Telecom Industry Highlights
Regulatory Perspectives

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Outline

- Convergence
- Re-Structuring Broadband
- Challenges of Restructuring Broadband
- WiMAX
- VOIP
- Market Overview
  - Fixed Lines
  - Mobile Lines
  - Internet

Convergence Roadmap

Technical Side:

1. Digitalized Infrastructure
   - Broadband;
   - Wireless and mobile technologies;
   - High-speed backbone networks;
2. Digitalized Media Content
   - DRM
   - DAM

Convergence Roadmap Cont'd

Regulatory view:

1. Conducive Market Conditions (supply, demand, competition);
2. Technological Neutrality;
3. Intellectual Property Rights and GATS agreement

Business view:

1. Investment incentives;
2. Additional service providers;
3. Diverse services; options;
4. Digital content creators

Impact of 'Converged' Telecom

- Gradual shift to VoIP and VOB (Voice over Broadband)
- CATV systems → offering video on demand, broadband access and voice telephony. CATV operators are now competing with telecom operators.
- Trend →offer triple play service bundles in inclusive packages
- Steady growth in 3G networks and wireless broadband services
- Threat on the industry

Impact of Convergence on Regulation

Implications:

- Rise in the number of wireless services→ raises the need for spectrum management reform.
- Revisiting current licensing regimes & favors regimes that are technologically neutral.
- Broadening market definitions, with the possibility of replacing several narrowly defined markets by a single more broadly defined market.

"Regulations in the Era of Convergence"

