# Open Source und Business in Europa - Status und Zukunftsperspektiven

Dipl.-Infom. Robert A. Gehring

TU Berlin und iRights.info

1946
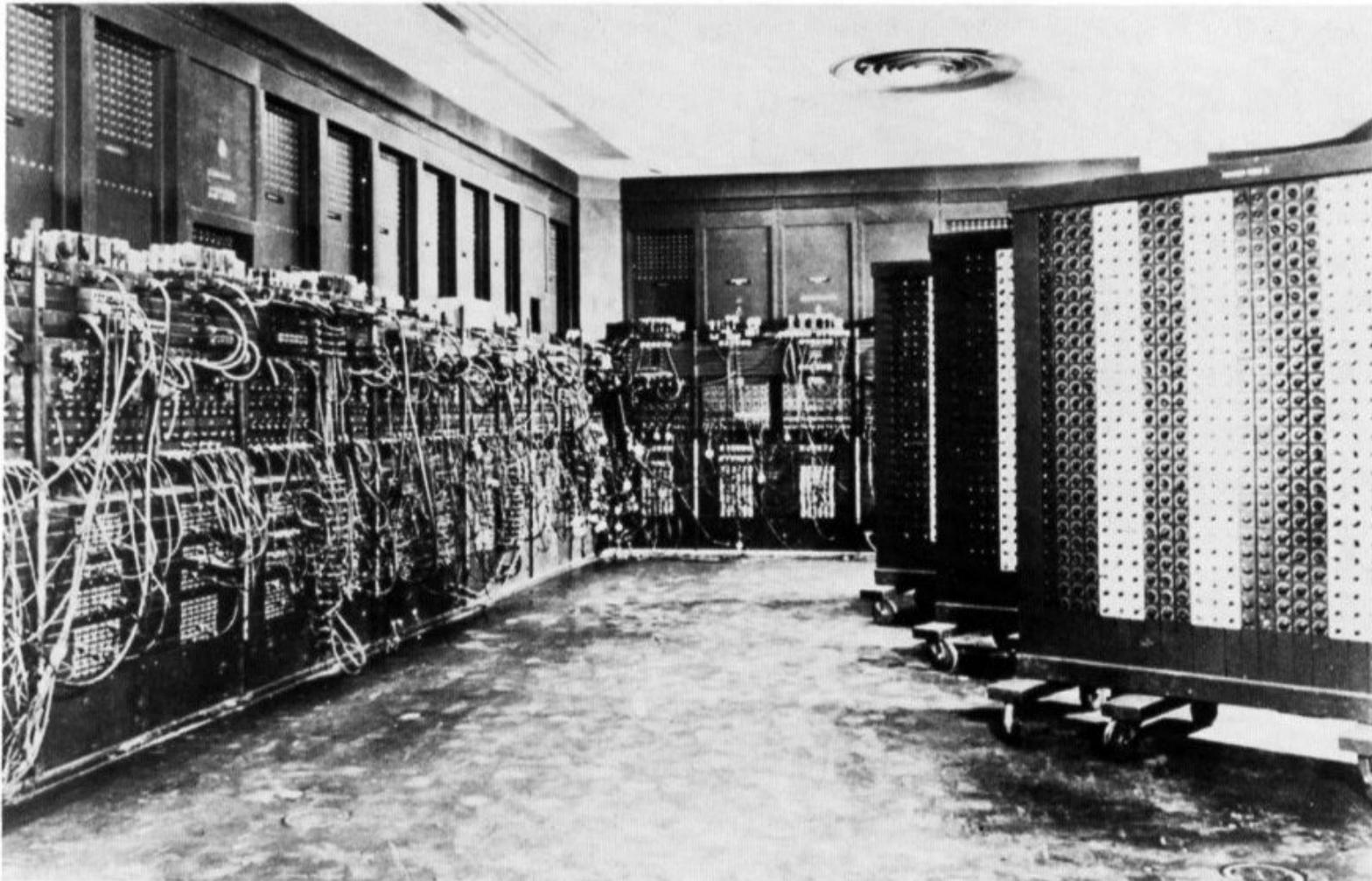
Bild 43
ENIAC, der erste elektronische Rechner der Welt, im Sommer 1946 in Betrieb genommen

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1949

Computer Laboratory, Cambridge University, UK

«The Cambridge group decided that the best way of reducing errors in programs would be to develop a "subroutine library"...The idea of a subroutine library was to write these operations as kind of miniprograms that programmers could then copy into their own programs...The idea of reusing existing code was and remains the single most important way of improving programmer productivity and program reliability.»

Campbell-Kelly & Aspray (1996), Computer, S. 185 f.

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1951

Computer Laboratory, Cambridge University, UK

«In 1951 the Cambridge group put all their programming ideas into a textbook...[which] was the only programming textbook then available... The Cambridge Model thus set the programming style for the early 1950s, and even today the organization of subroutines in virtually all computers still follows the Cambridge model.»

Campbell-Kelly & Aspray (1996), Computer, S. 186

1950er

- Schwerpunkt der IT-Forschung verlagert sich in die „Umgebung" des MIT

- Ende der 1950er: Erste „Hacker-Community" am MIT-AI-Lab

Route 128 and Environs

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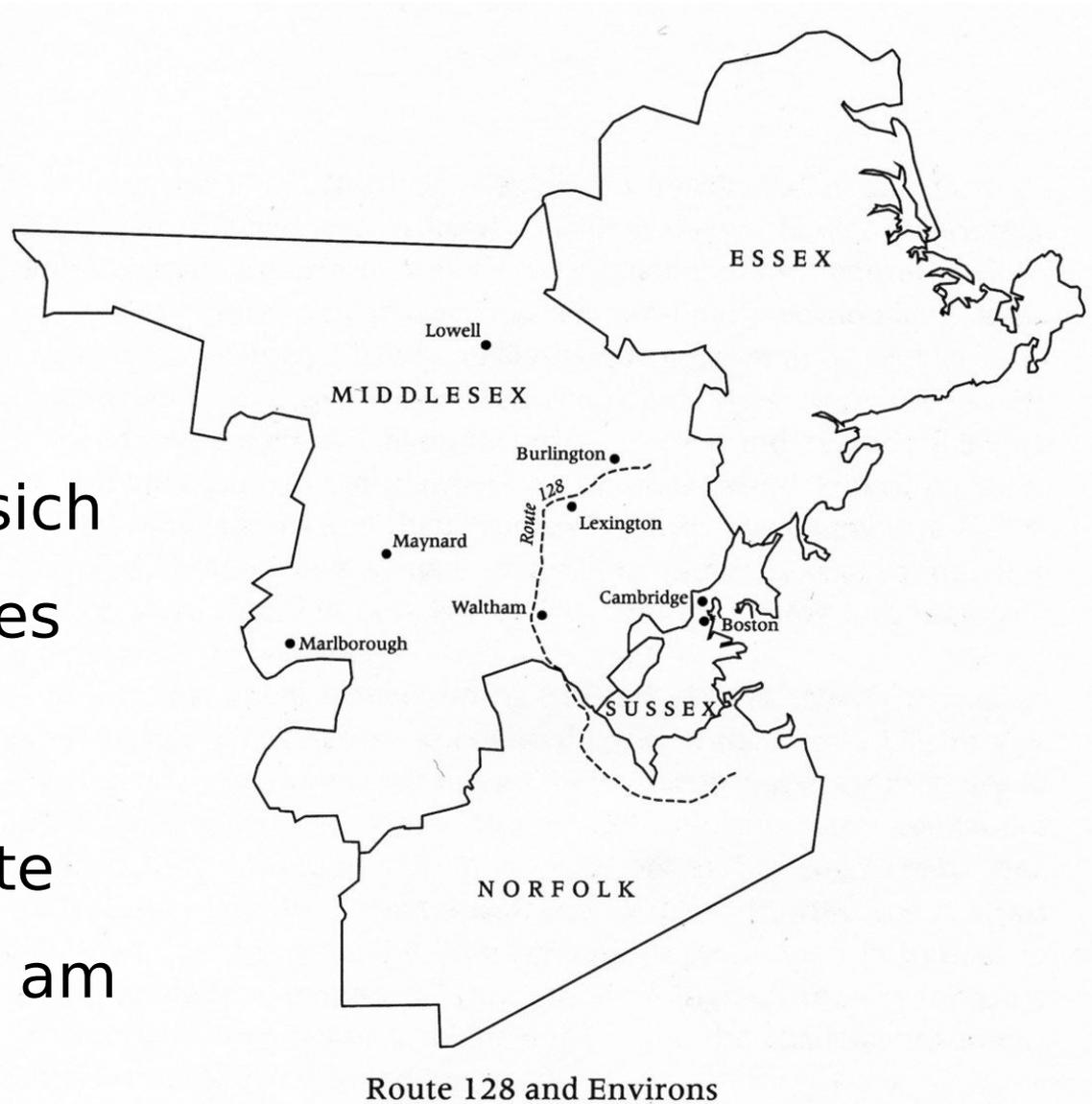
1959
Lincoln Lab „TX-0", MIT

«[Y]ou could even modify a program *while sitting at the computer*. A miracle!»

Levy (1984/1994), Hackers, S. 29

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Anfang der 1960er
MIT

«Something new was coalescing around the TX-0:
a new way of life, with a philosophy, an ethic, and a
dream.»

Levy (1984/1994), Hackers, S. 40

Die „Hacker-Ethic"

● «Access to computers...should be unlimited and total.»

● «All information should be free.»

● «Mistrust Authoriy – Promote Decentralization.»

Levy (1984/1994), Hackers, S. 40 f.

Die Ursprünge des „personal computing"!

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Silicon Valley and Environs
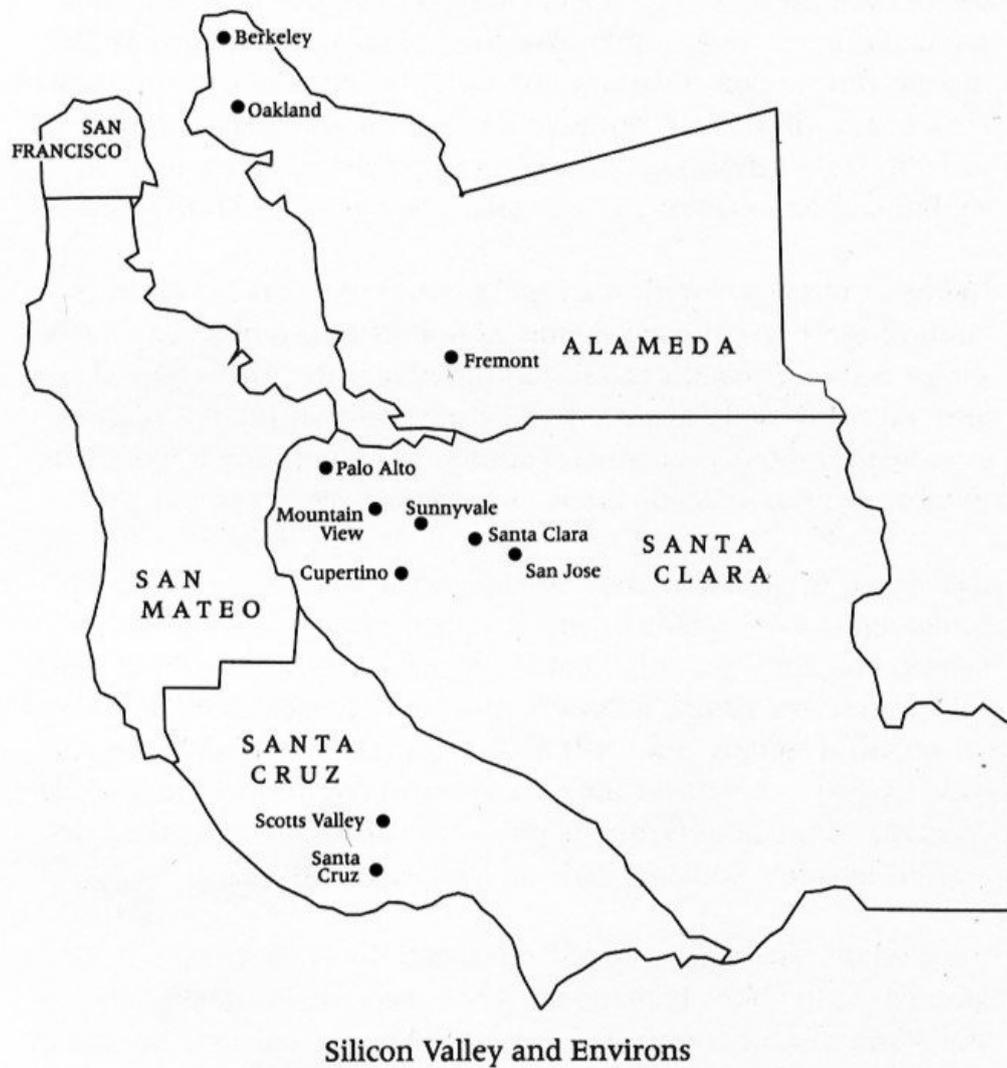
Quelle: Saxenian (1994), Regional Advantage, S. XII

