

---

# **Factors Influencing the Lifetime of Telecommunication and Information Technology Standards: Results of an Explorative Analysis of the PERINORM database**

Knut Blind

4th International Conference on  
Standardization and Innovation in Information Technology

SIIT 2005

ITU Headquarters, Geneva, Switzerland

---



**Fraunhofer** Institute  
Systems and

# Content

Background

Objective and Hypotheses

Methodology

Selected Results

Conclusions



# Background

Trend towards shorter product life cycles in ICT

Reaction by SDOs via fastening processes and new types of products (e.g. PAS (= public available specifications) and CWA (CEN workshop agreement))

Theoretical literature focus on lock-in problems of standards:

- David (1985), Arthur (1989), Farrell, Saloner (1985; 1986)

Case studies:

- Egyedi, Loeffen (2002), Egyedi, Hudson (2001)

Quantitative empirical studies:

- Blind and Grupp (2000); Blind et al. (2000); Egyedi and Heijnen (2005)

Research is supported by the FP IST Programme within the project NO-REST "Networked Organisations – Research into Standards and Standardisation" (Contract no.: FP 6 – 507626) ([www.no-rest.org](http://www.no-rest.org))



# Objective and Hypotheses

Objective: first explorative of standards dynamics in ICT

Hypotheses:

H1: the dynamics of standards depends on the type of technology

H2: although the differences between technologies should be more distinct than the differences between countries, we still observe significant institutional differences between national standardisation bodies

H3: the higher the speed of technical change, the higher the pressure to adapt, change or withdraw an existing standard

H4: the institutional framework in which a standard is embedded matters, because cross references in general, references to international standards, links to predecessor or successor documents will change the life expectancy of a standard



# Methodology

Output of formal standardisation activities is reported in PERINORM

Differentiation based on the international classification of standards (ICS).

more than 78,000 documents in the field telecommunication and more than 31,000 documents in the field information technology and office machines

Countries: Austria (AT); Belgium (BE), Czech Republic (CZ), Switzerland (CH), Germany (DE), Denmark (DK), Spain (ES); France (FA); Great Britain (GB), Italy (IT); Netherlands (NL); Norway (NO), Poland (PL); Russia (RU); Sweden (SE); Slovakia (SK); Turkey (TR) plus the set of international and European standards (IX)

Parameters: Classification, Cross references, Expiry date, International relationship, Issuing body, Origin code, Publication date, Replaced by, Replaces, Status, Withdrawal date



# Average Publication and Withdrawal Dates in Telecommunication Differentiated by Area of Standardisation

Categories	Publication	Withdrawal
Telecommunications in general including infrastructure	1996.59	1998.13
Telecommunication services	1998.34	2000.56
Telecommunication systems including network (system) aspects	1996.25	1998.14
Telecommunication terminal equipment	1995.25	1999.18
Radio communications	1996.61	1998.06
Mobile services	1998.08	1998.11
Integrated Services Digital Network (ISDN)	1997.27	1998.27
Electromagnetic compatibility (EMC) including radio interference	1998.19	1999.63
Components and accessories for telecommunications equipment	1994.59	1998.73
Special measuring equipment for use in telecommunications	1993.28	1997.88
Audio, video and audiovisual engineering	1995.57	1997.66
Television and radio broadcasting	1996.76	1998.32
Fibre optic communications	1999.03	1999.43
Telecontrol telemetering including supervising, control and data acquisition	1997.11	1997.94

