BROADBAND DEPLOYMENT: GAMTEL EXPERIENCE

BY
KATIM TOURAY
MANAGING DIRECTOR
GAMTEL

OVERVIEW OF BROADBAND

- What is broadband?
  - ITU Standardization sector defines Broadband services as transmission capacity that is faster than primary rate ISDN at 1.5Mbits to 2Mbit/s.
  - Economic Co-operation and development (OECD) considers Broadband to correspond to transmission speeds equal to or more than 256Kbit/s

OVERVIEW OF BROADBAND

- It can also be defined as the last mile connection above 128kb to the end user and depends on infrastructure.

- Broadband platforms for particular applications depend on latency affected by congestion or echo in the transmission network.

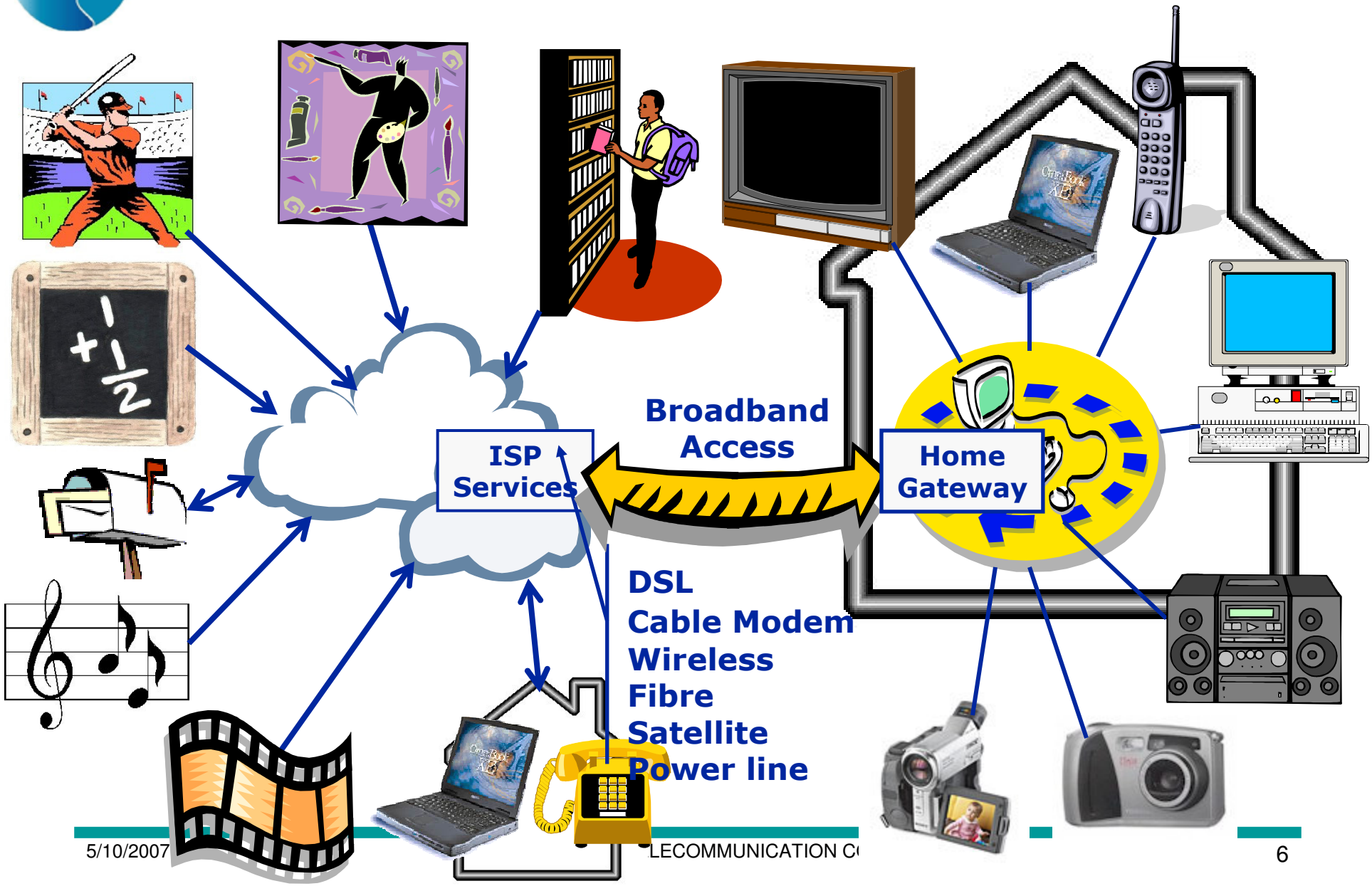
OVERVIEW OF BROADBAND

- Broadband Technologies using fixed-copper network
    - Digital Subscriber Lines (DSL): <=256kbs
    - Cable modems e.g. TV services
    - Hybrid Fiber Coax (HFC)
    - Fiber To The Home (FTTH)
    - Broadband over Power line network

