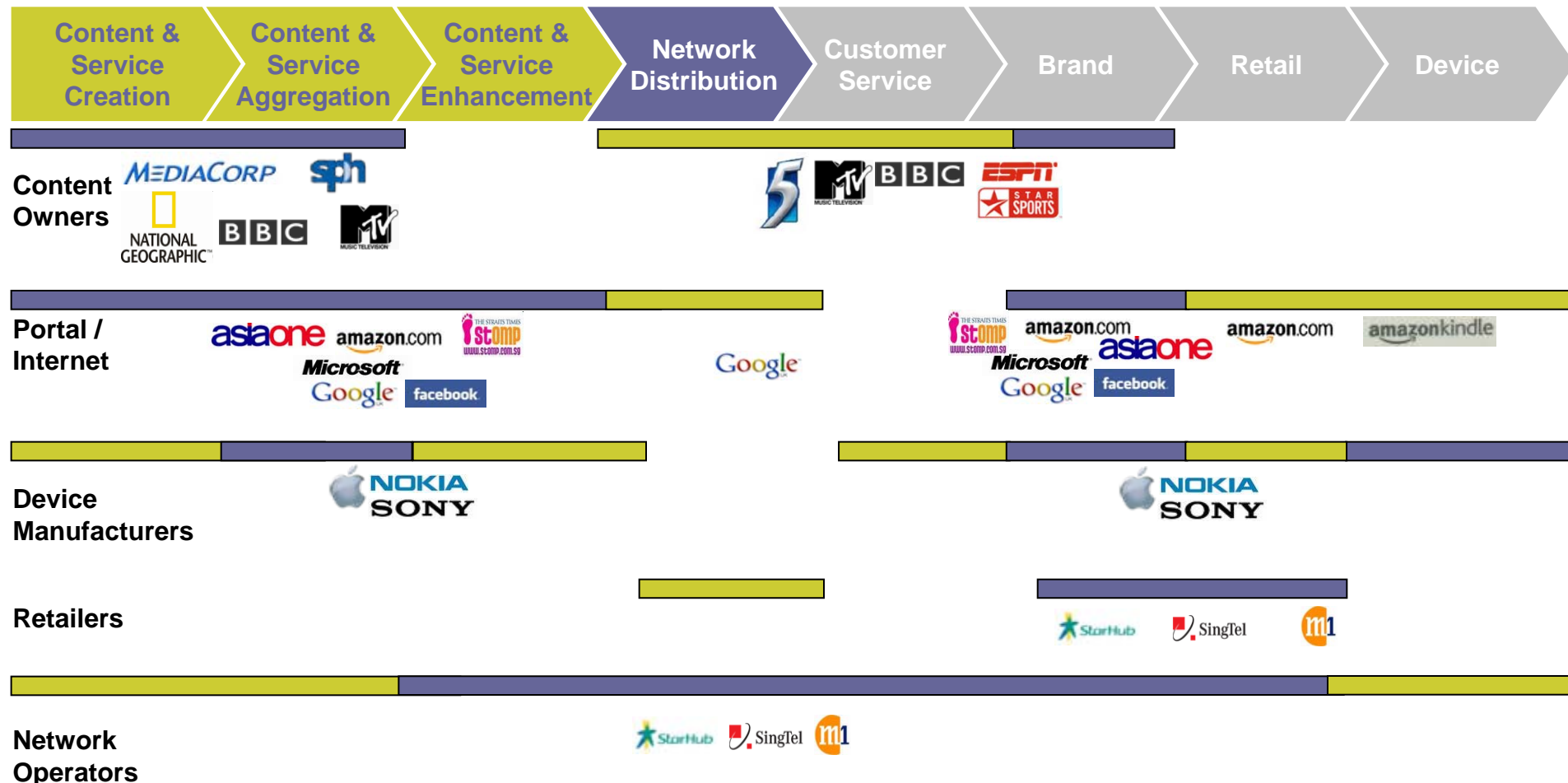
- Network availability
- Mean time to repair
- Fault rates
- Capacity Thresholds
- Opex per line / SIM

- ARPU
- SAC / SRC
- Customer profitability / lifetime value
- Churn
- Service provision time / cost
- Trouble resolution time / cost
- Customer satisfaction

Source: “Unbundling the Corporation” John Hagel III, HBR 1999, Accenture Experience

New entrants are exploiting the fragmentation to enter into parts of the value chain

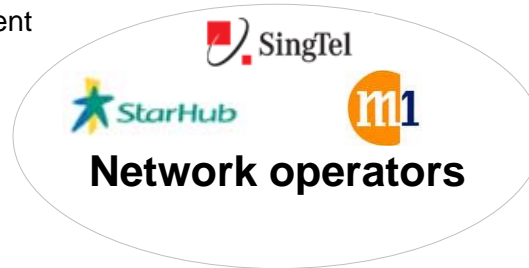
Example Companies & Main Value Chain Positions



Typically relatively stronger
 Typically relatively weaker

Players will form new partnerships, competitors and offerings

- Use broadband networks to provide content to customers
- Drive up broadband penetration
- Provide intelligence in the network / platform for a rich customer experience
- May secure content directly or via aggregators



- Use broadband as a 'dumb pipe' to deliver content
- Make it easy to find and schedule video content
- May not always be legal



- Look for new distribution channels to reach customers
- Have concerns over rights / piracy
- For broadcast channel providers, risk of loss of advertising revenues



- Create devices for end users
- Network agnostic
- Secure content, or allow customers to obtain their own

Impact of NGNBN on Structure



- Players who have strong presence in less obvious parts of the value chain will take advantage of the more open market to develop innovative services
 - Strong brands like Google, Sony and ESPN will seek to control the value chain
 - Past partners may be your competitors as they seek new ways of reaching customers
- Partnerships will be key to ensure delivery of a more complete customer experience
 - No one party will have a monopoly on ideas or new services
 - Innovation is no longer confined to your organization. Communities of developers and customers can become unexpected partners.
- Computing will be distributed, virtual and not necessarily owned in order to be controlled or utilized
 - New architectures will emerge, where disparate computing resources are virtually connected and shared for both development and production environments

Agenda



Thursday 13 August 2009

2:30 – 2:40: Welcome and Introductions

2:40 – 3:15: Will your partners today be your competitors tomorrow?