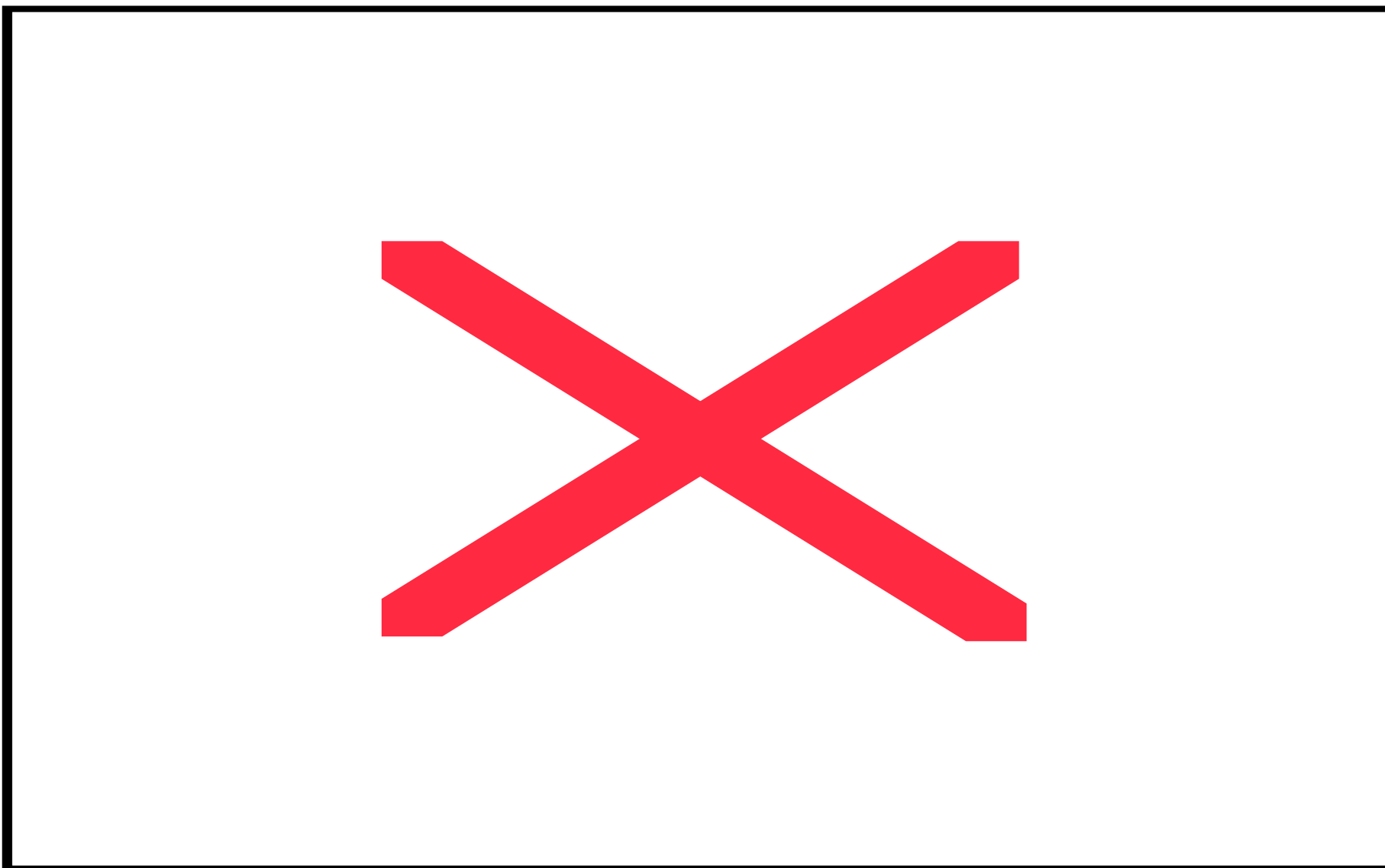


# Average Publication and Withdrawal Dates in Information Technology Differentiated by Area of Standardisation

Categories	Publication	Withdrawal
Information technology (IT) in general	1995.33	1995.16
Character sets and information coding	1996.19	1997.69
Languages used in information technology	1996.01	1998.22
Software including software development, documentation, internet applications and use	1995.12	1996.08
Open systems interconnection (OSI)	1995.75	1998.11
Networking including LAN, MAN, WAN	1995.80	1998.11
Computer graphics	1994.53	1998.20
Microprocessor systems including PCs, calculators, etc.	1992.44	1997.19
IT terminal and other peripheral equipment including modems	1994.75	1996.77
Interface and interconnection equipment	1993.98	1995.26
Data storage devices	1990.49	1994.70
Applications of information technology	1996.88	1998.39
Office machines	1986.26	1993.52

