Week 6

Providing Universal Access - NGNBN

Announcement of Changes

- Assessment percentage for this module is
  - Continuous Assessments: 60% (via assignment)
  - Exam: 40%

- Assignment (60%)
  - Paper – 40%
  - Presentation – 20%

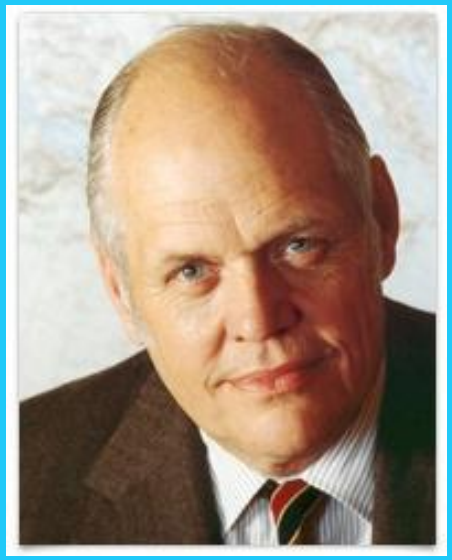
Outline

- Next Gen National Broadband Network

- Guest speaker:
  - Mr. Khoong Hock Yun
    - Assistant Chief Executive, Infrastructure & Services Development, IDA

Famous Last Words

"No one will ever want a computer in their home"



Ken Olsen

CEO, Digital Equipment Corp

1977

Long-standing Trend in ICT

- Underestimating consumer demand for faster computers with improved processing speeds, memory & storage capacity
  - New applications & programs have been leveraging on increased speed, memory & capacity
- Also true in demand for faster transmission speeds across digital telecom networks

Next Gen National Broadband Network

Background

- Broadband access is usually described by speed or bandwidth
  - Amount of data that can be transferred per second either to a user (download) or from a user (upload)
- Problems with current broadband
  - Speeds are not as advertised by service providers
  - Lack of reliability
  - Some service providers limit bandwidth available to heavy users

Broadband?

- Refers to a telecom signal or device of greater bandwidth, in some sense, than another standard or usual signal or device (the broader the band, the greater the capacity for traffic)
- Different criteria for "broad" have been applied in different contexts & at different times
  - "… with download speeds of at least 20 Mbps, & ideally 50 Mbps or greater"

Broadband Infrastructure

- Broadband Internet
  - Critical to a nation's physical infrastructure & economic growth
- Widely deployed in developed countries
  - Examples: Canada, France, Japan, the Netherlands, South Korea, Sweden, UK, …
- Broadband adoption rates are varied
  - Cost
  - Other factors

Issues

- Rationale & Benefits
- Who Pays?
  - Telcos, Government, or public/private partnership?
- Geographical Coverage

What Makes next generation broadband different

1) Dramatically faster file transfer speeds for both uploads & downloads
2) Ability to transmit streaming video, transforming the Internet into a far more visual medium
3) Means to engage in true real-time collaboration
4) Ability to use many applications simultaneously

Benefits to Consumers

- Satisfy increased demand for on-demand HDTV programmes
- Support faster upload speeds to share photos, videos & other user-generated content
- Speed up peer-to-peer file sharing e.g., BBC iPlayer
- Realise real-time collaboration tools
- Enable emergence of a whole host of online applications & services (many of which we can barely imagine today)

Universal Accessibility for Citizens

- Increase participation for citizens with disabilities, with low incomes, or who are not native English speakers
- Example: Snap!VRS
  - Provides sign language video relay services for deaf citizens
  - Uses videophones to connect deaf citizens with sign language interpreters who facilitate medical care or interaction with government agencies
- Provide disabilities with unprecedented ability to access info, services, & opportunities
  - Telecare & telework can improve their quality of life & employment
  - Working from home – more accessible & flexible work environment

Social Benefits

- Social inclusion
  - Universal access to broadband presents an unprecedented opportunity to foster a more participatory, cohesive society
  - Gives hitherto geographically dispersed communities & social groups the means of greater interaction & collaboration
  - Provision of services to disadvantaged & remote communities is vital to prevent a 'digital divide' between different sections of society
- Facilitate remote entertainment & online games

