TATA COMMUNICATIONS

Welcome to the New World

Srinivasa Addepalli
Sr. Vice President, Corporate Strategy

CORPORATE

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CONTENTS

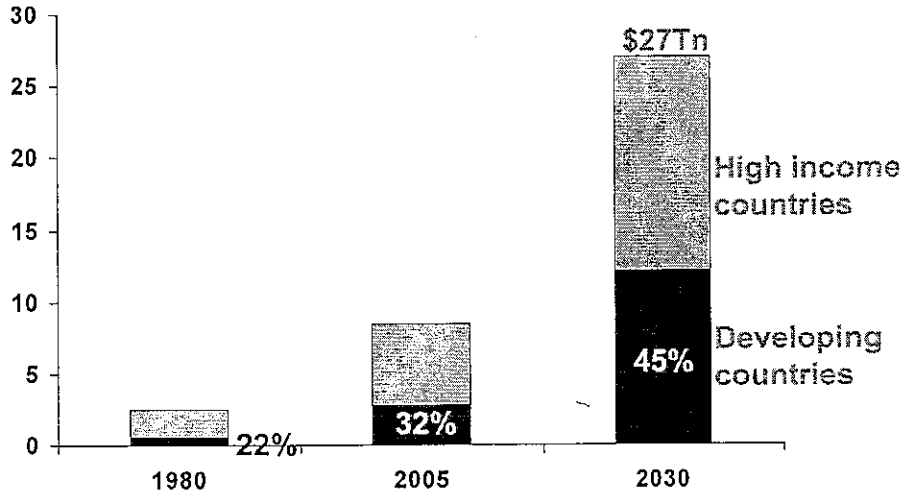
- The New World
- A New World of Communications
- The Tata Communications Journey

Our Market Environment

Globalization | **Web 2.0** | **India & China**

Globalization & Increased Role of Developing Countries

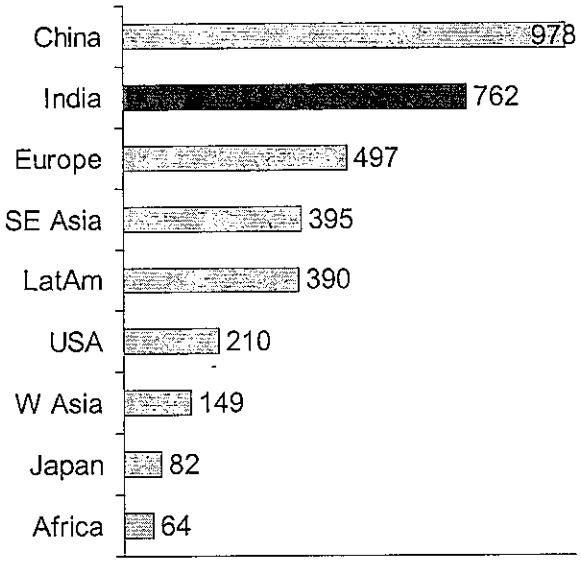
Exports from Developing and Developed Countries, 2005-2030 (US$2001 Trillions)



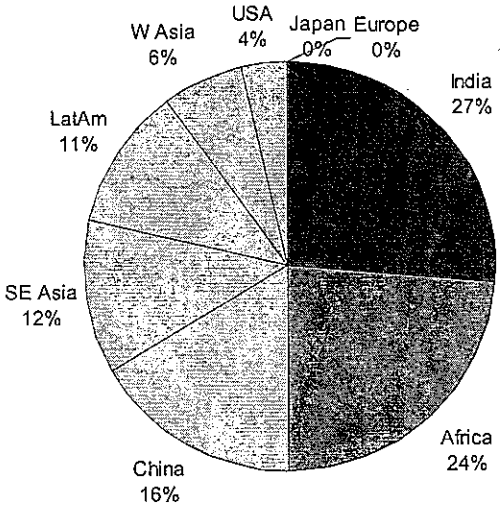
Source: World Bank

Growing Importance of India & China in the New World

Working Population 2010, millions



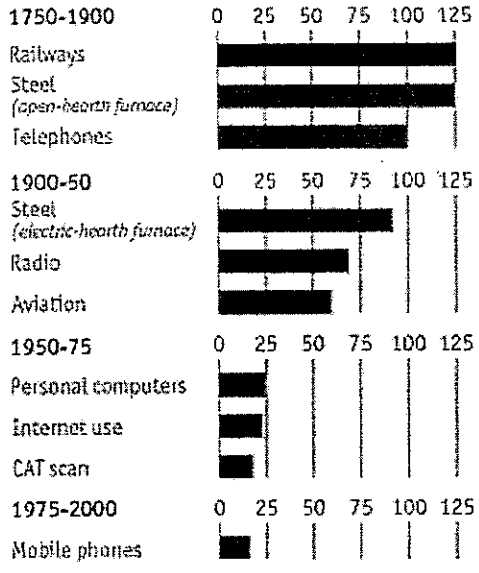
Addition to Working Pops 2005-2010



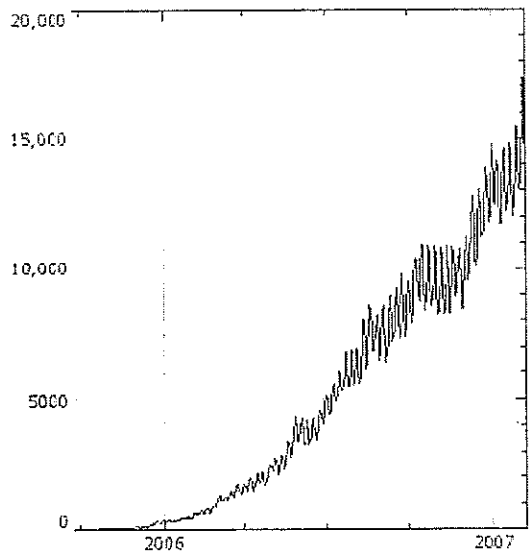
Source: Morgan Stanley: Tata Communications Research

Rapid Consumer Adoption of New Products & Technologies

of Years for 80% countries adoption



YouTube Daily Page Views ('000s)



Source: The Economist, citing the World Bank; Alexa

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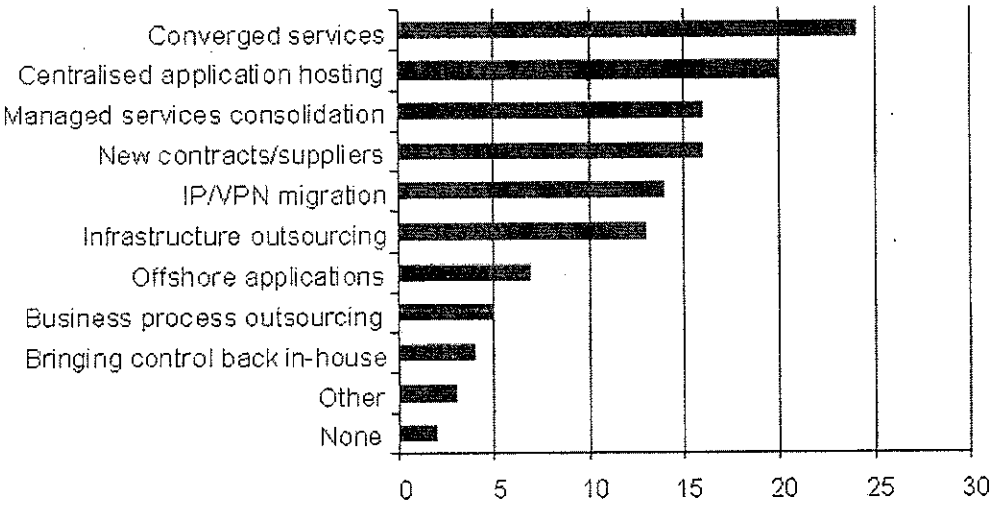
Enterprises Demand Managed & Converged Services

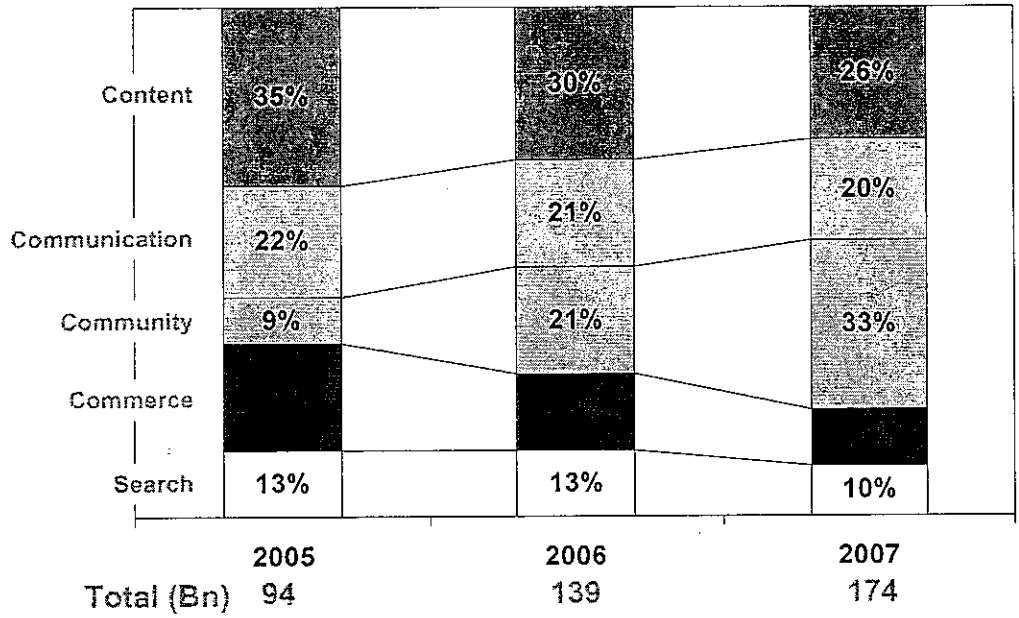
New Sourcing Plans / Strategies being considered by CIOs



Source: Ovum

Consumer Networking is Back in Fashion

Internet Traffic Mix (PageViews)



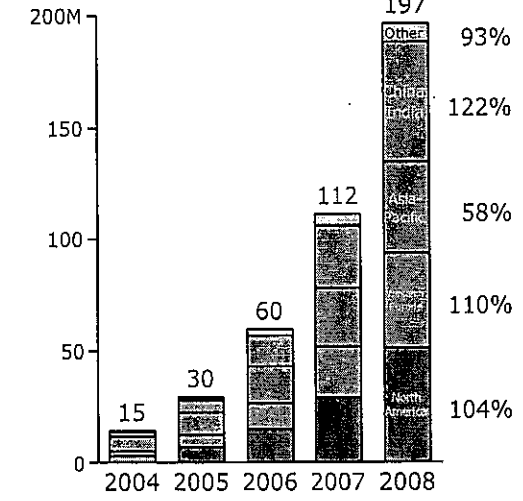
Source: Nielson Netratings

Video is the Driver of the Internet Now

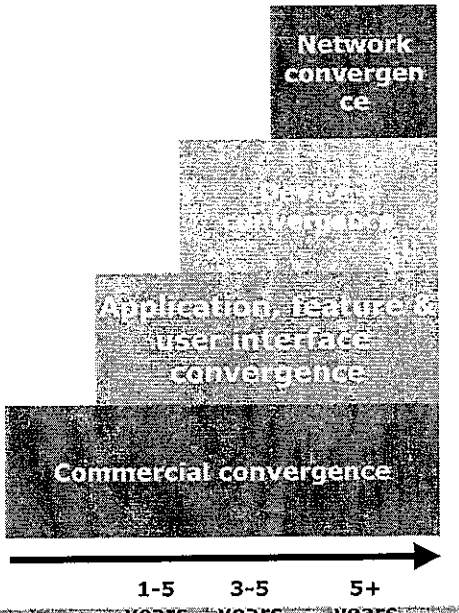
Site	Unique Viewers	Rank	Videos	Rank	Minutes	Rank
Total Internet	133,646		9,076,567		24,163	
YouTube	66,146	1	2,369,151	1	6,253	1
Yahoo!	34,934	2	386,542	2	1,007	2
MySpace	32,399	3	267,164	3	730	3
AOL	22,550	4	148,111	5	403	6
MSN	16,318	5	137,968	6	283	7
Disney Online	13,907	8	182,416	4	189	12
iFilm	9,211	13	33,532	21	40	22
ESPN	7,733	18	75,389	12	98	16
Weather.com	6,498	21	14,262	28	11	29
Photobucket	6,230	22	14,943	26	16	27
ABC	3,089	26	17,709	24	10	30
Heavy.com	2,592	28	12,641	29	22	24
Facebook	2,454	29	7,064	30	13	28

What's happening around us?

VoIP users to increase globally at 6th 120% CAGR



Convergence



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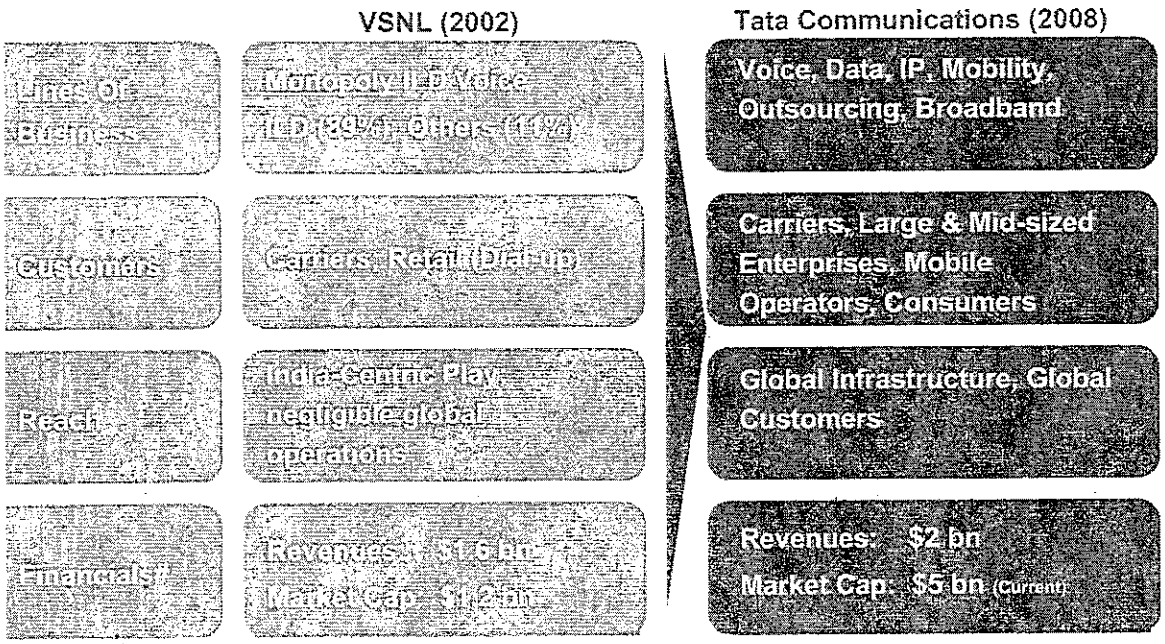
Transformation to a Global Challenger



March 31st of the year (FY02 and FY07)

Our Strengths

India Enablement

- #1 International and Enterprise data services in India
- Relationships with Top 2000 enterprises in India including Fortune 500 companies
- Best connectivity to India and expanded reach within

Global Submarine & IP Reach

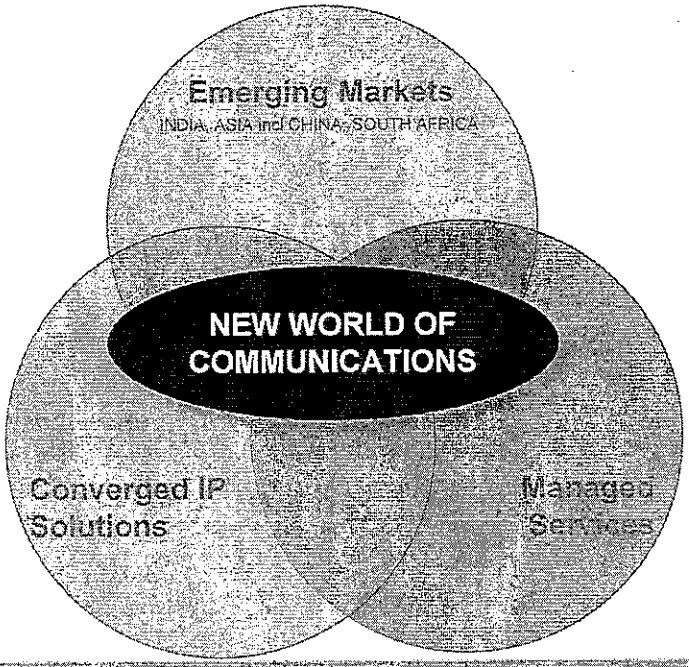
- Owned cable network across the globe: $1Bn investment
- Tier-1 Global IP Network and leading ISP in India
- Unique assets and connectivity in Asia, Middle East, Africa

Integrated Wholesale Services

- #1 wholesale international voice provider
- Suite of voice, data, IP, signaling and outsourcing services
- Over 1500 carrier relationships including 600+ mobile operators

Our Vision

Deliver a new world of communications to advance the reach and leadership of our customers

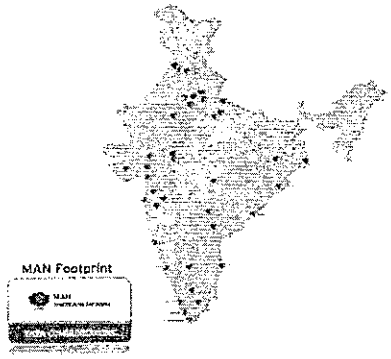


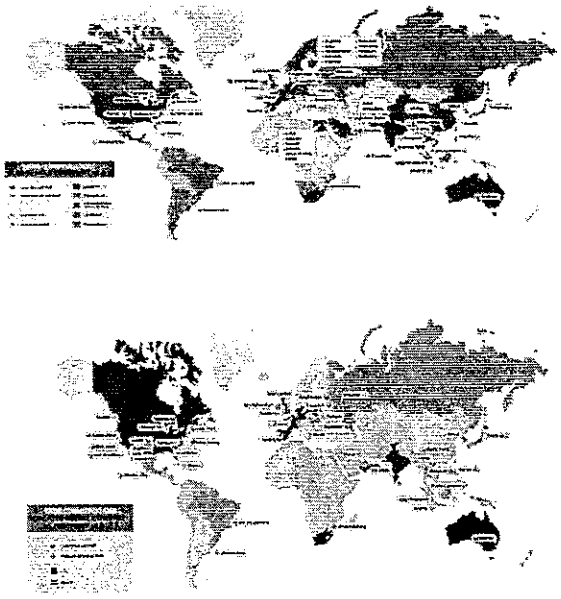
Major Investments: Cables

	Existing Cables	New / Planned		
OWN	TGN-Atlantic	• TGN-Intra Asia	S'pore-HK-Japan	H2 2008
	TGN-Pacific	• TGN-Eurasia	India-Europe	H2 2009
	TGN-Western Europe			
	TGN-Northern Europe			
	TGN-India/Asia			
CAPACITY	SMW-3	• IMEWE		
	SMW-4	• SEACOM		
	SAFE/SAT-3	• Africa		
	others			

Major Investments | MPLS & Ethernet Expansion

- New IP, MPLS & Ethernet PoPs
- NNIs
- Fiber (MAN) roll-out in India





Major Investments | Managed Services

Managed IT Infrastructure Services
- Colocation Services
- Managed Hosting Services
- Managed Storage Services

Managed Security Services
- CPE - Based Services
- Cloud - Based Services
- Professional Services

Managed Application Services
- Audio and Web Conferencing Services
- Business Messaging & Collaboration Services
- Hosted Contact Center Services
- Managed Voice Services

Major Investments | WiMAX for Last Mile in India and South Africa

Businesses

- Supplement Fiber roll-out in major metros
- Expand access reach (~E1) to all major business towns
- Current Status: 30 towns
- March 2009: 115 towns

Consumers

- Primary access mechanism for Broadband
- Provide reliable 1Mbps experience + content/apps
- Current Status: 1 city
- March 2009: 15 cities

Our Organization

5000 employees

20% outside India

37 nationalities

36 yrs avg age

Global Industry Recognition

The only Indian telco on the list – *BCG 2008 New Global Challengers*

2006 Best Wholesale Carrier Winner – *World Communications Awards*

2006 Best Pan-Asian Wholesale Provider – *Capacity Global Wholesale Awards*

CEO of the Year – N. Srinath: 2006 – *TelecomAsia*

Other recent awards:

- Atlantic ACM Excellence in Wholesale: 2008
- Frost & Sullivan #1 Enterprise Data Services Provider in India: 2007
- Voice & Data Top ILD Operator Award: 2001-2006

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Thank You

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BT perspectives on the 10th anniversary of the WTO telecoms agreement

Gordon Moir

Vice President & Chief Counsel

BT Global Services

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Alfonso X, King of Castile, 1252-84

"Had I been present at the creation, I would have given some useful hints for the better ordering of the universe."

