SIBIS

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Statistical Indicators Benchmarking the Information Society

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empirica

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Content

- SIBIS project: Statistical Indicators Benchmarking the IS:
  - Current status of work
  - New indicators
  - Indicator piloting via representative surveys
  - First results from surveys
  - Next steps
- Co-operation: SIBIS - Eurostat – NSIs - OECD – ESDIS - eEurope

SIBIS Topics

- No. 1: Telecommunications and access
- No. 2: Internet for research
- No. 3: Security and trust

Objective 1:
A cheaper, faster and secure Internet

- No. 4: Education
- No. 5: Work, employment and skills
- No. 6: Social inclusion

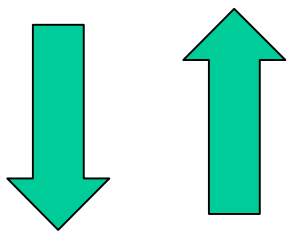
Objective 2:
Investing in people and skills

- No. 7: e-Commerce
- No. 8: e-Government
- No. 9: Health

Objective 3:
Stimulate the use of the internet

SIBIS worksteps

- Topic Research Reports (9 topics) (2001)
- Gap Analysis and new Indicator Development (2001/02)
- Indicator Piloting and Testing (in Surveys) (2002)
- Topic Reports (9 topics) (2002/03)
- Indicator Handbook (2003)



Eurostat, NSIs, OECD, ESDIS, eEurope 2005 …

Description format for statistical indicators

- Definition
- Notes
  - on relationships to (other) existing indicators
  - on methodology
- Sources for data and availability
  - Countries covered
  - Time series availability
- Operationalisation
  - e.g. question wording, branching instructions, data analysis instructions
- eEurope relevance

An example: How to measure telework

- Considered important tool in eEurope Action Plan
- How it is measured currently
  - Use of Eurobarometer data (also used for Benchmarking eEurope Action Lines)
  - “Telework occurs when paid workers carry out all, or part, of their work away from their normal places of activity, usually from home, using information and communication technologies”
  - Benchmarking Report says “In the future, the definition may be revisited to include wider forms of telework/ework”.

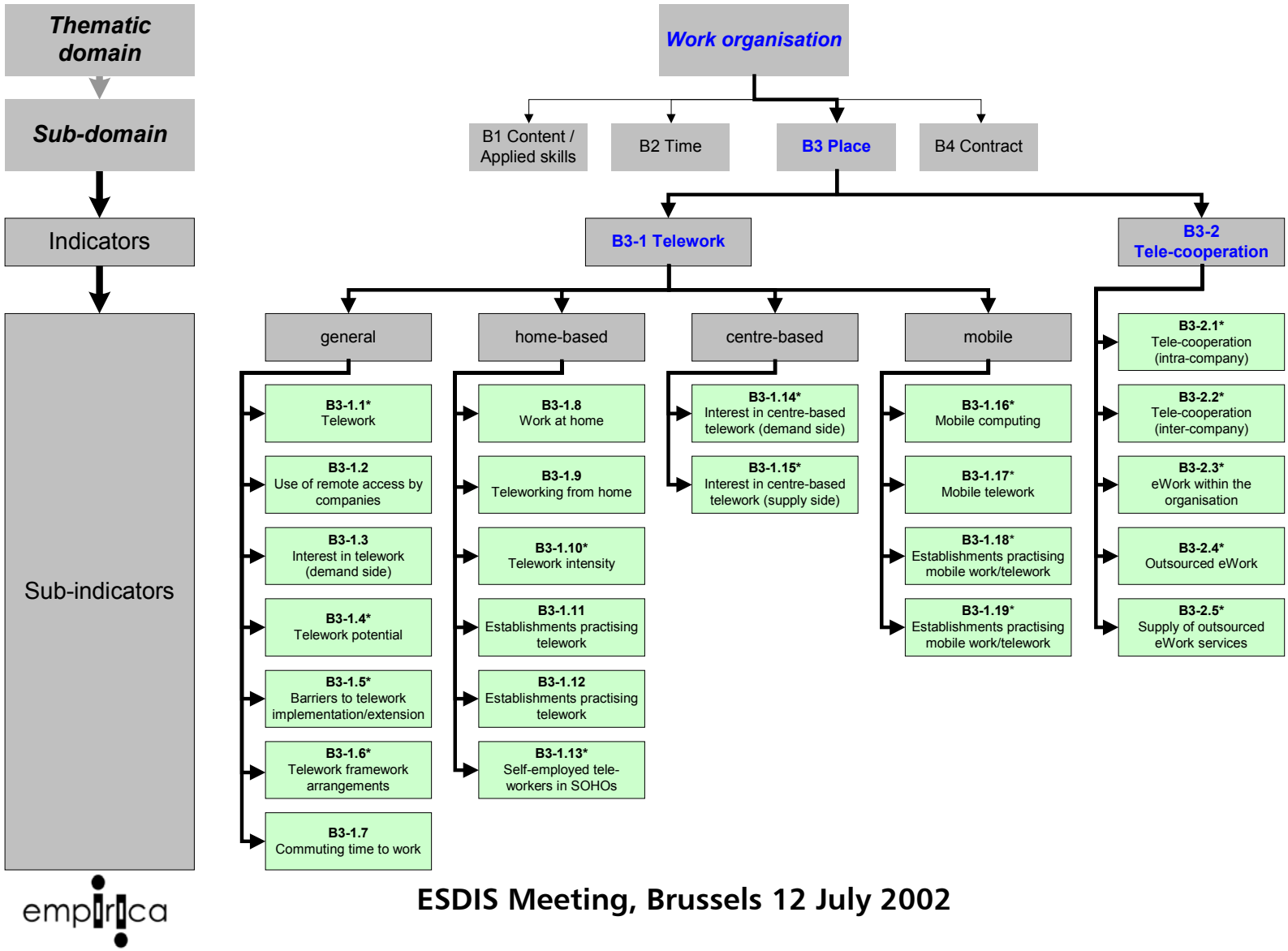
An example: How to measure telework

– "Telework occurs when paid workers carry out all, or part, of their work away from their normal places of activity, usually from home, using information and communication technologies. Do you currently telework, or not?"

An example: How to measure telework

- Conceptualisation of telework
  - Home-based telework
    - Permanent
    - Alternating
    - Supplementary
  - Mobile telework
  - Self-employed teleworkers in SOHOs (small office home office)
- Telework becomes part of majority of work settings
  - "anywhere-anytime, natural interactions with a universe of IST applications and services" (Liikanen)
- Measuring intensity of telework rather than counting teleworkers

Description of indicators



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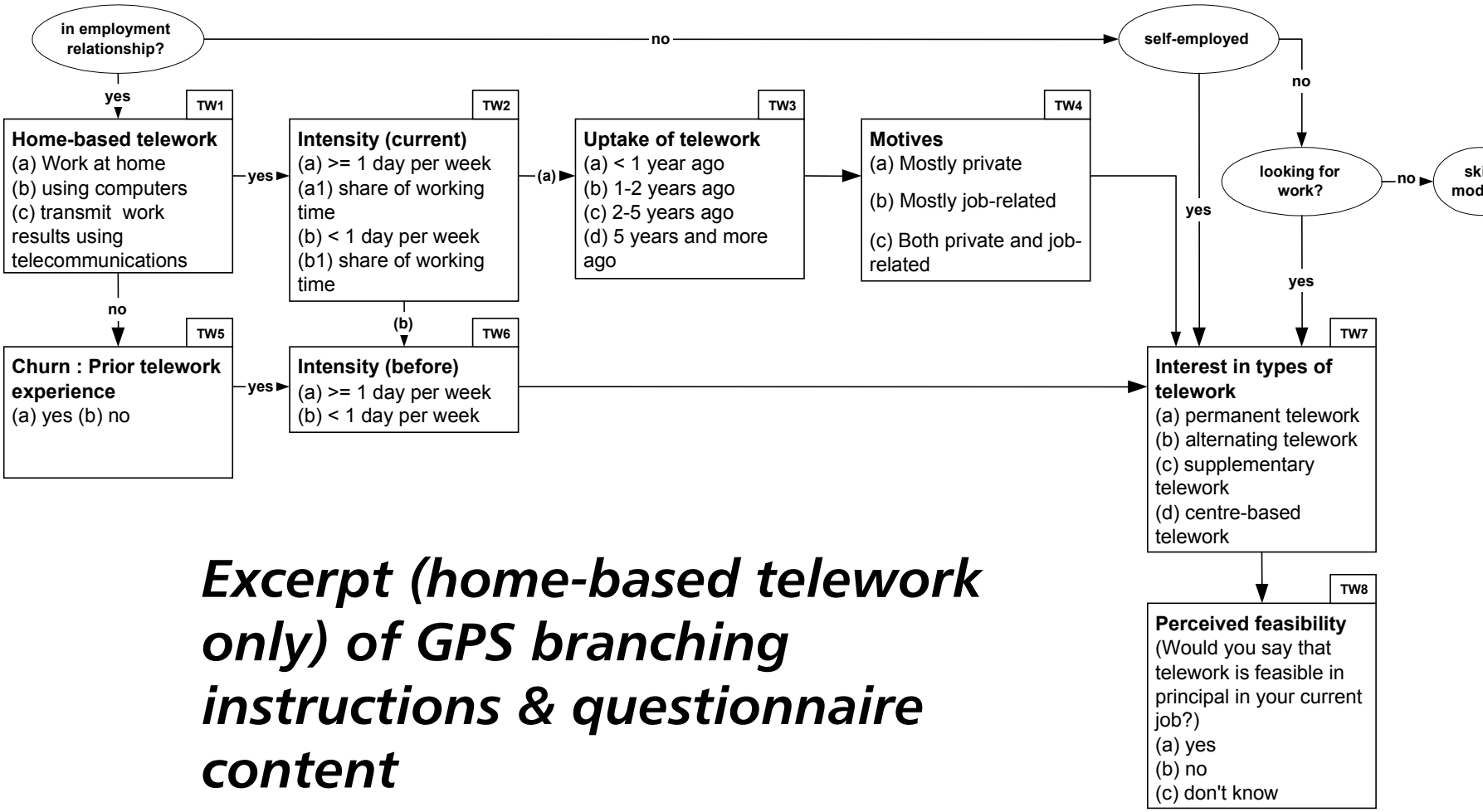
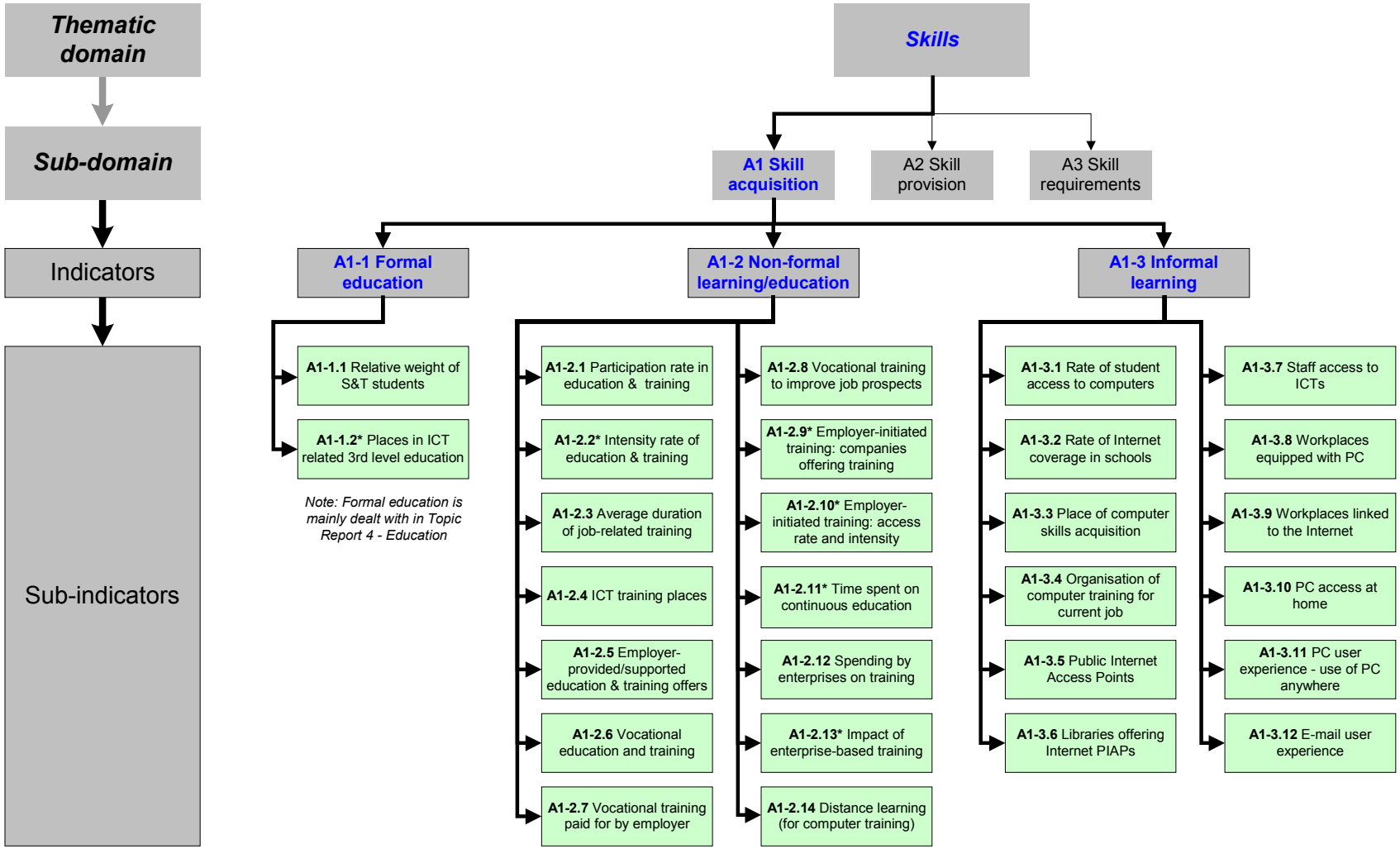
Operationalisation of “telework” indicators