OVERVIEW OF BROADBAND

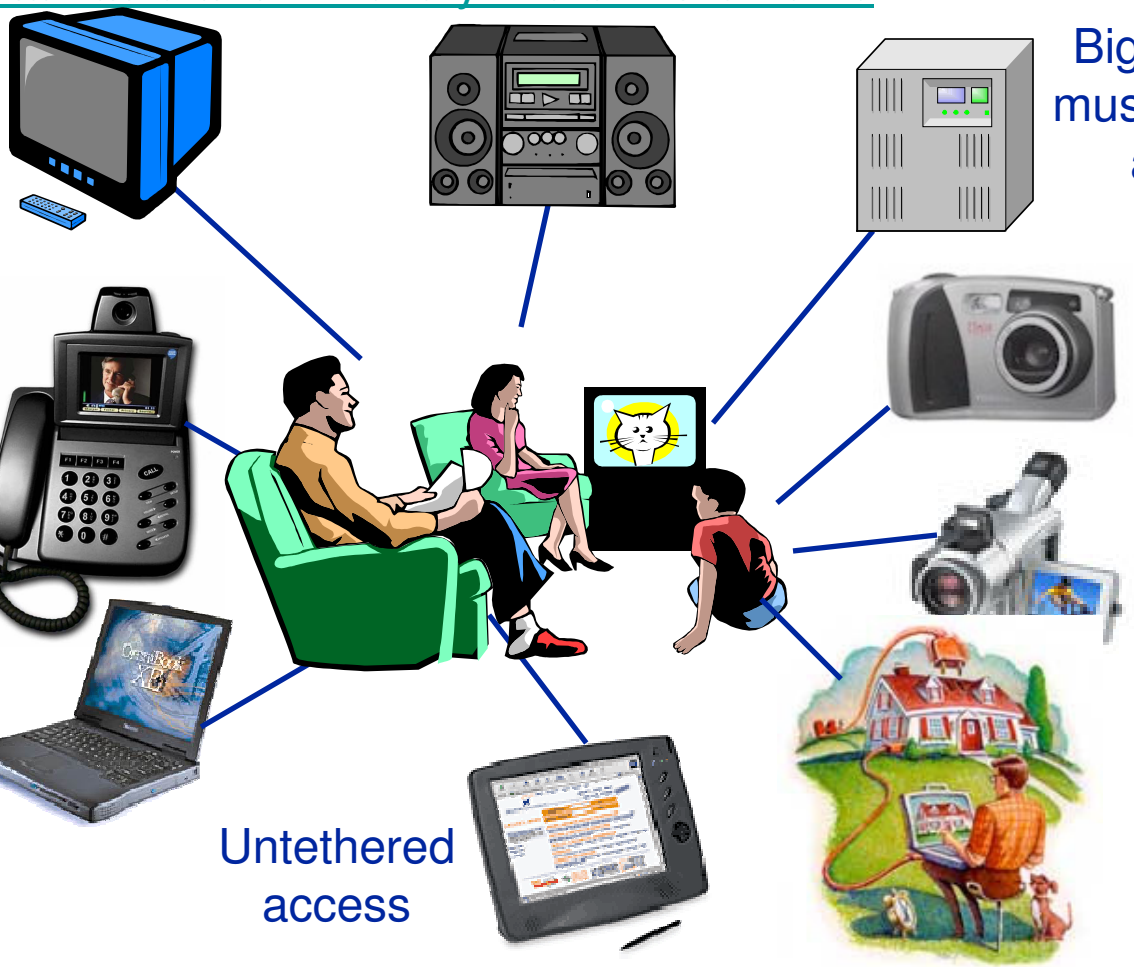
- Broadband Technologies using Wireless Network
  - WiMax using the licensed frequencies
  - CDMA (Ev-Do/DV)
  - Satellite