1960er

- Schwerpunkt der IT-Forschung verlagert sich in das „Silicon Valley"

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„Regional Advantage"
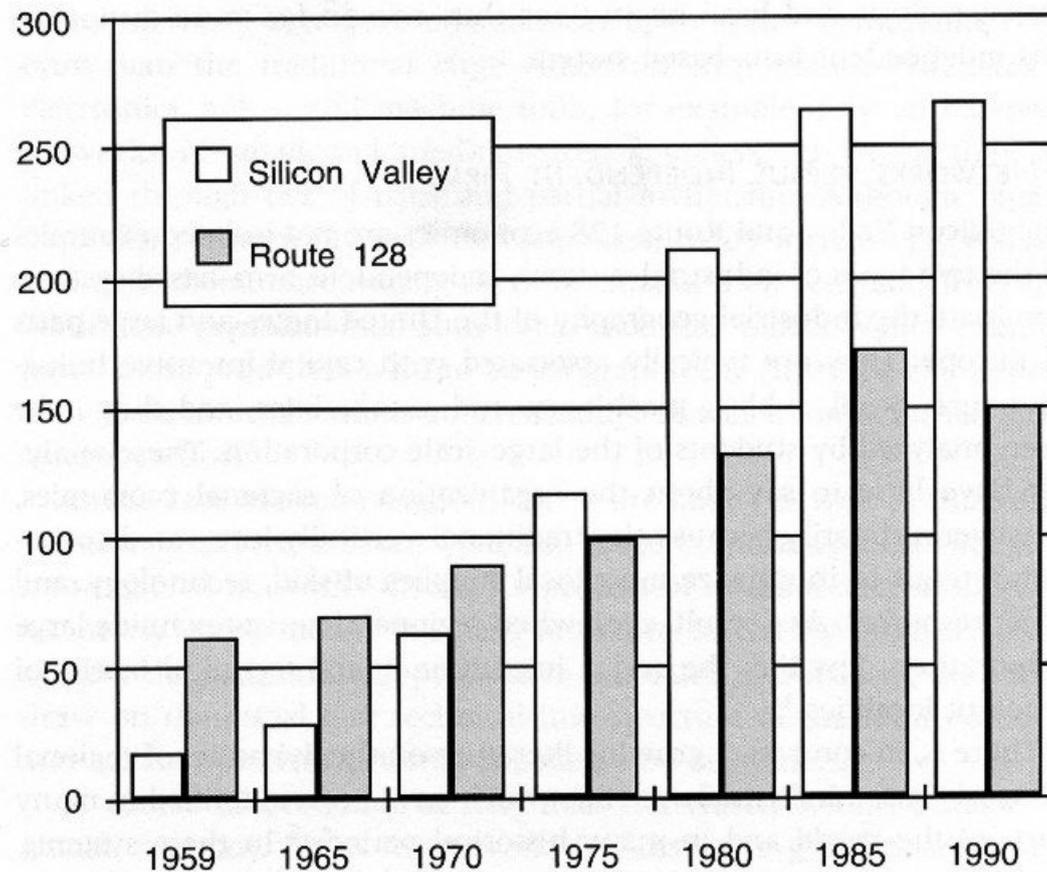
Figure 1. Total high technology employment, Silicon Valley and Route 128, 1959–1990. Data from *County Business Patterns*.

Quelle: Saxenian (1994), Regional Advantage, S. 3

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1974

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1975

Kalifornien

«AMATEUR COMPUTER USERS GROUP HOMEBREW COMPUTER CLUB . . . you name it

Are you building your own computer? Terminal? TV Typewriter?
I/O-Device? or some other digital black magic box?
Or are you buying time on a time-sharing service?
If so, you might like to come to a gathering of people with likeminded interests. Exchange information, swap ideas, help work on a project, whatever...»

<div align="right">Ley (1984/1994), Hackers, S. 200</div>

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Computers – the World's Greatest Toy!

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1976: Apple I

«[O]ur philosophy is to provide software for our machines free or at minimal cost.»

Levy (1984/1994),
Hackers, S. 253
(aus einer Apple-Anzeige)

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1980er

Figure 2 **COMPOSITION OF US COMPUTER SHIPMENT VALUE, 1977 TO 1987**
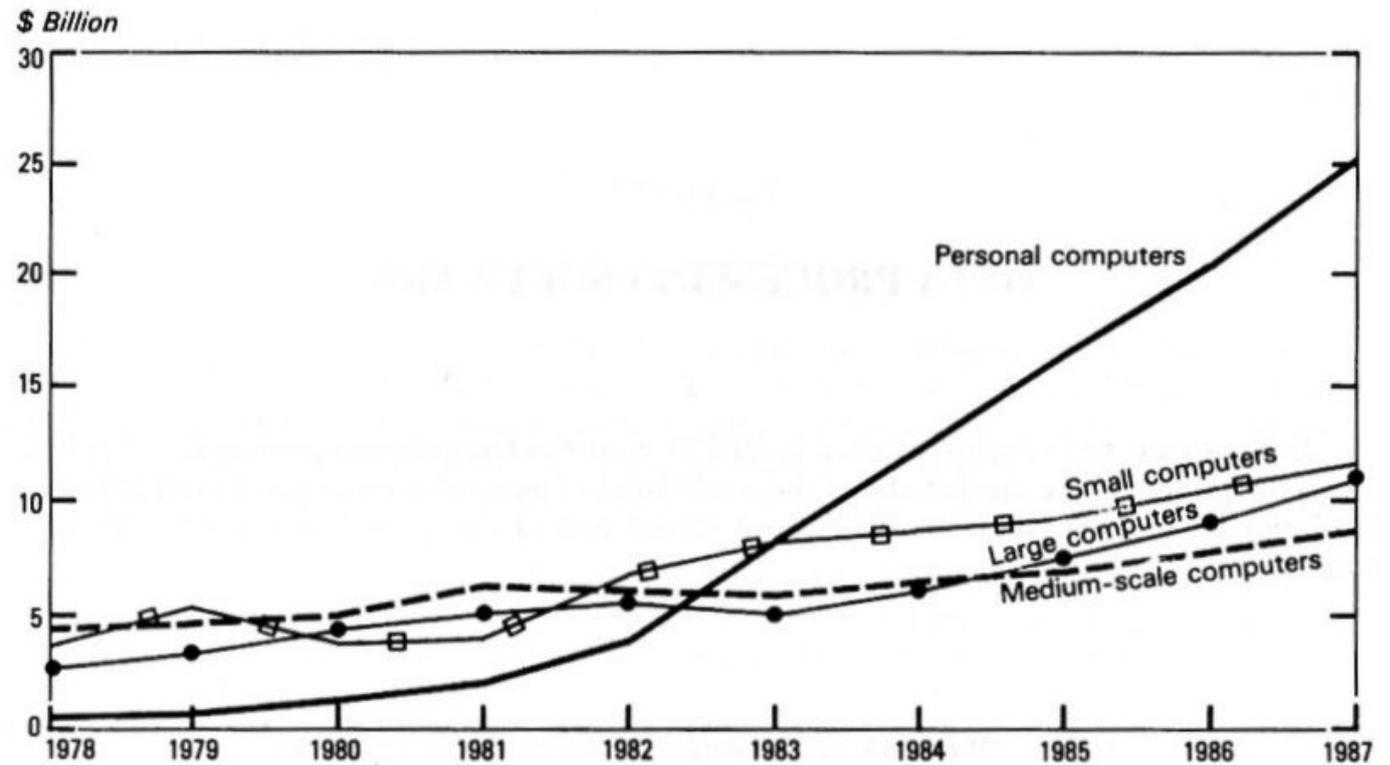
Note : *Small computers:* computers in the $ 10 000 to $ 100 000
price range in 1984;
Medium-scale computers: computers in the $ 100 000 to $ 1 million price range;
Large computers: computers priced over $ 1 million, including supercomputers.

Source : IDC, 1984

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1980er

Figure 12 THE COMPUTER SERVICES INDUSTRY IN THE UNITED STATES

UNITED STATES
$ billion

29.0
21.4
13.7
12.9
11.1
5.8
6.0
3.6

Software products
Data processing services (batch and remote)
Professional services (consulting, engineering and custom software)
Integrated or turnkey systems

1982 1987

Source: INPUT/ADAPSO 1983.
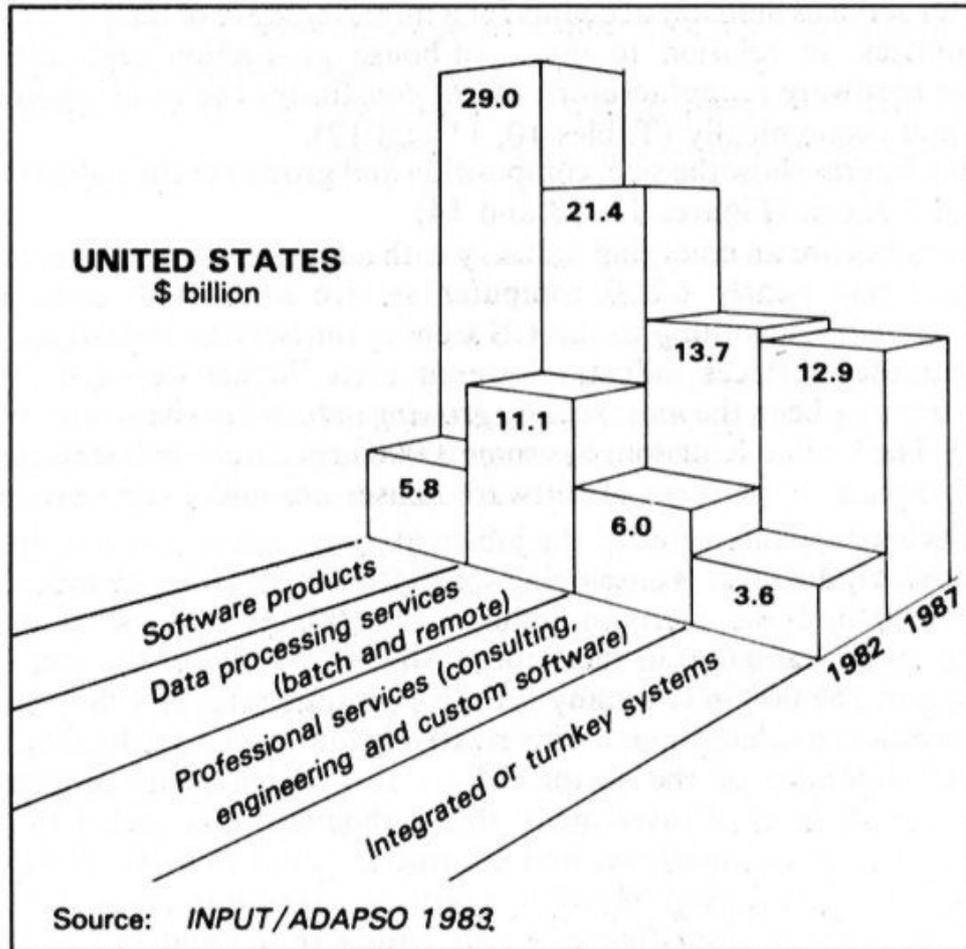
Quelle: OECD(1985), Software: An Emerging Industry, S. 64

Figure 13 THE COMPUTER SERVICES INDUSTRY IN EUROPE

EUROPE
$ billion

7.2
2.6
0.9
4.7
3.8
2.6
1.8
1.1

Software products
Data processing services (batch and remote)
Professional services (consulting, engineering and custom software)
Integrated or turnkey systems

1980 1985

Source: Quantum Science / ECSA, 1982.