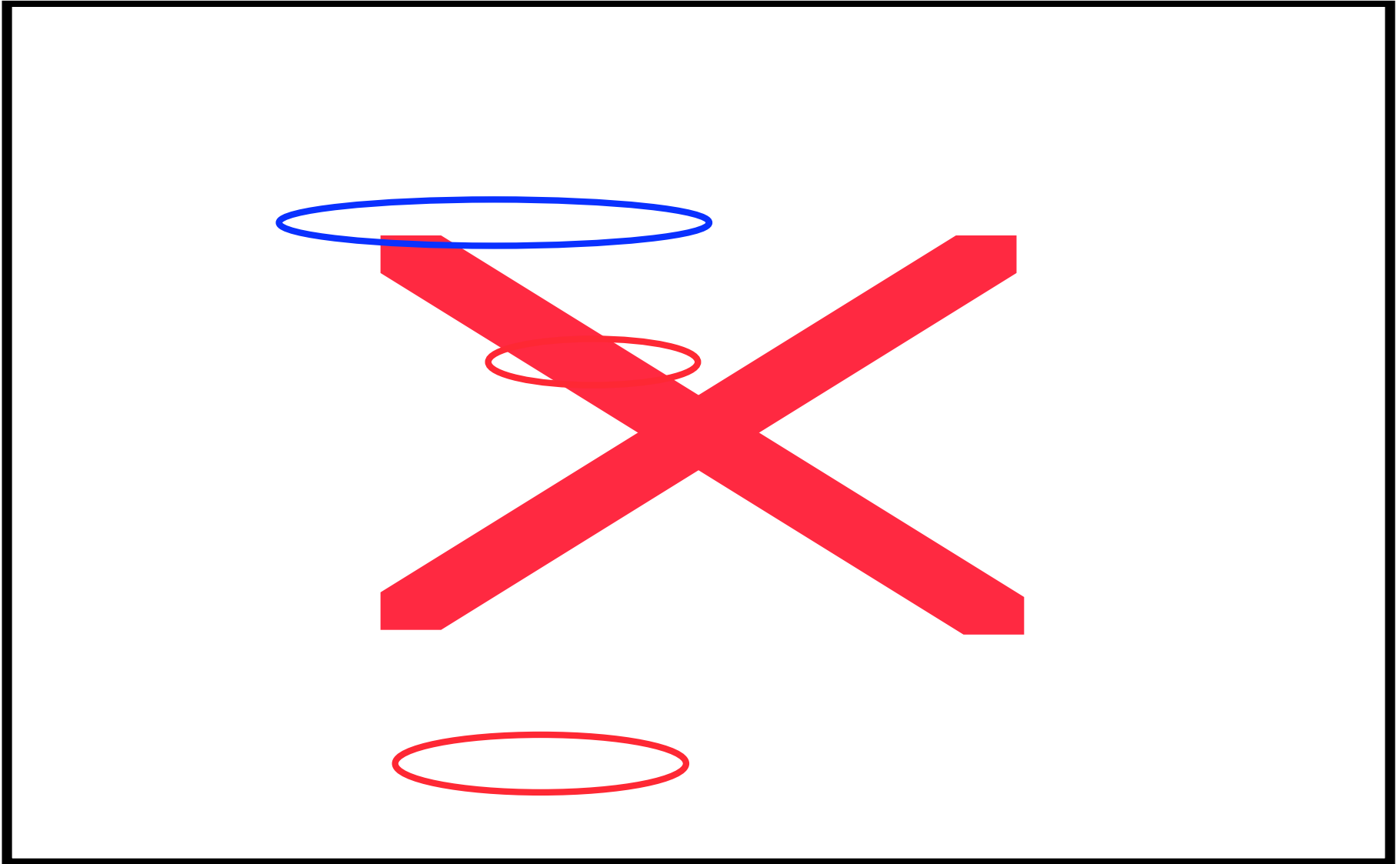


# Survival Times of Telecommunication and Information Technology Standards in Years by Country



Fraunhofer  
Institute  
Systems and  
Information Technology

# Survival Times of International Telecommunication Standards in Years by Are



Fraunhofer  
Institute  
Systems and

# Results of Hypotheses Tests via Cox Regression for International Telecommunication Standards

documents, which amended another and were amended by another document, have a significantly higher survival time than documents without this kind of cross references

if a standard is replaced by another standard, its expected lifetime is lower, like if a standard replaces another standard, its expected lifetime is higher

existence of cross and international references lead to a significant reduction of expected life times, although with an increasing number of international references the expected life time increases

if the speed or amount of technical change increases, the expected lifetime of a standard will be lower



# Conclusions

Further research is required moving to the quality of research based on patent databases

Policy recommendations:

- different technologies require obviously specific adjustment or withdrawal strategies in standardisation.
- standardisation bodies should be more aware of this heterogeneity and adapt their processes accordingly, always taking into account the continuous change in science, technologies and markets.
- differences between countries call for two strategies
  - benchmarking exercises to identify best practices
  - necessity to homogenise the processes across countries in order to avoid frictions causing risks for the development of technologies, but also markets (e.g. more homogeneous implementation or transfer of international and European standards into the body of national standards)
- in general, technology- and market-specific adjustments in the standards maintenance process, i.e. flexible heterogeneous approaches, but also more homogeneous approaches across countries and the various regional layers of standardisation