The Emerging Broadband Home
SOURCE: BroadbandHomeCentral.com



The Promise of Broadband
Source: BroadbandHomeCentral.com

Digital radio and TV everywhere in the home



Big jukeboxes of music, movies, TV and games

Voice and video conferencing

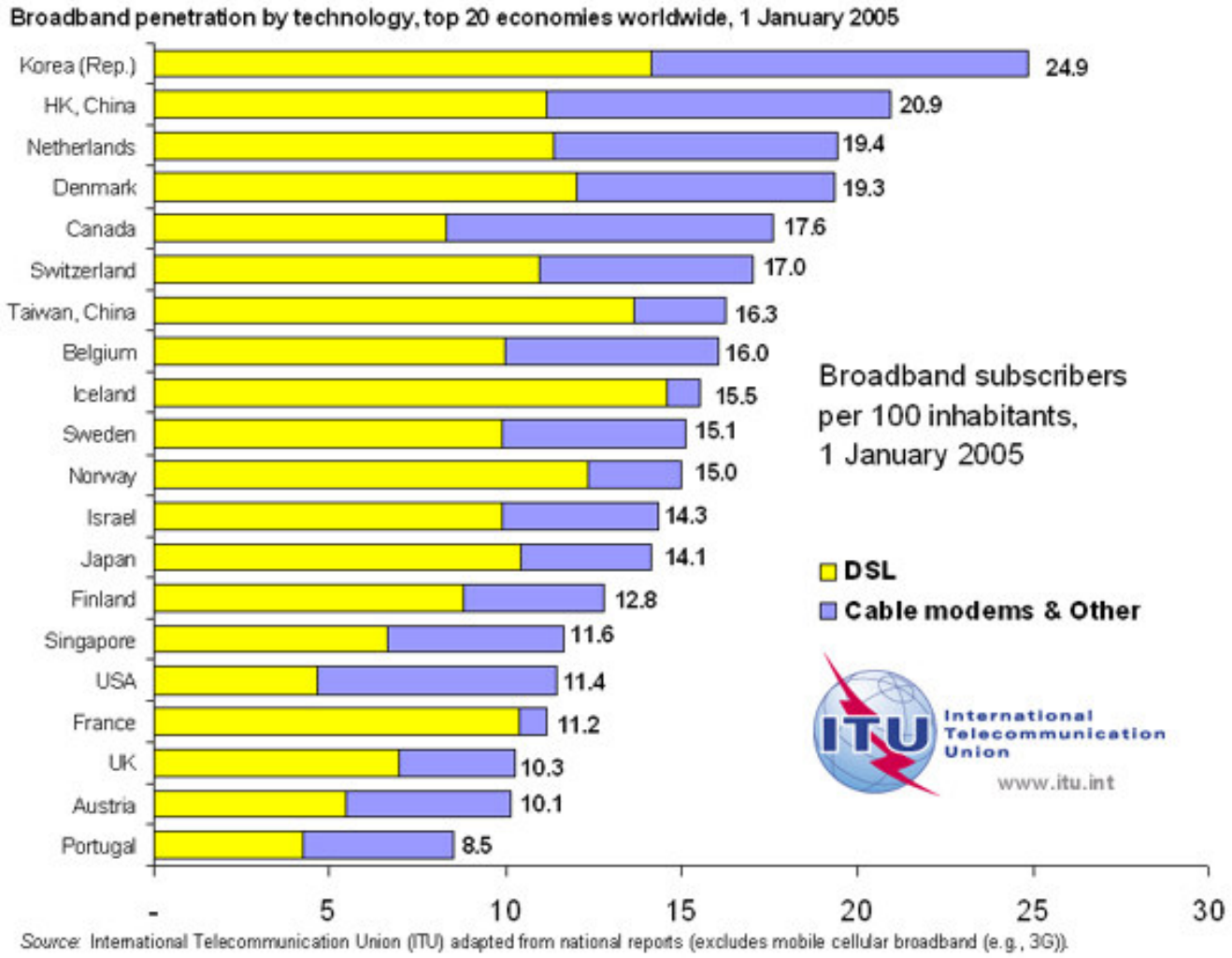
Share photos and videos with friends and family

