



PUERTO RICO
TELECOM
CONFERENCE 2011
THE NEW FUTURE

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Telecoms and Puerto Rico's Development

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Presentation Plan

- **The Global Context**
- **Telecommunications and Development**
- **Puerto Rico's Economic Development**
- **ICT in Puerto Rico**
- **Looking Forward**

The Global Context

“A powerful force now drives the world toward a single converging commonality, and that force is technology. It has proletarianized communication, transport, and travel, making them easily and cheaply accessible to the world’s most isolated places and impoverished multitudes.”

**Theodore Levitt,
“The Globalization of Markets”**

The Global Context

Main Features

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New modes of integration

- Financial markets
 - Mergers, acquisitions and their implications
 - Hedge Funds and the Sub-Prime issue
 - Sovereign Wealth Funds
- The Network Firm
- The management of the global economy

Capital mobility

- Short term financial flows
- Direct foreign investment
- The IMF and the World Bank

Globalization as a microeconomic phenomenon

- Firms, not states, as drivers of globalization
- Tensions arise from differences in national and firm objectives.
- Consolidations are now a global phenomena
- Brands matter
- Enabling technologies used to be centralized, derived technologies migrated, but this is changing

The Global Context

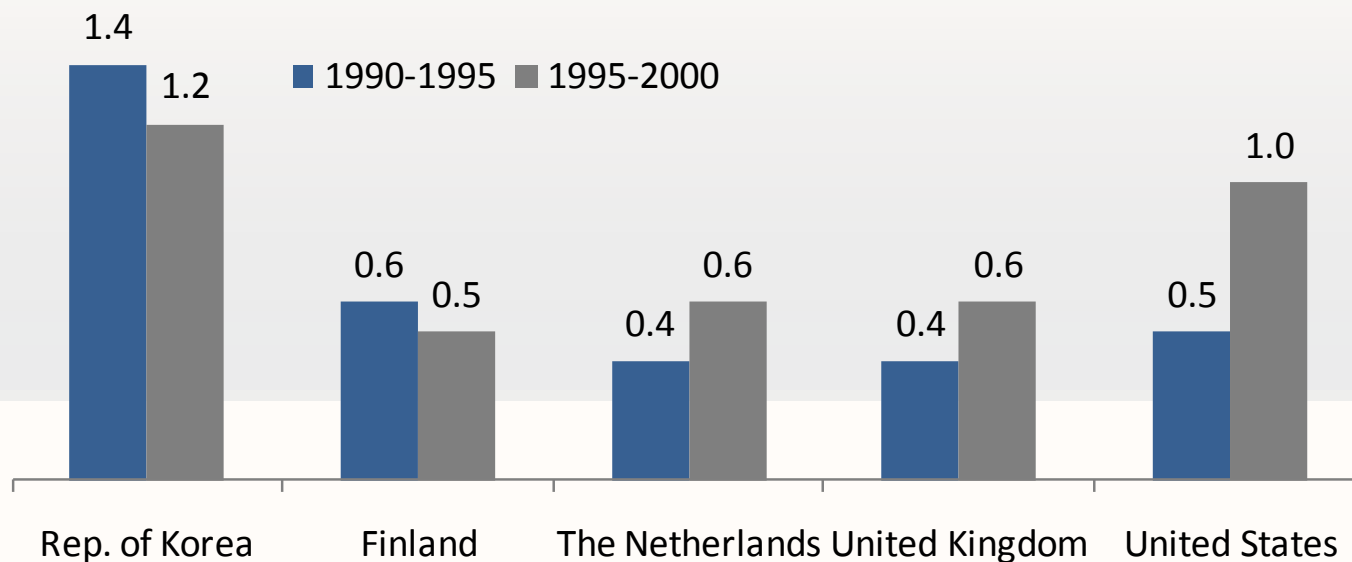
A changing context

P u e r t o R i c o C h a m b e r o f C o m m e r c e



- New competitive advantages
- Intangibles as the major trade component
- A new global economic center of gravity
- Network formation as a core competence
- The network firms and horizontal integration
- Markets are now global. E-bay and Amazon as poster children
- The marginal cost of information is nil, information is both a public and a free good
- The space that matters is no longer physical, but abstract.