Excerpt (home-based telework only) of GPS branching instructions & questionnaire content

SIBIS New Indicators (Work, Skills & Employment)



SIBIS New Indicators (Work, Skills & Employment)

Thematic Domain	Sub-domain	Selected new level 1 indicators	Piloting in SIBIS
Skills	Skill acquisition	• Use of e-learning by workers (offline/online)	SIBIS GPS
		• Spread of self-directed learning	SIBIS GPS
		• Share of companies that offer staff access to ICTs	SIBIS DMS
		• Use of PIAPs by the population, by teleworkers	SIBIS GPS
	Skill provision	• ICT skills in the labour force (self-assessed)	SIBIS GPS
		• ICT skills in the labour reserve (self-assessed)	SIBIS GPS

SIBIS New Indicators (Work, Skills & Employment)

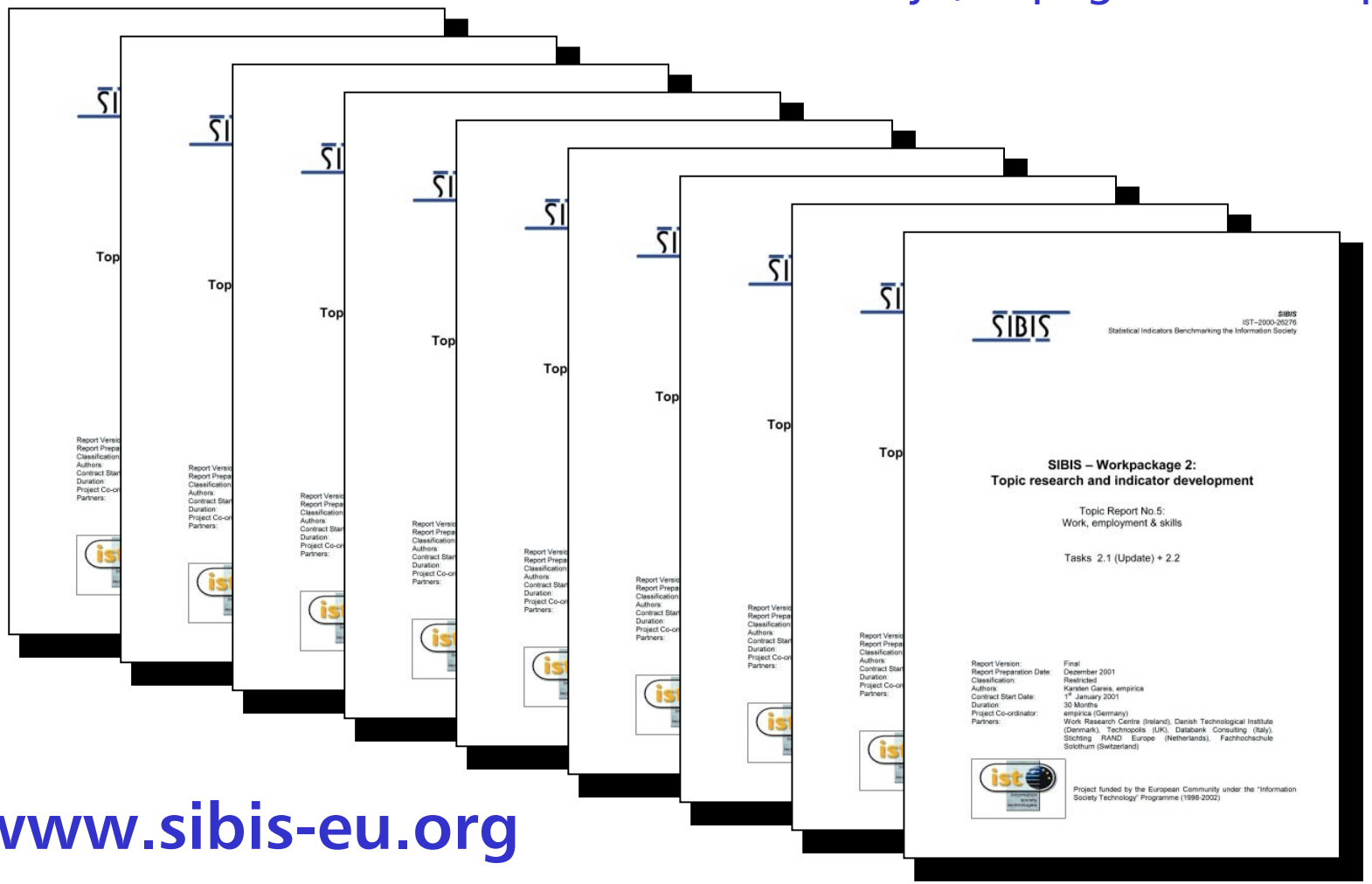
Thematic Domain	Sub-domain	Selected new level 1 indicators	Piloting in SIBIS
Work Organisation	Content/ applied skills	• Spread of cross-organisational co-operation	SIBIS GPS
		• Participation in decision-making in jobs with flexible working arrangement	SIBIS GPS
	Time	• Worker-centred adaptability of working times	SIBIS GPS
	Place	• Share of teleworkers according to telework intensity (home-based, mobile, SOHO)	SIBIS GPS
		• Share of jobs which are perceived feasible for telework	SIBIS GPS
		• Interest in telework (demand side)	SIBIS GPS
		• Teleworker churn	SIBIS GPS
		• Teleworkers by motives for starting telework	SIBIS GPS
		• Telework-enabled labour force participation	SIBIS GPS
	Contract	• Spread of eLancing among self-employed	SIBIS GPS

SIBIS New Indicators (Work, Skills & Employment)

Thematic Domain	Sub-domain	Selected new level 1 indicators	Piloting in SIBIS
Employment Structure and Outcomes	Benefits from employment	• Relative job satisfaction in flexible work arrangements	SIBIS GPS
		• Job quality of jobs with flexible work arrangements	SIBIS GPS
		• Perceived job security of workers with flexible work arrangements	SIBIS GPS
		• Outcomes of flexible work arrangements on work-family balance	SIBIS GPS
	Employment structure	—	—
	Output of employment	—	—

SIBIS Topic Research Outcomes / 'products'

Plus: Executive Summary (32 pages for all reports)



www.sibis-eu.org

SIBIS Surveys: Decision Maker Survey

- Target population (observation unit): establishments
- Reporting unit: IT decision makers
  - smaller establishments: managing director, general manager, proprietor
  - larger establishments: head of IT department, senior professionals in IT department
- DE, ES, FR, IT, UK + FI, GR (sample size 300-500 per country)
- 3.139 respondents
- Disproportionally stratified sample reflecting labour force distribution across establishment size bands
- Fieldwork: April – May 2002
- Fieldwork execution and management by INRA
- CATI; ~ 50 questions; average interview duration: 16 min.

DMS (establishments): Structure of questionnaire

Introduction and Screener Section

Module A: Basic characteristics (Type of organisation, Number of staff (employees), Turnover)

Module B: Module B: Basic ICTs take-up and intensity of use (e-Business) (e-Mail, Internet, Intranet, EDI, Video-conferencing, Call-centre, Staff access to ICTs)

Module C: e-Commerce (Website/ Internet presence, Online sales, Barriers to e-commerce (selling), Benefits from / Outcomes of e-commerce, Online procurement, Barriers to online procurement, Benefits from/ Outcomes of online procurement, Online supply chain integration, e-Marketplaces)

Module D: e-Business security (Security breaches, Information security strategy, Barriers to security, Security provisions)

Module F: e-Government (Use of e-Government services, Barriers to e-Government)

Module G: Website accessibility ("Design for all" / "universal design" principle awareness)

Module E: R&D (R&D staff, Computer staff in R&D unit(s), IT staff providing computer services to R&D, Outsourced computer services for R&D, Vacancies in IT for R&D)

SIBIS Surveys: General Population Survey

- Target population: resident population (15+) in private households
- GPS: EU15 (AT, DE, DK, FI, FR, GR, IR, IT, LU, NL, BE, SE, ES, PT, UK) + CH + US
  (sample size 500-1,000 per country)
- 11.832 respondents
- Fieldwork: April – May 2002
- Fieldwork execution and management by INRA
- CATI
- > 50 questions
- Interview duration 10 - 20 min.