Quelle: OECD(1985), Software: An Emerging Industry, S. 65

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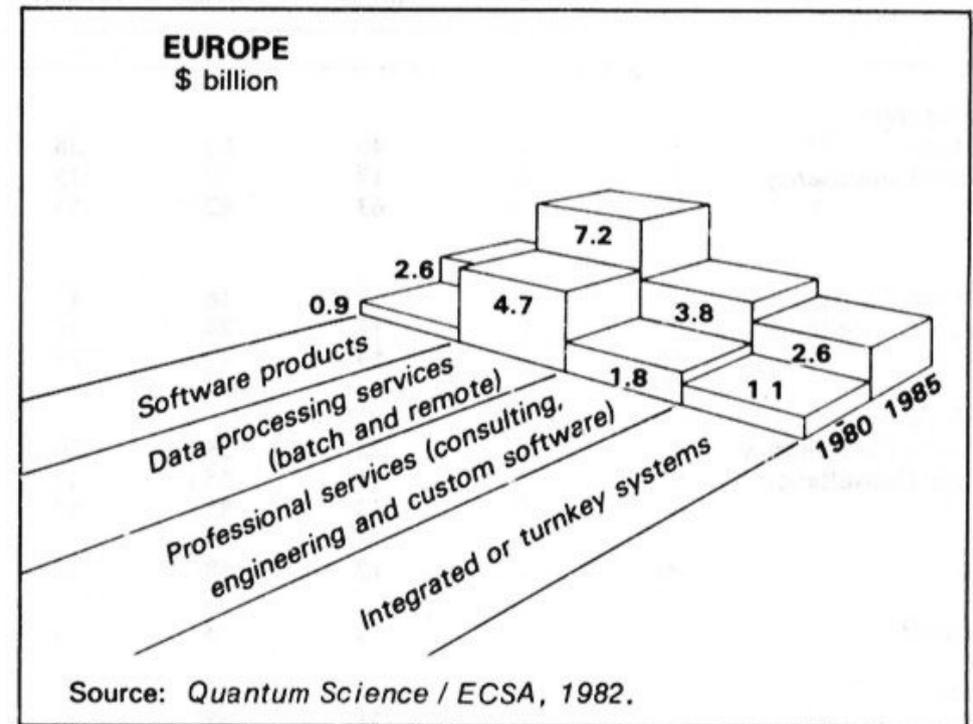
Ende 1983

MIT

«Richard Stallman did leave MIT, but he left with a plan: to write a version of the popular proprietary operating system called UNIX and give it away to anyone who wanted it.»

Levy (1984/1994), Hackers, S. 427

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1990er

Table 6.3

The *Datamation* top 15 in software, 1992. Firms in italic type are independent software vendors; those in roman are computer manufacturers.

Rank		Software revenues	Software revenues as percentage of total revenues	Total revenues
1	IBM	$11,365,900,000	17.6	$64,520,000,000
2	Fujitsu	$3,524,900,000	17.5	$20,142,200,000
3	*Microsoft*	$2,960,200,000		
4	NEC	$1,840,300,000	12.0	$15,359,000,000
5	*Computer Associates*	$1,770,800,000		
6	Siemens Nixdorf	$1,058,400,000	12.7	$8,345,100,000
7	*Novell*	$968,600,000		
8	Hitachi	$982,500,000	8.7	$11,352,000,000
9	*Lotus Development*	$810,100,000		
10	DEC	$800,000,000	5.6	$14,162,000,000
11	*Oracle*	$782,000,000		
12	Unisys	$712,000,000	9.1	$7,832,000,000
13	Olivetti	$707,800,000	12.3	$5,762,000,000
14	ICL	$692,400,000	16.3	$4,254,800,000
15	*Finsiel*	$633,000,000		

Quelle: Campbell-Kelly (2003), From Airline Reservations to Sonic the Hedgehog, S. 174

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Figure 6-12
U.S. trade balance of royalties and fees: 1987–2001
Billions of U.S. dollars
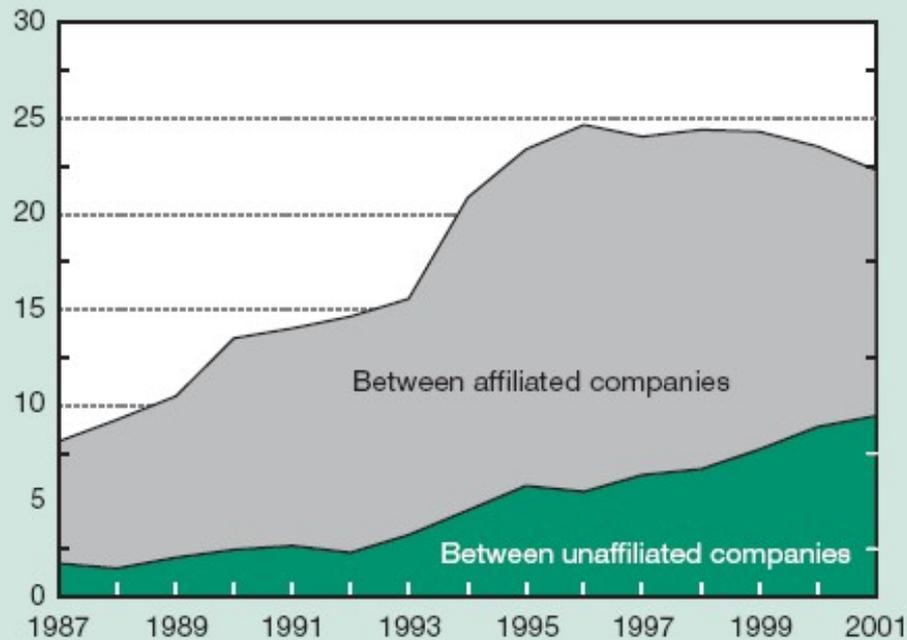
Between affiliated companies

Between unaffiliated companies

SOURCE: U.S. Bureau of Economic Analysis, *Survey of Current Business*, 2002. See appendix table 6-3.

Science & Engineering Indicators – 2004

Figure 6-13
U.S. royalties and fees generated from exchange of industrial processes between unaffiliated companies in selected countries: 2001
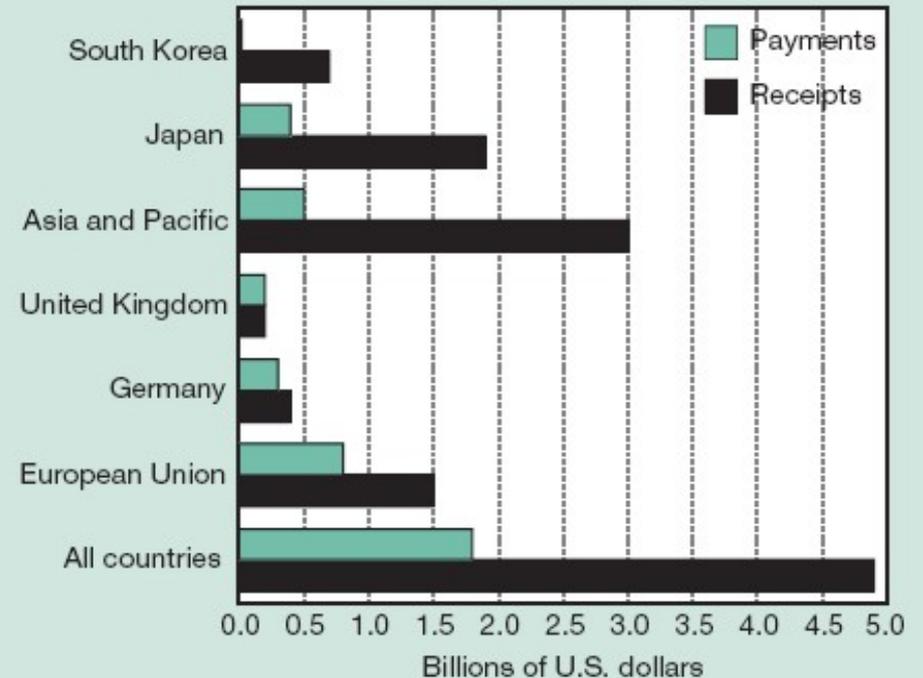
Payments
Receipts

South Korea
Japan
Asia and Pacific
United Kingdom
Germany
European Union
All countries

Billions of U.S. dollars

SOURCE: U.S. Bureau of Economic Analysis, *Survey of Current Business*, 2002. See appendix table 6-4.

Science & Engineering Indicators – 2004

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US-Handelsbilanz für Lizenzen

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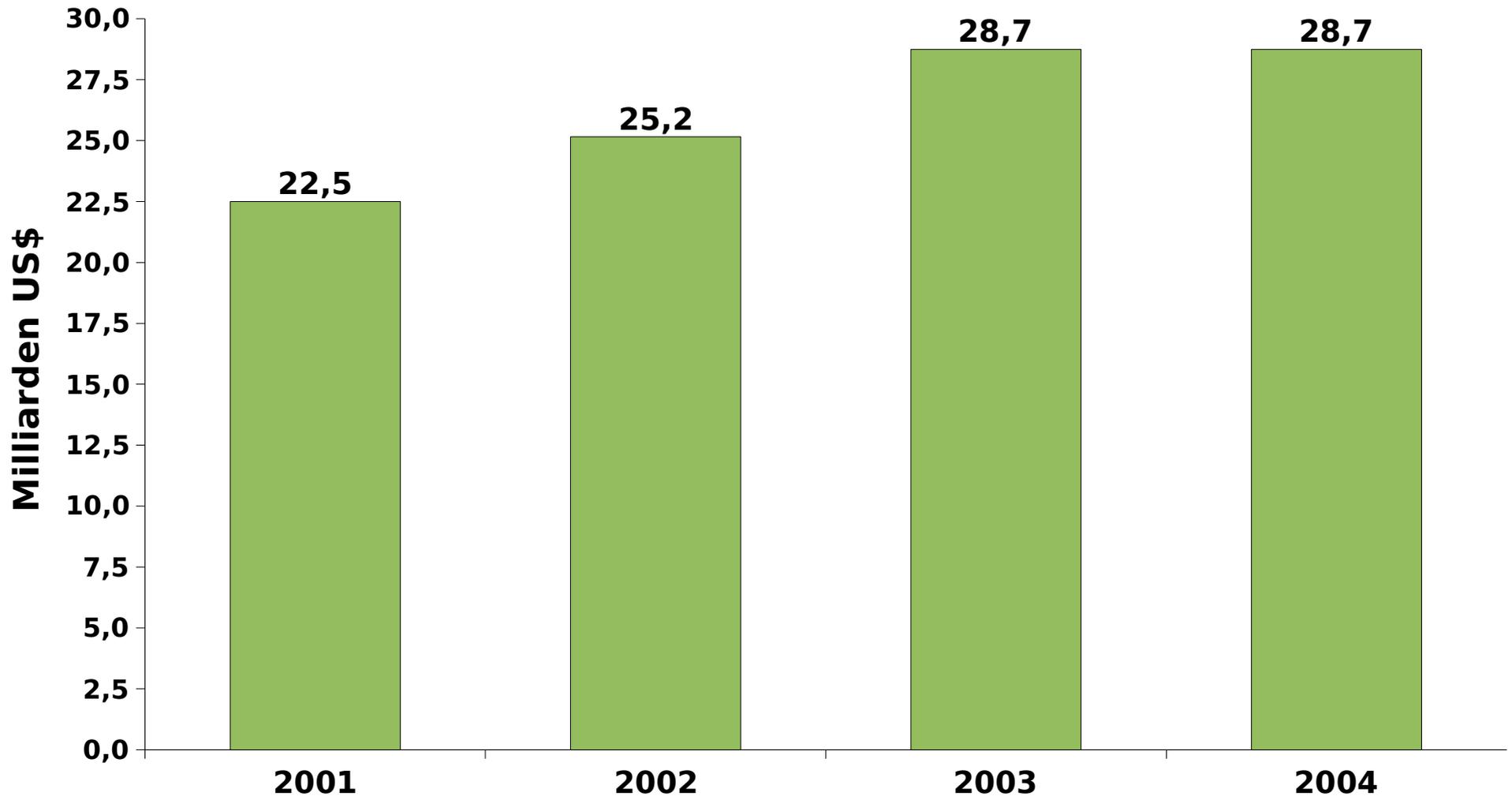
US-Ausgaben für Lizenzen

