

# IT Policy and Management

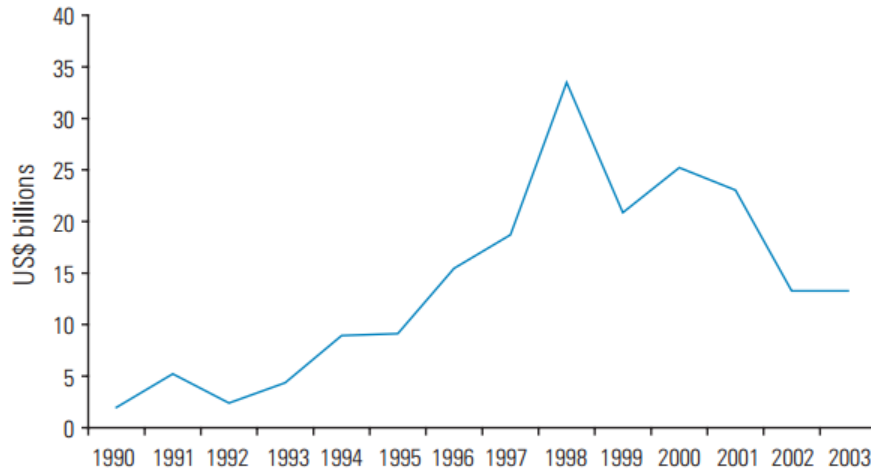
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# INTRODUCTION

- ICT led to an impressive growth in the world's technological capacity to handle information and communication. This has led to **profound changes** in the way society works.
- Readings:
  - World Bank. (2006). Information and Communications for Development: Global Trends and Policies in 2006. Washington D.C.  
<http://siteresources.worldbank.org/EXTINFORMATIONANDCOMMUNICATIONANDTECHNOLOGIES/Resources/282822-1141851022286/IC4DOverview.pdf> (pp. 1-12)
  - Methodological and Statistical Background on The World's Technological Capacity to Store, Communicate and Compute Information, 2012

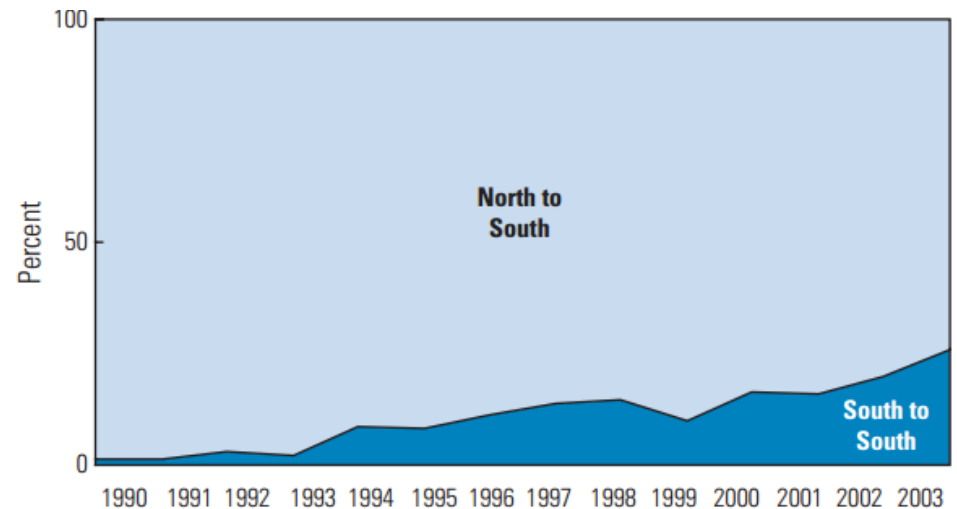
# Telecommunications in Developing Countries, 1990–2003

Total Telecommunications FDI



Source: Authors' analysis based on data from World Bank 2004.

