

SIBIS – Workpackage 2: Topic research and indicator development

Tasks 2.1 (Update) + 2.2 (revised version):
Work, employment & skills

Revised Version

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0 Overview

The spread of what is called new ways of working, often being made possible by advances in information and communication technology (ICT), has been described as a paradigm shift. In general, the transition from the previous to the recent paradigm is characterised by developments toward greater flexibility of labour deployment. A changing economic environment together with transformations in social attitudes are believed to have resulted in greater spatial, contractual and temporal flexibility, shifts towards less uniform social security provision, the need for updated skills and multi-tasking, and significantly more dynamic skill requirements. In this, ICTs act as enablers of change, although they do in no way predetermine outcomes.

Existing statistics have proven to be insufficient for mapping these developments. Moreover, there is still a lack of theoretical conceptualisation of the paradigm shift which would allow to represent the underlying developments by using existent statistics, as well as fresh data where necessary. Tackling this task has only just begun. This document is part of an effort to develop new indicators for mapping work, skills and employment in the Information Society. It presents the results of our stock-taking exercise of existing indicators that are (or can be) used for this purpose. It relates in many ways to the demand of the European Commission for better statistics, voiced in a number of top priority policy documents on the European Employment Policy, the Social Policy Agenda, and Lifelong Learning. Policy makers need accurate data to be able to assess the challenges that the Information Society poses, to develop adequate measures that effectively support policy goals, and to evaluate the success of their policies. The report also relates to the eEurope Action Line "Working in the knowledge-based economy". Indicators which are going to be developed will directly assess eEurope actions and/or produce additional information to better understand the impact of the ICTs on people's well-being in the European Union. The presentation of indicators in table form includes references to the eEurope actions insofar as they are related to these.

The document divides the topic into the three domains: (a) skills, (b) work organisation, and (c) structure and outcomes of employment. **Skills** are the necessary basis for the productive deployment of individuals in the production process (**work organisation**) which in turn creates the foundation for **employment** and the value derived from it (**outcomes** such as productivity, remuneration, work satisfaction, but also work-related health impairments etc.). Since the topic area is so broad that covering all fields for which indicators are being used is beyond the resources of the project, SIBIS focuses – in each of these three domains - on the following main areas for indicators:

- indicators which measure changes in the nature of skills being produced, supplied and demanded;
- indicators which measure increases in and changes to the flexibility of the way work is organised;
- indicators on social outcomes of work at the level of the individual worker.

For each of these, available indicators are described to enable an analysis of their suitability for mapping Information Society developments (see Annex 5.1). In addition, indicators which are in development, i.e. have been piloted in one-off studies or in one or a small number of EU Member States, have been collected (Annex 5.2). Data sources range from administrative data collections by supranational statistical bodies such as Eurostat, ILO and the OECD, and by national statistical offices, to regular surveys conducted by research organisations (see table in chapter 5.1.2).

The stock-taking analysis came up with plenty of indicators that cover the topic of work, employment and skills, but our research has shown that the developments that mark the shift from industrial to Information Society are insufficiently represented by available data. Fields in which additional indicators, together with data gathering structures that provide for continuous and timely data, are most urgently needed are: lifelong learning, in particular ICT-related and informal learning; supply of ICT-related skills inside of the labour market and among the

unemployed and the labour reserve; ICT-related skill requirements; the effectiveness of existing lifelong learning offers; changes in work content and working conditions; telework in the widest sense of the word, especially tele-cooperation and other kinds of "invisible" telework; changes to the formal as well as "informal" contract between workers and employers, e.g. the spread of performance-related pay and management by objectives; and non-monetary benefits of employment as well as detriments from work.

A common problem with the large majority of indicators identified concerns the timeliness of the information, and the regularity of data gathering exercises. Many of the surveys which produce the most valuable data are conducted only once in several years, or they are one-off exercises without any prospect of producing time-series data. Another important issue is that indicators should allow for breakdown of data by gender and other demographic as well as socio-economic variables. This is necessary to support EU policy-making in the area of e-Inclusion, equal opportunities and the prevention of a digital divide.

Therefore it is obvious that more advanced indicators, backed up by sound and well established data gathering structures, are needed. The main part of this document includes indicator suggestions which are designed to fill the gaps that have been identified. The focus here is on indicators for which data can be collected through representative surveys, as SIBIS will conduct a series of such surveys at a later stage of the project.

The report also contains two suggestions for compound indicators (indices, see section 4.2), one intended to represent worker-centred flexibility of work arrangements, the other to represent company-centred flexibility of work arrangements. By theory-led combination of indicators from a variety of sources, these indices allow to rank countries such as EU Member States according to the overall performance in comparison with each other. Although indices of this type have to be approached with care because of the necessary high level of aggregation of data, they nevertheless prove to be of high value for communication of the results of statistical analysis to policy makers and the wider public.

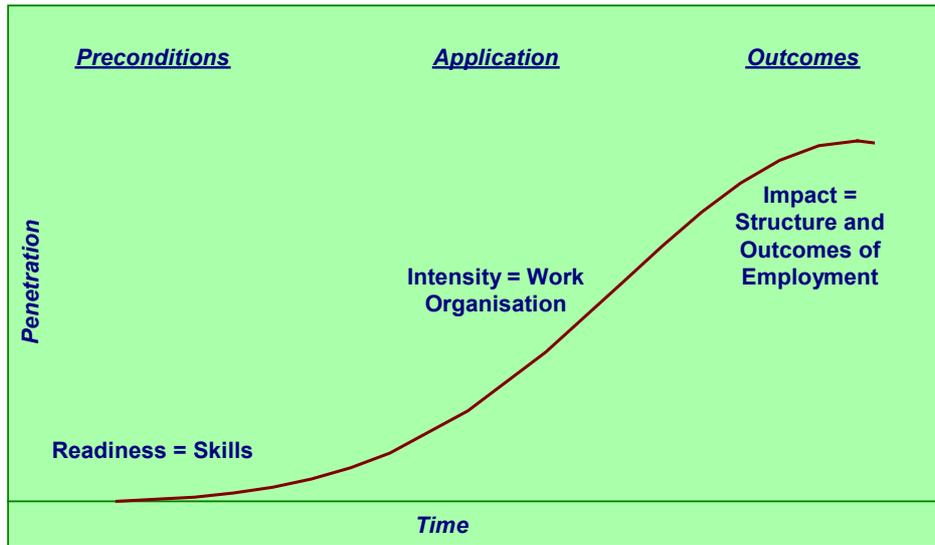
1 A Framework for the Development of New Indicators

This section explores, by consulting the relevant research literature on work, skills and employment, how information society developments affect supply and demand of human skills, how these interact with forms of work organisation and employment patterns, and in which ways ICTs act as enablers and shapers of change. The main stakeholders in each of the main areas of the Topic are outlined, together with existing indicators (to be specified in section 5.3).

The concept and idea of new ways of working has been described as a new paradigm. It is necessary to conceptualise this paradigm shift in sufficient detail so that the underlying developments can be mapped using existent statistics (as well as fresh data where necessary). Tackling this task has only just begun.

Skills are the necessary basis (precondition) for the productive deployment of individuals in the production process (application: *work organisation*) which in turn creates the foundation for *employment* and the value derived from it (outcomes such as productivity, remuneration, work satisfaction). In this sense, employment is the outcome of the labour market procedures that translate skills into work. Whereas skills and the deployment of workers in the production process are not ends in itself, employment is the socially accepted system through which the capabilities, preferences and needs of individuals are brought to a match. Ultimately, the impact of ICTs on skills and the organisation of work have to be measured according to their contribution to the goal of socially and individually satisfactory forms of employment.

Figure 1: Suggested focus of analysis according to stage of diffusion of an innovation (based on Simpson 1999)



The information society brings with it a new relationship between skills, work and employment, and new requirements which have to be met by

- individuals, to stay competitive on the labour market and to choose a way of working that maximises personal benefits;
- companies, to adapt the deployment of the factors of production, in particular labour, to current market environments; and
- the state, to provide services and regulatory frameworks that support employment structures that serve the public welfare.

As Figure 1 shows, the focus of analysis should shift according to the stage of diffusion of a certain new way of working (see Simpson 1999). Hence, work innovations which are quite new and not wide diffused yet (e.g. permanent telework) should be analysed by focussing on whether the preconditions for a further diffusion are sufficiently developed (using readiness indicators), whereas work innovations that have reached higher rates of penetration (e.g. computer-based working) would better be analysed by looking into intensity (how much, in which ways, for what purposes is the innovation applied) and impacts (e.g. labour market outcomes such as creation or displacement of jobs; changes in job quality).

1.1 Skills

Definitions and dimensions

"Skill" is the "learned power of doing something competently". In the context of work and employment, skill is the ability to fulfil a gainful occupation. More precise: Skills are the ability to conduct a certain activity with particular means and at a certain speed.

Skills are the main features demanded and supplied on the labour market. The distinction between demand and supply of skills shall be the main criterion for structuring skills-related aspects in this paper. Most important is the supply side, namely the acquisition and provision of skills, because the need to apply knowledge and skills efficiently and effectively is an imperative of the information society (OECD 1996: 32). Today these requirements focus on general skills needed to make use of ICTs, as well as the specialised, technical knowledge

needed to compete in increasingly knowledge-intensive work environments (Senge 1990; Argyris 1993) and to participate in decision-making via active citizenship (EC 2000memo).

New skill requirements follow from the concept of the Information Society for a number of reasons (Davidow and Malone 1992; Stock et al. 1998; Datamonitor 2000; Ducatel and Burgelman 2000; Millar 2001; OECD 2001wb; ILO 2001):

- *Size of ICT industry:* The technology that underlays the information society, namely ICTs such as the Internet, itself forms an industry of considerable size; companies that operate in this industry depend on the availability of skills that are in line with the dynamic requirements of the market. As in other industries that rely to a great extent on innovation as their main driving force, specific skills that have been acquired in the past are in danger of becoming obsolete extremely fast; they are constantly being replaced by new skill requirements.
- *ICT effects the whole economy:* The nature of ICT-related innovation implies that ICT is a basic technology that affects the foundations of the whole economy in one way or another. It impacts on all economic sectors, as ICTs are applied throughout the economy to increase productivity and enable innovation. Consequently, ICT-related skills are in demand in all companies, either as specialist skills for the operation and maintenance of ICT equipment, or as user skills for applying the technology to support the aims of the organisation.
- *Widespread private ICT use:* People (as citizens or consumers) need skills in using ICTs for them to be in the individual as well as public interest. These skills are not directly related to the competitiveness of companies, but the reality shows that companies benefit from domestic markets in which they can test their products in. The more advanced a population is with respect to the availability of ICT user skills, the better the conditions for companies that sell innovative ICT-related products.
- *Shortened skill lifecycles:* The application of ICTs has also affected the demand for skills that are not related to ICTs themselves. These indirect effects result, in particular, from the shortening of product life cycles that is being enabled by technology. The intensity of research and development associated with creating new products has steadily increased. Competitive forces are bound to lead to a further acceleration of the process of translating innovation into marketable products and processes. As new products and processes are associated with new skill requirements, skill life cycles, too, have shortened and will decrease further in the future.

Whether ICTs are the focus of the job or facilitate it, whether the job is inside an industry that produces ICTs or in an industry that uses them, new skills will be needed by the workers who perform the work.

Indicators to measure *Information Society skills* need to show how well individuals, as workers or job-seekers, offer the skills demanded in the electronic society. Digital literacy is an essential element for the employability and adaptability of the general workforce. But while international data on literacy levels is being collected in a standardised way already (IALS, see OECD 1995lit; 1997lit; 2000lit), concepts and data for “digital literacy” are so far only poorly developed. Which skills do employees need to get a job, how do they acquire these skills and how wide-spread are they currently? Information Society skills with relevance for our Topic consist of (compare Finnish Ministry of Education 2000: 6)

- technical skills,
- communication skills,
- skills in acquiring and using information,
- self-learning and self-assessment skills,
- participation skills (i.e. skills in exerting influence on information society policy).

A useful indicator for *directly assessing skills* would be the share of the workforce with a set of basic computing skills. Such an indicator is not available yet apart from the rate of participants who have acquired a certificate from formal IT training schemes such as the European

Computer Driving Licence, which give a non-representative picture of the diffusion of skills. We need more detailed indicators that directly assess the level of proficiency in specific ICT related skills.

Indicators for *indirect assessment* of skills measure settings or procedures that are believed to imply that the persons have acquired the skills in question. For example, for the sake of benchmarking the eEurope initiative “share of labour force that have [ever] received computer training” has been suggested as an indicator. Another would be the share of the employed who work with computers. Both indicators, however, have the disadvantage of excluding the unemployed and persons outside of the labour market, who also contribute to the current or potential skill supply respectively.

Highly-specialised skills are often acquired by obtaining a formal qualification such as a university degree. A number of indicators are available here, most based on agreed classifications of qualifications such as the International Standard Classification of Education (ISCED) developed under the auspices of the UNESCO. Examples include as ‘ICT intensity of graduate output’ and ‘number of places and graduates in ICT related third level education’. The EU High Level Group “Employment and Social Dimension of the Information Society” (ESDIS¹) has collected data on a number of indicators derived from the eEurope initiative.

A specific issue here is the widely discussed “skills gap”, i.e. the unsatisfied demand for ICT specialists. Market research organisations have started to calculate the size of the skills gap, i.e. to assess the demand for and supply of ICT specialists needed in each of the EU Member States (EITO 2000: 25; Datamonitor 2000; Heinderyckx 2001). Unfortunately, the methodology of the effort is not made fully transparent which diminishes the value e.g. of the IDC indicators described in section 5.1.3. There is a need for alternative projections based on different assumptions, as results tend to be heavily influenced by a small number of assumptions about which there is not always much consensus, and also by possible conflicts of interest on the part of the organisations carrying out the research.

The increasing speed with which market environments change with regard to technology, the structure of the economy and the regulatory framework, have affected the role of skill requirements in the society at large as well as at the personal level. It is now clear that the provision of skills must be constantly adapted to account for changes in skill requirements. Traditionally, basic skills and qualifications that are necessary to compete in the labour market were acquired in the stages of formal education in school, vocational training, universities, gradual schools, etc. These set the ground for the following stage(s) of gainful work. In the information society, training and working must to some extent take place in parallel, interacting with each other. This becomes clear in face of estimates which put the average half-life for technical knowledge at 3-5 years and estimate that complete obsolescence sets in after 6-10 years (Scheer et al. 1997, quoted in Finke 2000: 5).

The shortening of skill life cycles has resulted in skill requirements not being in sync anymore with the traditional working life cycles of individuals. Workers can to a much smaller extent rely on being able to market the skills they have acquired in the early stages of their life throughout their lifetime but have to constantly adapt them to the demands of the labour market. This belief is behind the concepts of Lifelong Learning (OECD 1996; Hanna 1998; Field and Leicester 2000; Finke 2000) and Continuous Training². Distinctions between education and work become increasingly blurred³.

¹ For background information on ESDIS see http://europa.eu.int/comm/employment_social/social/info_soc/esdis/activities.htm.

² Other terms used: post-school-learning, further education, continuing education, careers education, outreach education, workplace education, vocational training; see Finke 2000: 97.

³ To distinguish this topic from Education (SIBIS Topic 4), the discussion on skills in this Topic Research focuses on the acquisition of employment-related knowledge and skills *after* the (mostly continuous) pre-work phase of mostly full-time education (usually consisting of nursery, primary and secondary school, and maybe vocational training, gradual school or university, etc.) has been completed. According to this understanding, SIBIS Topic 4 (Education) deals with institutional structures and activities of education which prepares individuals for an entry level position and for their first steps towards job careers, while SIBIS Topic 5 (Work, skills and employment) deals with activities that help adult learners to refresh or improve their job-related skills or to prepare for new careers in different areas of the job market (compare Finke 2000: 27-28).

Lifelong Learning has become a top priority in the context of EU employment policies, especially since the Lisbon Summit. This becomes evident in the Employment Guidelines 4 and 5 on the issue of "Developing skills for the new labour market in the context of Lifelong Learning". In line with the EU's Memorandum on Lifelong Learning we define Lifelong Learning as

encompassing all purposeful learning activity, whether formal or informal, undertaken on an ongoing basis with the aim to improve skills, knowledge and competence⁴

Drymoussis (2000: 4) distinguishes between three basic categories of purposeful learning activity (see also Eurostat 2001task: 11):

- *Formal education* – It refers to learning taking place in education and training institutions leading to recognised diplomas and qualifications. According to the Glossary of the ISCED97 classification formal education refers to "...the system of schools, colleges, universities and other formal educational institutions that normally constitutes a continuous 'ladder' of *full-time* education for children and young people, generally beginning at age five to seven and continuing up to 20 or 25 years old." In some countries, however, these age limits need to be extended.
- *Non-formal learning/ education* – It refers to learning taking place within or outside educational institutions, including the workplace and does not typically lead to formalised certificates. According to ISCED97, non-formal education comprises "any organised and sustained educational activities that do not correspond exactly to the above definition of formal education. Non-formal education may therefore take place both within and outside educational institutions, and cater to persons of all ages."
- *Informal learning* – It consists of all intended learning activities and/or situations that cannot be classified as formal or non-formal education and training (i.e. self-directed training or in-groups at the workplace or within the family). These activities are characterised by relatively low level of organisation.

The OECD (INES 2000) suggests the following classification of types of education according to the above categories: Formal education encompasses early childhood education (ISCED 0 level), compulsory education (ISCED 1-2 levels) and post-compulsory education (ISCED 3-6 levels). Non-formal learning consists of continuing vocational education and training, and non-formal general education. Informal learning includes all remaining learning processes of people of all ages.

It becomes obvious that lifelong learning activities often take place outside of the formal education and qualification system, encompassing self-directed as well as private systems such as company-provided training. Training may occur as workers transition from one position to another. Training must also occur for workers who remain in the same position. There is a need for significant efforts to be put into training of existent staff, because acquiring new skills through new recruitment on the labour market involves high transaction costs and the loss of tacit knowledge embodied in existent staff; it is also made difficult when skill shortages exist in the labour market.

⁴ "The concept of lifelong learning, as defined here includes all learning activities: (a) that are purposeful, that is activities which are undertaken with the purpose of "improvement in behaviour, information, knowledge, understanding, attitude, values or skills" (ISCED 97, par.9 – definition of education); (b) that are undertaken on an ongoing basis, which means that they are not incidental or random but have "the elements of duration and continuity" (ISCED 97, par. 11), in principle without any lower duration limits; (c) independent of whether they are formal or not; includes different types of learning like apprenticeships, second-chance schools, on-the job or off-the job education and training, self-learning etc; (d) independent of source of funding, that is funded either by the private sector, the public sector or the individual; (e) independent of mode of provision (using traditional or modern means, such as Information and communication technologies). This notion of learning also encompasses the entire population independent of age and independent of their labour market status. It includes in principle all kinds of activities ranging from early childhood education to leisure education for the retired persons. The terms "knowledge, skills and competence" are not limited to work related outcomes of education and learning but also to societal and personal outcomes." (Eurostat 2001task: 9)

Indicators that “reflect the full meaning of lifelong learning as defined by this Memorandum [EC 2000memo] are not presently available” (do.: 20). Most indicators in use to cover education and training are based on the traditional assumption of a succession of phases which are either exclusively dedicated to learning or exclusively dedicated to working. This applies to the usual educational attainment indicators. As the concept of Lifelong Learning stresses the need to do both, learning and working, in parallel, new indicators for measuring learning which is only a secondary activity need to be developed, also including training that is neither provided by the state nor by companies but by individuals themselves or by other institutions:

- self-learning activities (differentiated according to types of skills acquired);
- participation in training as a secondary activity, in parallel with employment;
- participation in training that is provided by non-state, public institutions such as unions, church organisations, self-help groups etc.

For the purpose of identification and classification of existent and to be developed indicators, we suggest to distinguish between

- indicators measuring the *acquisition of skills* (this includes educational attainment, etc.),
- indicators measuring the *provision of skills* (i.e. the skill supply on the labour market) and
- indicators measuring *skill requirements* (i.e. the demand for skills on the labour market).

The role of ICTs

ICTs are not only a major cause for new skill requirements, but they also provide solutions for meeting them. For example, the training may make use of the Internet to substitute or supplement traditional training. Such a case is distance learning or *eLearning*, where training that traditionally would have occurred in a classroom takes place via an ICT link (Urdu 2000; OECD 2001e-1). *eLearning* is defined in the European Commission’s “*eLearning Action Plan*” (2001: 2) as

the use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services as well as remote exchanges and collaboration.

eLearning can help meeting the challenge posed by the Information Society: “A requirement that cuts across all education settings is the need to significantly improve the efficiency of the learning process and thereby control the cost of an exploding demand for education and training” (do.: 2). Moreover, new organisational models for the provision of training services are needed which take advantage of ICTs as well as traditional methods of teaching (Hanna 1998).

New indicators are needed for mapping developments in the supply as well as in the application of *eLearning* technologies (reach, frequency and intensity of use) and their outcomes. Currently, available statistics are very much limited to basic infrastructure variables such as rate of pupil access to computers, rate of Internet coverage in schools, and so forth. A more in-depth analysis should also identify

- the types of skills that lend themselves to Internet training;
- the use of the Internet for synchronous teaching across long distances (see also SIBIS Topic 4);
- the use of the Internet for individualised teaching;
- the use of the Internet to meet the specific training needs of the (long-term and hard-to-place) unemployed.

There are reasons to believe that *eLearning* technologies can be efficient only for a limited share of training tasks (Finke 2000). As long as there is no deeper knowledge of the spread

and success of existent eLearning schemes and technologies, their value for the objective of boosting Lifelong Learning will remain uncertain (European Commission 1998tec).

Stakeholders

Main stakeholders in the field of skill transfer and learning are (compare Borkowsky 2000):

- *Employers*: Employing organisations form the demand side in the labour market. As such, they translate their labour deployment requirements into demand for types of skills/skill combinations. Additional to the open labour market, internal labour markets are of prime importance, especially concerning the creation of skills among the existent workforce. Internal and open labour markets interact in cases when new skills are required. In such a situation, in principal two options are available; first, acquisition of skills by recruiting new workers on the open labour market; second, development of skills by training existent staff. Main users of ICT-enabled training services may be large and geographically scattered organisations or organisations with geographically scattered operations.
- *Workers*: The aggregated skills of workers constitute the supply side in the labour force. New skills are constantly added to the open labour market by new entrants who have just finished their education, by influx of foreign workers, by training measures through which unemployed should gain skills that are in demand, and by self-learning activities of job-seekers. People in work gain skills informally through their everyday working experience, and/or formally through employer-supplied training or training measures provided by third parties.
- *Other users of educational services*: This group includes the unemployed and individuals willing to enter gainful work but currently outside the labour market, as well as companies and other organisations. In general, training the unemployed and the youth is the responsibility of the state, while individuals who hold positions in companies are trained by their employer.
- *Social partners and other non-government regulators*: Traditionally, social partners play a major role in national employment policies in the EU. The results of the collective bargaining process have far-reaching implications for work organisation. In particular, attitudes towards the application of ICTs and new ways of working influence decisions taken on the company level and thereby can significantly affect the diffusion process.
- *Providers of educational services*: Companies and educational institutions run by the state or by private bodies such as unions and professional associations will provide services for formal education (Hanna 1998). They are paid for by the state, employers and/or the recipients.
- *Providers of educational technology*: Using ICTs for education offers huge potentials (European Commission 1998tec). The technology is developed and marketed by software firms specialised on eLearning products as well as traditional suppliers of teaching aids who transfer their content to the digital domain (Finke 2000: 27ff.).
- *Regulators in the field of education*: Education is regulated by government on EU, national country, regional and local level; the division of power over policy making in this field differs strongly between EU Member States. Regulation will probably be required to ensure that training paid for by public bodies provides real value, and to ensure that private sector training activities serve the public interest (in particular with regard to the access of disadvantaged labour force segments to training and education).

1.2 Work organisation

Definitions and dimensions

There is a widespread consensus among researchers that, although change tends to be gradual by nature, two distinct periods can be differentiated with regard to dominating social

concepts of work in recent times. The first is the post-WWII period of relative stability, the second is the period of economic restructuring that began in the first half of the 1970s, with an additional push in intensity in the 1980s and 1990s enabled by ICTs (Aglietta 1979; Piore and Sabel 1984; Handy 1990; Wood 1991; Castells 1996). Both periods were accompanied by what we want to call a work paradigm, i.e. a consensus about how work had to be 'properly' organised and supported by the socio-political framework (Gareis 2001). At the core of the work paradigm which dominated the second half of the 20th century is what is called the 'regular employment relationship', typical elements of which are full-time, permanent jobs with a contract of employment, even and stable distribution of working hours over a fixed number of days per week, and long job tenures (Mückenberger 1985; Dostal 1999; Hoffmann and Walwei 1999).

It is important to note that we talk about paradigms here, i.e. models with a strong normative component which do not necessarily reflect reality in an adequate way. 'Regular employment relationships' have never been as widespread in the decades after WWII as the term implies (Mückenberger 1985). Nevertheless, these paradigms are of exceptional importance because labour law and the regulation of social security standards tend to be based on them (see Kress 1998).

"Work" is defined here as aimed productive activity. In this deliverable, only productive activity for remuneration is considered, in other words gainful occupation. Self-work and societal work, two other main types of work, are not relevant here. As a rule, gainful occupation takes place in a company. There, individual work is embedded in a larger context and is subject to a certain kind of work organisation. Thus, organisational aspects of work, that is to say the co-ordination of employees in the course of division of labour, and the way these aspects are regulated in the form of contracts, are at the centre of the chapters on "work" in this paper.

In general, the transition from the previous to the recent paradigm is characterised by developments toward greater flexibility of labour deployment (Toffler 1980). A changing economic environment together with shifts in social attitudes and the widespread application of ICTs are believed to have resulted in greater spatial, contractual and temporal flexibility, shifts towards more self-provided social security provision, the need for multi-tasking and significantly more dynamic (social) skill developments (Büssing and Glaser 1998; Klotz 2000). ICTs are enablers of change but they do not predetermine outcomes. They do not e.g. push labour markets towards specific configurations, but open up new possibilities for organising work. The way ICTs are applied to change the organisation of work is to a great extent dependent on the bargaining power of employers vis-à-vis workers (Stanworth 1998; Valenduc et al. 2000) and on regulation by the state (ILO 2001).

When looking at flexibility developments, the dimensions considered are working time, the place of work, the type of contract and the work content, i.e. the skills that are applied in the production process (see Hoffmann and Walwei 1999; Gareis 2001). We believe that all major parameters of the change in the organisation of work can be captured using this framework.

- *Time of work*: This includes the variables
 - average working time per day, month, year, etc.;
 - working time distribution across daytime, week, months, etc.;
 - working time variability (which might be attuned to the demands of business, e.g. shift work, or to the preferences of workers, e.g. flexitime).

Data on these indicators are available from the European Labour Force Survey, surveys of the European Foundation, and other sources.

- *Place of work*: All types of telework are examples for changes that concern the spatial/locational organisation of work. Tele-cooperation, where the location of work stays more or less the same but the spatial organisation of teamwork and collaboration is geographically extended over IT networks, is another example.

While data for basic indicators such as 'working at home' are available from the Labour Force Survey, telework and other IT-enabled flexible ways of working have only been

covered in depth by one-off and pilot surveys so far. For some data on telework from ECaTT, time series are available.

- *Work contract*: This refers to the contract that underlays the relationship between worker and the organisation that utilises the work products, e.g. a contract of employment or a contractor/client-relationship that is based on self-employment. Differences in the duration of employment contracts affect average job tenure. Moreover, the contract defines the extent to which compensation is based on the input (working time) or the output (productivity) of work.

The contract dimension, as much as the formal contract is concerned, is well represented in the statistics. Informal contracts between workers and supervisors/employers, as well as new concepts such as output-based compensation schemes, are hardly covered by data.

- *Work content (applied skills)*: The skills workers apply in the production process define the content of their work (and vice versa). Work content has been hugely affected by the increasing 'informatisation' of work and changes to the variability of work tasks and access to work-related decision making. The latter is often discussed among the header job enrichment, job enlargement and empowerment (Drucker 1988).

Work content indicators have been developed based on the European Survey on Working Conditions (ESWCs, see Dhondt and Houtman 1997). There is a need for further indicators to be researched as most of the change in the way we work seems to be related to the work contents rather than changes in formal contracts.

Flexibility indicators developed by economists traditionally equal flexibility with employment protection legislation. An example is the OECD Labour Market Flexibility Index (Scarpetta et al. 2000). As Cazes (2000) points out, this approach may no longer be appropriate, one reason being that "standard employment protection indicators do not always capture the role of atypical forms of employment" (such as part-time and temporary contracts and the development of dual labour markets). More fundamentally, a flexibility indicator that excludes worker-centred flexibility (e.g. teleworking, discretion over working times and weekly working hours, company-provided training) is at odds with the European Union's view of the flexibility issue. There is a need for indicators that are capable of presenting a picture of the EU labour market situation that is in line with the European Employment Policy's emphasis on socially sustainable new ways of working in the Information Society (see Korte and Gareis 2001).