3:15 – 3:45: What services will consumers and businesses want on NGNBN?

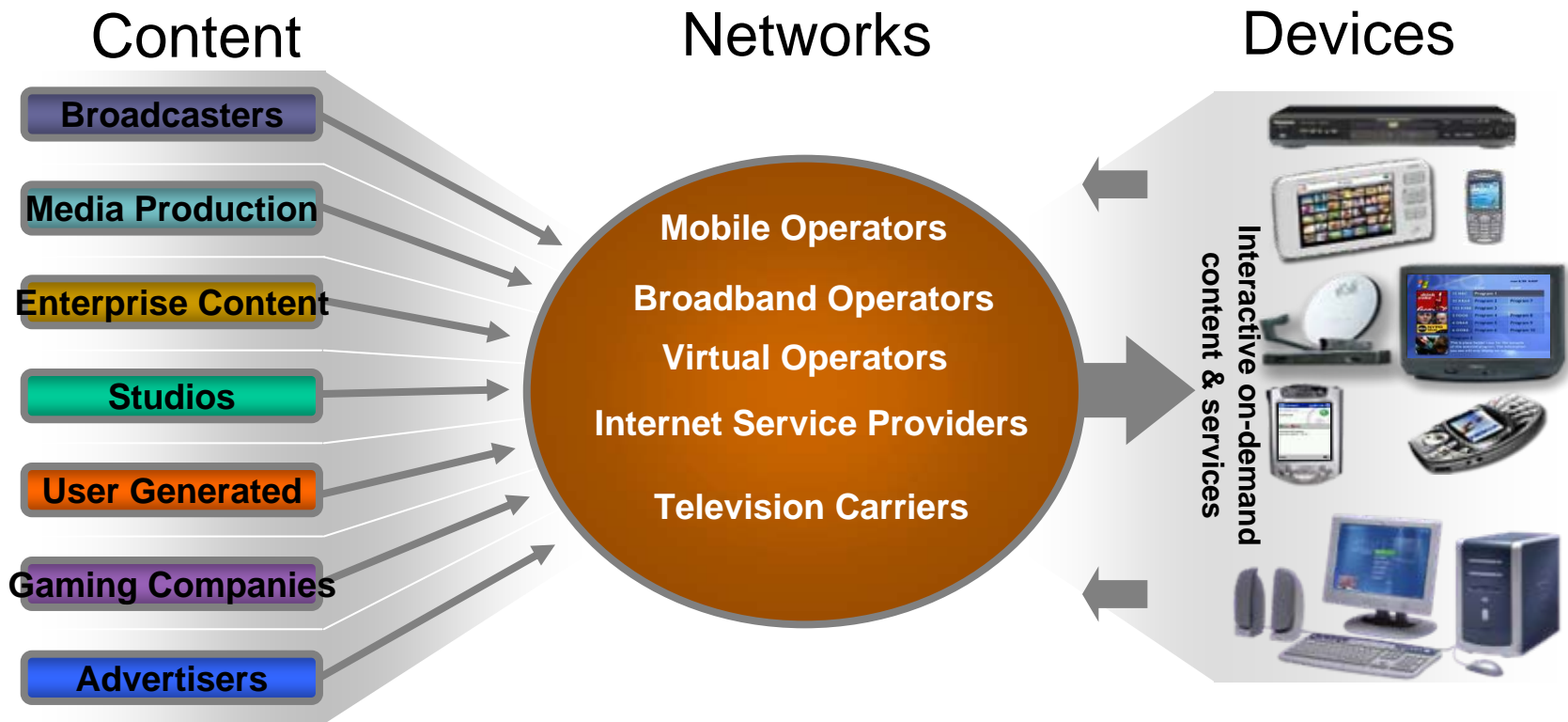
3:45 – 4:00: Tea Break

4:00 – 4:45: Delivering innovative services on NGNBN

4:50 – 5:00: Closing remarks

A New Playing Field

Broadband goes global and mobile:
NGNBN will accelerate growth in convergence and digital transformation.



New Patterns of Consumption

- The digital world will converge with the physical world.
- The era of device-centric computing is over. Content sits in the cloud. Connectivity-centric computing takes centre stage.
- Customers use web browsers to access a wide range of "cloud services", available on demand over the internet.
- Rich, personalised experiences that customers value – and are willing to pay for





What are the new services and applications that would be in demand and drive usage over the NGNBN, for consumer and enterprises?

The implications to both consumers and enterprises are:

Consumer

- Media Consumption
- Communications
- Print
- Learning
- Publishing
- Social environments

Enterprise

- Knowledge Worker
- Cloud Computing
- Consolidated Infrastructure

Halo: An immersive experience for communication and collaboration

IT Improvements

- Lifelike virtual meeting experience
- High-function collaborative work rooms
- No perceived delay in voice and video data transmission
- Ability to detect nuances of non-verbal communication
- Secure, high-bandwidth network

Business Benefits

- Effective collaboration among geographically and culturally diverse teams
- Greater productivity and business effectiveness
- Stronger business and social relationships
- Faster decision making and time to market
- Financial and environmental benefits of reduced travel
- Better employee work/life balance



HP's Manufacturing Example

Transferred product line from Oregon R&D to Singapore Manufacturing Line

Shorter Cycle Time: Six months instead of the usual full year.