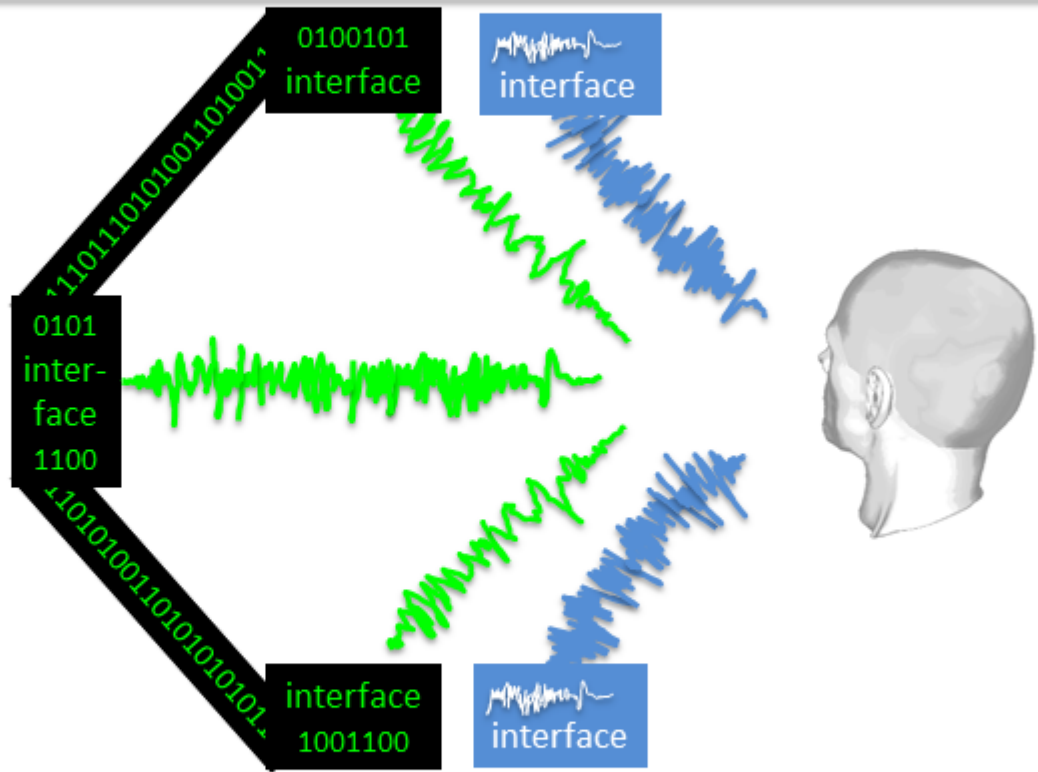
Telecommunications FDI by Source





digital	STORAGE	analog
PC hard-disk   DVD & Blu-Ray   Digital tape   Server & Mainframe hard-disk   CDs & Minidisks   Other hard-disks (portable)   Portable media player   Memory cards   Mobile phones & PDA   Videogames others   Floppy disks   Digital camera & camcorders internal   ChipCards		Video analog   Photo print   Audio cassette   Photo negative   Cine movie film   Vinyl LP   TV episodes film   X-Rays   TV movie film   Newsprint   Other paper & print   Books

	digital COMPUTATION
General-purpose	Personal computers   Videogame consoles   Servers & Mainframe   Supercomputers   Pocket calculators   Mobile phones/PDA
Application-specific	Digital Signal Processors   CD, DVD & PVR, cameras & camcorders, modems & setup boxes, GPS, portable media, printer & fax, radio, fixed phone, mobile phone   Microcontrollers   Graphic Processing



	digital	COMMUNICATION	analog
Broad-casting	TV-terrestrial   TV-cable   TV-satellite   Radio   Personal navigation GPS		TV-terrestrial   TV-cable   TV-satellite   Radio   Newspapers   Paper advertisement
Telecom	Fixed (voice) phone   Internet   Mobile (data) phone   Mobile (voice) phone		Fixed (voice) phone   Mobile (voice) phone   Paper postal letters

**61%**

**general-  
purpose  
computation**

**COMPUTE**

**86%**

**application-  
specific  
computation**

**Growth rates  
1986-2007**

**STORE**

**25%**

**storage**

**COMMUNICATE**

**30%**

**telecom**

**7%**

**broadcasting**

# INTRODUCTION (Contd)

- COMPLEMENTARY OPTIONAL READINGS
- Manuel Castells (2000), *“The Rise of the Network Society”*, <http://books.google.com>; Ch. 1&2
- Brynjolfsson, E., & Saunders, A. (2009). *Wired for Innovation: How Information Technology is Reshaping the Economy*. The MIT Press.  
[https://s3.amazonaws.com/zanran\\_storage/ia.ucpel.tche.br/ContentPages/107751226.pdf](https://s3.amazonaws.com/zanran_storage/ia.ucpel.tche.br/ContentPages/107751226.pdf)