BT

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BT in 1998

- February 1998: enthusiastic welcome for WTO agreement
- Chairman to shareholders: *"It is the competitive nature of the global market that spurs innovation and delivers customer benefits....it is the rapid change that generates opportunities we are determined to seize."*
- May 1998: £1 bn network modernisation and expansion announced to support anticipated growth in worldwide traffic

4

BT Global Services in 2008

- Ten years of growth. Customers looking for ever more seamless, cross border services
- BT focus on provision of networked IT services to multisite organisations worldwide:
  - Unilever, FIAT, Philips, Credit Suisse, Microsoft, UK National Health Service, Bristol-Myers Squibb, Pepsi, Lufthansa, Visa, Fujitsu and governments world-wide
- 30,000 employees in more than 50 countries
- Customers in more than 170 countries
- The world's leading MPLS network: 28,000 ports in over 70 countries
- 19 companies acquired in last 2 years
- Innovation in network security as well as customer requirements in, eg mobile

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So what hints can we offer for "better ordering of the universe"?

- Progress has been good (more signatories for Reference Paper, more commitments by existing signatories)
- Where liberalisation has progressed, innovation has increased and customers have benefited - both business and residential
- Need further commitments and enforcement of those commitments already given. Some suggestions follow

BT

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So what hints can we offer for "better ordering of the universe"?

- More attention is needed to:-
  - Further moves to remove foreign ownership rules and to ensure market access and transparent, clear enforcement of rules protecting against abuses by dominant operators
  - Different nature of business markets must be recognised
  - Significance of non-price discrimination needs to be addressed
  - Role of business telecoms as key facilitator for rest of WTO agenda
  - Regulatory solutions to guarantee "equivalence of inputs"
  - More harmonisation of regulatory solutions across borders
  - Proportionate national security based rules
  - Customers want more seamless services
  - BTGS still often feels like a freight forwarder which has to unpack its shipping containers at the national frontier but business is getting more international

BT

7

Business markets are different

- Major business customers require:-
  - High levels of reliability and security (public internet is not sufficient)
  - Simultaneous connection of widely-scattered global sites
  - One-stop-shop for global needs
- Regulatory approaches designed to achieve competition in consumer markets – notably, local loop unbundling (LLU) – have little impact in the business sector. Even after aggregation of needs of all potential customers, economies of scale will rarely justify nation-wide investment in local access.
- Operators specialising in the business segment must continue to rely of wholesale inputs from incumbent operators (typically 40% of costs)
- Effective regulation of these inputs is critical to innovation and competitiveness

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Non-discrimination is not enforced and must be:-

Country	Key Performance Indicators (KPIs)	KPIs published	KPIs measure conditions of internal supply against those to third parties
A	×	×	×
B	✓	✓	×
C	×	×	×
D	✓	✓	×
E	✓	✓	×
F	×	×	×
G	✓	×	×
H	✓	×	✓
I	✓	✓	✓

Research conducted with global customers and local experts

Anonymised country data

BT

9

Competitive business services will boost the global economy

- Investment in computers does not in itself increase productivity. Computers must be linked effectively together to allow business process innovation.
- Interworking of IT applications in different geographic sites promotes a new business paradigm:
  - Rationalisation of corporate functions in most appropriate geographic sites
  - Outsourcing to concentrate on core competencies
  - From "command and control" to "flat" organisations
  - From vertical integration to long-term collaboration between multiple entities
- New business paradigm promises to boost international trade and investment but supply of "ubiquitous connectivity" remains slower, less comprehensive, and more costly than it needs to be.
- Government and regulators need to revise almost exclusive focus on private consumer telecoms.
- ***Potential benefits of genuinely competitive business telecoms within EU: customer costs 15% lower, GDP at least 1.5% higher***

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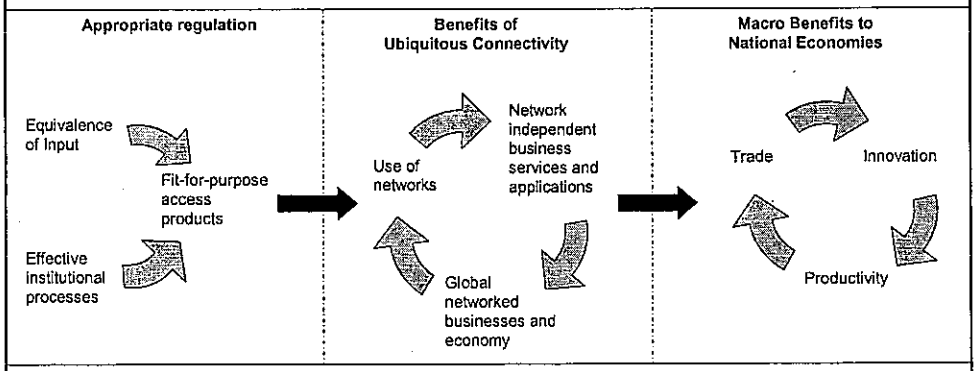
Competitive business telecoms are key facilitator for rest of WTO agenda



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Obligation for Equivalence of Input (EOI) is one solution

Provision of monopolised access and backhaul products to competitors on same basis for both incumbent operators' downstream arms and incumbents' wholesale customers:

- Same products
- Same supply times and terms and conditions (including price and service levels)
- Use of the same systems and processes
- Same reliability and performance for systems and processes.
- Same controlled access to and sharing of commercial information.

- **ie, non-discrimination plus**

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Functional separation is potentially the best EOI guarantee

- How to incentivise equivalence without constant regulatory review?

- An upstream business unit (clearly separate from the incumbents' other business units) with:
  - Transparent, forceful obligations (published and monitored)
  - Separate staff, management and remuneration incentives
  - Specific obligations with respect to confidential commercial and customer information
  - Monitoring and oversight by an independent Equality of Access Board
  - Governed by an independent management Board

- Effective regulation to ensure enforcement, including the following penalties for breach:-
  - Directions from the NRA or a court
  - Threat of competition law action
  - Third party actions for damages

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GATS and Telecom Market Evolution

Eric H. Loeb
Vice President, AT&T
International External and Regulatory Affairs

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Agenda

- AT&T Global Business and GATS after 10 Years
- GATS as Catalyst for Market Growth and Diversification
- Corporate View on Conditions for Market Entry

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Agenda

- **AT&T Global Business and GATS after 10 Years**
- **GATS as Catalyst for Market Growth and Diversification**
- **Corporate View on Conditions for Market Entry**

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AT&T Global Business Services in 2008

Employees
40,000 on six continents

Customers
140,000+, including all Fortune 1,000

Wholesale
Carrier's carrier + bilateral arrangements

Retail
Go where MNCs go

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Globalizing Customers Drive our Business Strategy

"Reach Where I do Business"

"Need for Consistent Service"

"Support Me Locally"

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How We Go To Market for Retail Business

Own and Operate: we own and operate in-country nodes and core backbone, with an extensive list of facility and competitive access suppliers

Examples:
- UK
- Japan
- Brazil

Local Service Provider Agreements: absent available licenses, we work with local licensed providers as business partners, with AT&T-defined, pre-agreed operations

- Thailand
- Indonesia
- Saudi Arabia

Equity Joint Ventures: where regulation requires and strategically justifiable, we invest in joint-ventures with "AT&T inside"

- India
- China
- Mexico

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Core GATS Impact on Sector Growth

- Market Opening
- Legal Stability
- Virtuous Circle of Investment
- Expansion of Market Participants
- Unbound "Me-Too" Emerging Markets

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Critical Conditions for Market Entry

✓ **Commitment** - nice; **Implementation** - necessary
- Speed, thoroughness

✓ **Independent Regulator and Transparent Process**
- Objective, efficient, non-discriminatory

✓ **Foreign Direct Investment**
- 100% ideal; majority control avoids non-market oriented JV
- National champions need competition, not protection

✓ **Broad Market Access Commitment**
- Full-service market access on both facilities and resale basis

✓ **Safeguards to Prevent Anticompetitive Practices**
- Abuse of customer information attained from competitors
- Withholding commercially relevant technical information

✓ **National Security Reviews**
- Narrowly tailored

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The Next Ten Years . . .

- **1997-2007** has brought competition to scores of countries and most of the existing telecom economy.

- **2008-2018** should complete the potential of deep commitments, and fluid global competition

- **Demand-driven regulations** will allow carriers to meet the constantly evolving needs of their customers.
  - Convergence, Collaboration, Competition
  - Provide customers what they want, where they want it

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2104

Negotiating Group on Basic Telecommunications 24 April 1996

REFERENCE PAPER

Scope

The following are definitions and principles on the regulatory framework for the basic telecommunications services.

Definitions

Users mean service consumers and service suppliers.

Essential facilities mean facilities of a public telecommunications transport network or service that

(a) are exclusively or predominantly provided by a single or limited number of suppliers; and

(b) cannot feasibly be economically or technically substituted in order to provide a service.

A major supplier is a supplier which has the ability to materially affect the terms of participation (having regard to price and supply) in the relevant market for basic telecommunications services as a result of:

(a) control over essential facilities; or

(b) use of its position in the market.

1. Competitive safeguards

1.1 Prevention of anti-competitive practices in telecommunications

Appropriate measures shall be maintained for the purpose of preventing suppliers who, alone or together, are a major supplier from engaging in or continuing anti-competitive practices.

1.2 Safeguards

The anti-competitive practices referred to above shall include in particular:

(a) engaging in anti-competitive cross-subsidization;

(b) using information obtained from competitors with anti-competitive results; and

(c) not making available to other services suppliers on a timely basis technical information about essential facilities and commercially relevant information which are necessary for them to provide services.

2. Interconnection

2.1 This section applies to linking with suppliers providing public telecommunications transport networks or services in order to allow the users of one supplier to communicate with users of another supplier and to access services provided by another supplier, where specific commitments are undertaken.

2.2 Interconnection to be ensured

Interconnection with a major supplier will be ensured at any technically feasible point in the network. Such interconnection is provided.

(a) under non-discriminatory terms, conditions (including technical standards and specifications) and rates and of a quality no less favourable than that provided for its own like services or for like services of non-affiliated service suppliers or for its subsidiaries or other affiliates;

(b) in a timely fashion, on terms, conditions (including technical standards and specifications) and cost-oriented rates that are transparent, reasonable, having regard to economic feasibility, and sufficiently unbundled so that the supplier need not pay for network components or facilities that it does not require for the service to be provided; and

(c) upon request, at points in addition to the network termination points offered to the majority of users, subject to charges that reflect the cost of construction of necessary additional facilities.

2.3 Public availability of the procedures for interconnection negotiations

The procedures applicable for interconnection to a major supplier will be made publicly available.

2.4 Transparency of interconnection arrangements

It is ensured that a major supplier will make publicly available either its interconnection agreements or a reference interconnection offer.

2.5 Interconnection: dispute settlement

A service supplier requesting interconnection with a major supplier will have recourse, either:

(a) at any time or

(b) after a reasonable period of time which has been made publicly known

to an independent domestic body, which may be a regulatory body as referred to in paragraph 5 below, to resolve disputes regarding appropriate terms, conditions and rates for interconnection within a reasonable period of time, to the extent that these have not been established previously.

3. Universal service

Any Member has the right to define the kind of universal service obligation it wishes to maintain. Such obligations will not be regarded as anti-competitive *per se*, provided they are administered in a transparent, non-discriminatory and competitively neutral manner and are not more burdensome than necessary for the kind of universal service defined by the Member.

4. Public availability of licensing criteria

Where a licence is required, the following will be made publicly available:

(a) all the licensing criteria and the period of time normally required to reach a decision concerning an application for a licence and

(b) the terms and conditions of individual licences.

The reasons for the denial of a licence will be made known to the applicant upon request.

5. Independent regulators

The regulatory body is separate from, and not accountable to, any supplier of basic telecommunications services. The decisions of and the procedures used by regulators shall be impartial with respect to all market participants.

6. Allocation and use of scarce resources

Any procedures for the allocation and use of scarce resources, including frequencies, numbers and rights of way, will be carried out in an objective, timely, transparent and non-discriminatory manner. The current state of allocated frequency bands will be made publicly available, but detailed identification of frequencies allocated for specific government uses is not required.

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THE ECONOMIC DEVELOPMENT BENEFITS OF FULL WTO TELECOM COMMITMENTS

All WTO member countries should adopt telecom commitments in the Doha Round providing market access for all services, 100 percent foreign capital investment and control, and acceptance of the full WTO Reference Paper. All countries should then rapidly ratify and implement those commitments.

- Prior to the WTO Basic Telecom Agreement in 1997, telecommunications was provided on a monopoly basis in most countries. A decade after that historic agreement, many countries now have fully open telecom markets and are receiving significant economic benefits as a result. The World Bank reports that information and communication technology (ICT) has become critical to economic growth for countries at all levels of development, and further emphasizes that telecom liberalization and competition is a powerful driver of global growth in ICT. Other expert bodies make similar findings.

- There also remain a significant number of WTO member countries with only limited WTO commitments in basic telecom or no commitments in this sector. The Doha Round of WTO services negotiations provides an important opportunity to remove these barriers to telecommunications trade and investment in both developed and developing countries that impede liberalization in this critical sector and the broader economic growth that is stimulated by open market policies.

- A major priority for the Doha Round should be the removal of restrictions on foreign direct investment (FDI) in telecommunications that continue to limit competition, investment and growth in many countries. The costs of FDI restrictions far outweigh any purported benefits by raising the cost of capital for incumbents and new entrants alike and impeding competitive market entry and efficient management. Where countries maintain FDI restrictions for an incumbent operator, they still can obtain significant competitive benefits by removing FDI restrictions for non-incumbents. Countries can also overcome the drawbacks of limitations on direct foreign ownership of telecom suppliers by removing restrictions on indirect foreign ownership and control.

Consistent and compelling evidence demonstrates that competitive telecommunications markets encourage broad economic growth in countries at all levels of development.

- *The World Bank reports that information and communication technology (ICT) now plays a critical role in encouraging economic growth throughout the world.*

  ⇒ "Experience over the past decade has shown that a vibrant and competitive information and communication sector is a prerequisite for developing information societies. . . . When tailored to needs, ICT has the potential to raise growth in businesses of any size and countries at any stage of development. . . . [I]n the 1990s globalization and the increasing information intensity of economic activity, coupled

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with rapid technological change and demand growth, made ICT critical to competitiveness and growth" World Bank, *Information and Communications for Development 2006: Global Trends and Policies*, at 3-4, http://siteresources.worldbank.org/EXTINFORMATIONANDCOMMUNICATIONANDTECHNOLOGIES/Resources/282822-1141851022286/TOC.pdf.

⇒ Based on surveys of 20,000 companies in 56 low and middle income countries, the World Bank has determined that "enterprises using [information and communications technology] more intensively are more productive, grow faster, invest more, and are more profitable." *Id.*, at 60-62. There has been a broad consensus for several years "among policymakers worldwide that information and communication provide key inputs for economic development, contribute to global integration while helping to retain the identity of traditional societies, and enhance the effectiveness, efficiency, and transparency of the public sector." *Id.* at 42.

⇒ "A good communication and information infrastructure is an essential part of overall infrastructure: it can improve the connectivity between firms, suppliers and clients as well as provide business opportunities, especially for companies that are physically distant from urban centers." *Id.* at 57. "The availability of a wide range of high-quality communications services at competitive prices is important: this allows firms to choose technologies and services appropriate to their business needs." *Id.* at 70.

- *The World Economic Forum similarly emphasizes that Internet-based ICT is driving innovation and transforming former ways of living and working.*

⇒ "There is growing evidence that ICT is driving innovation by allowing creative thinking and responsive problem-solving to provide the promise of never-before-seen opportunities for all. Access to the global networked economy is becoming an important cornerstone of the development of economies and societies." World Economic Forum, *The Global Information Technology Report 2006-2007*, Executive Summary, at 1, http://www.weforum.org/pdf/gitr/summary2007.pdf.

⇒ "[O]ne can argue that we are at a critical stage of transformation in society and business with new (Internet-based) information and communication technologies (ICT). For example, mobile telephones are not only creating innovative patterns of social and business communication but are also becoming sources of entrepreneurial business generation. . . . The penetration of the Internet has reached a critical threshold, and even poor countries in Africa are moving actively to leverage the transformative potential of the global information architectures created by the Internet. Ethiopia, despite being one of the continent's poorest countries, is spending nearly one tenth of its GDP on information technology every year." *Id.*

- *The ITU makes similar findings.*

  - ⇒ "The telecommunications sector deserves special recognition for its impact on the economy worldwide. . . . Worldwide, the ITU estimates that telecommunication service revenues have more than doubled, from US$ 517 to US$ 1,216 billion over the last ten years. . . . Africa is the region where telecommunication service revenues as a percentage of GDP have grown fastest. Today, they represent almost five percent of GDP in Africa, compared to 4.5 percent in Oceania, 3.8 percent in Asia, 3.3 percent in Europe and 2.9 percent in the Americas. This highlights the importance of the telecommunication sector for the African economy." *ITU, World Telecommunication/ICT Development Report 2006, Measuring ICT For Social and Economic Development*, Executive Summary at 10-11, http://www.itu.int/dms_pub/itu-d/opb/ind/D-IND-WTDR-2006-SUM-PDF-E.pdf.