The Contribution of ICT Investment to GDP Growth



Source: *ICT and Economic Growth: Evidence from OECD Countries, Industries and Firms*, 2003

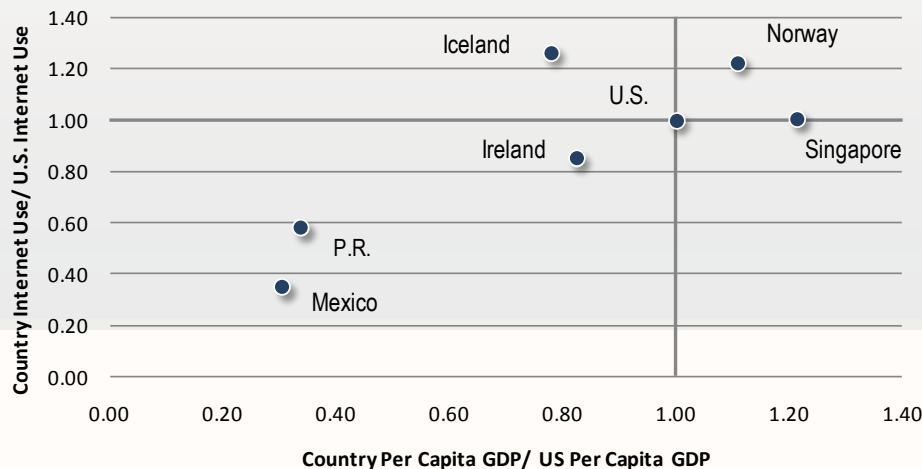
Note: Data Available for U.S.A.: 1991-95 & 1996-01; U.K.: 1984-94 & 1994-98; Finland: 1990-95 & 1996-99; Korea: 1991-95 & 1996-00; The Netherlands: 1991-95 & 1996-2000.

Telecommunications and Development

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diagram

Economic Development and Internet Use



Source: IMF; PR Planning Board; ETI and Internet World Statistics

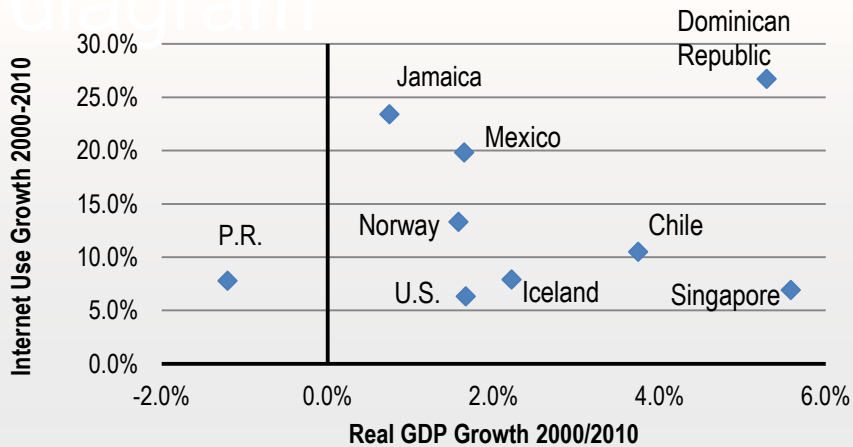
1. In order to establish a link between economic development and Internet use, a comparison was made by Estudios Técnicos, Inc. using the GDP per capita of each country and the Internet use rate. The U.S. was selected as the benchmark rate with a value of 1.0.
2. What the graph clearly demonstrates is that higher income countries have more intensive Internet use.

Telecommunications and Development

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Economic and Internet Use Growth Rates 2000-2010



There is widespread evidence that a robust ICT infrastructure drives economic growth

Source: IMF; PR Planning Board; ETI and Internet World Statistics

How P.R. Fares Today:	
Number of Internet Users Per 100 People	
Region	Estimates
Developed economies	71.6
Deveveloping economies	21.1
World	30.1
United States	79.0
Puerto Rico	40.6