- **Sharm El Shiekh, Egypt.**
- **March 27th – 29th 2007.**

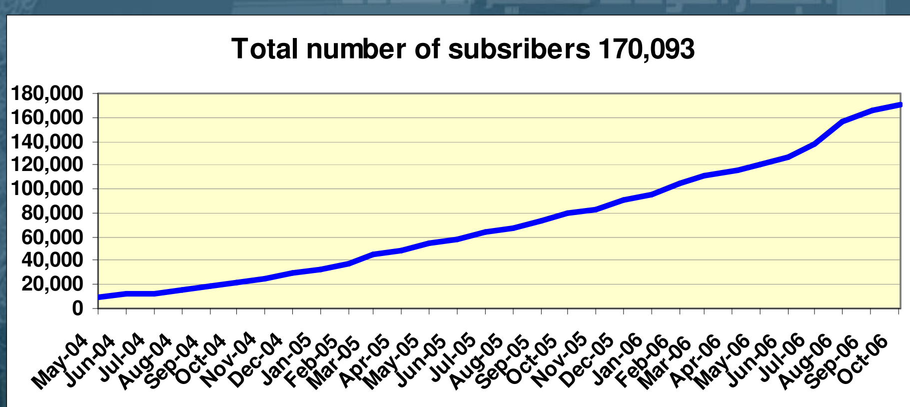
Re-Structuring Broadband

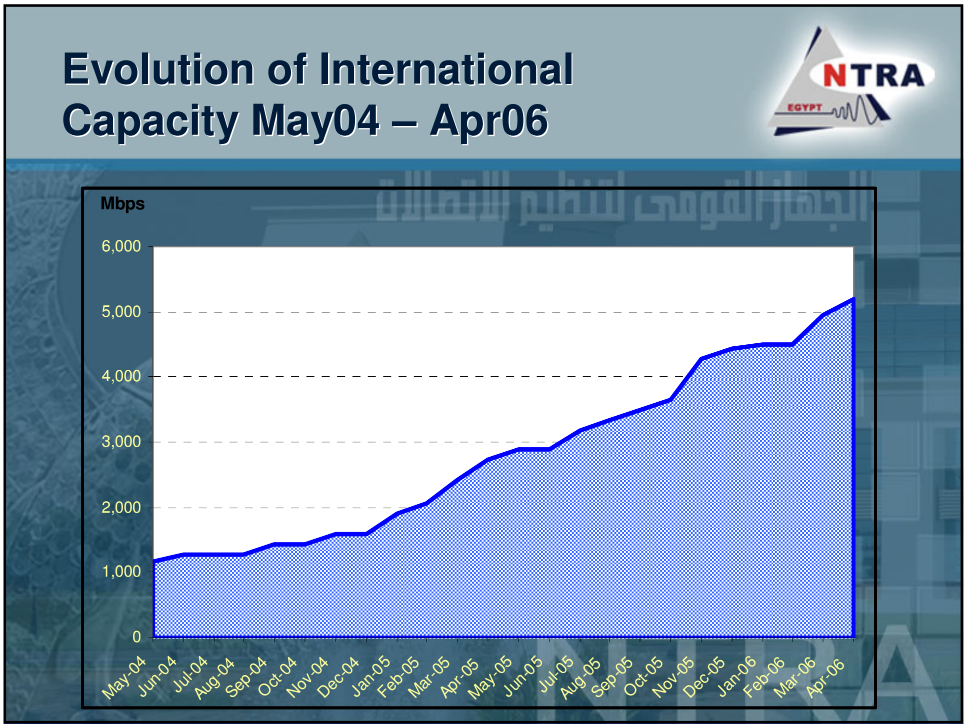
- Increasing broadband penetration
- Promoting ADSL higher speeds by getting their prices down (starting from USD 16 per month)
- Paving the road for eContent market by availing high speed connections
- Providing special services for buildings as an alternative to ADSL line sharing
- Considering WiMax technology as a possible solution to BWA in Egypt

Challenges of Restructuring Broadband

- Impact on Free Internet market
- ADSL business model and pricing scheme
- ADSL line sharing and unlicensed service providers

Evolution of ADSL Subscribers May04 – Oct06




Evolution of International Capacity May04 – Apr06
NTRA
EGYPT
Mbps
6,000
5,000
4,000
3,000
2,000
1,000
0
May-04 Jun-04 Jul-04 Aug-04 Sep-04 Oct-04 Nov-04 Dec-04 Jan-05 Feb-05 Mar-05 Apr-05 May-05 Jun-05 Jul-05 Aug-05 Sep-05 Oct-05 Nov-05 Dec-05 Jan-06 Feb-06 Mar-06 Apr-06


WiMAX
NTRA
EGYPT
Traditional Technologies can deliver
Broadband, but Fixed
Mobile, but Narrowband
WiMAX Will Meet Emerging Customer Demand
Fixed & Nomadic Data, Voice, Video

Consultation Procedures

- **First Phase – April 05**
  - Hearing Session
- **Second Phase – within June**
  - Publishing a Consultation Paper (draftframework)
- **Third Phase – within July**
  - Workshop discuss the Consultation Paper and feedback and adopt final framework

BWA Hearing Session

- **Discussed different applications**
  - Nationwide Network
  - Backhauling
  - Last-Mile Access Network
- **Scenarios for Regulatory Models**
  - Nationwide Service Provider
  - Regional Service Provider
  - Network Operator
- **Licensing issues**
- **Concentrated on WiMax technology**

Food for Thought

- **WiMAX will become the dominant standard for Wireless LAN in fixed broadband networks**
- **Focus is too often on technologies:**
  - Subscribers pay for services, not technologies
  - Technologies enable services, but should not be a burden on users
  - Broadband capabilities are important, but bandwidth is not the only meter to assess service.

VOIP: Introduction

- Transformation in Internet technologies
- Transition from circuit switched services to digital, Internet, packet-based networks and technologies — such as VOIP
- VOIP offers service at lower cost
- Uncharted legal, financial and technological challenges
- Ways to fit the new technology into existing regulatory frameworks.