As the EU Employment Policy and the eEurope Action Plan are vantage points for SIBIS research on work, skills and employment, we are interested on the one hand in models of work organisation that harness the potential of ICTs to reconcile the interests of workers and employers by allowing greater flexibility for both groups of actors. On the other hand, special attention has to be paid to ICT-related developments which might lead to disadvantages for certain groups of people and the creation of a digital divide in the labour market (National Telecommunications and Information Administration 1999).

We define new ways of working in the information society for this research as

those work forms which divert from the post-WWII work paradigm and/or which are made economically as well as socially feasible by the use of ICTs.

The latter part of the definition acts as the major way to differentiate new ways of working against traditional atypical work forms such as shift-work and piece-work in manufacturing and self-employment in retail, small trade and the primary sector. For example, today's teleworkers may look similar to traditional home workers, but through the use of ICTs teleworkers are integrated in the teamwork at the central office (or in virtual teams consisting exclusively of teleworkers) so that they do not have to suffer from social isolation.

The role of ICTs

ICTs play a major role in the developments towards greater flexibility in work arrangements. Examples of direct effects include the following:

- Flexitime and part-time working models have strongly benefited from ICTs (especially technologies for asynchronous communication), as these have gradually lessened the dependence of routine communication and workflow in organisations on face-to-face interaction and, by implication, fixed and universal working times.
- Decreases in transaction costs such as those caused by the application of ICTs will result, according to neoclassical labour market theory, in the increasing importance of self-employment vis-à-vis dependent employment (Wiegand et al. 1997). This takes place e.g. via corporate outsourcing, i.e. the transfer of activities formerly kept in-house to the free market.
- The same is true for developments such as the surge in innovative business models (especially for small companies) based on ICTs and falling barriers of entry in sectors that have traditionally been protected by requirements for major capital investments and by heavy regulation by the state, again attributed in part to the application of ICTs.
- The distance-bridging properties of ICTs increase the 'spatial flexibility' of companies as well as workers: Technically it becomes possible to choose locations for work processes more freely. This makes companies more adaptable to changes in their environment. One practical example is home-based telework. At another level, increased spatial flexibility allows companies to spread their activities over space which may be regions, whole countries or even the whole world.

Some indicators on the tools used for working are available, such as 'use of computer for work' and 'use of Internet for work'. More sophisticated indicators that map the effects of ICTs on the work process are clearly needed.

There is a clear lack of concepts how to monitor and measure the changes in the way work is accomplished in the information society. More efforts and additional indicators, based on a well developed conceptual understanding of the developments that underlay change in this area, are needed. Changes in the structure and mobility of the workforce need to be examined and measured. These include:

- changes in work content, i.e. time devoted to specific activities,
- working time variability and interrelationship with spatial flexibility (telework),
- proportion of the workforce engaged in ICT-related work settings such as tele-cooperation,
- frequency of and geographic distance involved in telecommuting,
- practice of outcome-related compensation models.

Whereas companies will increasingly be asked to provide continuous learning for their employees, they also have to take care of organisational learning, i.e. knowledge management on the company level (Senge 1990; Huber 1991; Nonaka and Takeuchi 1995). Only if organisations are able to systematically preserve and exploit the know-how of their workforce will they be inclined to invest in training activities. Therefore knowledge management has a close relationship to Lifelong Learning and should be adequately mapped using statistical indicators. Some have been developed and piloted for the purpose of market research and one-off research studies, but no time-series data exists.

Stakeholders

For stakeholders in the field of work organisation, see the following section.

1.3 Structure and outcomes of employment

Definitions and dimensions

The impact of ICTs on skills and the organisation of work should be measured according to their contribution to the goal of socially and individually satisfactory forms of employment. Accordingly, SIBIS should collect and, where necessary, develop indicators for measuring the outcome of changes in the ways of working at the level of the national economy (e.g. employment rates) as well as the level of the individual (benefits from employment).

The dimensions to be considered here are:

- *Benefits from employment:* Material and immaterial benefits from employment can be distinguished. The most important material benefit is remuneration, to be measured as personal income. Immaterial benefits can be summarised with the term "work satisfaction". Also to be considered are 'negative benefits' such as detriments resulting from work like e.g. ill-health and stress.
- *Level and structure of employment:* On the macro level, the scope and structure of employment and unemployment are core factors for political decision makers. Numerous indicators are to be considered, including data for workforce, reserve labour force, employees and unemployed.
- *Output of employment:* On the firm level as well as on the macro-economic level, employment-related output of business activity can be measured by labour productivity and unit labour costs (OECD 2001, Ch. D; ILO 2001, KILM 17). Both serve for assessing economic performance. Labour productivity can be defined in two different ways: The relation of value added per year (output) and overall working time of employees in that year (input), or the relation of GDP in a year and the average number of employees in that year. Unit labour costs are defined as "labour compensation per unit of gross value added produced", compensation including gross wages and salaries as well as other costs of labour like employers' contribution to social security schemes.

Job satisfaction, for example, is an outcome of work at the individual worker's level that has to be monitored to be able to assess the sustainability of working arrangements. Data that not only maps the spread of flexible work practices, but also worker's satisfaction with them and effects on the quality of jobs, are needed if policy makers want to make sound decisions about which ways of working should be supported and which should be prevented (Clark 1998). The European Survey on Working Conditions (ESWCs) can act as a starting point in this regard.

Recent research has confirmed that tackling skill mismatches on the labour market implies that it will not be sufficient to train the current labour force, and to qualify tomorrow's new entrants to the labour force by providing adequate education. It will also be necessary to tap latent labour supplies. Therefore, measuring the extent of skill supply and demand at present and, in particular, projections and estimates of their future development need to take into account a differentiated view at labour market participation. For these reasons, all indicators to be used for measuring ICT-related developments in employment patterns have to allow for differentiation, especially with regard to gender.

The role of ICTs

There have been numerous attempts to conceptualise and measure the contribution of ICTs to trends in the structure and size of employment, with varying degrees of success (Bell 1979; Whitley and Wilson 1986; Brynjolfsson 1998; Passamonti and Lucchi 1998; Henry et al 1999; Preissl 2000). Basically, a number of correlations between ICTs and the level and structure of employment exist:

- the production of ICTs creates employment opportunities;
- the application of ICTs:
 - changes production processes inside of companies;

- affects the processes of transaction between companies;
- makes possible new means of distribution;
- enables new ways of managing labour on company level;
- enables new ways of regulating employment by the state.

All of these have manifold implications for the structure and overall level of employment, and also on macro-economic variables that measure economic activities and output (which in turn influence employment). A better understanding of the correlation between ICTs production and application and effects on employment is needed to guide policy making on EU and Member State level. We will discuss available indicators which are used for such analysis in this document.

One (comparatively easy to apply) indicator of employment effects is employment in the ICT sector itself (see OECD 2000meas; Danmarks Statistik et al. 2001).

Another important point concerns the efficiency of matching processes on the labour market. The Internet opens up new possibilities to make job matching more efficient. Public Employment Services in the EU have begun to make use of the Internet to publish vacancies (Gareis and Mentrup 2001a). They face competition in private labour market intermediaries that charge companies for job advertisements that are placed on websites with sophisticated job and candidate search engines. The literature tells almost nothing about the degree to which these Internet-based services have made matching more efficient and more effective, and how job-seekers and recruiters use them in combination with traditional channels of communication.

Stakeholders

Main stakeholders in the fields work organisation and employment are:

- *Employers*: They represent the demand side in the labour market. Company decisions on recruitment and work force issues determine to a large extent job market outcomes.
- *Workers*: The aggregated capabilities and preferences of workers constitute the supply side of the labour market.
- *Employee reserve*: Individuals who are either unemployed or who have decided not to take part in the labour market but would be willing to work under altered circumstances represent the labour force reserve. The size of this group is mainly influenced by the regulatory framework, the business cycle, and a number of structural parameters (Fuchs and Schmidt 2000).
- *Public regulators in the field of employment policy*: The state takes a central role in the labour market by creating the framework in which labour can be traded between workers and employers. Many observers think that state intervention is to a large extent responsible for the differences in the performance of labour markets between the Member States of the EU, and beyond. This applies, in particular, to the speed and nature of the diffusion of atypical ways of working, including ICT-enabled work forms (EC 1999stat).
- *Social partners and other non-government regulators*: Traditionally, social partners play a major role in national employment policies in the EU. The results of the collective bargaining process have far-reaching implications for work organisation. In particular, attitudes towards the application of ICTs and new ways of working influence decisions taken on the company level and thereby can significantly affect the diffusion process (MIRTI 1998; Bibby 2001).
- *Intermediaries* in the labour market, including Public Employment Services (Walwei 1996), but also private companies that derive revenues from supporting the matching between supply and demand on the labour market. These intermediaries are important as users and providers of ICT-based matching services that may increase the efficiency and performance of the overall matching process (Gareis and Mentrup 2001a; High Level Prospect Group 2001).

2 The demand for new indicators in the field of work, employment and skills

Plenty of indicators are available to cover the topic of work, employment and skills, but our research has shown that the developments that mark the shift from industrial to Information Society are insufficiently represented by available data. Policy makers need accurate data to be able to assess the challenges that the Information Society poses, to develop adequate measures that effectively support policy goals, and to evaluate the success of their policies. For this reason, statistics that map the changes that underlay the current shift of paradigms, from the post-war work paradigm to the 21st century work paradigm, are in high demand. The gaps in data coverage that exist today seriously hamper the ability of available data to support EU policy makers in assessing changes in the world of work, and acting accordingly. In this section, the case for additional, new indicators will be made.

2.1 Skills

The main theme running through all discussions about **skills** in the Information Society is the issue of **Lifelong Learning**. It has been dealt with extensively by the Eurostat Taskforce on Measuring Lifelong Learning, which has published its final report in March 2001. This group of statistical experts has investigated existing indicators and suggested new ones. The suggestions of the Taskforce have been a starting point for developing the SIBIS indicators in this field, with a clear focus on indicators that can be piloted in the SIBIS surveys themselves. We intend this to be a first step towards the "complete survey on education and informal learning" envisaged by Skaliotis (2000). The Memorandum on Lifelong Learning (EC 2000memo) has identified six key messages with regard to "taking action on lifelong learning":

- New basic skills for all
- More investment in human resources
- Innovation in teaching and learning
- Valuing learning
- Rethinking guidance and counselling
- Bringing learning closer to home

The document asks for the EC and Member States to "develop data relating to [these] six key messages and to define appropriate quantitative and qualitative indicators on lifelong learning" (EC 2000memo: 20-21).

With regard to the **acquisition of skills**, formal education structures and concepts will have to undergo a thorough revision. Only this will make schools and universities capable of delivering the services which are required in the age of the Information Society. This issue is dealt with in Topic Report No. 4. Indicators on non-formal education and training (which are among the subjects of this report) suffer from a lack of commonly agreed concepts and appropriate standards. Indicators in this field must be able to encompass the whole variety of existing training environments to be found in present-day reality. Moreover, the shifts away from state-provided towards company- and self-provided training, and from full-time education towards continuous supplementary education, have not been adequately represented in available indicators. Most important are better measures of informal learning, as the way people acquire knowledge is shifting from formal, full-time education settings towards more informal learning environments. Consequently, new indicators developed by SIBIS focus very much on non-formal training and informal (e.g. self-directed) learning.

The Eurostat Taskforce on Lifelong Learning stresses that there is an urgent need for indicators measuring intangible investments in training activities by companies. Data on intangible investments by companies "may provide the link for measuring return to investment in learning by enterprises" (Eurostat 2001task: 14). If companies are to assume responsibility for providing lifelong learning opportunities, such measures are of great importance. This

relates to message 4 of the Memorandum on Lifelong Learning which asks for significant improvements "in the ways in which learning participation and outcomes are understood and appreciated, particularly non-formal and informal learning". Ultimately, though, the data derived from company surveys and the like will only be truly comparable when a classification of learning activities (including informal learning) has been agreed upon. Work on this is underway in OECD and UNESCO working groups, but is not part of the SIBIS project. In the meantime, case-study based research is likely to produce the most useful results.

IT-related learning, e.g. acquiring the skills to master ICTs for certain purposes, has also been undergone a transformation. Younger generations receive most of their skills in using ICTs from every-day usage and learning-by-doing, while older generations tend to need more formal training. Therefore, measuring ICT-related skill acquisition by counting the hours spent in computer training courses has its drawbacks. Moreover, it has become harder in general to distinguish IT-related learning activities from other learning, as ICTs penetrate every sphere of our lives. Nevertheless, better data on participation in IT-related training, together with data on IT skills (see below), would allow for establishing a relationship between training intensity and IT skills in a country, or subpopulation hereof.

Time use surveys seem to be an interesting proposition for measuring informal as well as formal learning activities, but have the disadvantage of being very expensive. It could be useful, however, to integrate features of time use surveys into general population surveys to gather data on these issues.

Indicators on eLearning as an innovative way of skill acquisition are almost totally missing. As eLearning plays an important role in the European Commission's strategy for knowledge dissemination, data on current usage and, in particular, acceptability and potential has to be provided soon.

The best source of information on the acquisition of skills seems to be, as the Eurostat Taskforce on Lifelong Learning concludes, the individual. "At European level and within the ESS such a survey would take the form of a harmonised household learning survey" (Eurostat 2001task: 16). In line with this finding, most new indicators described in Chapter 3 will be based on data gathered from the general population rather than from establishments. Additionally, subgroups of the general population such as individuals in institutions (employees in companies, teachers/trainers in education organisations) should be addressed.

The **provision of skills** (i.e. the supply of skills on the labour market) has been at the centre of a public debate on the shortcomings of today's education systems. Data on educational attainment, e.g. on the intensity of certain professions in the graduate output, are readily available (although comparability between countries suffers from national differences in education systems and curricula). However, data on IT-skills in not directly ICT-related professions (non-specialist ICT skills of students) is scarce. Surveys of students could be useful to remedy this situation.

This applies also to the population in general. In principal, there are three ways to measure skills:

- First, counting certificates which have been granted to all citizens who have mastered a defined sets of skills in some sort of examination. This option is only available if a common assessment scheme is available across countries, and widely used by citizens. With regard to ICT skills, such a scheme is not available yet, although the European Computer Driving License (ECDL) initiative is working on this goal.
- Second, directly measuring skills through some sort of testing. This is extremely time-and cost-intensive and therefore not done often. The International Adult Literacy Survey (IALS) took four years to finish the first round of surveys, and another two years for publishing the results. It should be adapted to account for the specific properties of electronic information sources. If other surveys are used for this purpose, measuring Information Society literacy should follow the system of literacy levels developed by the IALS. There are doubts, however, if a large-scale survey of the size of the IALS will ever be able to adequately provide data on IT-related skills because of problems of timeliness, as IT-related skill

requirements change much faster than the sort of basic literacy skills included in the IALS concept.

- Third, indirectly measuring skills by means of self-assessment. Of course, this method has always to deal with problems of social desirability which is likely to distort findings. However, this kind of measurement has the advantage of low costs and, if required, timeliness, which means that it might be the only feasible way of measuring IT-related skills at short notice, and on a regular basis with short time intervals.

The problems facing EU Member States with regard to the scarcity of IT-related skills requires to take advantage of unused skills in the labour force, to better match demand and supply of skills. Indicators on ICT skills in the labour reserve are, therefore, of high relevance to EU decision making.

With regard to **skill requirements**, EU policy-makers until now have to rely on proprietary data provided by IT consultancies such as IDC, as other available data are limited to vacancies unfilled statistics provided by Public Employment Services (which are hardly comparable between countries), and national surveys of companies. PES data are not available for cross-country comparisons because of differences in employment regulation. They also do not allow for an exact assessment of skill requirements, as data is only provided along occupational categories that do not adequately reflect the variety of IT-related skills to be found in reality. Regular surveys of companies, which are already being conducted by individual EU Member States, should be organised at the EU level.

Data is also scarcely available on the suitability and adequateness of individual education activities for meeting the requirements of current or prospective jobs. Combining information on the acquisition of skills with data on their adequateness for meeting real-life demands would greatly improve policy-makers' knowledge about the effectiveness of education policy measures.

Suggestions for Indicators from the Report of the Eurostat Task Force on Lifelong Learning

The following is a list of questions which were identified as being relevant to lifelong education and learning by the Eurostat Taskforce on Lifelong Learning:

- "What kind of educational programmes or learning activities are available? Where? When? For whom?
- Who are the organisers/providers/sellers/buyers of educational programmes and learning activities?
- Who are the learners? (sex, age group, socio-economic profile, preferences)
- How do they participate in education and learning activities? (access, completion, learning)
- What is the impact (outcomes) of participation on education and learning activities on the individual labour market situation, status, career and citizenship?
- Why are potential learners not participating in education and learning?"

The Taskforce also suggests a harmonised adult education survey. "The target group of such a survey would be the 16+ year olds and the reference time should be one year. The proposed EU-AES would include information on the following aspects (transversal for formal and non-formal education and informal learning):

(A) ON THE INDIVIDUAL

Demographic data

- age, sex, nationality/citizenship/ethnicity/main residence

Educational and social profile

- family situation (work, children, caring): educational attainment (level and field of education and training); educational background of the parents; disability (physical, mental)

Labour market information:

- labour status (employed, unemployed, inactive, self-employed, voluntary work)

<ul style="list-style-type: none"> • current/last job (including occupational category) • employer/enterprise (NACE sector, size) • income <p>Other personal information:</p> <ul style="list-style-type: none"> • self reported basic Skills (digital literacy and ICT familiarity, foreign language skills); social/Civic Participation <p>(B) Participation/Access</p> <p>Incidence</p> <ul style="list-style-type: none"> • participation (number of events) <p>Volume</p> <ul style="list-style-type: none"> • time spent in education and learning (volume) within working hours/beyond working hours <p>Unmet demand</p> <ul style="list-style-type: none"> • perceived personal demand (needs and interests) <p>Access/obstacles/equity</p> <ul style="list-style-type: none"> • perceived obstacles to participation • transparency of learning offer (information and advice/guidance) <p>(C) CHARACTERISTICS OF EACH ACTIVITY</p> <p>Content</p> <ul style="list-style-type: none"> • type of learning activity, field of study, purpose/aim • place in national education system (for formal/non formal education) • recognition of learning outcomes <p>Volume</p> <ul style="list-style-type: none"> • duration <p>Characteristics of provision</p> <ul style="list-style-type: none"> • type of provider <p>Subjective evaluation of activity</p> <ul style="list-style-type: none"> • perceived motives (job-related, societal, personal) • perceived benefits (job-related, societal, personal) <p>Financing</p> <ul style="list-style-type: none"> • source of financial support (public, employer, individual learner)"

Source: Eurostat 2001task: 20-21

2.2 Work organisation

In the second domain, **work organisation**, we found a whole array of indicators which have been used in data-gathering exercises such as population surveys, but most indicators in this area are still in the piloting stage and have not been integrated into regular surveys of sufficient size such as the European Labour Force Survey. An agreement on common definitions is clearly needed to make the best of existing resources for one-off surveys.

With regard to **work content/applied skills**, most attention has been paid to the use of basic ICTs such as computers and the Internet at the work place. Changes in working methods that have been enabled by the use of ICTs have attracted much less attention. Only data from one-off projects such as the Employment Participation in Organisational Change (EPOC) survey by the European Foundation, and surveys which are repeated only in large time intervals (e.g. the International Social Survey Programme (ISSP) and the European Survey on Working Conditions (ESWCs)) are available for this purpose. This is unfortunate, as the focus on IT tools may cover up large differences in the way these new technologies are used, and in

impacts on employee's control over their work contents. Another area which is not properly represented in statistics are changes in the division of labour, which are related to the often-mentioned concepts worker empowerment and job enrichment as well as to groupwork and collaboration.

In comparison, changes to the **time-related organisation of work** are much better covered by available statistics. There is the danger that, in the middle term, some of these indicators will have to be redesigned if currently still common terms such as 'full-time' and 'part-time' lose their relevance in favour of a continuum of contractually fixed working hours per week, or variable numbers of working hours according to the needs of the worker or the employer. For the collection of time-series it is therefore advisable to use intensity indicators which use a common measure (e.g. average hours worked per week) and do not rely (as for example the European Labour Force Survey (LFS) still does) on the subjective judgement of the respondent.

Data that allows for differentiating between worker-centred and company-centred flexibility is of special importance (e.g. indicators on part-time work derived from the LFS), because they may be used to put the debate on the flexibilisation of the labour market on a conceptually more satisfying grounding. The current political debate still suffers from a view of flexibility that is too general and not differentiated enough. For a more accurate view on the options available on the way towards more flexibility, and possible drawbacks of different types of flexibility, better data is needed, for example on reasons for working part-time and on the methods companies choose to adapt total hours worked to fluctuations in demand.

The location or **place of work** has often been discussed in the context of ICT-enabled new ways of working such as telework. Most national statistical agencies (and also the LFS) traditionally collect data on home-based work, but this is a totally different group of workers than those who are commonly referred to as "teleworkers". According to available evidence (see ECaTT 2000, Felstead and Jewson 2000), one of the formal differences is that home workers tend to work at home for most or all of their working time (in the respective job), whereas teleworkers usually spend only a small part of their working time at home while still being based primarily in a traditional central office facility.

Data on telework is available from a number of sources, but definitions diverge strongly, and time series data are scarce. The data collected by empirica (Korte and Wynne 1996; ECATT 2000) and is the most detailed available, offering multiple possibilities for breakdowns. For some of the indicators from this source, time-series data is available for 1994 and 1999 for the 5 biggest EU Member States. For these reasons, the empirica data presents a very good basis for developing a common set of indicators on ICT-enabled remote work, but some features need more piloting still.

In contrast to home-based telework, tele-cooperation is much less visible - this is the reason why it is also called "in-situ telework". Consequently, statistical indicators on ICT-based forms of cooperation between workers are even less developed. The general population survey conducted in ECaTT, again, can act as a basis because it has collected detailed data on the intensity of company-internal and company-external tele-cooperation already in 1999 for 10 EU Member States, with breakdowns possible for communication technology used.

In general, counting teleworkers becomes increasingly more difficult as they are defined at least partly by the technology they use. This fact poses considerable problems to statistical measurement because of the rapid development of ICTs and their tendency to gradually penetrate every sphere of life. In fact, the telework bracket has been extended further and further with the introduction of new technologies to the workplace, so much that it will be possible to call almost every employee in a country like Sweden or Germany a 'teleworker' in a few years time (especially if the definition includes centre-based, self-employed and mobile teleworkers). Because of this, it seems necessary to switch from 'teleworkers' as unit of reference to 'intensity of telework', measured e.g. in share of working time spent at other locations than the central office facility while staying in touch electronically. This applies especially to mobile, but to a lesser extent also to home-based teleworking.

Data from company surveys are of limited value in this respect because they usually face problems in assessing the intensity of usage, but rather deliver data about uptake (i.e. whether a technology is used or not). Examples for these problems can be studied in the DTI International Benchmarking Study, the ECaTT Decision Maker Survey, and in the EMERGENCE employer survey. A combination of company and population surveys seems to be best suited for the challenge of mapping changes in the organisation of work in companies.

The **contractual dimension** of work organisation concerns, in particular, shifts between different types of employment, i.e. between self-employment and dependent employment and between temporary and open-ended work contracts. These refer to the formal contract between worker and employer/client. The data situation in this respect can in general be regarded as being good, although there are problems associated with the statistical representation of seemingly self-employed workers. Moreover, the category 'self-employed' encompasses a large variety of own-account workers as well as business owners which have not much more in common than the fact that they are not formally working for somebody else. Analysis of sectoral data will be required to better understand structure and outcomes of contractual flexibility. Moreover, there is a demand for an indicator that adequately represents the number of the so-called "new self-employed" or "e-workers" (Malone and Laubacher 1998). Other phenomena for which data is missing include performance-related pay, and outcomes of ICT-based matching on the labour market (Gareis and Mentrup 2001a).

The most often used indicators on the flexibility of labour markets and regulatory regimes of national labour markets have been developed and calculated by the OECD. These are measures for the stringency of labour markets with regard to the effect of regulatory labour market regimes between countries. Main ingredients are sub-indicators measuring procedural requirements for laying off workers, notice and severance pay, prevailing standards of and penalties for 'unfair' dismissals, and conditions for fixed-term contracts (Nicoletti et al. 2000). With regard to this understanding of flexibility in labour market contexts, the European Commission (2000xa: n.p.) states that "the concept of flexibility in working life, first established by the OECD, was opposed by the Trade Unions because it only referred to the need of workers to adapt to changing economic conditions.

By contrast, the European Employment Strategy [...] was based on the wider concept of 'adaptability' which combined flexibility and security". Boeri et al. (2000: 1) define adaptability as the ability of the labour market to a) provide protection against uninsurable labour market risk b) ensure that labour skills continuously match demand as economic development and technological advance take place and as the international division of labour evolves, and c) maintain an efficient degree of geographical and sectoral mobility. Indicators of labour market adaptability have to be capable of presenting a picture of the EU labour market situation that is in line with the European Employment Policy's emphasis on socially sustainable new ways of working in the Information Society. This is an area where innovative approaches towards compound indicators/indices for labour market flexibility are in demand. In Chapter 4 of this document, two possible approaches will be outlined.

2.3 Structure and outcomes of employment

The third domain (**structure and outcomes of employment**) encompasses two distinct types of indicators; on the one hand indicators that measure macro-economic constructs such as unemployment, employment in different economic sectors, developments in productivity etc.; on the other hand indicators on the personal benefits (and detriments) from employment.

Quality in work is traditionally measured based exclusively on pay, and maybe hours of work, as reflected in the European Community's structural indicators. However, research based on personal experiences of workers themselves has shown that pay is by far not considered to be the most important aspect of a job (Clark 1998). Rather, job security, an interesting job, and promotion opportunities are ranked highest. Therefore, an assessment of quality in work in the EU has to acknowledge these aspects, too.

It is also important that, as "concerns about job quality are [...] strongly related to concerns about labour market segmentation and social exclusion" (EC2001emp: 66), data on work quality must include indicators that measure disparities between groups of workers in countries, e.g. by breaking down data according to the skill level of jobs.

Data on the immaterial **benefits of employment**, as well as detriments such as negative health effects, are available on a time-series basis, mainly from the International Social Survey Programme (ISSP) and a survey on employment options of the future conducted by the European Foundation. Recently, supplements to the regular twice-yearly Eurobarometer surveys have also delivered data on this issue. It would be highly welcome if time-series data on a short interval basis would become available through these sources soon. The next step should be to break down the data on these variables to account for differences between various types of work and, in particular, between people engaged in new ways of working and traditional workers. One issue deserving special attention are outcomes of work on the balance between work and family life, as there has been scarce evidence yet about whether flexible working methods benefit families or not.

With regard to satisfaction indicators as used by Eurobarometer, it has to be borne in mind that results usually show a strong dependence on the interview context (e.g. type of interview, preceding questions, interviewer characteristics). Advanced control over the interview situation is required, which is usually not given in CATI contexts. For this reason, time-series data on satisfaction indicators have to be approached with care.

Indicators measuring outcomes at the aggregate level, i.e. the **level and structure of employment**, are plenty. Researchers that want to calculate correlations between changes in the fabric of the EU economy and labour market effects have many indicators at their disposal. Problems with regard to the ability to map Information Society developments with these data stem mainly from the lack of appropriate sectoral and occupational standards. Both data on sectors and occupations are still heavily biased towards the status quo of the industrial age. Service sectors are underrepresented in statistics; likewise, service occupations. This poses the danger that changes in the sectoral structure of the economy are not recognised early enough, or are misinterpreted.

With regard to indicators on employment and unemployment, information on the composition of the labour reserve need improvement. The European Union will not be able to reach its ambitious goals regarding the increase of employment levels, especially among women, if it does not exploit all opportunities for tapping the labour reserve. This requires better indicators on the characteristics of the not working population, especially skills and personal preferences. Many indicators have been piloted in the European Foundation's survey on work options of the future can act as a good example in this respect, but it is not expected to be repeated, i.e. no time-series data will be available.