  - ⇒ "Studies that analyze the overall impact of the ICT market on the economy highlight its substantial share, as well as its growing importance. . . . [T]he most important economic impact of the spread and use of ICTs is indirect, by transforming the way individuals, businesses and other parts of the society work, communicate and interact. The beneficial impact of ICTs on productivity – which can help reduce poverty – is of particular interest as ICT diffusion levels across all countries rise." *Id.* at 14 & 15.

- *Telecom liberalization stimulates the provision of high quality, low cost communications and the spread of information and communications technology.*

  - ⇒ "Liberalization and competition – and the resulting increase in private investment – have driven the development of telecommunications infrastructure and ICT in general. . . . By opening their communications markets through well-designed reforms, governments can create competitive markets that grow faster, lower costs, facilitate innovation and respond better to user needs." World Bank, *Information and Communications for Development 2006: Global Trends and Policies*, at 6. Liberalization and competition "will stimulate new investment in additional bandwidth, increase demand for communication services through falling prices, and promote greater efficiency and innovation in the provision of infrastructure and services." *Id.* at 70.

  - ⇒ "High quality, low-cost communications can be effectively provided only in competitive markets. Several studies found that the introduction of competition in international communications lowers the input costs for firms (lower cost of international calls, access to global data networks), and spurs productivity gains (better integration in the client-supplier chain). These two factors improve the competitiveness of export-oriented forms and stimulate economic growth." World Bank, *Competition in International Voice Communications* (2004), at 16. At the same time, globalization has increased the demand for "high-quality, low-cost communications to promote better access to markets and to increase economic integration and global competitiveness." *Id.* at 15-16.

⇒ Hong Kong's telecommunications market, in which all sectors have been fully liberalized with no ownership restrictions, "was estimated to be directly responsible for 3.3 percent of GDP in 2004" and "has been an important factor in Hong Kong's development as a leading business and financial center." Hong Kong: The Facts, Telecommunications, Hong Kong Administrative Region Government, http://www.info.gov.hk/hkfacts/telecom.pdf

⇒ "The development of Singapore as an Asian infocomm hub depended on our telecommunications sector being globally competitive. Our attractiveness to investors depended, apart from other factors, on easy access to world class and competitively priced telecommunications." Speech by Dr. Lee Boon Yang, Minister for Information, Communication and the Arts, Government of Singapore, at the ITU Telecom World 2003 Plenary Session, Oct. 13, 2003.

⇒ In the European Union, where all telecom market sectors were fully liberalized in 1998, "[t]he telecommunications price index has fallen at an average rate of 2.4% over [the period 1996-2004], although the rate of increase slowed down somewhat after 2002. This price fall has occurred in parallel with increasing competition and technological progress." Commission of the European Communities, *Evaluation of the Performance of Network Industries Providing Services of General Economic Interest, 2006 Report*, Commission Staff Working Document, Brussels, Jul. 12, 2007, at 7. Between 1994 and 2004 there was "a substantial rise in the volume of telecommunications services purchased, which is not only a reaction to substantial price cuts but can also be attributed to technological advances (such as the emergence of mobile telephony and Internet usage), network effects, new services offered, etc." *Id.* at 10. "It is also noteworthy that after 1996 the demand growth was higher than the productivity growth in communication services . . ., thus leading to employment increases." *Id.* at 8. "In the EU25 telecommunications sector, employment increased at an annual average of 1.5% between 1995 and 2004, although there was a slight decline between 2003 and 2004." *Id.* at 7. In the EU, "[e]lectronic communications are the major success story of liberalisation." *Id.* at 15. http://ec.europa.eu/economy_finance/publications/structural_policies/2007/horizontalevaluation4_en.pdf.

- *Telecom liberalization is encouraging the expansion of fixed and mobile networks, making services more affordable and creating new entrepreneurial and development opportunities in a number of developing countries.*

  ⇒ "Recent experience with the rapid growth of pre-paid mobile services provides a tantalizing hint of the true market potential of the millions of currently under-served consumers." Muna Nijem, Chairman of the Board and CEO, Telecommunications Regulatory Commission of Jordan, Closing Remarks to the 4th Annual Global Symposium for Regulators, hosted by the International Telecommunications Union, Dec. 2003.

⇒ "The first step [in extending communication and information services] is to allow markets to work. Competitive, private-led markets go a long way toward making communication and information services available to the entire population. Reforms in the telecommunication sector open the way." World Bank, *Competition in International Voice Communications* (2004), at 41.

⇒ "Competitive, well regulated private investment remains the key to meeting the growing demand for [information and communications infrastructure]. There is plentiful evidence that countries that have introduced private competition under capable regulators have seen faster rollout of services and lower costs. Independent regulation and competition together raise private investment by 50 percent. In turn, private investment is related to higher teledensities and greater efficiency in the sector. Competition can also reduce prices by as much as 20 percent. Regarding the Internet and e-commerce, cross-country studies strongly suggest that rollout of affordable infrastructure is the most important factor, after income per capita, in explaining takeup." *Financing Information and Communication Infrastructure in the Developing World*, World Bank Working Paper No. 65 (2005), at xiii. *See also, Contribution of Information and Communication Technologies to Growth,* World Bank Working Paper No. 24 (2004), at 19.

- *Telecom liberalization and the spread of information and communications technology stimulate new employment opportunities.*

⇒ "Data on the ICT sector show that, generally speaking, following the contraction in the early 2000s, developed countries experienced an increase in both value added and employment in the ICT sector in 2003. This increase in demand and supply in the developed countries' ICT sector opened up new prospects for developing country business partners. In 2003, the ICT sector represented 5.5 per cent of total business employment in developed countries and was a source of employment growth. ICT sector employment grew by over 8 per cent annually between 1995 and 2003, which represented an additional 1 million people employed." United Nations Conference on Trade and Development, *Information Economy Report 2006, The Development Perspective*, Nov. 2006, Overview at 3, http://www.unctad.org/Templates/webflyer.asp?docid=7576&intItemID=3991&lang=1&mode=downloads.

⇒ "India, in particular, has demonstrated the impact of ICTs in employment and economic growth. In reality, economic growth started rapidly in the 1980's, and the creation of employment in the software and business process outsourcing industries picked up in the early 1990's. Software exports grew from $225 million in 1992-1993 to $3,010 six years later. Employment in the software industry was estimated to have grown from 242,000 persons during the period 1999-2000 to 568,000 four years later – an average yearly growth rate of 18 per cent. Employment in business process outsourcing grew from 70,000 workers in 1999-2000 to 245,500, a growth rate of 42 per cent average per year." *Id.*, at 238 (citations omitted).

⇒ "There is a widespread belief that competition triggers significant labor cuts, but the evidence suggests that this is not the case in developing countries. A comparative analysis of twenty-six countries in Asia and Latin America shows that during 1990-94 employment in markets with varying degrees of competition increased by 20.73 percent, while in monopoly markets employment grew by only 3.13 percent. . . . In developing countries, where teledensity was as low as 5.2 in 1994, network expansion creates a demand for labor that outweighs the trends toward workforce reduction that network modernization has generated in industrial countries where teledensity was 52.3." The World Bank Group, *Competition in Telecoms – Implications for Universal Service and Employment*, Public Policy for the Private Sector, Oct. 1996, at 2.

- *Telecom liberalization also increases the efficiency of incumbent carriers.*

⇒ "The desire to protect the incumbent operator is commonly cited as a reason for governments' reluctance to introduce competition in international voice communications . . . However, international experience shows that incumbent operators can adapt, successfully, to the changed conditions in the telecommunications market following the introduction of competition in international voice communications." World Bank, *Competition in International Voice Communications* (2004), at 22. "Competitive pressures in international voice communications created incentives for both [BT and Telekom Malaysia] to launch new services. This benefited the consumer as well as the financial health of the companies and countries. Both operators were able to safely maintain financial profitability, and the states were able to collect additional revenue." *Id.*

⇒ "Privatization of the incumbent (usually fixed-line) telephone company into a competitive regime contributes to leveling the playing field for competitors, redirects government efforts towards policy and regulation, increases the efficiency of a major operator, and provides additional revenue for private financing of investment." *Financing Information and Communication Infrastructure in the Developing World*, World Bank Working Paper No. 65 (2005), at 15. "[C]ountries with greater private involvement in the incumbent . . . see higher rollout of services, more efficiency, and higher investment flows." *Id.* at 10. Because of their strong cash flows and good business fundamentals, incumbent carriers are often very attractive to financial investors. World Bank, *Information and Communications for Development 2006: Global Trends and Policies*, at 29.

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Improved WTO commitments are necessary to encourage increased trade, investment and competition in telecommunications. WTO commitments not only create the opportunity for trade and investment but also – of equal importance – create investor confidence in the legal protection for those investments.

- *Many countries nonetheless still retain telecom market entry barriers that limit competition, investment and growth.*

  ⇒ "A recent survey of 15 Asian economies notes that all but 1 had restrictions on telecommunications FDI, including maximum foreign share of 30 to 49 percent of total equity." World Bank, *Information and Communications for Development 2006: Global Trends and Policies*, at 30. "[T]he 2005 ITU Regulatory and Competition Database suggests that as of 2004, 50 percent of developing countries retained monopolies on international telephony, 43 percent still had monopolies on fixed local services, and 13 percent on mobile services." *Id.*

  ⇒ Some countries' domestic laws allow greater competition and foreign ownership than their WTO commitments provide. Those countries will not realize the full benefits of their existing market liberalization unless it is fully supported by WTO commitments. Without WTO commitments, there will be investor uncertainty on whether existing levels of liberalization might be reduced under some future government. As a result, those countries will lose potential telecom investment to other more open markets where there is less investment risk.

  ⇒ WTO commitments "strengthen investor confidence by demonstrating that a country intends to reform its telecommunications sector in a nonreversible way. They also provide recourse to foreign investors (through their government) to settle disputes under the WTO dispute resolution system. GATS commitments, in this way, enhance and underpin the domestic sector reform agenda . . . , providing investors with greater confidence." World Bank, *Information and Communications for Development 2006: Global Trends and Policies*, at 33.

  ⇒ "WTO commitments will be an important signal to investors regarding not only reform, but the stability of that reform. A stable regulatory and policy environment is vital in telecommunications because of the high fixed costs associated with utilities. . . . A recent survey of strategic telecommunications investors in Asia which asked about the determinants of entry and exit decisions confirms the centrality of regulatory consistency. Nine specified risk factors that influenced such decisions were ranked by investors in approximately the following order of concern (highest to lowest): regulatory consistency, rate of return, quality of local partners, direct control, country risk, repatriation of profits, currency risk, the scale of the investment, and insurable risks." *Financing Information and Communication Infrastructure in the Developing World*, World Bank Working Paper No. 65 (2005), at 16-17.

  ⇒ "[S]ince 1997, many countries making GATS commitments in telecommunications services have experienced more rapid growth in fixed line penetration, mobile subscribers and telecommunications-sector revenues than their similarly-situated

neighbours." Bressie, Kende & Williams, *Telecommunications Trade Liberalisation and the WTO*, 7 Info 3 (2005).

The benefits of full competition require WTO telecom commitments allowing market access for all services, 100 percent foreign capital investment and control, and acceptance of the full WTO Reference Paper.

- *WTO commitments should ensure full market access for all telecom services.*

  ⇒ The removal of restrictions on facilities-based competition provides significant benefits to consumers by requiring suppliers to compete vigorously and encourage lower prices, the development of new services and the use of the most efficient technology to win customers and lower costs.

  ⇒ "Compared with gradual liberalization, full competition results in lower prices and higher welfare gains. ... [I]nternational call charges in full competitive markets can be as low as one-third of the prices in partially competitive markets, resulting in substantial benefit to consumers." World Bank, *Competition in International Voice Communications* (2004), at 6. "[O]nce countries commit to open their markets under the WTO framework, they have a legally binding obligation that takes precedence over national law, strengthening the credibility of their commitment." *Id.* at 18-19.

  ⇒ "The Dominican Republic's small market sustains five [international service] competitors; Chile's sustains 34; and the United Kingdom's sustains 500.... [I]t is interesting to note that the trend has continued, even during the sector's financial crisis in 2000 to 2001. The number of suppliers in the United Kingdom's market grew from 306 in July 2000, to 500 in July 2002. In the same period, the number of suppliers in Malaysia grew from five to 12, and in Argentina from four to 66." *Id.*, at 6.

- *WTO commitments should also allow 100 percent foreign capital investment and control of all telecom suppliers. The benefits from removing restrictions on FDI increase the competitiveness of both incumbents and new entrants by reducing the cost of capital and stimulating improvements in management and technology.*

  ⇒ FDI is a major source of ICT financing – between 1990 and 2003, 122 of 154 developing countries received FDI in telecommunications. World Bank, *Information and Communications for Development 2006: Global Trends and Policies*, at 7. "Over the past decade, the bulk of telecommunications FDI has . . . been directed to finance infrastructure roll-out, a trend that can be expected to continue in the future." *Id.* at 23.

  ⇒ "In an industry as capital-intensive as telecommunications, access to capital is key to ensuring the deployment and expansion of a robust network." *Id.*, at 15. FDI has "typically been the driver of sector growth in liberalizing countries" and has brought "new management approaches, technology, and skills transfer to the host countries."

Id. at 16. "As the market grows, becomes more competitive, and matures, private domestic investment follows and often overtakes FDI." *Id.*

⇒ "Governments have realized that any restrictions they place on investment (be it foreign or domestic) raises the cost of financing (and ultimately of services), thus making investment less likely." World Bank, *Information and Communications for Development 2006: Global Trends and Policies*, at 30. "In most cases, foreign ownership restrictions limit takeover risk and hence management accountability, and reduce investment incentives, thereby inhibiting effective, profit-oriented management." *Id.* "Policy makers in developing countries should further reduce foreign ownership restrictions in the telecommunications sector to reap the benefits FDI brings in terms of lower cost of capital and higher productivity, coverage, and quality of services." *Id.* at 30-31.

⇒ "FDI restrictions not only place a maximum limit on potential foreign private investment, they can also deter such investments altogether." *Financing Information and Communication Infrastructure in the Developing World*, World Bank Working Paper No. 65 (2005), at 16.

⇒ Foreign investment restrictions also cause significant strategic or financial inefficiencies. Partners that are new to the telecom sector may lack relevant operational expertise, while telecom providers in the foreign market may be more focused on protecting their existing business than on promoting the success of a new venture. Restricting foreign ownership to a minority stake increases these potential problems by denying the overseas supplier operational control of the joint enterprise and giving rise to concerns that the domestic controlling partner may not be committed to full implementation of the service portfolio, or may manage the network in ways that do not meet customers' service level expectations.

⇒ "Restrictions on foreign investment . . . limit the abilities of local companies to be effective participants in global telecommunications alliances. This in turn limits the ability for strategic equity investments, sharing of technologies and know-how, and the economic scope and scale that often accompanies these alliances." Procter & Olivier, *Capital Flows and Cost of Capital: The Importance of Liberalized Investment Rules for a Competitive Telecommunications Sector* (2002), at 8. FDI restrictions "have a negative effect on both the ability to gain access to capital, and the cost of what is available, particularly for smaller and newer players in the telecom sector." *Id.* at 22.

⇒ "Complex ownership arrangements de-link management from facing investor risks and reduce foreign investor incentives for transfer of management expertise to the firm, thereby curbing effective, profit-oriented management. Further, lack of a clear policy for such investment prolongs negotiation, increases the risk for long-term partnership, and discourages future investments." *Financing Information and Communication Infrastructure in the Developing World*, World Bank Working Paper No. 65 (2005), at 16.

U.S.A.

⇒ Canada's House of Commons Standing Committee on Industry, Science and Technology found in 2003 that foreign ownership restrictions negatively impact telecommunications industry competition by reducing the pool of investment capital available to telecommunications companies and have a broad adverse economic impact.

> "Foreign ownership restrictions have played a role in impeding capital investment by new entrants in the Canadian telecommunications sector in the past decade. They also have been a factor in the recent financial instability of the industry, which saw a number of capital restructurings and bankruptcies. Moreover, since telecommunications is a critical element of the global, networked, knowledge-based economy, these restrictions are also likely stifling Canada's productivity and economic growth performance.
>
> "In summary, foreign ownership restrictions compromise, among other important economic contributions, the diffusion of new communications technologies and Canadians' access to modern communications services. For all these reasons, the Committee recommends the complete removal of Canada's foreign ownership restrictions applicable to telecommunications carriers." Report of the Standing Committee on Industry, Science and Technology, *Opening Canadian Communications to the World*, April 2003, Conclusion. http://cmte.parl.gc.ca/Content/HOC/committee/372/inst/reports/rp1032302/instrp03/15-concl-e.htm

- *Where countries maintain FDI restrictions for an incumbent operator, they still can take significant steps to reduce inefficiencies and increase competition in their markets by removing FDI restrictions for other operators.*

⇒ As an example of this approach, the recently-negotiated U.S.-Korea Free Trade Agreement allows 100 percent foreign ownership of facilities-based suppliers in Korea other than Korea Telecom and SK Telecom, while maintaining restrictions on more than 49 percent foreign ownership of the latter two operators. http://www.ustr.gov/Trade_Agreements/Bilateral/Republic_of_Korea_FTA/Draft_Text/Section_Index.html

⇒ One study notes that "larger, more established firms typically have a lower WACC [weighted cost of capital] than newcomers to any given sector" and that "[n]ew entrants, because of the higher cost of their financing, thus actually require greater access to funding than established players with larger revenue streams." Procter & Olivier, *Capital Flows and Cost of Capital: The Importance of Liberalized Investment Rules for a Competitive Telecommunications Sector* (2002), at 21. "While an established payer may be able to attract capital from one market or one source, when newer companies seek outside financing, they are more likely to be successful if they can draw from and mix the greatest number of instruments and investors, in order to come up with the best formula for a reduced WACC." *Id.* at 22. The removal of FDI restrictions for non-incumbents is therefore likely to increase the

viability of competitive operators even where FDI restrictions are maintained for incumbents.

- *Countries can also overcome restrictions on direct foreign ownership of telecom suppliers and obtain the benefits of an open investment regime in telecommunications by removing restrictions on indirect ownership.*

  ⇒ The United States limits the direct foreign ownership of radio licensees, including telecommunications carriers holding cellular, microwave and other wireless licenses. However, the United States also allows up to 100 percent foreign ownership of a U.S. holding company that holds a controlling interest in a telecommunications carrier radio licensee. (The United States has no restrictions on the foreign ownership of telecommunications carriers that do not hold radio licenses.)