Savings: Saved 44 international trips off the project, and US\$1 million.

Greatest benefit: Faster time-to-market—in half the usual time

MScope: Experiential Learning

- World is your playground
- Experiential Learning at HortPark



mscope.com

Sign up | Sign in | Forum | Help | Upload a Mediascape

What is a Mediascape? | Download Mscope Suite | Browse Mediascapes | Blog

Search for MEDIASCAPES

Get out and explore.

Discover the unexpected — games, guides, stories triggered by your GPS location.

Interact with the world in a whole new way. Experience sounds and images linked to the landscape. Discover a rush of info as you turn a corner, a challenge awaiting you on your arrival. Imagine the games you can build, the stories you can tell. It's just the beginning. [More...](#)

Get a Mediascape

Find the ones you want to play. Download as many as you want — they're free!

Featured

- Doubloons
- Riot 1337
- always something somewhere else

More...

New

- University Park Campus Tour, Nottingham, UK
- Audio functions
- Measuring distance traveled

More...

[Browse Mediascapes](#)

Get Started

Got a GPS device? It's not just for directions — not anymore. Transform it with Mscope. Download the software you need to play — and build — mediascapes. Then get out there and see for yourself.

[Download Mscope Suite](#)
Version 2.1 | 10.5 MB

Make a Mediascape

It's easy. You don't have to start from scratch. We're all about sharing. Adapt mediascapes you like. Borrow parts to build your own. Upload yours to show what you've done. [More...](#)

mscopeFest08
December 2 & 3
Thanks for attending!
Belfast, UK

About mscapers.com | Labs experimental zone | Press kit | Contact us

© 2008 Mavisen-Beckard Development Company, L.P.
All rights reserved. | Contact: [info@mscope.com](#)

Our vision of Everything as a Service

We are now entering...
The era of
“Everything as a Service”

Where a wide range of cloud services, from business to entertainment to community, will be personalised to create richer experiences

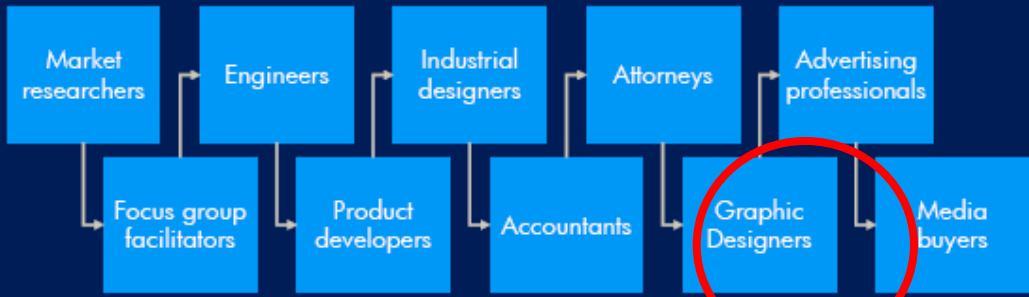


Crowd-sourcing to tap collective intelligence



The entire value chain, from idea to finished product, is now delivered via the Internet.

An example:
Logo for the 2012 London Olympics



We're embarking on the next wave of talent aggregation and disintermediation...powered by the Internet platform.



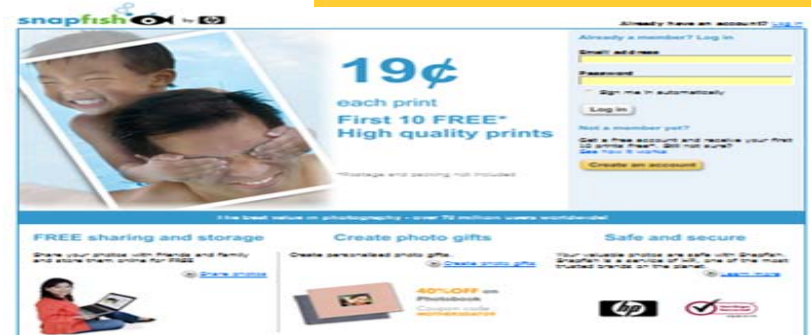
\$800,000



\$599

Picturing the Future

- A leading online photo service
- Print on anything – from mugs, photo books, cards
- Snapfish Lab: Crowd-sourcing of R&D ideas and new products that appeal from consumers themselves
- Benefits: Speed up innovation



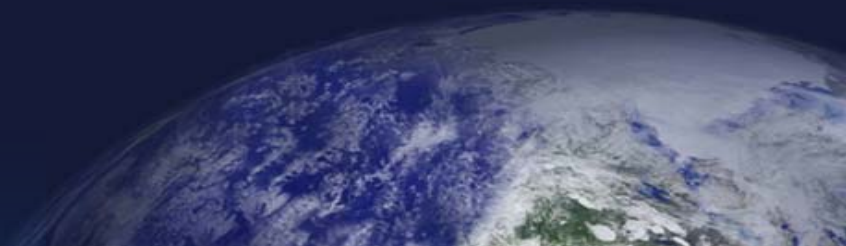
Cloud Service: Publishing is being democratised

- Publishing a short-run magazine: Costly and Labour-intensive
- Consider: “web-DNA” (no waste, personalized content, open to all) with best of print
- Turn your PDF into magazines
- New Business Model: Print on demand, Pay for Per Page Print



The screenshot shows the MagCloud website interface. At the top left, there is a red header with the MagCloud logo and a 'BETA' tag. To the right of the logo, there are links for 'New? Sign Up.' and 'Member? Sign In.', and a 'Help' button. Below the header, there is a navigation bar with 'Home', 'Browse', and 'Publish' options. The main content area features a 'Welcome to MagCloud.' message. Underneath, there is a 'BROWSE' section with 'Featured' and 'Recent' sub-sections. A carousel of magazine covers is displayed, with the current featured magazine being 'C&K Magazine, Spring 2009' by Corbett & Kish Publishing. The cover of this magazine shows a wine glass and the text 'LIFESTYLE C&K Magazine, Spring 2009 by Corbett & Kish Publishing'.