3 Suggestions for SIBIS indicators on "work, skills and employment"

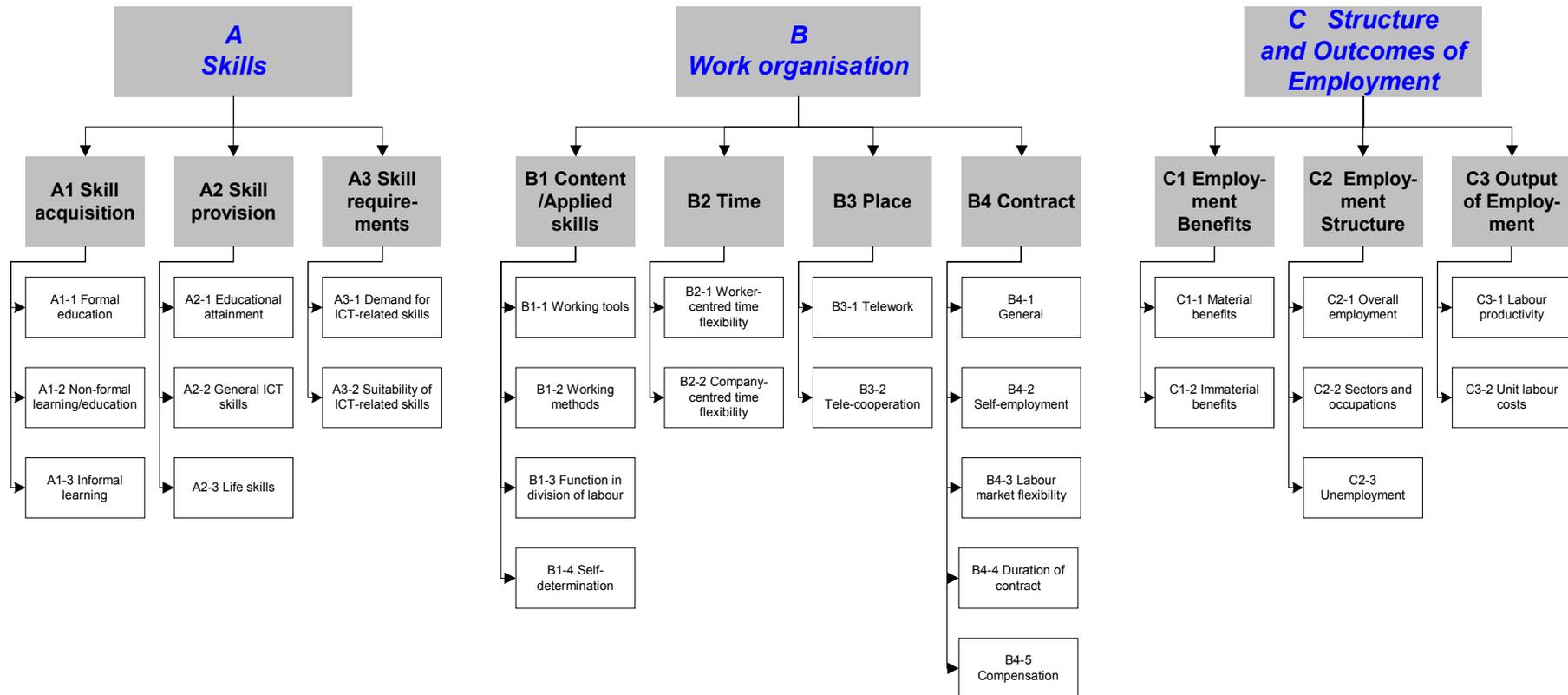
This section of the report will outline the indicators SIBIS proposes for future data collection. Some of them are based on existing indicators, but modified to meet the requirements outlined in the previous sections (see also chapter 5.1.1), some respond to ideas for indicators mentioned in research and policy papers (see 5.3), some have to the knowledge of the authors not been piloted yet at all.

The indicator description tables provide the exact definition along with supplementary information. The listing follows the structure developed in SIBIS deliverable 1.4.

Thematic domain			Suggested sub-domain	Relevance for Employment Pillars
A. Skills	B. Work Organisation	C. Employment Structure/ Outcomes		
A1			Skill acquisition	Pillar I, III
A.2			Skill provision	Pillar I, III
A.3			Skill requirements	Pillar I, II
B.1	B.1		Work content/ applied skills	Pillar III
	B.2		Time of work	Pillar III
	B.3		Place of work	Pillars III, IV
	B.4	B.4	Contract of work	Pillar III
		C.1	Benefits from employment	Pillar III
		C.2	Structure of employment	all Pillars
		C.3	Productivity	Pillars II, III

The figure on the next page shows the structure of SIBIS indicators on work, employment and skills in the form of a hierarchical tree.

All indicators are labeled by a three or four digit code which indicates the thematic domain, sub-domain, indicator and (in most cases) sub-indicator. The # after the indicator number distinguishes the suggested indicators from the existing ones described in the annex of this document.



3.1 Suggested SIBIS skill indicators

3.1.1 Skill acquisition

The figure and table below give an overview over indicators on skill acquisition, which are then described separately in more detail in the subsequent part of this chapter.

A1 – Skill acquisition (Thematic domain: skills)			
No.	Name of indicator	Based on	Method
A 1 - 1 F o r m a l e d u c a t i o n			
A1-1.3#	Inclusion of ICT-related training in non-ICT related third level education	not known yet	Survey of students or university lecturers
A 1 - 2 N o n - f o r m a l l e a r n i n g / e d u c a t i o n			
A1-2.15#	Intensity of training per person trained/ per person employed	A1-2.3 IALS	SIBIS GPS
A1-2.16#	Intensity of training, total per country	A1-2.2* LFS	SIBIS GPS
A1-2.17#	Initiative for work-related learning	-	SIBIS GPS
A1-2.18#	Interest in work-related/ICT-related learning	check Eurobarometer 47.0	SIBIS GPS
A1-2.19#	Financing of work-related training	-	SIBIS GPS
A1-2.20#	Perceived obstacles to participation in work-related/ self-directed training	suggested by Task Force	SIBIS GPS
A1-2.21#	Ratio of intensity of training between genders	A1-2.2* LFS	SIBIS GPS
A1-2.22#	Ratio of training participation between younger and older employees	Netherlands Min. of Economic Affairs (see A1-2.1)	Calculation using LFS data
A1-2.23#	Use of eLearning by workers	- (cf. Eurobarometer 54.0)	SIBIS GPS
A1-2.24#	Use of eLearning by students	- (cf. Eurobarometer 54.0)	SIBIS GPS
A1-2.25#	Offer of IT-related training by companies	-	SIBIS DMS (preferably HR manager)
A1-2.26#	Use of eLearning by companies	-	SIBIS DMS (preferably HR manager)
A1-2.27#	Perceived impact of enterprise-based training	A1-2.13*	DMS (HR Manager)
A 1 - 3 I n f o r m a l l e a r n i n g			
A1-3.13#	Spread of self-directed learning	A1-2.1 LFS	SIBIS GPS
A1-3.14#	Intensity of self-directed learning	A1-2.3 IALS	SIBIS GPS
A1-3.15#	Companies supporting self-directed training by their staff	-	SIBIS DMS (preferably HR manager)
A1-3.16#	Companies financing home ICT equipment of their staff	-	SIBIS DMS
A1-3.17#	Employers whose company finances home ICT equipment	-	SIBIS GPS
A1-3.18#	Staff access to ICTs	A1-3.7* (ECaTT 1999)	SIBIS DMS; optional: GPS
A1-3.19#	Use of PIAPs by the population	-	SIBIS GPS
A1-3.20#	Awareness of PIAPs and knowledge about location	-	SIBIS GPS
A1-3.21#	PC access at home and at work	A1-3.10* (ECaTT 1999)	GPS
A1-3.22#	Use of PC - anywhere	A1-3.11* (ECaTT 1999)	GPS
A1-3.23#	Use of e-mail and purpose of use	A1-3.12* (ECaTT 1999)	GPS

Name of indicator	A1-1.3# Inclusion of ICT-related training in non-ICT related third level education
Definition	Average time students in third level education spend on structured ICT-related training (i.e. excluding self-directed learning), as share of total time spent on formal education. May be broken down by fields of education (according to ISCED 97, see Eurostat 1999)
Notes on relationships to existing indicators and methodology	Not based on an existing indicator. IT-related training is hard to define in a way that is suitable for a non-expert survey, and will become more difficult still with the penetration of ICTs into all spheres of life.
Sources for data and availability	This requires a sSurvey of students engaged in third level education. Alternatively, a survey of third level education lecturers (comparable to the head teachers survey by Eurobarometer) would be possible, but it would be more difficult to calculate numbers of affected students from this.
Issues for SIBIS surveys	Not to be included in SIBIS surveys because number of third level students in the sample will be too small.
eEurope relevance	Remotely relevant for the eEurope action: <ul style="list-style-type: none"> • 2b-2 – increase IT training places and courses and promote gender equality in such courses, using ESF where appropriate

Name of indicator	A1-2.15# Intensity of training per person trained/ per person employed
Definition	<p>Average numbers of hours spent on education and training per month of</p> <ul style="list-style-type: none"> • all persons who finished full-time initial education; • all persons employed. <p>It is possible to differentiate between ICT-related and not ICT-related education and training.</p>
Notes on relationships to existing indicators and methodology	<p>Based on A1-2.3 (for which data is only collected irregularly). Problems with the indicator are related to the reliability of "time spent on education and training" as an indicator for training intensity. Drymoussis (2000: 9) states that "reservations may be expressed on whether the number of hours in training for all forms of training is a reliable measure of intensity."</p>
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	<p>Suggested questions:</p> <ul style="list-style-type: none"> • Did you participate in some kind of computer-related training or learning activities in the last four weeks, excluding self-directed learning? [...] • Apart from the computer-related learning, did you participate in some other kind of work-related training or learning activities in the last four weeks, excluding self-directed learning? [...] • How many weeks, days or hours did you spend on these training activities in the last four weeks - altogether? • Did you engage in some kind of work-related self-directed learning, in the last month? [...] • How many weeks, days or hours did you spend on self-directed learning in the last four weeks - altogether?
eEurope relevance	<p>Relevant for the eEurope action:</p> <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning • 2b-2 – increase IT training places and courses and promote gender equality in such courses, using ESF where appropriate

Name of indicator	A1-2.16# Intensity of training, total per country
Definition	<p>Ratio of aggregated numbers of hours of education and training per month to total adult population.</p> <p>It is possible to differentiate between ICT-related and not ICT-related education and training.</p>
Notes on relationships to existing indicators and methodology	<p>Based on A1-2.2* LFS.</p> <p>Problems with the indicator are related to the reliability of "time spent on education and training" as an indicator for training intensity. Drymoussis (2000: 9) states that "reservations may be expressed on whether the number of hours in training for all forms of training is a reliable measure of intensity."</p> <p>This indicator gives no information on the distribution of education and training across the different subpopulations of the universe. Results may therefore conceal important differences between countries. Additional break-downs have to be devised to tackle this problem.</p>
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	<p>Suggested questions:</p> <ul style="list-style-type: none"> • Did you participate in some kind of computer-related training or learning activities in the last four weeks, excluding self-directed learning? [...] • Apart from the computer-related learning, did you participate in some other kind of work-related training or learning activities in the last four weeks, excluding self-directed learning? [...] • How many weeks, days or hours did you spend on these training activities in the last four weeks - altogether? • Did you engage in some kind of work-related self-directed learning, in the last month? [...] • How many weeks, days or hours did you spend on self-directed learning in the last four weeks - altogether?
eEurope relevance	<p>Relevant for the eEurope action:</p> <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning • 2b-2 – increase IT training places and courses and promote gender equality in such courses, using ESF where appropriate

Name of indicator	A1-2.17# Initiative for work-related learning
Definition	Share of persons engaged in work-related learning (in the last month) who state that the initiative for participation came from themselves/ from the employer/ from a third person or organisation.
Notes on relationships to existing indicators and methodology	Not based on existing indicators. Problems resulting from social desirability should be taken into account when interpreting the data from this indicator.
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	Suggested questions: <ul style="list-style-type: none"> • Did you participate in some kind of computer-related training or learning activities in the last four weeks, excluding self-directed learning? [...] • On whose initiative did you participate in these training activities? (MULTIPLE ANSWERS: employer/ supervisor at work; advisor (e.g. PES); own initiative; DK) • Apart from the computer-related learning, did you participate in some other kind of work-related training or learning activities in the last four weeks, excluding self-directed learning? [...] • On whose initiative did you participate in these training activities? (MULTIPLE ANSWERS: employer/ supervisor at work; advisor (e.g. PES); own initiative; DK)
eEurope relevance	Relevant for the eEurope action: <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning

Name of indicator	A1-2.18# Interest in work-related/IT-related training
Definition	Share of persons employed/ of labour force who state interest in work-related training/ computer-related training. For definitions of work-related and IT-related training, see Indicator A1-2.15#.
Notes on relationships to existing indicators and methodology	Not based on existing indicators. Problems resulting from social desirability should be taken into account when interpreting the data from this indicator. Questions about interest should be interpreted with care because stated interest does not imply a high degree of commitment. Moreover, it is not made explicit under which circumstances the interest might be transferred into actual behaviour.
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	Suggested questions: <ul style="list-style-type: none"> • [WHO HAVE NOT PARTICIPATED IN LAST 4 WEEKS] Would you be interested in participating in computer-related training, in general? • [WHO HAVE PARTICIPATED IN LAST 4 WEEKS] Would you be interested in participating in more computer-related training? • [WHO HAVE NOT PARTICIPATED IN LAST 4 WEEKS] Would you be interested in participating in work-related training, in general? • [WHO HAVE PARTICIPATED IN LAST 4 WEEKS] Would you be interested in participating in more work-related training?
eEurope relevance	Relevant for the eEurope action: <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning

Name of indicator	A1-2.19# Financing of work-related training
Definition	<p>Person or organisation responsible for financing work-related training, as share of all who participated in work-related training in the four weeks prior to the survey.</p> <p>For definitions of work-related and IT-related training, see Indicator A1-2.15#.</p>
Notes on relationships to existing indicators and methodology	<p>Not based on existing indicators.</p> <p>Applicability of this question depends on whether the respondent is aware of who financed the training.</p>
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	<p>Suggested questions:</p> <ul style="list-style-type: none"> • [ALL WHO PARTICIPATED IN TRAINING] Who did cover the costs for this training? Was it (a) fully financed by employer; (b) shared between employer and self; (c) shared between employer and public body (eg PES); (d) shared between public body (eg PES) and self; (e) fully self-financed; (f) DK
eEurope relevance	<p>Relevant for the eEurope action:</p> <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning • 2b-2 – increase IT training places and courses and promote gender equality in such courses, using ESF where appropriate

Name of indicator	A1-2.20# Perceived obstacles to participation in work-related/self-directed training
Definition	<p>Share of persons who state certain reasons for not practising self-directed learning (more often), as share of all persons in paid work.</p> <p>For definitions of work-related and IT-related training, see Indicator A1-2.15#.</p>
Notes on relationships to existing indicators and methodology	<p>Not based on existing indicators. Suggested by Eurostat Taskforce on Lifelong Learning (see Eurostat 2001task).</p> <p>Problems resulting from social desirability should be taken into account when interpreting the data from this indicator.</p> <p>The base might be extended to also include persons looking for work. Answer categories may be modified as a result of pretesting.</p> <p>It might be questioned whether respondents are able to give replies to this question which adequately reflect reality.</p>
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	<p>Suggested questions:</p> <ul style="list-style-type: none"> • [WHO ARE NOT ENGAGED IN SELF-DIRECTED LEARNING] Why do you not practise self-directed learning [more often]? Is it because you (a) do not have the time; (b) think it is too expensive; (c) do not find training offers attractive; (d) do not know enough about training offers available; (e) think it is too much effort to reach training sites; (f) regard other things as more important
eEurope relevance	<p>Relevant for the eEurope action:</p> <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning • 2b-2 – increase IT training places and courses and promote gender equality in such courses, using ESF where appropriate

Name of indicator	A1-2.21# Ratio of intensity of training between genders
Definition	<p>Ratio of aggregated numbers of hours of education and training of women to aggregated numbers of hours of education and training of men, adjusted to distribution of men and women in the total population.</p> <p>It is possible to differentiate between ICT-related and not ICT-related education and training.</p>
Notes on relationships to existing indicators and methodology	Based on indicator A1-2.15#, broken down by gender.
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	<p>Suggested questions:</p> <ul style="list-style-type: none"> • Did you participate in some kind of computer-related training or learning activities in the last four weeks, excluding self-directed learning? [...] • Apart from the computer-related learning, did you participate in some other kind of work-related training or learning activities in the last four weeks, excluding self-directed learning? [...] • How many weeks, days or hours did you spend on these training activities in the last four weeks - altogether? • Did you engage in some kind of work-related self-directed learning, in the last month? [...] • How many weeks, days or hours did you spend on self-directed learning in the last four weeks - altogether?
eEurope relevance	<p>Relevant for the eEurope action:</p> <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning • 2b-2 – increase IT training places and courses and promote gender equality in such courses, using ESF where appropriate

Name of indicator	A1-2.22# Ratio of training participation between younger and older employees
Definition	Ratio of share of population aged 25-34 participating in education and training, to the share of population aged 45-64 participating in education and training, per country
Notes on relationships to existing indicators and methodology	This indicator is based on A1-2.1: Participation rate in education and training (see Chapter 0), defined as: Percentage of population, aged 25-64, participating in education and training (over the 4 weeks prior to the survey). It has been proposed by the OECD (1999out). A breakdown by gender appears worthwhile.
Sources for data and availability	LFS (quarterly survey, results published only annually)
Issues for SIBIS surveys	Not to be included, data available from Eurostat.
eEurope relevance	Relevant for the eEurope action: <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning

Name of indicator	A1-2.23# Use of eLearning by workers
Definition	<p>Share of working population (plus persons looking for work) who use eLearning technologies, differentiated according to technology used:</p> <ul style="list-style-type: none"> • offline electronic learning material (including CD-ROMs) • online learning material provided on the internal computer system of the employing organisation <ul style="list-style-type: none"> • real-time (eg live tutorials) • archived • online learning material accessed through the Internet <ul style="list-style-type: none"> • real-time (eg live tutorials) <ul style="list-style-type: none"> • accessed at home • accessed at work • archived <ul style="list-style-type: none"> • accessed at home • (++) accessed at work
Notes on relationships to existing indicators and methodology	<p>Not based on existing indicators (see Eurobarometer 54.0 for question on distance-learning for computer courses).</p> <p>Wording might not be easily comprehensible enough, may have to be changed as a result of pretesting.</p> <p>This indicator might become less useful in the future as soon as users will not be able anymore to identify the technology which is behind an e-learning service.</p>
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	<p>Suggested questions:</p> <p>Did you use, in the course of your training last month, ... (MULTIPLE ANSWERS):</p> <ul style="list-style-type: none"> • (a) CD-ROMs or other offline electronic learning material • (b) online learning material provided on the internal computer system of your organisation <ul style="list-style-type: none"> • (i) real-time (eg live tutorials) • (ii) archived • (c) online learning material accessed through the Internet <ul style="list-style-type: none"> • (i) real-time (eg live tutorials) <ul style="list-style-type: none"> • (+) accessed at home • (++) accessed at work • (ii) archived <ul style="list-style-type: none"> • (+) accessed at home • (++) accessed at work
eEurope relevance	<p>Relevant for the eEurope action:</p> <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning

Name of indicator	A1-2.24# Use of eLearning by students
Definition	<p>Share of persons who have not finished full-time initial education yet (ESOMAR definition) who use eLearning technologies, differentiated according to technology used:</p> <ul style="list-style-type: none"> • offline electronic learning material (including CD-ROMs) • online learning material provided by your school or university (etc.) <ul style="list-style-type: none"> • real-time (eg live tutorials) • archived • online learning material provided by someone else, accessed through the Internet <ul style="list-style-type: none"> • real-time (eg live tutorials) <ul style="list-style-type: none"> • accessed at home • accessed at school/university • archived <ul style="list-style-type: none"> • accessed at home • (++) accessed at school/university
Notes on relationships to existing indicators and methodology	<p>Not based on existing indicators (see Eurobarometer 54.0 for question on distance-learning for computer courses).</p> <p>Wording might not be easily comprehensible enough, may have to be changed as a result of pretesting.</p> <p>This indicator might become less useful in the future as soon as users will not be able anymore to identify the technology which is behind an e-learning service.</p>
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	<p>Suggested questions:</p> <p>Did you use last month, in the course of your education, ... (MULTIPLE ANSWERS):</p> <ul style="list-style-type: none"> • (a) CD-ROMs or other offline electronic learning material • (b) online learning material provided on the internal computer system of your organisation <ul style="list-style-type: none"> • (i) real-time (eg live tutorials) • (ii) archived • (c) online learning material accessed through the Internet <ul style="list-style-type: none"> • (i) real-time (eg live tutorials) <ul style="list-style-type: none"> • (+) accessed at home • (++) accessed at work • (ii) archived <ul style="list-style-type: none"> • (+) accessed at home • (++) accessed at work
eEurope relevance	<p>Relevant for the eEurope action:</p> <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning

Name of indicator	A1-2.25# Offer of IT-related training by companies
Definition	Share of companies/establishments that offer IT-related training, to be broken down in modes of training delivery
Notes on relationships to existing indicators and methodology	<p>Not based on an existing indicator.</p> <p>Listings of IT-related methods of training should try to conform with the classification of modes of delivery as proposed by the Leonardo da Vinci I action programme (see Eurostat 2001task, Annex 6).</p> <p>Feasibility of answer categories has to be pre-tested. If DMS is targeted at IT managers, wording has to be adapted.</p> <p>A problem with Option 2 (see below) is that e-learning is only covered when its content is computer-related training.</p> <p>Wording might not be easily comprehensible enough, may have to be changed as a result of pretesting.</p>
Sources for data and availability	DMS: Survey of HR managers
Issues for SIBIS surveys	<p>Possible question (answer categories to Option 2 comply with Leonardo da Vinci I - off the job training except for (f) and (g)):</p> <ul style="list-style-type: none"> • Do you train your staff in obtaining ICT skills? • Which of these types of ICT training do you provide? • OPTION 1: (a) off the job [INTERVIEWER: NOT AT THE WORKPLACE], (b) on the job [INTERVIEWER: AT THE WORKPLACE], (i) structured training (OJT-instructions, formal introductions, tutoring, demonstration); (ii) unstructured training (coaching, counselling, (group) discussions • OPTION 2: (a) Classroom instruction (b) Group or project work (c) Workshops or seminars (d) Participation in conferences or external lectures (e) Visits to exhibitions/trade fairs (i) Distance learning using paper teaching materials (ii) Distance learning using electronic online teaching materials, e.g. on the Internet or Intranet (iii) Distance learning using electronic offline teaching materials such as CD-ROMs (g) Support of self-directed learning by offering financial support for the purchase of learning materials or equipment (home PC)".
eEurope relevance	<p>eLearning is proposed by the European Commission as a means of enabling cost-efficient ways to provide lifelong learning to a large share of the labour force.</p> <p>Relevant for eEurope actions:</p> <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning • 2b-4 - support greater flexibility in the workplace

Name of indicator	A1-2.26# Use of eLearning by companies
Definition	<p>Share of companies/establishments that use eLearning technologies for training their staff, differentiated according to technology used:</p> <ul style="list-style-type: none"> • (a) self-produced electronic teaching materials (i) online, e.g. on the Internet or Intranet (ii) offline, e.g. CD-ROMs • (b) externally purchased electronic teaching materials (i) online, e.g. on the Internet or Intranet (ii) offline, e.g. CD-ROMs • (c) real-time broadcasting of tutorials via (i) Intranet, (ii) Business TV or (iii) other means
Notes on relationships to existing indicators and methodology	<p>Not based on existing indicators.</p> <p>It is not totally clear which time unit the question refers to?</p> <p>For repetition in future surveys, the list of technologies would have to be modified, but in a way that still allows for production of time-series data.</p>
Sources for data and availability	SIBIS DMS (HR managers)
Issues for SIBIS surveys	<p>Suggested questions:</p> <p>Which of the following IT-based methods for training your staff are used by your company/establishment?</p> <ul style="list-style-type: none"> • (a) self-produced electronic teaching materials (i) online, e.g. on the Internet or Intranet (ii) offline, e.g. CD-ROMs • (b) externally purchased electronic teaching materials (i) online, e.g. on the Internet or Intranet (ii) offline, e.g. CD-ROMs • (c) real-time broadcasting of tutorials via (i) Intranet, (ii) Business TV or (iii) other means
eEurope relevance	<p>eLearning is proposed by the European Commission as a means of enabling cost-efficient ways to provide lifelong learning to a large share of the labour force.</p> <p>Relevant for eEurope actions:</p> <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning • 2b-4 - support greater flexibility in the workplace

Name of indicator	A1-2.27# Perceived impacts of company-provided training
Definition	Impacts of investments in company-provided training as perceived by decision makers for human resource management of companies. May be broken down by types of training provided.
Notes on relationships to existing indicators and methodology	A1-2.13* (but this indicator does not present results in standardised form).
Sources for data and availability	DMS (HR managers) This indicator is not suitable for the SIBIS DMS as it is of paramount importance that target persons are HR managers and/or managing directors (or likewise).
Issues for SIBIS surveys	Suggested questions: According to your experience, what impacts has the training you provide to your staff had on your company? <ul style="list-style-type: none"> • Has staff productivity been improved? • Has staff turnover been reduced? • Has innovative activity been boosted? • Have personnel costs increased? • Has staff morale been improved? Answer categories: significantly, somewhat, not at all
eEurope relevance	Relevant for eEurope actions: <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning • 2b-4 - support greater flexibility in the workplace

Name of indicator	A1-3.13# Spread of self-directed learning
Definition	Share of population who practised work-related self-directed learning in the four months prior to the survey.
Notes on relationships to existing indicators and methodology	Based on existing indicator A1-2.1 (LFS), but explicitly focussing on self-directed learning. It may be questioned if respondents are aware enough of the fact that the self-directed learning they practise has indeed a relation to their current or future paid work. This is all the more true at a time when traditional job qualifications are gradually losing relevance and more generic skills are becoming more important for meeting labour market requirements.
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	Suggested questions: <ul style="list-style-type: none"> • Did you engage in some kind of work-related self-directed learning, in the last month? [...] • What was the field you learned about? (ISCED 97 "Narrow fields", see Eurostat 1999)
eEurope relevance	Relevant for the eEurope action: <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning

Name of indicator	A1-3.14# Intensity of self-directed learning
Definition	Average numbers of hours spent on work-related self-directed learning of <ul style="list-style-type: none"> • all persons who finished full-time initial education; • all persons employed.
Notes on relationships to existing indicators and methodology	Based on existing indicator A1-2.3 (IALS). It may be questioned if respondents are aware enough of the fact that the self-directed learning they practise has indeed a relation to their current or future paid work. This is all the more true at a time when traditional job qualifications are gradually losing relevance and more generic skills are becoming more important for meeting labour market requirements.
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	Suggested questions: <ul style="list-style-type: none"> • Did you engage in some kind of work-related self-directed learning, in the last month? [...] • How many weeks, days or hours did you spend on self-directed learning in the last four weeks - altogether? • What was the field you learned about? (ISCED 97 "Narrow fields", see Eurostat 1999)
eEurope relevance	Relevant for the eEurope action: <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning

Name of indicator	A1-3.15# Companies supporting self-directed learning by their staff
Definition	Share of companies who foster self-directed learning by their staff by providing learning tools, financial support or release from work for learning purposes.
Notes on relationships to existing indicators and methodology	Not based on existing indicators. The wording of this module has to ensure that only schemes/arrangements are taken into account which are available to a significant share of the staff.
Sources for data and availability	DMS: establishment survey; HR managers needed as respondents.
Issues for SIBIS surveys	Suggested questions: <ul style="list-style-type: none"> • Do you support your staff's own-initiative learning, e.g. by providing learning tools, financial support or release from work for learning purposes? • [IF YES] Which of these types of support do you make use of? <ul style="list-style-type: none"> • (a) financial support <ul style="list-style-type: none"> • (i) contribution to costs of home IT equipment • (ii) contribution to costs of learning materials • (iii) contribution to payments for courses, events etc. • (b) provision of teaching material <ul style="list-style-type: none"> • (i) in Intranet • (ii) via business TV • (iii) other • (c) other support <ul style="list-style-type: none"> • (i) release from work for learning activities • (ii) advice & consultancy • (iii) job-rotation • (iv) other
eEurope relevance	Relevant for the eEurope action: <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning

Name of indicator	A1-3.16# Companies financing home ICT equipment of their staff
Definition	Share of companies/establishments that support self-directed learning of their staff through financing ICT equipment.
Notes on relationships to existing indicators and methodology	Not based on an existing indicator. See Indicator A1-3.15#. The wording of this module has to ensure that only schemes/arrangements are taken into account which are available to a significant share of the staff.
Sources for data and availability	DMS: establishment survey; HR managers needed as respondents.
Issues for SIBIS surveys	<p>Suggested questions:</p> <ul style="list-style-type: none"> • Do you support your staff's own-initiative learning, e.g. by providing learning tools, financial support or release from work for learning purposes? • [IF YES] Which of these types of support do you make use of? <ul style="list-style-type: none"> • (a) financial support <ul style="list-style-type: none"> • (i) contribution to costs of home IT equipment • (ii) contribution to costs of learning materials • (iii) contribution to payments for courses, events etc. • (b) provision of teaching material <ul style="list-style-type: none"> • (i) in Intranet • (ii) via business TV • (iii) other • (c) other support <ul style="list-style-type: none"> • (i) release from work for learning activities • (ii) advice & consultancy • (iii) job-rotation • (iv) other
Notes on relevance	<p>Relevant for the eEurope action:</p> <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning

Name of indicator	A1-3.17# Employees whose company finances home ICT equipment
Definition	Share of employees whose employer contributes to financing home ICT equipment.
Notes on relationships to existing indicators and methodology	Not based on an existing indicator. See Indicator A1-3.15# and A1-3.16#.
Sources for data and availability	<p>SIBIS DMS</p> <p>It has to be taken into account that, from the employee's viewpoint, there are different types of support:</p> <ul style="list-style-type: none"> • employees actually receiving financial support currently; • employees being offered financial support, but not making use of this currently; • employees which might be offered financial support if they asked for it.
Issues for SIBIS surveys	<p>Suggested questions:</p> <p>Does your employer offer financial support for the ...</p> <ul style="list-style-type: none"> • (a) purchase of learning equipment such as a computer • (b) purchase of learning materials such as books and CD-ROMs • (c) payment of fees for participation in training courses
Notes on relevance	<p>Relevant for the eEurope action:</p> <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning

Name of indicator	A1-3.18# Staff access to ICTs
Definition	Share of establishments that give the majority of their office workers access to <ul style="list-style-type: none"> • external e-mail, • the Internet, • their Intranet, • video conferencing. Alternatively: as share of establishments that use each of these technologies.
Notes on relationships to existing indicators and methodology	A1-3.7* ECaTT DMS (establishment survey) 1999 This indicator does not reflect that there is a difference between the technical ability and the actual ability (under the conditions which apply for the individual worker, e.g. control, regulations that forbid private use of e-mail) to use these technologies.
Sources for data and availability	SIBIS DMS
Issues for SIBIS surveys	Suggested question: What applications can be accessed by the majority of your <i>office</i> workers? Can the majority of your office workers <ul style="list-style-type: none"> • send e-mails to external addresses, • browse Internet sites, • browse Intranet sites, • use video-conferencing.
eEurope relevance	Relevant for eEurope actions: <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning • 2b-4 - support greater flexibility in the workplace

Name of indicator	A1-3.19# Use of PIAPs by the population
Definition	<p>Share of total population (aged 15+) who have used a PIAP in the month prior to the survey, differentiated by type of PIAP.</p> <p>A PIAP is defined as</p> <ul style="list-style-type: none"> • a public place where Internet access is free or • an Internet café or something comparable where access is charged for.
Notes on relationships to existing indicators and methodology	<p>Based on existing indicator A1-3.5. Compare also Eurobarometer Flash 103 ("Internet and the Public").</p> <p>Estimates about time such as here usually have to be treated with care as social desirability and other factors might lead to estimates which do not adequately reflect reality.</p> <p>This indicator might become less useful in the future in case Internet access will become almost ubiquitously available throughout the public space.</p>
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	<p>Suggested questions:</p> <p>In the last month, how much time did you spend per week using the Internet ... [INTERVIEWER: Please give me the average per week]</p> <p>(a) at home (b) at workplace (c) at school, university or other educational institution (d) at public place where Internet access is free (e) at Internet café where you have to pay for access (f) at some other place not mentioned</p> <p>Answer categories (FOR EACH): (a) <1 hour; (b) at least 1, but less than 3 hours; (c) at least 3, but less than 7 hours; (d) at least 3, but less than 14 hours; (e) 14 hours or more; (f) DK</p>
Notes on relevance	<p>Relevant for the eEurope action:</p> <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning

Name of indicator	A1-3.20# Awareness of PIAPs and knowledge about location
Definition	Share of population (aged 15+) who are <ul style="list-style-type: none"> • aware of public places where they can access the Internet for free • know where to find such a place.
Notes on relationships to existing indicators and methodology	Compare Eurobarometer Flash 103 ("Internet and the Public"). It is not clear if Internet access in privately owned, but publically accessible places such as bars, shops, conference facilities etc. are included in this definition.
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	Suggested questions: It is now possible to access the Internet, for free, in some public places. Are you aware of such access possibilities and do you know where you could find one in your proximity? <ul style="list-style-type: none"> • (a) aware of PIAPs and know where to find one • (b) aware of PIAP but does not know where to find one • (c) not aware / or has not heard of PIAPs • (d) DK
Notes on relevance	Relevant for the eEurope action: <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning

Name of indicator	A1-3.21# PC access at home and at work
Definition	Share of the population (aged 15+) who at home have access to a (a) PC/Mac (b) PC/Mac that is connected online to somewhere else, e.g. the Internet.
Notes on relationships to existing indicators and methodology	A1-3.10* (ECaTT 1999 GPS) It may be necessary to explicitly include nation-specific online service providers (such as Minitel in France) and ISPs which have a unique identity such as AOL. Internet access at the workplace might be at the workplace of the respondent, or at a central location to which the respondent has access (e.g. computer room). Access to the Internet outside the home/workplace cannot be measured dichotomously (yes/ no) as everybody can have access e.g. by visiting an Internet cafe.
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	Suggested questions: <ul style="list-style-type: none"> • Do you have access to the Internet in your home? • [IF NO] Have you had Internet access in your home in the past? • Do you have access to the Internet at your workplace? • [IF NO] Have you had Internet access at your workplace in the past?
eEurope relevance	Relevant for the eEurope action: <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning

Name of indicator	A1-3.22# PC user experience – use of PC anywhere
Definition	Share of the population (aged 15+) who have used a PC or other computer in the month prior to the survey.
Notes on relationships to existing indicators and methodology	Based on existing indicator A1-3.11* (ECaTT 1999 GPS); similar indicators are used in other surveys, but no time-series data available yet. Describing what is meant here is difficult as computers become commonplace in many household appliances and also include pocket calculators etc. We suggest a note to interviewer that only keyboard-controlled computer should be included.
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	Suggested questions: <ul style="list-style-type: none"> • Have you used a PC or any other computer - in the past month? (YES, NO, DK)
eEurope relevance	Relevant for the eEurope action: <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning

Name of indicator	A1-3.23# E-mail user experience
Definition	Share of the population (aged 15+) who have sent or received e-mails either at place of work, at home, or elsewhere, in the month prior to the survey. Purpose of using e-mail (for business, for private purposes, for both, for neither).
Notes on relationships to existing indicators and methodology	A1-3.12* (ECaTT 1999 GPS) Estimates about numbers such as here usually have to be treated with care as social desirability and other factors might lead to estimates which do not adequately reflect reality.
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	Suggested questions: <ul style="list-style-type: none"> • Did you send or receive any e-mail last month, either at your place of work, at home or elsewhere? [INTERVIEWER: By e-mail I mean electronic correspondence, messages that can be sent or received by computer, but not fax] • What did you use e-mail for, did you mainly use it for business, or private purposes, or both? • How many e-mails did you send last week (I) for private purposes and (II) for business purposes, roughly? [OPEN]
eEurope relevance	Relevant for the eEurope action: <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning

3.1.2 Skill provision

Overview Table (including indicators in development)

A2 – Skill provision (Thematic domain: skills)			
No.	Name of indicator	Based on	Suggested method
A 2 - 1 Educational attainment			
No new indicators suggested			
A 2 - 2 General ICT skills			
A2-2.6#	Web Language Skills Index	-	calculation from OECD and Eurobarometer data
A2-2.7#	ICT skills in the labour reserve	-	SIBIS GPS
A 2 - 3 Life skills			
A2-3.2#	ICT skills in the population/workforce	suggested by European Commission (2000list; I 11)	SIBIS GPS
A2-3.3#	Level of eLiteracy in the population	IALS	GPS (face-to-face)

Name of indicator	A2-2.6# Web Language Skills Index
Definition	Share of population with skills in a certain language, multiplied with number of web pages available in this language.
Notes on relationships to existing indicators and methodology	Number of web pages in language: Based on data from OECD. Share of population with skills in languages: Based on data from Eurobarometer (last: 55.1). Question: What is your mother tongue? And which languages can you speak well enough to take part in a conversation, apart from your mother tongue? [answer categories: 11 official EU languages plus Arabic and Chinese]
Sources for data and availability	Data from Eurobarometer available: EB 34.0 (1990), 41.0 (1994), 44.0 (1995), 47.2OVR (1997), 50.0 (1998), 52.0 (1999), 54LAN (2000), 55.1 (2001).
Issues for SIBIS surveys	Not included in SIBIS GPS.
eEurope relevance	Relevant for the eEurope action: <ul style="list-style-type: none"> • 2b-x – general indicator for topic 'Working in the knowledge based economy'

Name of indicator	A2-2.7# ICT skills in the labour reserve
Definition	<p>Share of individuals with advanced ICT skills in the labour reserve.</p> <p>Definition of "Advanced ICT skills" outstanding.</p> <p>"Labour reserve" is defined as persons who are either temporarily not working (because of unemployment or illness) or not working, but not still studying and not retired (ESOMAR definition).</p>
Notes on relationships to existing indicators and methodology	<p>Not based on an existing indicator.</p> <p><i>Eurostat:</i> The "Labour reserve" is defined as individuals "outside the labour force who are likely to join the labour force in the future under more favourable labour market or social conditions". The Eurostat Labour Force Survey publishes data on "inactive population, aged 15 years or more, by willingness to work and by reasons for not seeking employment". However, no detailed information on the qualification of the inactive population is provided. The most detailed data available is on education level (first, second, or tertiary) of inactive individuals aged between 25 and 59 years. What is missing is data on the field of qualification and on the proportion of labour reserve in the inactive population.</p> <p><i>OECD:</i> The OECD has a rather limited concept of labour reserve, comprising only of "discouraged and involuntary part-time workers". Most recent data on this topic was published in the 1995 Employment Outlook. In any case, the OECD sources EU data from Eurostat, so the OECD does not provide more or better data on the labour reserve than Eurostat.</p> <p>A more detailed survey of qualification of individuals in the hidden labour force would be needed. Probably, existing Eurostat labour force surveys only needed to be supplemented by questions on ICT skills.</p>
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	<p>ICT skills may be calculated from "skills" module in SIBIS GPS:</p> <p>We would like to ask you few questions in relation to your experience of and knowledge about using the Internet. Please indicate for each question whether you would say your knowledge is very good, rather good, rather small or you don't have any knowledge at all about this.</p> <ul style="list-style-type: none"> • (I) to locate the information on the Internet that I require • (II) to use a search engine • (III) to quickly identify the source of an information I found on the Internet • (IV) to get in touch with others through the Internet • (V) I to create my own personal web page • (VI) to find online job adverts • (VII) to find online information about the local community • (VIII) to participate in local community initiatives through the Internet • (IX) to obtain information from my local political representative via the Internet • (X) to obtain and install software on my computer • (XI) to use digital services such as online banking • (XII) to understand the content of websites written in English • (XIII) to participate in an online training course

	<p>Employment status derived from ESOMAR standard demographic classification used in SIBIS GPS:</p> <p>[IF NOT STILL STUDYING] At present are you ...</p> <ul style="list-style-type: none"> • (a) self-employed • (b) in paid employment • (c) temporarily not working (unemployed, illness) • (d) retired • (e) not working/ responsible for ordinary shopping and looking after the home
eEurope relevance	<p>A shortage of ICT professionals in all EU countries has repeatedly been stated. Considering measures to reduce this shortage, it would be valuable to know about the share of individuals with ICT skills among the so-called "labour reserve" (or "hidden labour force"). This indicator would be useful to determine a possible skills gap among non-professionals.</p> <p>Relevant for the eEurope action:</p> <ul style="list-style-type: none"> • 2b-x – general indicator for topic 'Working in the knowledge based economy'

Name of indicator	A2-3.2# ICT skills in the population/workforce
Definition	<p>Share of population (aged 15+) with advanced ICT skills or share of persons in paid work with advanced ICT skills.</p> <p>"Advanced ICT skills" are defined as comprising all capabilities listed below.</p> <p>Employment status derived from ESOMAR standard demographic classification used in SIBIS GPS.</p>
Notes on relationships to existing indicators and methodology	<p>Not based on existing indicator.</p> <p>Data derived through self-assessment is affected by problems of social desirability, but direct assessment such as used for the IALS is prohibitively expensive.</p>
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	<p>ICT skills calculated from "skills" module in SIBIS GPS:</p> <p>We would like to ask you few questions in relation to your experience of and knowledge about using the Internet. Please indicate for each question whether you would say your knowledge is very good, rather good, rather small or you don't have any knowledge at all about this.</p> <ul style="list-style-type: none"> • (I) to locate the information on the Internet that I require • (II) to use a search engine • (III) to quickly identify the source of an information I found on the Internet • (IV) to get in touch with others through the Internet • (V) I to create my own personal web page • (VI) to find online job adverts • (VII) to find online information about the local community • (VIII) to participate in local community initiatives through the Internet • (IX) to obtain information from my local political representative via the Internet • (X) to obtain and install software on my computer • (XI) to use digital services such as online banking • (XII) to understand the content of websites written in English • (XIII) to participate in an online training course
eEurope relevance	<p>Relevant for the eEurope action:</p> <ul style="list-style-type: none"> • 2b-x – general indicator for topic 'Working in the knowledge based economy'

Name of indicator	A2-3.3# Level of eLiteracy in the population
Definition	Share of population (aged 15+) who have shown a certain level of eLiteracy in a direct measurement exercise. Alternatively: A level of eLiteracy shown in a direct measurement exercise.
Notes on relationships to existing indicators and methodology	Based on IALS, has to be adapted to account for the specificities of documents in electronic contexts. Methodology see OECD (2000lit)
Sources for data and availability	Face-to-face GPS; extensive interviews needed.
Issues for SIBIS surveys	Not relevant.
eEurope relevance	Relevant for the eEurope action: <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning

3.1.3 Skill requirements

Overview Table (including indicators in development)

A3 – Skill requirements (thematic domain: skills)			
No.	Name of indicator	Based on	Suggested method
A 3 - 1 Demand for ICT-related skills			
A3-1.3#	Employers' ICT skill requirements of non-professionals	e.g. IAB-BIBB survey	DMS
A 3 - 2 Suitability of ICT-related skills			
A3-2.3#	Adequateness of work-related training for demands of the current job	-	SIBIS GPS
A3-2.4#	Perceived suitability of ICT skills of job applicants/ new recruits	none	DMS (HR managers)

Name of indicator	A3-1.3# Employers' ICT skill requirements of non-professionals
Definition	Employers' ICT skill requirements of employees in and applicants for non-ICT-professional positions. "ICT skills" to be defined according to EICTA classification (in progress ⁵) "Non-professionals": Not ICT professionals as to be defined by EICTA
Notes on relationships to existing indicators and methodology	Based on existing indicator A3-1.1 (IDC). Only one existing indicator related to ICT skill requirements has been identified: IDC provides data on the demand for ICT professionals (see EITO 2000, chapter "ICT skills in Western Europe"). What is missing is a complementary indicator related to ICT skill requirements of non-professionals, that is to say of employees who are neither ICT professionals, E-business professionals nor call centre professionals. The BIBB/IAB survey (only Germany) has collected data on this indicator.
Sources for data and availability	To be included in a future DMS, must be targeted at HR managers in companies.
Issues for SIBIS surveys	Not suitable for SIBIS GPS or DMS.
eEurope relevance	Such an indicator would be useful to determine a possible skills gap among non-professionals.

⁵ The European ICT Industry Association (EICTA) is currently working on "Generic skills profiles for the ICT Industry in Europe" in order to identify the requirements of the ICT industry regarding the skills of ICT professional staff at all levels, define standard job and skills profiles, prepare curricula guidelines, and contribute to the political debate about the ICT skills needs. The final report is foreseen to be published in early 2002.

Name of indicator	A3-2.3# Adequateness of work-related training
Definition	Perceived adequateness of work-related training received for the demands of the current job/ personal demands, and reasons if training is considered not to be sufficient.
Notes on relationships to existing indicators and methodology	Not based on existing indicators. Pretesting would have to establish whether reasons for inadequacies are too complex to allow for the use of closed answers and CATI methodology. "Personal demands" may have to be defined to ensure consistent interpretation.
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	Suggested questions: <ul style="list-style-type: none"> • Did you participate in some kind of computer-related training or learning activities in the last four weeks, excluding self-directed learning? [...] • Apart from the computer-related learning, did you participate in some other kind of work-related training or learning activities in the last four weeks, excluding self-directed learning? [...] • To what extent do you think that the training you received is adequate for the demands of your job? (fully sufficient; partly insufficient; totally insufficient; DK) • [IF NOT FULLY SUFFICIENT] Why do you think the training is not adequate? Is it because it was ...(a) too specific (ie not transferable to other applications); (b) too general (ie not directly applicable); (c) not comprehensive enough (ie it does not answer some important needs); (d) not efficient enough [TAKES TOO MUCH TIME] • To what extent do you think that the training and learning activities you have received are sufficient for your personal demands?
eEurope relevance	Relevant for the eEurope action: <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning

Name of indicator	A3-2.4# Perceived suitability of ICT skills of job applicants/ new recruits
Definition	Share of HR managers who express satisfaction with the ICT skills of job applicants/recruits. Answer categories to be used: very satisfied, fairly satisfied, not very satisfied, not satisfied at all.
Notes on relationships to existing indicators and methodology	Not based on an existing indicator.
Sources for data and availability	To be included in a future DMS targeted at HR managers in companies.
Issues for SIBIS surveys	Not suitable for SIBIS DMS because target must be HR managers.
eEurope relevance	Relevant for the eEurope action: <ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning

3.2 Suggested SIBIS indicators on work organisation

3.2.1 Work content/applied skills

Overview Table (including indicators in development)

B1 –Work content/applied skills (thematic domain: work organisation)			
No.	Name of indicator	Based on	Suggested method
B 1 - 1 Working tools			
See Indicators A1-3.21# and A1-3.23#.			
B 1 - 2 Working methods			
B1-2.5#	Collaboration	ECaTT 1999	GPS
B1-2.6#	Use of group work	EPOC	DMS (Regular repetition of EPOC)
B 1 - 3 Working tasks			
B1-3.3#	Job enlargement (change)	Cranfield HR Management Survey	DMS (HR Managers)
B 1 - 4 Self-determination			
B1-4.6#	Participation in decision-making concerning changes at the workplace	ESWCs	calculation from ESWCs data
B1-4.7#	Management by objectives	ESWCs	calculation from ESWCs data

Name of indicator	B1-2.5# Collaboration
Definition	Workers who exchange information and communicate with people outside their organisation, with customers or clients, suppliers, or other business partners, on a regular basis.
Notes on relationships to existing indicators and methodology	B1-2.2* (from ECaTT 1999). Indicator is only useful if results are broken down by position in job as defined by ESOMAR, because some positions (e.g. "employed person, working not at a desk, but in a service job") naturally involve interaction with customers, but one may argue not in a very collaborative manner.
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	Suggested questions: In the course of your job, do you exchange information and communicate with people outside your organisation, with customers or clients, suppliers, or other business partners, on a regular basis? [IF YES] How frequent are your phone calls, meetings, mail and other communication with external contacts? <ul style="list-style-type: none"> • (a) 10 or more a day, • (b) at least one a day, • (c) at least one a week, • (d) less than one a week? • (e) DK
eEurope relevance	Relevant for the eEurope action: <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace

Name of indicator	B1-2.6# Use of group work
Definition	<p>Share of organisations using group work (3 categories: weak group delegation; medium group delegation and team-based); alternatively: share of workplaces that are involved in group delegation.</p> <p>Compound indicator consisting of:</p> <ul style="list-style-type: none"> • percentage of employees working in groups • the extent to which the groups are entitled to take decisions on their own (the number of 'decision rights', see B1-4.3*). <p>Calculation arithmetics to be determined.</p>
Notes on relationships to existing indicators and methodology	Derived from a postal survey of management in organisations (see Sisson 2000).
Sources for data and availability	<p>EPOC 1996</p> <p>This was a one-off survey (according to information provided by the European Foundation). We suggest that this indicator should be included in a regular survey to be conducted in time intervals of a maximum of 5 years.</p>
Issues for SIBIS surveys	Not to be included in SIBIS DMS.
eEurope relevance	<p>Relevant for the eEurope action:</p> <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace

Name of indicator	B1-3.3# Job enlargement
Definition	<p>Share of organisations in which the specification of jobs has been changed to the effect that</p> <ul style="list-style-type: none"> • jobs have been made wider/more flexible or • jobs have been made more specific <p>Differentiated according to type of employees: management, professional/technical, clerical, manual.</p>
Notes on relationships to existing indicators and methodology	Based on indicators developed by Brewster et al. (2000).
Sources for data and availability	Data for this indicator is available from the Cranfield European Human Resource Management Survey (5 rounds since 1990)
Issues for SIBIS surveys	Not to be included in SIBIS DMS.
eEurope relevance	<p>Relevant for the eEurope action:</p> <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace

Name of indicator	B1-4.6# Participation in decision-making concerning changes at the workplace
Definition	Share of workforce who claim they are able to discuss with their superiors the organisation of their work when changes take place.
Notes on relationships to existing indicators and methodology	Partly similar to B1-4.2 "Job autonomy". For discussion see Dhondt and Houtman (1997).
Sources for data and availability	Data for this indicator is available from the European Survey on Working Conditions (ESWCs) 1990, 1995, 2000
Issues for SIBIS surveys	Not to be included in SIBIS GPS.
eEurope relevance	Relevant for the eEurope action: <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace

Name of indicator	B1-4.7# Management by objectives
Definition	Share of the employed labour force who claim that they generally have to "meet precise quality standards", "assess themselves the quality of their own work", "solve unforeseen problems on their own" and are "able to choose their order of tasks, methods of work and speed or rate of work".
Notes on relationships to existing indicators and methodology	Similar to B1-4.1 "Participative organisation". For discussion see Dhondt and Houtman (1997).
Sources for data and availability	Data for this indicator is available from the European Survey on Working Conditions (ESWCs) 1990, 1995, 2000
Issues for SIBIS surveys	Not to be included in SIBIS GPS.
eEurope relevance	Relevant for the eEurope action: <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace

3.2.2 Time of Work

Overview Table

B2 – Time of Work (thematic domain: work organisation)			
No.	Name of indicator	Based on	Suggested method
B 2 - 1 Worker-centred time flexibility			
B2-1.5#	Reasons for working part-time	Work Options Survey; LFS	GPS
B2-1.6#	Part-time working preferences	Work Options Survey	GPS
B2-1.7#	Perceived opportunity for maternal/paternal leave	-	GPS
B2-1.8#	Work-centred adaptability of working times	B2-1.3	GPS
B 2 - 2 Company-centred time flexibility			
B2-2.5#	"Breathing organisations" - practice	cf German company surveys (IAB)	DMS

Name of indicator	B2-1.5# Reasons for working part-time
Definition	Share of all part-time workers who state one of a number of reasons for working part-time rather than full-time.
Notes on relationships to existing indicators and methodology	<p>Identical with indicator used in the "Work Options of the Future" Survey (undertaken 1998 by the European Foundation):</p> <p>I would like to ask you why you work part-time rather than full-time. Is it because ...</p> <ul style="list-style-type: none"> • you are a student / at school • you are ill or disabled • you could not find a full-time job • you do not want to work full-time <p>Why don't you want a full-time job? It is because...</p> <ul style="list-style-type: none"> • you are financially secure and work only because you want to • or because you earn enough working part-time • or because you want or need enough time for your children • or because you want or need enough time to care for elderly, ill or persons with disability in your family? • Or do you have other domestic commitments which prevent you from working full-time • Are you working part-time because you want to have enough time for yourself and your own activities, e.g. hobbies, cultural or political activities? • Or do you have another reason? <p>A similar indicator is included in the Community LFS; but this contains much less detail. For each person holding a part-time job information is given on the reason, answer categories being:</p> <ul style="list-style-type: none"> • because person is undergoing school education or training • because of own illness or disability • because person could not find a full-time job • because person did not want a full-time job • because of other reasons • no reason given. <p>Progress on harmonisation of LFS data on this indicator has not been sufficient yet. In many countries, most part-time workers did not fall in one of these groups (in particular Belgium, Spain, Italy, Austria; see Eurostat 2001).</p>
Sources for data and availability	<p>Data for this indicator is available from:</p> <ul style="list-style-type: none"> • "Work Options of the Future" Survey (undertaken 1998 by the European Foundation). This survey is, according to a statement by the European Foundation, not planned to be repeated any time soon. We suggest to include this question in a regular survey such as the LFS. • Community LFS (much less detail)
Issues for SIBIS surveys	Not to be included in SIBIS GPS because has been piloted already.
eEurope relevance	<p>Relevant for the eEurope action:</p> <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace

Name of indicator	B2-1.6# Part-time working preferences
Definition	Share of all full-time workers who would currently prefer to work part-time, and reasons for doing so.
Notes on relationships to existing indicators and methodology	<p>Identical with indicator used in the "Work Options of the Future" Survey (undertaken 1998 by the European Foundation):</p> <p>Would you currently prefer to be working part-time - either on a permanent basis, or for a given period only with the possibility of returning to full-time afterwards?</p> <p>Why do you want to work part-time instead of full-time? Is it ...</p> <ul style="list-style-type: none"> • because you want or need more time for your children? • because you want or need more time to care for elderly, ill or persons with disability in your family? • because OTHER domestic commitments come in conflict with your present full-time job? • because you want to have more time for yourself and your own activities (e.g. hobbies, cultural or political activities)? • because you want to reduce the strains resulting from working full-time? • Or are there other reasons?
Sources for data and availability	Data for this indicator is available from the "Work Options of the Future" Survey (undertaken 1998 by the European Foundation). This survey is, according to information provided by the European Foundation, not planned to be repeated any time soon. We suggest to include this question in a regular survey such as the LFS.
Issues for SIBIS surveys	Not to be included in SIBIS GPS because has been piloted already.
eEurope relevance	Relevant for the eEurope action: <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace

Name of indicator	B2-1.7# Opportunity for paternal/maternal leave
Definition	Perceived consequences of taking paternal/maternal leave, broken down by gender
Notes on relationships to existing indicators and methodology	Not based on an existing indicator, but see Work Option Survey.
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	<p>Suggested question:</p> <p>What would be the consequences if you decided to take paternal/maternal leave?</p> <p>Would it be possible, in principle, to take paternal/maternal leave in your current job?</p> <p>How much would it affect your career prospects and your standing in the company you work for if you took paternal/maternal leave? (very much, somewhat, not much, not at all)</p>
eEurope relevance	<p>This indicator has been suggested by the EC in its communication on job quality (EC 2001jobq: 13).</p> <p>Relevant for the eEurope action:</p> <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace

Name of indicator	B2-1.8# Work-centred adaptability of working times
Definition	Share of workers who express that it is very true/quite true that they can <ul style="list-style-type: none"> • adapt starting & finishing times of your work days to your personal preferences • adapt the weekly number of hours you work to your personal preferences.
Notes on relationships to existing indicators and methodology	Similar to existing indicator B2-1.3 (ESWCs), but not using a dichotomous scale for replies. This allows respondents to differentiate between different degrees of freedom of choice.
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	Questions suggested: How true is it in relation to your current work arrangement that... <ul style="list-style-type: none"> • ... • you can adapt starting & finishing times of your work days to your personal preferences • you can adapt the weekly number of hours you work to your personal preferences. Answer categories: very, quite, a little, not at all, DK
eEurope relevance	Relevant for the eEurope action: <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace

Name of indicator	B2-2.5# Breathing organisations
Definition	Share of all establishments that use each of the following strategies to deal with scarcity of qualified staff: <ul style="list-style-type: none"> • overtime, extra shifts • rationalisation • temporary employees • temporary workers (derived from temp work agency) • outsourcing
Notes on relationships to existing indicators and methodology	Identical with indicator used for the "Representative survey on manpower requirements in establishments" conducted by IAB and ifo Institut (in Germany only). It would have to be targeted at human resource managers or owners/managing directors.
Sources for data and availability	Data only available for Germany. We suggest to include it in a regular EU-wide company survey.
Issues for SIBIS surveys	Not to be included in SIBIS GPS because HR managers necessary as target persons.
eEurope relevance	This indicator might be interesting to measure the use of time flexibility to adapt to variations in demand, especially with regard to the eEurope action: <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace

3.2.3 Place of work

Overview Table (including indicators in development)

