

The Dynamics of Standards

Edited by
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Foreword

Scholars in science and technology studies have been interested in standards and standardization processes for a relatively short time. Much of the seminal literature stems only from the 1980s and early 1990s, spurred to a large extent by the tremendous growth and diversification that occurred in the information and communication technology industries. These developments crystallized interest in the roles of regulation and technological co-ordination in the innovation process in an especially forceful way. In this tumultuous and exciting new industrial environment, issues like voluntary industry standards, which heretofore had attracted little analytical interest except perhaps on the part of engineers, began to be seen as critical factors in the formation of technology markets and in the business strategies of high-technology companies. The public interest implications of standards became highlighted also. Over more than three decades, a rich and sophisticated theoretical and empirical literature has emerged from a broad cross-section of science and technology perspectives and disciplines. But a great many intriguing questions still persist.

This is an important new book that directly addresses probably the most significant and longstanding lacuna in our understanding of standards. Most previous studies have focused upon the problems of how standards are acquired in the first place; mainly upon problems of technology selection, actor co-ordination and institutional dynamics. The key observations that most of the impact of a standard occurs after it has been established, and that most standards do not retain their original form throughout their lifetimes, was always staring us in the face. That until now few scholars have addressed this issue specifically is itself perhaps a 'standards' problem. With the maturation of any field of scientific enquiry, certain 'standard' problems and approaches become entrenched, many scholars becoming more intent upon refining methods and 'improving' knowledge than upon posing radical new questions.

The contributors to this volume must be commended for taking this much needed next step boldly and with the confidence that can be born only of extensive knowledge and experience acquired over many years. In many respects, the contributors set out a new paradigm for the investigation of standards. They open the door to new kinds of questions about the function and role of standards in rapidly changing technological and business environments and new approaches to the investigation of standardization phenomena. The scientific implications will be far reaching. But so also will the

practical implications as the major strategic and public interest issues in the ICT industries shift from traditional problems of coordinating hardware, software and infrastructure to concerns about the role of standards in the management of digital content, especially concerning ownership rights and digital permanence. We can all look forward to the many elaborations of this new paradigm that I am sure will begin to emerge within a very short time.

Richard Hawkins,
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Innovation Policy, University of Calgary, Canada

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This volume builds on two projects. First, it draws heavily on a European Union project funded under the Information Society Technologies priority of the 6th Framework Programme. The project, called ‘Networking Organizations – Research into Standards and Standardization’ (NO-REST, project coordinator: Knut Blind, 2004–06) was a co-operation between the Fraunhofer Institute (Knut Blind and Stefan Gauch), Aachen University (Kai Jakobs), TNO Institute for Strategy, Technology and Policy (Richard Hawkins), Delft University of Technology (Tineke Egyedi and Jos Vrancken), STEP SINTEF (Eric Iversen and Richard Tee), the University of Edinburgh (Ian Graham, Raluca Bunduchi and Martina Gerst), and ETSI (Yves Chauvel). It focused on the supply and demand side of information and communication technology (ICT) standards for networked organizations and on their interaction, which is an important source of standards’ dynamics. ‘Standards’ dynamics’ is a term that refers to what happens to standards once they have been developed. It has received very little scholarly attention despite the difficulties surrounding it. Standards’ dynamics was the theme of the NO-REST work package led by Tineke Egyedi. Most of the contributions to this work package have since evolved into chapters in this volume. In the context of the NO-REST project our gratitude goes to the European Commission for funding the project, and to our NO-REST colleagues for their support, feedback and discussions.

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Two external contributors, Kees van der Meer and Josephine Thomas, who were not involved in either of the above projects, have been invited to contribute because of the high interest of their work for our theme. We are proud to include their chapters in this volume.