  ⇒ Foreign governments, individuals and corporations may therefore own and control U.S. telecommunications suppliers holding radio licenses simply by establishing a U.S. corporation to hold a 100 percent or other controlling interest in the U.S. telecommunications supplier. For example, T-Mobile USA, the fourth largest U.S. wireless carrier, is a wholly owned indirect subsidiary of Deutsche Telekom.

- *WTO commitments also should include acceptance of the full WTO Reference Paper.*

  ⇒ The WTO Reference Paper reflects a global consensus on a set of regulatory principles relating to competitive safeguards, interconnection, universal service, independent regulation, licensing procedures and the allocation of scarce resources to encourage the development of competitive telecommunications markets. The more than 60 countries that have adopted the full text have recognized that market access commitments in telecommunications are not sufficient to encourage competition and that the avoidance of further potential obstacles to market entry in such matters as licensing and obtaining necessary interconnection arrangements is also a critical aspect of opening formerly closed or restricted telecom markets to competition. The adoption of the Reference Paper plays a key role in encouraging market entry by assuring investors that new entrant carriers will operate on a level playing field.

  ⇒ WTO Reference Paper "principles are considered to be best practices fundamental to ensuring minimum standards of good regulatory behavior, effective competition, and a stable climate for investors." World Bank, *Information and Communications for Development 2006: Global Trends and Policies*, at 34.

  ⇒ "In general, investors are interested in certainty, predictability, and access to profits. The Reference Paper is the starting point to address these key issues for investors in developing markets." *Legal and Regulatory Implications of Implementing WTO Telecommunication Commitments in Developing Markets*, David Satola, Counsel, World Bank, Oct. 1997.

  ⇒ "Putting in place the basic elements of a credible interconnection regime that is consistent with the WTO principles is a key precondition for effective competition in

international telecommunications services." World Bank, *Competition in International Voice Communications* (2004), at 33.

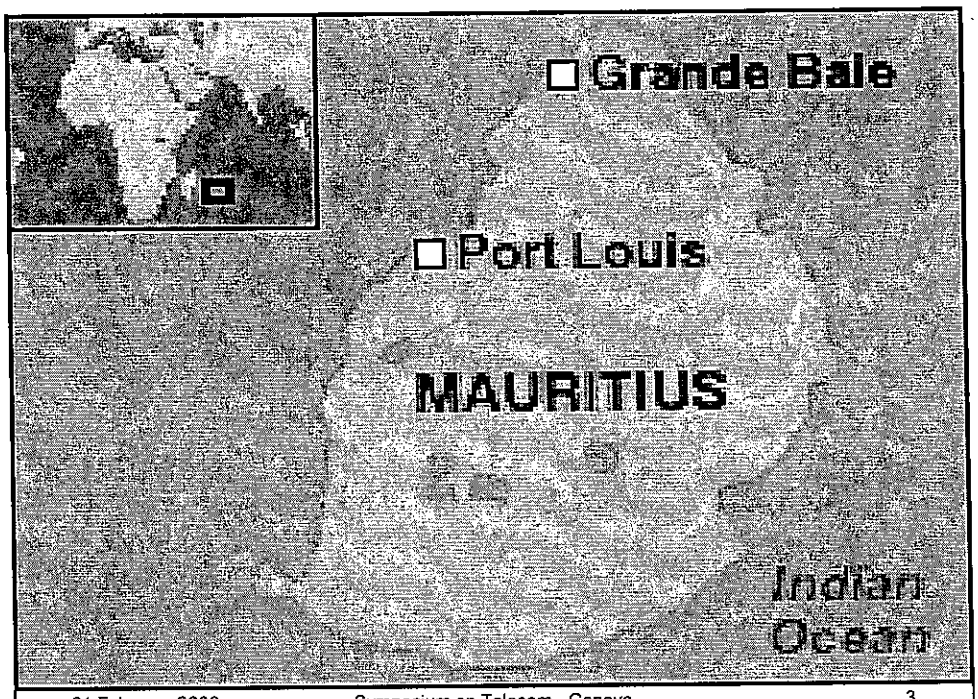
⇒ "A related important element of the WTO regulatory principles is to ensure the regulator's independence from operators in order to avoid conflicts of interest." *Financing Information and Communication Infrastructure in the Developing World*, World Bank Working Paper No. 65 (2005), at 17. "Absent a strong independent regulator, the effects of competition are muted and the impact of privatization can be dissipated. At the same time, it is important to note the risk of regulatory failure – excessive, poorly designed, or poorly implemented regulation. Regulatory institutions in developing countries are likely to have relatively limited capacities, and so it is important to ensure that regulatory structures are designed to minimize the burden of regulation. Sectors should be made to operate efficiently through the mechanism of competition, with regulatory intervention only used where competitive forces do not or cannot operate effectively." *Id.* at 11.

Outsourcing in Mauritius

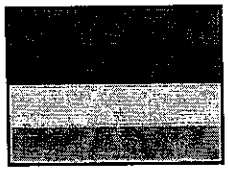
Dr M K Oolun
ICT Authority – Mauritius

Presentation outline

- Mauritius ???
- Mauritius commitments - White paper
- Liberalisation process
- Policies
- ICT facts
- New orientations – ITES (outsourcing)
- Outsourcing value chain
- The way forward

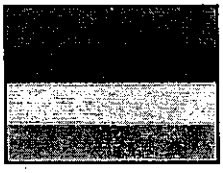


Country Profile - 1



- **A volcanic island of lagoons and palm-fringed beaches in the Indian Ocean, has a reputation for stability and harmony among its mixed population of Asians, Europeans and Africans.**

Country Profile - 2



- **Full name:** The Republic of Mauritius
- **Population:** 1.26 million
- **Capital and largest city:** Port Louis
- **Area:** 2,040 sq km (788 sq miles)
- **Major languages:** English, French (both official), Creole, Indian languages
- **Major religions:** Hinduism, Christianity, Islam
- **Life expectancy:** 69 years (men), 76 years (women)
- **Monetary unit:** 1 Mauritian rupee=100 cents (1USD = 28MUR)
- **Main exports:** Sugar, clothing, tea, jewellery
- **GNI per capita:** US $5,450 (2007)
- **Internet domain:** .mu
- **International dialling code:** +230

GATS commitment of Mauritius

- Voice telephone services
- Packet-switched data transmission services
- Circuit switched data transmission services
- Telex services
- Telegraph services
- Facsimile services
- Private based circuit services
- Electronic mail
- Voice mail

December 1997 – White paper in Telecom

- Government expressed its determination to ensure the widest participation in the formulation of any policy bearing in mind the nation's interest and the will to push Mauritius forward as an info-communications hub in the region.

Principles - 1

- Regulation
  - responsibility of the regulator is therefore to ensure that operators feel the pressure to meet the needs of users (e.g., affordability, interconnection, availability and quality of service)
- Private Sector Participation
  - ***Local Entrepreneurs***
  - ***Strategic Equity Partners***
  - ***Financial (or Portfolio) Investors***

Principles - 2

- **Market Entry and Competition**
- **Information Sector Promotion**
  - Falling costs to make remoteness less important.
  - ICT as a sector
  - ICT as an enabler ITES (banking and financial services)
  - Outsourcing

LIBERALISATION PROCESS - 1

- Phase I
  - 1998 - Completion of initial phase of privatisation of Mauritius Telecom
- Phase II
  - From 1997 through year-end 1998
    - new legislation
    - establishment of the new Mauritius Telecommunications Authority
    - establishment of the new Telecommunications Advisory Council
    - intensive initial policy and regulatory decision-making
    - intensive activity toward the initial partial privatisation of Mauritius Telecom.
    - opening up of some additional services to competition;

LIBERALISATION PROCESS - 2

- **Phase III**
  - From 1999 to 2004
    - gradual sector liberalisation
    - the advent of competition across other market segments
- **Phase IV**
  - From 2005 and beyond
    - full compliance with WTO obligations.

ICT facts – Dec 2007

- Indicators:
  - Fixed density = 28.4% (2 ops)
  - Mobidensity = 65.3% (3 ops)
  - Broadband = 11%
- Services:
  - Triple play since Nov 2005
  - M-banking Dec 2006

ICT sector turnover

	2000	2001	2002	2003	2004	2005
Total Turnover of ICT sector (Rs Million)						
IT Turnover (Rs Million)	2,595	2,579	2,647	4,049	8,919	9,492
Hardware	2,053	1,959	1,844	3,109		
Software	90	110	135	197		
Services	452	510	668	743		
of which training	52	60	38	58		
Distribution of IT Turnover (%)						
Hardware	79%	76%	70%	77%		
Software	3%	4%	5%	5%		
Services	17%	20%	25%	18%		
Communications (Rs Million)	5,250	6,300	6,850	6,768	8,132	10,195
Total Turnover of ICT sector (Rs Million)	7,845	8,879	9,497	10,817	17,051	19,687
Export Turnover of ICT sector (Rs Million)					1,616	1,788
Export Turnover as a % of Total ICT Turnover					9.50%	9.10%
% Contribution of value added to GDP					5%	-
ICT Intensity (ICT Expenditures as a % of GDP)					11%	-
Annual Growth Rate		13.18%	6.96%	13.90%	57.63%	15.46%

Source: derived from CSO and ICTA basic data

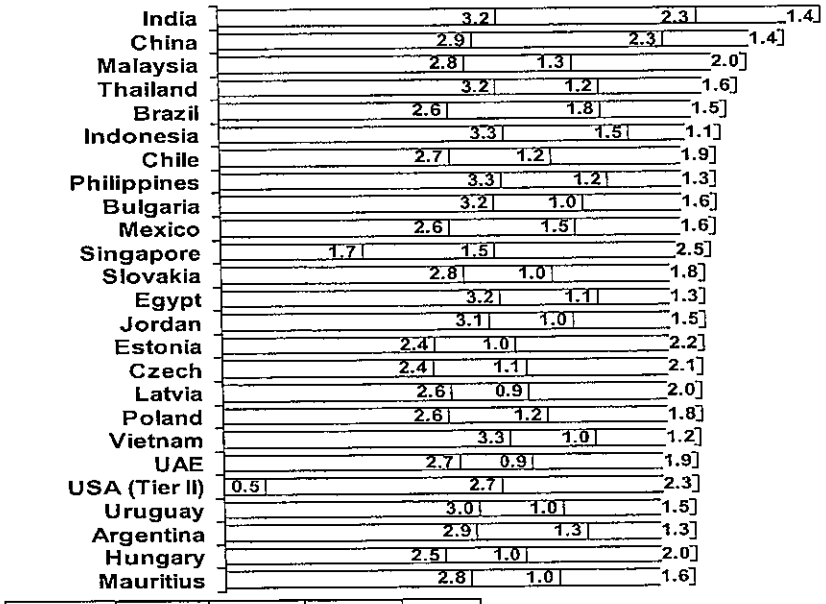
Policy Review

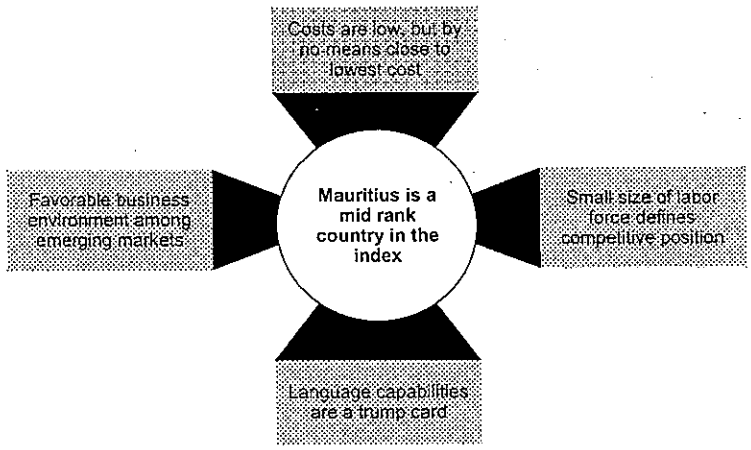
- The characteristics of the telecommunications sector make it imperative for relevant policies to be reviewed regularly thus making the process of policy making exercise a dynamic one.

The reviews

- 2001 – replacement of the TA 98 by the ICT Act 2001 to bring in convergence issues
- 2003 – bringing forward the liberalisation date
- 2004 – NTP 2004 to revise previously set targets
- 2007 – Elaboration of the NICTSP: new orientation

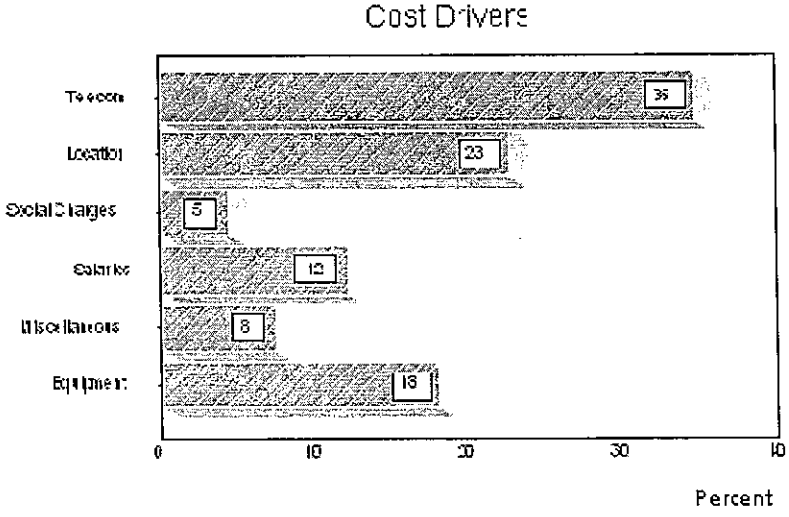
Outsourcing: Global Services Location Index 2007

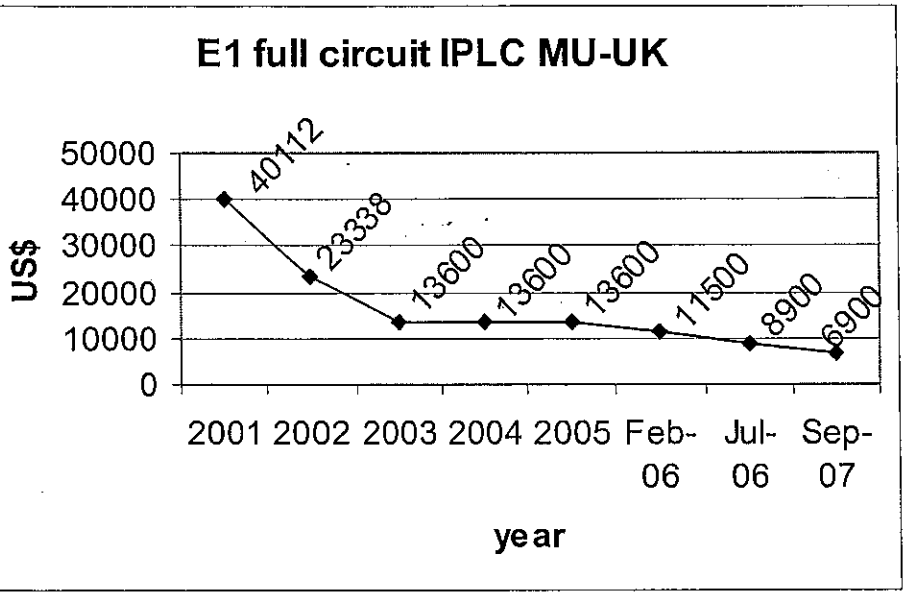




Source: BOI Mauritius

BPO reality for Mauritius





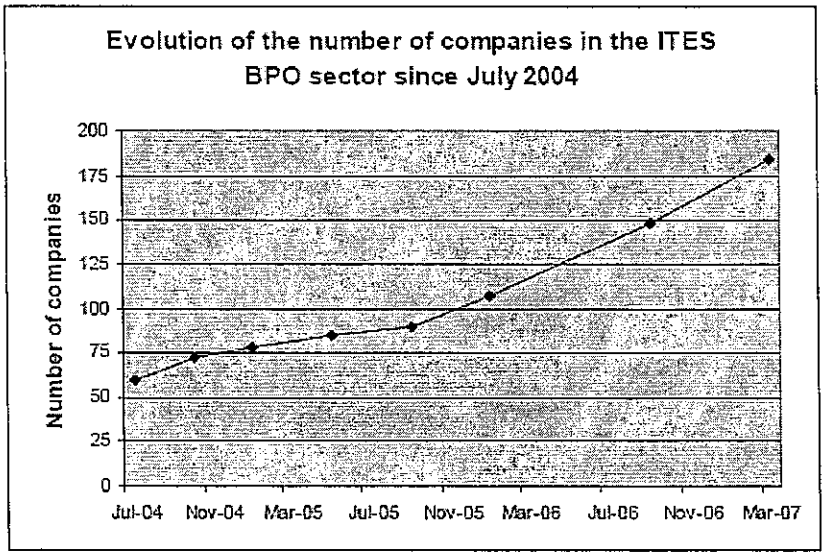
Value chain

- Basic call centre
- BPO
  - Finance & Accounting (Accenture, Deloitte consulting)
  - Travel & Hospitality (Quatrro)
  - Insurance (Momentum)
- KPO
  - data gathering and validation (ASSET4)
- LPO
  - LALIVE, Switzerland
- HRO (Ceridian)

The Mauritian ITES BPO Scenario

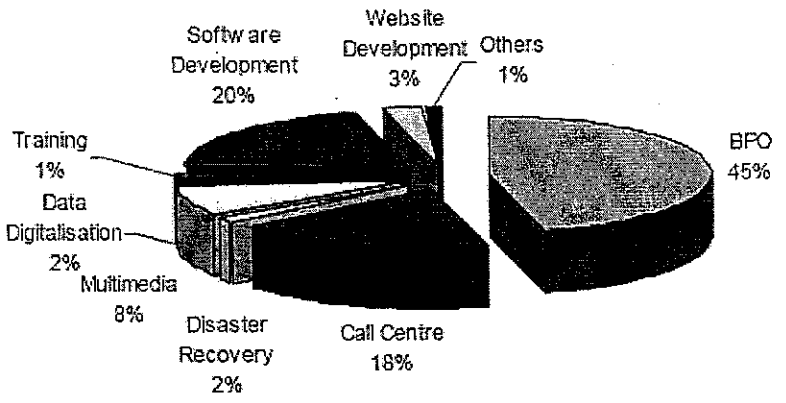
ITES- BPO Industry			
	Oct 2005 to Jan 2006	Feb 2006 to Sept 2006	Oct 2006 to Mar 2007
No of Companies	107	148	185
Cumulative realized Investment (MUR)	917,989,339	1,010,262,462	1,552,743,953
Additional Investment (MRU)		92,273,123	542,481,491
Employment	4,332	5,513	6,960