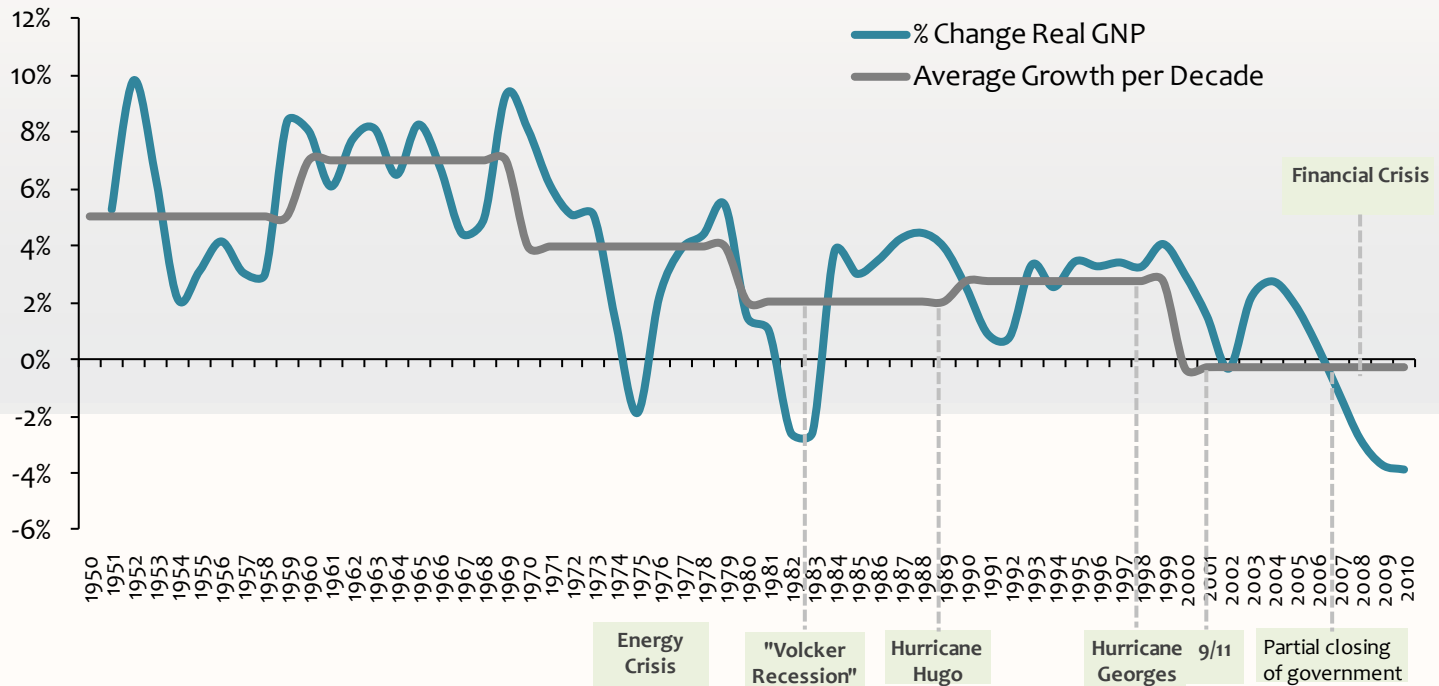
Sources: ITU (2010).Key Global Telecom Indiators for the World; Estudios Técnicos (May,2011).

Telecommunications and Development

Worldwide, it is estimated that e-commerce delivers:

- 1 15% savings over other forms of commerce,
- 2 Generates a \$10 trillion market.
- 3 It also represents an important source of job growth.
- 4 It also translates into higher wages, with the average wage for an ICT worker 75% greater than the average earnings for the U.S. worker.
- 5 World exports of ICT were \$1.4 trillion in 2009 and grew at an accumulated annual rate of 5.6%.
- 6 In China and India exports grew during the period at 27.9% and 28.4%, respectively.