B3 –Place of Work (thematic domain: work organisation)			
No.	Name of indicator	Based on	Suggested method
B 3 - 1 T e l e w o r k			
general			
B3-1.20#	Technical telework potential	ECaTT 1999	GPS
B3-1.21#	Perceived feasibility of telework	ECaTT Switzerland 1999	SIBIS GPS
B3-1.22#	Telework saturation level	ECaTT 1999 see Gareis and Kordey 2000	Based on SIBIS GPS
B3-1.23#	Telework framework agreements	suggested by European Commission (2000list: 8)	e.g. ESDIS
B3-1.24#	Interest in telework (demand side)	B3-1.3 (TELDET 1994, ECaTT 1999)	SIBIS GPS
B3-1.25#	Teleworker churn	B3-1.9 (TELDET 1994, ECaTT 1999)	SIBIS GPS
home-based			
B3-1.26#	Intensity of teleworking from home	B3-1.10* ECaTT 1999	SIBIS GPS
B3-1.27#	Establishments practising telework	B3-1.11 TELDET 1994, ECaTT 1999	SIBIS DMS
B3-1.28#	Establishments interested in telework (supply side)	B3-1.12 TELDET 1994, ECaTT 1999	SIBIS DMS
B3-1.29#	Self-employed teleworkers in SOHOs	B3-1.13* (ECaTT 1999)	SIBIS GPS
centre-based			
PIAPs: see Indicators A1-3.19# and A1-3.20# in section 3.1.1			
B3-1.30#	Interest in centre-based telework (demand side)	B3-1.14* (ECaTT 1999)	SIBIS GPS
mobile			
B3-1.31#	Intensity of mobile computing	ECaTT 1999	SIBIS GPS
B3-1.32#	Intensity of mobile telework	ECaTT 1999	SIBIS GPS
B3-1.33#	Access points for mobile telework	-	SIBIS GPS
B3-1.34#	Establishments practising mobile work	B3-1.18* (ECaTT 1999)	SIBIS DMS
B3-1.35#	Establishments practising mobile telework	B3-1.19* (ECaTT 1999)	SIBIS DMS
B 3 - 2 T e l e - c o o p e r a t i o n			
B3-2.6#	Tele-cooperation (inter-company)	ECaTT 1999	SIBIS GPS
B3-2.7#	Tele-cooperation (intra-company)	ECaTT 1999	SIBIS GPS

Name of indicator	B3-1.20# Technical telework potential
Definition	<p>Share of persons in paid work whose job is technically suitable for spending at least one day per week at a telework-place, away from the office. Persons who are technically suitable for telework are those who</p> <ul style="list-style-type: none"> • on average spend more than 6 hours a week doing any kind of office work; <i>and</i> • on average spend more than 6 hours a week doing work which could be done at a desk – paperwork, writing, reading, working with pictures, or using the telephone; <i>and</i> • on average spend more than six hours a week doing work on a computer or using a computer-controlled machine; <i>and</i> • do not require access to special equipment, facilities, or face-to-face-interaction with others during these periods.
Notes on relationships to existing indicators and methodology	<p>Based on B3-1.4* (ECaTT 1999) Builds on module used in ECaTT, modified according to suggestions by Jack Nilles.</p> <p>Data from the ECaTT 1999 survey indicates that this indicator may not be suitable for explaining differences in "teleworkability" between countries, as those countries with the lowest share of teleworkers were among the ones with the highest share of "teleworkable" jobs.</p> <p>Teleworkability as defined such does not take into account that workers must be able to lump together "teleworkable working hours" to make telework a realistic option.</p>
Sources for data and availability	<p>ECaTT 1999 provides data on the first three of these criteria for 10 EU Member States.</p>
Issues for SIBIS surveys	<p>Suggested questions:</p> <p>Work normally includes a number of different tasks to be performed. In your work, do you on average spend more or less than 6 hours a week doing any kind of office work?</p> <p>[IF NO]</p> <ul style="list-style-type: none"> • Do you on average spend more or less than six hours a week doing work which could be done at a desk - paperwork, writing, reading, working with pictures, or using the telephone? • Do you on average spend more or less than six hours a week doing work on a computer or using a computer-controlled machine? <p>[IF YES TO ONE OF THESE] Do you require access to special equipment or facilities at the office, or face-to-face-interaction with others, during these periods?</p>
eEurope relevance	<p>Needed for projections of the spread of telework in the future (saturation rate).</p> <p>Relevant action point in eEurope:</p> <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic 'Working in the knowledge based economy'

Name of indicator	B3-1.21# Perceived feasibility of telework
Definition	Share of workers who state that telework would be feasible in principal in their current job.
Notes on relationships to existing indicators and methodology	<p>Based on question included in ECaTT 1999 (only Switzerland). In contrast to the indicator on technical teleworkability, this indicator measures the perception of workers with regard to the feasibility of telework.</p> <p>Questions like this have the disadvantage that it is impossible to control for the external factors the respondent takes into account when answering the question (e.g.: does feasibility mean to be allowed to telework if the respondent asked his/her superior the next day?)</p>
Sources for data and availability	<p>ECaTT 1999 (only Switzerland).</p> <p>Suggested for SIBIS GPS.</p>
Issues for SIBIS surveys	<p>Suggested questions:</p> <p>Would you say that telework is feasible, in principal, in your current job?</p>
eEurope relevance	<p>Relevant action point in eEurope:</p> <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic ‘Working in the knowledge based economy’

Name of indicator	B3-1.22# Telework saturation level
Definition	<p>Share of persons in paid work whose job is technically suitable for spending at least one day per week at a telework-place, away from the office, multiplied with the share of workers who are interested in telework.</p> <p>May be differentiated according to type of telework.</p> <p>For definition of persons who are technically suitable for telework, see Indicator B3-1.20#.</p> <p>For definition of persons interested in telework see Indicator B3-1.24#.</p>
Notes on relationships to existing indicators and methodology	<p>Based on B3-1.4* (ECaTT 1999) and on indicator used by Gareis and Kordey (2000).</p> <p>Discussion of technical teleworkability see Indicator B3-1.20#.</p>
Sources for data and availability	ECaTT 1999 provides data on the three first of these criteria for
Issues for SIBIS surveys	See other telework indicators.
eEurope relevance	<p>This indicator is needed for projections of the spread of telework in the future (saturation rate), see Gareis and Kordey (2000).</p> <p>Relevant action point in eEurope:</p> <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic ‘Working in the knowledge based economy’

Name of indicator	B3-1.23# Telework framework agreements
Definition	<p>Countries (or regions) in which a framework agreement between the major organisations representing workers' and employees' interests concerning the subject of home-based telework is in place.</p>
Notes on relationships to existing indicators and methodology	This indicator has been suggested by the European Commission (2000list: 8).
Sources for data and availability	<p>Administrative data collection or expert interviews. The data should be collected by experts on telework in each Member State. The ESDIS group appears to be a suitable agent to collect the data along with their other work on Information Society indicators.</p>
Issues for SIBIS surveys	Not suited for DMS or GPS.
eEurope relevance	<p>Relevant action point in eEurope:</p> <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic ‘Working in the knowledge based economy’

Name of indicator	B3-1.24# Interest in telework (demand side)
Definition	<p>Share of all persons in work or looking for work who are interested in (a) permanent home-based telework, (b) alternating home-based telework, (c) supplementary telework.</p> <p>Home-based teleworkers are those who</p> <ul style="list-style-type: none"> • work from home for at least one full working day per week; • use a personal computer in the course of their work; • use telecommunications links (phone/ fax/ e-mail) to transfer work results; • are either in salaried employment or self-employed in which case their main working place is on the contractor's premises. <p>Individuals who are teleworking from home more than 90% of their overall working time are referred to as permanent teleworkers, while those working from home less than 90% of their overall working time, but more than one full day per week, are referred to as alternating teleworkers.</p> <p>Supplementary teleworkers would fit into the home-based category but for the fact that they spend less than one full day teleworking from home per week.</p>
Notes on relationships to existing indicators and methodology	<p>Based on B3-1.3 (ECaTT). For discussion of methodology see Gareis and Korte 1999.</p> <p>Questions about interest should be interpreted with care because stated interest does not imply a high degree of commitment. Moreover, it is not made explicit under which circumstances the interest might be transferred into actual behaviour.</p> <p>The definition of telework differs slightly from the one used in the TELDET and ECaTT studies: Now, telecommunications links (phone/ fax/ e-mail) must be used <i>to transfer work results</i>.</p>
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	<p>Suggested questions:</p> <p>If you could telework, how interested would you be in</p> <ul style="list-style-type: none"> • (I) doing almost all your work teleworking at home • (II) telework where you did not spend all your working time, but at least one full working day, at home • (III) telework where you spent your regular working time away from home but did additional work and preparation teleworking at home • (IV) work in an office provided near your home which would allow you to save commuting time? <p>Answer categories: (a) very interested, (b) interested, (c) not interested, (d) DK</p>
eEurope relevance	<p>Relevant action point in eEurope:</p> <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic 'Working in the knowledge based economy'

Name of indicator	B3-1.25# Teleworker churn
Definition	Share of all persons in work who are not teleworking currently, but have teleworked before (only including home-based teleworkers and self-employed teleworkers in SOHOs). Definition of telework: see Indicator B3-1.24#.
Notes on relationships to existing indicators and methodology	Based on TELDET/ECaTT indicators on telework (see B3-1.9 and B3-1.13), but discussing past telework practice. Optionally, an index measuring the share of previous to current teleworkers might be calculated.
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	Suggested questions: Do you telework from home at all, a part or all of your working time? [IF NO] Have you ever teleworked before? [IF YES] Back then, did you regularly telework at least one full working day a week?
eEurope relevance	Relevant action point in eEurope: <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic ‘Working in the knowledge based economy’

Name of indicator	B3-1.26# Intensity of home-based telework
Definition	<p>Teleworkers as percentage of labour force.</p> <p>Home-based teleworkers are those who</p> <ul style="list-style-type: none"> • work from home for at least one full working day per week; • use a personal computer in the course of their work; • use telecommunications links (phone/ fax/ e-mail) to transfer work results; • are either in salaried employment or self-employed in which case their main working place is on the contractor's premises. <p>Individuals who are teleworking from home more than 90% of their overall working time are referred to as permanent teleworkers, while those working from home less than 90% of their overall working time, but more than one full day per week, are referred to as alternating teleworkers.</p> <p>Supplementary teleworkers would fit into the home-based category but for the fact that they spend less than one full day teleworking from home per week.</p>
Notes on relationships to existing indicators and methodology	<p>Based on B3-1.9 (ECaTT). For discussion of methodology see Gareis and Korte 1999.</p> <p>The definition of telework differs slightly from the one used in the TELDET and ECaTT studies: Now, telecommunications links (phone/ fax/ e-mail) must be used <i>to transfer work results</i>.</p> <p>In the future, an indicator which totally moves away from setting a threshold between teleworkers and non-teleworkers will become more useful. For this, each worker would be assigned to one class of teleworking intensity (e.g. 0%, -25%, -50%, -75%, -100%).</p>
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	<p>Suggested questions:</p> <p>With the help of telephone, fax and computer, many types of work can now be done at home which would not be possible without these modern technologies. This is sometimes called telework.</p> <p>Do you telework from home at all, a part or all of your working time?</p> <p>[IF YES] Do you spend at least one full working day a week teleworking from home?</p> <ul style="list-style-type: none"> • [IF YES] How many days in a typical working week? • [IF NO] In a typical working week, approximately what percentage of your total working time do you spend teleworking?
eEurope relevance	<p>Relevant action point in eEurope:</p> <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic 'Working in the knowledge based economy'

Name of indicator	B3-1.27# Establishments practising telework (home-based or by self-employed)
Definition	Share of establishments practising telework; Teleworkers can be <ul style="list-style-type: none"> • Permanent teleworkers who spend nearly all their working time at home. • Alternating teleworkers who spend only part of their working time at home, but at least one full working day per week. • Supplementary teleworkers who spend not their regular working time at home but do additional work and preparation teleworking at home. • Self-employed teleworkers who work either for the respondent's organisation only or for other organisations as well.
Notes on relationships to existing indicators and methodology	B3-1.11 (TELDET 1994, ECATT 1999). For discussion of methodology, see Gareis and Korte 1999. Telework by self-employed teleworkers is difficult to differentiate from other forms of outsourcing. Therefore, data on establishments working with self-employed telework has to be treated with care. With the further spread of telework and remote access, this module (which only measures take-up) will lose relevance. For this reason, data collected from workers will increasingly be the only meaningful source for measuring the spread of telework.
Sources for data and availability	SIBIS DMS
Issues for SIBIS surveys	Suggested questions: Teleworkers in general are those who <ul style="list-style-type: none"> • work at a distance from the premises of their employer • use computers in their work • transmit work results using telecommunications I am now going to list five forms of teleworkers. Please tell me whether any of the following currently work for your establishment. <ul style="list-style-type: none"> • (I) teleworking employees who spend nearly all their working time at home • (II) teleworking employees who spend only part of their time but at least one whole working day a week at home • (III) employees who spent not their regular working time at home but do additional work and preparation teleworking at home • (IV) self-employed teleworkers working for your organisation only • (V) self-employed teleworkers working for other organisations as well Answer categories (for each): <ul style="list-style-type: none"> • practising <ul style="list-style-type: none"> • [IF YES] interested in extending this form of telework (<ul style="list-style-type: none"> • [IF YES] already concrete plans • interested in introducing this type of telework <ul style="list-style-type: none"> • [IF YES] already concrete plans

	<ul style="list-style-type: none">• not practising, interested
eEurope relevance	Relevant action point in eEurope: <ul style="list-style-type: none">• 2b-4 - support greater flexibility in the workplace• 2b-x – general indicator for topic ‘Working in the knowledge based economy’

Name of indicator	B3-1.28# Establishments interested in telework (supply side)
Definition	<p>Share of establishments that are interested in implementing/extending telework and that have concrete plans to do so in the next 1-2 years;</p> <p>“Establishments with teleworkers are those that have staff who</p> <ul style="list-style-type: none"> • work at a distance from the premises of their employer; • use computers in their work; • transmit work results using telecommunications. <p>Teleworkers can be</p> <ul style="list-style-type: none"> • Permanent teleworkers who spend nearly all their working time at home. • Alternating teleworkers who spend only part of their working time at home, but at least one full working day per week. • Supplementary teleworkers who spend not their regular working time at home but do additional work and preparation teleworking at home. • Self-employed teleworkers who work either for the respondent’s organisation only or for other organisations as well.”
Notes on relationships to existing indicators and methodology	<p>B3-1.12 (TELDET 1994, ECATT 1999).</p> <p>Questions about interest should be interpreted with care because stated interest does not imply a high degree of commitment. Moreover, it is not made explicit under which circumstances the interest might be transferred into actual behaviour.</p> <p>Telework by self-employed teleworkers is difficult to differentiate from other forms of outsourcing. Interest in working with self-employed telework might therefore be hard to measure.</p>
Sources for data and availability	SIBIS DMS
Issues for SIBIS surveys	Suggested questions see Indicator B3-1.27#
eEurope relevance	<p>Relevant action point in eEurope:</p> <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic ‘Working in the knowledge based economy’

Name of indicator	B3-1.29# Self-employed teleworkers in SOHOs
Definition	<p>Self-employed teleworkers in SOHOs are those</p> <ul style="list-style-type: none"> • who are self-employed or effectively self-employed (e.g. persons employed by own company or employed by organisation they have considerable managing power over); • whose main place of work is at home or they claim not to have a main place of work; • who tele-cooperate with clients and/or (other) business partners. <p>For definition of tele-cooperation see Indicator B3-2.6#.</p>
Notes on relationships to existing indicators and methodology	<p>B3-1.13* (ECaTT 1999).</p> <p>As opposed to workers with a contract of employment, most self-employed workers have always worked from home. Therefore, telework by self-employed can not be measured in the same way as in the case of employed teleworkers. This indicator uses the way self-employed workers interact with their clients and business partners as a criterion. So-called "seemingly self-employed" who work on the premises of their clients and share many of the characteristics of employed workers are not included in this definition.</p>
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	<p>Suggested questions:</p> <p><u>Module for tele-cooperation</u> see Indicator B3-2.6#.</p> <p><u>Main place of work:</u></p> <p>Is your main place of work ...?</p> <ul style="list-style-type: none"> • at home or less than 1 km away, • less than 5 km, • less than 20km, • less than 50 km, • less than 100 km, • more than 100 km away from your home, • or do you not have a main place of work? <p><u>Self-employment:</u> (Standard ESOMAR module)</p> <p>At present are you ...</p> <ul style="list-style-type: none"> • self-employed • in paid employment • temporarily not working (unemployed, illness) • retired • not working/ responsible for ordinary shopping and looking after the home <p><u>Effectively self-employed:</u></p> <p>[IF NOT SELF-EMPLOYED BUT IN PAID EMPLOYMENT] Do you own or have shares in your employing organisation?</p> <p>[IF YES] Do you have a significant say in the way the company is run?</p> <p>[IF YES] Can you decide your own terms of employment? [IF YES = EFFECTIVELY SELF-EMPLOYED]</p>
eEurope relevance	Relevant action points in eEurope:

	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic ‘Working in the knowledge based economy’
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Name of indicator	B3-1.30# Interest in centre-based telework (demand side)
Definition	Share of all persons in work or looking for work who are interested in centre-based telework, i.e. working part of their working time (but at least one day per week) or all their working time in an office provided near their home for the purpose of reducing commuting distances, a so-called telecottage or telecentre.
Notes on relationships to existing indicators and methodology	<p>Based on B3-1.14* (ECaTT 1999), modified as suggested by Jack Nilles to also include non-permanent centre-based telework</p> <p>The term telework-centre is of limited usability for representative surveys for the following reason: Most multi-site organisations consist of a headquarters and a number of establishments at other sites, and these have become more and more closely integrated into the corporate production process by means of new ICT. The only distinguishing feature of a telework-centre would then be the purpose to provide workplaces near the homes of employees. Then again, does this mean (a) only existent members of staff or (b) newly recruited employees? If (a) holds true, all available evidence suggests that only a couple of organisations exist all over Europe that would fit into this description (Korte 1998), making any efforts to measure telework in such centres as a share of total employment seem ridiculous. If (b) is taken into consideration, one has to recall that every locational decision about where to set up an establishment takes into account the accessibility by prospective employees. If a western multi-national corporation sets up shop e.g. in India to benefit from lower local labour costs, it is with the purpose to be close to a certain type of employees. To summarize, distinguishing telework-centres from traditional branch establishments of multi-site organisation has in our opinion become utterly useless.</p>
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	<p>Suggested questions:</p> <p>If you could telework, how interested would you be in work in an office provided near your home which would allow you to save commuting time?</p> <p>Answer categories: (a) very interested, (b) interested, (c) not interested, (d) DK</p>
eEurope relevance	<p>Relevant action point in eEurope:</p> <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic ‘Working in the knowledge based economy’

Name of indicator	B3-1.31# Mobile computing
Definition	<p>Number of persons who [regularly] use a mobile computer (laptop, notebook - should be keyboard-controlled), as share of workforce or share of mobile workers.</p> <p>Mobile workers are those who work at least 10 hours per week away from home and from main place of work, e.g. on business trips, in the field, travelling or on customer's premises.</p>
Notes on relationships to existing indicators and methodology	<p>B3-1.17* (ECaTT 1999)</p> <p>ECaTT asked "Do you <i>ever</i> use ...", but as mobile computing is becoming more widespread, data on regular users might be more relevant.</p>
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	<p>Suggested questions:</p> <p>Do you spend any of your working time away, from your home and from your main place of work, e.g. on business trips, in the field, travelling or on customer's premises?</p> <p>[IF YES]</p> <ul style="list-style-type: none"> • How much of your working time do you spend away from home and main place of work? (>=10 hours per week; < 10 hours per week; < 10 hours a month) [alternatively: no classes assigned beforehand] • Do you ever [alternatively: regularly] use a computer (laptop/notebook) when travelling?
eEurope relevance	<p>Relevant action point in eEurope:</p> <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic 'Working in the knowledge based economy'

Name of indicator	B3-1.32# Mobile telework
Definition	Number of mobile teleworkers as share of workforce. Mobile teleworkers are those who <ul style="list-style-type: none"> • work at least 10 hours per week away from home and from main place of work, e.g. on business trips, in the field, travelling or on customer's premises; • use online computer connections when doing so.
Notes on relationships to existing indicators and methodology	B3-1.17* (ECaTT 1999) ECaTT asked "Do you ever use ...", but as mobile computing is becoming more widespread, data on regular users might be more relevant. Questions concerning purpose will become more relevant because online computer connections are fast becoming widespread to an extent that users will not be aware of them anymore. Suggested question to be added: For what purpose do you use these online connections? Do you use the online connection to <ul style="list-style-type: none"> • access the Internet • transfer e-mail • connect to your company's internal computer system (eg intranet)
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	Suggested questions: Do you spend any of your working time away, from your home and from your main place of work, e.g. on business trips, in the field, travelling or on customer's premises? [IF YES] <ul style="list-style-type: none"> • How much of your working time do you spend away from home and main place of work? (>=10 hours per week; < 10 hours per week; < 10 hours a month) [alternatively: no classes assigned beforehand] • Do you ever [alternatively: regularly] use online computer connections when travelling?
eEurope relevance	Relevant action point in eEurope: <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic 'Working in the knowledge based economy'

Name of indicator	B3-1.33# Access points for mobile telework
Definition	<p>Number of persons who use each of the following access points for online connections, as share of mobile teleworkers/mobile workers:</p> <ul style="list-style-type: none"> • stationary access point <ul style="list-style-type: none"> • hotel, conference site, etc. • another company's premises • commercial teleservice center, eg Internet café • or on the move (mobile), using the cellphone for data transfer <p>Mobile teleworkers are those who</p> <ul style="list-style-type: none"> • work at least 10 hours per week away from home and from main place of work, e.g. on business trips, in the field, travelling or on customer's premises; • use online computer connections when doing so.
Notes on relationships to existing indicators and methodology	<p>Not based on an existing indicator.</p> <p>Answer categories (list of access points) might have to be modified as a result of piloting.</p>
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	<p>Suggested questions:</p> <p>Where do you use online computer connections? Do you normally use it...</p> <ul style="list-style-type: none"> • (b) At a stationary access point <ul style="list-style-type: none"> • (i) hotel, conference site, etc. • (ii) another company's premises • (iii) commercial teleservice center, eg Internet café • (b) or on the move (mobile), using the cellphone for data transfer
eEurope relevance	<p>Relevant action point in eEurope:</p> <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic 'Working in the knowledge based economy'

Name of indicator	B3-1.34# Establishments practising mobile work
Definition	Share of establishments practising mobile work. “Establishments with mobile workers are those that have staff who work away from the company’s premises, i.e. in the field or on customer’s premises for more than 10 hours a week.”
Notes on relationships to existing indicators and methodology	Based on existing indicator B3-1.18* (ECaTT 1999). The threshold of 10 hours per week is arbitrary, but deemed necessary to define the focus of the question. 10 hours is equivalent to roughly 2 hours per workday or one full-day trip per week.
Sources for data and availability	SIBIS DMS
Issues for SIBIS surveys	Suggested questions: <ul style="list-style-type: none"> • Mobile work: • In many companies there are some employees who spend a considerable part of their working time away from their employer’s premises, i.e. in the field or at customer’s premises. • Does your establishment have employees who do so for approximately more than 10 hours a week? • (a) yes • (i) Roughly, how many? [OPEN] • (b) no • (c) DK •
eEurope relevance	Relevant action point in eEurope: <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic ‘Working in the knowledge based economy’

Name of indicator	B3-1.35# Establishments practising mobile telework
Definition	<p>Share of establishments practising mobile telework.</p> <p>Establishments with mobile workers are those that have staff who work away from the company's premises, i.e. in the field or on customer's premises for more than 10 hours a week.</p> <p>Establishments with mobile teleworkers are those that have equipped some of their mobile workers to have online access to company in-formation systems form outside of the company's premises."</p>
Notes on relationships to existing indicators and methodology	<p>Based on existing indicator B3-1.19* (ECaTT 1999)</p> <p>The threshold of 10 hours per week is arbitrary, but deemed necessary to define the focus of the question. 10 hours is equivalent to roughly 2 hours per workday or one full-day trip per week.</p>
Sources for data and availability	SIBIS DMS
Issues for SIBIS surveys	<p>Suggested questions:</p> <p>Today mobile workers can be given online access to company information systems. Are some of your mobile workers equipped to have online access to company information systems from outside of the organisation's premises?</p> <p>[IF YES] Roughly, how many? [OPEN]</p>
eEurope relevance	<p>Relevant action point in eEurope:</p> <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic 'Working in the knowledge based economy'

Name of indicator	B3-2.6# Tele-cooperation (intra-company)
Definition	Share of workers <ul style="list-style-type: none"> • who collaborate with externals (not located on the same site) at all, using e-mail, video-conferencing, the transfer of computer files or share joint databases (e.g. Intranet) – occasional tele-cooperation; • who use e-mail for collaboration with others (not located on the same site) daily, or use video-conferencing or file sharing at least once a week – regular tele-cooperation.
Notes on relationships to existing indicators and methodology	Based on B3-2.1* (ECaTT 1999).
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	Suggested questions: In the course of your job, do you exchange information and communicate with people outside your organisation, with customers or clients, suppliers, or other business partners, on a regular basis? [IF YES] How frequent are your phone calls, meetings, mail and other communication with external contacts? (10 or more a day; at least one a day; at least one a week; less than one a week) When you communicate with your external contacts, do you sometimes use e-mail, fax, video conference, file transfer or other computer access? <ul style="list-style-type: none"> • [IF YES] How often is this? (FOR EACH ITEM: 10 or more times a day; at least once a day; at least once a week; less than once a week; never) • [IF YES] Do you use a computer system which is shared with any customer or supplier, perhaps a shared database, file server or extranet?
eEurope relevance	Relevant action point in eEurope: <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic ‘Working in the knowledge based economy’

Name of indicator	B3-2.7# Tele-cooperation (inter-company)
Definition	Share of workers <ul style="list-style-type: none"> • who collaborate with same-company workers not located on the same site (but in other establishments) at all, using e-mail, video-conferencing, the transfer of computer files or share joint databases (e.g. Intranet) – occasional tele-cooperation; • who use e-mail for collaboration with others not located on the same site daily, or use video-conferencing or file sharing at least once a week – regular tele-cooperation.
Notes on relationships to existing indicators and methodology	Based on B3-2.1 (ECaTT 1999). Respondents need to have knowledge of the company structure to be able to distinguish between external and same-company contacts.
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	Suggested questions: Are all staff working for your company based on one site or not? [INTERVIEWER: CLARIFY AS NECESSARY: "at least one person regularly works at a different location to one where you regularly work?"] [IF YES] Are you in contact with the people at the other location(s) at all? [IF YES] When you communicate with the people at the other location(s), do you sometimes use e-mail, fax, video conference, file transfer or other computer access? [IF YES]: How often is this? (FOR EACH ITEM: 10 or more times a day; at least once a day; at least once a week; less than once a week; never) Do you use a computer system which is shared with the people at the other location(s), perhaps a shared database, file server or extranet?
eEurope relevance	Relevant action point in eEurope: <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic 'Working in the knowledge based economy'

3.2.4 Work contract

Overview Table (including indicators in development)

B4 – Contract of Work (thematic domain: work organisation)			
No.	Name of indicator	Based on	Suggested method
B 4 - 1 G e n e r a l			
B4-1.2#	Share of atypical employment in economic sectors	LFS	calculation using LFS data
B 4 - 2 S e l f - e m p l o y m e n t			
B4-2.6#	eLancers	-	SIBIS GPS
B 4 - 3 L a b o u r m a r k e t f l e x i b i l i t y			
B4-3.5#	Job churning	PPI (USA)	Calculation using data from LFS, ECHP (?)
B4-3.6#	Use of Internet for job seeking	ECaTT 1999	SIBIS GPS
B4-3.7#	Use of Internet for recruitment	-	SIBIS DMS
B4-3.8#	Success of online media for job-seeking	-	SIBIS GPS
B4-3.9#	Share of recruitments resulting from Internet-based matching	-	DMS (HR managers)
B 4 - 4 D u r a t i o n o f c o n t r a c t			
no new indicators suggested			
B 4 - 5 C o m p e n s a t i o n			
B4-5.2#	Workers with performance-related pay	ESWCs	Calculation from existing data (GPS)

Name of indicator	B4-1.2# Share of atypical employment in economic sectors
Definition	Share of the workforce (broken down by economic sectors) engaged in atypical employment relationships. This includes: <ul style="list-style-type: none"> • own account self-employed (i.e. without employees) outside farming • temporary employed • part-time employed (adjusted for temporary or self-employed part-time workers)⁶
Notes on relationships to existing indicators and methodology	B4-1.1; Based on indicator developed by IAB (Hoffmann and Walwei 2000a) which makes use of LFS data. The authors only differentiate between countries, but we suggest to break down the data by economic sectors (NACE "Sections"). For methodology of the Community Labour Force Survey, see EC and Eurostat 1998lfs.
Sources for data and availability	Calculations based on Community Labour Force Survey data (quarterly).
Issues for SIBIS surveys	Data available from other sources.
eEurope relevance	Relevant action point in eEurope: <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic 'Working in the knowledge based economy'

⁶ The Community Labour Force Survey defines part-time workers as follows: "The distinction between full-time and part-time work should be made on the basis of a spontaneous answer given by the respondent. It is impossible to establish a more exact distinction between part-time and full-time work, due to variations in working hours between Member States and also between branches of industry. By checking the answer with the number of hours usually worked, it should be possible to detect and even to correct implausible answers, since part-time work will hardly ever exceed 35 hours, while full-time work will usually start at about 30 hours." (EC and Eurostat 2001: 8-9)