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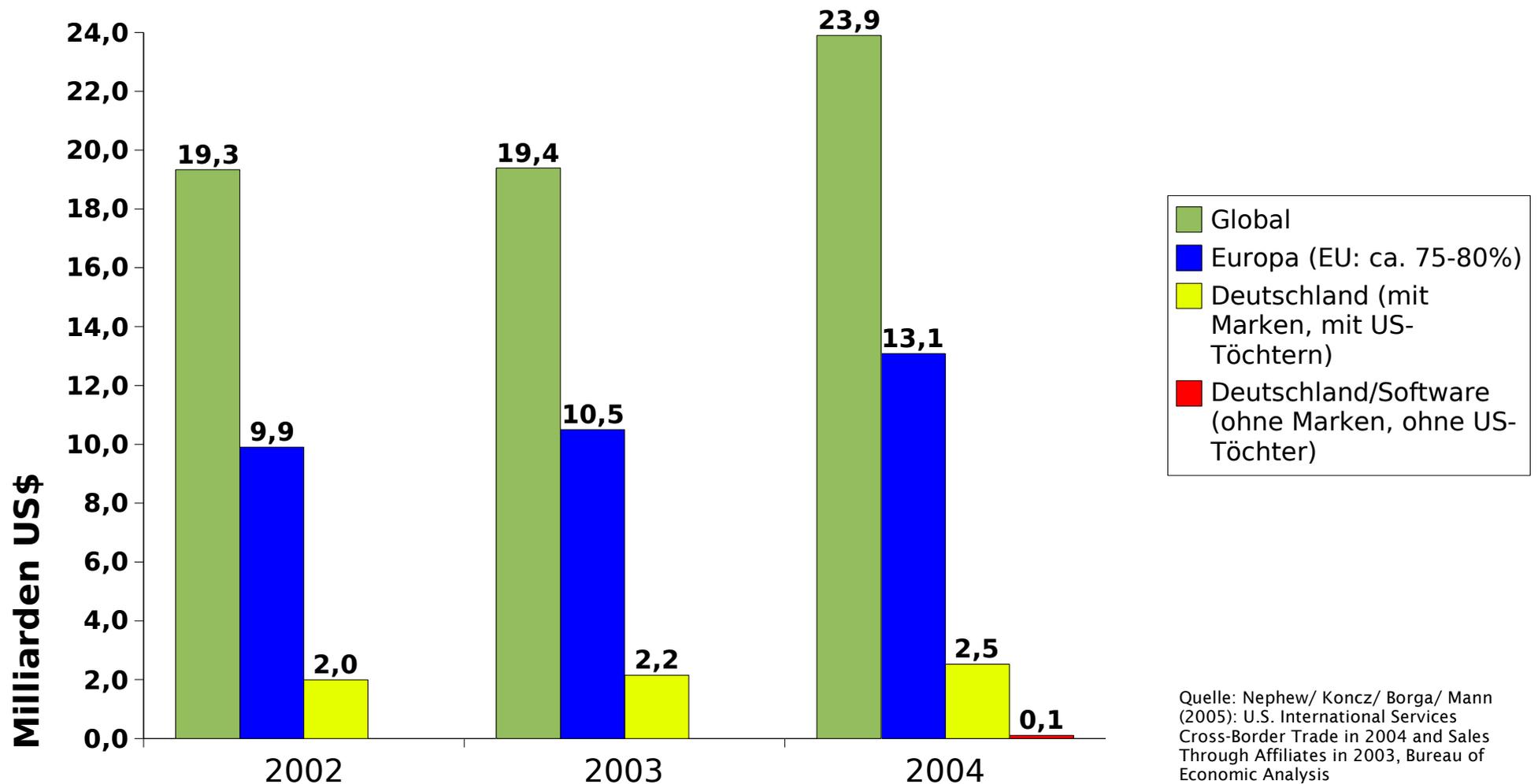
US-Einnahmen aus Lizenzen

Milliarden US$

Legend:
- Global (grün)
- Europa (EU: ca. 75-80%) (blau)
- Deutschland (mit Marken, mit US-Töchtern) (gelb)
- Deutschland/Software (ohne Marken, ohne US-Töchter) (rot)

2002: 44,5 | 21,3 | 3,1 | 0,5
2003: 48,1 | 23,2 | 3,3 | 0,5
2004: 52,6 | 25,2 | 3,5 | 0,6
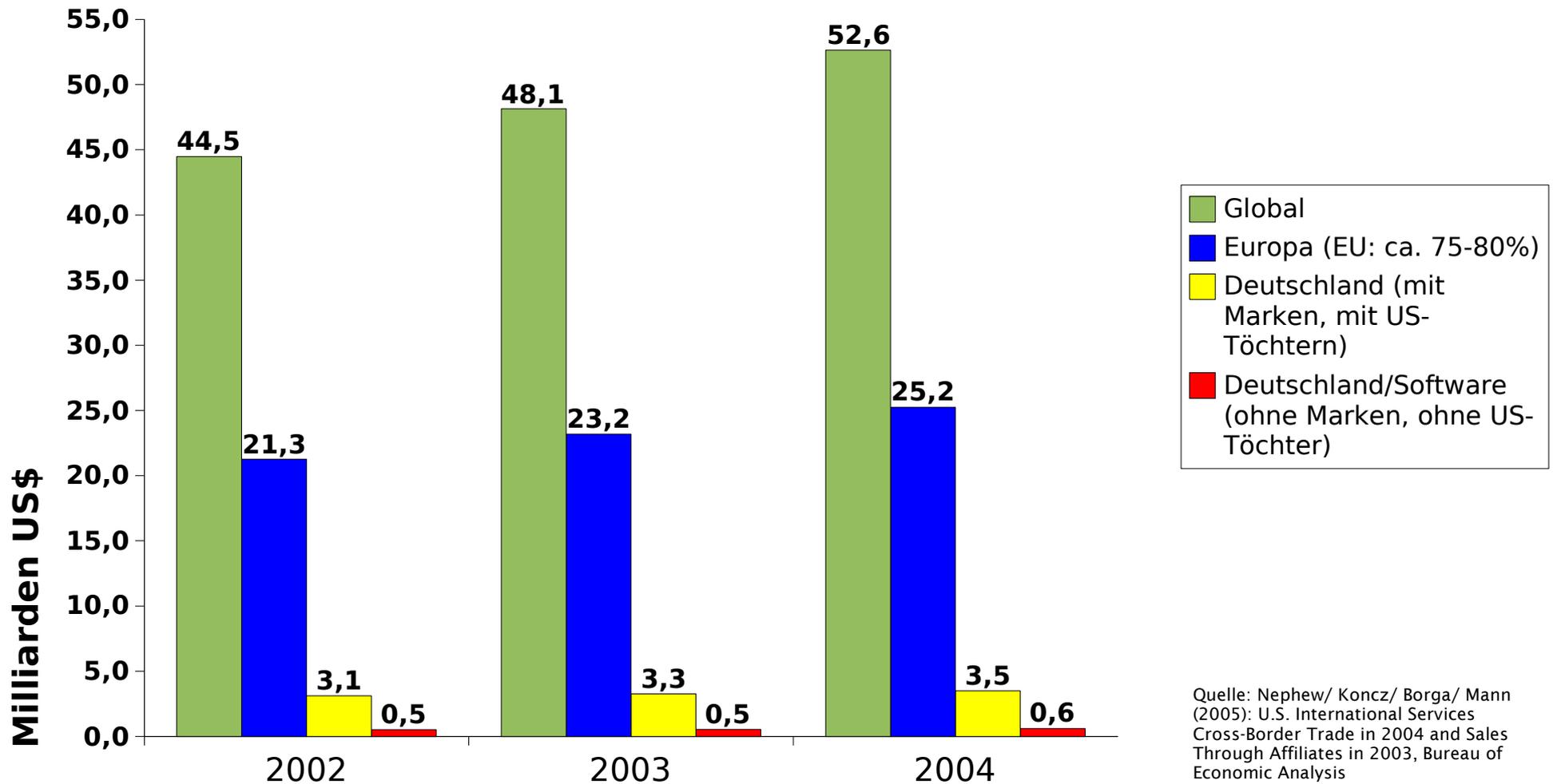
Quelle: Nephew/ Koncz/ Borga/ Mann (2005): U.S. International Services Cross-Border Trade in 2004 and Sales Through Affiliates in 2003, Bureau of Economic Analysis

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1991

From: torva...@klaava.Helsinki.FI (Linus Benedict Torvalds)
Newsgroups: comp.os.minix
Subject: What would you like to see most in minix?
Summary: small poll for my new operating system
Keywords: 386, preferences
Message-ID: <1991Aug25.205708.9541@klaava.Helsinki.FI>
Date: 25 Aug 91 20:57:08 GMT
Organization: University of Helsinki
Lines: 20

Hello everybody out there using minix -

I'm doing a (free) operating system (just a hobby, won't be big and
professional like gnu) for 386(486) AT clones. This has been brewing
since april, and is starting to get ready. I'd like any feedback on
things people like/dislike in minix, as my OS resembles it somewhat
(same physical layout of the file-system (due to practical reasons)
among other things). ...

Anfang der 1990er

- 1990: WWW-Technologie
- 1991: Berners-Lee kündigt WWW an
- 1993: Netscape gegründet
- 1993: Wired gegründet
- 1994: Apache-Gruppe bildet sich
- ...

1994

Linux Journal

Linux Code Freeze

by Linus Torvalds

This is a general announcement of the imminent code-freeze that will hopefully makes Linux 1.0 a reality. The plan has been discussed a bit with various developers already, and it's already late but still in effect otherwise.

In short, the next version of Linux (0.99.15) will be a "full-featured" release, and only obvious bug-fixes to existing features will be applied before calling it 1.0. If this means that your favorite feature or networking ver-

Linux vs. Windows NT and OS/2

We continue to see media blurbs and ads for both Microsoft's Windows NT and IBM's OS/2. Both promise to be the operating system that we need and to take advantage of the capabilities of the Intel 386 and beyond. In the mean time, development and use of Linux, another system that takes advantage of these capabilities, lumbers along. In this article, Bernie Thompson explores these as three alternatives to just staying with what you have.

by Bernie Thompson

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1994

Distribution of Registered Linux Users

39.20% North America

.48% South America

1.50% Asia

3.54% Austral-Asia

.47% Africa

4.85% Other

49.96% Europe
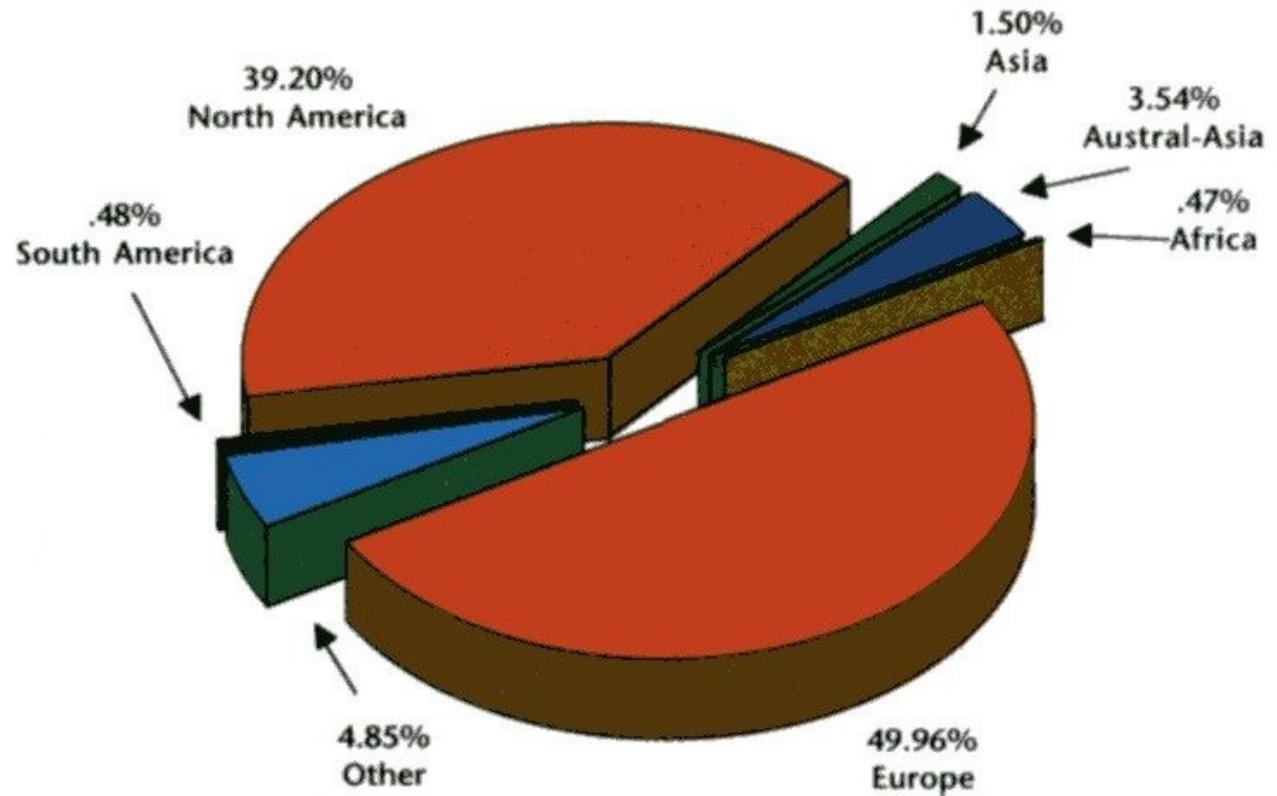
Linux use continues to grow by leaps and bounds. See the sections "Linux around the world" (pg 22) and "Linux Counter" (pg26)