A history of lost competitive advantages



Puerto Rico's Economic Development

The Limits of our Economic Model

P u e r t o R i c o C h a m b e r o f C o m m e r c e



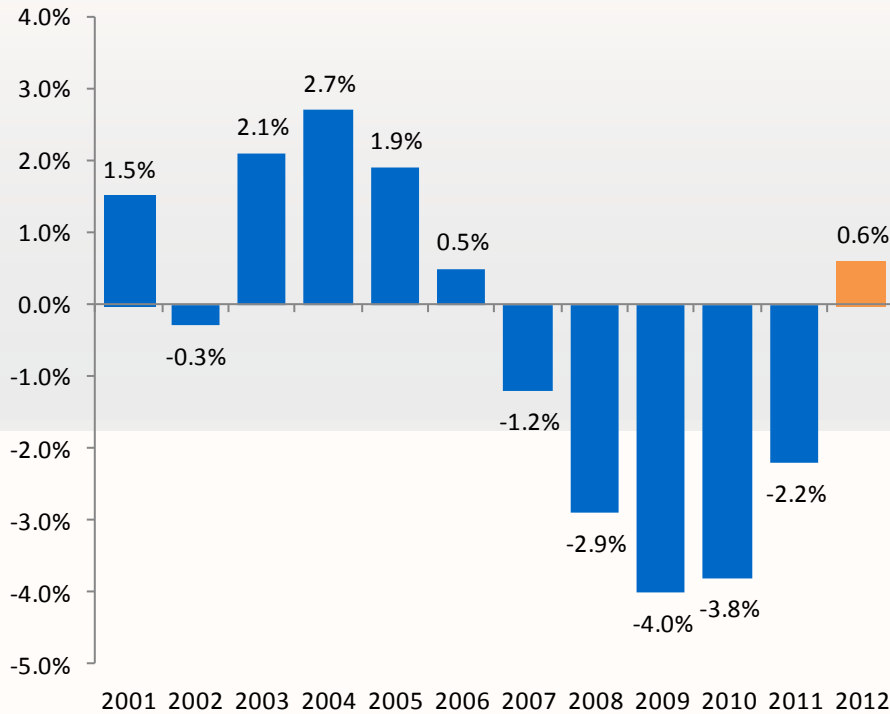
- The previous graph illustrates the limits of Puerto Rico's approach to development
- However, the implications of these limits were mitigated by:
 - Life extenders
 - Petrochemicals
 - Government expenditures
 - Section 936
 - Section 901
 - The three buffers
 - Federal transfers
 - The informal economy
 - Government employment

Puerto Rico's Economic Development The 2001-2010 Decade

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diagram GNP Real Growth
Fiscal Years



The economy was 3.5% smaller at the end of 2010 than it was at the beginning of 2001, and 12% smaller at the end of 2010 than at the beginning of 2007.

Puerto Rico's Economic Development
The 2001-2010 Decade: Looking for Explanations

P u e r t o R i c o C h a m b e r o f C o m m e r c e



- Some explanations:
 - The loss of competitive advantages
 - High transaction costs
 - Institutional obsolescence
 - Poor fiscal and economic management
 - A changing global context

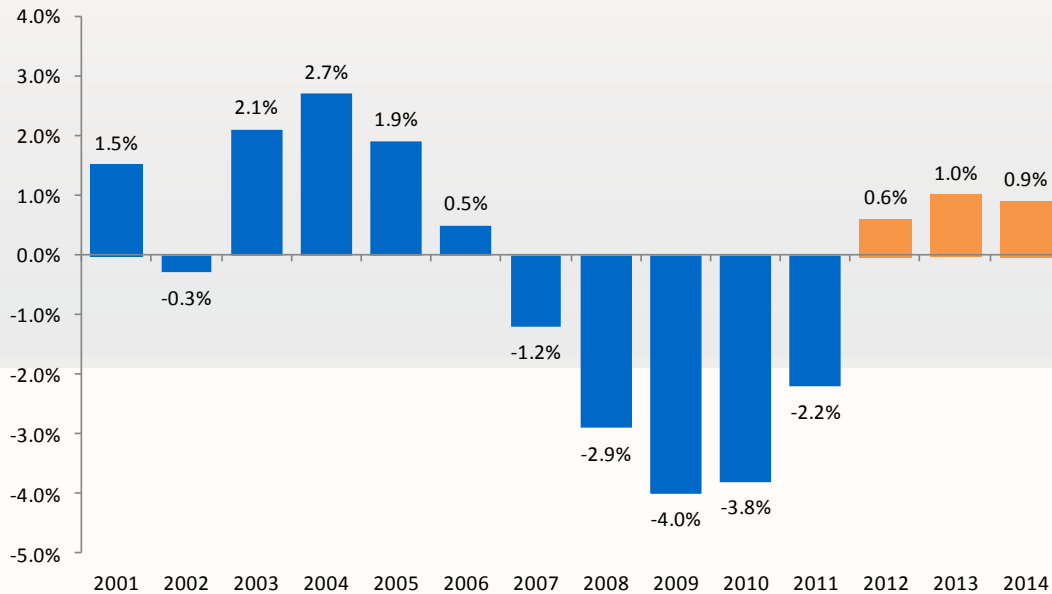
- The concern for Puerto Rico's development experience arises from the fact that sustained negative economic performance has cumulative effects that could make recovery more difficult if not impossible.

