

# Information Societies in Latin America and the Caribbean

Development of Technologies and Technologies for Development

Wilson Peres and Martin Hilbert Editors









# Information Societies in Latin America and the Caribbean Development of Technologies and Technologies for Development

Wilson Peres and Martin Hilbert Editors







Economic Commission for Latin America and the Caribbean (ECLAC) Santiago, Chile, December 2010

### Libros de la CEPAL



### **Alicia Bárcena** Executive Secretary

# **Antonio Prado**Deputy Executive Secretary

**Mario Cimoli**Chief, Division for Production, Productivity and Management

### Susana Malchik

Officer-in-Charge, Documents and Publications Division

This book is the result of collective work carried out in the framework of the Information Society Programme by the Economic Commission for Latin America and the Caribbean (ECLAC) Division for Production, Productivity and Management. Between 2004 and 2008, financial support for the programme was provided by the European Union, through the Alliance for the Information Society (@LIS), and by Canada's International Development Research Centre (IDRC), through the Observatory for the Information Society in Latin America and the Caribbean (OSILAC) project.

The original drafting of the chapters was done by numerous staff members and consultants, under the general supervision of the current officer in charge of the division, Martine Dirven. Chapter I was written by Martin Hilbert; chapter II by Martin Hilbert and Doris Olaya; chapter III by Mario Cimoli and Nelson Correa; chapter IV by Fazia Pusterla, Carlos Razo, Marcia Tavares and Paulo Tigre; chapter V by Álvaro Calderón; chapter VI by Fernando Rojas, Carlos Razo and Marcio Wohlers; chapter VII by Álvaro Díaz; chapter VIII by Juan Enrique Hinostroza; chapter IX by Hernán Moreno; chapter X by Martin Hilbert and Valeria Jordán; chapter XI by Martin Hilbert; chapter XII by Massiel Guerra, Martin Hilbert and Valeria Jordán; and chapter XIII by Martine Dirven. Priscila López and Cristián Vásquez provided essential information used in chapter II. The editors carried out the final substantive revision.

The opinions expressed in this document do not necessarily reflect the official views of the European Union or of IDRC.

Cover design: Ximena Ulibarri

United Nations publication ISBN: 978-92-1-121704-9 E-ISBN: 978-92-1-054523-5 LC/G.2363-P Sales No.: E.08.II.G.72

Copyright © United Nations, December 2010. All rights reserved

Printed in United Nations, Santiago, Chile

Requests for authorization to reproduce this work in whole or in part should be sent to the Secretary of the Publications Board, United Nations Headquarters, New York, NY 10017, United States. Member States and their governmental institutions may reproduce this work without prior authorization, but are requested to cite the source and inform the United Nations of such reproduction.

### **Contents**

Foreword		11
Summarv		15
Introducti	on and overview	17
Part one		
	l paradigm: its diffusion and impact	23
The digita	i paradigiti. its diffusion and impact	
Chapter I		
Technolog	ical revolution and digital convergence	25
	The digital paradigm and the information society	
В.	Trajectories of the digital paradigm	
	1. The bit: foundation of the digital age	
	2. Capture and translation	32
	3. Communication	
	4. Computing	
	5. Storage	
	6. ICT convergence	
C.	Conclusions and the future of the digital paradigm	
Chapter II		
	d of the digital paradigm in the region	47
A	The international divide: a moving target	17 19
В.	The internal divides digital inclusion	40
Б.	The internal divide: digital inclusion	
	1. The access divide	
	2. The usage divide	61

4 ECLAC

Chapter I	II	
	omic impact of ICT	65
Α.	ICT contribution to growth	65
В.	The efficiency of ICT investment	
_		
Part two		
The devel	opment of ICT	75
Chapter I	V	
	ndustries	77
A.	Hardware production	
	1. Introduction	
	2. The status and dynamics of the global industry	
	3. The ICT hardware industry in Brazil and Mexico	
	4. Policy issues	
В.	Software and related services	98
٥.	1. Introduction	
	Performance and evolution	
	3. Transnational firms	
	4. Production strategies of transnational firms in	
	the region	109
	5. Principal domestic firms	113
	6. Policy considerations	
	o. Toncy considerations	110
Chapter V		
Telecomn	nunications operators	119
A.	Introduction	119
B.	The global market	
	1. The erosion of traditional sources of revenue	120
	2. An end to the industry's segmentation and the	
	emergence of new competitors	123
C.	The response of the global providers	125
	1. The exploitation of economies of scale and the	
	search for components of an integrated	
	services offering	127
	2. Redefining the principal business	129
D.	Industry dynamic in Latin America	137
	1. Characteristics of the market	137
	2. Concentration of leadership	
	3. Convergent services: the role of the	
	new competitors	145
C1 -		
Chapter V		
	nunications regulation	
A.	Introduction	
В.	Evolution of the sector in Latin America	
	1. State monopoly	
	2. Reform and privatization	152