GPS (population): Structure of questionnaire I

Module IN: Introduction and screening (Age, Educational attainment, Employment status, Occupation, Type of organisation, Main working place)

Module A: Basic ICT equipment access and use (Use of computer, Use of e-mail, Internet access and use, Methods of Internet access, Effects of Internet use, Barriers to using the Internet, Access to mobile phone, Mobile data services, Effects of mobile phone use)

Module B: E-commerce and other uses of the Internet (Online activities, Barriers to buying online)

Module D: Skills (Internet user experience and know-how)

Module L: e-Health (Use of online health information, Perception regarding the trust placed in online health information provider, Rationale for health info search)

Module J: Security (Security concerns, Reporting of security violations, Security-related awareness and behaviour)

GPS (population): Structure of questionnaire II

Module K: e-Government (Preference for e-Government services, e-Government experience, Barriers to e-Government)

Module E: Telework (Home-based telework, Intensity of home-based teleworking, Duration of telework, Financing of tele-workplace, Interest in telework, Perceived feasibility, Effects of telework)

Module F: Mobile work (Mobile work (Intensity), Mobile telework)

Module G: **Tele-cooperation/Tele-collaboration** (Co-operation with external contacts using ICTs, e-Lancing)

Module H: Outcomes of work (Work-family balance, Job quality, Job satisfaction)

Module C: Educational attainment and lifelong learning (Company-provided training, Training provided by other organisations, Self-directed learning, Modes of training (use of eLearning))

Module Z: Standard demography (Household size, Disability, Income)

SIBIS Surveys: Some Results from the GPS

- Participation in work-related training
  - Employed persons (excl self-employed)
  - Labour force (incl self-employed and unemployed)
- Self-directed learning
  - Employed persons (all in paid work)
  - Labour force (incl unemployed)
  - Unemployed
- e-Learning
  - Labour force (incl unemployed)
- Telework

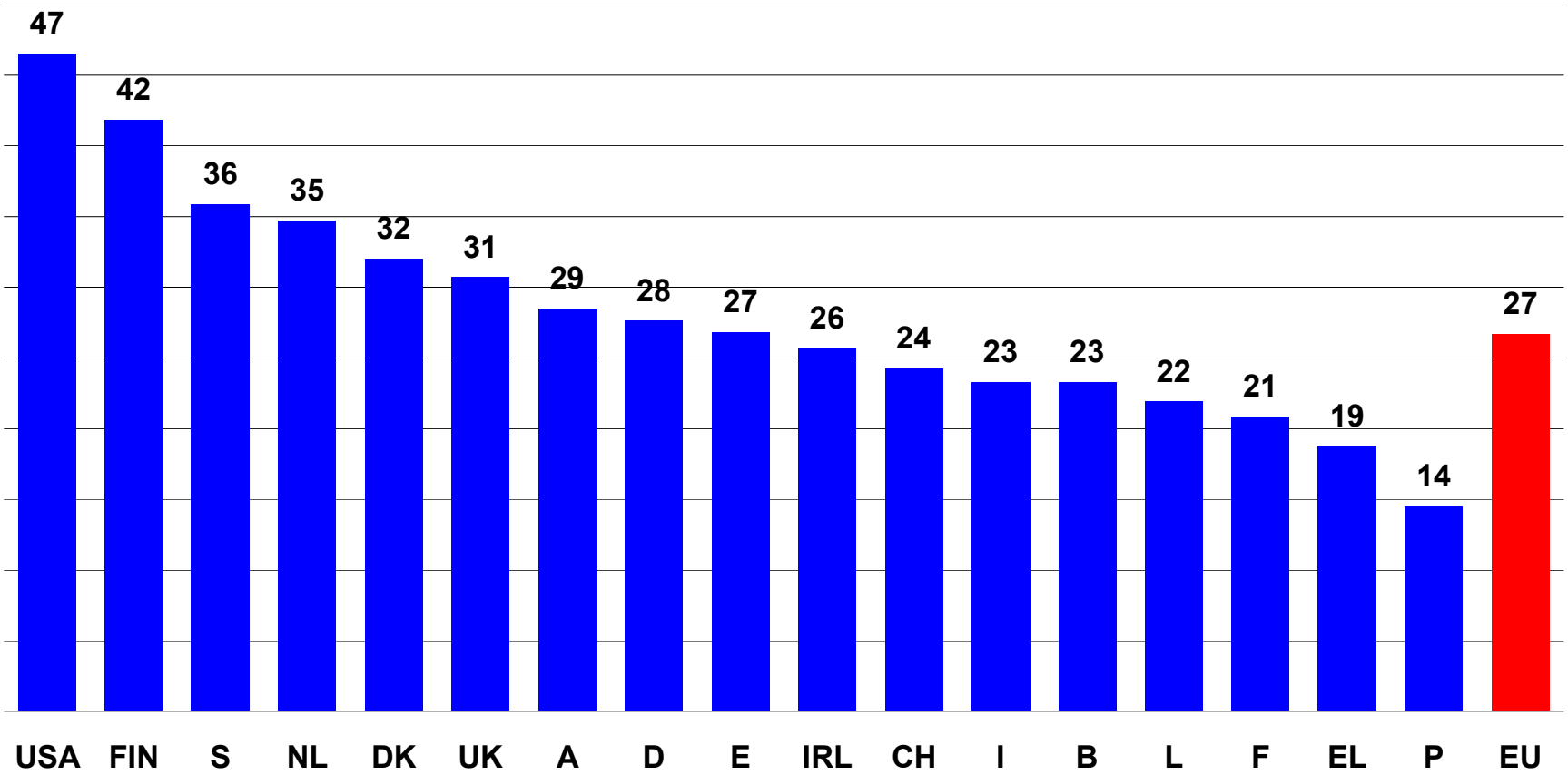
SIBIS Surveys: Some Results from the GPS

- Measuring participation in work-related training
  - Eurostat until now uses LFS data
  - LFS systematically underestimates the spread of work-related training as it focuses (in most countries) on formal training measures
  - SIBIS uses the following question wording: Did you participate in some kind of work-related training activities that were provided either by your company or by an other organisation, in the last four weeks?
  - Distinction between base “all with contract of employment” and “total labour force (incl unemployed)”

SIBIS Surveys: Some Results from the GPS

Participation in work-related training in last 4 weeks

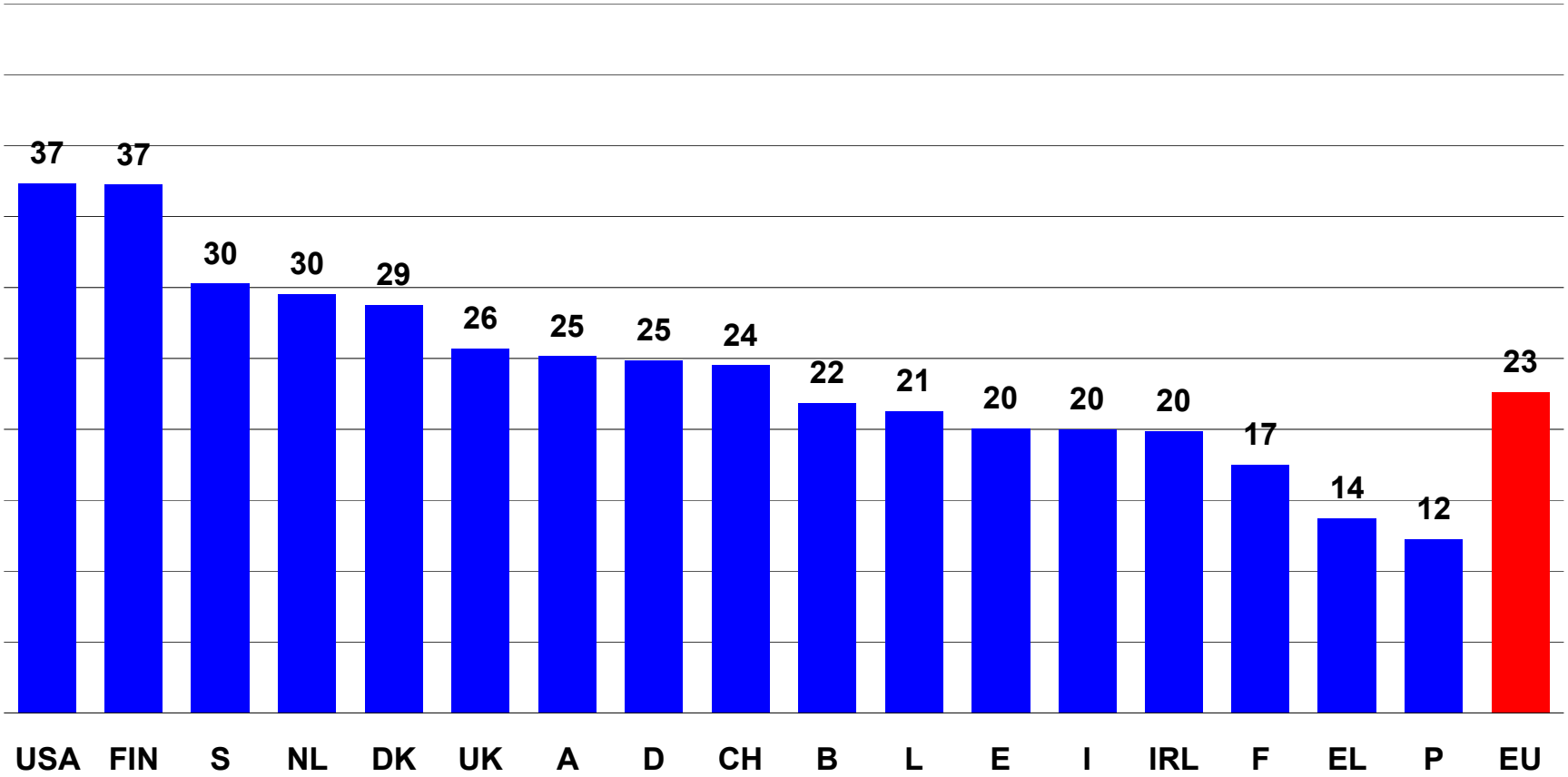
Base: All with contract of employment



SIBIS Surveys: Some Results from the GPS

Participation in work-related training in last 4 weeks

Base: Labour force (incl. self-employed and unemployed)