Everything-as-a-Service



Cloud Services

Snapfish MagCloud BookPrep Logoworks Friendlee MySpace CloudPrint
MarketSplash + HP

No. 1
online
photo
service
worldwide

Self publish
and sell
magazines,
on demand

Automate
s workflow
for
on-
demand
printing

Professional
marketing
services for
small
businesses

Mobile,
location-
aware
social
networkin
g

Unlocking
content
from the
digital
world

Print from
anywhere
with a
mobile
device

Software as a Service

IT Business
Management

Software Quality
and Security

Business Service
Management

Project and portfolio
management

Cloud service
testing

Cloud service
assurance

Infrastructure as a Service

Pay-per-use computing that enables providers to efficiently host
cloud services

Four key business models

1 Advertising

Google Ad Network
Microsoft Live

2 Subscription

Salesforce.com
Vodafone/RIM

3 Transaction Broker

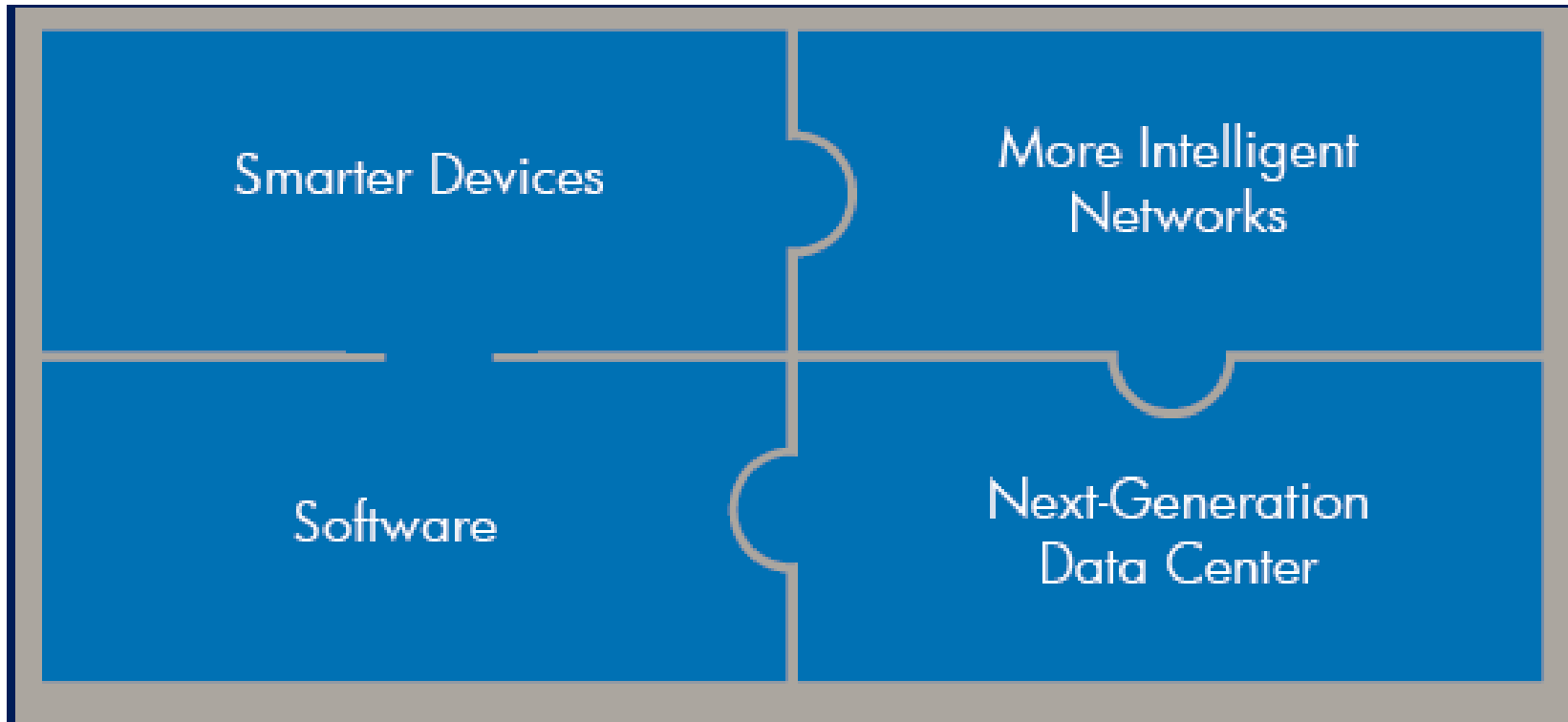
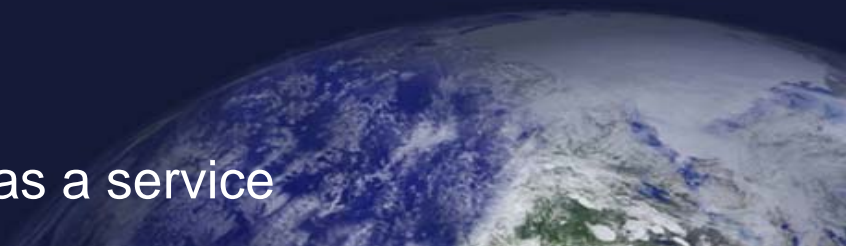
Amazon Mechanical Turk
eBay

4 Digital to Physical/ Bits to objects

Snapfish
Logoworks

What it takes:

Technology building blocks for everything as a service



Agenda



Thursday 13 August 2009

2:30 – 2:40: Welcome and Introductions

2:40 – 3:15: Will your partners today be your competitors tomorrow?