	3. Effects of reform	154
	4. Concentration in the sector	158
C.	Regulatory agendas	159
	1. Regulation and technological convergence	159
	2. An agenda led by the agency responsible for	
	protecting competition	
	3. Agendas dictated by public policy	161
	4. Ongoing development of agendas	163
D.	Strengthening regulatory agencies	
	1. Regulatory agency objectives	165
	2. Characteristics of regulatory agencies	165
	3. Regulatory agencies and convergence	168
	4. From ex ante regulation to policy that promotes	
	and protects competition	171
E.	The universalization of services	
F.	Conclusions	176
Chapter V	П	
	e on intellectual property rights with regard to ICT	179
A.	Introduction	
В.	Intellectual property rights in the digital environment	
C.	Software	
C.	1. Software patents	
	Open source software	
	3. Issues under debate	
D.	Content	
D.	Technological protection measures (TPMs)	
	Copyright enforcement	
	3. Issues under debate	
E.	Conclusions	
E.	Conclusions	190
Part three		
ICT for de	velopment: applications and content	201
Chapter V	ш	
Education		203
A.	General context	
л.	1. Access	
	2. Use of ICT	
D		
В.	Progress	215
C.	Conclusions	∠16
Chapter I)	(	
	ent	217
A.	General context	217
	1. E-government: levels of development	219
	2. Semantic, organizational, technical and	
	governance considerations	221

6 ECLAC

	3. Evaluating quality of service	228
	4. Interoperability governance and architecture	
В.	Progress	230
	1. Coordination of e-government	
	2. Some specific e-government applications	
	3. Local e-government	
C.	Conclusions	245
Chapter !	X	
		247
A.	General context	247
B.	Progress	251
	1. Digitizing the front office: e-commerce	
	2. Digitizing back office processes: e-business	257
C.	Conclusions	258
Chapter :	XI	
	nd disaster management	261
Α.		
	1. General context	
	2. Progress	
В.	Electronic disaster management	
	1. General context	
	2. Progress	
C.	Conclusions	
Part four		
	cy for development	273
-		
Chapter !		
National	and regional strategies	
A.		275
В.	The need for ICT policy	276
C.	1	
D.		
	1. The status of national strategies	
	2. Quality of the agenda	
	3. Content of the agendas	293
	4. Advances in critical areas and the status	
	of policy development	295
	5. Lessons from national experiences	
E.	The regional dimension	
	1. Its importance, origins and characteristics	
	2. Objectives and characteristics of eLAC	
	3. Progress on a multisectoral challenge	
	4. Lessons for regional coordination	307

Chap	oter XIII	
ECL	AC recommendations	311
	A. ICT and their impact	312
	B. Development of ÎCT: hardware	313
	C. Development of ICT: software and related services	314
	D. Development of ICT: telecommunications providers	
	and regulation	316
	E. The intellectual property rights debate	318
	F. Development with ICT: education	319
	G. Development with ICT: e-government	321
	H. Development with ICT: e-business	
	I. Development with ICT: e-health and disaster	
	management	323
	J. Policies for development with ICT	324
	K. Conclusion	
Biblio	ography	329
ECL	AC publications	351
Table	es	
I.1	Paradigms, industries and infrastructures of the	
	technological revolutions	28
I.2	Increase in installed capacities and reductions in prices on	
	the ICT technological frontier, between 1980 and 2005	29
I.3	Communication variants	
II.1	Gini coefficients for ICT in households	
II.2	Public ICT access centres (PIAC) in Latin America, 2006	61
III.1	Sources of growth in production, by period	
III.2	Contribution of ICT capital to GDP growth	
IV.1	ICT hardware sales in the world and in Latin America,	
	by segment, 2003-2006	78
IV.2	Exports and imports of ICT goods	79
TT 7 つ	D:1. TOT 1 1 1 1	

## 预览已结束,完整报告链接和二维码如下:

https://www.yunbaogao.cn/report/index/report?reportId=5\_1932