# Technology

- Technology: The knowledge, skills, methods and procedures associated with the production and utilization of goods and services in a given society.
- materialized in designs, specifications, formulations, operating instructions, machinery, equipment, buildings, systems, and other tangible or near-tangible forms (embodiment of technology)
- The distinction between technology and the embodiment of products of technical knowledge is a fundamental one



# Production, consumption and organizational technology.

- Production technology
  - the techniques of production, the meaning with which the term technology is most frequently used.
- Consumption technology
  - the choice of products or systems for the satisfaction of specific consumption requirements,
  - defines the mix of goods and services that production technology has to deliver;
- Organizational technology
  - the organization of production, distribution and consumption,
  - Provides the framework within which production technology is selected and applied, and its fruits distributed socially;
  - Example: plantation vs. cooperatives, small enterprises vs. large, collective consumption vs. individual consumption.

# IT Policy

- important branch of the science of development policy
- Studied as a distinct factor in the development process
- As a result of the question of the choice of appropriate technologies from abroad and the development of local scientific and technological capabilities.

# IT Policy

- The problems of devising a technology policy are more subtle, more complex, and not amenable to treatment with simple formulae.
- They have to do with setting priorities, choosing the most suitable from what is available, bargaining for it on the best possible terms, scheduling and sequencing

# characteristic features of the technological condition of the Caribbean Region

- Technological dependence:
  - a structural propensity for continuous and systematic reliance on imported production, consumption and to some extent organizational technologies.
  - The most dynamic components of the productive system on the part of socio-economy
  - The productive technologies concerned are imported wholesale and are not subject to any significant local adaptation or modification
- technological underdevelopment:
  - A general weakness and belt of development of local science and technology institutions and, their lack of integration with the local socio-economic system especially the productive system
- - technological dysfunctionality
  - Foreign and local technologies being applied are not appropriate to the objectives set for technology, such as employment generation, nutrition. structural interdependence. etc.
- Readings: The approach of technological Policy studies Norman Grivan

# IT Strategy

- the overall plan which consist of objective(s), principles and tactics relating to use of the technologies within a particular organization.
- Can be implied from the organization's behaviors towards technology decisions, and may be written down in a document
- Has traditionally been expressed in a document that explains how technology should be utilized as part of an organization's overall corporate strategy and each business strategy.
- For IT, the strategy is usually formulated by a group of representatives from both the business and from IT.
- Often the led by an organization's Chief Technology Officer (CTO) or equivalent.
- A technology strategy may cover developments somewhere between three and 5 years into the future.

# IT Strategy

- The technology strategy may refer to:
  - High-level view of Logical architecture of information technology systems
  - High-level view of Physical architecture of information technology systems
  - Technology Rationalization Plan
- Audience:
  - internal IT staff members.
  - non-technical stakeholders involved in business planning within an organization.
    - It should be free of technical jargon and information technology acronyms.

# Sections of a technology strategy

- Executive Summary - This is a summary of the IT strategy
  - High level organizational benefits
  - Project objective and scope
  - Approach and methodology of the engagement
  - Relationship to overall business strategy
  - Resource summary
    - Staffing
    - Budgets
    - Summary of key projects

# Sections of a technology strategy

- Internal Capabilities
  - **IT Project Portfolio Management** - An inventory of current projects being managed by the information technology department and their status. Note: It is not common to report current project status inside a future-looking strategy document. Show Return on Investment (ROI) and timeline for implementing each application.
  - An inventory of existing applications supported and the level of resources required to support them
  - Architectural directions and methods for implementation of IT solutions
  - Current IT departmental strengths and weaknesses



# Sections of a technology strategy

- Opportunities
  - Description of new cost reduction or efficiency increase opportunities
    - Example: List of available Professional Service contractors for short term projects
  - Description of how Moore's Law (faster processors, networks or storage at lower costs) will impact the organization's ROI for technology p
- Threats
  - Description of disruptive forces that could cause the organization to become less profitable or competitive
  - Analysis IT usage by competition

# Sections of a technology strategy

- IT Organization structure and Governance
  - IT organization roles and responsibilities
  - IT role description
  - IT Governance
- Milestones
  - List of monthly, quarterly or mid-year milestones and review dates to indicate if the strategy is on track
  - List milestone name, deliverables and metrics

# FRAMEWORK OF IT POLICY ANALYSIS

- Questions to be addressed:
- what are the forms in which technology is presently imported and the characteristics, effects, etc. of these forms?
- what is the extent, nature and experience of the development of local technological capabilities? ‘
- how well orchestrated are the imported and the locally generated technologies towards servicing the objectives set for technology?