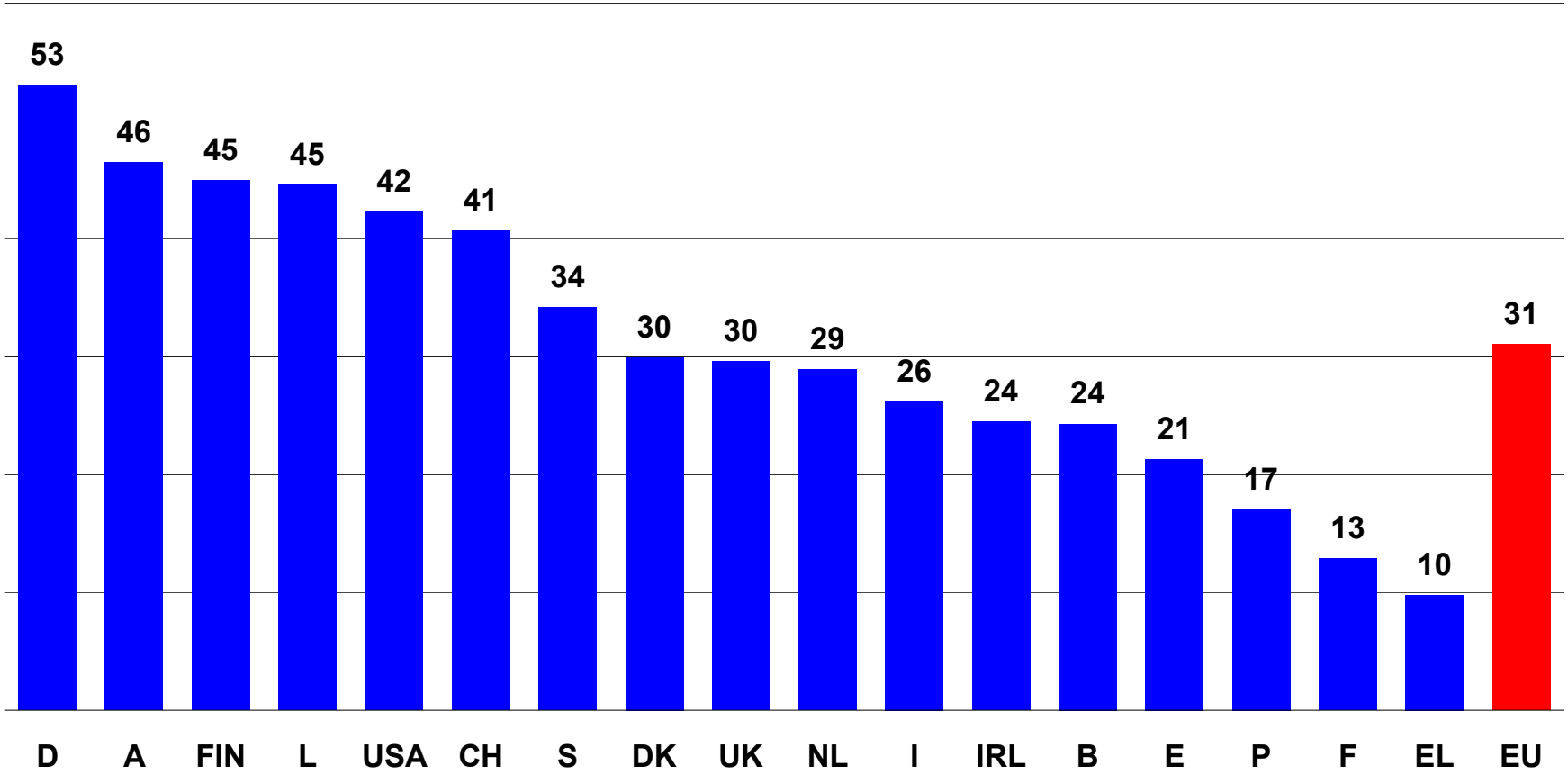
SIBIS Surveys: Some Results from the GPS

- Measuring self-directed learning
  - Although LFS regulation stresses that self-directed learning should be included in the EU data on lifelong learning, analysis of Member States' LFS questionnaires suggests that this is mostly not the case
  - SIBIS uses the following question wording: Apart from the training that may have been provided by others, did you engage in some kind of self-directed learning related to your work, in the last four weeks?
  - Distinction between base "all employed", "total labour force (incl unemployed)" and "unemployed"

SIBIS Surveys: Some Results from the GPS

Self-directed learning in last 4 weeks

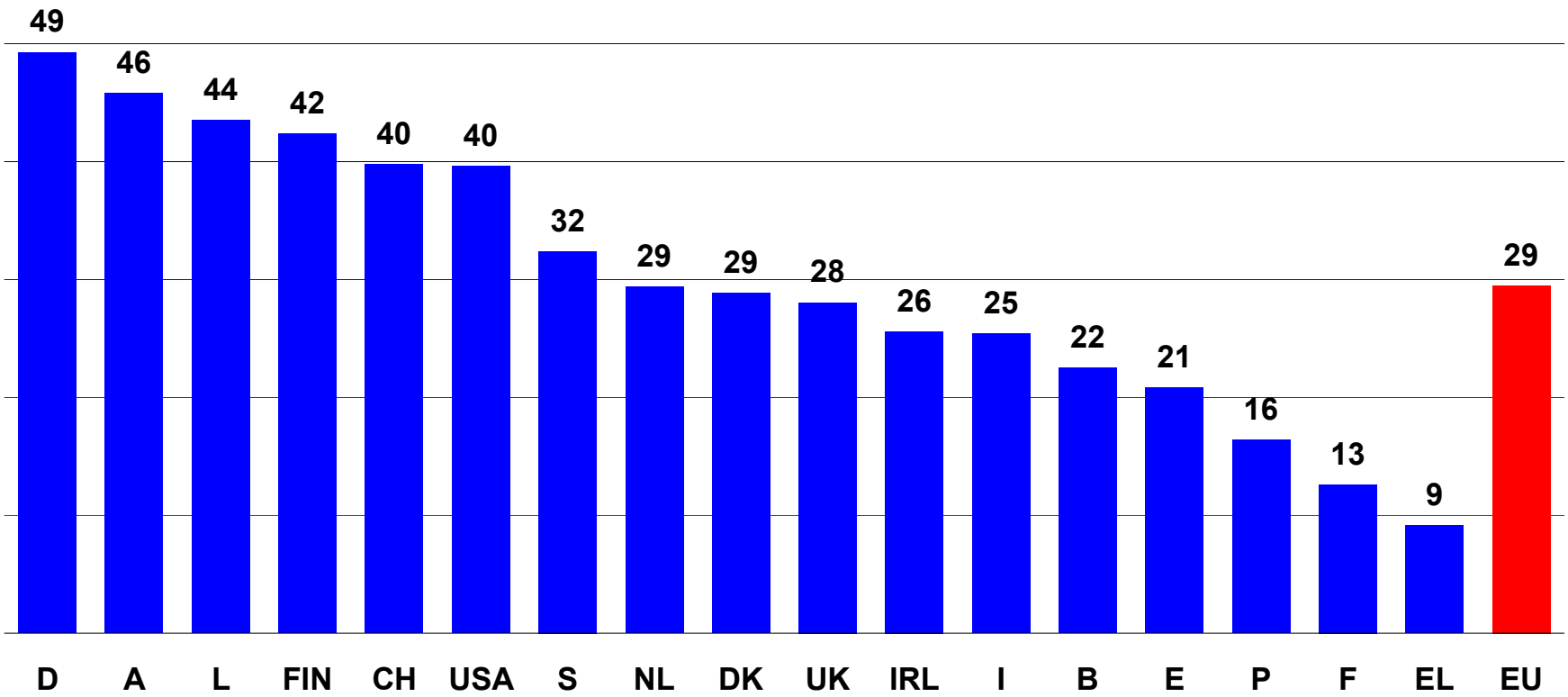
Base: All employed (incl. self-employed)



SIBIS Surveys: Some Results from the GPS

Self-directed learning in last 4 weeks

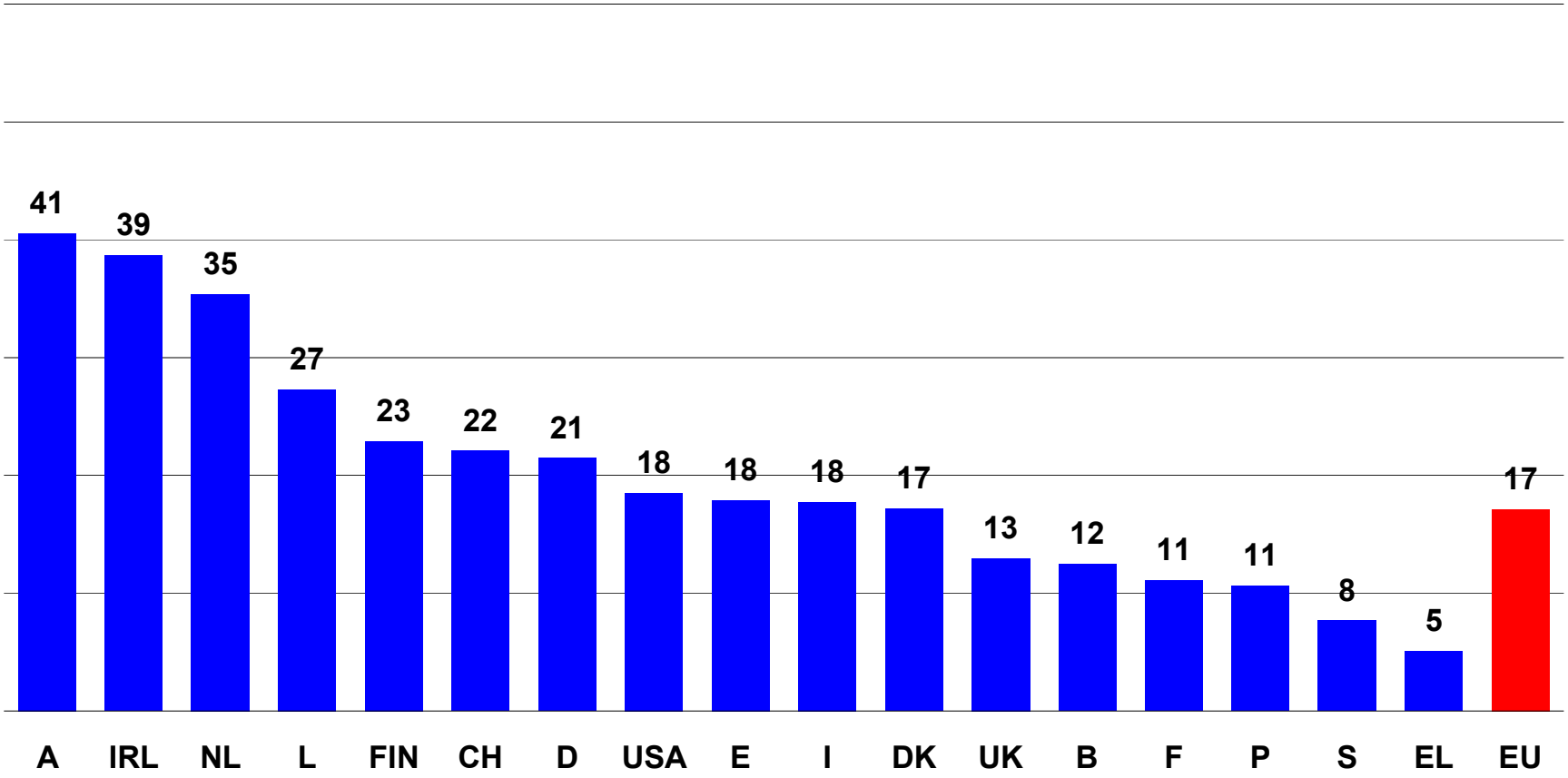
Base: Labour force (incl. self-employed and unemployed)