Name of indicator	B4-2.6# e-Lancers
Definition	Number of own-account self-employed (i.e. without employees) who use the Internet <ul style="list-style-type: none"> • to acquire jobs/contracts, • to deliver work products to clients/customers.
Notes on relationships to existing indicators and methodology	Not based on an existing indicator. It is open to debate whether the definition should only include freelancers which usually use exclusively the Internet for these tasks, or whether it is sufficient when they do so "often". We suggest to design the question so that data are provided for both definitions.
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	Suggested questions: <u>Self-employment</u> (ESOMAR standard module): At present are you ... <ul style="list-style-type: none"> • self-employed • in paid employment • temporarily not working (unemployed, illness) • retired • not working/ responsible for ordinary shopping and looking after the home <u>Type of self-employment</u> (ESOMAR standard module): What kind of work do you do? [INTERVIEWER: What position do you hold?] <ul style="list-style-type: none"> • Professional (eg doctor, lawyer, accountant, architect) • Business proprietor, owner of company/shop, craftsmen, other self-employed person <ul style="list-style-type: none"> • How many employees do you have? [OPEN] • Farmer, fisherman [IF BUSINESS PROPRIETOR etc.] What kind of work do you do? Are you ... <ul style="list-style-type: none"> • working mainly at a desk • working not at a desk, but travelling (salesmen, driver, ...), • working not at a desk, but in a service job (retail shop, restaurant, ...) <u>e-Work</u> : We would like to know what role the Internet plays for your business. Do you often attract new business through the Internet? Do you often deliver work products to your clients/customers through the Internet? Is it usual that you communicate with clients/customers exclusively through the Internet and phone [i.e. without meeting in person?]
eEurope relevance	Relevant action point in eEurope: <ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic 'Working in the knowledge based economy'

Name of indicator	B4-3.5# Job churning
Definition	Number of jobs created plus number of jobs destroyed in a given year, as share of workforce.
Notes on relationships to existing indicators and methodology	Based on B4-3.3* (PPI, see Atkinson et al. 1999) which is based on US data. It should be checked whether e.g. the Community LFS or the ECHP can provide the data necessary to calculate the equivalent data for EU Member States.
Sources for data and availability	Not known yet, probably LFS or ECHP.
Issues for SIBIS surveys	Not planned for inclusion in SIBIS GPS.
eEurope relevance	Relevant action point in eEurope: <ul style="list-style-type: none"> • 2b-x – general indicator for topic ‘Working in the knowledge based economy’

Name of indicator	B4-3.6# Use of Internet for job-seeking
Definition	Number of persons who have used the Internet for job search, as share of all persons who have spent time looking for a new job, or related to their career, in the year prior to the interview.
Notes on relationships to existing indicators and methodology	Based on indicator used in ECaTT 1999. A comparable indicator (see B4-3.4*) has been piloted in Eurobarometer 54.0: "Do you use a computer? IF YES What do you use a computer for? Reply option: ‘... looking for a job on the Internet’". This is a readiness indicator; measuring intensity would imply finding out what exactly the Internet was used for (cf ECaTT 1999); measuring impact would mean asking whether online job search actually brought any benefits (see Indicator B4-3.8#)
Sources for data and availability	SIBIS GPS (time-series data available from ECaTT 1999 for 10 EU countries).
Issues for SIBIS surveys	Suggested questions: Over the past year have you spent time looking for a (new) job, or looking for information related to your career? [IF YES] Did you use the Internet or another online service in your search? • [IF NO] Did you use a computer at a job centre or similar organisation for job search?
eEurope relevance	Relevant action point in eEurope: <ul style="list-style-type: none"> • 2b-x – general indicator for topic ‘Working in the knowledge based economy’

Name of indicator	B4-3.7# Use of Internet for recruitment
Definition	Number of establishments/companies that use their online presence for recruitment purposes, as share of all establishments/companies.
Notes on relationships to existing indicators and methodology	<p>Not based on existing indicator, but related to e-commerce module used in ECaTT 1999.</p> <p>It should be noted that the proposed question would only cover recruitment activities through a company's website (passive use). Active recruitment, i.e. HR staff searching the web for skilled staff, might not be covered.</p>
Sources for data and availability	<p>SIBIS DMS.</p> <p>Questions which went into more detail would have to be targeted at HR managers.</p>
Issues for SIBIS surveys	<p>Suggested questions:</p> <p>Does your organisation offer information on the Internet, for example by means of a website?</p> <p>[IF YES] For what purposes is your establishment present on the Internet?</p> <ul style="list-style-type: none"> • ... • recruitment • ...
eEurope relevance	<p>Relevant action point in eEurope:</p> <ul style="list-style-type: none"> • 2b-x – general indicator for topic 'Working in the knowledge based economy'

Name of indicator	B4-3.8# Success of online media for job-seeking
Definition	Share of online job seekers who agree with each of the following statements below.
Notes on relationships to existing indicators and methodology	Not based on an existing indicator. Module is only applicable if the respondent has tried other ways of job-seeking before. Young labour market participants may never have searched a job outside the Internet. This affects the future value of the indicator.
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	Suggested questions: We would like to ask you to estimate some of the benefits of using the Internet for your job search. For each of the following, please indicate if you strongly agree, rather agree, rather disagree or strongly disagree. <ul style="list-style-type: none"> • I was better able to find information about job opportunities in other regions or countries • I was able to get up-to-date information on job offers more often • I identified more job offers which matched my own skills and preferences • I obtained better information about potential employers • I found it easier to get in contact with potential employers
eEurope relevance	Relevant action point in eEurope: <ul style="list-style-type: none"> • 2b-x – general indicator for topic ‘Working in the knowledge based economy’

Name of indicator	B4-3.9# Share of recruitments resulting from Internet-based matching
Definition	Share of HR managers in companies who claim that a certain percentage of all recruitments have resulted from Internet-based recruitment.
Notes on relationships to existing indicators and methodology	Not based on an existing indicator. Classes suggested: 0%, -10%, -25%, -50%, >50%.
Sources for data and availability	DMS (HR Managers)
Issues for SIBIS surveys	Not suitable for SIBIS DMS because has to be targeted at HR managers.
eEurope relevance	Relevant action point in eEurope: <ul style="list-style-type: none"> • 2b-x – general indicator for topic ‘Working in the knowledge based economy’

Name of indicator	B4-5.2# Workers with performance-related pay
Definition	Share of workers whose remuneration includes at least one of the following: <ul style="list-style-type: none"> • Piece rate or productivity payments • Payments based on the overall performance of the company (profit sharing scheme) where you work • Payments based on the overall performance of a group • Income from shares in the company you work for. Differentiated according to type of employees: management, professional/technical, clerical, manual.
Notes on relationships to existing indicators and methodology	Based on B4-5.1*. We suggest to aggregate the data (see definition above) so that workers can be differentiated according to whether they receive some kind of performance-related pay, or not. In addition to the questions as contained in the ESWCs, it might be worthwhile to ask for the share of overall remuneration derived from performance-related pay.
Sources for data and availability	ESWCs 1990, 1995, 2000
Issues for SIBIS surveys	Not to be included in SIBIS GPS because Indicator has already been piloted.
eEurope relevance	2b-4 - support greater flexibility in the workplace

3.3 Suggested SIBIS indicators on structure and outcomes of employment

3.3.1 Benefits from employment

Overview Table (including indicators in development)

C1 – Benefits from employment (Thematic domain: structure and outcomes of employment)			
No.	Name of indicator	Based on	Suggested method
C 1 - 1 M a t e r i a l b e n e f i t s			
no new indicators suggested (but see Indicator B4-5.2#)			
C 1 - 2 I m m a t e r i a l b e n e f i t s			
C1-2.15#	Job quality of jobs with flexible work arrangements	Eurobarometer 44.3	SIBIS GPS / DMS (HRM)
C1-2.16#	Outcomes of flexible work arrangements on work-family balance		SIBIS GPS / DMS (HRM)
Satisfaction			
C1-2.17#	Life satisfaction of workers with flexible working conditions	-	GPS (calculation based on existent data, e.g. Euro-barometer?)
Job security and availability			
C1-2.18#	Perceived job security of workers with flexible work arrangements	C1-2.7 (ISSP)	SIBIS GPS
Health effects			
C1-2.19#	Job-related health complaints of workers with flexible work arrangements	ESWCs	Analysis of existing dataset (GPS)

Name of indicator	C1-2.15# Job quality of work arrangements with flexible working conditions
Definition	<p>Share of workers who report ("very true", "quite true") certain aspects of job quality, broken down by type of work arrangement.</p> <p>Flexible work arrangements are defined as comprising:</p> <ul style="list-style-type: none"> • telework: home-based (see Indicator B3-1.26#), self-employed (B3-1.29#) or mobile (B3-1.31#); • part-time work: persons declaring that they work part-time (LFS methodology, see footnote 6); • temporary and fixed-term work (see existing Indicator B4-4.1); • self-employed work without employees, outside farming.
Notes on relationships to existing indicators and methodology	<p>Based on C1-2.1. Builds on Eurobarometer question (e.g. 47.1), but data broken down to account for differences between various types of workers.</p> <p>Additional to mean values, standard deviations and other measures of distribution have to be devised to account for the fact that job quality might vary strongly among workers with flexible working conditions.</p>
Sources for data and availability	Data available from Eurobarometer (e.g. 21.0, 47.0), but data has to be analysed to investigate if break-downs of this type are possible.
Issues for SIBIS surveys	<p>Questions suggested:</p> <p>How true is it in relation to your current work arrangement that...</p> <p>(I) you have a lot of say over what happens in my job</p> <p>(II) your job allows you to take part in making decisions that affect your work</p> <p>(III) your job requires that you keep learning new things</p> <p>(IV) your job is secure</p> <p>(V) your income is high</p> <p>(VI) you can adapt starting & finishing times of your work days to your personal preferences</p> <p>(VII) you can adapt the weekly number of hours you work to your personal preferences.</p> <p>Answer categories: very, quite, a little, not at all, DK</p>
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic ‘Working in the knowledge based economy’

Name of indicator	C1-2.16# Work-family balance and flexible work arrangements
Definition	<p>Share of workers who report that they "always" or "often" experience certain effects of their work on family life, broken down by type of work arrangement.</p> <p>Flexible work arrangements are defined as comprising:</p> <ul style="list-style-type: none"> • telework: home-based (see Indicator B3-1.26#), self-employed (B3-1.29#) or mobile (B3-1.31#); • part-time work: persons declaring that they work part-time (LFS methodology, see footnote 6); • temporary and fixed-term work (see existing Indicator B4-4.1); • self-employed work without employees, outside farming.
Notes on relationships to existing indicators and methodology	<p>Builds on Eurobarometer module (44.3). The Eurobarometer data file does not allow for break-downs by type of work arrangement.</p> <p>It might be useful to build a compound indicator which combines all five effects on family life into one, along the lines suggested by the OECD (Clark 1998: 25-26): First, dichotomous variables is to be created with 1 representing "always" and "often" and 0 representing "sometimes", "hardly ever" and "never". Then the sum of these five dummies must be calculated. The resulting variable counts the number of times (out of five) the respondent reports a high frequency of an effect of work on family life. This variable runs from zero, for those without any of these effects, to five for those whose work regularly has negative effects on family life on all of the five criteria listed.</p>
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	<p>Questions suggested:</p> <p>How often do you ...</p> <ul style="list-style-type: none"> • Find your work stressful • Come home from work exhausted • Find your job prevents you from giving the time you want to your partner or family • Feel too tired after work to enjoy the things you would like to do at home • Find your partner/family gets fed up with the pressure of your job <p>Answer categories: always, often, sometimes, hardly ever, never, DK</p>
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic 'Working in the knowledge based economy'

Name of indicator	C1-2.17# Life satisfaction of workers with flexible working conditions
Definition	<p>Life satisfaction as operationalised by Eurobarometer: "On the whole, are you very satisfied, fairly satisfied, not very satisfied or not at all satisfied with the life you lead?", broken down by</p> <ul style="list-style-type: none"> • persons in work vs. not in work • self-employed/ temporarily employed/ permanently employed • part-time/ full-time workers • flexible workers (compound index)/ traditional workers • etc.
Notes on relationships to existing indicators and methodology	<p>C1-2.1. Builds on Eurobarometer question (e.g. 47.1), but data broken down to account for differences between various types of workers.</p> <p>Results of questions on satisfaction usually show a strong dependence on the interview context (e.g. type of interview, preceding questions, interviewer characteristics). Advanced control over the interview situation is required, which is usually not given in CATI contexts. For this reason, data on satisfaction indicators have to be approached with care.</p>
Sources for data and availability	Data available from Eurobarometer (e.g. 21.0, 47.0), but data has to be analysed to investigate if break-downs of this type are possible.
Issues for SIBIS surveys	Not suitable for GPS or DMS.
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic 'Working in the knowledge based economy'

Name of indicator	C1-2.18# Perceived job security of workers with flexible work arrangements
Definition	<p>Percentage of employees who "strongly agree" or "agree" to the statement "My job is secure", broken down by type of work arrangement.</p> <p>Flexible work arrangements are defined as comprising:</p> <ul style="list-style-type: none"> • telework: home-based (see Indicator B3-1.26#), self-employed (B3-1.29#) or mobile (B3-1.31#); • part-time work: persons declaring that they work part-time (LFS methodology, see footnote 6) • temporary and fixed-term work (see existing Indicator B4-4.1) ; • self-employed work without employees, outside farming.
Notes on relationships to existing indicators and methodology	Based on C1-2.7 and on Eurobarometer 44.3. However, the data from the ISSP does not allow for break-downs by type of work arrangement, and is not available for all EU Member States. The ISSP is only being conducted in large time intervals, while the Eurobarometer survey was an one-off exercise.
Sources for data and availability	SIBIS GPS
Issues for SIBIS surveys	<p>Suggested questions:</p> <p>How true is it in relation to your current work arrangement that...</p> <ul style="list-style-type: none"> • ... • your job is secure • ... <p>Answer categories:</p> <ul style="list-style-type: none"> • very, • quite, • a little, • not at all • DK
eEurope relevance	2b-4 - support greater flexibility in the workplace

Name of indicator	C1-2.19# Job-related health complaints of workers with flexible work arrangements
Definition	<p>Percentage of employees reporting at least one of the following health problems caused by their job:</p> <ul style="list-style-type: none"> • ear problems, • eye problems, • skin problems, • backache, • headaches, • stomach ache, • muscular pain in arms or legs, • respiratory problems, • allergies, • heart disease. <p>Broken down by type of work arrangement. Flexible work arrangements are defined as comprising:</p> <ul style="list-style-type: none"> • telework: persons declaring they telework from home; • part-time work: persons declaring that they work part-time (compare LFS methodology, see footnote 6) • temporary and fixed-term work (compare existing Indicator B4-4.1): persons declaring they work on a fixed term contract or a temporary employment agency contract; • self-employed work without employees, outside farming.
Notes on relationships to existing indicators and methodology	Based on C1-2.12. We suggest to break down the data by typical / atypical work arrangements.
Sources for data and availability	ESWCs 1990, 1995, 2000
Issues for SIBIS surveys	Not to be included in SIBIS GPS because Indicator has already been piloted.
eEurope relevance	2b-4 - support greater flexibility in the workplace

3.3.2 Level and structure of employment

Overview Table (including indicators in development)

C2 – Level and structure of employment (Thematic domain: structure and outcomes of employment)			
No.	Name of indicator	Based on	Suggested method
C 2 - 1 Overall employment			
No new indicators suggested.			
C 2 - 2 Sectors and occupations			
C2-2.9#	Employment in ICT start-ups	-	n.a.
C 2 - 3 Unemployment			
No new indicators suggested.			

Name of indicator	C2-2.9# Employment in ICT start-ups
Definition	Persons employed in ICT start-ups. "ICT" = companies in the ICT sector, i.e. NACE categories suggested by the OECD (ICCP) "start-up" = in business not older than three years.
Notes on relationships to existing indicators and methodology	Eurostat does not provide comprehensive data on new businesses, but is currently working on such a statistic. Data are intended to be published towards the end of year 2002. Other sources for statistics on new businesses in the EU were not identified. The OECD does not provide such data. Methodological issues: " <i>Data pollution</i> ": New business statistics usually do not only include genuine, active new firms, but also renamed firms, dummy firms and the like. The share of those may differ considerably between countries, reducing the interpretability. <i>Incomplete statistical coverage</i> : New firms do not necessarily have to be registered, and unregistered firms are difficult to determinate in empirical investigations. The requirement to register a firm may differ from country to country, so that the empirical ground for determining the total number of new businesses differs, too. <i>Longitudinal data</i> : To determine the number of employees in companies that have been existing for a certain period of time – here: three years –, longitudinal data would be necessary. This would require to construct a European company panel.
Sources for data and availability	Not yet available, but Eurostat plans to make data available soon.
Issues for SIBIS surveys	This indicator could hardly be part of the GPS or the DMS.
eEurope relevance	Employment in young ICT companies can contribute to acquiring new knowledge - technological and organisational -; "job-hopping" among young ICT companies - and also from and to older ICT companies – can contribute to spreading new knowledge and establishing inter-firm networks.

3.3.3 Output of employment

For this sub-topic, no new indicators are suggested in the scope of the SIBIS project.

4 Suggestions for composite indices

It may be useful to aggregate some of the indicators developed (if appropriate, together with indicators already existing in official statistics) into topic indices. In this chapter, we discuss two approaches for such compound measures.

Each index consists of a number of indicators which are aggregated. For the benefit of comparability we propose to convert original indicator values into standardised values with the country showing the highest value being assigned the benchmark value of 100 (see Tables in the next section). Each country can then be ranked according to its performance in each indicator. The values for each of the suggested indices can then be calculated as the mean of these ranks. In this first approach, we suggest not to weigh single indicators.

The approach described below has already been realised based on data which is already available (see following tables). However, in order to improve the appropriateness of the indicators included, and to be able to update the indices in regular intervals in the future, new data collection is necessary. The surveys undertaken as part of the SIBIS project will pilot some of the indicators we suggest for regular use in official statistical data gathering.

4.1 Index on worker-centred flexibility

Based on the framework outlined in PART A, we selected the component statistics listed in the following table to construct an index for worker-centred flexibility. In the following we will briefly discuss each of these components.

Table. Indicators for measuring worker-centred flexibility of work arrangements

Dimension	Indicator	Preliminary source
Time	Voluntary part-time working	Community Labour Force Survey (quarterly)
Time	Temporal autonomy in job	ECaTT (1999)
Place	Home-based teleworking (excluding self-employed)	ECaTT (1999)
Place	Teleworkability	ECaTT (1999)
Contract	Job security	International Social Survey Programme (1997); Eurobarometer 44.3 (1996) ⁷
Contract	Average job tenure	OECD (1999)
Content	Share of population aged 25-64 participating in training (lifelong learning)	Community Labour Force Survey (quarterly)
Content	Participation in decision-making concerning changes at workplace	European Survey on Working Conditions (2000)

4.1.1 Dimension: Time

Flexitime, part-time work and credit time arrangements are only three examples of a declared general move away from stability in working times (the so-called 9-to-5 job) towards models

⁷ Only satisfaction

that are sup-posed to be more in line with the requirements of business in increasingly volatile markets, as well as the personal preferences of employees. Flexibility in this regard can take the basic forms of:

- more flexible choice of regular working time per day, month, year, etc.;
- more flexible choice of the distribution of working hours across daytime, week, months, etc.;
- greater working time variability (which might be attuned to the demands of business, e.g. shift work, or to the preferences of workers, e.g. flexitime).

Part-time working is in general considered to be one of the most visible of developments towards greater flexibility in working arrangements (EC 2000EiE: 29-42). The specification of the hours worked may originate in preferences of the worker, the company, or both depending on the overall labour market situation (e.g. unemployment rates) and business imperatives. Government such as in the Netherlands have developed a strategy of promoting part-time working with the attempt to reduce unemployment rates and offer work opportunities to those not able to work full-time (especially women). In contrast, some Nordic countries such as Sweden and Denmark have explicitly sought to convert part-time jobs into full-time jobs as a means of gender mainstreaming (Hoffmann and Walwei 2000).

This shows that, from a worker-centred point of view, caution should be taken before interpreting high levels of part-time work as a sign of labour market adaptability as it can be a sign for the incapability of an economy to provide enough full-time jobs. In fact, the majority of EU workers consider the level of job security to be lower in part-time in comparison to full-time arrangements (Gasparini 2000). For this reason, a more accurate indicator of worker-centred flexibility would be the rate of voluntary part-time work.

The other major aspect of worker-centred time flexibility is temporal autonomy, i.e. the extent of discretion over working times. The most prominent model involves a core daily working time, around which individual working hours can be arranged according to individual or company requirements. More advanced models have shed the core working time altogether. Flexitime models, like part-time working, are supported by ICTs through improvements in management and monitoring technology, and more powerful asynchronous communication media such as e-mail and voice mail which have liberated routine communication and workflow in organisations from the dependence on face-to-face interaction (and, by implication, fixed working times). Discretion over start/finish of working day was selected as indicator because other models (such as freedom to choose days worked per week or months worked per year) are much less widespread.

4.1.2 Dimension: Place

The distance-bridging properties of ICTs increase the 'spatial flexibility' of companies as well as workers: Technically it becomes possible to choose locations for work processes more freely. The location of work becomes variable in the short term, whereas it was practically fixed in the short and medium term before. This makes them more adaptable to changes in their environment. To varying degrees, companies have made use of this new freedom to change the geography of work, while workers demand to work where they want to as the need for colocation appears to be gradually diminishing. One practical outcome of increased locational flexibility at the level of the individual work arrangement is telework, which can take different forms: home-based (in the home of the worker), mobile (on business trips or in the field) or, much more seldom in practice, centre-based (in a centre which is located to save commuting time).

Home-based telework is today implemented mostly in a worker-centred way (EC 2001stat), in particular with the aim to improve the compatibility of work and family life and to keep highly productive knowledge workers happy. It is therefore selected here as an indicator for worker-centred flexibility. As telework is still not very widespread in the EU yet but believed to

experience considerable growth in the near future (Gareis and Kordey 2000), an additional indicator included in this index is teleworkability which represents the share of the workforce which could, in principal, telework from home at least one day per week. The inclusion of teleworkability ensures that not only the current state, but also the "technical" potential for further diffusion of home-based telework in a country is taken into account.

4.1.3 Dimension: Contract

This dimension refers to the contract that underlies the relationship between worker and the organisation that utilises the work products, e.g. a contract of employment or a contractor/client-relationship that is based on self-employment.

The worker-centred perspective on the flexibility of a working arrangement is almost diametrically opposed to the company's view. While a permanent employment relationship might mean rigidity from the company's standpoint, it means - in the absence of forced labour - something completely different for the worker: the freedom to look out for an other appointment while enjoying the security which comes from holding a job. A worker-centred flexibility index must, therefore, include measures on job security to take account of the fact that flexibility in working arrangements is only recognised as such by workers if it is combined with some provision of safety.

For this reason, we included two measures of job security in the worker-centred index. Unfortunately, data from the International Social Survey Programme on the share of the workforce who claim that their job is secure is available only for a number of EU Member States, and not up-dated frequently enough. As an alternative we use data from Eurobarometer which measures the satisfaction with job security of respondents representative of the EU labour force. The second indicator selected is the average job tenure. In country comparisons, a higher average job tenure indicates that workers have a higher likelihood of staying with the same employer than in other countries, which was found to correlate positively with the perception of job security (Clark 1998).

4.1.4 Dimension: Content (applied skills)

The skills workers apply in the production process define the content of their work (and vice versa). Work content has been hugely affected, in particular, by the increasing 'informatisation' of work and by technological progress related to ICTs.

Continuous learning affects workers as well as companies, with the difference that workers must be concerned about their employability while companies must manage the skills in their staff to support the production process now and in future. The fact that skill requirements today change over shorter durations means that workers cannot rely on being able to market their skills once they have acquired them in their youth throughout their lifetime. Rather, they have to constantly adapt their skills to the demands of the labour market, i.e. practice 'lifelong learning' even while they are holding a job. Life-long learning boosts employability and therefore provides workers with the flexibility of choice on the labour market.

Available data on lifelong learning measures is scarce. For our purpose, the most adequate indicator is the share of the population of employable age (but excluding persons in initial full-time education) who take part in education and training (including self-directed learning). For this data is provided by the Community Labour Force Survey.

The last indicator that went into this index on worker-centred flexibility is participation in decision making, again derived from data collected through the ESWCs. Workers have an interest in keeping some degree of control over changes to their working conditions; otherwise flexibility is something imposed on them, potentially to their disadvantage. Participation in

decision making is therefore a vital ingredient in an index that tries to present flexibility of working arrangements from the viewpoint of workers.

4.2 Index on company-centred flexibility

Again, based on the framework outlined in PART A we selected some component statistics (which are listed in the following table) to construct an index, this time for company-centred flexibility. Further below we will briefly discuss each of these components.

Table. Indicators for measuring company-centred flexibility

Dimension	Indicator	Preliminary source
Time	Part-time working	Community Labour Force Survey (quarterly)
Time	Workers with atypical working times (evening, night, weekend work and working long hours) (ESWCs)	European Survey on Working Conditions (2000)
Place	Tele-cooperation (ECaTT)	ECaTT (1999)
Place	Mobile teleworking (ECaTT)	ECaTT (1999)
Contract	Employment Protection Legislation Indicator (OECD)	OECD (1998)
Contract	Workers with temporary work contracts (excluding voluntary and contracts for training) (LFS)	Community Labour Force Survey (quarterly)
Content	Employees who have had training provided by employer (past 12 months) (ESWCs)	European Survey on Working Conditions (2000)
Content	Management by objectives (ESWCs)	European Survey on Working Conditions (2000)

4.2.1 Dimension: Time

From the company-centred view, every part-time worker increases the supply of workers willing to work flexible hours, so the appropriate indicator here is the share of all part-time workers in a national workforce.

Apart from part-time jobs, companies show much interest in non-typical working times to get working hours in line with production and service schedules. While traditional shift-working in manufacturing is declining (in absolute numbers) together with the decreasing workforce employed in these sectors, it is being extended to sectors where it has been non-existent previously (Brewster et al. 1997). Workers who are deployed at the front-office, i.e. have direct contact with customers, are the first to be exposed to the requirements resulting from extended opening hours and 24 hours a day, 7 days a week customer service strategies. In Sweden and Finland, which are among the EU Member States with the highest share of employment in the service sector, there are already more women than men engaged in shift-work. Indeed, workers with "atypical working times" (the indicator chosen for inclusion in the AWAI-2) constitute already the majority in all EU Member States.

4.2.2 Dimension: Place

Mobile telework, one major type of spatial flexibility, is mostly implemented on the initiative of the company with the aim to move workers closer to customers (Gareis and Kordey 1999). The increase in the number of mobile workers is due to sales staff (and other employees who traditionally work in the field) being equipped with remote access technology, and also due to rising numbers of office workers who spend a high share of their working time on business trips for the purpose of meeting co-operating partners.

Mobile telework is chosen here as an indicator for company-centred spatial flexibility, together with tele-cooperation has become the common working mode for an increasing share of workers. Tele-cooperation is sometimes also called 'in situ telework', because, although workers appear to be co-located in central office buildings, in fact they are often working closely together with project partners at far away locations. Evidence suggests that tele-cooperation has boosted worker productivity and innovative performance throughout the EU economy by allowing flexible configurations of human capital without actually moving people from one place to the other (Reichwald et al. 1998). Data for all of these variables comes from the 1999 ECaTT survey conducted in 10 EU Member States.

4.2.3 Dimension: Contract

This dimension refers to the contract that underlies the relationship between worker and the organisation that utilises the work products, e.g. a contract of employment or a contractor/client-relationship that is based on self-employment. Differences in the duration of employment contracts affect average job tenure.

As the first indicator for the company-centred view of this dimension, we used the Employment Protection Legislation Indicator developed by the OECD. This indicator was developed to be able to compare the effect of regulatory labour market regimes between countries. Main ingredients are subindicators measuring procedural requirements for laying off workers; notice and severance pay; prevailing standards of and penalties for 'unfair' dismissals; 'objective' reasons under which a fixed-term contract could be offered; the maximum number of successive renewals of fixed-term contracts; and the maximum cumulated duration of a fixed-term contract (Nicoletti et al. 2000: 41). According to this indicator, countries such as the United Kingdom and Ireland, but also Denmark, are those with lowest levels of employment protection regulation while France, Italy and Spain provide the most stringent regimes.

One way for companies to deal with stringent labour market regimes is to look for alternative work arrangements that are not subject to the same regulation as regular employment relationships, e.g. fixed-term contracts. For this reason we selected the share of workers with temporary (fixed-term) work contracts as an additional indicator for measuring the contract dimension in the AWAI index. For meaningful comparison between countries, the raw figures from the Community Labour Force Survey need to be adapted to account for so-called voluntary temporary workers, most of which are persons who hold contracts for training (e.g. apprenticeships, vocational training).