2001

Open-Source-Entwickler je Mio. Einwohner
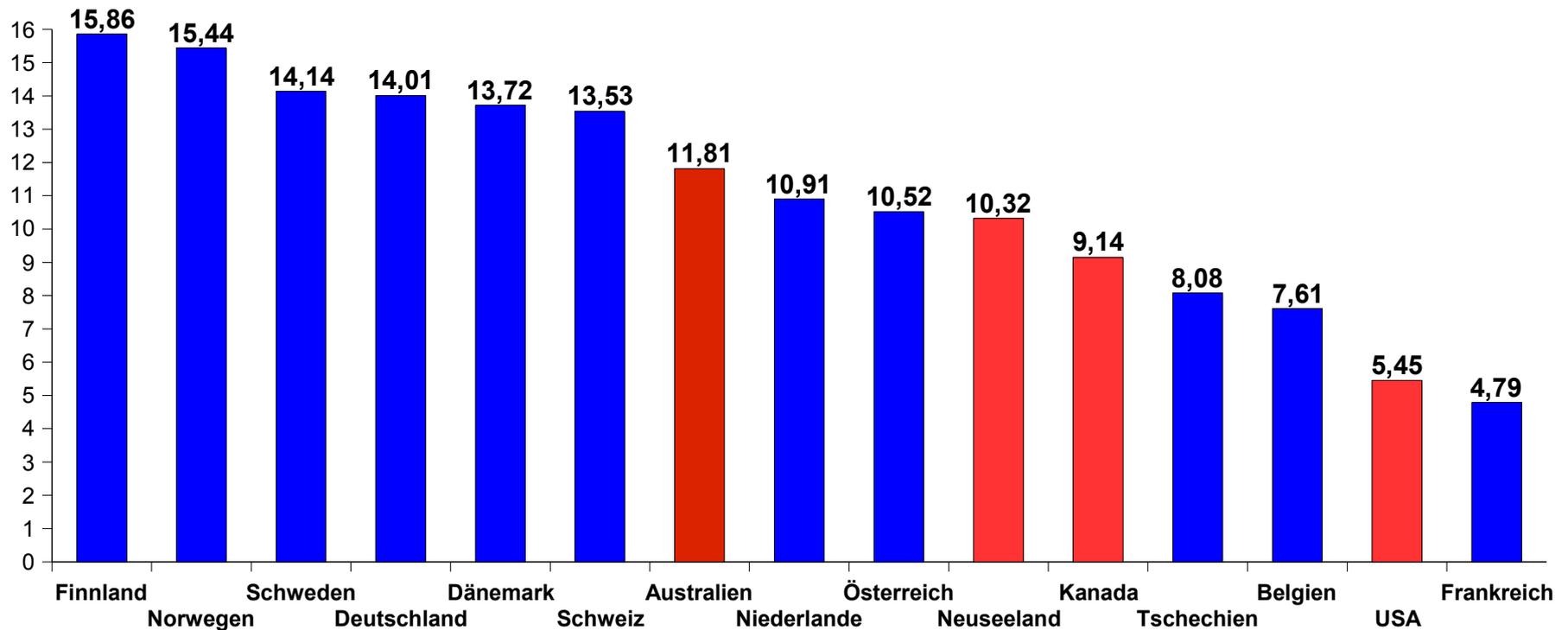
Quelle: Robles et al. (2001), WIDI, Studie an der TU Berlin

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2006

«US-based companies continue to dominate the software and services industry. Of the roughly $285 billion in total revenues of the global industry in 2004, only about $50 billion was generated by non-US companies.

...

It is possible that the relative strength of US firms might eventually be eroded by widespread adoption of open source software.**»**

ACM (2006), Globalization and Offshoring of Software, S. 104 f.

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Industriestruktur in Europa (EU-15)

Anteil in Prozent

- Micro (1-9): 89
- Small (10-49): 9,26363636363636
- Medium (50-249): 1,50909090909091
- Large (250+): 0,281818181818182

Quelle: OECD

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Industriestruktur in Europa (EU-15)

Anteil in Prozent

Legend:
- Umsatz (yellow)
- Wertschöpfung (blue)

	Umsatz	Wertschöpfung
Micro (1-9)	20,5	20,8
Small (10-49)	20,2	19,9
Medium (50-249)	19,8	19,0
Large (250+)	39,5	40,3

Quelle: OECD

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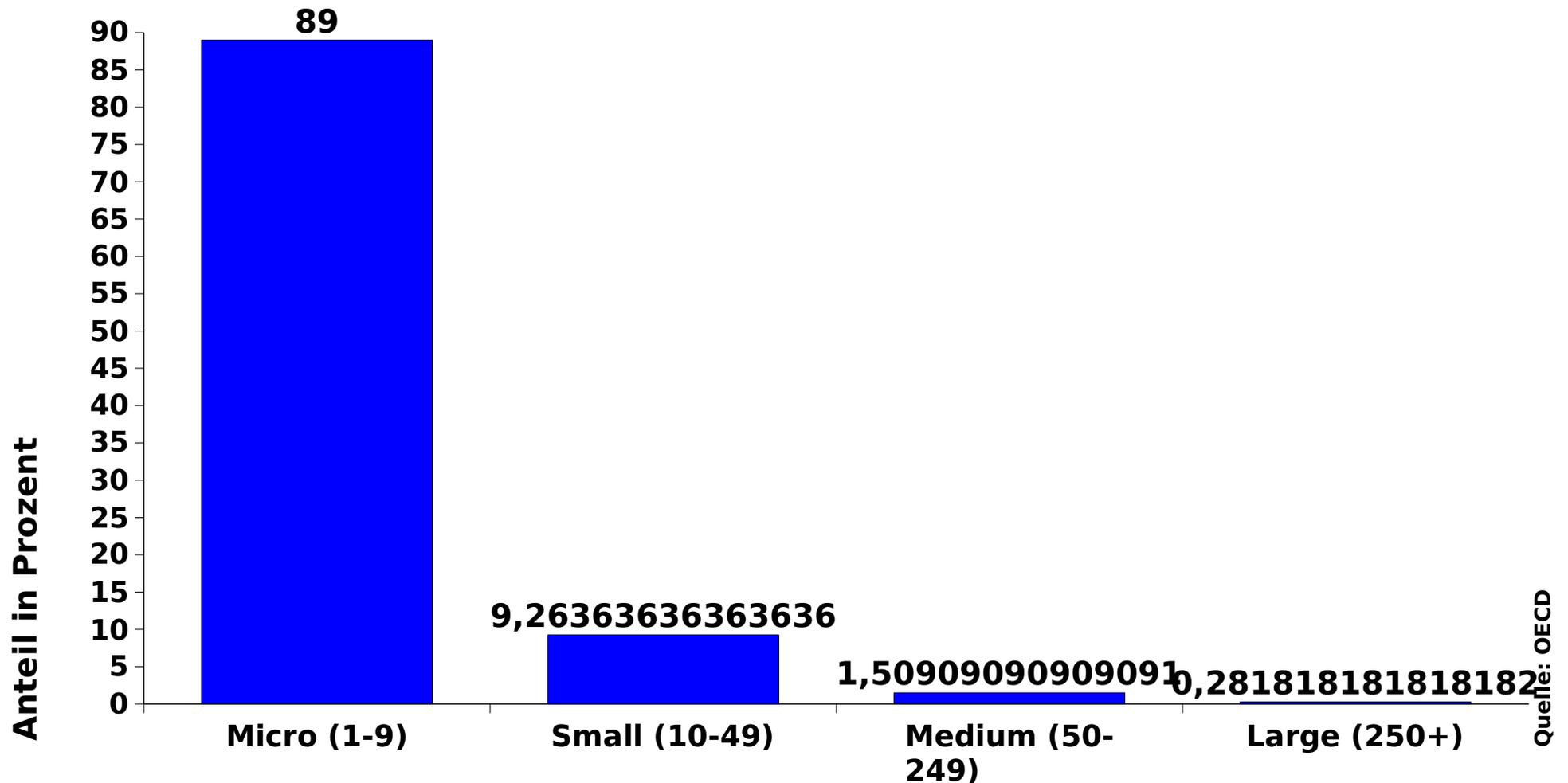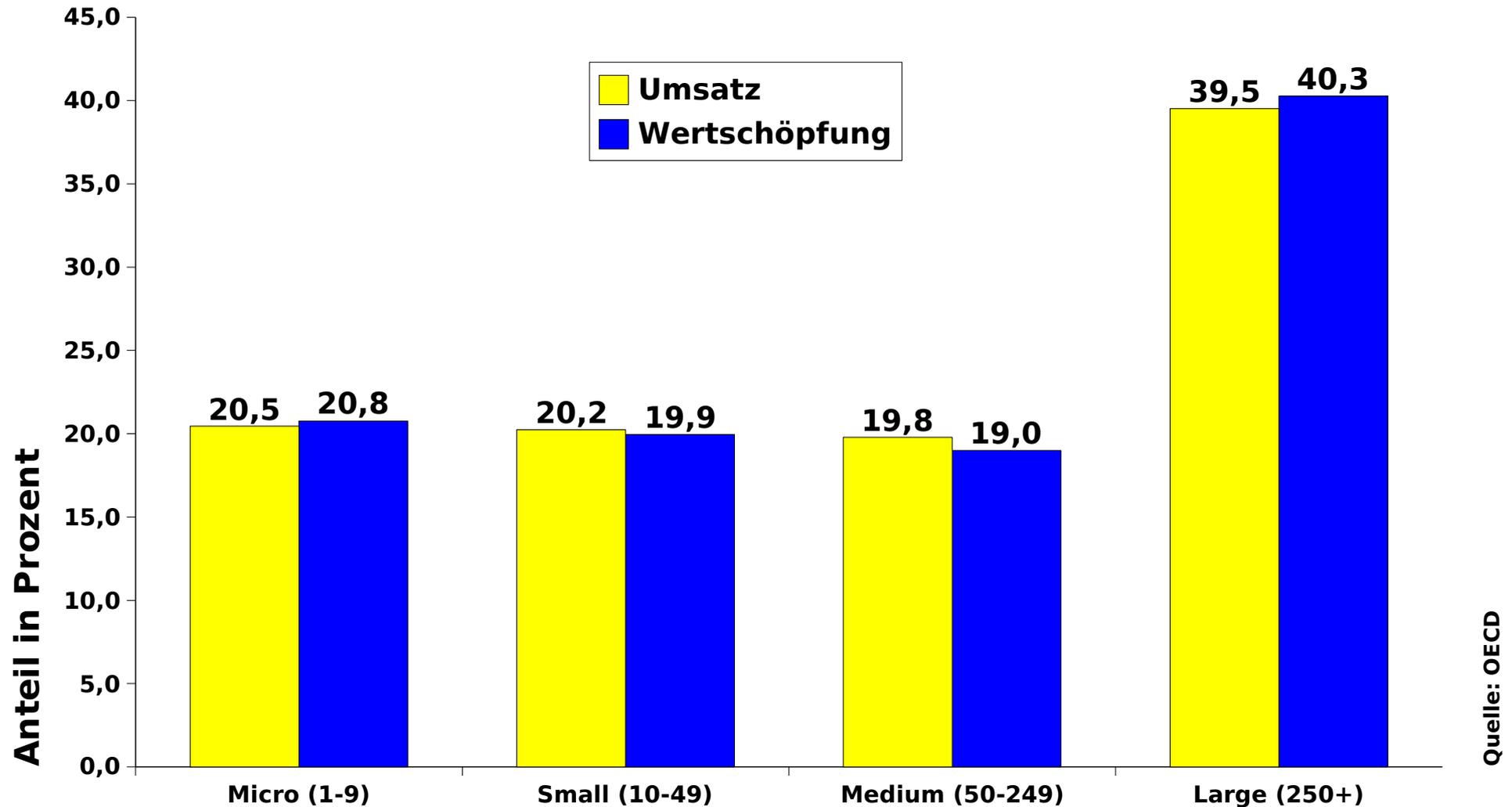
OSS-Einsatz in Europa 2004-2005