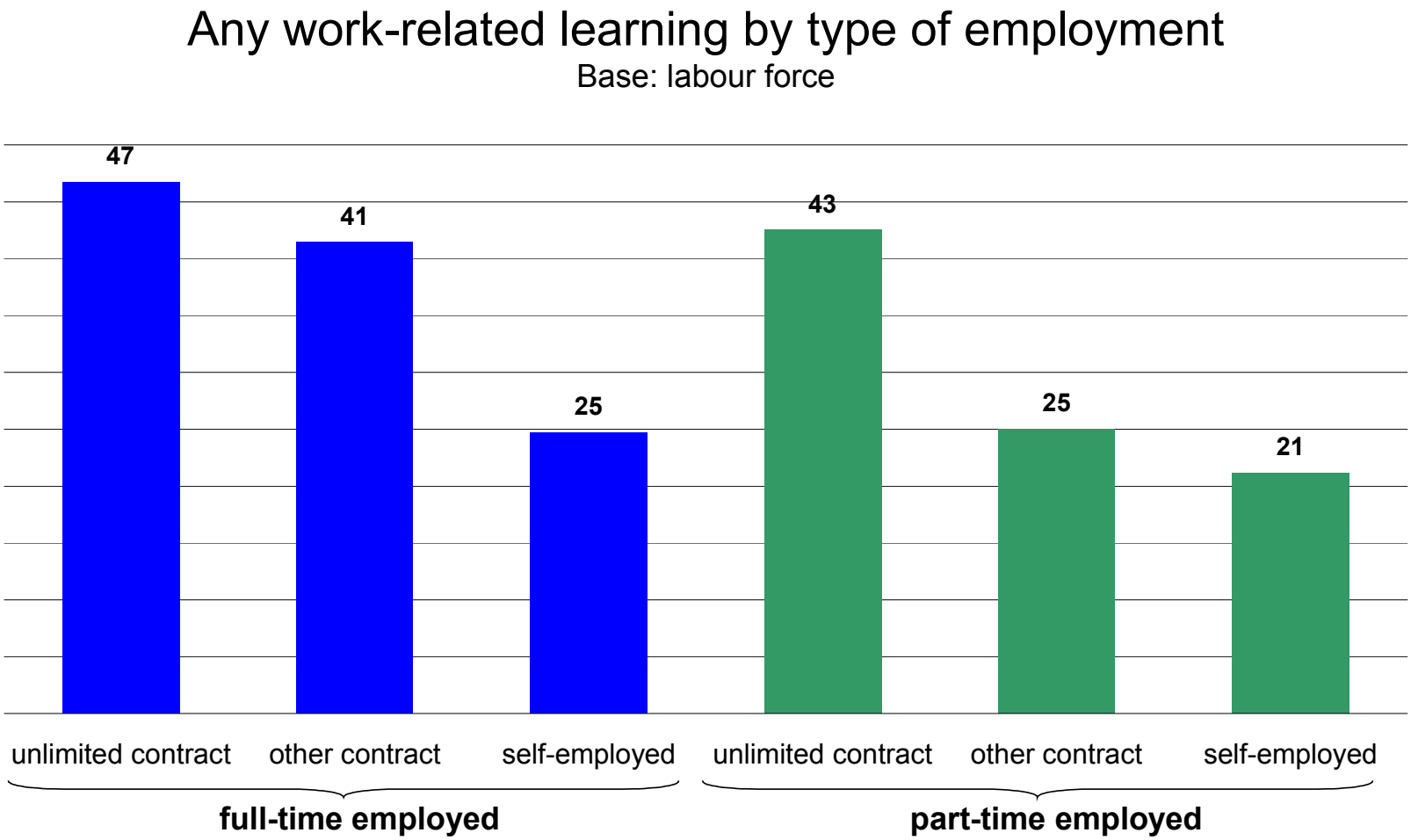
SIBIS Surveys: Some Results from the GPS

Self-directed learning in last 4 weeks

Base: Unemployed



SIBIS Surveys: Some Results from the GPS



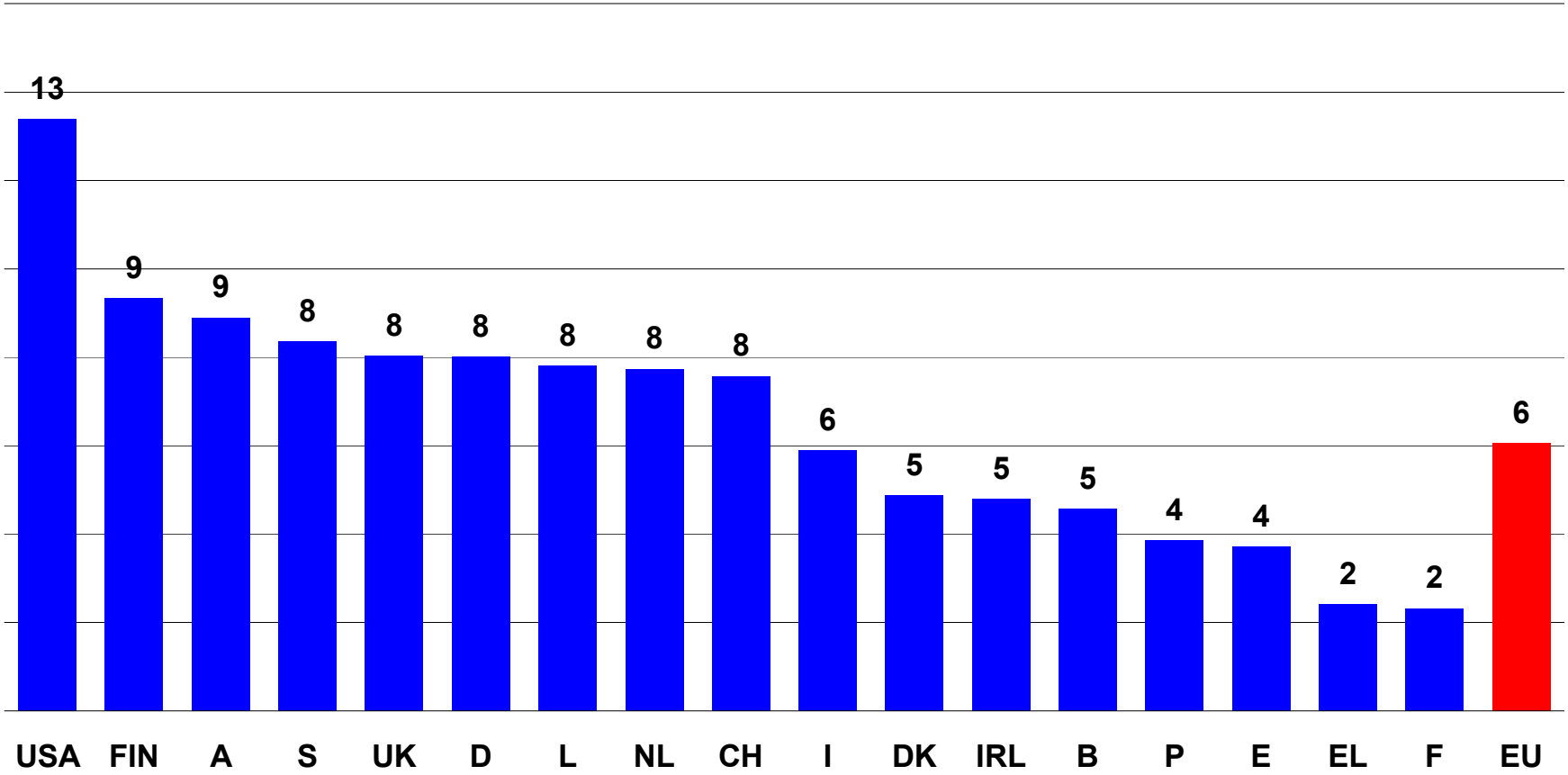
SIBIS Surveys: Some Results from the GPS

- Measuring e-learning
  - The Commission's eLearning Action Plan (2001) has stressed the need for makinig best use of information and communication technology for enabling lifelong learning.
  - No cross-country data available from other sources yet.
  - SIBIS distinguishes between offline and online eLearning: Did you use, in the course of your training and learning in the last four weeks, electronic learning materials
    - CD-ROMs or other so-called offline media such as diskettes, audio or video tapes etc.
    - online learning materials provided on the internal computer system of your organisation or through the Internet

SIBIS Surveys: Some Results from the GPS

eLearning in last 4 weeks

Base: Labour force



SIBIS Surveys: Some Results from the GPS - Telework -

- Telework penetration
  - 1999 (ECATT project: www.ecatt.com)
  - 2002 (SIBIS project: www.sibis-eu.org)
- Number of teleworkers 1999 - 2002
  - General EU10 / EU15 plus USA, CH
  - Member States
  - Categories: home-based, supplementary, mobile, self-employed teleworking

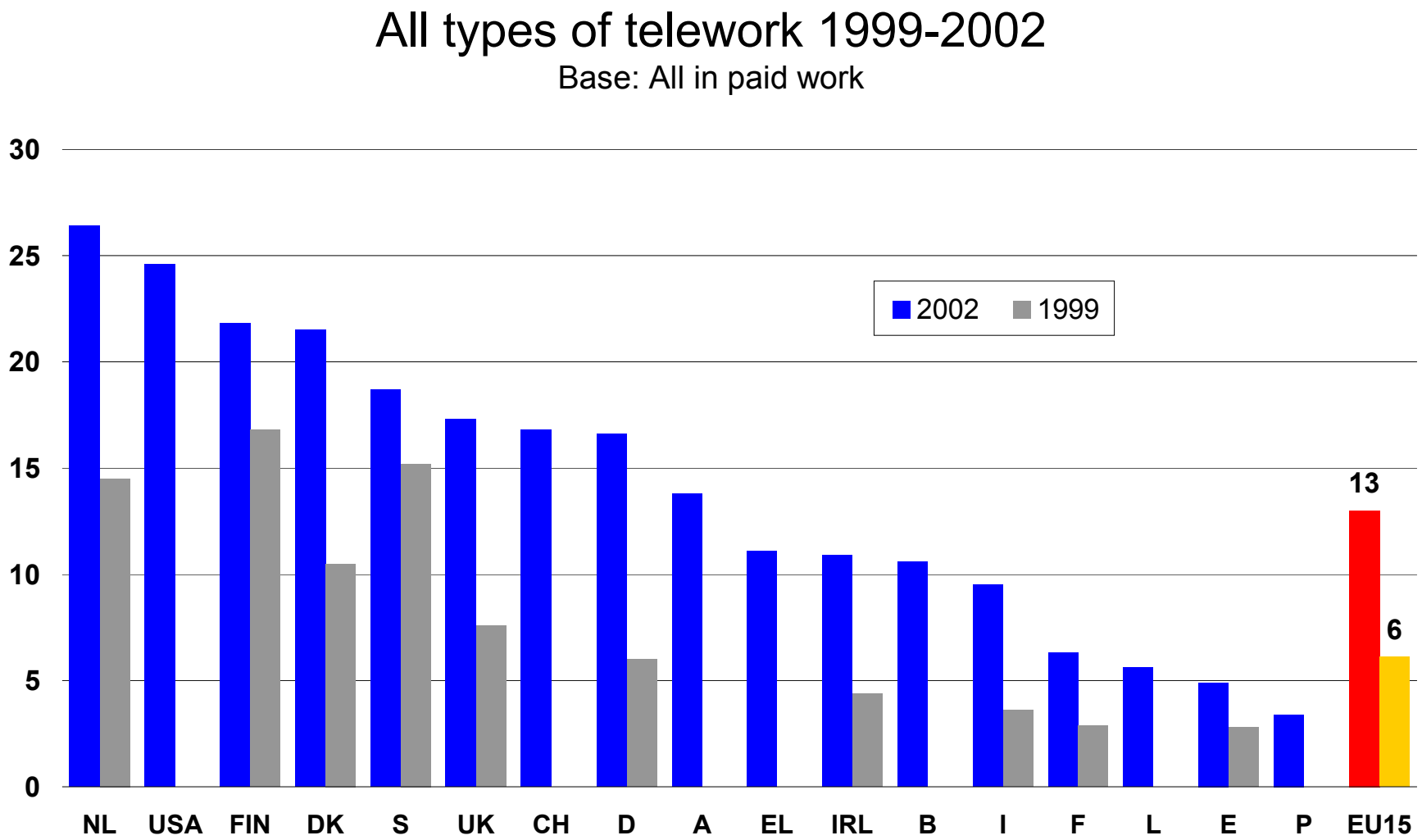
SIBIS Surveys: Some Results from the GPS