VOIP Regulatory Framework

- Security Issues
- Voice Quality
- Interconnection Requirements
- Emergency Services
- Universal Service
- Interoperability between VOIP Operators;
- Compatibility & Interoperability between VOIP and PSTN Operators
- Numbering in Nomadic and non-Nomadic VOIP services

Egyptian Market Development

Fixed Line Market

NTRA EGYPT

- **Fixed Network**
  - Unbundling of the Local Loop
  - TE Licensing
- **Market Access permitted for**
  - Domestic payphones
  - Domestic value-added services allowed (e.g. PPCC)
- **Domestic Voice**
  - Resale of Telecom Egypt's domestic service allowed
- **International Voice**
  - International voice liberalized

Fixed Line Market cont'd

NTRA EGYPT

- **Telecom Egypt has privatized 20% of its shares.**
- **Telecom Egypt may continue the privatization up to 49% of its shares in subsequent stages.**
- **All licensees must be companies registered in Egypt**
- **All companies must train local human resources**

Telephone main lines in operation 10.6 Million Lines

Total Public Pay phones

55683 Cabins

Mobile Market

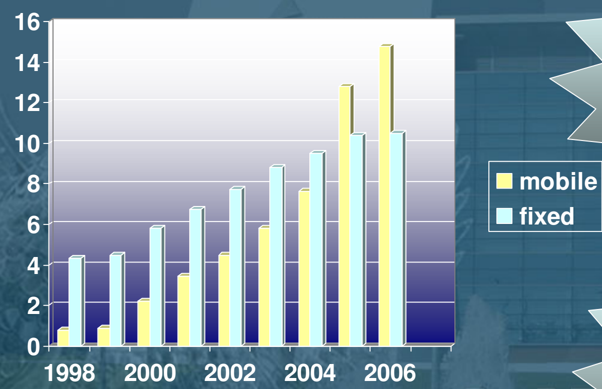
- Increase in mobile subscribers
- Usage of mobile phones surpassed the usage of fixed telephone lines
- Prices decrease gradually, especially with a third operator entering the market
- Services offered by both mobile operators are very similar to each other

3rd Mobile Network

- NTRA issued an RFP for 3rd mobile network in February 2006
- It will use both 2G & 3G technology
- 11 consortia from international companies in partnership with Egyptian companies applied
- NTRA formed a high-level committee to conduct the technical evaluation of bids
- Financial bidding process
- Consortium of Etisalat of Emirates, Egypt Post, and CIB won the bid with 16.7 billion Egyptian Pounds

Steady Increase in Fixed Lines & A Boom In Mobile Phone Users

NTRA EGYPT



Mobile penetration Rate

18.5%

Fixed Line penetration

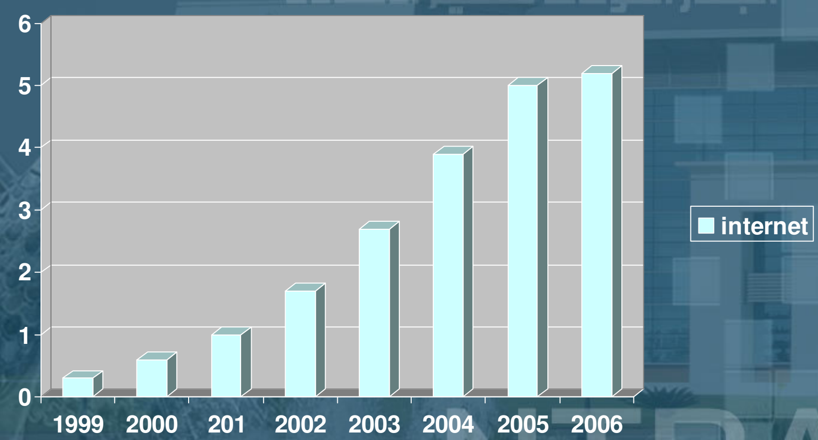
14.8 %

Internet Market

NTRA EGYPT

- Enabling Internet access on all fixed phone lines without monthly fees
- Same cost as a local call since Jan 2002
- Provided by Telecom Egypt in conjunction with 210 Egyptian ISPs
- Beneficiaries: > 6 million users
- International Bandwidth: 8.3 Gbps
- Data Backbone Providers: 7
- Target within a year
  - **Linking 1.7 million households to the Free Internet service**
  - **Getting 7 million users online while doubling the international capacity**

Major Increase in the number of Internet Users



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