Telemedicine

Work from home as easily as in the office

Untethered access

Control VCRs, AC, lights from anywhere


Broadband penetration by technology, top 20 economies worldwide, 1 January 2005
Korea (Rep.) 24.9
HK, China 20.9
Netherlands 19.4
Denmark 19.3
Canada 17.6
Switzerland 17.0
Taiwan, China 16.3
Belgium 16.0
Iceland 15.5
Sweden 15.1
Norway 15.0
Israel 14.3
Japan 14.1
Finland 12.8
Singapore 11.6
USA 11.4
France 11.2
UK 10.3
Austria 10.1
Portugal 8.5
- 5 10 15 20 25 30
Broadband subscribers per 100 inhabitants, 1 January 2005
DSL
Cable modems & Other
ITU International Telecommunication Union
www.itu.int
Source: International Telecommunication Union (ITU) adapted from national reports (excludes mobile cellular broadband (e.g., 3G)).

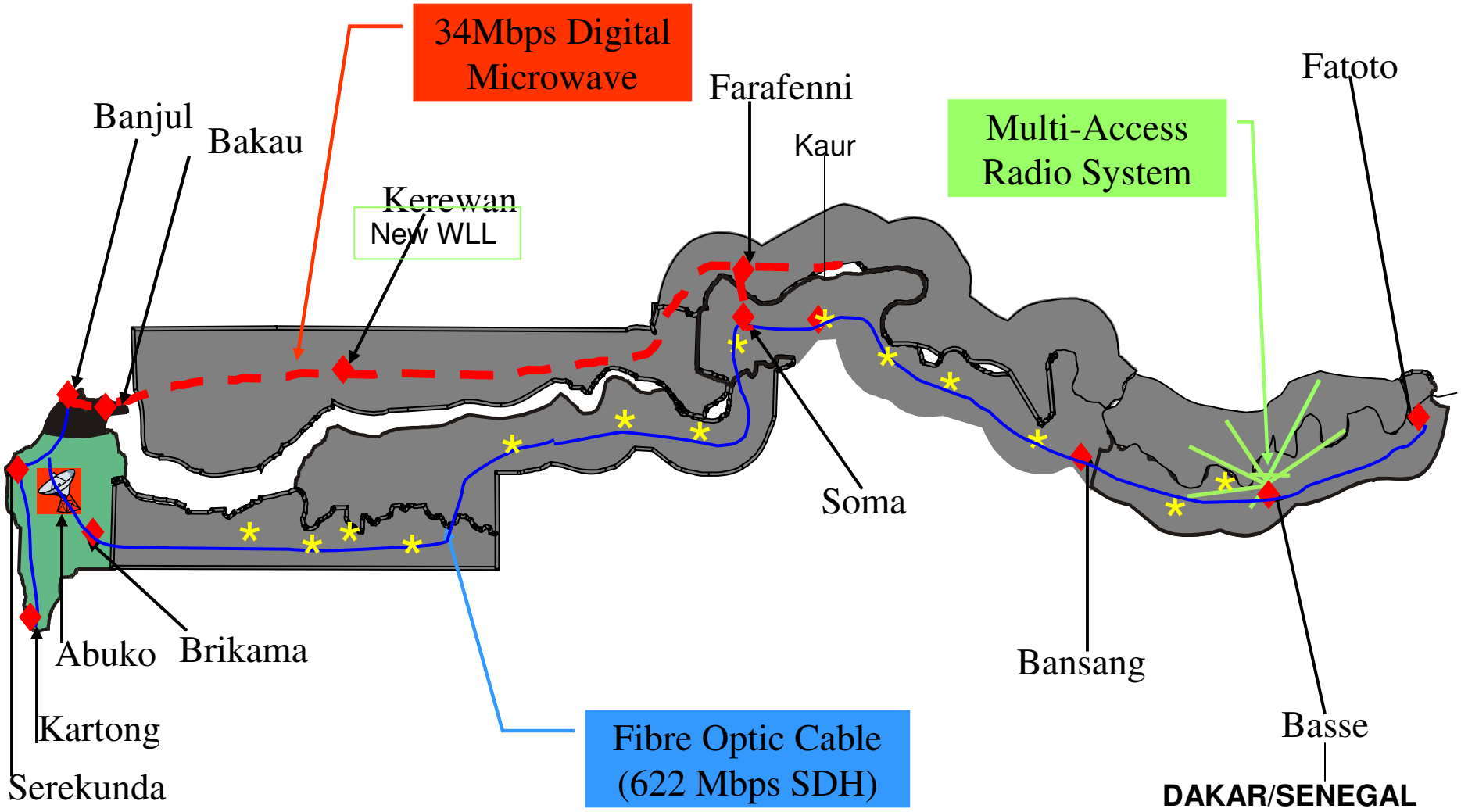
BROADBAND ROLL-OUT: GAMTEL

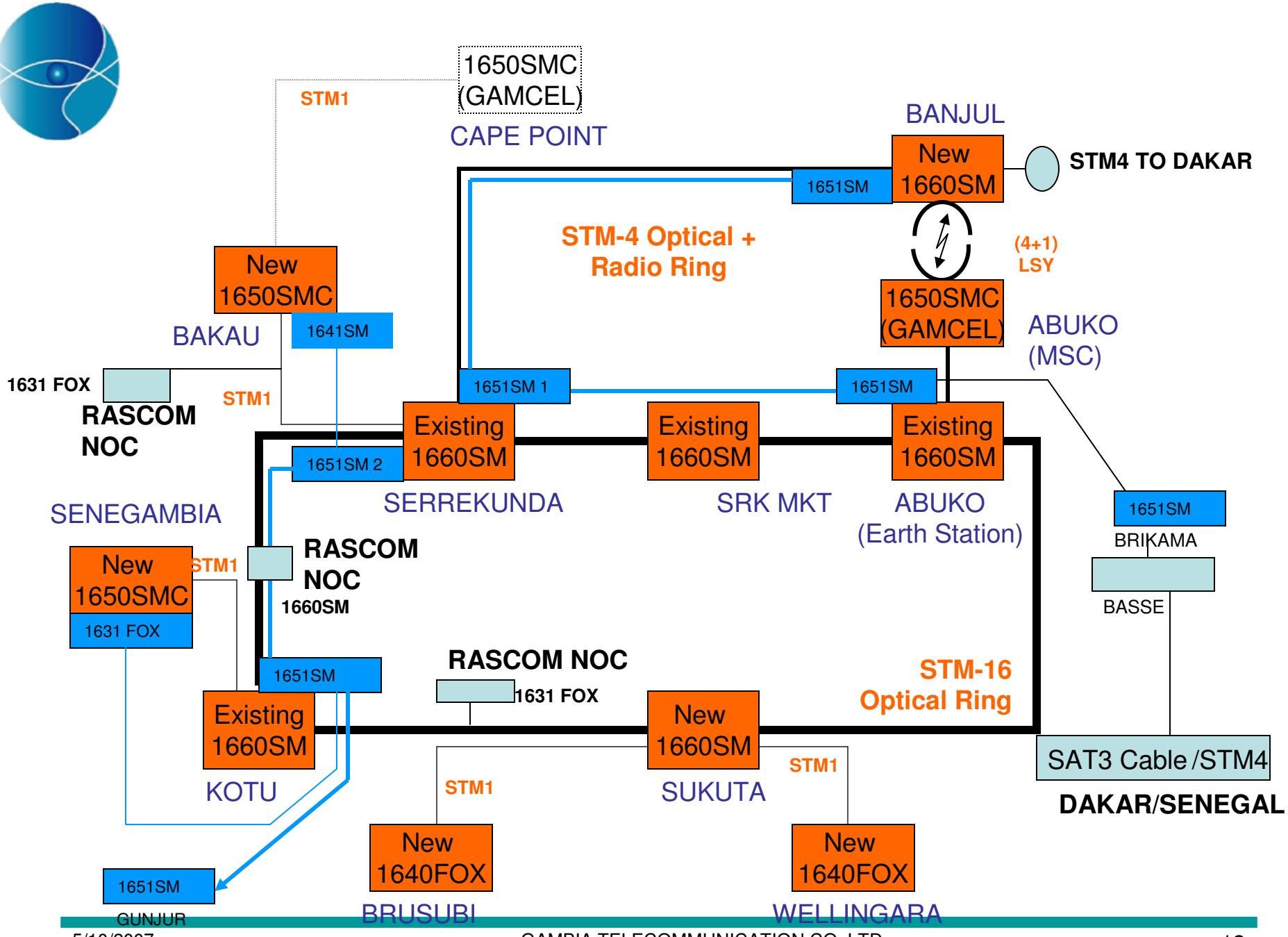
- Broadband roll-out considerations:
  - Growing demand for high-speed Internet access.
  - Fixed network faces competition (strategic shift from voice to data)
  - Need to provide affordable high-speed Internet access.
  - Add value to existing fixed lines and increase ARPU.
  - The need to cater for the emerging services and applications