Source: BOI



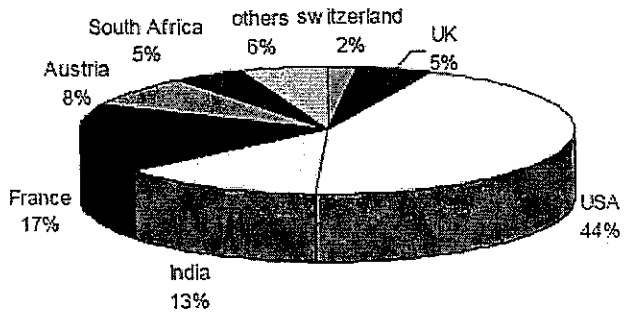
Source: BOI

Mauritian ITES BPO Sector as at March 2007



Source: BOI

Cumulative proposed FDI by country of origin for operational companies only



Source: BOI

Key drivers for sector development

- Political will
- Clearly defined policy
- The Regulatory environment which should be compliant with the Regulatory state model (stability, continuity, perpetual and adaptive nature)
- The PR

Way forward

- **Growth Areas**
  - Architectural Outsourcing (Mahindra)
  - Pharmaceutical
  - Biotechnology
  - R & D
- Regulatory reform in line with the 'Reform Continuum Model' – evolving business model of ICT regulators towards achieving deregulation of the sector

Thank You very much for your kind attention

Dr M K Oolun
Executive Director – ICTA Mauritius
Contact: oolun@icta.mu

Benefits of a Liberalized Telecommunications Market to other Industries

– Impact of Telecom Reform on Indian IT-BPO Growth

Geneva
February 2008

NASSCOM®

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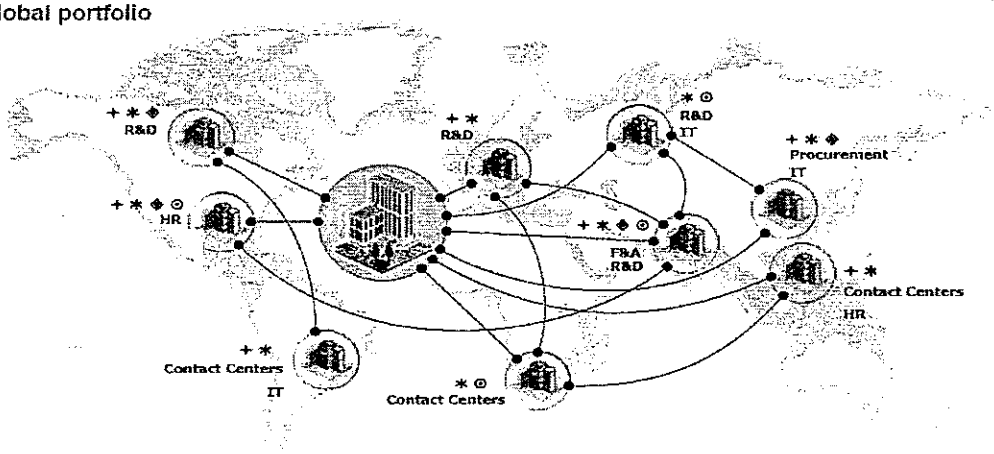
Advances in telecommunications technology have enabled a disruptive transformation of the global business services value-chain

Unprecedented division of services labor... leveraging centers of excellence... managed as a global portfolio



...taking into account capabilities, human capital, infrastructure, political risk, currency fluctuations, cost of labor, productivity, taxation, security and legal environment

.....to produce the optimum, networked services value chain.

+Captive Center * 3rd Party Outsourcing ◆ BOT ⊙ Joint Ventures

Source: NeoIT

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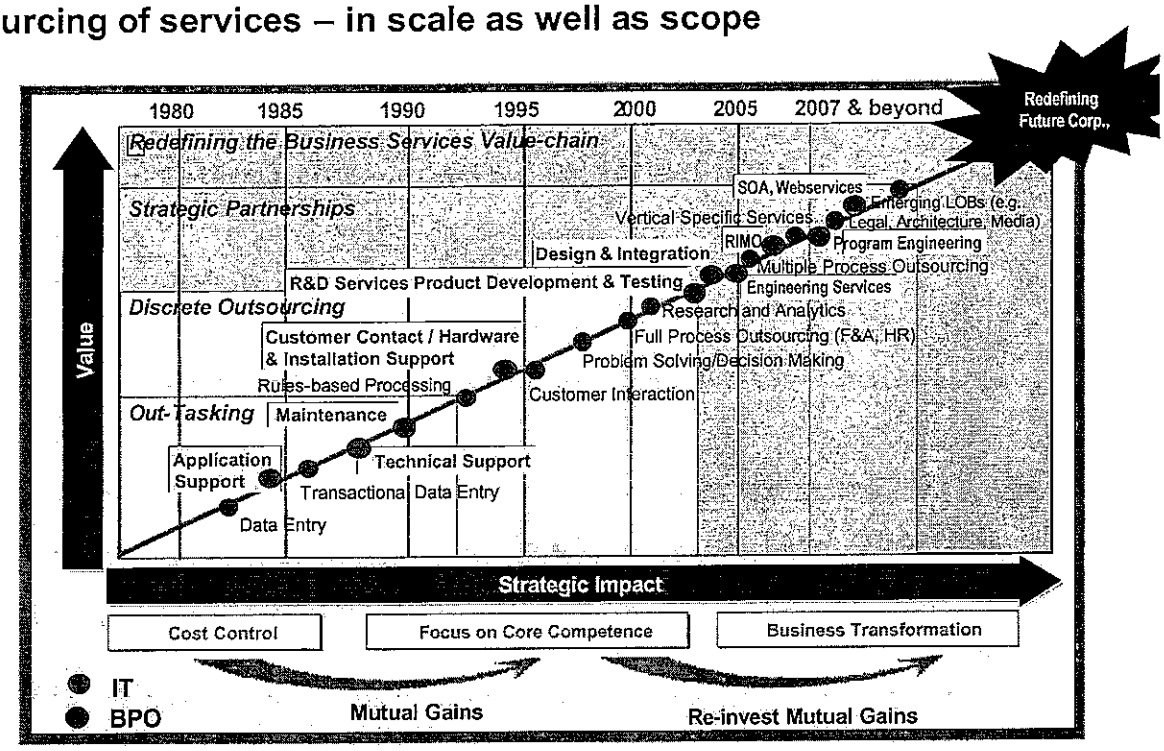
...which is evidenced in the rapid adoption and evolution of global sourcing of services – in scale as well as scope



Source: neoIT, NASSCOM

Note: Services listed are indicative not exhaustive

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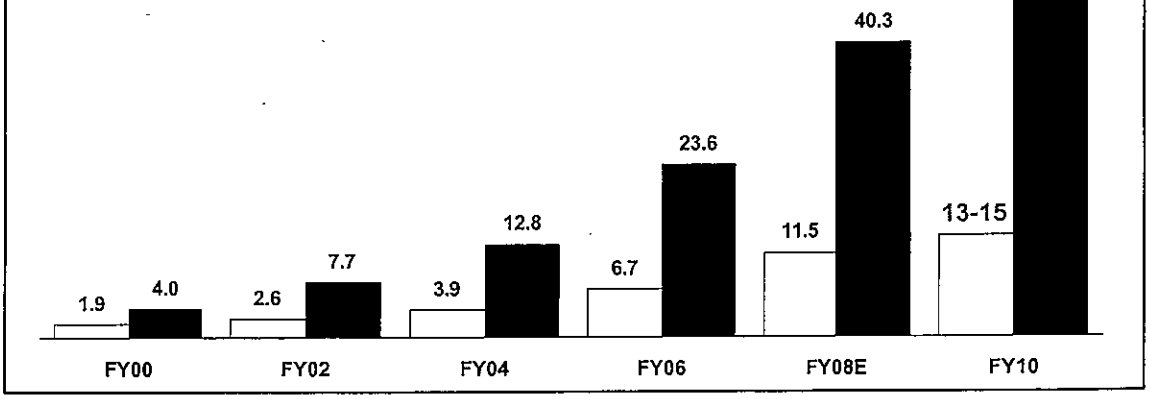
The Indian IT-BPO sector has led this evolution, growing at an unprecedented pace

USD billion, percentage

CAGR	PERIOD	□ DOMESTIC MARKET*	■ EXPORTS*	TOTAL
10 YR TARGET	FY00-10	22.1%	31.2%	28.9%
ACHIEVED	FY00-07	23.3%	34.4%	31.4%
REQUIRED	FY07-10	19.3%	24.1%	23.2%



* Includes IT Software and Services, Engineering Services, as well as BPO Services

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...that has contributed to significant payoffs for India – in many ways

Poster-child for global services trade	• India an indispensable part of any major global sourcing strategy • Accounts for 63-65% of all offshore IT*; 40-45% of offshore BPO • Model for other countries looking to build IT-BPO capabilities
Rapid growth in employment and investment	• ~2 million professionals employed directly • Indirect employment of over 7 million attributed to this sector • Key contributor to India's trade surplus (comm. services), foreign exchange reserves and attractiveness as an investment destination
Catalyst for broad-based development	• Key driver of urban development beyond existing city limits • E-governance initiatives to drive systemic efficiencies and extend ICT penetration to the grass-roots level • Instrumental in advocating the potential benefits of reform in other sectors, effecting progressive policy change

* Includes IT Software and Services, and Engineering Services

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India's sustained leadership is built on a powerful combination of strong fundamentals and an enabling environment

	INDIA'S KEY STRENGTHS	COMPARATIVE ADVANTAGE
Talent Pool	• Large graduate outturn (>3.2 million p.a.) • Acknowledged intellect (esp. science, engg) • Knowledge of / familiarity with English	• Young demographic profile, surplus working-age population • No other location offers a comparable combination of skill and scale
Cost Advantage	• Significant cost advantage (30-70%)* • Sustained / enhanced by process efficiency/ maturity, productivity gains	• Cost advantage vis-à-vis client countries remains compelling • Lack of experience scalability in potential alternative destinations
Quality and Information Security	• Industry-wide adoption of global standards and best-practices • Emphasis on self-regulation and 'raising-the-bar' internally	• Supply-side maturity, appreciation of the importance of quality / security in delivering IT-BPO services • Demonstrated superiority
Business Environment	• Timely policy actions and progressive regulatory reform • Active participation of public / private enterprise in providing key inputs	• Early-mover advantage, strong fundamentals • Industry development is largely self-sustained
Supply-base Capability/ Maturity	• Scale and scope of services delivered • Players are making investments in capabilities to enhance value delivered (global delivery, technology, domain knowledge, etc.)	• Greater experience, scale, scope and client confidence • 'First-choice' for customers seeking to enhance their global sourcing initiatives

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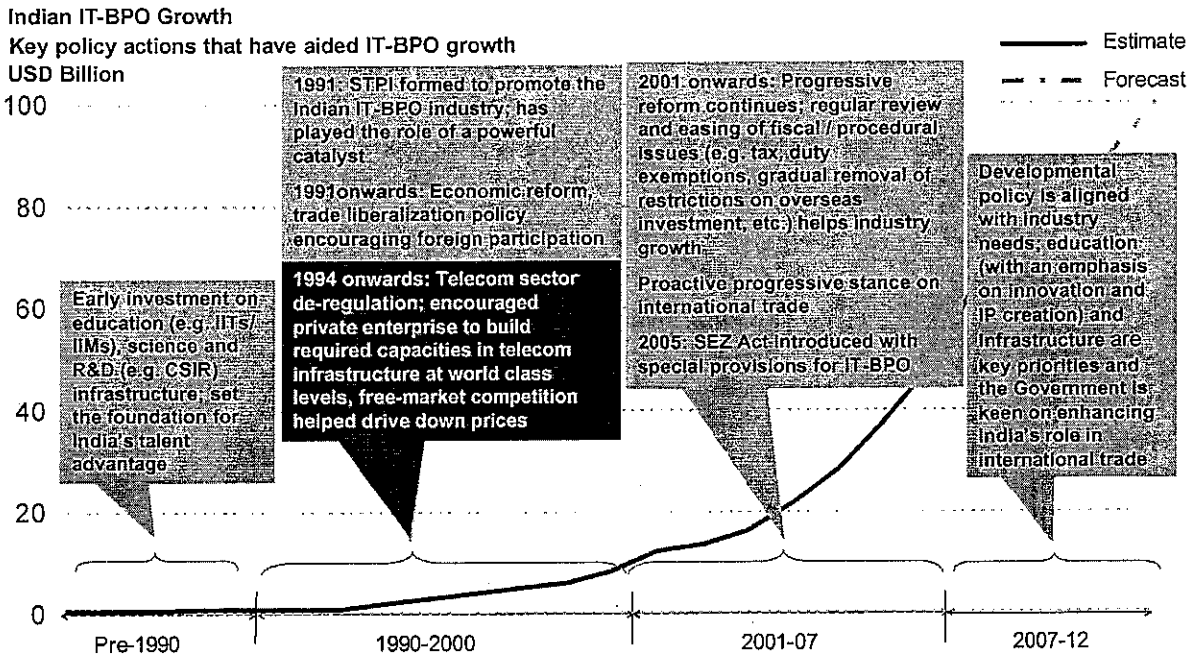
Timely policy actions in the early years, and progressive reform have played a key role in nurturing Indian IT-BPO growth



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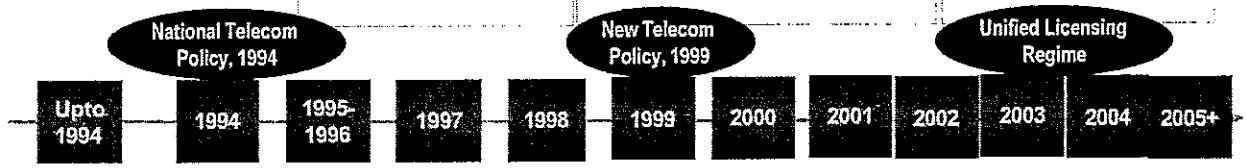
Telecom policy reform has laid special emphasis on independent regulation, competition and investment facilitation

Pre-reform	Partial Deregulation	Further Deregulation	Take off
Pre-1994	1994-1999	1999 - 2002	2002 onwards
▪ MTNL - Mumbai and Delhi; DTS elsewhere ▪ No mobile service ▪ NLD - DoT per/ BSNL ILD - VSNL	▪ 4 private fixed service providers with less than 1% market share ▪ 2 GSM mobile players in each circle ▪ 13 players start mobile service	▪ Licenses converted to revenue sharing ▪ Private sector share less than 5% in revenue terms ▪ Competition in NLD and ILD ▪ Licenses on Revenue share ▪ 4 mobile operators / circle	▪ Calling Party Pays ▪ CDMA launch ▪ 3-6 operators in each circle ▪ Intra-circle merger guidelines ▪ Unified Licensing ▪ Ceiling on Bandwidth Tariffs
	▪ National Telecom Policy (NTP) 1994 ▪ TRAI constituted 1997	▪ NTP 1999 ▪ BSNL formed 2001 ▪ Internet Telephony 2002 ▪ FDI - 49 %	▪ Broadband policy 2004 ▪ FDI - 74% 2005



Source: IBEF

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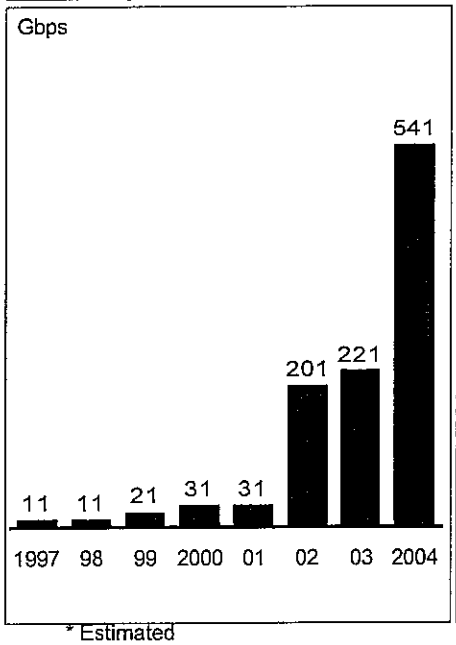
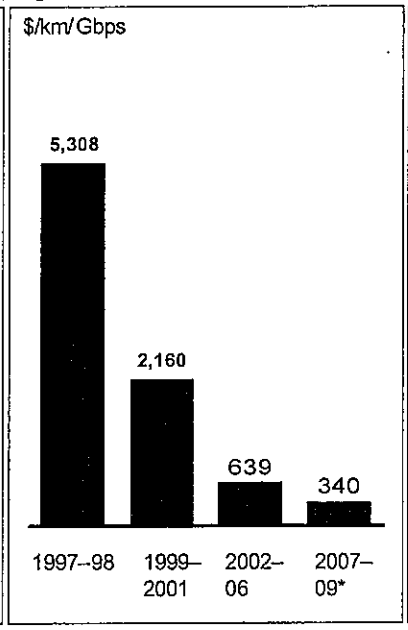
...that has played a key role in forming the 'raison d'être' of Indian IT-BPO success

Indian International Submarine Cable Capacity, 1997–2004

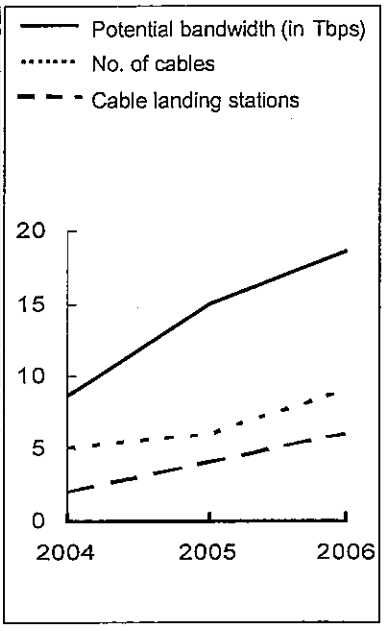


* Estimated

Unit cost of submarine cable systems, 1997–2009



International connectivity evolution in India



Source: TeleGeography, a research division of PriMetrica, Inc.; TRAI; McKinsey analysis

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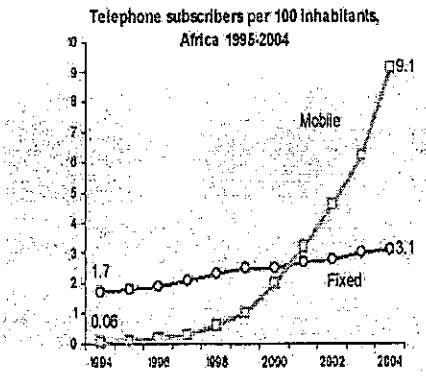
Manobi