Puerto Rico's Economic Development Projections 2011-2014

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GNP Real Growth Puerto Rico



Projected growth rates are clearly insufficient to resolve employment and other social and economic needs.

Source: Puerto Rico Planning Board 2001 – 2012, Estudios Técnicos, Inc. 2013-2014.

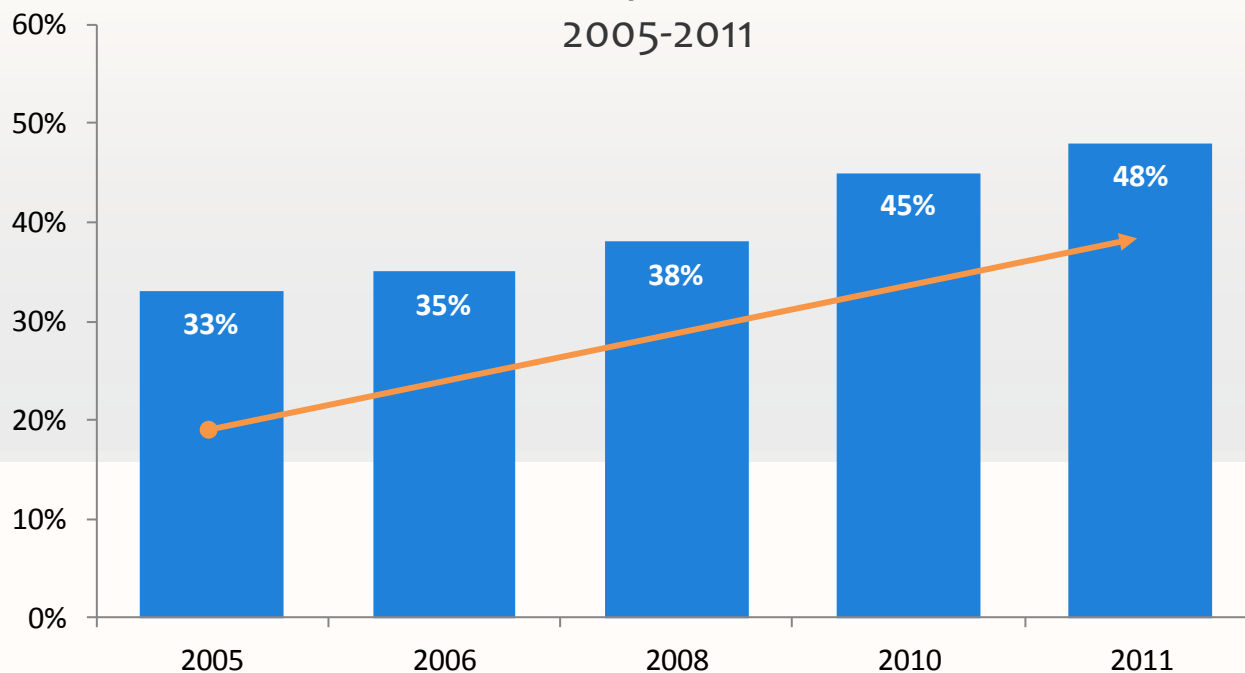
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Internet Use