# building blocks of policies in the digital age

- Watch <http://www.youtube.com/watch?v=GT1VNI3RkXk>
  - Can national broadband network work in Nigeria? How can it stabilize Nigeria digital economy? Smart City
- Keeping both the technological means and the social ends in mind, we discuss conceptual frameworks that show the “**Big Picture**” of the relevant building blocks **of the ICT paradigm**.
- **Readings:**
  - Hilbert, M. (2012). Towards a Conceptual Framework for ICT for Development: Lessons Learned from the Latin American “Cube Framework”. *Information Technologies & International Development*, 8 Winter, 243–259. <http://itidjournal.org/itid/article/viewFile/967/408>
  - Wilson, E. J. III. (2004). *The Information Revolution and Developing Countries*. Cambridge: MIT Press. <http://books.google.com> (pp. 37-46) or <http://www.cidcm.umd.edu/leadership/chapter2.pdf> (p 1-19)
  - Perez, C. (2004), *Technological revolutions, paradigm shifts and socio-institutional change*, <http://www.carlotaperez.org/papers/basic-technologicalrevolutionsparadigm.htm>
- **Reading questions:**
  - (1) While Hilbert views “social change” as the result of ICT diffusion, Wilson views “social structure” as the cause for ICT diffusion. Contrast both. Which is the chicken and which the egg: technology or society?
  - (2) What does each author say about the importance of policies?
- (3) Provide concrete examples
- from the digital paradigm to flesh out Perez’s 3 interconnected processes of change and adaptation

# building blocks of policies in the digital age: Kondratiev waves

- In economics, Kondratiev waves (also called supercycles, great surges, long waves, K-waves or the long economic cycle) are supposedly cycle-like phenomena in the modern world economy
- The period of the wave averages at fifty, and ranges from approximately forty to sixty years, the cycles consist of alternating intervals between high sectoral growth and intervals of relatively slow growth.

# building blocks of policies in the digital age: Destructive innovation

- A disruptive innovation is an innovation that helps create a new market and value network, and eventually goes on to disrupt an existing market and value network (over a few years or decades), displacing an earlier technology
- [http://en.wikipedia.org/wiki/Disruptive\\_technology#Examples\\_of\\_disruptive\\_innovations](http://en.wikipedia.org/wiki/Disruptive_technology#Examples_of_disruptive_innovations)

# building blocks of policies in the digital age

- The all-embracing nature of the ICT paradigm forces respective **policy agendas** to be just as comprehensive and far-reaching.
- There is need to identify:
  - relevant building blocks **of the ICT paradigm**
  - How national and international **policy agendas** approach such far-reaching changes
-

- Readings:

- Peres, W. and Hilbert, M. (2010), National and Regional Strategies. In *The Information Society in Latin America and the Caribbean: Development of Technologies and Technologies for Dev.*, UN-ECLAC, [www.eclac.org/publicaciones/xml/3/43803/Libro\\_Cepal\\_98.pdf](http://www.eclac.org/publicaciones/xml/3/43803/Libro_Cepal_98.pdf) Ch. XII, pp.275-310;
- Adamali, A., Coffey, J. O., & Safdar, Z. (2006). Trends in National E-Strategies: A Review of 40 Countries. In *2006 Information and Communications for Development:....* The World Bank. <http://books.google.com/books?isbn=0821363468> Ch.5; pp.87-124.

- *Reading questions:*

- (1) *What are the main characteristics of a national ICT strategy?*
- (2) *What is the role of the development of ICT infrastructure in relation to other areas?*
- (3) *What do you think are the 3 most important policy areas and why?*



# DIGITAL DIVIDE: diffusion of ICT

- All innovations, including ICT, spread slowly and unevenly throughout society, which inevitably creates a divide between those that already have access and use it, and those still excluded. We start by reviewing the **demand side of the diffusion process**
- **Readings:**
  - Rogers, E. (1962/2003), *Diffusion of Innovations*, (Ch. 5: The Innovation-Decision Process, pp. 168-202); the 5th edition of the book must be purchased or lend from the library; the 3rd (less complete) edition of the book is accessible here: <http://www.scribd.com/doc/41176402/Diffusion-of-Innovations-3rd-Ed>
  - Tom Valente (2010), *Diffusion of Innovations: Network Analysis*, VideoPart1 (10min); VideoPart2 (9min); VideoPart3 (10min).
  - Martin Hilbert (2011), The end justifies the definition: The manifold outlooks on the digital divide and their practical usefulness for policy-making. *Telecommunications Policy*, 35(8), 715-736.  
[http://www.martinhilbert.net/ManifoldDigitalDivide\\_Hilbert\\_AAM.pdf](http://www.martinhilbert.net/ManifoldDigitalDivide_Hilbert_AAM.pdf)