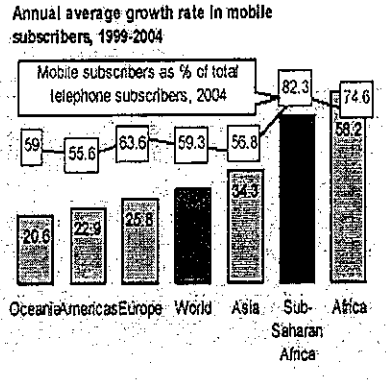
Convergent value-added services **make content for millions of new internet users** through Agricultural Value Chains

Daniel Annerose, CEO
WTO, Geneva, 2008

Manobi

Africa, the fastest growing mobile market

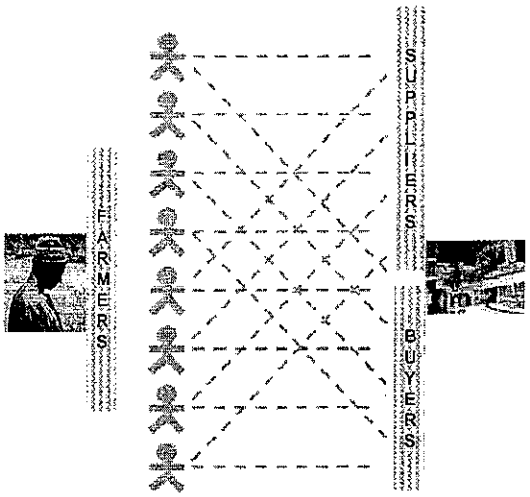




2011

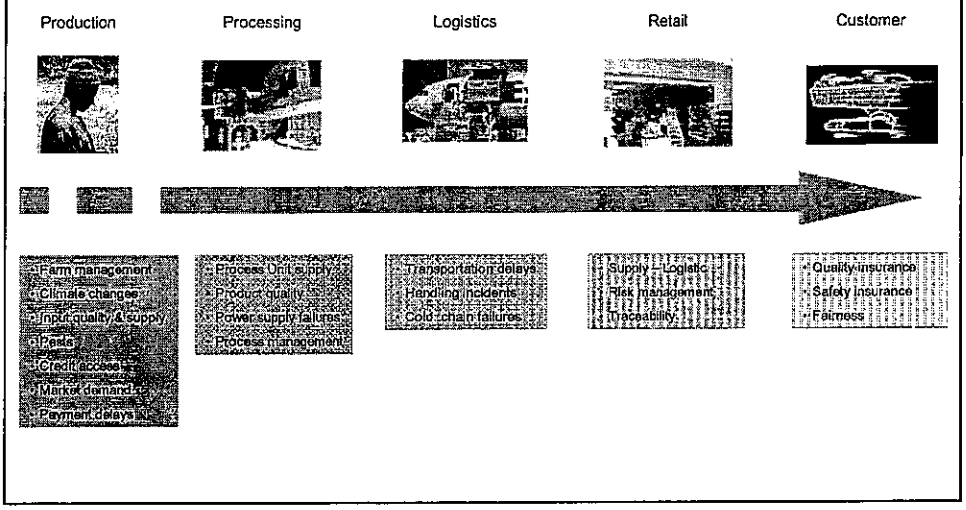
- + 50% of Africa's 950 million people will use cell phones (BroadGroup)
- 70% of them will live in rural areas (World Bank)

Weaknesses in agribusiness in Africa

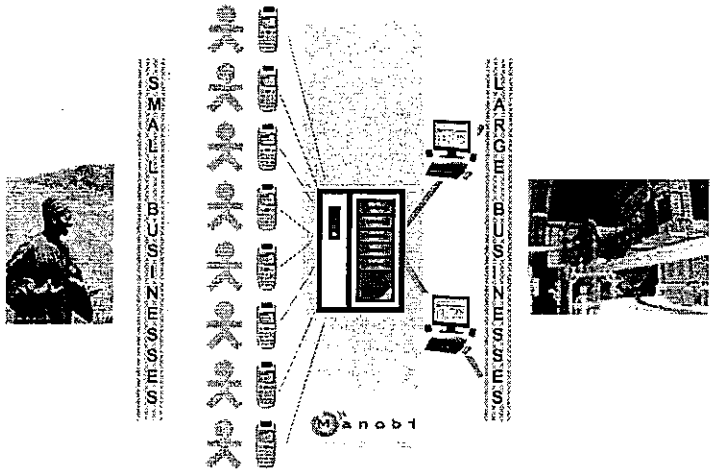


- Numerous and splitted relationships
- No shared and powerful interactive communication systems
- Poor visibility of the reality of activity of small farmers
- High cost management
- Limited performances
- Poor profitability

Weaknesses increase risks



Linking Small business 2 Large business



With Manobi Solutions

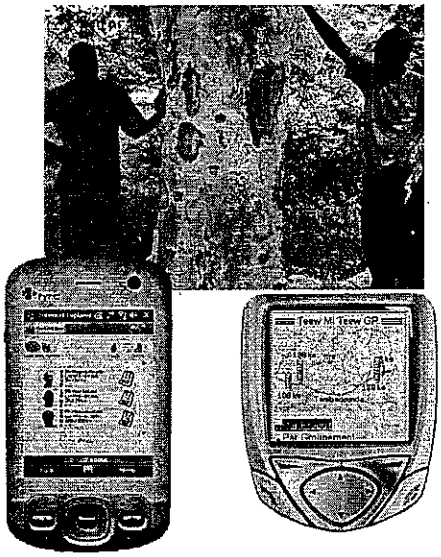
Market knowledge increases everyone's income

- Modou Seck waits for the middleman at the gate of his farm
- He doesn't know his product's value is on the end market
- He can only negotiate with the information the middleman gives him!

But with T2M...

- He checks the market price on his cell phone.
- He shows the screen to the middleman
- **They negotiate a fair price as business peers**
- He increases his annual revenue by $750 per acre, **doubling his income.**
- The middleman wins, too, because he now uses T2M to choose the best end market to get for himself the highest price.

Better Linkages Improve Revenue

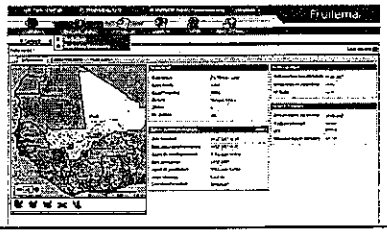


- Karaya gum producers have a contract to supply local exporters
- Exporters argued that since they don't know what inventory is available, they can't carry enough cash to pay farmers at the point of sale
- So the producers were obliged to sell to local middlemen instead, but at a lower price

But with "GIS + T2M"...

- Gum growers have a dedicated system with **PDA/GPRS/GSM** to record their inventory
- Inventory stocks are displayed on the exporter's screen on a mobile GIS map.
- Exporters optimize their collection logistics and save money.
- Gum growers sell at higher prices directly to exporters paid cash on delivery — and increase their business income by 40% to 50%.

Produce traceability yields global markets



- Mango growers and exporters in Mali faced trade barriers preventing access to Northern markets
- They were totally dependent on the importer who only acted as an "agent", leaving the Malians to carry all the transport and "opening" risks that they had no control over
- Their market system was not robust enough to promote their products profitably on foreign markets

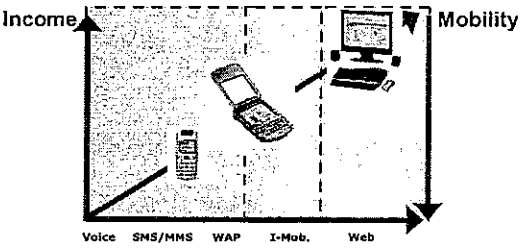
But... with "Fresh Food Trace"...

- Malian mango growers have an mobile to internet system to post complete product information for their partners and customers
- Every single action touching the mango—from the field to the fork—is logged onto a mobile device.
- Complete product traceability is guaranteed to importers, retailers, customers.
- The end market, not the farmer, readily pays 9 cents per pound of fruit to have individual farm sourcing... and the guarantee of food safety standards.

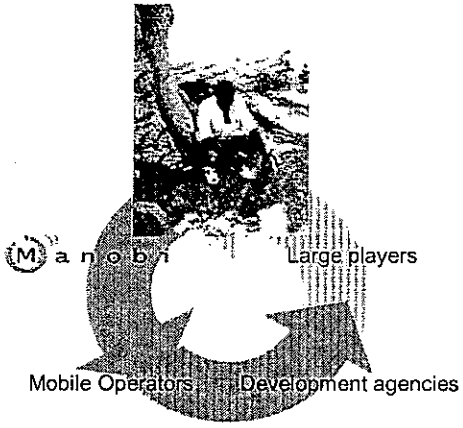
Our vision

Manobi turns the mobile phone into a business tool

- We develop **local contents and services** for all business players in their own value chains.
- We create a unique convergence between the Mobile Network & Internet to provide to our clients access and data exchange on business pricing and logistics anytime and anywhere.
- We use technology to deliver user-centered services and content for every business, no matter what its size.
- We push the envelope of network flexibility to deliver efficient e-tools to all our clients



The win-win ecosytem for rural communities



- A user-centric strategy
- Local content for local needs
- Specific & profitable new business models for sustainability
- Large improvement of value chain performance
  - ↗ Clients
  - ↗ Loyalty
  - ↗ Exposure
  - ↗ Competitiveness

Example : Our MIS initiative

- **Improving market access and income of small and vulnerable farmers**
  - 650 000 vulnerable farmers to transform in profitable agri-businesses

Private sector

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http://www.manobi.net

The Benefits of Liberalized Telecommunications Markets

Robert Pepper
Senior Managing Director
Global Advanced Technology Policy

Symposium on Basic Telecom Agreement
February 2008

1

Goals for Public Policy

- **Economic**
  - Grow GDP
  - Productivity growth
  - Jobs
  - Maximize social welfare=consumer + producer welfare
  - Innovation
  - Investment
- **Social**
  - Inclusion
  - Diversity
  - Culture promotion
  - Social cohesion
  - Public Safety
  - Citizenship

2

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- Competition grows markets
- Competition brings economic and social benefits

- "Market confusion"
- Competition destroys value
- Need monopoly to justify risky investment
- Competition harms bottom of the pyramid

3

Measuring Results

- Dramatic teledensity growth
- Price declines
- MOUs/utilization growth
- New business model development
- Measuring infrastructure investment
  - ICT mapping
    - "ICT Ecosystem" surrogate for "liberalization"
    - "ICT Infrastructure"
  - ECTA scorecard

4

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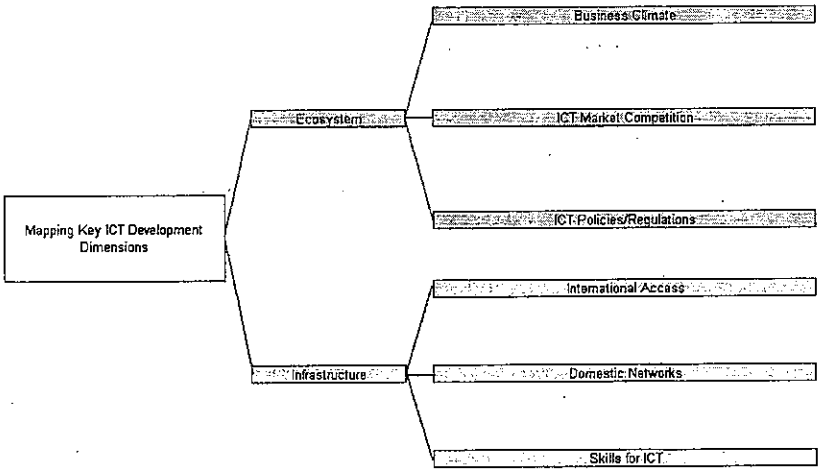
"Mapping" ICT Development

- ICT "ecosystem"
  - Level of competition
  - Quality of regulations
  - Ease of doing business
- ICT "infrastructure"
  - Hardware and telecommunications infrastructure
  - Trained/qualified labor
- Requires balanced approach
  - Moving to the "upper right"

5

Two Dimensions of the ICT Development Map



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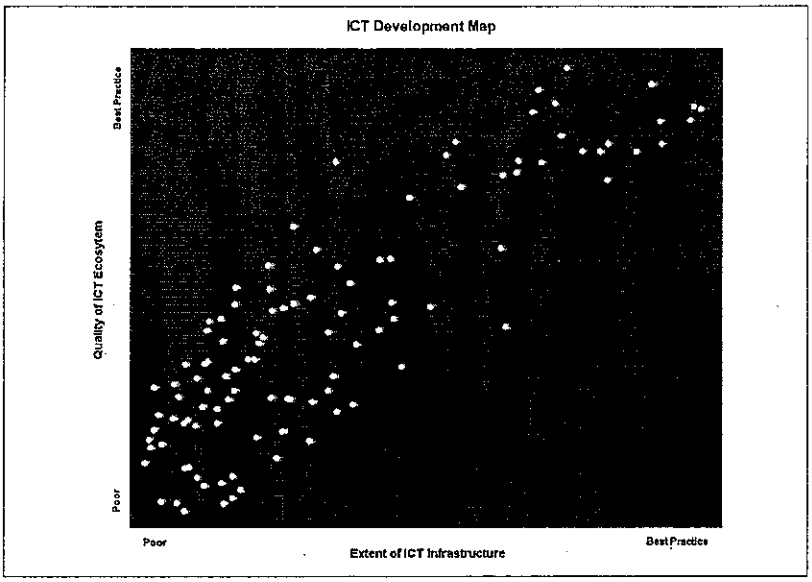
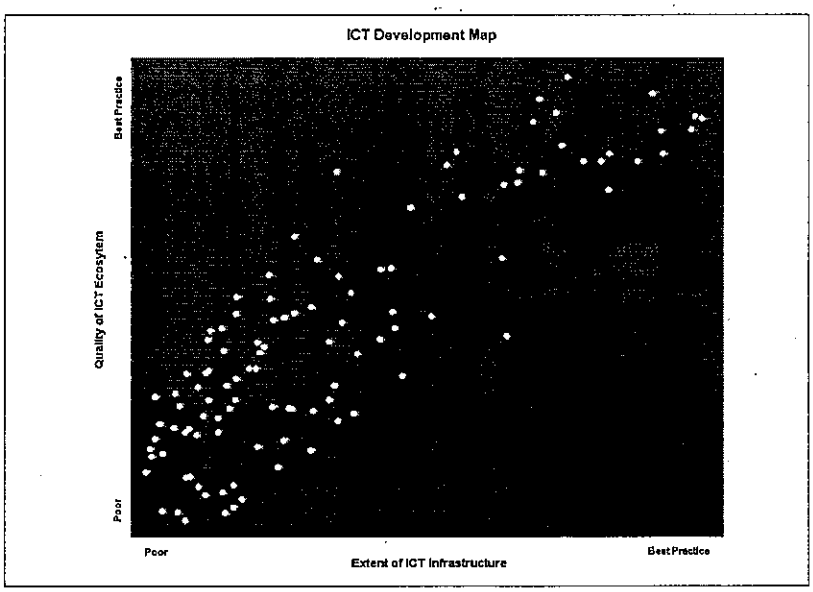
ICT Development Map



7

ICT Development Map



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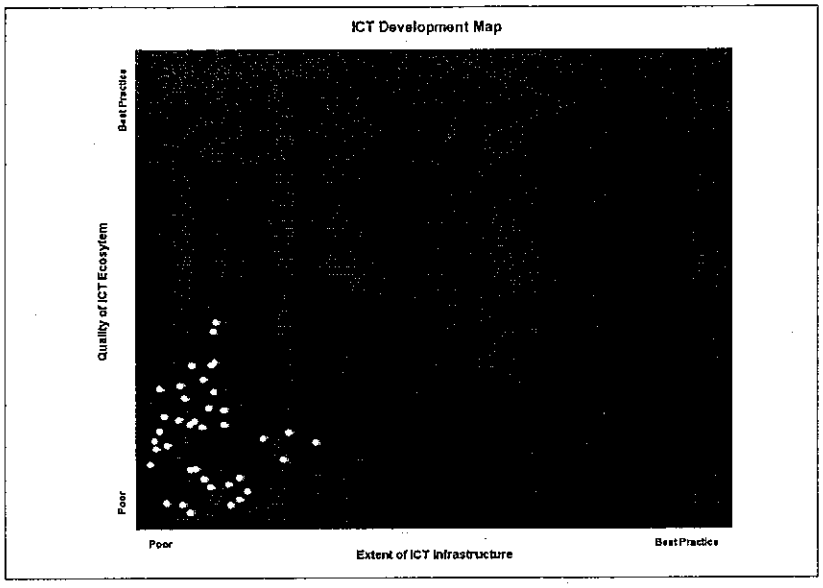
'Poor' Ecosystem and/or Infrastructure



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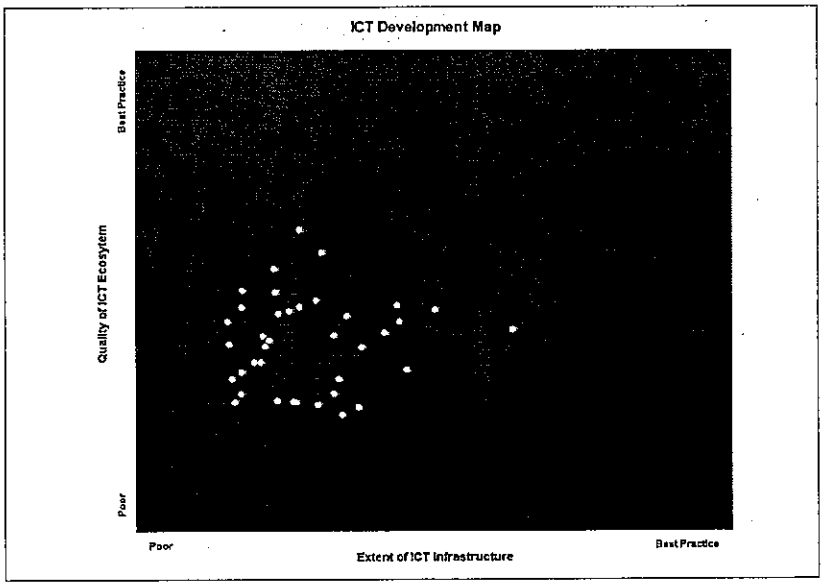
'Moderate' Ecosystem and/or Infrastructure