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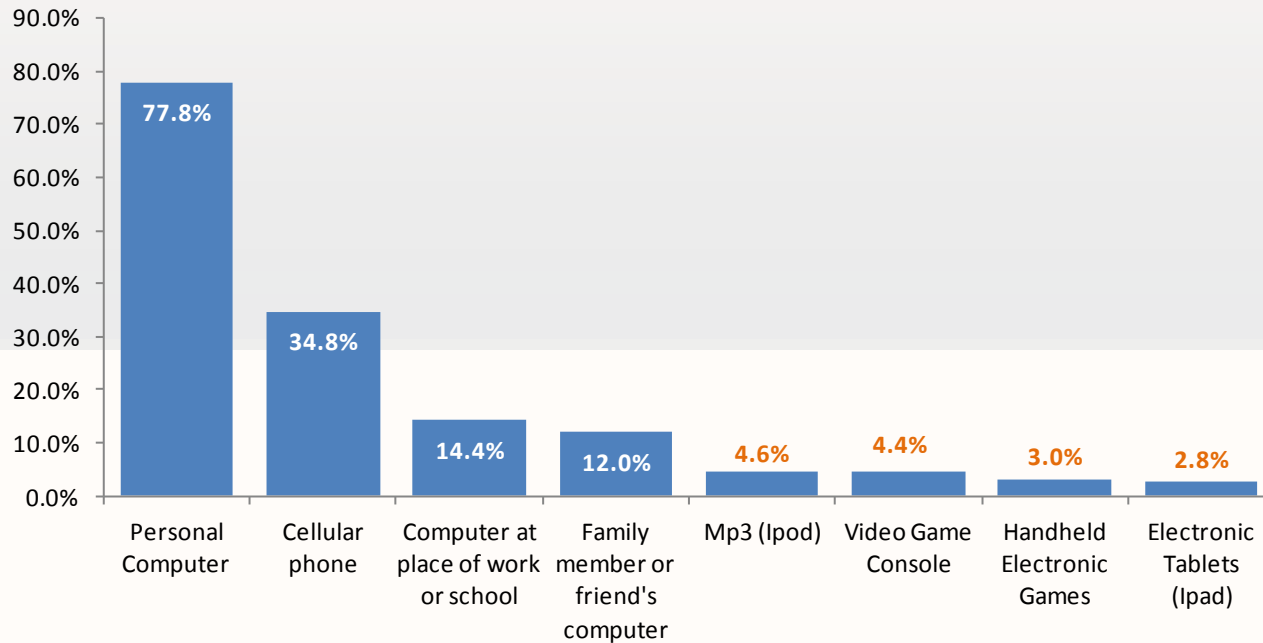


Internet penetration
2005-2011



1,500,837 users 12+ in age

How do they connect?



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- Although total employment in ICT fell in the decade due to the recession, it still is responsible for a substantial number of jobs.

ICT Employment, 1999 & 2010	
	1999
Word Processors and Typists	9,310
Electrical and Electronic Equipment Assemblers	7,640
Data Entry Keyers	4,280
Telecommunications Equipment Installers and Repairers, Except Line Installers	2,560
Computer Programmers	1,800
Computer Operators	1,610
Computer Support Specialists	1,350
Telecommunications Line Installers and Repairers	1,230
Computer and Information Systems Managers	900
Electromechanical Equipment Assemblers	860
Computer Systems Analysts	830
Graphic Designers	750
Computer, Automated Teller, and Office Machine Repairers	590
Network and Computer Systems Administrators	550
Computer Science Teachers, Postsecondary	480
Database Administrators	240
Computer Software Engineers, Systems Software	100
Network Systems and Data Communications Analysts	90
Computer Software Engineers, Applications	-5
Desktop Publishers	-5
Total	35,160
ICT Employment as Percentage of Total Employment	3.53%
	2010
Word Processors and Typists	7,160
Data Entry Keyers	2,720
Telecommunications Line Installers and Repairers	2,100
Computer Support Specialists	2,630
Computer Programmers	1,680
Computer Systems Analysts	1,110
Graphic Designers	960
Computer, Automated Teller, and Office Machine Repairers	910
Computer Operators	860
Computer and Information Systems Managers	840
Network and Computer Systems Administrators	880
Computer Software Engineers, Applications	550
Electrical and Electronic Equipment Assemblers	640
Telecommunications Equipment Installers and Repairers, Except Line Installers	550
Computer Hardware Engineers	240
Database Administrators	220
Computer Science Teachers, Postsecondary	220
Total	24,270
ICT Employment as Percentage of Total Employment	2.55%

Source: U.S. BLS, Occupational Employment Survey, 1999 and 2010.
 Note: 'Computer Hardware Engineers' and 'Computer Specialist, All Other' were not available for 1999.

- CIO and other Broad Band Initiatives*

PR Bridge Initiative \$25.8 mm in ARRA funds

INTENE/SUAGM \$22.6 mm requested for broad band project

INTECO \$12.9 mm for broad band Project

Broad Band Mapping \$1.4 mm

*Source: Modelo Económico para la Nueva Economía, 2011.