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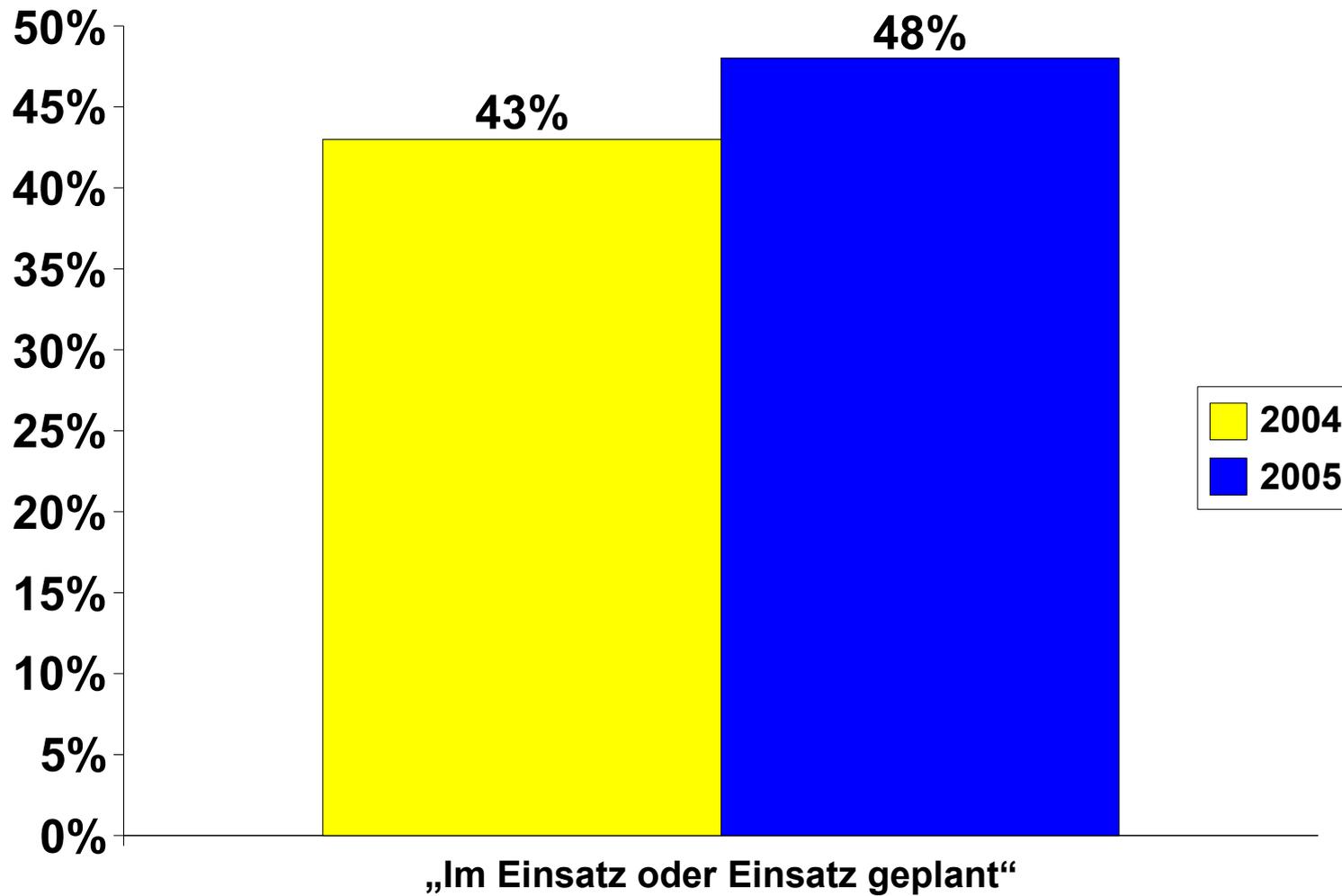
OSS-Akzeptanz in Europa 2005

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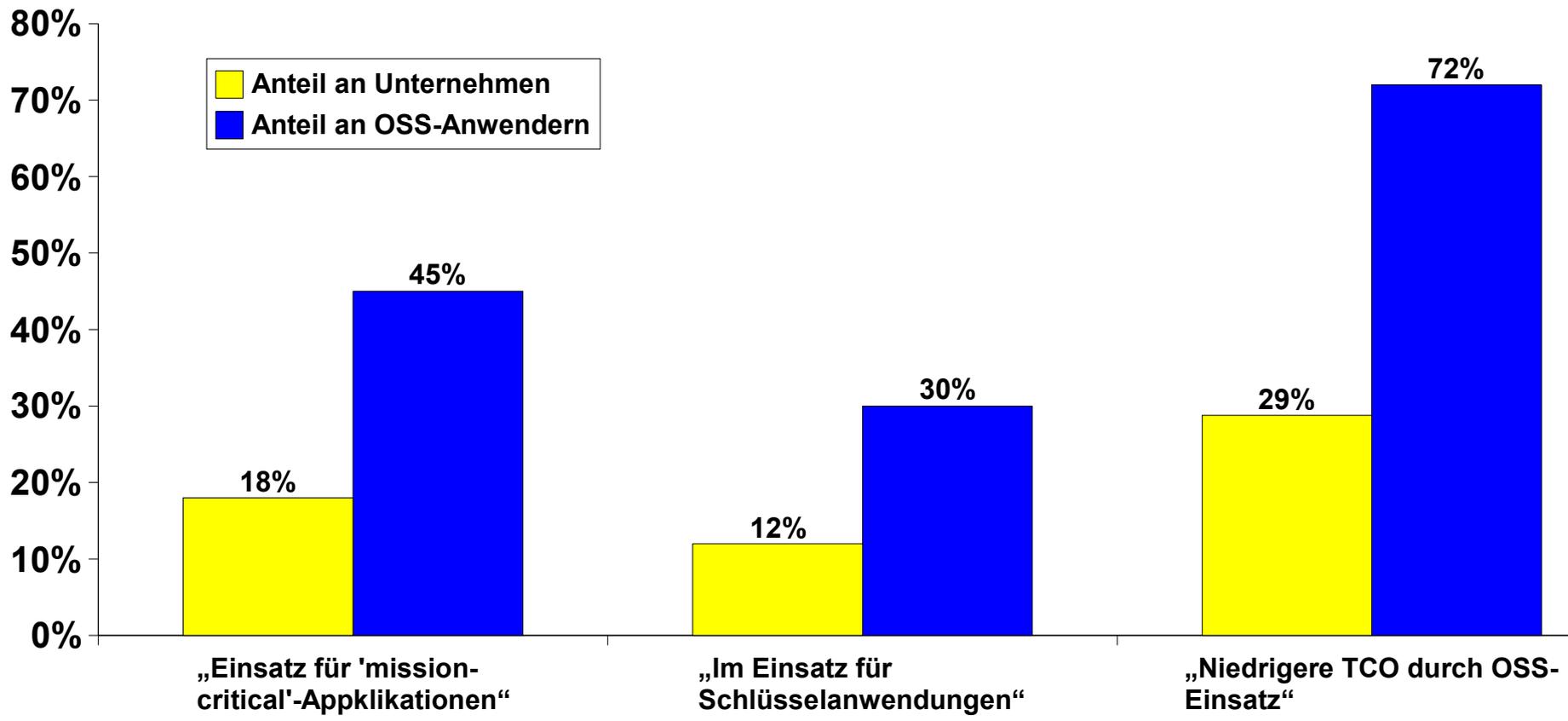
OSS in europäischen Behörden

«A study of 12 European countries conducted by the University of Maastricht in the Netherlands found that nearly 49 percent of local government authorities are using Floss (free/libre/open source software) and those doing so would like to increase its use. The phone and web-based survey, conducted from late 2004 into early this year, netted 955 respondents in Austria, Belgium, Czech Republic, Denmark, France, Germany, Italy, the Netherlands, Poland, Spain, Sweden and the UK.»

Jeremy Kirk: Open-source software gaining in Europe
PC Advisor, 21. Oktober 2005

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KBSt Koordinierungs- und Beratungsstelle der Bundesregierung
für Informationstechnik in der Bundesverwaltung

Bundesministerium
des Innern

> Home > Software > OSS-Kompetenzzentrum

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- Standards und Architekturen
- Wirtschaftlichkeit und Recht
- Software
  - ▼ OSS-Kompetenzzentrum
    - OSS-Projekte
    - Bundesverwaltung
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    - OSS-Einsatz
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    - Alternativen
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  - Migration
- Zentrales IT-Angebot und Netze
- Service
- Foren

Erweiterte Suche

Newsletter E-Mail*

OSS-Kompetenzzentrum der Bundesverwaltung

Sie haben Fragen zum Thema Open-Source-Software (OSS) oder planen eine Migration Ihrer Systeme? Das virtuelle OSS-Kompetenzzentrum ist eine zentrale Anlaufstelle für alle Fragen rund um das Thema OSS. Es ist aus aus einer gemeinsamen Initiative des Bundesministerium des Innern, des Bundesministerium für Verkehr, Bau und Wohnungswesen und des Bundesamtes für Sicherheit in der Informationstechnik hervorgegangen.

Aktuelles

Datum	Titel
21.11.2005	Kolab gewinnt Preis als "Bester Groupware Server"

OSS-Projekte

In der nachfolgenden Liste finden Sie die drei aktuellsten OSS-Projekte angezeigt, die auf diesen Seiten zur Verfügung stehen.
Zur vollständigen Projektliste klicken Sie bitte hier

Projekttitel		Status Einordnung
Hochverfügbarkeitslösung basierend auf Open-Source-Software Der Bundesbeauftragte für den Datenschutz (BfD) Bei diesem Projekt handelt es sich um ein Pilotprojekt, welches von der KBSt initiiert wurde. Dabei wurde auch vom Kooperationsvertrag, den das BMI mit IBM zur Förderung von Open-Source-Software (OSS)	★	Einsatz und Entwicklung von OSS

OSS-Projekte

Über unseren Projektkatalog können Sie bequem nach Beispielprojekten in der deutschen Verwaltung recherchieren.

OSS-Projekte

Kontakt

Haben Sie Fragen oder Ideen zur Weiterentwicklung des OSS-CC?

Wir freuen uns über Ihre Anregungen!

redaktion@kbst.bund.de

z.B. Deutschland...

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Weltweiter Server-OS-Markt 2004-2005

(in Milliarden US$)

Windows 2004: 16,905444126074 · 2005: 17,7
Linux 2004: 4,71854304635762 · 2005: 5,7
UNIX 2004: 18,5972369819341 · 2005: 17,5

| | 2004 | 2005 |

Quelle: IDC 2006

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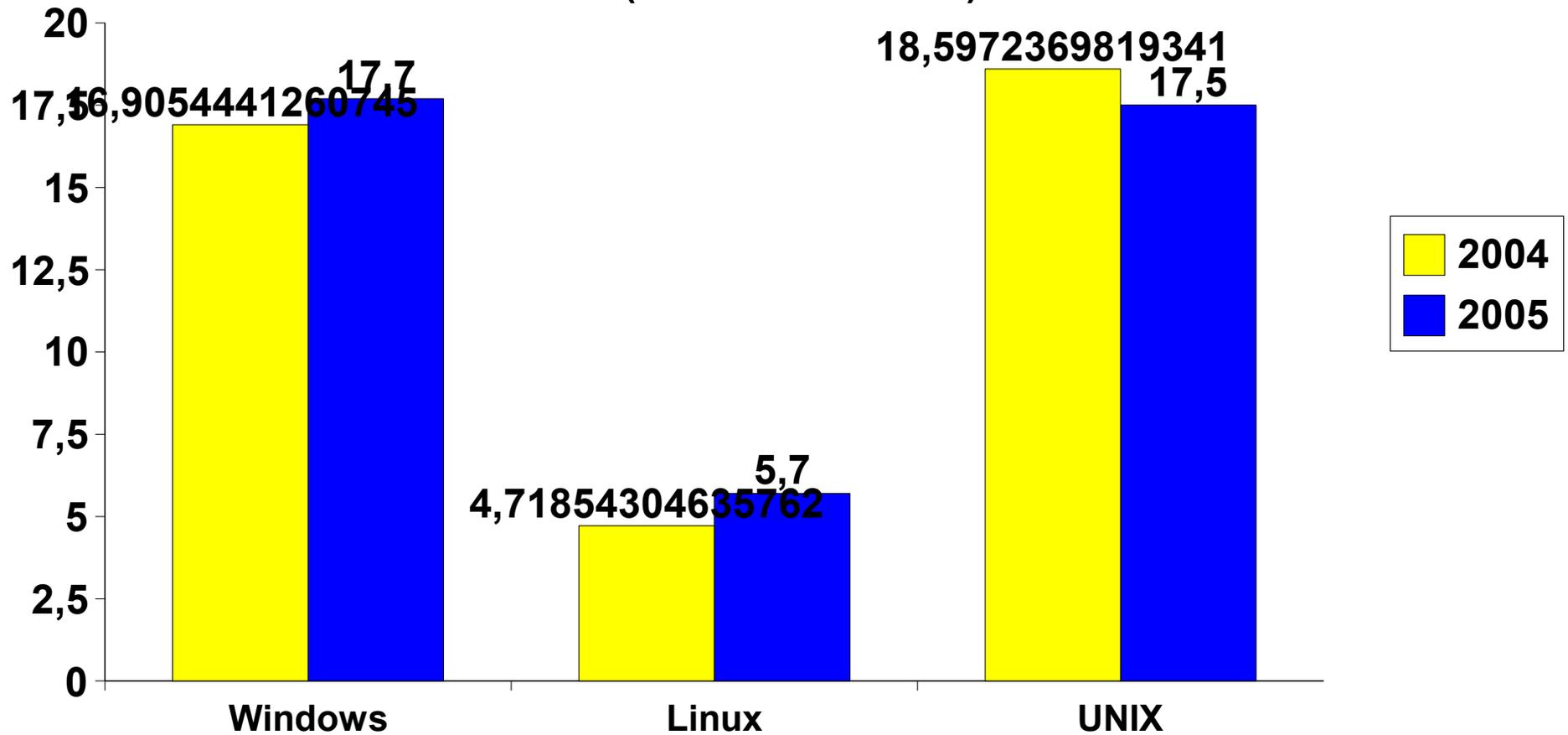
Wachstum 2004-2005 des Server-OS-Marktes

