

# Exploiting Intellectual Property: Potential of Technical Protection and Recommendations for Government Action

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## Agenda

- Intellectual Property and Software Piracy
- Current Strategies Against Software Piracy
- Research Goals and Methodology
- Research Results
- Implications for Software Publishers
- Recommendations for Government Action
- Outlook: Beyond Software Piracy

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## Problem of Software Piracy

- Piracy rates declining since mid '90s,
  - ➔ e.g., piracy rate in Germany: 42% in '95 → 30% (2003)
- Piracy rates (2003)
  - 23% in US
  - 30% in Germany
  - 36% worldwide
  - 71% in Eastern Europe

Estimated global loss in 2003: US\$ 28 billion

BSA (2004),  
Tranhagan / Griffith (1998)

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## Current Strategies against Software Piracy

### Policy level

- ➔ Legislative regulations
- ➔ Legal actions
- ➔ Educational campaigns

### Organizational level

- ➔ Product characteristics
  - Documentation
  - Support
- ➔ Pricing policy
- ➔ Licensing terms
- ➔ Technical protection

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## Technical Protection

- **Token-based protection**
  - Dongles, Smart-Cards, ...
  - Serial Numbers, CD-Checks, Challenge-Response, ...
- **Token-less protection**
  - Watermarking
  - Encryption, Obfuscation

Cost issues !

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## Research Questions and Methodology

### Questions

- (1) To what degree does stronger technical protection lead to less piracy?
- (2) Which Internet services (i.e., filesharing networks, public websites) are used to obtain pirated software?

### Methodology

- ➔ Online survey among users of sequencer software (794 participants in two groups, 37 countries)
- ➔ Studying five different types of copy protection and six different Internet services
- ➔ Descriptive statistics and binary logistic regression

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## Research Results: Descriptive Statistics

Technical Protection	Piracy Rate (in %)	
	Mail-Group	Board-Group
Serial Number	25	16
CD-Checks	24	30
Challenge-Response	50	23
Dongle	22	20
Expansion Card	7	9

⇒ High piracy rates in spite of technical protection

## Research Results: Binary Logistic Regression

Variable	Mail-Group				Board-Group			
	$\beta$	Std. Err	Sig.	Exp ( $\beta$ )	$\beta$	Std. Err	Sig.	Exp ( $\beta$ )
CP	0,846	0,322	0,009	2,329	0,382	0,210	0,069	1,465
INC	0,475	0,124	0,000	1,608	0,447	0,076	0,000	1,564
WORK	0,294	0,120	0,015	1,341	0,299	0,084	0,000	1,348
UINT	0,032	0,012	0,006	1,033	0,046	0,010	0,000	1,047
GIU	-0,048	0,084	0,563	0,953	0,044	0,058	0,452	1,045
WWV	0,476	0,184	0,010	1,610	0,576	0,165	0,000	1,780
NG	-0,060	0,174	0,730	0,942	0,057	0,096	0,551	1,059
EM	-0,321	1,100	0,771	0,726	0,513	0,218	0,019	1,670
CHAT	-0,143	0,175	0,415	0,867	-0,206	0,100	0,039	0,814
P2P	-0,097	0,170	0,568	0,908	-0,889	0,103	0,000	0,411
FTP	0,270	0,174	0,120	1,311	0,070	0,113	0,535	1,073

## Research Results: Major Findings

- (1) No technical protection fully avoiding piracy
- (2) Weaker technical protection not necessarily leading to more piracy
- (3) Stronger technical protection not always reducing piracy
- (4) Probability of piracy depending on personal income, software usage intensity, and operational area of software application
- (5) P2P and chat networks fostering piracy

## Implications for Software Publishers

- Anti-piracy policy beyond technical protection useful  
⇒ e.g., support only for registered users
- Price differentiation based on product features and regional markets to accommodate importance of personal income needed
- Integrating applications increasing intensity of software usage advisable
- Alternative types of technical copy protection considering software aging or software diversity recommendable

## Suggested Government Actions

### Recommended Measures

- Intensified government cooperation with trade associations such Business Software Alliance (BSA), 'Gesellschaft zur Verfolgung von Urheberrechten' ('GVU')
- Tightening of copyright ('Urheberrechtsgesetz')
- Appeal to conscience through educational campaigns (e.g., similar to campaign mid 1980s in US)

### Issues

- ⇒ Costs of enforcement
- ⇒ Barriers to innovation
- ⇒ Non-global solution insufficient
- ⇒ Requirement to allow for private back-up copies (protection of consumer interests)

## Outlook: Beyond Software Piracy

Piracy from software

- ↳ to music
- ↳ to video (movies)
- ↳ to eBooks and eNewspapers

?

Technical protection likely to have similar problems

Government actions required  
AHEAD of time  
to guarantee innovation and economic growth !

.... Questions, Comments, Complaints ?

*Beyond this Talk:*  
**Association of Information Systems**

➔ [www.aisnet.org](http://www.aisnet.org)  
➔ [www.isworld.org](http://www.isworld.org)

**Thank you very much for your attention!**

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