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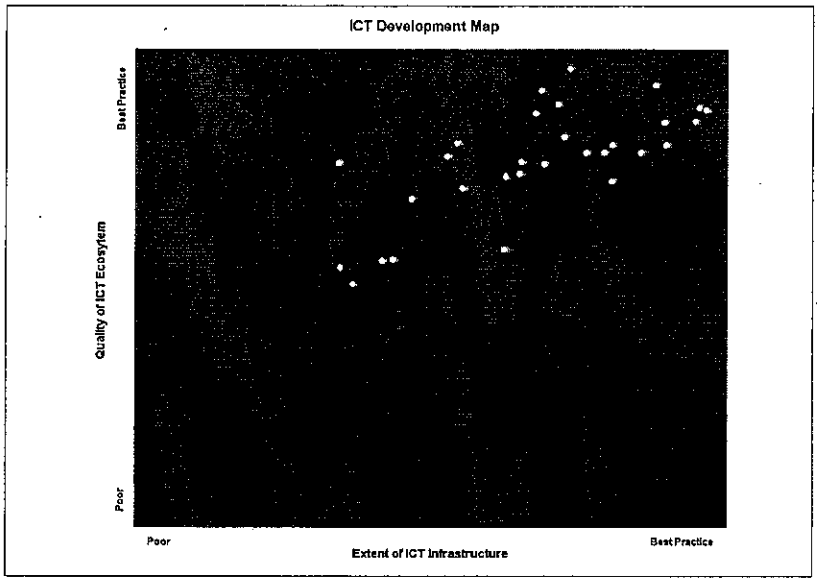
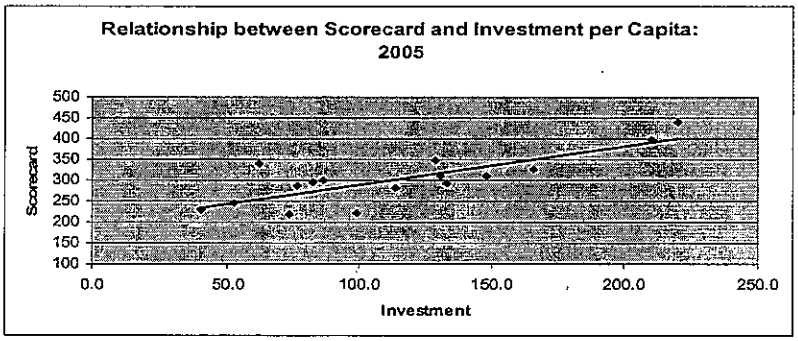
'Good' Ecosystem and/or Infrastructure



11

Competition Regulation Correlated with Investment—ECTA Scorecard



ECTA Scorecard reflects (A) the institutional framework; (B) general market access conditions; and (C) the specific competitive and regulatory conditions

12

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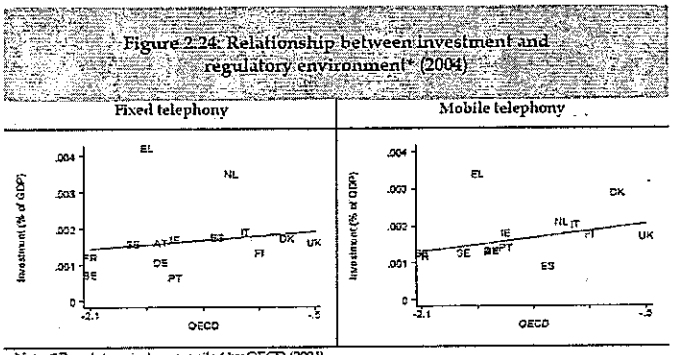
OECD Regulatory Index (2004)



Note: * Regulatory index compiled by OECD (2004).
Source: Company Annual Reports and LE calculations, OECD.

The regulatory index is based on:
(1) The extent to which there is free entry into the market (from a regulatory perspective);
(2) The extent to which the largest firms in the fixed and mobile sectors are privately owned
(3) The market structure, based on market shares.

13

Lessons Learned

- **Theory of market liberalization has been supported by the results—"Evidence Based"**
- **Implementation (regulatory regime) matters**
  - **In telecom, regulator key to implementing trade requirement—unique**
  - **Details matter**
  - **Low entry barriers for being "under appreciated"**
- **Open markets and competition works**
  - **Arguments against liberalization incorrect**
  - **Consumers benefit**
  - **Market grows**
  - **Infrastructure investment grows**

14

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What's next?

- Focus on demand as well as supply
  - ➢BTA/Reference Paper focused on supply side
  - ➢Open markets for demand creating applications
- Convergence of devices with networks as well as services
- Interpretation is key
- Need to maintain open markets, free trade

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Regulatory challenges in new and emerging services

Dr Tim Kelly, Head,
Standardization Policy
Division (ITU-T)

WTO Symposium on
Telecommunications:
Commemorating the 10th anniversary
of the Fourth protocol to the GATS

The views expressed are those of the author and do not necessarily reflect those of the ITU or its membership.
The author can contacted by e-mail at tim.kelly@itu.int.

Key issues in 1998 ....

- **WTO Negotiations on Basic Telecoms**
  - Foreign investment and ownership
  - Liberalization of satellite services
  - Fear of "one-way bypass"
  - Accounting rates
- **ITU World Telecom Policy Forum on trade in telecoms**
  - FCC "Notice of Proposed Rulemaking" on int'l settlements
  - Creation of a Focus Group on accounting rates
  - Relations between ITU and WTO
  - Regulatory reference paper incorporated in WTPF Opinion A

Geneva 16-18 March

In the aftermath of the negotiations...

- **MCI/WorldCom**
  - Nov 1997 merger created company worth >US$100 bn
  - Filed for bankruptcy in July 2002 amid financial scandal and lawsuits
- **AT&T**
  - In 1998, was world's most profitable int'l carrier with income of US$6.4bn and US$53bn revenues
  - Following collapse of share price, sold for just US$16bn to SBC in 2005
- **Sprint**
  - In Oct 1999, a planned US$129 bn merger with MCI, was blocked for competition policy concerns
  - Following heavy losses, reinvented itself as wireless provider following merger with NEXTEL in 2005

Aftermath ...satellite services

- **Global Mobile Personal Communications by Satellite (GMPCS) Operators**
  - Iridium, launched on 1 Nov 1998, but filed for bankruptcy on Aug 13 1999
  - Globalstar, launched in Feb 1998, but filed for bankruptcy on Feb 15 2002
  - Teledesic, gained some 500 MHz of spectrum from ITU WRC, but ceased satellite construction in Oct 2002
- **Traditional Geostationary satellite operators**
  - INTELSAT, spun-off New Skies in Nov 1998 and privatized in Jan 2001. Acquired its major competitor, PanAmSat in July 2006
  - INMARSAT, was "corporatized" in 1999, and is now diversifying away from traditional maritime focus
  - Thuraya, launched service in 2001 as an Arab States regional operator and now has over 250'000 subscribers

International Telecommunication Union

Some future regulatory challenges that have trade implications

- **Development of Next-Generation Networks (NGNs)**
  - IP-based networks replacing circuit-switched ones
  - Bundled service packages available
- **Liberalization of spectrum markets**
  - Spectrum trading will allow much greater flexibility in the allocation and use of wireless spectrum
- **Access to addressing/numbering resources**
  - Non-geographic telephone numbers and non-country code Internet addresses
- **Convergence**
  - Is it possible to separate the medium from the message?
  - Implications for trade in audiovisual and multimedia services
- **E-commerce**
  - Why should Internet-based trade be exempt from taxes?

International Telecommunication Union

What is an Next Generation Network?

Today's PSTN network	Next Generation Networks
• Circuit-switched.	• Packet-based, based on Internet Protocol (IP).
• Limited mobility of end-user services.	• Broad-based 'generalised mobility'.
• Vertical integration of application and call control layers, with dedicated networks.	• Horizontally-integrated control layers, with simultaneous delivery of applications. Service-related functions independent of transport-related technologies.
• Non-responsive network.	• NGN will be able to identify and adapt to user needs in real-time.

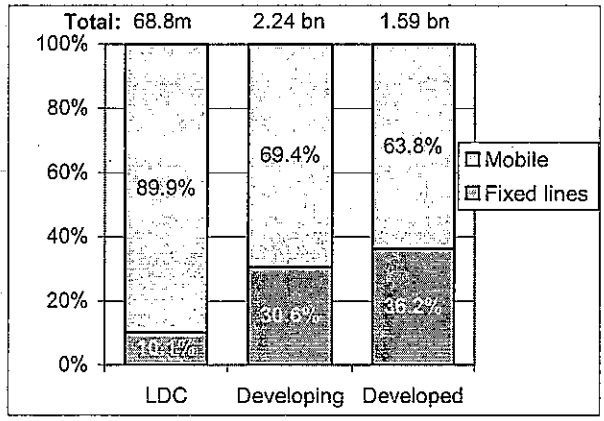
Source: ITU Internet Reports 2005: The Internet of Things

International Telecommunication Union

NGN in developing countries

More likely to be leveraged off mobile than fixed-line networks

Percentage of mobile users and fixed-lines, 2006, by type of country



Source: ITU World Telecom Indicators Database.

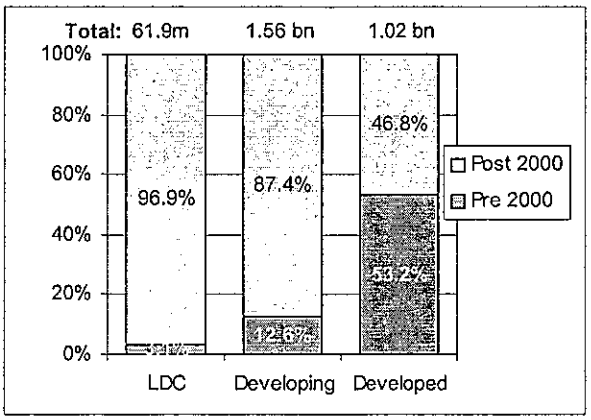
International Telecommunication Union

NGN in developing countries

More likely to be leveraged off mobile than fixed-line networks

More likely to be a new build than an overlay

2006 Installed base of mobile users, pre and post 2000



Source: ITU World Telecom Indicators Database.

International Telecommunication Union

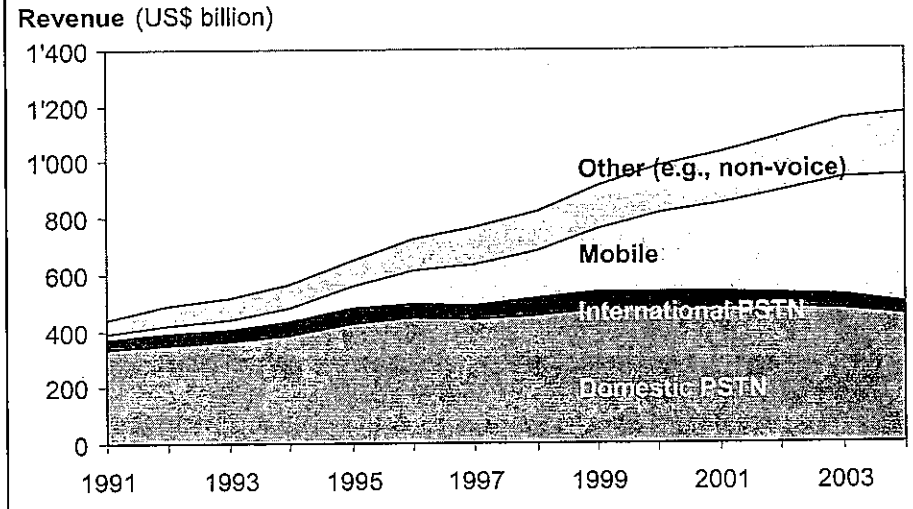
NGN in developing countries

- More likely to be leveraged off mobile than fixed-line networks
- More likely to be a new build than an overlay
- More likely to be driven by cost savings

Examples

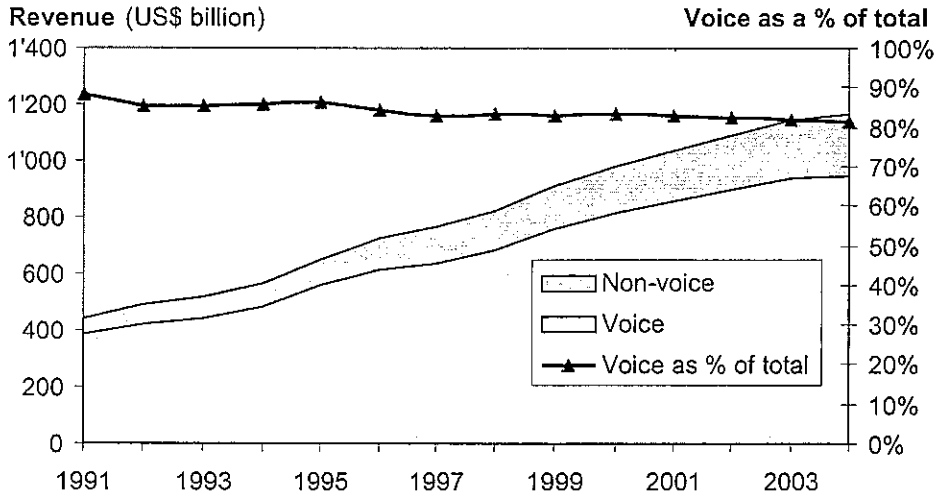
- In Chile, VTR is offering triple play services to 2.2m residential subscribers
- In Sudan, Canar Communications has launched an IP-based NGN network in 2005, including voice and wireless Internet bundles

Long-term telecom revenue trends



Source: ITU Information Society Statistics Database.

Revenues from voice-oriented networks are relatively stable as % of total telco revenue



Source: ITU Information Society Statistics Database.

International Telecommunication Union

Some regulatory challenges of NGNs

- Pricing: Will NGN offer prices that are significantly lower than those available today?
- Bundling and billing: How to distinguish the real price of services when they are bundled?
- Interconnection: Will current interconnection models (based on per-minute settlement) work in an NGN?
- Security: If much greater capacity is available at the edges of the network, how to guarantee security?
- Investment: Will unbundling discourage new infrastructural investment? Infrastructure sharing?
- Traffic prioritization: Is the Net really "neutral"?
- Emergency services: What level of universal service obligation to impose?
- Competition policy: Significant market power will not disappear in an NGN environment
- Consultation: compensation for stranded assets?
- Identity management and privacy: What rules for data retention?

International Telecommunication Union

Triple-play bundles: The example of Free.fr (Iliad)

- Freebox: 29.99 Euros per month (US$40)
- ADSL2+ Internet up to 28 Mbit/s (down) 1Mbit/s (up)
- Unlimited VoIP calling to 49 countries worldwide (+domestic calls and line rental in France)
- 100 video channels (+ 150 options)
- But ... only available in France

13

Regulatory implications of bundling

- Clear trend towards multiple-play
  - In EU, around 15% of households take a bundled package
  - This is facilitated by ever increasing broadband speeds (e.g. in UK, headline connection speeds doubled in 2006)
  - Infrastructure competition assists in promoting broadband and reducing prices
- Bundling makes price comparison difficult
  - Are incumbents leveraging market share in one market to compete successfully in another?
  - Do bundled packages have the effect of "locking in" users and preventing price shopping?

International Telecommunication Union

Key issues for trade negotiators

- **Shift from circuit-switched to IP networks**
  - Geographical locus of activity less relevant (reducing the effectiveness of national laws)
  - But, mobile interconnection & roaming still a hot issue
- **Finite resources**
  - Spectrum will be major source of wealth creation in coming century, and increasingly traded
  - Governance of numbering, addressing & ID resources
  - Trading of carbon-offsets using ICT networks
- **Convergence**
  - Network-specific regulations less relevant

International Telecommunication Union

Relevant upcoming ITU events

- **March 2009: 4th World Telecom Policy Forum**
  - On theme of convergence and the impact of NGNs
  - Also covering Internet-related public policy issues, and other emerging policy issues
- **2012: World Conference on International Telecommunications (WCIT) ?**
  - Treaty-making conference to revise International Telecommunication Regulations (ITRs)
  - ITRs includes (by reference) procedures for settlement of international telecom accounts
- **2015: Review of implementation of World Summit on the Information Society (WSIS)**

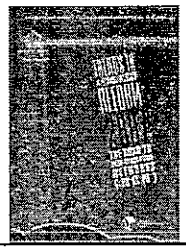
Thank you.

For more information, see:

- ITU Internet Reports 2007: Digital.Life at www.itu.int/digitallife

- ITU New Initiatives Workshop "What rules for IP-enabled NGNs?" (March 2006) at: http://www.itu.int/spu/ngn

- Trends in Telecom Reform: The road to NGN (2007) at: http://www.itu.int/ITU-D/treg/



Inter-American Telecommunication Commission

Organization of American States

Panel G : Regulatory challenges in addressing new and emerging services, technologies and e-commerce

2/21
16:30 2nd

Clovis Baptista
Executive Secretary
Inter-American Telecommunication Commission
Organization of American States

WTO Symposium on Telecommunications to Commemorate the 10th Anniversary of the Fourth Protocol to the GATS
20-21 February 2008, Geneva, Switzerland

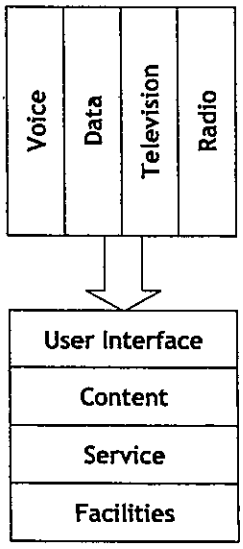
1

Inter-American Telecommunication Commission

Organization of American States

What is convergence?

- The **underlying trend** is firms in IT, telecom, and broadcasting sectors attempting to offer multiple services.
- This trend is **driven** by the ability in IP networks to **separate facilities and services**.
- This trend is **strengthened** by the reducing cost, increasing capacity, and proliferation of:
  - *Computing devices* – smaller multimedia devices
  - *Media channels* – bandwidth hungry services
  - *IP networking* – any service, any facility
  - *Wireless telecom* – mobility, cheaper and quicker deployment



Source: World Bank (CITEL doc. STE-356/07)

Inter-American Telecommunication Commission

Organization of American States

Convergence = multiple services together

- The underlying trend is common:
  - *Networks converge*: Access networks merge (Comcast cable TV with VoIP and Internet, Verizon FiOS TV and Internet)
  - *Devices converge*: Many services on the same device (iPhone)
  - *Services converge*: Different services coming together (Skype videoconferencing)
  - *Companies converge*: Merging or acquiring competencies across sectors (AOL Time Warner, NTL-Virgin Mobile, Telemar and Way TV)
- So in every form of convergence, **services that used to be separately offered are now coming together.**

Source: World Bank (CITEL doc. STE-356/07)

3

Inter-American Telecommunication Commission

Organization of American States

Regulatory challenges

- For regulators, the fundamental problem arising from convergence is **reconciling old frameworks to new technologies and removing asymmetry.**

Old framework → **New technologies** → New challenges

- Specific network-service rules (cable-TV, telephone-voice)
- Telecom and broadcasting were separate, and could have different rules and agencies
- Different obligations and rules for different pairs
- Underlying regulatory philosophy was different

- Who regulates IPTV over phone lines or VoIP over cable? Which rules apply?
- Who follows what rules?
- Force reconciliation or lead to confusion

- The key problem is that old rules were different for different pairs.
- In a converged era, this **asymmetry** causes confusion.