Finally, we sincerely thank our reviewers and colleagues Jan van den Berg (Delft University of Technology), Raluca Bunduchi (University of Aberdeen Business School), Martina Gerst (University of Edinburgh), Ole Hanseth (University of Oslo), Arjan Loeffen (Valid/Vision), Jaroslav Spirco (Delft University of Technology), Mostafa Hashem Sherif (AT&T), Nelson Enano (student at Delft University of Technology) for their useful reviews of earlier

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Tineke M. Egyedi and Knut Blind
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Abbreviations

AAP	American Association of Publishers
AFNOR	Association Française de Normalisation
AIM	Application Interpreted Model
ALG	Application Level Gateway
AMS	Acquisition Management Systems
ANSI	American National Standards Institute
AP	Access Point
ARM	Application Reference Model
ASN.1	Abstract Syntax Notation 1
ATA	Air Transport Association
Amd	Technical Amendment
BSI	British Standards Institute
CALS	Continuous Acquisition and Life cycle Support
CCC	RWTH's Computing and Communication Centre
CCITT	Comité Consultatif International Téléphonique et Télégraphique (now ITU-T)
CDMA	MoD Central Data Management Authority
CDMA2000	Code Division Multiple Access 2000
CE	Conformité Européenne
CEN	Comité Européen de Normalisation
CEN/ISSS	CEN/Information Society Standardization System
CENELEC	Comité Européen de Normalisation Electrotechnique
CIDR	Classless Interdomain Routing
CSS	Cascading Style Sheets
Cor	Technical corrigendum
DC	Dublin Core
DCMI	Dublin Core Metadata Initiative
DCQ	Dublin Core Qualifiers
DECT	Digital Enhanced Cordless Telecommunications
DIN	Deutsches Institut für Normung
DIS	Draft International Standard
DNS	Domain Name System
DOI	Diffusion of Innovation
DSSSL	Document Style Semantics and Specification Language
DTD	Document Type Definition

DVD	Digital Versatile Disc
DVD+RDL	DVD Recordable Dual Layer
DoD	US Department of Defense
ECMA	European Computer Manufacturers Association (now ECMA International)
ECMA TC 31	ECMA Technical Committee 31
EMC	Electromagnetic Compatibility
ERB	Editorial Review Board
ESPRIT	European Strategic Program of Research and Development in Information Technology
ETSI	European Telecommunications Standards Institute
Ed.	Edition
FCD	Final Committee Document
FDIS	Final Draft International Standard
GCA	Graphic Communications Association
GML	Generalized Markup Language
GSM	Global System for Mobile communications
HIPERLAN	High Performance Radio Local Area Network standard
HTML	HyperText Markup Language
HyTime	Hypermedia Time based structuring language
ICANN	Internet Corporation for Assigned Names and Numbers
ICS	International Classification for Standards
ICT	Information and Communication Technology
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IETF	Internet Engineering Task Force
IMAP	Internet Message Access Protocol
IP	Internet Protocol
IPR	Intellectual Property Right
IPT	Integrated Project Team
IPv4	Internet Protocol version 4
IPv6	Internet Protocol version 6
IR	Infrared
IS	International Standard
ISDN	Integrated Services Digital Network
ISO	International Standardization Organization
ISP	International Standardized Profile (Chapter 9)
ISP	Internet Service Provider (Chapter 5)
IT	Information Technology
ITU	International Telecommunication Union
ITU-T	International Telecommunication Union – Telecom standardization sector

IrDA	Infrared Data Association
JTC 1	Joint Technical Committee 1 of ISO/IEC
LAN	Local Area Network
LLC	Logical Link Control
MAC	Medium Access Control
MAN	Metropolitan Area Networks
MES	Metadata Element Set
MMCD	MultiMedia Compact Disc
MODS	Metadata Object Description Schema
MoD	Ministry of Defence (UK)
MoPS	Mobile Professors and Students
NAT	Network Address Translation
NATO	North Atlantic Treaty Organization
NIST	National Institute of Standards and Technology (US)
OCLC	Online Computer Library Center
ODA	Open Document Architecture
ODF	Open Document Format
ODIF	Open Document Interchange Format
OMG	Object Management Group
OOXML	Office Open XML
OSI	Open Systems Interconnection
PC	Personal Computer
PDA	Personal Digital Assistant
prEN	Draft European standards
RAMP	Rapid Acquisition of Manufactured Parts
RFC	Request For Comments ('Internet standards' are also RFCs)
RIPE	Réseaux IP Européens
RUP	Rational Unified Process
SC	SubCommittee
SD	Super Density
SDIF	SGML Document Interchange Format
SDL	Specification and Description Language
SDO	Standards Development Organization
SGML	Standard Generalized Markup Language
SIP	Session Initiation Protocol
SMTP	Simple Mail Transfer Protocol
SOAP	Simple Object Access Protocol
SOHO	Small Office or Home Office
SRU	Search/Retrieve via URL
SRV	SeRVice (part of data record in DNS)
SRW	Search/Retrieve Web service