- Measuring telework
  - For eEurope 2002 Benchmarking, Eurobarometer Data was used
  - Working definition in Eurobarometer was very fuzzy so that it was left to respondents to decide what constitutes a teleworker
  - Other teleworking than traditional “home-based telework” was not considered
  - However, available evidence suggests that mobile telework and telework by self-employed in SOHOs are at least as important for business competitiveness as home-based telework, and also have strong impacts on work flexibility

SIBIS Surveys: Some Results from the GPS

- Measuring telework
  - SIBIS uses separate question modules for gathering data on
    - home-based telework
    - telework by self-employed in SOHOs
    - mobile telework
  - Question wording for home-based telework: With the help of telephone, fax and computer, many types of work can be done from home. If work results are transferred electronically, this is sometimes called telework. Do you presently telework from home, for at least some of your working time?
  - SIBIS measures not only take-up, but also intensity (share of working time spent at teleworkplace)

SIBIS Surveys: Some Results from the GPS



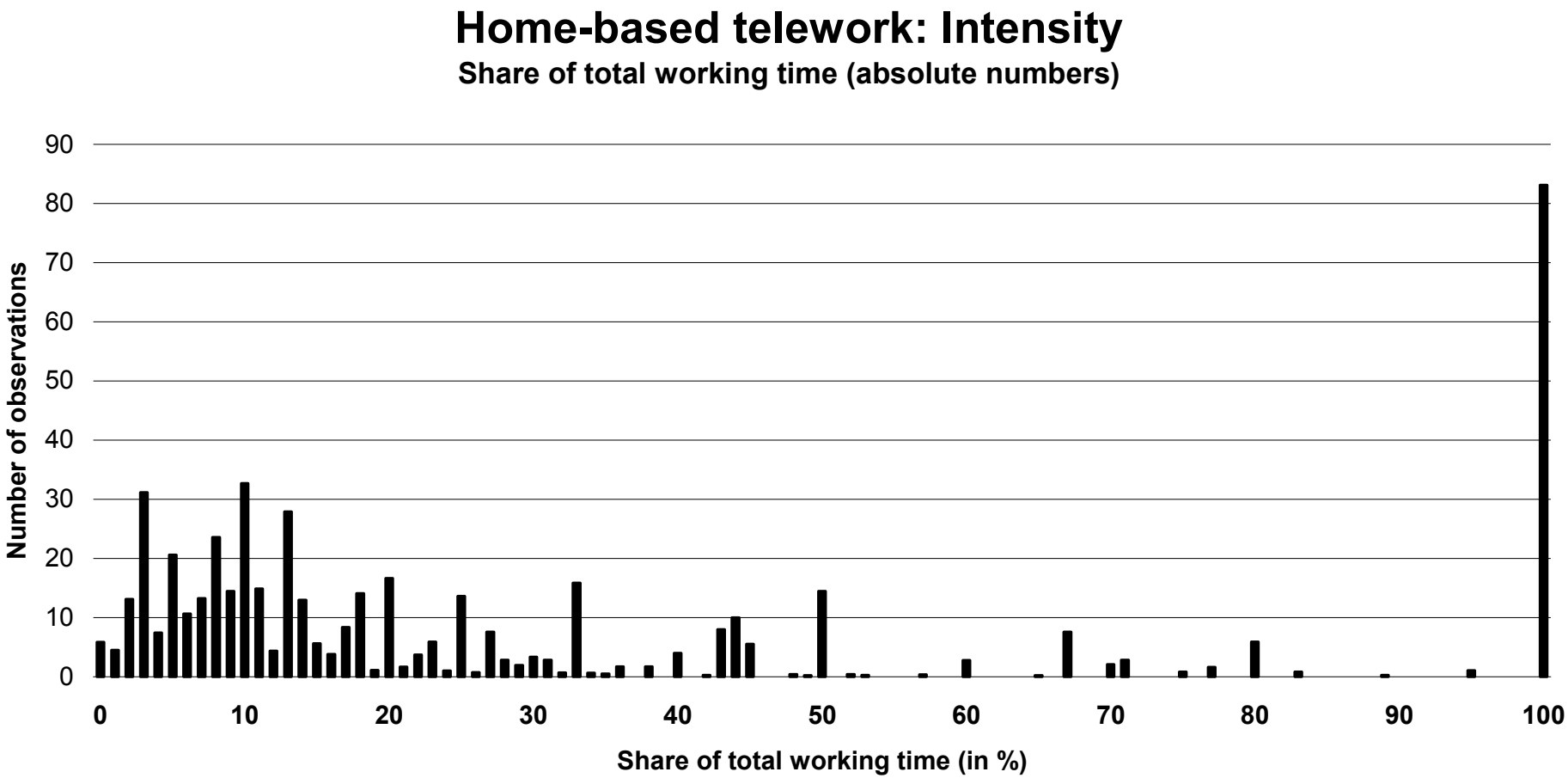
SIBIS Surveys: Some Results from the GPS
- Telework 1999 – 2002 -

Country	Teleworker in % of workforce		Average annual growth in %
	1999	2002	
Netherlands	14,5	26,4	22
Finland	16,8	21,8	9
Denmark	10,5	21,5	27
Sweden	15,2	18,7	7
United Kingdom	7,6	17,3	32
Germany	6,0	16,6	40
Ireland	4,4	10,9	35
Italy	3,6	9,5	38
France	2,9	6,3	30
Spain	2,8	4,9	21
EU10	**6,0**	**13,0**	**29**

SIBIS Surveys: Some Results from the GPS
- Telework 1999 – 2002 -

Country	1999 (%)	2002 (%)	2002 (abs.)
Netherlands	14,5	26,4	2.061.048
Finland	16,8	21,8	507.068
Denmark	10,5	21,5	578.780
Sweden	15,2	18,7	777.733
United Kingdom	7,6	17,3	4.788.121
Germany	6	16,6	6.138.348
Austria		13,8	516.258
Greece		11,1	438.006
Ireland	4,4	10,9	181.376
Belgium		10,6	421.138
Italy	3,6	9,5	1.983.030
France	2,9	6,3	1.472.625
Luxembourg		5,6	14.672
Spain	2,8	4,9	707.854
Portugal		3,4	165.818
EU10	**6**	**13**	**20.643.610**
CH		16,8	-
USA		24,6	36.719.190

SIBIS Surveys: Some Results from the GPS



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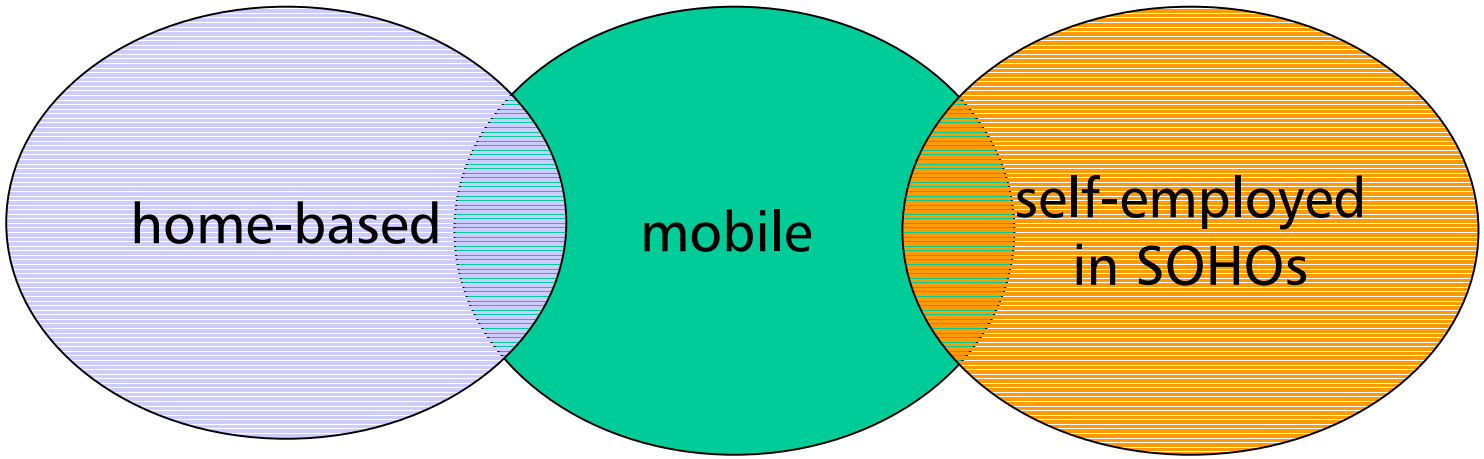


- working at home with PC
- using ICT to transfer work results
- permanent, alternating or supplementary

- working away from main place of work
- using online-connections during business trips or in the field
- e-mail, Internet or remote access

- home is the main place of work or the base for trips into the field
- using ICT to transfer work results
- SOHO = small office, home office

SIBIS Surveys: Some Results from the GPS

Spread of Telework in EU15		
	1999	2002
home-based telework >= 1 day per week	2.0%	2.1%
home-based telework < 1 day per week	2.0%	5.3%
mobile telework	1.6%	4.0%
self-employed in SOHOs	0.9%	3.4%
all types	6.1%	13.0%

SIBIS Surveys: Some Results from the GPS
- Telework 2002 -

Category	Country	Teleworker in % of workforce 2002
Frontrunners	Netherlands	26,4
	Finland	21,8
	Denmark	21,5
Fast followers	Sweden	18,7
	United Kingdom	17,3
	Germany	16,6
	Austria	13,8
Average	*EU*	*13,0*
Slow followers	Greece	11,1
	Ireland	10,9
	Belgium	10,6
	Italy	9,5
Sedentaries	France	6,3
	Luxembourg	5,6
	Spain	4,9
	Portugal	3,4

Measuring the digital divide in the society: a pilot for 4 risk groups (DDIX)

The policy focus is on the presumably disadvantaged segments of society ("risk / disadvantaged groups"):

- The Gender dimension
  - **Risk group:** women
- The Age dimension
  - **Risk group:** elderly people **(in this study defined as "50+ years old")**
- The Education dimension
  - **Risk group:** low education **(= formal education finished at age of ≤ 15 years)**
- The Income dimension
  - **Risk group:** low income **(= lowest quartile)**

Selected indicators for DDIX

- **four indicators selected to build the composite index: data availability driven choice of indicators, but core indicators for current digital divide paradigm**
- **data: Eurobarometer surveys (1997, 2000)**