4.2.4 Dimension: Content (applied skills)

To identify adequate indicators for company-centred flexibility with regard to this dimension, a look at some trends in business theory and human resource management is helpful. The key message of many of these (e.g. business process re-engineering) is that companies have to abandon of activities that do not create any value for customers. As a consequence, successful companies have flattened organisational hierarchies so that more responsibility and decision power can be decentralised and handed over to the (groups of) individuals who are actually carrying out the work and who are much better acquainted with the needs of

certain jobs. If such decentralisation is to be made to work, employees need to be trained continuously. This is also a logical consequence of the impact of ICTs which have shortened skill life cycles enormously. We chose "employees who have had training provided by their employer" as indicator representing the extent to which a country's company's have accepted this challenge.

Decentralisation also means that management styles change: from the traditional "management by eyeball" to "management by objectives" techniques that rest on the monitoring of results instead of behaviour. No indicator on the spread of management by objectives in EU Member States is readily available. As a supplement, we constructed an indicator from variables included in the European Survey on Working Conditions (ESWCs) .

4.2.5 Results of preliminary calculation

The statistical variables outlined in the previous section were used to calculate a ranking of countries along each indicator. For the benefit of comparability we have converted original indicator values into standardised values with the country showing the highest value being assigned the benchmark value of 100 (see Tables in the next section). Each country was ranked according to its performance in each indicator. The values for each of the AWAI-2 subindices were then calculated as the mean of these ranks, resulting in two AWAI-2 subindex values, one representing worker-centred flexibility and the other company-centred flexibility. In this first approach, single indicators were not weighted.

The country coverage was restricted to the 10 EU Member States for which data along all indicators could be made available (Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Spain, Sweden, United Kingdom).

The approach described, while being very tentative, has the advantage of being based on data which is already available, and will be updated in regular intervals in the future. Results can necessarily only be preliminary, but we think that this second version of the AWAI Index is the best available compound measure on the development of ICT-related increases in labour market flexibility yet.

Table 3 ranks countries according to their mean ranking in the eight variables representing worker-centred flexibility. The Netherlands, the benchmark with regard to voluntary part-time working and participation in decision-making, come out first, followed by the Nordic countries Sweden (the benchmark for lifelong learning), Denmark (the benchmark for job security) and Finland (the benchmark for discretion over working hours and home-based teleworking). Germany, Italy (the benchmark for teleworkability and job tenure) and the U.K. constitute the midfield, while Ireland, France and Spain clearly lag behind.

Table 4 ranks countries according to their mean ranking in the eight variables representing company-centred flexibility. Here, the country sequence is somewhat different. The U.K. ranks best together with the Netherlands, followed by the Nordic countries. Italy and the Germany perform much worse compared to the worker-centred subindex.

Table 4-1: AWAI-2 values - Subindex on worker-centred flexibility

Dimension	TIME		PLACE		CONTRACT		CONTENT		AWAI-2 Worker-centred Flexibility Index ⁸	Country rank
	Voluntary part-time working	Discretion over working time	Home-based teleworking	Teleworkability	Job security	Job tenure	Participation in decision making	Lifelong learning		
Netherlands	100	77	60	99	94	79	100	72	6.63	1
Sweden	44	75	79	76	87	95	88	100	6.13	2
Denmark	46	82	67	73	100	70	98	96	5.88	3
Finland	20	100	100	83	87	83	97	91	5.88	3
Germany	44	82	22	93	88	85	75	24	5.13	5
Italy	13	81	24	100	86	100	67	24	4.63	6
U.K.	59	74	36	92	84	69	86	97	4.50	7
Ireland	39	75	15	75	84	78	76	24	2.50	8
France	33	63	18	85	77	93	80	13	2.38	9
Spain	16	70	19	87	83	83	56	23	2.00	10

Table 4-2: AWAI-2 values - Subindex on company-centred flexibility

Dimension	TIME		PLACE		CONTRACT		CONTENT		AWAI-2 Company-centred Flexibility Index ⁹	Country rank
	Part-time working	Atypical working hours	Mobile teleworking	Tele-Cooperation	Employment Protection in Legislation	Involuntary temporary workers	Management by Objectives	Employee training provided by company		
U.K.	57	86	49	85	100	14	85	96	6.63	1
Netherlands	100	72	100	90	58	39	96	84	6.63	1
Finland	20	84	60	100	64	37	69	100	6.00	3
Denmark	47	70	49	63	78	14	100	89	5.13	4
Sweden	44	73	53	75	58	37	56	80	4.63	5
Ireland	35	85	7	75	89	6	69	67	4.00	6
France	31	83	19	53	42	43	71	47	3.50	7
Germany	43	75	35	64	49	21	56	56	3.38	8
Spain	16	100	12	48	40	100	67	36	3.00	9
Italy	14	93	33	54	38	21	65	42	2.38	10

Comparing the results for both subindices, we can distinguish between three groups of countries (in columns we have put the difference between both AWAI-2 values, where a positive value means that the country ranks higher in average with regard to worker-centred flexibility, and a negative value indicates that it performs better with regard to company-centred flexibility):

- The first group consists of countries that perform well in both subindices: In particular the Netherlands (0.00) which are at the top of the rank in both indices, and also Finland (-

⁸ Inverse average rank of 8 benchmarked variables

⁹ Inverse average rank of 8 benchmarked variables

0.12) and Denmark (+0.75). These EU Member States come closest to reaching the aims of the European Employment Policy.

- A second group is made up by countries who perform weak in both subindices and includes France (-1.12) and Spain (-1.00). These are countries which still have a long way to go before they reach at least EU average levels of labour market adaptability.
- A third groups contains countries that score high on the worker-centred subindex, but much lower on the company-centred subindex: Italy (+2.25), Germany (+1.75) and Sweden (+1.50). In these EU Member States, flexibility on labour markets is distributed in favour of workers, while companies are in need of a more flexible regulatory environment.
- The last group is made up by countries that score high on the company-centred index, but low on the worker-centred index, and includes the U.K. (-2.13) and Ireland (-1.50). In these EU Member States, flexibility on labour markets benefits mainly employers.

5 Annexes

5.1 Existing indicators

5.1.1 Quality requirements

Indicators have to meet basic requirements with regard to the quality of indicators if they are to be used for informing policy makers and other decision makers. In the SIBIS task 1.5 document, these requirements were outlined. Therefore, indicators should be:

- *outcome focused*: It is critical that an indicator reflect the resulting social outcomes that are of concern. If design decisions are based only on whether numbers are easily measured or already collected and adequate consideration is not given to the connection between those values and the outcomes of interest, the resultant “indicators” will not be useful.
- *complete*: When seeking to describe a given social result, it is important that indicators take into account all relevant routes to obtaining that outcome. If an indicator captures only one source of a result and ignores others, its usefulness will be compromised.
- *causatively informative*: Good indicators should help provide insights into the causes of societal outcomes in addition to their symptoms.
- *clear*: The connection between the measurements that make up the indicators and the social outcome it seeks to reflect should be unambiguous to all populations who need to understand and use it.
- *policy relevant*: Indicators should be designed so they are relevant for policy-makers in the area. Without the connection to policy, the indicator will have little relevance for outcomes.
- *publicly defensible*: The measurements that serve as the basis of indicators should be reproducible and verifiable. The construction of the indicator and justification for its use must stand up to public scrutiny and challenge.
- *technology neutral*: When examining the information society, an area intimately connected with technology and innovative progress, it is critical that indicators not be limited to specific technologies or industries.
- *stable through time or able to be updated*. Because one of the main functions of indicators is to measure outcomes consistently through time, it should be possible to compare the results of measurements over long periods. If an indicator cannot be measured precisely the same way indefinitely, it is imperative that routes exist to revise and refine it so that the indicator will continue to be a useful measure.
- *not geographically specific*: Because of the importance of benchmarking as an application of these indicators, it is critical that they be constructed in a way which facilitates comparison between disparate regions and nations.
- *distributionally sensitive*: If indicators mask differences in the ways social change affects different parts of the population, policies may be designed which do not properly address or may even aggravate the inequality. As a result, indicators should contain information about how the impacts of changes are spread across the population.

5.1.2 Overview of main data sources

A major source for employment-related data for EU Member States is the Union Labour Force Survey (LFS). This provides the only statistics on employment, unemployment and related variables which are comparable and, except for a few items, complete for all Member States and which enable structural features of the Union’s work force to be analysed on a consistent basis. Since it is based on a survey of households and uses a common set of questions and

methodology, the LFS abstracts from national differences in definitions, methods of classification and administrative procedures and regulations. Data from national sources may, therefore, differ from the figures calculated on the basis of the LFS (Employment in Europe 1999: 151f.). The LFS was carried out annually from 1983 (Spain and Portugal 1986/7, Austria, Sweden and Finland 1995) to 1999 and is now carried out quarterly.

"An ad hoc module will be added to the labour force survey in 2001 to better describe flexibility of the labour market. Besides questions on the type of labour contracts, the module will provide data on paid and unpaid overtime, shift work patterns, on-call work, variable working times and working time banking. The module also includes two variables to describe the match between on the one hand, shift work and other working time arrangements and on the other hand, the individual preferences. These variables focus on specific aspects of the labour conditions of the labour supply. Because of their limited scope, they are less useful than the more general indicator of time-related underemployment" (van Bastelaer 2000: 5).

Moreover, a new LFS module on Lifelong Learning is planned by Eurostat for implementation from 2003 onwards (Drymoussis 2000: 9). As the OECD Network B plans a similar module to be included in 'carrier' surveys on "continuing education and training of adults", co-operation between OECD and Eurostat is planned.

LFS data has been analysed by many researchers in order to develop more adequate indicators. IAB, the research arm of Germany's Public Employment Agency, is responsible for one such attempt (see Hoffmann and Walwei 2000a).

A second major data source is the Eurostat Benchmark Employment Series which is considered the best available measure of (changes in) the total employed in individual Member States. The series do not come from a common source but from quarterly (6 countries) or annual (3) national labour force surveys, national accounts (3), registration data, labour accounts and a microcensus (1 each). Since the sample size of the LFS is not sufficient (and the survey was only carried out annually until 1999), it cannot substitute for the Benchmark Employment Series yet. There are plans to make a quarterly and continuous labour force survey of sufficient size available in the future.

Comparative data for countries in the rest of the world, as well as the EU itself, comes from the ILO and the OECD.

The ILO compiles a Collection of Labour Statistics on an annual basis. In 1996, the ILO was asked by its stakeholders to develop and disseminate an expanded range of up-to-date and relevant labour market indicators. The project (and the CD-ROM and book publications presenting its results) is called the ILO Key Indicators of the Labour Market (KILM). The KILM project does not directly use national sources as its primary data providers, but rather takes advantage of existing compilations of data held by various international organisations, including the ILO itself, United Nations Statistics Division, OECD, World Bank, UNIDO, EUROSTAT, UNESCO and the United States Bureau of Labor Statistics (BLS). KILM also contributes to ILO's annual Yearbook of Labour Statistics.

The OECD also hosts data on labour force statistics which are made public in quarterly and annual reports.

With regard to data on the use of ICTs related to work, skills and employment, Eurostat has been very active lately. Examples for its data gathering exercises are the supplement to Eurobarometer 54 – "Europeans, Information and Communication Technologies and Employment" from November 2000 and the Flash Eurobarometer 88. Non-Eurostat data collections in this vein include the annual International Benchmarking Study from UK's Department of Trade and Industry, as well as occasional surveys such as those by empirica: TELDET 1994 and ECaTT 1999 (some parts have already been used for a 1985 survey). The EU research project EMERGENCE has recently staged a survey of employers on the use of telework, outsourcing and other forms of "eWork". One-off studies of this type latter present valuable testbeds for the piloting of innovative indicators.

IDC, the IT consultancy company, has calculated (based on own surveys) the size of the IT skills gap in a joint project with Microsoft, the software company. However, measuring skill provision and demand is made difficult by lack of generic skill profiles which are up-to-date, applicable across countries, and supported by statistical data. For this reason, the European Commission's Directorate-General Enterprise has launched a study "Generic skills profiles for the ICT Industry in Europe" whose objective it is to identify the requirements of the ICT industry regarding the skills of ICT professional staff at all levels, define standard job and skills profiles, prepare curricula guidelines, and contribute to the political debate about the ICT skills needs. Project leader is the European ICT Industry Association (EICTA). The final report is foreseen to be published in 2001.

A number of sources present data gathered by means of company surveys. The Cranfield European Human Resource Management Survey deals with various subjects in the human resources & industrial relations field. It was set up to collect data in a homogeneous and organised survey. So far, there had been seven 'rounds' of collecting data in many countries in Europe and in the world with up to 26 countries participating.

The European Commission's DG Enterprise conducts the Community Innovation Survey which deals, in particular, with investments in R&D and innovative performance. This includes questions on innovative ways of organising work as well as training of staff. ENSR is an annual survey targeted at small and medium-sized enterprises (SMEs) which also provides data on work-related issues. SME-related data is also available from Eurostat which for this purpose collects data from the Member States and harmonises it as much as possible to enable cross-country comparisons.

Another group of data sources stems from surveys of the general population, households or workers. The European Foundation for the Improvement of Living and Working Conditions, a European Union body, is responsible for three major pan-European surveys on working conditions (3 rounds of surveys 1990, 1995 and 2000), on employment preferences and options (1998) and on employee participation and team-working (1996). The Working Conditions Survey is planned to be extended to the 12 EU applicant countries in 2001. The Foundation currently seeks to establish closer, formal links between its data and the data on working conditions produced by other national and European surveys (Eurostat).

Eurostat's Flash Eurobarometer 83 dealt with citizens' attitudes towards new ways of working such as self-employment.

The European Community Household Panel (ECHP), conducted annually, was established to better understand the full range of labour market transitions in the EU. It has tracked the experiences of people initially selected through random samples of the populations of EU member states since 1994 (Fisher et al. 2000). Eurostat has released the first three waves of the ECHP, in the form of a User's Database (UDB), for analysis in 1999. The ECHP is currently under revision, with a revised ECHP (then called EU-SILC - EU Statistics on income and living conditions) starting most probably in 2003. There is the intention to include some questions on education, a small number of questions on training and to ask for more detailed information on education and training in a specific ad-hoc module to be added for one year. The overall main focus of the future ECHP will be on living conditions and social exclusion. The instrument will give priority to high quality cross-sectional data, while the longitudinal dimension will be limited to income and some social exclusion indicators (Eurostat 2001task: 19).

The European Foundation's Survey on Employee Participation in Organisational Change (EPOC) was conducted only once so far, and dealt primarily with questions concerning employee representation which are of interest for unions and works councils.

A couple of data sources are available covering the area of education statistics with an emphasis on further education and lifelong learning. Eurostat is behind the Continuing Vocational Training Survey (CVTS) as well as the Vocational Education and Training Survey (VET). Both are annual surveys with a heavy emphasis on non-formal training, but not covering informal learning such as self-directed learning. UOE is an annual UNESCO-OECD-Eurostat data collection of statistics on students, teachers, graduates and expenditures for

education. For sources for national adult education surveys, see Eurostat (2001task: Annex 3, p. 3/5ff.).

Directly measuring skills is made difficult by the need to agree on universal literacy criteria, and by the costly nature of surveys of this kind. The International Adult Literacy Survey (IALS), the most far-reaching of all efforts to directly measure skills, has so far been carried out in 12 countries. It is based on a model that can be used to test a range of attributes related to human capital. Interviews are conducted in the homes of respondents and consist of both a test of respondents' ability to carry out certain tasks, and a gathering of background information on the characteristics of participants such as demographic variables, socio-economic status, participation in educational and other activities (see OECD 1998: 22ff). The OECD plans to modify the IALS, extending the range of measures to include inter-personal skills (communication, teamwork), problem-solving and other aptitudes (e.g. knowledge of democratic and economic systems, self-esteem) not covered yet. The aim is an *International Life Skills Survey*, which is scheduled to reach piloting stage in 2002.

Time Use Surveys (TUS) present an interesting approach towards measuring a whole array of indicators which are of relevance for the subject of this report. Apart from national time use surveys which are being conducted in almost every EU Member State (see Niemi 2000) for an overview), recently attempts to harmonise surveys across Europe have been successful. The first harmonised European TUS is currently being conducted in the EU. However, the Eurostat Taskforce on Lifelong Learning notes that "it is impossible to distinguish learning activities on the basis of the classification of activities used for the current EU-TUS. Nevertheless the possibility of using TUS at a later stage should also be taken into account in the development of a classification of learning activities." (Eurostat 2001task: 13). The same applies for other questions such as practice of new ways of working.

The European System of Social Indicators (EUSI), an EU research project under the direction of ZUMA (Centre for Survey Research and Methodology, Mannheim), is developing a theoretically and methodologically well-grounded selection of social indicators to be used for continuously observing the development of welfare and quality of life as well as changes in the social structure at the European Level. It makes use of the best available time-series data and checks for cross-national and cross-cultural comparability of indicators and will also develop synthetic aggregate indicators which will summarise information on central welfare dimensions (see Berger-Schmitt and Jankowitsch 1999).

The International Social Survey Programme (ISSP)¹⁰ is run by a permanent network of social research institutes. Thirty countries are participating in an annual round of surveys. Each year a questionnaire module on a special topic as well as a common set of background variables are integrated in national surveys in the participating countries. Topics vary from year to year, but every topic is repeated after a few years. A module on "work orientations" was fielded in 1989 and 1987.

¹⁰ See www.issp.org.

Name of data source (Acronym)	Main publication(s) of interest for SIBIS	Description (incl. target, survey unit)	Responsible	Country coverage	Frequency
Adult Education Survey Finland ¹¹	Statistics Finland 1998	GPS	Statistics Finland, Ministry of Education Finland	FIN	1980, 1990, 1995, 2000
BIBB/IAB Qualification and Employment Situation Survey	Dostal et al. (2000; 2001)	Persons >14 who are in paid work of at least 10 hours per week	BIBB/IAB	D	1979, 1985/86, 1991/92, 1998/99
Community Innovation Survey	Eurostat 2001soi	Companies	Eurostat, EC DG XXII	EU	1993, 1997, 2001
Continuing Vocational Training Survey (CVTS) ¹²	EU Commission 1997voc; Egner 2001	DMS (enterprises > 9 workforce); e.g. 3,200 companies in Germany	Eurostat	EU + 10 other European countries	1994, 2000
Cranfield European Human Resource Management Survey ¹³	Brewster et al. 1996; 1997; 2000	Human resource managers in companies	Cranfield	22 countries	5 rounds since 1990, latest published: 1999
ECaTT (and TELDET)	ECaTT 2000	Decision Maker Survey (DMS): 4158 establishments, GPS: 7700 individuals aged 14+	ECaTT project, Empirica	EU (excl. A, B, EL, LUX, P)	1999 (one-off ¹⁴)
ENSR Enterprise Survey	EU Commission 2000obs	Enterprises (8,000)	n.a.	EU + LIE, N, CH, IS	annual since 1992, latest published: 1999
Eurobarometer Standard survey (Supplements)	EU Commission 2001eu54	GPS (General population) - (1000 persons 15+ per country)	EC; INRA	EU	2000 (54.0)
Eurobarometer Flash 83 - Entrepreneurship	EU Commission 2000entre	GPS (8063 in all EU Member States, 507 in USA)	Eurostat/ Gallup Europe	EU, USA	20000 (one-off)

¹¹ The Survey 2000 is the fourth survey carried out by Statistics Finland on the subject of participation in adult education and training. The previous Adult Education Surveys are from 1980, 1990 and 1995. The surveys were made as joint projects with the Ministry of Education.

¹² "The CVT-survey objectives were to obtain data from a representative sample of enterprises about: a) The number of individuals taking part in training; b) The number of participants per type of activity and size category; c) The costs of training; d) Training in the enterprises and outside; e) Outside training per type of institution; f) Training area per type of training institution; g) Training by area in the undertaking; h) Duration of training in the undertaking; i) Participation by gender." (Brandsma and Kornelius 1999: 5)

¹³ Questionnaire see <http://cranet.biu.ac.il/SOC/sb/cranet/sode.html>.

¹⁴ For some indicators on telework, data is available for 1994, 1999 and 2002.

Name of data source (Acronym)	Main publication(s) of interest for SIBIS	Description (incl. target, survey unit)	Responsible	Country coverage	Year
Eurobarometer Flash 88 - Internet for the General Public ¹⁵	EU Commission 2000eb88	GPS	Eurostat/ Gallup Europe	EU	2000 (one-off)
European Labour Force Survey (LFS)	EU Commission and Eurostat 2000lfs	Households ¹⁶	EU	EU	annual (quart. since 1999)
IAB calculations based on LFS data	Hoffmann and Walwei 1999; 2000a; 2000b	see LFS	BA-IAT	EU	1988, 1998
EMERGENCE Employer Survey	Huws 2001; Huws & O'Regan 2001	8000 employers, representative, > 50 employees, all sectors	IES/ NOP	EU + HU, PL, CZ	2000 (one-off)
Employee Direct Participation in Organisational Change (EPOC) Survey	Sisson 2000; Bosch 2000a	5,786 'organisations' with more than 25/50 employees, 'representative'	European Foundation	D, DK, E, F, I, IRL, NL, P, UK.	1996
EOS Survey – Telecommunications in Europe	EU Commission 2000sit	7514 companies < 50 employees	EC, EOS Gallup	EU	2000, planned for 2002
European Household Panel (EHP) ¹⁷	Fisher et al. (2000)	60,000 European households	Eurostat with NSA	EU	annual since 1994, latest published: 2000
European Survey on Employment Options for the Future	Bielenski 1999; Huijgen et al. 2000; Atkinson et al. 2000; Gasparini et al. 2000.	GPS (aged 16 to 64)	European Foundation	EU + Norway	1998 (one-off)
European Survey on Working Conditions (ESWCs) ¹⁸ (prev.: ESWE)	Merli� and Paoli 2001; Green and McIntosh 2001	GPS (aged 16 to 64)	European Foundation	EU	1990, 1995, 2000
European System of Social Indicators (EUSI)	Berger-Schmitt 2001	presents harmonised data from various sources	ZUMA, EuReporting Project Consortium	EU15, CH, CZ, H, N, PL, USA, JAP	various

¹⁵ See http://europa.eu.int/ISPO/basics/measuring/eurobaro/eurobaro88/i_eurobaro88.html.

¹⁶ Household sample survey (quarterly since 1999); respondent is reporting also on other members of the household (proxy interview).

¹⁷ This is the only European household panel currently available; see Eurostat (1998)

¹⁸ See <http://www.elsevier.nl/homepage/sae/econbase/labeco/menu.sht>.

Name of data source (Acronym)	Main publication(s) of interest for SIBIS	Description (incl. target, survey unit)	Responsible	Country coverage	Year
Eurostat Benchmark Employment Series	Employment in Europe (annual)	various national sources (national labour force surveys, national accounts, registration data, labour accounts, microcensus)	Eurostat	EU	quarterly
Eurostat SME Tabular Database	Eurostat and EC 1998 (5 th edition)	presents harmonised data from various national sources (enterprise censuses, VAT register, statistical business register, results of surveys, etc.)	Eurostat	EU	1994-95 data (published 1999)
Harmonised European Time Use Survey (TUS)	none yet	GPS	EU, NSA	EU	2001 (1 st)
IDC Skills Demand and Supply Analysis	IDC 2000; 2001	Information systems managers, and others	IDC, Microsoft	EU + N, CH	various, latest published: 2000
ILO Collection of Labour Statistics	Yearbook of Labour Statistics	administrative data collection	ILO	World	annual
ILO KILM	ILO 2000kilm	administrative data collection	ILO	World	various
International Adult Literacy Survey	OECD 1995lit; 1997lit; 2000lit.	GPS (2000 to 8000 adults aged 16-65 per country)	OECD, Statistics Canada, others	1994: CD, D, IRL, NL, PL, S, CH (part), USA. 1996: AUS, B, IRL, UK, Z. 1998: CR, DK, FIN, H, I, N, SL, CH (rest).	1994, 1996, 1998
International Adult Literacy and Life Skills Survey (ALL)	none yet	GPS (people aged between 16 and 65); pilot in 2001, first survey planned for 2002	n.a.	CD, USA, CH, N, NL, B, I, China, others	2002 (plan)
International Benchmarking Study	DTI 2000	Companies (DMS) (500 in the UK, 300 in other countries)	DTI, Romtec (prev.: Spectrum)	UK, F., D, I, S, USA, CA, J	annual since 1997; latest published: 2000

Name of data source (Acronym)	Main publication(s) of interest for SIBIS	Description (incl. target, survey unit)	Responsible	Country coverage	Year
International Social Survey Programme (ISSP)	e.g. Berger-Schmitt 2001	ca. 1000 per country	various national social research institutes	Module on "work orientation": A, UK, IRL, I, NL, N, D, HU, USA plus (only 1997): F, DK, P, E, S, CH, CZ, PL, JAP.	1989, 1997
OECD Data Collection on Human Capital Investment	OECD 1998hci	various	OECD	OECD	latest published: 1998
OECD Data Collection on ICT Sector	OECD 2000meas	various	OECD	OECD	various, latest published: 2000
OECD Data Collection on Science, Technology and Industry ¹⁹	OECD 1999score	various	OECD	OECD	various, latest published: 1999
OECD Labour Force Statistics	Quarterly Labour Force Statistics (quarterly); Labour Force Statistics (annual)	administrative data collection	OECD	OECD	quarterly/annual
UOE (Annual joint UNESCO-OECD-Eurostat data collection of statistics on students, teachers, graduates, expenditure)	Eurostat 2000key	administrative data collection	UNESCO-OECD-Eurostat	UN	annual
Use of ICT in Nordic Enterprises Survey	Danmarks Statistik et al. (2001)	Companies (postal survey); response: DK 2440, FIN 1655, S 1901, N 2712.	Nordic national statistical agencies	DK, FIN, N, S	1999/2000 (1 st)
Vocational Education and Training Survey (VET) ²⁰		administrative data collection; data collection on <i>initial</i> vocational education and training	Eurostat, DG XXII, CEDEFOP	EU	annual, latest published: 2000

¹⁹ See also <http://www.oecd.org/subject/cstp/1999/stats.htm>.

²⁰ See Brandsma and Kornelius (1999) and Davis (n.a.).

5.1.3 Traditional indicators for work, employment & skills

This chapter lists indicators for which time-series data is available already.

The listing will follow the structure developed in SIBIS deliverable 1.4, and described in section **Fehler! Verweisquelle konnte nicht gefunden werden.** of this report (see table below). The table shows that the thematic areas work, skills and structure/outcomes of employment overlap to some extent.

Thematic domain			Suggested sub-domain	Relevance for Employment Pillars
A. Skills	B. Work Organisation	C. Employment Structure/ Outcomes		
<i>A1</i>			Skill acquisition	Pillar I, III
<i>A.2</i>			Skill provision	Pillar I, III
<i>A.3</i>			Skill requirements	Pillar I, II
<i>B.1</i>	<i>B.1</i>		Work content/ applied skills	Pillar III
	<i>B.2</i>		Time of work	Pillar III
	<i>B.3</i>		Place of work	Pillars III, IV
	<i>B.4</i>	<i>B.4</i>	Contract of work	Pillar III
		<i>C.1</i>	Benefits from employment	Pillar III
		<i>C.2</i>	Structure of employment	all Pillars
		<i>C.3</i>	Productivity	Pillars II, III

All indicators are labeled by a three or four digit code which indicates the thematic domain, sub-domain, indicator and (in most cases) sub-indicator. An asterisk after the indicator code means that data for this indicator is not available at all yet, only available for one or a small number of EU Member States, or not available on a time-series basis. These indicators are described in section 5.2 on "indicators under development".