SSE	Support Solutions Envelope of MoD
STEP	STandard for the Exchange of Product model data
TCP	Transport Control Protocol
TEI	Text Encoding Initiative
TOE	Technology, Organization, Environment
TPAD	Terminal Packet Assembly/Disassembler
TR	Technical Report
TWG	Technical Working Group
UML	Unified Modelling Language
UNICODE	Unique, universal, and uniform character encoding
URMEL	Ubiquitous RWTH for Mobile E-Learning
USPI-NL	Dutch Process and Power Industry Association
VPN	Virtual Private Network
W-CDMA	Wideband Code Division Multiple Access
W3C	World Wide Web Consortium
WAN	Wide Area Networks
WEP	Wired Equivalent Privacy
WG 8	Working Group 8
WLAN	Wireless Local Area Network
WORM	Write Once Read Many times
XML	EXtensible Markup Language
XML WG	XML Working Group
ZING	Z39.50 International Next Generation

Contents

<i>List of Figures</i>	vii
<i>List of Tables</i>	viii
<i>List of Boxes</i>	x
<i>List of Contributors</i>	xi
<i>Foreword</i>	xiii
<i>Acknowledgements</i>	xv
<i>List of Abbreviations</i>	xvii

1. General Introduction	1
<i>Tineke M. Egvedi and Knut Blind</i>	

PART ONE THE PROBLEM OF CHANGING STANDARDS

2. The Sustainability of Digital Data: Tension Between the Dynamics and Longevity of Standards	15
<i>Kees van der Meer</i>	
3. An Implementation Perspective on Sources of Incompatibility and Standards' Dynamics	28
<i>Tineke M. Egvedi</i>	

PART TWO CAUSES OF CHANGE

4. + vs -: Dynamics and Effects of Competing Standards of Recordable DVD-Media	47
<i>Stephan Gauch</i>	
5. Internet Addressing Standards: A Case Study in Standards Dynamics Driven by Bottom-Up Adoption	68
<i>Jos Vrancken, Marnix Kaart and Michel Soares</i>	
6. Incompatible Successors: The Failure to Graft XML onto SGML	82
<i>Tineke M. Egvedi and Arjan Loeffen</i>	

PART THREE CHANGE IN AN IMPLEMENTATION CONTEXT

- 7. The IEEE 802.11 WLAN Installation at RWTH Aachen University: A Case of Voluntary Vendor Lock-In 99
Kai Jakobs
- 8. A Case Study of the Adoption and Implementation of STEP 117
Josephine W. Thomas, Steve Proberts, Ray Dawson and Tim King

PART FOUR SCALE OF CHANGE

- 9. How stable are IT standards? 137
Tineke M. Egyedi and Petra Heijnen
- 10. Factors Influencing the Lifetime of Telecommunication and Information Technology Standards 155
Knut Blind

PART FIVE CONCLUSION

- 11. Conclusion 181
Tineke M. Egyedi
- Bibliography* 190
- Index* 205

Figures

1.1	Three categories of standards change: implementation change, maintenance and succession in the extended life cycle of a standard	5
3.1	Schematic representation of the phases leading up to the standard implementation	30
4.1	Relationship of standards, consortia and actors in the context of DVD recordable standardization	56
5.1	Network structure	71
5.2	Connecting a LAN via a NAT gateway	74
6.1	The relative importance of domains of use in SGML and XML	93
7.1	Timeline of the project and of availability of 802.11-based product	107
7.2	The dimensions of dynamics	109
9.1	Number of standards documents published per year	143
9.2	Number of changes over time: withdrawals, supplements and editions	145
9.3	Aggregate number of changes per year and the number of unchanged main documents	147
9.4	Mean age of withdrawn documents	151
9.5	Comparison of computed age based on withdrawn standards and standards that are 'still active'	151
10.1	Survival times of telecommunication and information technology standards in years by country	164
10.2	Survival times of international telecommunication standards by area of standardization	165
10.3	Survival times of international information technology standards by area of standardization	167