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Quelle: IDC 2006
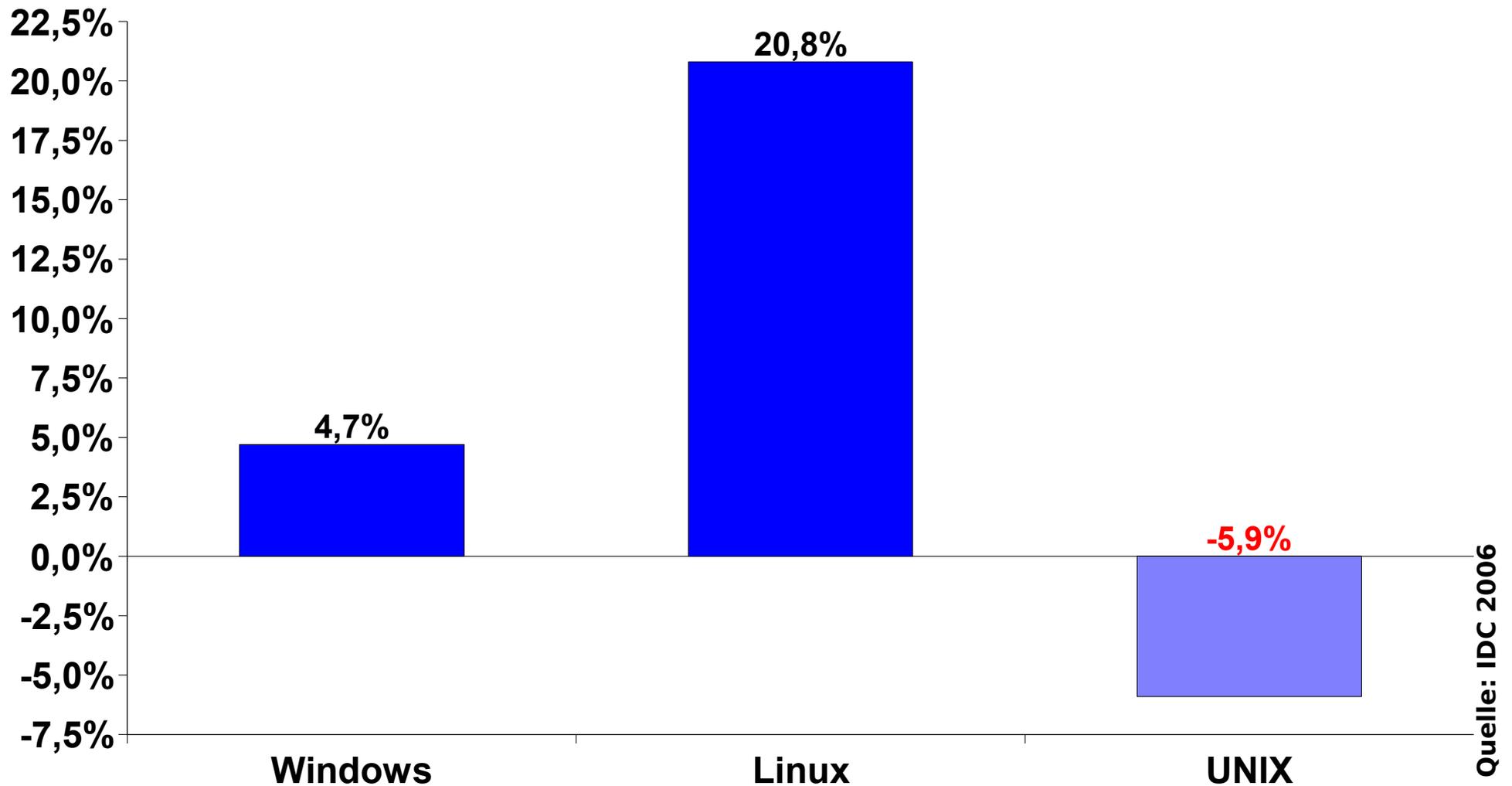
OSS-Datenbankmarkt 2004/2008

$1.000.000.000 — 2005
$900.000.000 — 2008
$800.000.000
$700.000.000
$600.000.000
$500.000.000
$400.000.000
$300.000.000
$200.000.000
$100.000.000
$0

$300.000.000

$1.000.000.000
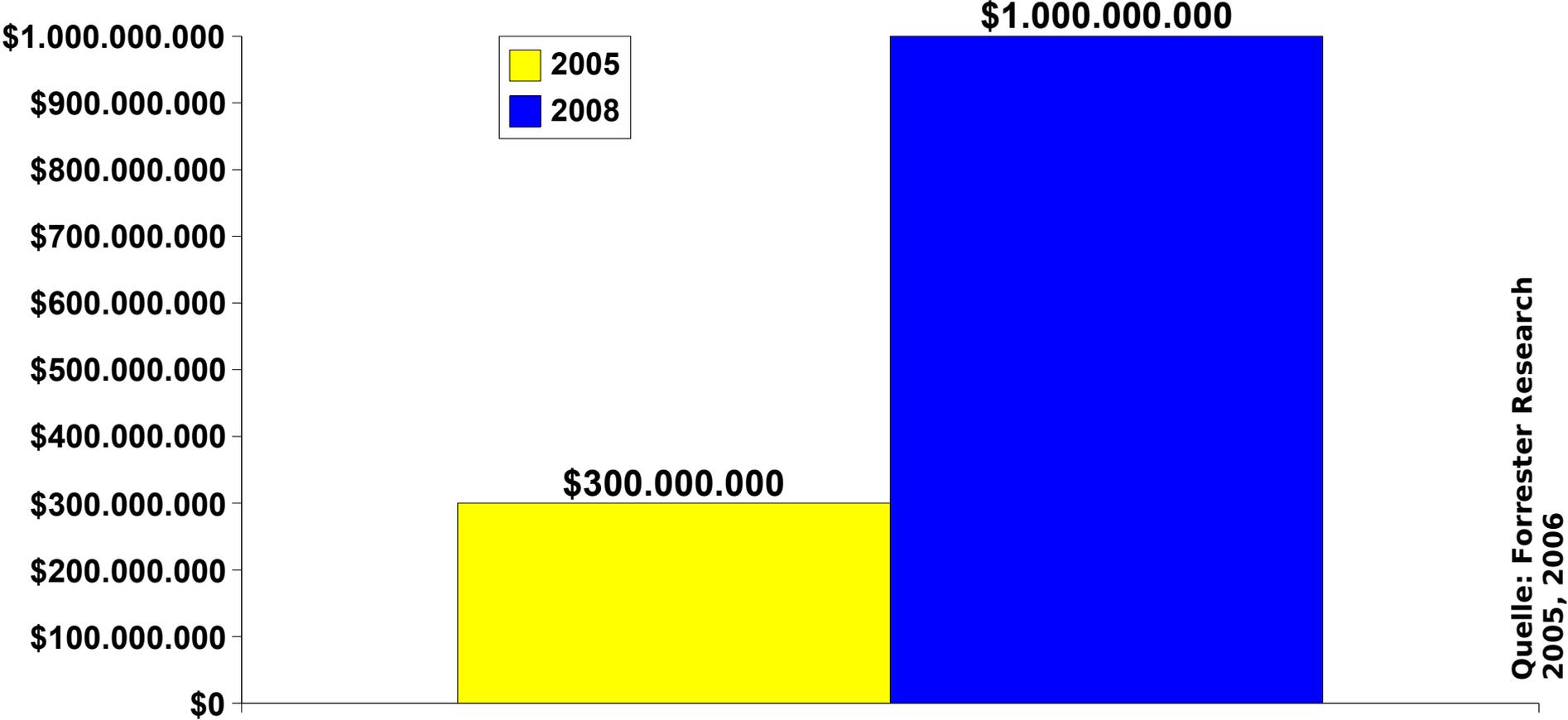
Quelle: Forrester Research 2005, 2006

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EU

Policies | Activities | Culture & Society | Economy & Work | Education & Training | Quality of Life | IS Industry | Regions / World | IS Research

Free and Open Source Software

All About

Understanding F/OSS

European F/OSS-related research activities

Other activities and initiatives

Useful Information

Cases of official recognition / adoption of F/OSS

Links

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ACTIVITIES :: Free & Open Source Software :: European FOSS related research activities

European F/OSS-related research activities

The European Commission has supported a number of initiatives in the domain of free and open source software since 1998, with initial steps conducted through the creation of the **Working group on Libre Software**. The working group presented a paper at the IST'99 conference in Helsinki during the special session track on Libre software, and at the workshop on free software held the 23 of March 2000 in Brussels.

The **Information Society Technologies (IST) research programme** implements the research and technology development aspects of **free and open source software**. Some 20 research projects directly supporting F/OSS are currently under way, all selected for funding during the EU's **5th Framework Programme** (1998-2002). They contribute to the development of essential components of a free software infrastructure, and associated development tools or applications. A catalogue of FOSS related projects funded by the Commission can be downloaded from **here** (pdf format).

In preparation of FP6, **ISTAG** published a **report** (pdf format) on "Software Technologies, Embedded systems and Distributed Systems" that also has a chapter on the role of open source. The recommendations call for the use of open source in all relevant areas of the IST as well as in specific fields such as e-government.

The **FP6 IST workprogramme 2003-2004** refers to FOSS in the following way "The development of open standards and open source software will be encouraged when appropriate to ensure interoperability of solutions and to further innovation".

Hereafter a selection of direct links to projects related to free and open software in various parts of the **6th** and **5th** Framework Programmes is provided:

6th Framework Programme:

Project acronym	Project title	Project keywords
Software Technologies		
AMIGO	Ambient Intelligence for the networked home environment **Project on Cordis; Project Website**	Software Technologies; Ambient Intelligence

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EU

Policies | **Activities** | Culture & Society | Economy & Work | Education & Training | Quality of Life | IS Industry | Regions / World | IS Research

Free and Open Source Software

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ACTIVITIES :: Free & Open Source Software :: Other activities and initiatives

Other activities and initiatives

The impact of F/OSS reaches far beyond research and development activities.

The **e-Europe 2005 action plan** calls for the consideration of open source software solutions in many areas, in particular in the field of public administrations (see eGovernment: an eEurope 2005 policy priority).
In parallel the **IDABC programme** on interchange of data between European administrations studied the **pooling of open source software** resources and production between European administrations.

The IDA programme also supported the development of open source migration guidelines.

A **consultation meeting** (pdf format) on European perspectives for open source software provided input on the main opportunities for open source software in Europe in the coming years.

Policy actions and non research programmes are also active in promoting use of open source software. This is in particular the case for the **IDABC programme** that has first conducted a study on open source software for administrations, and is studying the setting up of a portal for pooling open source software between European administrations.

The **Joint Research Centre** of the European Commission has a number of free / open source software projects:

- **GIST** A generic information server for collaborative environments
- **PERLZ** A fully PERL implementation of Z39.50
- **RDFStore** A PERL RDF parser and database store
- **Open-GIS Web Mapping** Java implementation of OpenGIS web mapping protocol.

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EU

Policies Activities Culture & Society Economy & Work Education & Training Quality of Life IS Industry Regions / World IS Research

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ACTIVITIES :: Free & Open Source Software :: Cases of F/OSS recognition or adoption

Cases of official recognition/adoption of F/OSS

Cases of F/OSS recognition or adoption in government and public administrations

Hereafter a number of cases of F/OSS recognition, explicit policy statements or procurement decisions from public bodies all over the world are listed. Although such examples are often published in press reports and F/OSS-related websites, this list only includes cases, which are accessible through official sources (governmental websites etc.).