C&IT in Puerto Rico

The Regulatory Framework

P u e r t o R i c o C h a m b e r o f C o m m e r c e



- Puerto Rico has looked at Telecommunications as a sector to be regulated
- The Telecommunications Regulatory Board is a regulator and was created when the privatization of the PRTC first came up in the early nineties
- In Singapore the parallel agency is the Media Development Authority
- A Telecommunications Blueprint was prepared some time ago and the Chief Information Officer position created in 2009
- The IPTV issue illustrates the need for a new public policy that looks upon Telecommunications as a sector to be promoted and not just regulated
- Telecommunication Technologies are enabling technologies

Looking Forward

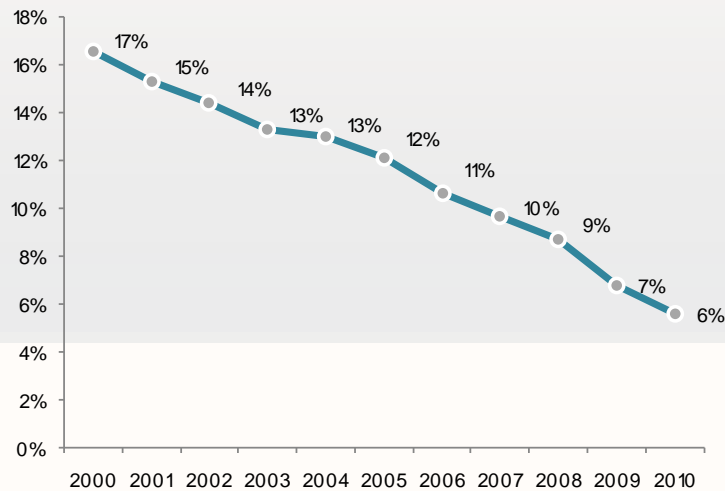
The need for Increasing Investment

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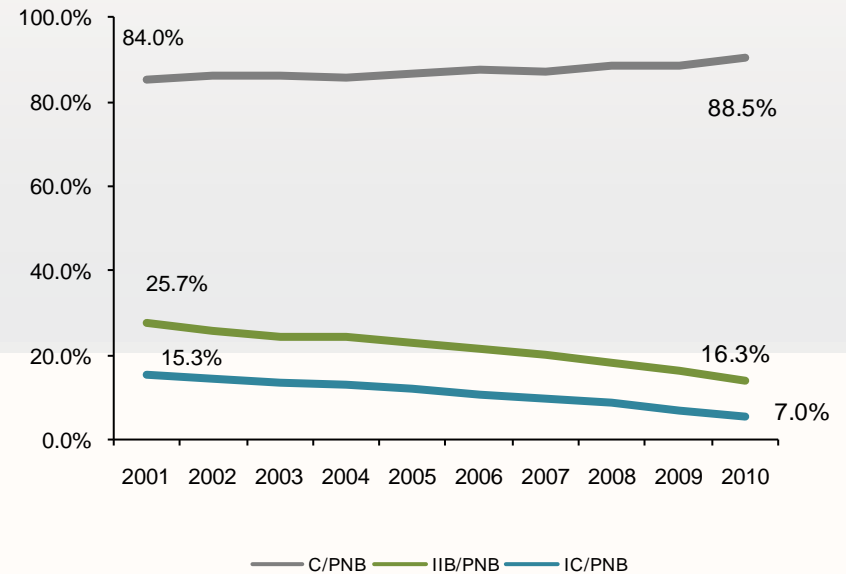


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Construction Investment / GNP