3:15 – 3:45: What services will consumers and businesses want on NGNBN?

3:45 – 4:00: Tea Break

4:00 – 4:45: Delivering innovative services on NGNBN

4:50 – 5:00: Closing remarks

Agenda



Thursday 13 August 2009

2:30 – 2:40: Welcome and Introductions

2:40 – 3:15: Will your partners today be your competitors tomorrow?

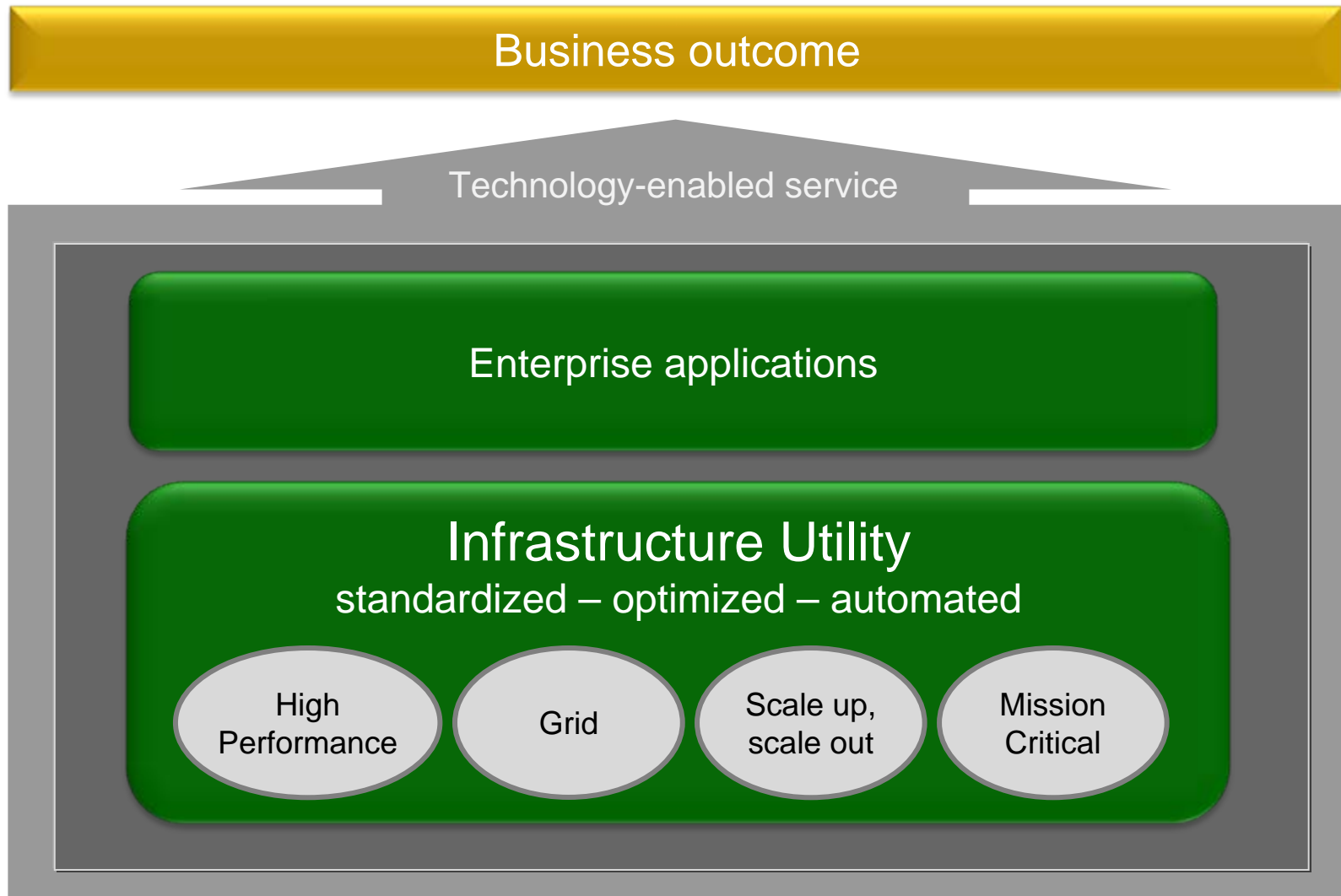
3:15 – 3:45: What services will consumers and businesses want on NGNBN?