Indicators

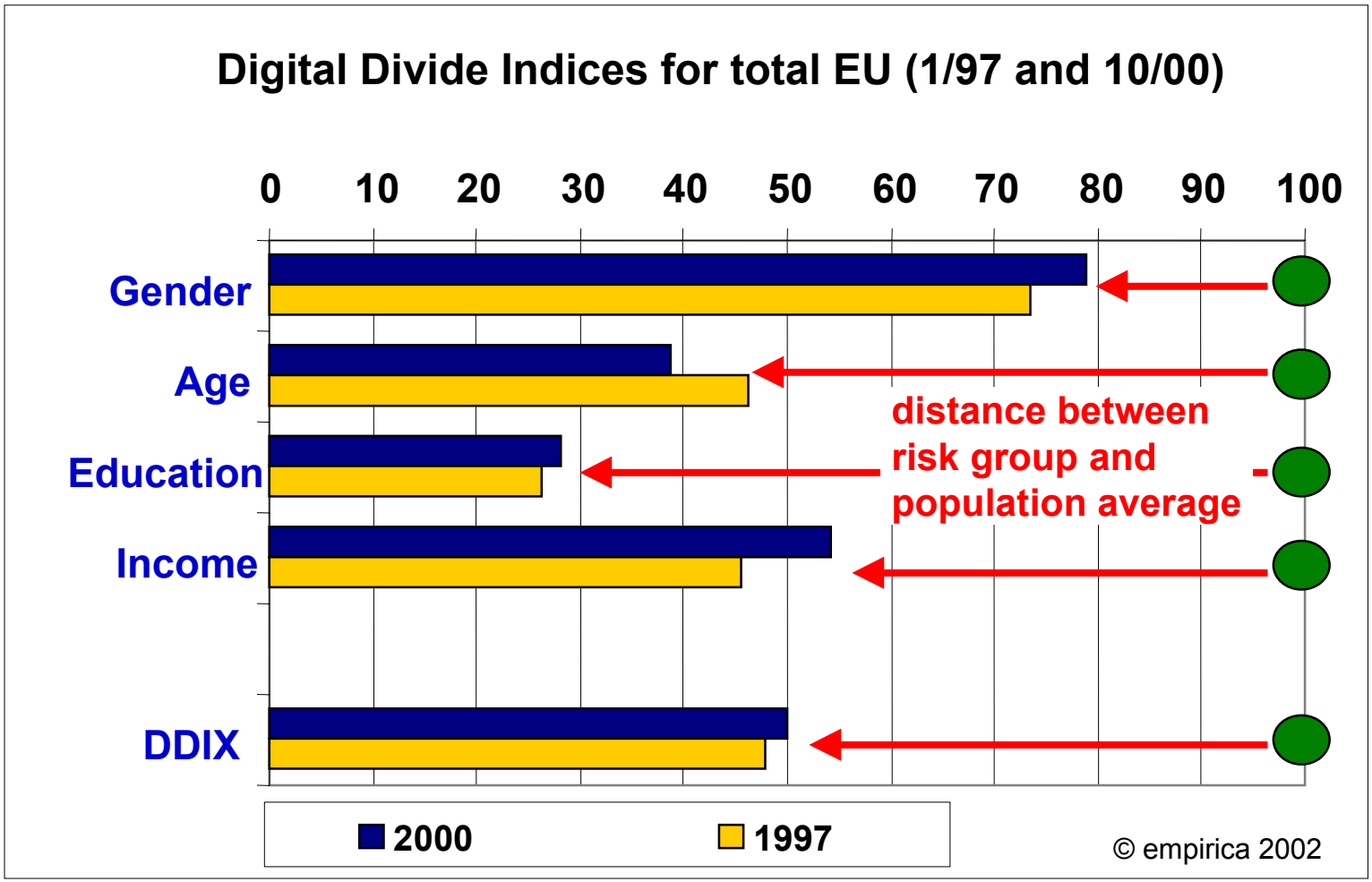
1: Percentage of computer users

2: Percentage of people who use a computer at home

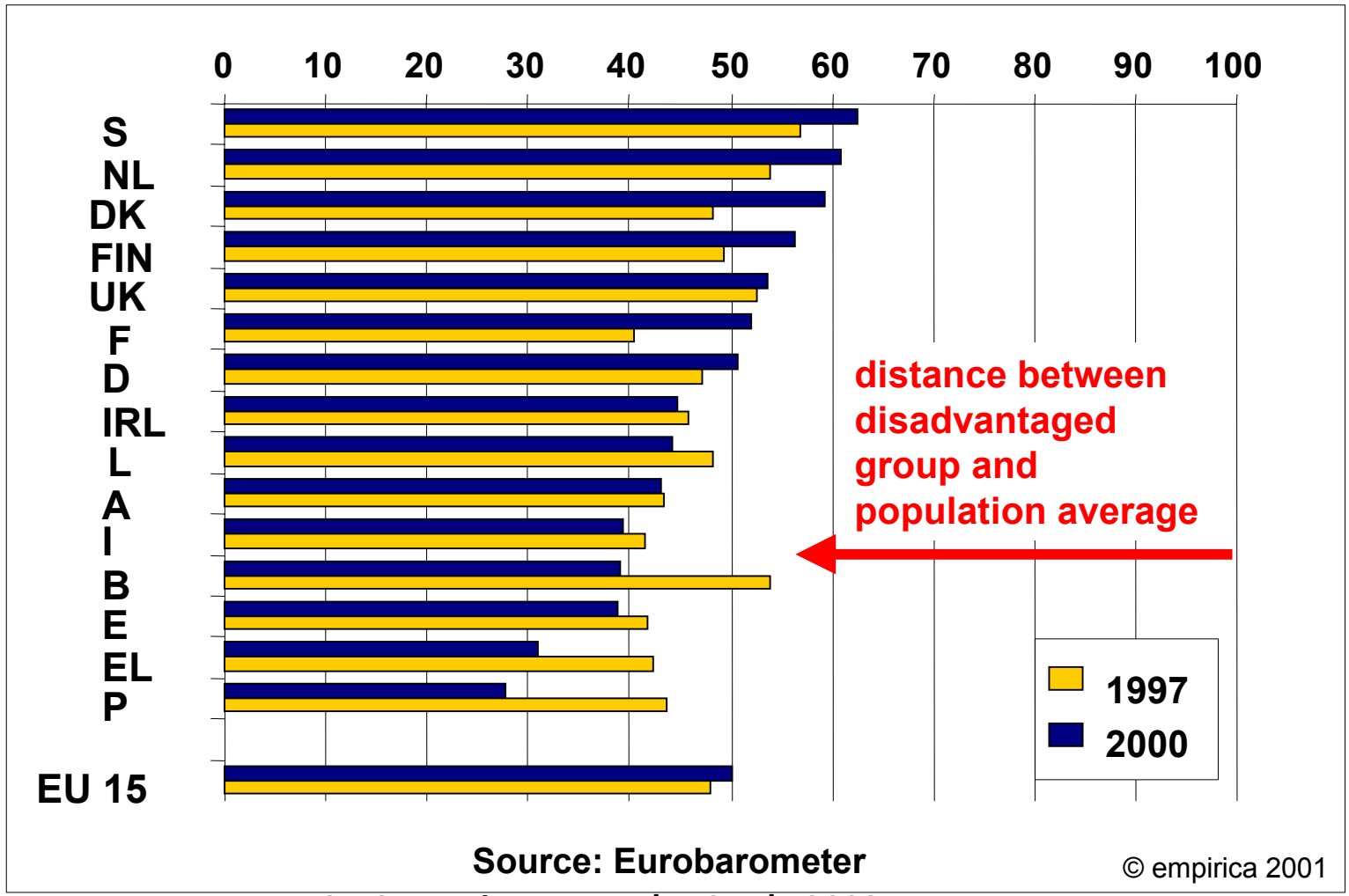
3: Percentage of internet users

4: Percentage of people who use internet at home

The compound Digital Divide Indices on EU Level (1997 / 2000)