The Development Gap: C/GNP-I/GNP



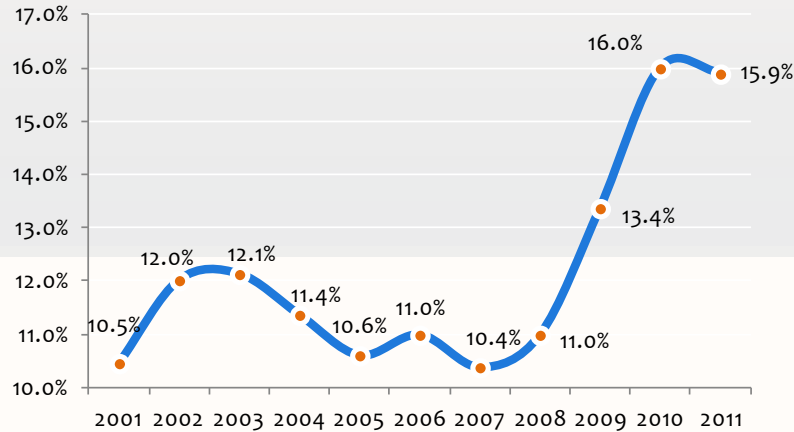
Looking Forward

The social dimension

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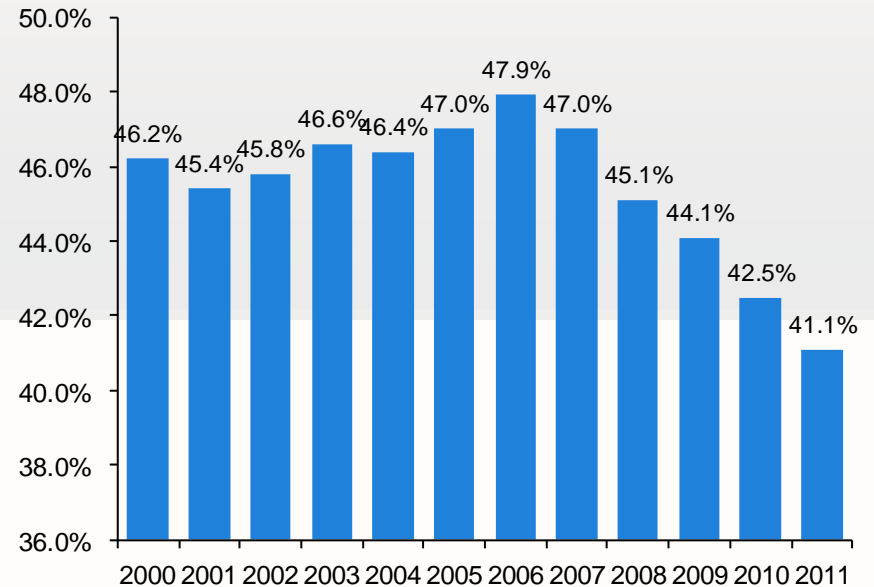


Unemployment Rate Total



Source: Puerto Rico Planning Board.

Labor Force Participation Rate (Fiscal Years)



Source: Junta de Planificación and Departamento del

Looking Forward

The social dimension

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LINE CHART

Puerto Rico is well positioned to developed as a regional ICT hub as reflected in the WEF report and the World Bank's *Doing Business 2011* report. Recent studies on CAFTA +RD conclude that ICT is an important area of opportunity.

Networked Readiness Index Latin America and the Caribbean, 2010-2011

Economy	Rank	Index
Barbados	38	4.32
Chile	36	4.28
Puerto Rico	43	4.10
Uruguay	45	4.06
Costa Rica	46	4.03
Brazil	56	3.90
Panama	60	3.89
Trinidad & Tobago	63	3.83
Colombia	58	3.80
Jamaica	73	3.78
Mexico	78	3.69
Dominican Republic	79	3.62
Peru	89	3.54
El Salvador	92	3.52
Guatemala	94	3.51
Argentina	96	3.47
Guyana	100	3.43
Honduras	103	3.34
Ecuador	108	3.26
Venezuela	118	3.18
Paraguay	127	3.00
Nicaragua	128	2.99
Bolivia	135	2.89

Source: World Economic Forum (2011). *The Global Information Technology Report 2010-2011*.

Closing Remarks

Specific Needs

P u e r t o R i c o C h a m b e r o f C o m m e r c e



- Shifting the policy emphasis from material to intangible production and exports
- Developing critical mass in key areas that support knowledge based initiatives
- Creating networks to compensate for scale limitations
- Redefining the economy and transforming its institutional framework, in line with global realities
- Generating Strategic Intelligence as a continuing institutional learning process
 - Technology
 - Products
 - Markets
- Completing the value chain in manufacturing
- In telecommunications moving from a regulatory to a promotional mindset

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THANK YOU!