3:45 – 4:00: Tea Break

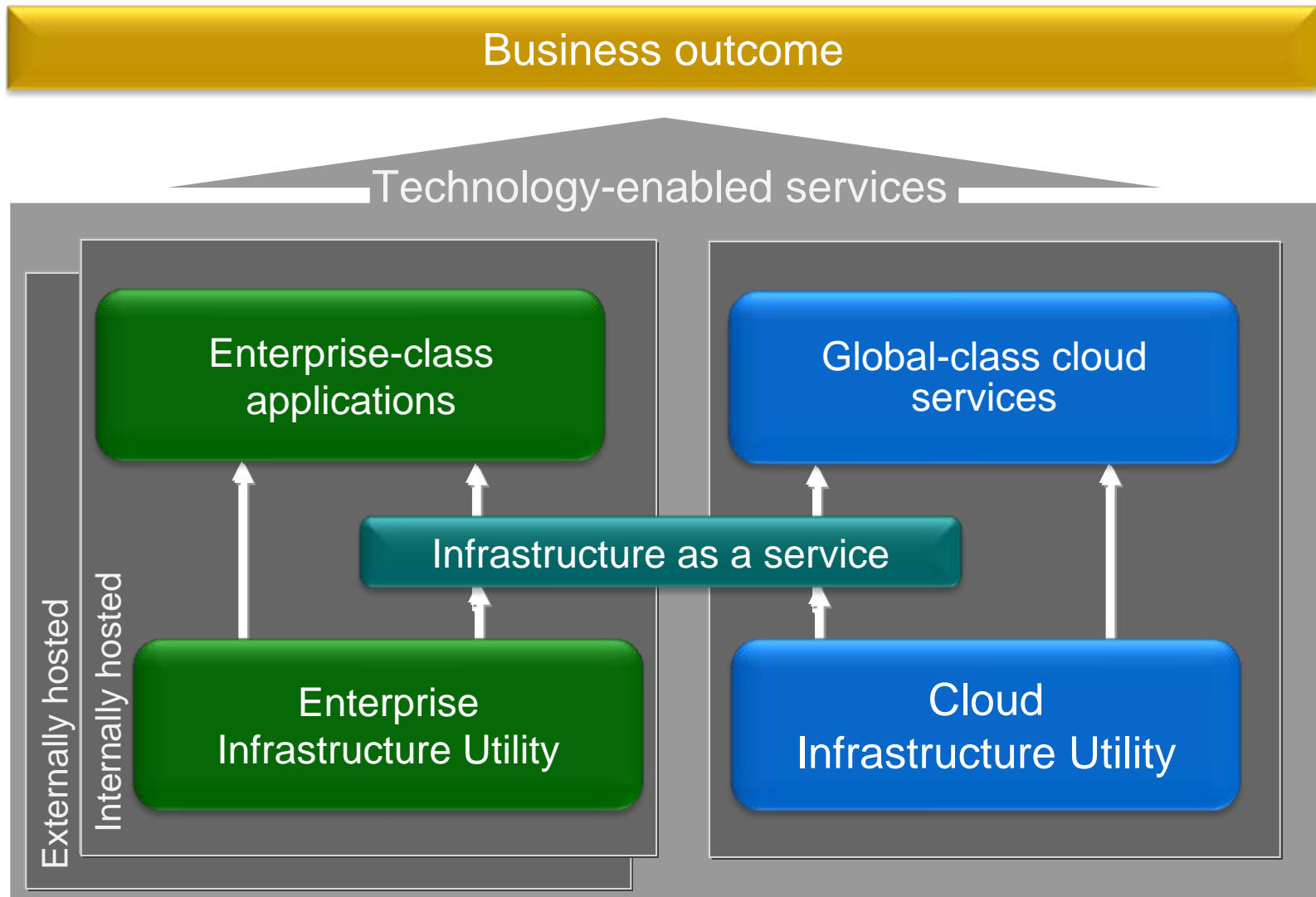
4:00 – 4:45: Delivering innovative services on NGNBN

4:50 – 5:00: Closing remarks

An infrastructure utility underpins both dedicated and “as a service” applications



An infrastructure utility underpins both dedicated and “as a service” applications



Everything-as-a-Service



Massive scale-out servers, storage, network , e.g. HP Bladesystem Matrix

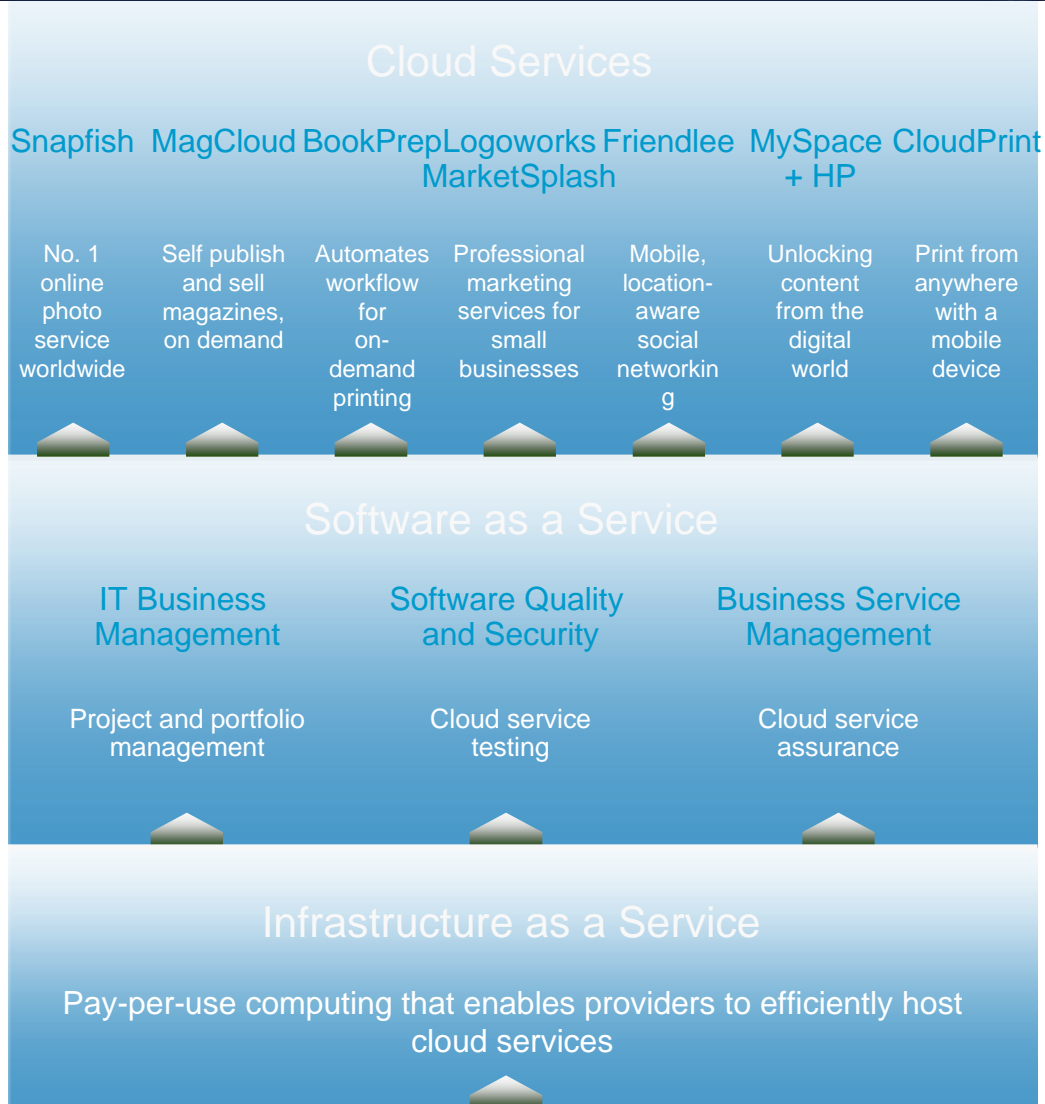
Software for Infrastructure and management, e.g. Cloud Assure