BROADBAND ROLL-OUT: GAMTEL

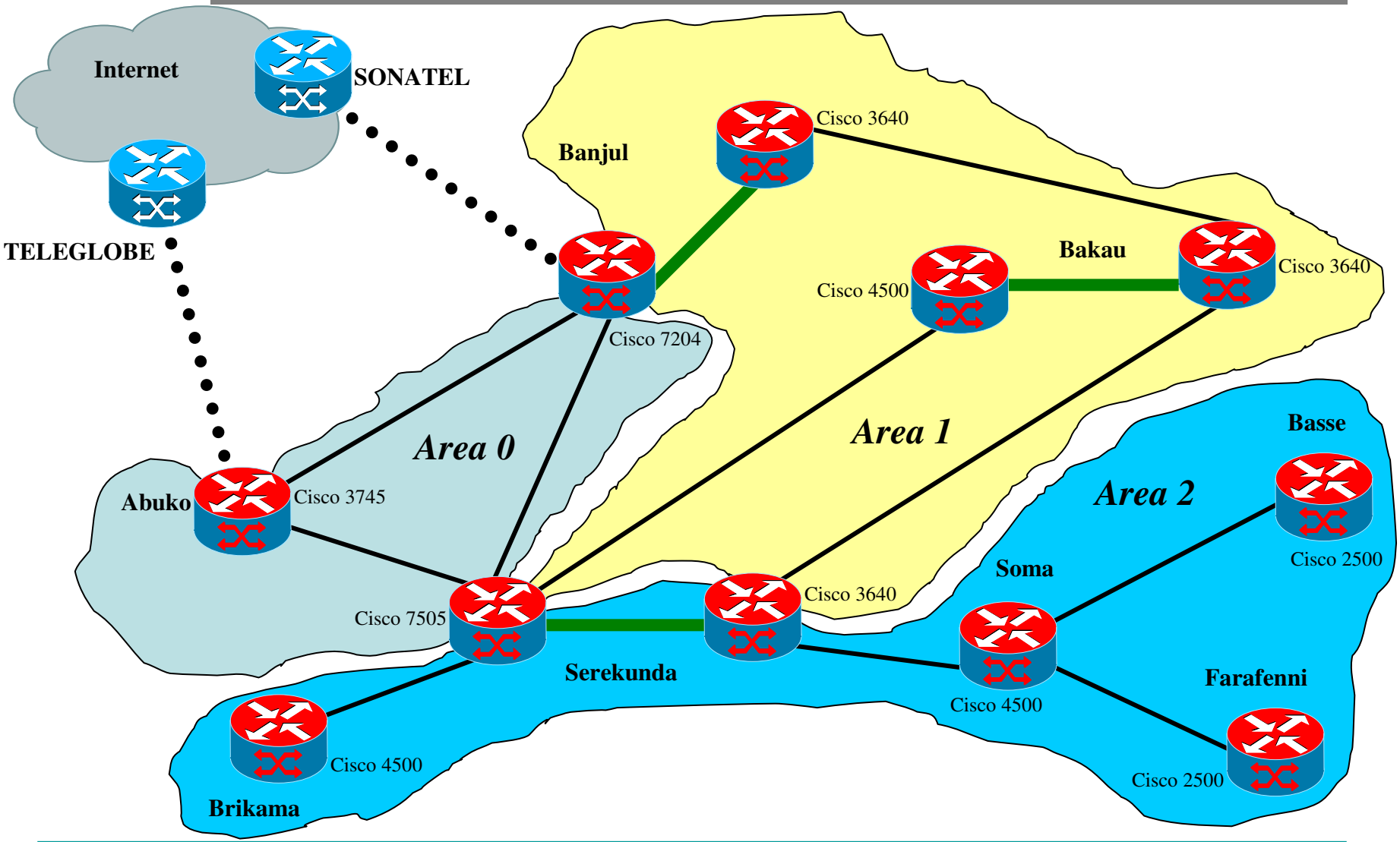
- Existing infrastructures:
  - Fixed line Network: Fiber core transmission and fixed copper lines for access with over 50,000 connected subscribers.
  - CDMA EV DO data capacity : 5,000 customers
  - An IP backbone for countrywide Internet access.
  - Wireless network (WLL) deployed in remote areas.