New Services for Citizens

- More videos of meetings & hearings (Congressional, school boards, town halls, county & city councils) online
  - Improves civil process
- Improved emergency response by police, fire & medical personnel in response to crises
  - Enables first responders to share text, images & video across jurisdictional barriers

Public Services for Citizens

- Digital applications will deliver more effective & efficient public services to every region & sector in society
- More sophisticated online applications can be used to engage with Government clients
  - For example, those that experience difficulty interacting using more traditional methods

Benefits to Business

- Allow businesses to offer new services to customers
- Enhance possibilities of tele-working
- Faster uploads support
  - Easy video-conferencing
  - Practical telecommuting
  - Moving data storage & security off-site
- New commercial applications, products, services & contents of high-speed broadband era

Benefits to R&D

- More collaborative models of engagement across a range of research topics will drive Internet economy
- Products & Services
  - Next Generation services such as high-quality video streaming
  - Enable visual networking for more effective remote working, advanced e-commerce & remote access to powerful computing (cloud computing)

Benefits to Education

- Creativity & skills that are a pre-requisite of a knowledge economy can be fostered through creation of a world-class e-education system
- Remote education services
  - e.g., interactive distance education

Benefits to Healthcare

- Enable delivery of healthcare & other local services to remote locations electronically
  - e.g., remote diagnosis & medical services

Economic Development

- ICT is a critical determinant in transition to a knowledge economy with an increased reliance on services traded over digital networks
- ICT will advance sustainable development by encouraging distance working, delivery of health (e.g., remote diagnosis & medical services) & other local services to remote locations electronically
- Inward investment
  - Quality of telecoms is 3rd most important factor in company location

Example 1

- World's most ambitious education portal
- Built an infrastructure to allow over 1,500 registered tutors to create & sell coaching videos for
  - English, science, math, languages, economics
  - SAT & ACT exams

Example 2

megastudy

- A billion US$ public Korean company
- Uses similar model as Global Scholar
- Use high-speed to transform Korea's test preparation market
- Business model is subscription for each course
- Teachers who produce best instructional videos for preparing national aptitude become celebrities
  - Gets ~23% revenue for each class they teach
  - Can have an unlimited number of students
  - Some earn > US$1M p.a. while average Korean teacher earns US$40K
  - Must be promotional, funny, engaging, effective
    - Bottom line, they must be entrepreneurial

Summary: Benefits of next generation broadband network

- True potential lies in transformative new functionalities it enables & innovative web-based applications it supports
- Makes practical realization of cloud computing
  - Vision of computing where computer programs & applications, content & file storage no longer reside primarily on user desktop computer
  - Can be stored on remotely-located servers

Actions for Increasing Broadband Deployment Adoption

- Instituting plans & policies
- Providing funds through public-private partnerships
- Increasing competition
- Expanding online services
- Providing digital literacy training, consumer subsidies, or both

Geographical Variation in Access

- Fibre will be deployed first where there are more customers (uneven deployment)
  - Leads to 'digital divide' issue
- High population density & greater proportion of overhead cables make it relatively cheaper to deploy fibre in certain countries
- Broadband tend to reach urban areas first before slowly spreading to other parts of country
- Digging up roads is expensive to lay fibre
  - Lower cost by using existing ducts & sewers
- More expensive to deploy in existing sites than new-build
  - ~70% of cost is civil engineering e.g., digging up roads

Guest speaker

Mr. Khoong Hock Yun

Assistant Chief Executive, Infrastructure & Services Development, IDA

Talk Outline

- Focus: NGNBN as an example of govt leadership in infocomm infrastructure deployment for national competitiveness
  - iN2015 pyramid with focus on secure & trusted infrastructure
  - Rationale for NGNBN
  - Objectives
  - Key requirements (e.g., speeds, prices)
  - Implementation (like industry structure, architecture i.e. COs, last mile, iExperience Centre, inter-constituency competitions)
  - Challenges (strategic, operational)
  - Results (industry players, competition, prices, services)
  - NGNBN & related infrastructure (NAF, NIMS, SGIX, Wireless@SG, etc)