Data center infrastructure: design and optimization, e.g. Cloud consulting services

Data center services: in-house and outsourced, e.g. EDS

Cloud Consulting Services cloud roadmap service, cloud discovery workshop

Everything-as-a-Service

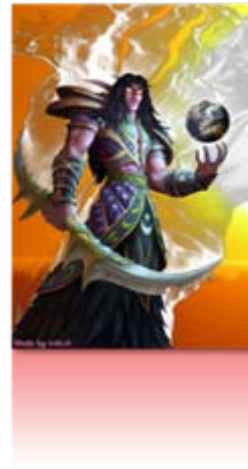


Cloud Assure
Service Portfolio Management solutions
ITIL v3 authorship; COBIT, ISO, and other industry standards and practices

Example

Dynamic, cloud-based gaming

- Taps massive scale, capacity of the cloud
- Enables evolving story lines, time-based events
- Co-creation across entertainment industries



Industry standard hardware is the backbone of Web 2.0



Some issues to think about

- Service Level Agreements
- Licensing of Software
- Security
- Developers Platform

Future of Devices is in the Cloud

- Increased bandwidth and connection to Internet
- Rich applications + services
- Rich mobile data in the cloud
 - Social graph
 - Real time Web (e.g. Twitter)
 - Location data
- Cloud-based platform for mobile Web

Smart, Connected, Service Oriented Devices

Future is multiple, smart devices connected to multiple/disparate services

OEMs, Developers, SIs, Companies (especially SMEs) to build services which mix cloud and in-house computing

NGNBN will allow users seamless access to their data on the cloud



OEMs



Developers



System Integrators

Connected Consumer Devices

1. Smart phones
2. MIDs
3. Portable Navigation
4. Portable Media Players
5. Digital Picture Frames
6. Advanced STB
7. Others...

Connected Enterprise Devices

1. Thin Client (#1)
2. Point Service Terminals
3. ATMs/Kiosks
4. Industrial Automation
5. Medical Systems
6. Multifunction Printers
7. Digital Signage, Others...

Cloud Services

- Live Search
- zune
- Windows Live
- Live Mesh
- Microsoft adCenter

On-Premise Servers

- Windows Server 2008
- Microsoft SQL Server
- System Center Operations Manager 2007
- Microsoft BizTalk Server 2006 R2



XBOX 360



Availability of Cloud computing providers on NGNBN is key

Cloud Computing Providers (Amazon, Google, Microsoft, etc...)

NGNBN

Challenges For RSPs



Security

Manageability

Interoperability

RSPs

The Move Is On

Desktop
Software



- Apple iTunes, iPhone SDK
- Adobe AIR
- Intuit Quicken Online

Enterprise
Software



- SAP Business ByDesign
- Lotus Notes Hosted Messaging
- Siebel CRM OnDemand

Consumer
Web



- Google Chrome, Android, Gears
- Yahoo! BrowserPlus, Zimbra Desktop
- eBay Desktop, Skype

Pure-Play
SaaS



- Salesforce Offline Edition 2.0, Mobile
- NetSuite Office integration
- Zoho CRM Outlook Edition