Source: World Bank (CITEL Doc. STE-356/07)

4

Key regulatory issues

- Among the range of issues that regulators consider when addressing convergence, the **most significant** (and challenging) are:
  - **Licensing:** Who can do what?
  - **Competition** (especially interconnection): Who can reach subscribers and distribute content?
  - **Spectrum management:** Which bands of spectrum can be used for what service, and under what conditions?
  - **Universal service:** Who pays, for what, and subsidizes whom?
  - A related issue is the **institutional framework:** we are seeing more 'converged regulators'.
- Other **issues** relate to numbering, market dominance, QoS definitions, content regulation, accessibility, privacy and piracy.

Source: World Bank (CITEL Doc. STE-356/07)

5

Inter-American Telecommunication Commission
Organization of American States

Electronic Commerce (EC): Concepts and Definitions

- What is Electronic Commerce: Various definitions (OECD, WTO, G-7)
  - The production, advertising, sale and distribution of products and services over digital networks (WTO).
  - Closed (proprietary) versus open (Internet) networks: changed dynamics of interaction between buyer(s) seller(s).

Search/Order	Payment	Delivery
On-line	Physical	Physical
On-line	On-line	Physical
On-line	On-line	On-line

6

Internet "Readiness": Infrastructure requirements for EC

- Telecommunications/ Information Technology (level of telephone line, cellular phone, cable TV penetration)
- Personal Computers (with Internet connection)
- Legal and regulatory framework:
  - Payments
  - Digital signatures
  - Intellectual property
  - Technical standards (telecommunications, Internet applications, payment systems, etc)
  - Taxation of electronic transactions
  - Consumer Protection
  - Privacy

7

Inter-American Telecommunication Commission
Organization of American States

ROLE OF CITEL

- **Telecommunications advisory body of the Organization of American States - OAS**
- **Brings together representatives of OAS Member States, the private sector and international/regional organizations.**
- **Mission: To foster the development of ICT/telecommunications in Americas.**
- **Vision: To be a responsive, dynamic, and effective specialized advisory body that promotes the ongoing exchange of experiences, information, and knowledge between governments and the private sector and develops reference guidelines to assist Member States in achieving their objectives.**
- **Mandates: Summits of the Americas and OAS General Assembly.**

8

CITEL TOP PRIORITIES

- Connectivity Agenda of the Americas
- Technology watch
- Regional Spectrum Harmonization
- Policy and Regulatory aspects related to Convergence
- Digital TV roll out
- Capacity building
- Development of coordinated regional proposals for global telecommunications fora

THANK YOU

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Tel: +1 202 458 3004

ESOA
European Satellite Operators Association

Global Communications via Satellite

Christodoulos Protopapas
Chairman
European Satellite Operators Association
(ESOA)

Geneva, 21st February 2008

www.esoa.net
chair@esoa.net

ESOA
European Satellite Operators Association

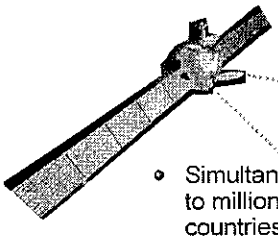
What is ESOA?

- ESOA represents ALL European satellite operators
- The Association works with policy-makers to ensure that satellite technology and services are taken into proper account in the delivery of public sector objectives so citizens all over the globe can benefit from them
- The availability of satellite services depends on political support, a favourable regulatory environment, a fair industrial policy and awareness
- The Members of ESOA are:

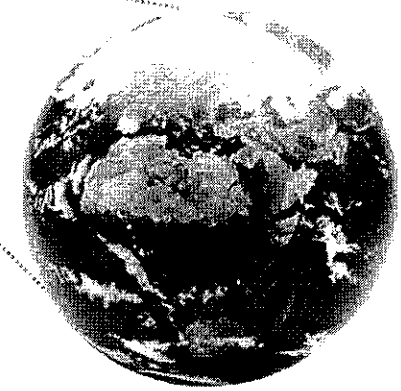
EADS Astrium · Eurasiasat · eutelsat · Hellas Sat · hispasat · inmarsat · SES · Sirius · telenor · Telespazio

ESOA
European Satellite Operators Association

One Satellite can see & serve one third of the globe

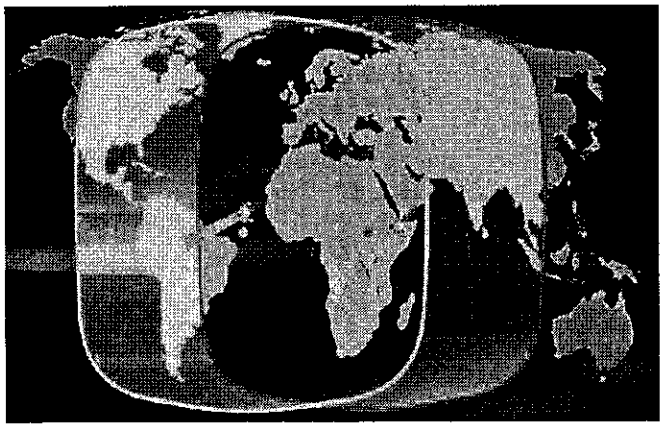


- Simultaneous service delivery to millions of users in many countries through a single integrated infrastructure
- No physical connection needed; wireless connectivity
- Immune to events that disable terrestrial & cellular networks: often used for emergency communications



ESOA
European Satellite Operators Association

An Example of Satellite 'Footprint'



- All countries under the satellite beam can receive a signal & services: ***technically and naturally*** they are open to satellite services
- Satellite operators depend on open markets & this unique feature to enable worldwide service to nearly every community on Earth
- Some governments impose regulations to keep markets closed to 'foreign' satellites

ESOA
European Satellite Operators Association

Some Barriers to Offering Satellite Services

- Discriminatory Licensing Procedures
  - ⇒ burdensome requirements, high regulatory fees, &/ or applied only to foreign satellite operators
- Local Presence Requirements
  - ⇒ requires foreign satellite operators to establish a national company
- Monopoly Treatment
  - ⇒ prevents foreign satellite operators from accessing the market directly & obliging them to sell through the incumbent operator
- Invoking Security Concerns
  - ⇒ fears that undesirable customers might transmit over foreign satellites &/ or might not be controllable

ESOA
European Satellite Operators Association

Trends in Markets for Satellite Services

The world has seen a general telecom liberalisation over the last 10 years but we still see two types of satellite markets:

1. Those *countries with their own satellite programmes* who wish to protect them
2. Those *countries who allow all satellite operators to serve their markets*

⇒ Both will benefit from open markets:

- ⇒ Whether in developed or developing countries, many people remain unconnected – satellite connectivity often is their only communications link
- ⇒ Established satellite operators are often involved in extensive & innovative development projects
- ⇒ National satellite systems are generally designed to illuminate more than national territory - open markets allow all operators to serve multiple countries, & benefits users with competitive satellite capacity & services
- ⇒ National governments have full control on licensees authorized to provide telecom services in country

European Satellite Operators Association

Benefits of Open Markets

- Best prices & maximum choice of products for consumers
- Competitive domestic market & healthy environment for innovation drives a country's growth in the sector & generates efficiencies that spill into other sectors as well
  - E.g. In Europe a variety of digital TV platforms exist & satellite has a good share complementing terrestrial operators especially in rural & mountainous regions
  - Satellite drives the development of new services such as high-definition TV & mobile TV (e.g. Korea/ Japan)
- Aid & development issues: foreign operators are often the bearers of key applications such as tele-education/ tele-medecine or the initiators of novel local projects that enable otherwise unconnected communities to develop
- Satellite technology can provide governments with independence and immediate connectivity in times of disaster & are an essential communications back up for national telecom network continuity in case of cut terrestrial lines

European Satellite Operators Association

Security - A Common Concern

Some countries raise security concerns as a reason for excluding foreign satellites

- Fixed Satellite Services: Need to ensure that those who 'uplink' to a satellite are responsible entities operating according to authorised procedures/ with licenses (FSS) - this requirement should not differ between foreign & domestic satellites.
- Mobile Satellite Services: Beyond a receiver, no physical infrastructure is required locally to receive a satellite signal. However some countries often impose the presence of a local gateway on the territory
  - ⇒ ***Alternative solutions often satisfy security concerns even better than local gateways***

⇒ Security concerns can be addressed but require a dialogue with the satellite operator

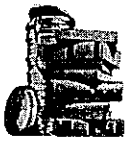
Google

Future Regulatory Challenges

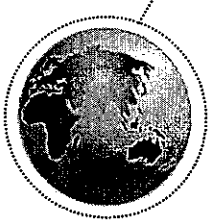
Nicklas Lundblad
European Policy Manager

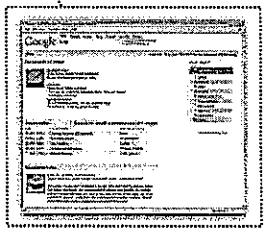
Google's Mission

Google



organize the world's information and make it universally accessible and useful.





Focusing on users for a free and open Internet

Google

What are the regulatory objectives?

Google

To encourage innovation

To maximize sustainable growth

To foster global communication

Where does innovation take place?

Google

Open platforms!

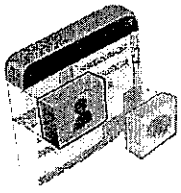
Regulatory challenges

Google

•Substance

- Keeping the networks open
  - Android, open social, open standards
- Protecting the platforms while striking a reasonable balance on issues of intellectual property rights, privacy and freedom of expression
  - Moving forward in global standards for communication privacy
  - Exploring fair use in user created content
  - Exploring where filtering or proprietary standards amount to non-tariff trade barriers

Gmail by Google BETA



open handset alliance

Regulatory challenges

Google

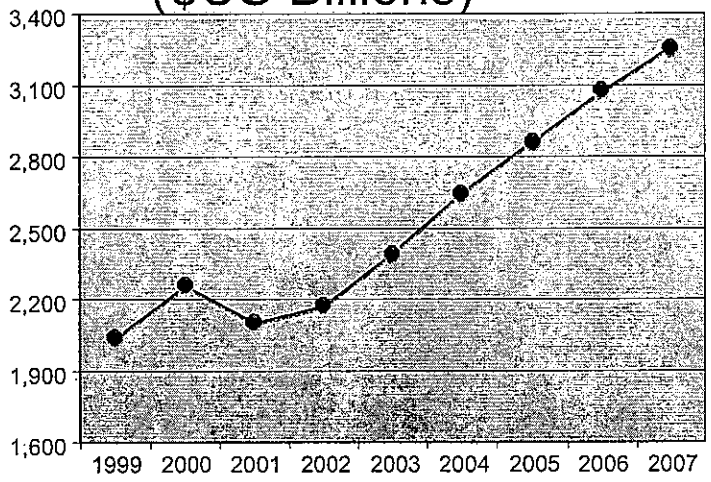
•Process

- Evidence-based policy making
  - Always focus on the users
  - Allow for patterns to emerge before regulating
- Multi-stakeholder
  - Users, companies and other actors
- Global approach
- Understanding when to innovate and when to de/regulate

The Next Revolution in Global Communications and Information Markets—Implications for Global Governance

Peter Cowhey
University of California, San Diego
February 2008
pcowhey@ucsd.edu

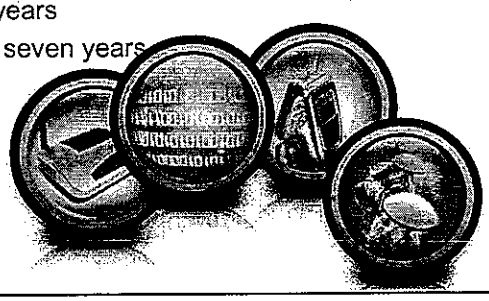
The Market Stakes are Very Big: Global ICT Spending ($US Billions)



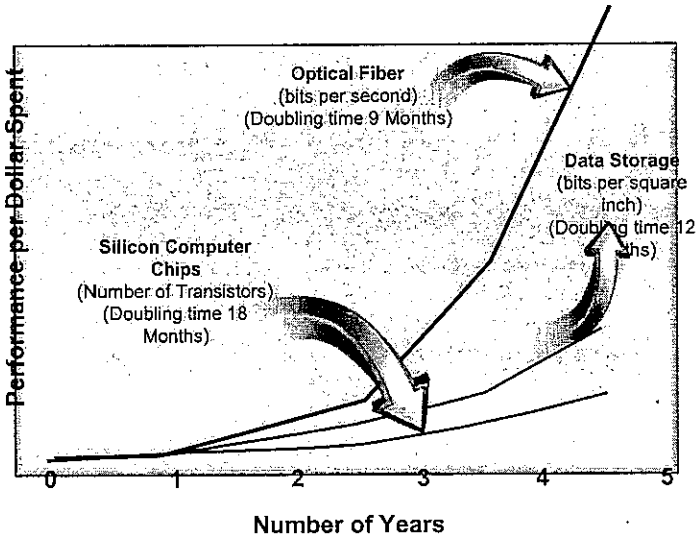
Source: WITSA's 2004, Digital Planet: The Global Information Economy.

The Foundations of this "Inflection Point" (a fundamental shift) for ICT

- Modular architecture – policy builds standardized interfaces—like Legos building blocks: Goal is mix and match innovation
- Cheap revolution–
  - Microelectronics: processing, storage & terminals
  - Communications: Ubiquitous broadband
  - Software: Last ten years
  - Digital content: last seven years

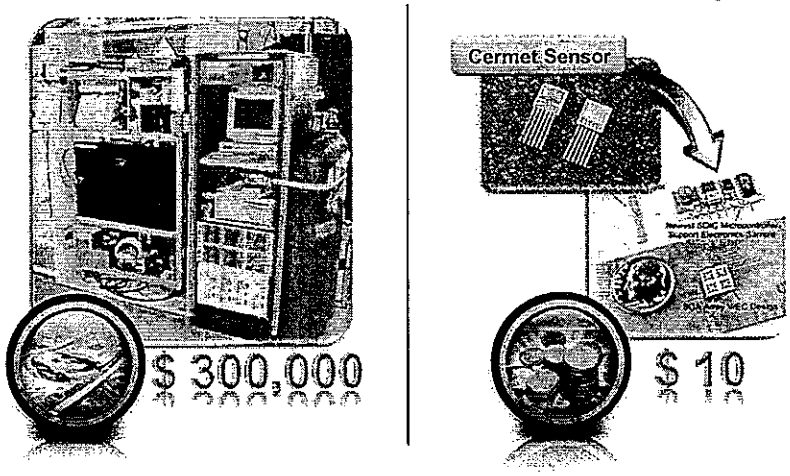


The Cheap Revolution



Scientific American, January 2001

Breakthroughs on Environmental Monitoring Systems through "Laboratories on a Chip"

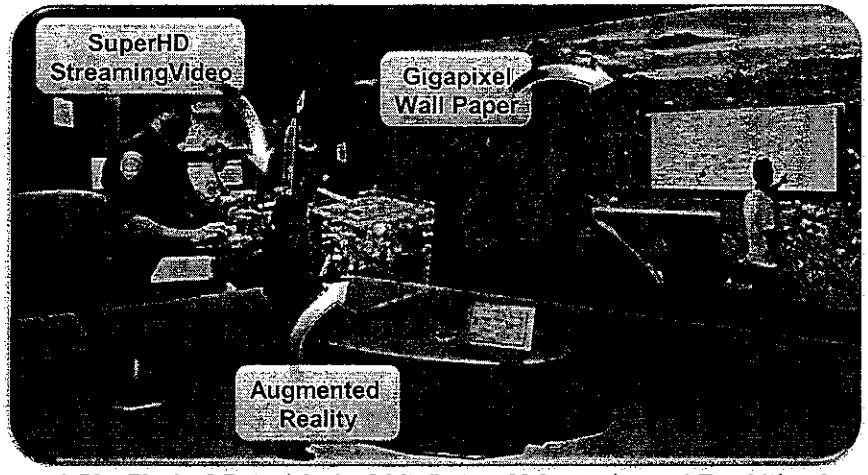


Source: Greg McRae, MIT and ANL

The Internet of Things

- IBM estimate: Networked terminals will grow from 24 billion to 1 trillion by 2012
- Novel architectures and services require flexible spectrum and regulatory arrangements

An Innovation Vision for the Future: Towards Gigabit/s Research Nets



1 GigaPixel x 3 Bytes/pixel x 8 bits/byte x 30 frames/sec ~ 1 Terabit/sec!

Source: Jason Leigh, EVL, UIC

Predicting Bandwidth Utilization and Innovation

- The 1 gigabit/second research networks lead "high end" commercial use by about 7 years
- The research networks lead "high end" consumer use by about 12 to 15 years
- The leading edge use for pictures and sound today is illegal sharing of movies and music
- The leading edge tomorrow will be interactive visual and data applications for work and personal uses

In 1997 the money was in voice telephone services—not now

- In 2008 (the Web 2.0) turning information into dollars is driving innovation in information networks
  - Digital ad revenues=$45 billion
  - Print and broadcast ads=$360 billion
- Ads tied to search are the first and easiest target—but many new forms of making money on information will follow
  - Personal health care information
  - Audio-visual content (YouTube is only the start)

Three Implications of Technology

- Anti-competitive behavior is harder as modularity emerges
  - BAT principles are a requisite for modularity
- Pricing can be totally surprising—e.g., VoIP may mean that voice is free but basic rate for broadband data may increase
- Service applications respect no boundaries—audio-visual digital content services ignore national regulations

There will be a variety of institutions involved in governance

- Should take advantage of industry or non-governmental governance systems as long as they are subject to government review
- WTO advantages:
  - Scheduling system allows countries to make "modular" commitments (X, but not Y)
  - Reference paper allows creation of binding principles to harmonize essential requirements of national policy while allowing considerable freedom for particular rules implementing the principles

Light touch regulation to promote next generation of broadband

- User cooperatives can share costs of investing in dark fiber and fixed mobile build out: Requires countries to have regulations that facilitate network sharing among users and interconnect right to backbone network—both BTA commitments
- Spectrum—Use BTA to promote service and technology neutrality for spectrum and schedule commitments to allow commercial resale of spectrum.

Next Generation Interconnection

- Next Generation Peering Policy—how to deal with viruses that could corrupt networks? Could grant peering only to networks that are certified as "secure"
  - Create BTA requirement that governments may only set functional security requirements—not particular technologies—that are least burdensome for trade
  - Allow industry associations to administer the safety certification
  - Allow third party suppliers (value added suppliers) to provide security functions for networks
- Mobile services: Freedom of terminal attachment and terminal software for broadband

How BTA could address Audio-Visual

- Liberalize cross-border A-V service market while allowing rules to encourage localism, pluralism, and diversity of content—
- Distinguish Push (broadcast) vs. Pull (Internet downloads)—at least liberalize "pull"
- Transparent subsidies for local content that are least burdensome for trade—a "bit tax"?

Is Personal data portable?

- Telecom carriers are moving to become providers of enhanced web services and information storage—many of these services involve considerable co-investment by users
  - Personal health web services
- If you switch from NTT to Google, can you move the personal data stored on NTT website?: This is the equivalent to number portability.