The list is by no means exhaustive and the situation is currently very variable, as new reports appear quite often. Hence this list does not provide a total coverage of F/OSS adoption by the public sector, but presents several examples in order to supplement the F/OSS analysis.

- **Denmark**: On June 20, 2003 the Danish Ministry of Science, Technology and Innovation published a Software Strategy paper. According to this, the main objective is to foster competition, quality of services and coherency in the public software solutions on the basis of the following principles: "Maximum value for money irrespectively of the type of software, Competition, independence and freedom of choice, Interoperability and flexibility, Development and innovation". *Source*: **http://www.oio.dk/software/english**

- **Denmark**: The aforementioned strategy paper follows an extensive analysis of Free and Open Source Software undertaken by the Danish Board of Technology, and published in October 2002. It emphasises the additional competition brought by OSS, the additional freedom of choice, interoperability and increased value-for-money. According to the official website, "The report shows that there are potential

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EU

Free/Libre/OpenSource Software: Worldwide impact study

WORLD FLOSS

Maastricht Economic and social Research and training centre on Innovation and Technology

Free/Libre/Open Source Software: Worldwide impact study

- home
- partners
- publicity
- related presentations

The FLOSSWorld project aims to strengthen Europe's leadership in FLOSS and open standards research, building a global constituency with partners from Argentina, Brazil, Bulgaria, China, Croatia, India, Malaysia and South Africa.

Context
Free/Libre/Open Source Software (FLOSS) is arguably one of the best examples of open, collaborative, internationally distributed production and development that exists today, resulting in tremendous interest from around the world, from government, policy, business, academic research and developer communities.

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The problem
However, empirical data on the impact of FLOSS, its use and development is still quite limited. The FP5 FLOSS project and FP6 FLOSSPOLS project have helped fill in the gaps in our knowledge about why and how FLOSS is developed and used, but have necessarily been focussed on Europe. FLOSS is a global phenomenon, particularly relevant in developing countries, and thus more knowledge on FLOSS outside Europe is needed.

Information Society
Technologies

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Innovationshemmnisse (EU 15)

Prozent

Legend:
- **Ability to use new technologies**
- **Human Resources**
- **Financial Resources**
- **Protecting Know-ledge**
- **Finding Partners for knowledge sharing/networking**
- **Access to innovative customers**

Values: 34,7 · 46,3 · 24,7 · 11,3 · 19,3 · 39,0

Quelle: Eurostat Statistics in Focus Theme 4-39/2002

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200x: „Open Innovation"

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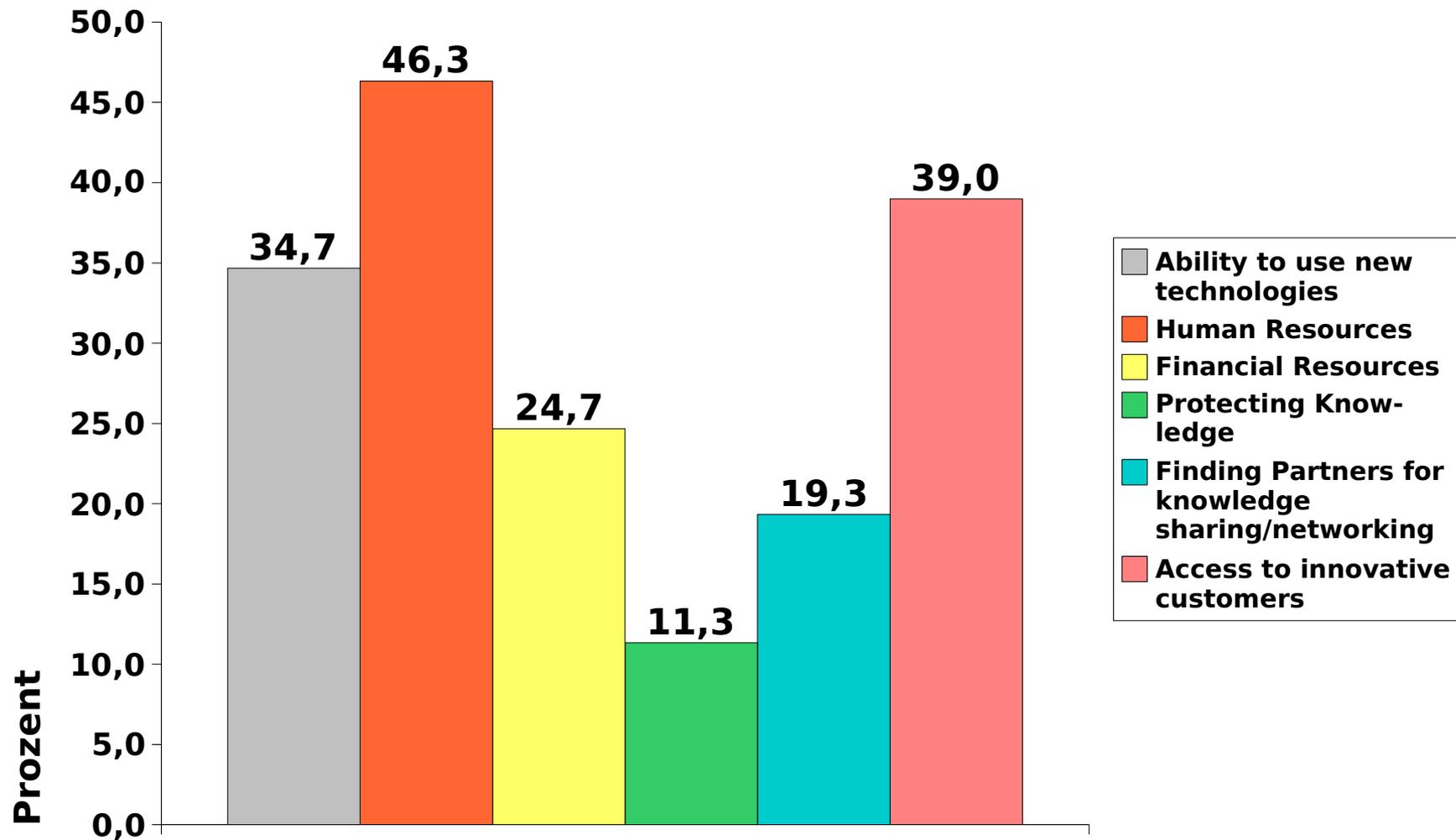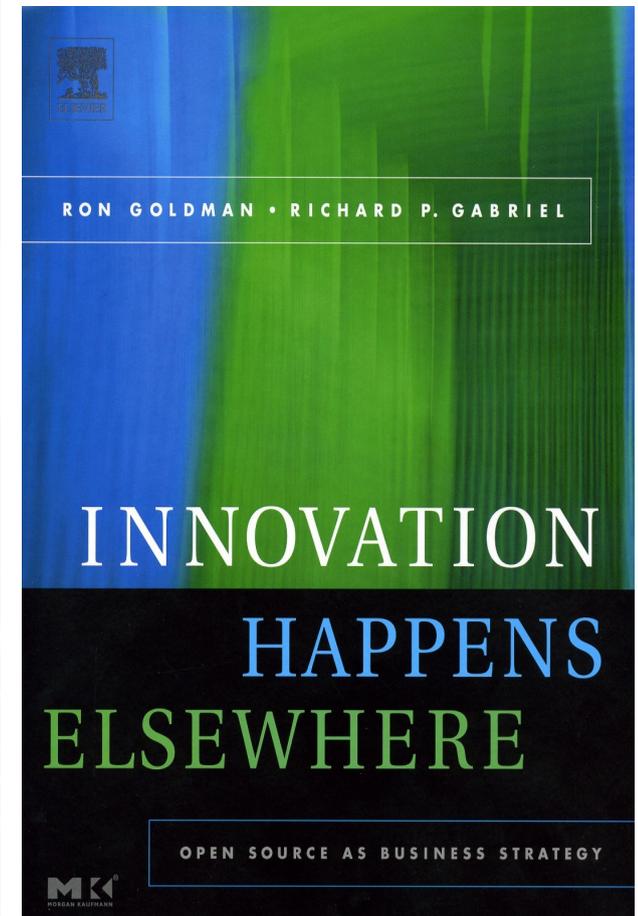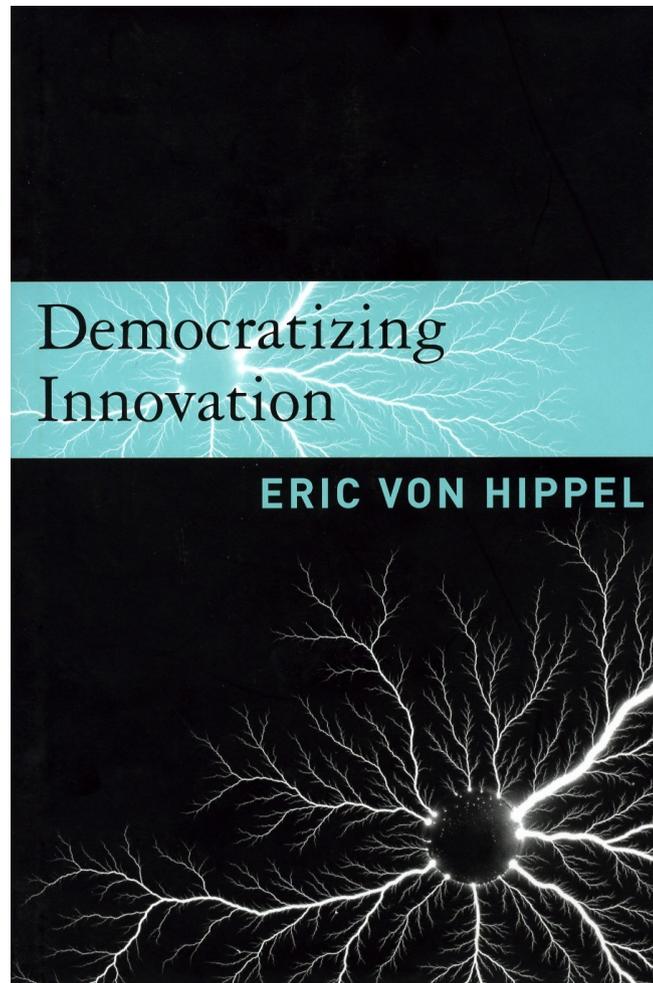
Was motiviert die Firmen?

- «Open Source software allows small enterprises to afford innovation»

- «Contributions from the OS community are useful to fix bugs and improve software»

- «Open Source software is reliable and of high quality»

- «Independence from price and licence policies of the large software companies»

Rossi & Bonaccorsi (2005), Why profit-oriented companies enter the OS field? Intrinsic vs. extrinsic incentives

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Was motiviert die Firmen?

- «Availability of good IT specialists in the field of Open Source Software»

- «Studying the code written by other programmers (using it for new solutions)»

- «Gaining a reputation among costumers and competitors by opening the code»

- «Having products not available on the proprietary software market»

Rossi & Bonaccorsi (2005), Why profit-oriented companies enter the OS field? Intrinsic vs. extrinsic incentives

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Was motiviert die Firmen?

● «Agreement with the values of the Open Source movement»

● «Placing source code and skills at disposal of the Open Source community»

● «Thinking that software should not to be a proprietary assets»

Rossi & Bonaccorsi (2005), Why profit-oriented companies enter the OS field? Intrinsic vs. extrinsic incentives

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„Regional Advantage" (2)

«It is helpful to think of a region's industrial system as having three dimensions: local institutions and culture, industrial structure, and corporate organization. Regional institutions include public and private organizations such as universities, business associations, and local governments, as well as the many less formal hobbyists clubs, professional societies, and other forums that create and sustain regular patterns of social interaction in a region.»

AnnaLee Saxenian (1994), Regional Advantage, S. 7

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Oder anders formuliert...

«Transforming a market into a community.»

Simon Phipps, Chief Open Source Officer, Sun (2006)

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Referenz

Homepage des Autors:

<http://ig.cs.tu-berlin.de/ma/rg/ap>.

„Der Aufstieg der Netzwerkgesellschaft"

«Die neuen Informationstechnologien sind nicht einfach Werkzeuge, die benutzt werden, sondern Prozesse, die entwickelt werden (müssen). Anwender könn[en] Entwickler werden. Also können Anwender die Kontrolle über die Technologie übernehmen. ... Zum ersten Mal in der Geschichte ist der menschliche Verstand eine unmittelbare Produktivkraft und nicht nur ein entscheidendes Element im Produktionssystem.»

Manuel Castells (1996, dt. 2001),
Der Aufstieg der Netzwerkgesellschaft, S. 34

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