Services Platform and Applications



Azure™ Services Platform

 Live Services

 Microsoft .NET Services

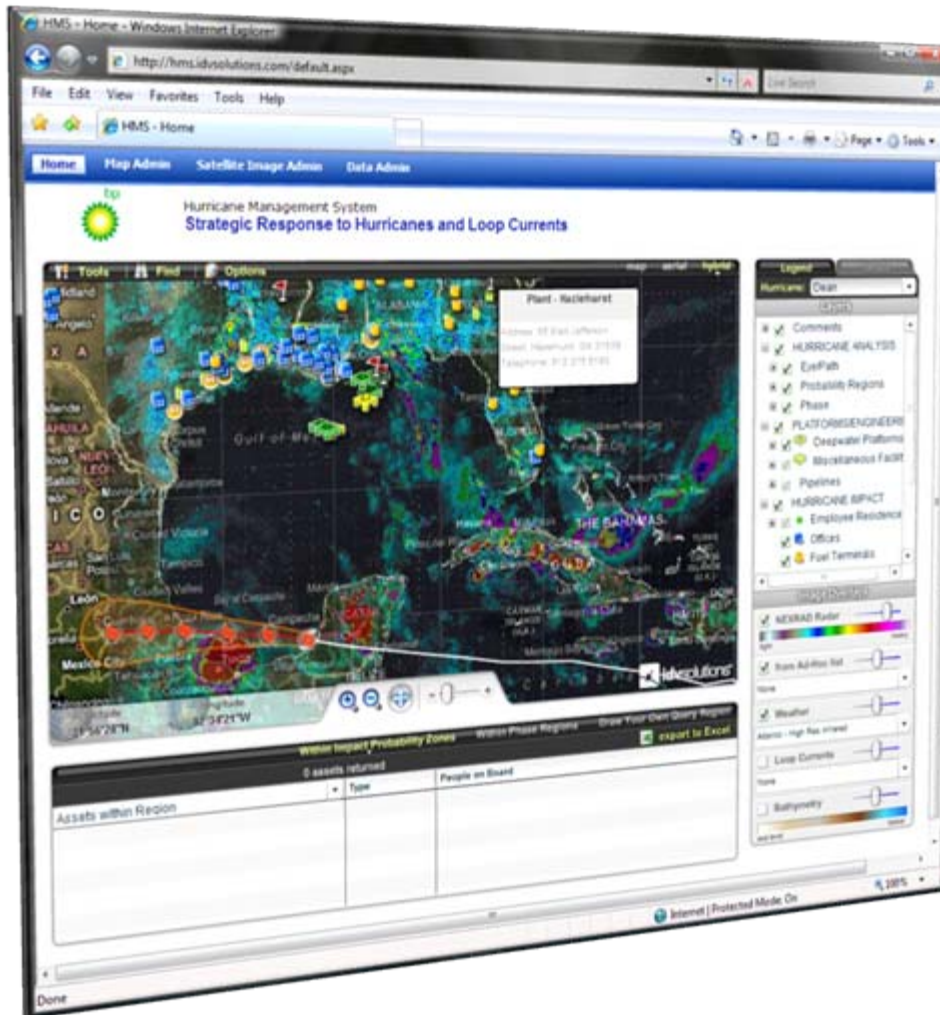
 Microsoft SQL Services

 Microsoft SharePoint Services

 Microsoft Dynamics CRM Services

 Windows® Azure™

BP Hurricane Management System

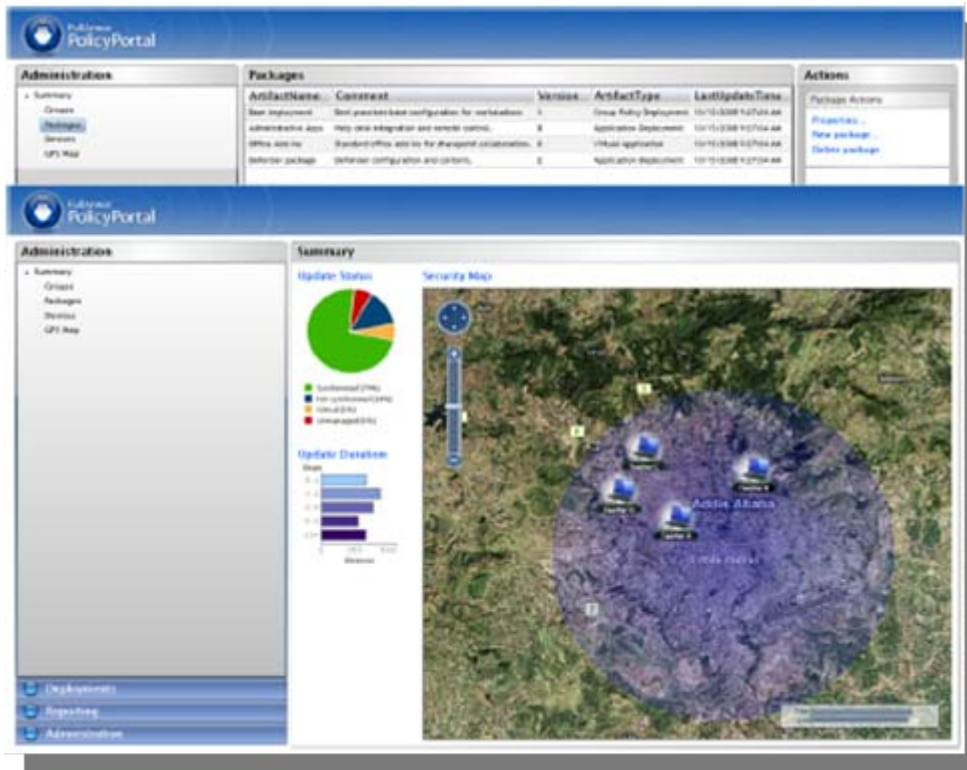


- Enterprise mash-up
- Builds upon Virtual Earth
- 22 sources of data
- Office client integration
- MOSS, SQL back end



FullArmor Policy Portal Ethiopia Schools Project

Combines the magic of the PC as an instructional device with the benefits of centralized control and deployment



- Enabled by Windows Azure
- The power of the PC
- Combined with central control
- 250,000 teachers



Agenda



Thursday 13 August 2009

2:30 – 2:40: Welcome and Introductions

2:40 – 3:15: Will your partners today be your competitors tomorrow?

3:15 – 3:45: What services will consumers and businesses want on NGNBN?

3:45 – 4:00: Tea Break

4:00 – 4:45: Delivering innovative services in NGNBN

4:50 – 5:00: Closing remarks



Thank You