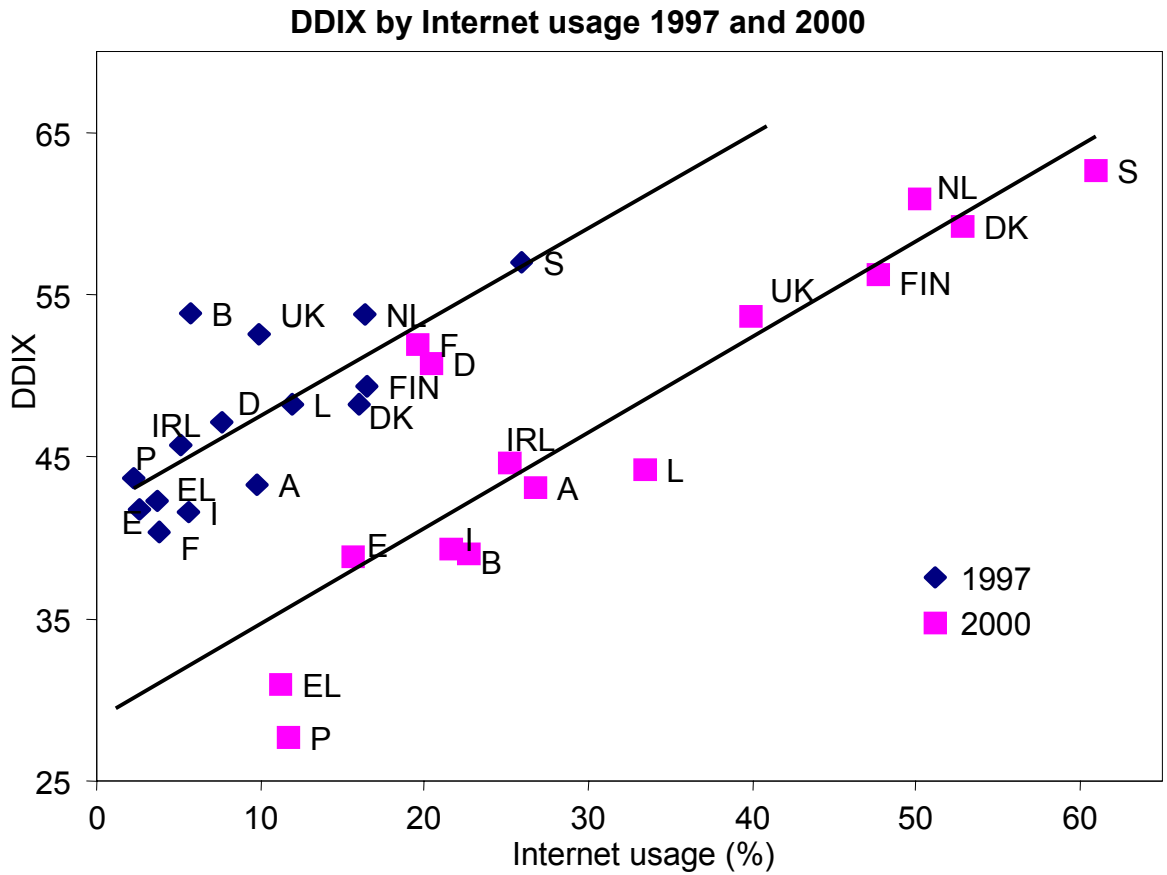


The "DDIX" 1997 and 2000: Comparison of Member States

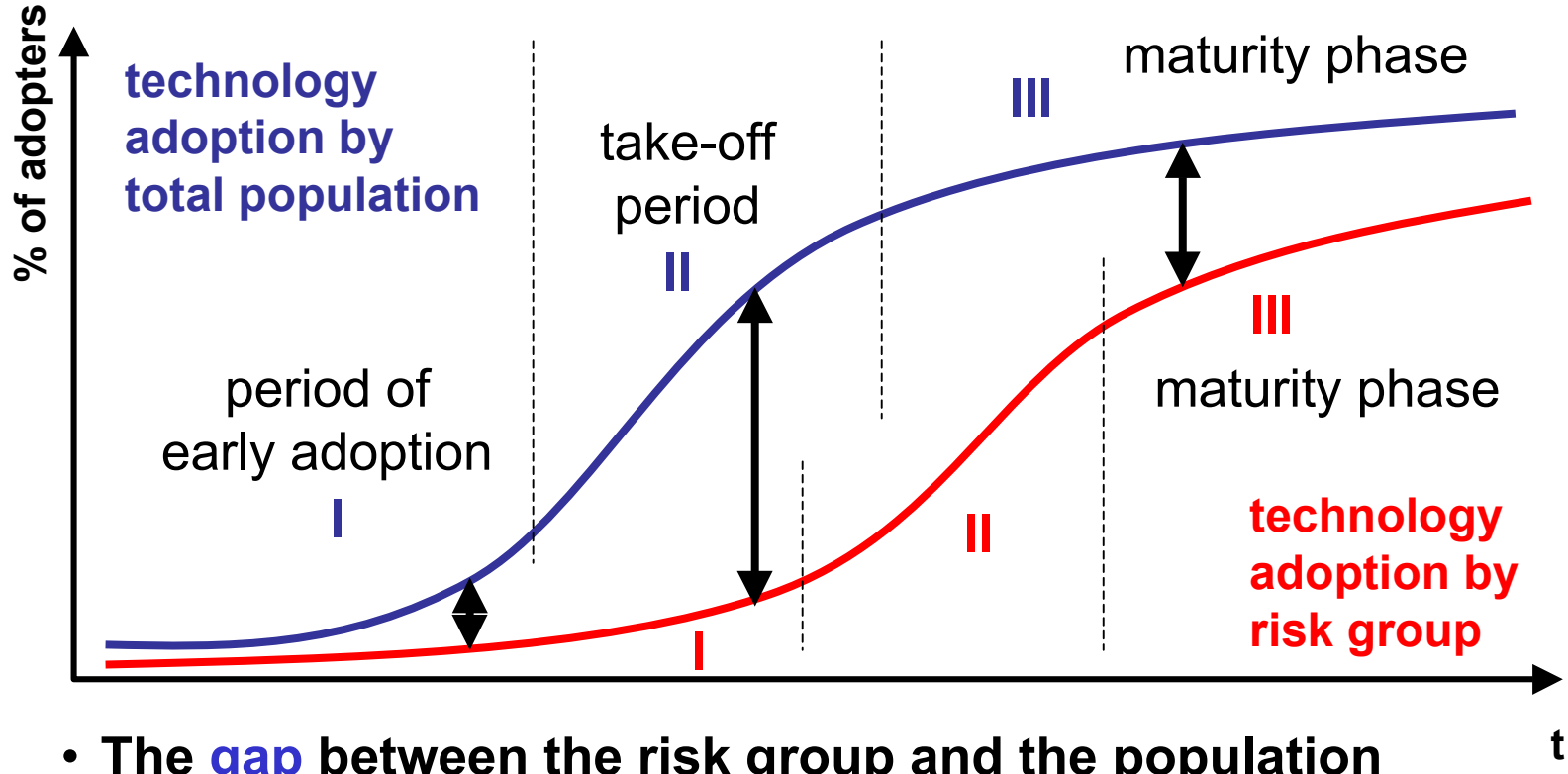


The "DDIX" 1997 and 2000: Comparison of Member States

- Stagnation on EU level effect of equality having improved in some Member States and aggravation in others:



Model based on diffusion theory



- The gap between the risk group and the population average will (normally) increase at first and decrease once the risk group has entered the take-off period.
- Simple deterministic logistic curve modelling would expect only increasing ratios over time, however.

Summary: Basic results

- Usage of computers and internet is still very uneven across different socio-demographic groups.
- The most threatened groups considerably lagging behind are:
  - People with low education are only 28% as likely as the average to use a computer and the internet.
  - Elderly people are only 39% as likely.
  - People with low income are only 54% as likely.
- The "gender divide" in using computers and the internet is closing in nearly all Member States.

Summary: Basic results

- The Digital Divide Index **(= diffusion ratio risk group / population average)** has stagnated between 1997 **(48)** and 2000 **(50).**
- But the dynamic was a different one in the four dimensions analysed in this pilot study:

	Index 97	Index 00	Change %
Gender	**73**	**79**	**+ 8.2 %**
Age	**46**	**39**	**- 15.2 %**
Education	**26**	**28**	**+ 7.7 %**
Income	**45**	**54**	**+ 20.0 %**

Note: perfect equality = Index of 100

Summary: Member States

- Results suggest that the digital divide is wider in less advanced than in the leading countries (in terms of using ICT).
  - The compound Index is lowest in Portugal and Greece (i.e. there are the highest relative levels of social inequality in using computers and internet).
  - The Index is highest in Sweden, NL and Denmark.
- Note: The results are very different if the absolute distance (in percentage points) is measured.
  - But: We argue that - for most purposes - the ratio should be used as the standard measure.

SIBIS and SIBIS+

- SIBIS extension towards NAS:
  - Slovenia
  - Hungary
  - Slovak Republic
  - Czech Republic
  - Bulgaria
  - Romania
  - Estonia
  - Latvia
  - Lithuania
  - Poland
- **General Population Survey (GPS) in NAS10 later in 2002**
- 6000 interviews in 10 countries; mostly PAPI
- Result: GPS data for: EU15, CH, USA and NAS 10 (27 countries)

SIBIS Next steps in the project

9 Topic Reports (education, work, e-commerce, ...):

- Executive Summary (which mainly contains results: GPS and DMS)
- Introduction
- Identification of the indicator framework and hierarchy (5-20 pages)
- Analysis of data (20 to 50 pages) (which also includes the discussion on quality of indicators, drawbacks, limitations etc.)
- Identification of gaps / Questions arising from the analysis
- Conclusions

Draft: September 2002

Final: April 2003

Indicator Handbook

April 2003

Synopsis of survey questions and comparisons

- E-Commerce surveys of companies:
  - EC survey on ICT usage of enterprises (2003) (PAPI)
  - SIBIS Decision Maker Survey (DMS) (2002) (CATI)
  - E-business marketw@tch (2002) (CATI)
  - ECKMU-2 (2001) (CATI)
  - ECATT (1999) (CATI)

- Household / population surveys:

Add „Eurobarometer“

  - EC survey on ICT usage of households (2002) (CATI or CAPI recommended)
  - SIBIS General Population Survey (GPS) (2002) (CATI)

Co-operation
SIBIS – Eurostat – NSIs – ESDIS – eEurope 2005

- Objective:
  - harmonisation of IS / ICT statistics
  - eEurope 2005 indicator development for benchmarking
  - Contributions to policy development
- Next Steps (proposal):
  - Sharing of experiences from indicator development, piloting / testing and surveys
  - Joint development of new indicators
  - Identification and discussion of overlaps, complementarities, synergies in questionnaires
  - Where appropriate: ad hoc use of relevant SIBIS:
    - Indicators
    - Questions
    - Questionnaire modules

Thank you very much for your attention!

For more information please visit:

www.empirica.com
www.sibis-eu.org
www.ebusiness-watch.org
www.ecatt.com
www.seniorwatch.de
www.families-project.com
www.flexwork.eu.com
www.databank.it/star

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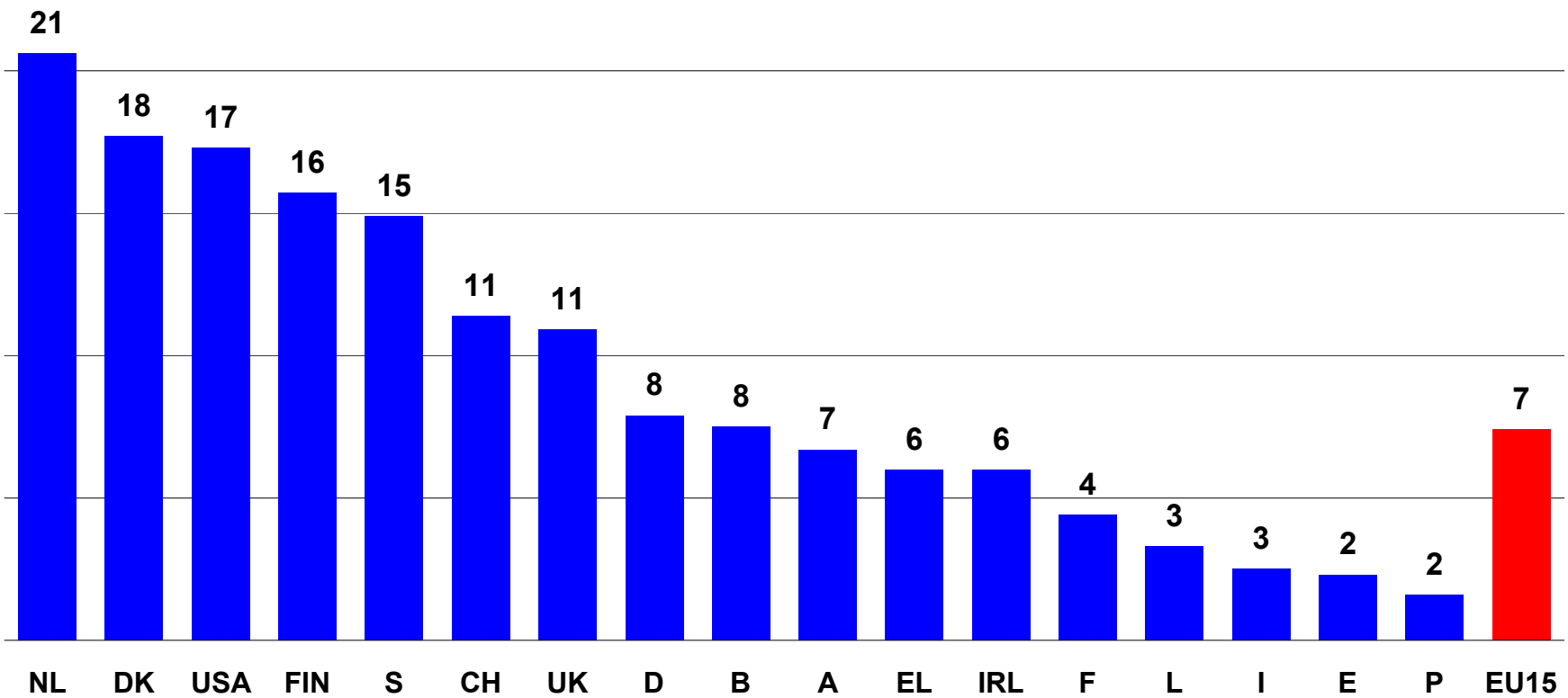
SIBIS Surveys: Some Results from the GPS

Home-based teleworking

Base: All in paid work; SOHOs not included



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