# DIGITAL DIVIDE: diffusion of ICT

- *Reading questions:*
  - (1) *Choose one example of a specific ICT and walk step by step through Rogers diffusion process (Figure 5.1/ Table 5.1)*
  - (2) *What are “social networks” and what do they have to do with the digital divide?*
  - (3) *What are the most significant socio-economic variables that determine Internet access?*
  - (4) *Based on evidence from the U.S., South Korea and Chile: what percentage of national public sector ICT policy budgets is dedicated to ICT infrastructure*



# e-GOVERNMENT: the public sector as digital catalyzer

- E-Government (short for electronic government, also known as e-gov, Internet government, digital government, online government, or connected government) consists of the digital interactions between a government and citizens (G2C), government and businesses/Commerce (G2B), government and employees (G2E), and also between government and governments /agencies (G2G). Essentially, the e-Government delivery models can be briefly summed up as (Jeong, 2007)
  - G2C (Government to Citizens)
  - G2B (Government to Businesses)
  - G2E (Government to Employees)
  - G2G (Government to Governments)
  - C2G (Citizens to Governments)
- This digital interaction consists of governance, information and communication technology (ICT), business process re-engineering (BPR), and e-citizen at all levels of government (city, state/province, national, and international)

# e-GOVERNMENT: the public sector as digital catalyzer

- Keywords (look up at: [www.wikipedia.org](http://www.wikipedia.org)): “*e-Government*”; “*Civil Sector Reform*”; “*Corruption Perceptions Index*”; “*Public participation*”; “*Open Government.*”
- *Videos:*
- *Egovernment Revolutions*
- <http://www.youtube.com/watch?v=NJ-JyDO0vHs>
- eGovernment Applications:
- [http://www.youtube.com/watch?v=8v\\_uc5Gsx00](http://www.youtube.com/watch?v=8v_uc5Gsx00)
- Open Government Partnership
- <https://www.youtube.com/watch?v=LijchWVlirc>
- UN eGovernment Online Portal
- <https://www.youtube.com/watch?v=z0A9CnAHnks&list=PLDA226C17BCE57E16>

# e-GOVERNMENT: the public sector as digital catalyzer

- Civil service reform
  - a deliberate action to improve the efficiency, effectiveness, professionalism, representativity and democratic character of a civil service, with a view to promoting better delivery of public goods and services, with increased accountability.
  - Such actions can include data gathering and analysis, organizational restructuring, improving human resource management and training, enhancing pay and benefits while assuring sustainability under overall fiscal constraints, and strengthening measures for public participation, transparency, and combating corruption.
  - Important differences between developing countries and developed countries require that civil service and other reforms first rolled out in developed countries be carefully adapted to local conditions in developing countries.

# e-GOVERNMENT: the public sector as digital catalyzer

- The digitization of the public sector is not automatically empowering and democratic. As early as 1948, long before academics started to talk about the “Information Society”, the novelist George Orwell wrote a novel about a dark vision of the information age (“1984”), where “*Big Brother is watching you*”. We review the current status of **Internet freedoms in Africa**.
- The government not only helps to guide the transition of society as a whole, but it is subject to the ongoing digital transformations itself. The **digitization of the execution of the law** by the executive branch is a central ICT policy area.

# e-GOVERNMENT: the public sector as digital catalyzer

- Watch
- <https://www.youtube.com/watch?v=z0A9CnAHnks&list=PLDA226C17BCE57E16>
- <http://www.youtube.com/watch?v=NJ-JyDO0vHs>
- Readings:
  - United Nations DESA. (2012). e-Government Survey 2012: e-Government for the People. Retrieved from <http://unpan1.un.org/intradoc/groups/public/documents/un/unpan048065.pdf>



# e-GOVERNMENT: the public sector as digital catalyzer

- ***Reading questions:***

- *(1) How are the UN-DESA “Online Service Index” and the “Supplementary e-Participation Index” constructed?*
- *(2) What role do you think e-government development plays for the general transition of a country toward the digital age?*
- *(3) Of the different examples given in the report, which is your favorite e-government application, website, or service? Why?*

# **e-GOVERNMENT: the public sector as digital catalyzer**