Topology


34Mbps Digital Microwave
Banjul
Bakau
Kerewan
New WLL
Farafenni
Kaur
Multi-Access Radio System
Fatoto
Soma
Abuko
Brikama
Kartong
Serekunda
Fibre Optic Cable (622 Mbps SDH)
Bansang
Basse
DAKAR/SENEGAL


1650SMC
(GAMCEL)
STM1
CAPE POINT
BANJUL
New
1660SM
STM4 TO DAKAR
1651SM
STM-4 Optical +
Radio Ring
(4+1)
LSY
New
1650SMC
BAKAU
1641SM
1650SMC
(GAMCEL)
ABUKO
(MSC)
1631 FOX
STM1
RASCOM
NOC
1651SM 1
1651SM
Existing
1660SM
Existing
1660SM
Existing
1660SM
1651SM 2
SERREKUNDA
SRK MKT
ABUKO
(Earth Station)
SENEGAMBIA
1651SM
BRIKAMA
New
1650SMC
STM1
RASCOM
NOC
1660SM
1631 FOX
BASSE
1651SM
RASCOM NOC
1631 FOX
STM-16
Optical Ring
Existing
1660SM
New
1660SM
SAT3 Cable /STM4
KOTU
STM1
STM1
SUKUTA
DAKAR/SENEGAL
New
1640FOX
New
1640FOX
1651SM
GUNJUR
BRUSUBI
WELLINGARA

Existing Backbone Topology



Broadband Roll-out: GAMTEL

- Market conditions for broadband services
  - Large number of dial up customers
  - Several ISDN services customers
  - Many dedicated Internet leased lines services

BROADBAND ROLL-OUT: GAMTEL

- GAMTEL Broadband Technologies:-
  - Being the fixed network provider. The DSL technology was used to take advantage of the existing fixed line infrastructure.
  - Five DSLAM were deployed in five switching areas with one ATM switch in January 2006. This was preceded by a pilot of one DSLAM to test the operations as well as assess customers reaction.

BROADBAND ROLL-OUT: GAMTEL

- The feedback received from customers was encouraging and in effect demand for the service grew more than the provisioned capacity.

- One IP DSLAM was deployed to address the Internet needs of the AU conference in June 2006.

BROADBAND ROLL-OUT: GAMTEL

- Two categories of DSL services are being offered and both have the potential to grow:-

1.0 Asymmetrical Digital Subscriber line (ADSL) is a form of DSL where more bandwidth is allocated to download than upload. This makes it ideal for web browsing and typical Internet usage. ADSL is available at a maximum distance of 3km from the local exchange- one of its disadvantages.

BROADBAND ROLL-OUT: GAMTEL

– Found to be suitable for residential use as the need for multiple lines is eliminated ; on a single pair the telephone can be used and the Internet surfed simultaneously.

– SMEs also form the bulk of ADSL customers and is increasing.

Broadband Roll-out: GAMTEL

2.0 Single pair High-speed DSL (SHDSL):
Its symmetric. SHDSL connections are best suited for servers (web, FTP, File) and other business uses such as video – conferencing that require high speed in both direction.

– Does not support voice, mostly used for business and substitutes the leased line.

CHALLENGES IN GAMTEL

- Limitation of distance in deploying DSL services and slow growth due to huge investment cost in copper network fixed lines.

✓ Hence the deployment of WLL (Air span) and CDMA wireless technologies deployed in both the pilot and expanded project included the EV-DO

CHALLENGES

- To upgrade the internet infrastructure and make it scalable and flexible, particularly to allow GAMTEL change their pricing model.
- Lack of suitable local content and hosted applications for broadband usage.
- Higher usage of the International bandwidth requiring more capacity. The International bandwidth is very expensive for African countries (full circuit)!!!

THE WAY FORWARD

- A state of the art IP-MPLS backbone is being implemented except to launch late July 2007 that is scalable and flexible. This will greatly enhance and help expand access to quality broadband services.
- A Wimax is also under consideration for roll out in collaboration with DOSCIT in support of the e-government initiative as well as the e-health and e-education of the Pan African initiative.
- Food for thought: MAKING BANJUL A WIRELESS INTERNET CITY!!!

THANK YOU

END