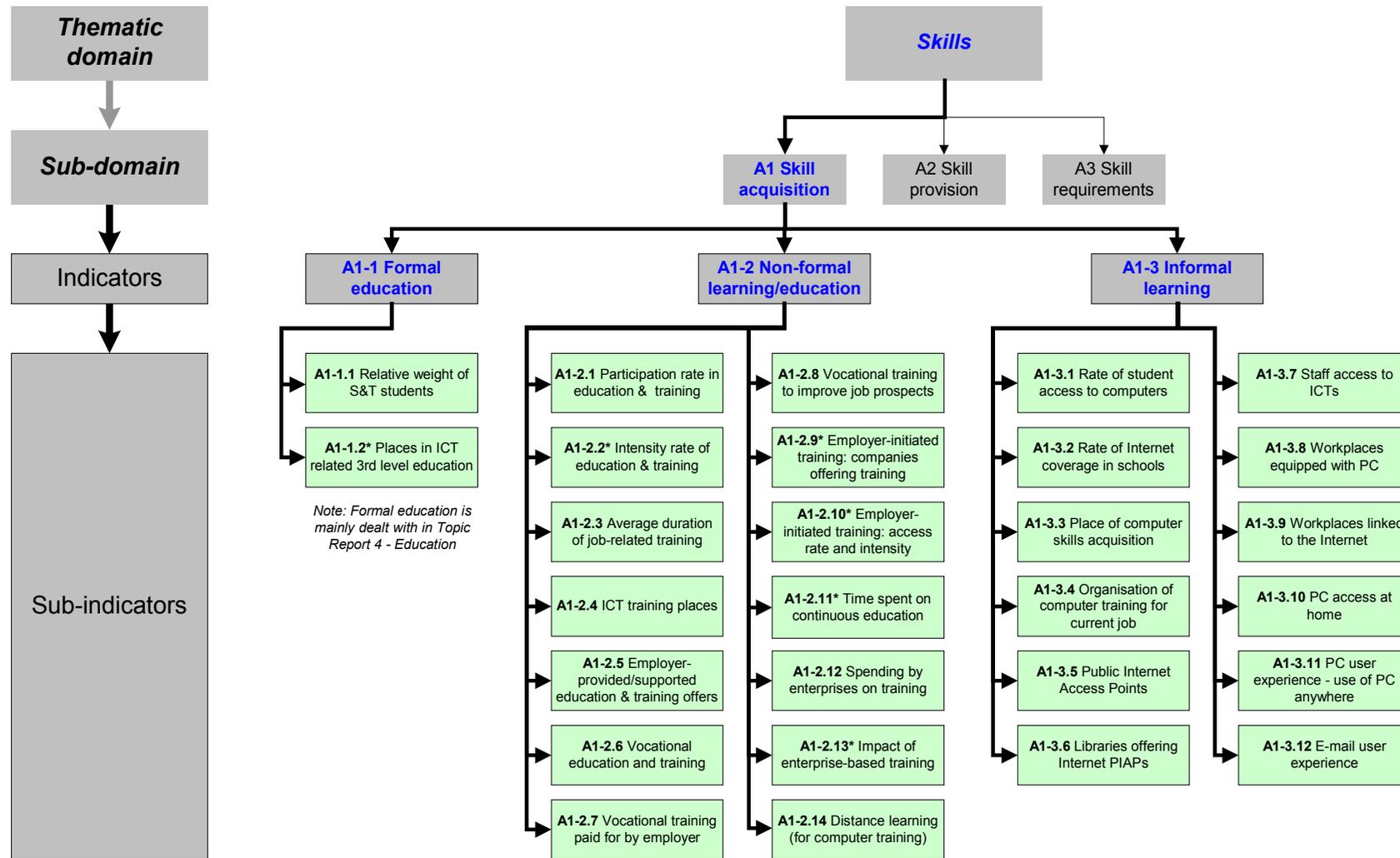
Skill indicators

Skill acquisition

The figure and table below give an overview over indicators on skill acquisition, which are then described separately in more detail in the subsequent part of this chapter. Indicators which are not in use yet but are still in a stage of development, or indicators that have been piloted only in one-off data gathering exercises, are dealt with in chapter 5.2.

A1 – Skill acquisition (Thematic domain: skills)²¹			
No.	Name of indicator	Availability	Main source
A 1 - 1 F o r m a l e d u c a t i o n			
A1-1.1	Relative weight of science & technology students in the national education system	yes	Eurostat
A1-1.2*	Number of places in ICT related third level education	yes	ESDIS
A 1 - 2 N o n - f o r m a l l e a r n i n g / e d u c a t i o n			
A1-2.1	Participation rate in education and training	yes	LFS
A1-2.2*	Intensity rate of education and training	in development	LFS
A1-2.3	Average duration of job-related training (per person trained/per person employed)	yes	IALS
A1-2.4	ICT training places	yes	ESDIS
A1-2.5	Employer-provided or –supported education and training offers	yes	ECHP
A1-2.6	Vocational education and training	yes	ECHP
A1-2.7	Vocational education and training paid for by employer	yes	ECHP
A1-2.8	Vocational education and training to improve skills and job prospects	yes	ECHP
A1-2.9*	Job-related training on the initiative of the employer – Companies offering training	in development	CVTS
A1-2.10*	Job-related training on the initiative of the employer – Access rate and intensity	in development	CVTS
A1-2.11*	Time spent of continual vocational education and training within working hours	in development (piloted in D only)	German TUS
A1-2.12	Spending by enterprises on training	yes	Eurostat
A1-2.13*	Impact of enterprise-based training	in development	various, not standardised yet
A1-2.14	Distance learning (for computer training)	yes	Eurobarometer
A 1 - 3 I n f o r m a l l e a r n i n g			
A1-3.1*	Rate of student access to computers	yes	OECD, national data
A1-3.2	Rate of Internet coverage in schools	yes	OECD
A1-3.3	Place of computer skills acquisition	yes	Eurobarometer
A1-3.4	Organisation of computer training for current job	yes	Eurobarometer
A1-3.5	Public Internet Access Points (PIAPs)	yes	ESDIS
A1-3.6	Libraries offering Internet access to the public	yes	ESDIS
A1-3.7*	Staff access to ICTs	piloted	ECaTT 1999 DMS
A1-3.8*	Work places equipped with PC	piloted	Nordic Statistical Offices
A1-3.9*	Work places linked to the Internet	piloted	Nordic Statistical Offices
A1-3.10*	PC access at home	piloted	ECaTT 1999 GPS
A1-3.11*	Use of PC – anywhere	piloted	ECaTT 1999 GPS
A1-3.12*	Use of e-mail, and purpose of use	piloted	ECaTT 1999 GPS

²¹ Further indicators not listed here describe the situation in initial vocational education and training and are based on the VET database (administrative data collection), see Eurostat (2001task: A2 – 4/8f.).



Name of indicator	A1-1.1 Relative weight of science & technology students in the national education system
Definition	<p>The "relative weight" for each country is calculated as $R = (A-1)/(A+1)$, where $A = [\text{number of students in S\&T}/\text{total number of students (of the country)}]/[\text{number of students in S\&T}/\text{total number of students (of the "Triad")}]$</p> <p>Thus, if a country has the same proportion of students in S&T as the Triad countries (EU + US + JP), then the value of R will be zero; if it has a lower proportion than the Triad, then R will be negative; if it has a higher proportion, then R will be positive.</p>
Notes	-
Sources	UOE; Eurostat 2000tow: 38
Countries covered	EU Member States, comparable to US and JP data from OECD/UNESCO
Time series available	to be researched
eEurope relevance	<ul style="list-style-type: none"> • 2b-2 – increase IT training places and courses and promote gender equality in such courses, using ESF where appropriate
Future value	Ensured as long as definition is clear and adequate
Links to other indicators	-

Name of indicator	A1-1.2 Number of places in ICT related third level education
Definition	<p>Number of places in ICT related third level education per 1000 inhabitants (share of all third level students);</p> <p>Third level defined as education after secondary school at an institute of further or higher education (e.g. university or college). This indicator measures input.</p>
Notes	See List of eEurope Benchmarking indicators (European Commission, 2000list): Indicator 12
Sources	ESDIS – data source for ESDIS data unknown
Countries covered	EU Member States (data on some countries missing)
Time series available	Annual (proposed)
eEurope relevance	<ul style="list-style-type: none"> • 2b-2 – increase IT training places and courses and promote gender equality in such courses, using ESF where appropriate
Future value	ICT-related to be defined by consulting the listing to be produced by the European ICT Industry Association (EICTA). This would ensure value for future surveys.
Links to other indicators	To be disaggregated by gender (for eEurope assessment)

Name of indicator	A1-2.1 Participation rate in education and training
Definition	<p>Percentage of population, aged 25-64, participating in education and training (over the 4 weeks prior to the survey);</p> <p>“A reference period of four weeks has been chosen in order to avoid distortion of information due to recall problems. The reference period is the last four weeks preceding the survey, except for France, the Netherlands and Portugal for which information is collected only if education or training is under way on the date of the survey.</p> <p>Education includes initial education, further education, continuing or further training, training within the company, apprenticeship, on-the-job training, seminars, distance learning, evening classes, self-learning, etc as well as other courses followed for general interest: language, data-processing, management, art/culture, health/medicine courses. Before 1998, education was related only to education and vocational training which was relevant for the current or possible future job of the respondent. Comparable data not available for the US.” (Drymoussis 2000: 9)</p>
Notes	<p>This indicator is usually called “Lifelong learning” (LLL₂), see e.g. Joint Employment Report 2000 Statistical Annex: 7 and Drymoussis 2000: 9.</p> <p>“The indicator encompasses the variety of learning activities in continuing training, including further and higher education, which are essential to enhance the skills of the workforce ensuring their adaptation to the new knowledge-based society and their employability.” (do.: 9)</p> <p>Other sources for similar data are the IALS (not regular) and various national household surveys (see OECD 1998hci: 45).</p>
Sources	LFS; see EU (2000struc): 44
Countries covered	EU Member States
Time series available	Annual (quarterly since 1999)
eEurope relevance	2b-1 - give the labour force the chance to become digitally literate through life long learning
Future value	<p>“The indicator needs to be further improved in view of the comparability problems between some Member States. The participation rate indicator provides no information about the duration of training.” (do.: 9)</p> <p>Indicator may have to be adapted to changes in the understanding of “education and training”.</p>
Links to other indicators	<p>Broken down by sex, age groups (25-34, 35-44, and 45-64) and working status (employed, unemployed, inactive);</p> <p>Also of interest: ratio of training participation between younger and older employees (see Netherlands’ Ministry of Economic Affairs, 2000: 131); data source: OECD Employment Outlook, 1994-95 data.</p>

Name of indicator	A1-2.3 Average duration of job-related training (per person trained/per person employed)
Definition	Average duration of job-related training undertaken by employed adults, in hours per year and per person trained; Average duration of job-related training undertaken by employed adults, in hours per year and per person employed; Calculation: [Average duration of job-related training undertaken by employed adults, in hours per year and per person trained] * [rate of participation in job-related training in % of all employed]
Notes	See OECD 1998hci: 47ff.
Sources	IALS
Countries covered	See Table on data sources in section 5.1.1.
Time series available	None yet, planned for future
eEurope relevance	2b-1 - give the labour force the chance to become digitally literate through life long learning
Future value	The IALS is planned to be modified, extending the range of measures to include inter-personal skills (communication, teamwork), problem-solving and other aptitudes (e.g. knowledge of democratic and economic systems, self-esteem) not covered yet. The aim is a International Life Skills Survey, which is, however, still far off.
Links to other indicators	-

Name of indicator	A1-2.4 ICT training places
Definition	Number of ICT training places (no exact definition given)
Notes	-
Sources	ESDIS January 2001 (data delivered by Member States)
Countries covered	D, EL, E, F, IRL, FIN, S
Time series available	n.a.
eEurope relevance	<ul style="list-style-type: none"> 2b-2 – increase IT training places and courses and promote gender equality in such courses, using ESF where appropriate
Future value	Ensured as long as definition is clear and adequate; European ICT Industry Association (EICTA) currently works on definition of standard job and skills profiles and curricula guidelines, these should be used as the basis for categorising training places in ICT-related areas as soon as they are available.
Links to other indicators	-

Name of indicator	A1-2.5 Employer-provided or -supported education and training offers
Definition	Percentage of individuals reporting that their employer 'provides free or subsidised' education and training
Notes	This indicator is called ETFSE in West and Hind 2000 (chapter 4); results reproduced in EC 2001EiE: 72.
Sources	ECHP
Countries covered	See Table on data sources in section 5.1.1.
Time series available	Annual
eEurope relevance	<ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning • 2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured
Links to other indicators	Different breakdowns possible

Name of indicator	A1-2.6 Vocational education and training
Definition	Percentage of individuals aged 25 and over who have received vocational education or training (including part-time or short courses) over the past year.
Notes	This indicator is called VTA in West and Hind 2000 (chapter 4)
Sources	ECHP
Countries covered	See Table on data sources in section 5.1.1.
Time series available	Annual
eEurope relevance	<ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning • 2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured
Links to other indicators	compare A1-2; different breakdowns possible

Name of indicator	A1-2.7 Vocational education and training paid for by employer
Definition	Percentage of individuals aged 25 and over in paid employment who received vocational education or training (including part-time or short courses) paid for by their employer.
Notes	This indicator is called VTE see West and Hind 2000 (chapter 4)
Sources	ECHP
Countries covered	See Table on data sources in section 5.1.1.
Time series available	Annual
eEurope relevance	<ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning • 2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured
Links to other indicators	Different breakdowns possible

Name of indicator	A1-2.8 Vocational education and training to improve skills and job prospects
Definition	Percentage of individuals aged 25 and over who received vocational education or training (including part-time or short courses) over the past year to improve skills and job prospects; Percentage of those who received vocational education or training (including part-time or short courses) over the past year to improve skills and job prospects who found it 'very useful'.
Notes	This indicator is called VTSJ in West and Hind 2000 (chapter 4)
Sources	ECHP
Countries covered	See Table on data sources in section 5.1.1.
Time series available	Annual
eEurope relevance	<ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning • 2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured
Links to other indicators	Different breakdowns possible

Name of indicator	A1-2.12 Spending by enterprises on training
Definition	Expenditure on vocational training as a percentage of total labour costs
Notes	See OECD 1998hci: 40 "Gives a rough indication of the scale of spending by firms. But much private human resource investment is hidden."
Sources	Eurostat Labour Cost Survey
Countries covered	EU Member States
Time series available	1988, 1992, 1996, 1999
eEurope relevance	<ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning • 2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	n.a.
Links to other indicators	n.a.

Name of indicator	A1-2.14 Distance learning (for computer training)
Definition	Share of employed persons who have a certificate in the use of computers as a result of distance learning
Notes	Derives from survey (GPS)
Sources	Eurobarometer 54.0 / ESDIS
Countries covered	EU Member States
Time series available	n.a.
eEurope relevance	<ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning • 2b-2 – increase IT training places and courses and promote gender equality in such courses, using ESF where appropriate
Future value	<p>“Use of computers” might have to be specified as computer technology spreads further into everyday life and PC and other IT devices converge.</p> <p>European ICT Industry Association (EICTA) currently works on definition of standard job and skills profiles, these should be used to improve this indicator as soon as they are available.</p>
Links to other indicators	-

Name of indicator	A1-3.2 Rate of Internet coverage in schools
Definition	Percentage of schools connected to the Internet by education level (primary, secondary)
Notes	<p>See Joint Employment Report 2000 Statistical Annex: 7 and Drymoussis 2000: 11</p> <p>see A1-4; “One should distinguish however between the use of Computer/internet for teaching and that for other purposes, such as administrative tasks. An indicator by purpose could accordingly be specified and the possibility of calculating the share of teaching hours computer supported could be explored in the future.”</p> <p>This indicator is called LLL₅ in Drymoussis 2000.</p>
Sources	“OECD or national data” (see Joint Employment Report 2000 Statistical Annex: 7), ESDIS
Countries covered	EU Member States
Time series available	None yet, planned for future
eEurope relevance	<ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning
Future value	This is a readiness indicator; intensity and impact indicators will become more pressing in the future
Links to other indicators	-

Name of indicator	A1-3.3 Place where basic computer user skills have been acquired
Definition	Share of employed persons who have acquired computer user skills at [...]; “Where did you learn how to use a computer?” <ul style="list-style-type: none"> • At school • At university • At work on your own or with the assistance of colleagues • At work in a training course organised in-house • In a job placement • At a meeting of a club or special interest group • At a friend's place • At home on your own • In a training course paid for by your employer • In a training course paid for by a government agency • In a training course paid for by yourself • In an Internet café/ a cybercafé • In a public office or place like a library • Other (SPONTANEOUS)” Various composite indicators possible.
Notes	Derives from survey (GPS)
Sources	Eurobarometer 54.0 / ESDIS
Countries covered	EU Member States
Time series available	n.a.
eEurope relevance	<ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning • 2b-2 – increase IT training places and courses and promote gender equality in such courses, using ESF where appropriate • 2b-6 – set up public Internet access points in public places and establish multimedia telecentres in all communities providing access to training and e-work facilities
Future value	“How to use a computer” might have to be specified as computer technology spreads further into everyday life and PC and other IT devices converge. eLearning should be added as an answer category.
Links to other indicators	Data on independent variables for cross-tabulation available; data may be used to construct new indicators.

Name of indicator	A1-3.4 Organisation of computer training for current job
Definition	Share of employed persons who had a computer training for their current job that took place in the work place; was organised by an external training institute; organised within normal working hours; was paid for by the employer. “Have you ever had computer training for your job, or not? IF YES: <ul style="list-style-type: none"> • Did your last computer training take place in your work place, or not? • Was your last computer training organised by an external training institute, or not? • Was it organised within your normal working hours, or not? • Was it paid for by your employer, or not?”
Notes	Derives from survey (GPS)
Sources	Eurobarometer 54.0 / ESDIS
Countries covered	EU Member States
Time series available	n.a.
eEurope relevance	<ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning • 2b-2 – increase IT training places and courses and promote gender equality in such courses, using ESF where appropriate
Future value	“Computer training” might have to be specified as computer technology spreads further into every aspect of working life and PC and other IT devices converge.
Links to other indicators	Data on independent variables for cross-tabulation available

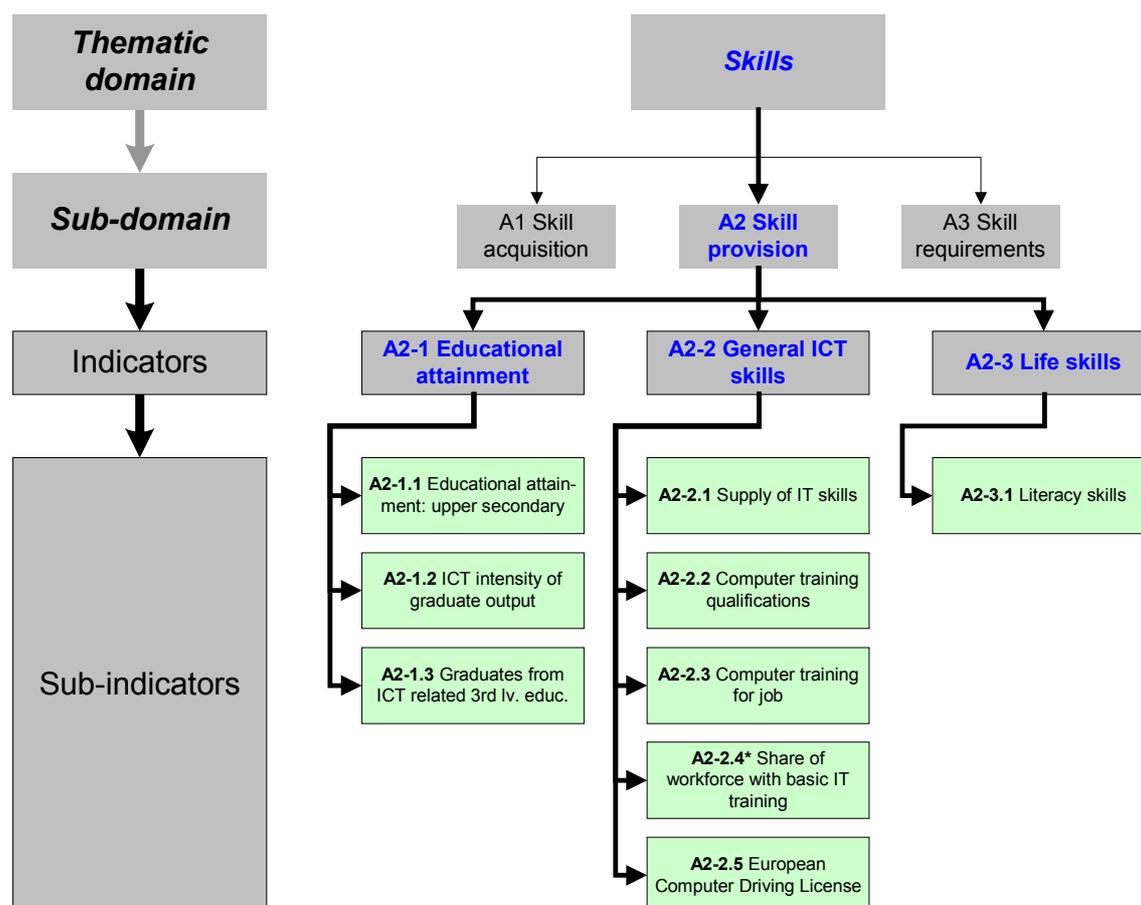
Name of indicator	A1-3.5 Public Internet Access Points (PIAPs)
Definition	Public Internet Access Points (PIAPs) per 1000 inhabitants; PIAPs are “publicly provided centres providing access to the Internet regardless of their public and/or private provider and whether access is free or not though excluding fully private Internet cafés”
Notes	reliability of original data source questionable
Sources	ESDIS; see List of eEurope Benchmarking indicators (European Commission, 2000list): Indicator 14;
Countries covered	B, DK, D, F, IRL, NL, A, FIN, S, UK
Time series available	yes
eEurope relevance	<ul style="list-style-type: none"> • 2b-6 – set up public Internet access points in public places and establish multimedia telecentres in all communities providing access to training and e-work facilities
Future value	Definition must be more clear.
Links to other indicators	-

Name of indicator	A1-3.6 Libraries offering Internet access to the public
Definition	Percentage of public libraries offering Internet access to the public
Notes	See List of eEurope Benchmarking indicators (European Commission, 2000list): Indicator 14
Sources	ESDIS – data source for ESDIS data unknown
Countries covered	EU Member States (data on some countries missing)
Time series available	Annual (proposed)
eEurope relevance	<ul style="list-style-type: none"> • 2b-2 – increase IT training places and courses and promote gender equality in such courses, using ESF where appropriate
Future value	Ensured
Links to other indicators	Also available: Number of libraries with Internet per head.

Skill provision

Overview Table (including indicators in development)

A2 – Skill provision (Thematic domain: skills)			
No.	Name of indicator	Availability	Main source
A 2 - 1 Educational attainment			
A2-1.1	Educational attainment (LLL ₁)	yes	LFS or UOE
A2-1.2	ICT Intensity of graduate output	yes	Eurostat
A2-1.3	Number of graduates from ICT related third level education	yes	ESDIS
A 2 - 2 General ICT skills			
A2-2.1	Supply of IT Skills in Western Europe	yes (proprietary)	IDC
A2-2.2	Computer training qualifications	yes	Eurobarometer
A2-2.3	Computer training for job	yes	Eurobarometer
A2-2.4*	Percentage of workforce with (at least) basic IT training	in development	none yet
A2-2.5	European Computer Driving Licence (ECDL)	yes	EDCL
A 2 - 3 Life skills			
A2-3.1	Literacy skills	yes	IALS



Name of indicator	A2-1.1 Educational attainment – upper secondary
Definition	Percentage of population having attained at least upper secondary level education
Notes	See Joint Employment Report 2000 Statistical Annex: 7 and Drymoussis 2000: 8. <p>“A high level of educational attainment has important implications on education and training opportunities throughout the life span. It provides a fundamental picture of the education level of the labour force in the Member states. There is ample evidence showing that the participation in lifelong learning increases with the initial level of education.” (do.: 8)</p> <p>“This indicator therefore aims at measuring the conditions of access to lifelong learning over a long time span.” (do.: 9)</p> <p>This indicator is called LLL₁ in the Statistical Annex of the Joint Employment Report 2000</p>
Sources	LFS (alternatively UOE database can be used as source)
Countries covered	EU Member States
Time series available	Annual (quarterly since 1999)
eEurope relevance	2b-x - general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured
Links to other indicators	Broken down by sex and age groups (25-34, 35-44, 45-64)

Name of indicator	A2-1.2 ICT Intensity of graduate output
Definition	Total number of graduates in science & technology as a percentage of 20-24 year old people
Notes	-
Sources	UOE; Eurostat (ESDIS 2001: 12)
Countries covered	EU Member States, comparable to US and JP data from OECD/UNESCO
Time series available	Annual
eEurope relevance	<ul style="list-style-type: none"> • 2b-2 – increase IT training places and courses and promote gender equality in such courses, using ESF where appropriate
Future value	Ensured as long as definition is clear and adequate
Links to other indicators	-

Name of indicator	A2-1.3 Number of graduates from ICT related third level education
Definition	Number of graduates from ICT related third level education per 1000 inhabitants (share of all third level graduates); Third level defined as education after secondary school at an institute of further or higher education (e.g. university or college).
Notes	See List of eEurope Benchmarking indicators (European Commission, 2000list): Indicator 12
Sources	ESDIS – data source for ESDIS data unknown
Countries covered	EU Member States (data available only for Spain as yet)
Time series available	Annual (proposed)
eEurope relevance	<ul style="list-style-type: none"> • 2b-2 – increase IT training places and courses and promote gender equality in such courses, using ESF where appropriate
Future value	Use of EICTA classification would ensure value for future surveys.
Links to other indicators	to be disaggregated by gender (for eEurope assessment)

Name of indicator	A2-2.1 Supply of IT Skills in Western Europe
Definition	<p>“In order to capture the scale of the IT skills shortage, IDC has included both full-time IT related jobs as well as IT generated tasks executed on a partial job description basis. [...] IT work is segmented into activities that have to be performed during the planning, implementation, maintenance, management and training phases.”</p> <p>Types of IT skills included in the analysis are:</p> <ul style="list-style-type: none"> • Applications environments (skills in software applications, also including multi-user ones (e.g. SAP) • Distributed environments (skills in IT environments, client/server technology, e.g. Windows NT, Unix) • Internetworking environments (skills in ICTs to underpin business processes through the Internet) • Neutral environments (skills to combine technical with business processes through IT) • host-based environments (skills centred around mainframe technology, e.g. IBM's MVS)
Notes	<p>“From more than 12,000 interviews with information systems (IS) managers across Europe, IDC translates IS spending intentions into the amount of work needed to be done in order to assimilate acquired technology.[...] Validation of this demand profile is performed by investigating trends among “intermediaries”, typically recruitment agencies. IDC estimates that 40-70% of vacancies (depending on the country) are filled by these intermediaries, and trends in their activities provide valuable validation of the demand profile generated by IT spending patterns.”</p>
Sources	IDC (estimates; methodology see IDC 2000: 24; primary data sources only partly revealed)
Countries covered	EU Member States + N, CH
Time series available	Bi-annual (Note: data is proprietary and may not be available to the public)
eEurope relevance	<p>2b-2 - increase IT training places and courses and promote gender equality in such courses, using ESF where appropriate</p> <p>2b-5 – promote a network of learning and training centres for demand-driven ICT training and retraining of postgraduates</p> <p>2b-x - general indicator for topic ‘Working in the knowledge based economy’</p>
Future value	Future terms of access to IDC data unknown
Links to other indicators	Broken down by different types of skills (internetworking, applications, distributed, technology neutral, and host-based environments)

Name of indicator	A2-2.2 Computer training qualifications
Definition	Share of employed persons who have formal computer-related training qualifications; “Which, if any, of these computer training qualifications do you have?” <ul style="list-style-type: none"> • Degree in computer science • School certificate in the use of computers • Certificate in the use of computers from a public training institution • Certificate in the use of computers from a private company • Certificate in the use of computers as a result of distance learning • Other (SPONTANEOUS) • None”
Notes	Derives from survey (GPS). This indicator has the disadvantage of excluding the supply of skills by the unemployed and other potential workers who are not part of the current labour force.
Sources	Eurobarometer 54.0 / ESDIS
Countries covered	EU Member States
Time series available	To be researched.
eEurope relevance	<ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning • 2b-2 – increase IT training places and courses and promote gender equality in such courses, using ESF where appropriate • 2b-6 – set up public Internet access points in public places and establish multimedia telecentres in all communities providing access to training and e-work facilities
Future value	“Computers” might have to be specified as computer technology spreads further into everyday life and PC and other IT devices converge.
Links to other indicators	Data on independent variables for cross-tabulation available

Name of indicator	A2-2.3 Computer training for job
Definition	Share of employed persons who had computer training for their current job; <ul style="list-style-type: none"> “Have you ever had computer training for your job, or not?”
Notes	Derives from survey (GPS). This indicator has the disadvantage of excluding the supply of skills by the unemployed and other potential workers who are not part of the current labour force.
Sources	Eurobarometer 54.0 / ESDIS
Countries covered	EU Member States
Time series available	To be researched.
eEurope relevance	<ul style="list-style-type: none"> 2b-1 - give the labour force the chance to become digitally literate through life long learning 2b-2 – increase IT training places and courses and promote gender equality in such courses, using ESF where appropriate
Future value	“Computer training” might have to be specified as computer technology spreads further into every aspect of working life and PC and other IT devices converge.
Links to other indicators	Data on independent variables for cross-tabulation available

Name of indicator	A2-2.5 European Computer Driving Licence (ECDL)
Definition	Number of ECDL issued across EU Member States ²²
Notes	ECDL holders as share of total adult population can be calculated easily
Sources	ECDL registers (www.ecdl.com)
Countries covered	See footnote 22.
Time series available	Monthly
eEurope relevance	<ul style="list-style-type: none"> 2b-1 - give the labour force the chance to become digitally literate through life long learning 2b-2 – increase IT training places and courses and promote gender equality in such courses, using ESF where appropriate
Future value	Depends on the acceptance of ECDL as main national training/assessment scheme in the EU Member States. The curriculum has to be updated regularly to account for technological developments and changes in user requirements.
Links to other indicators	Terms of access to ECDL data unknown

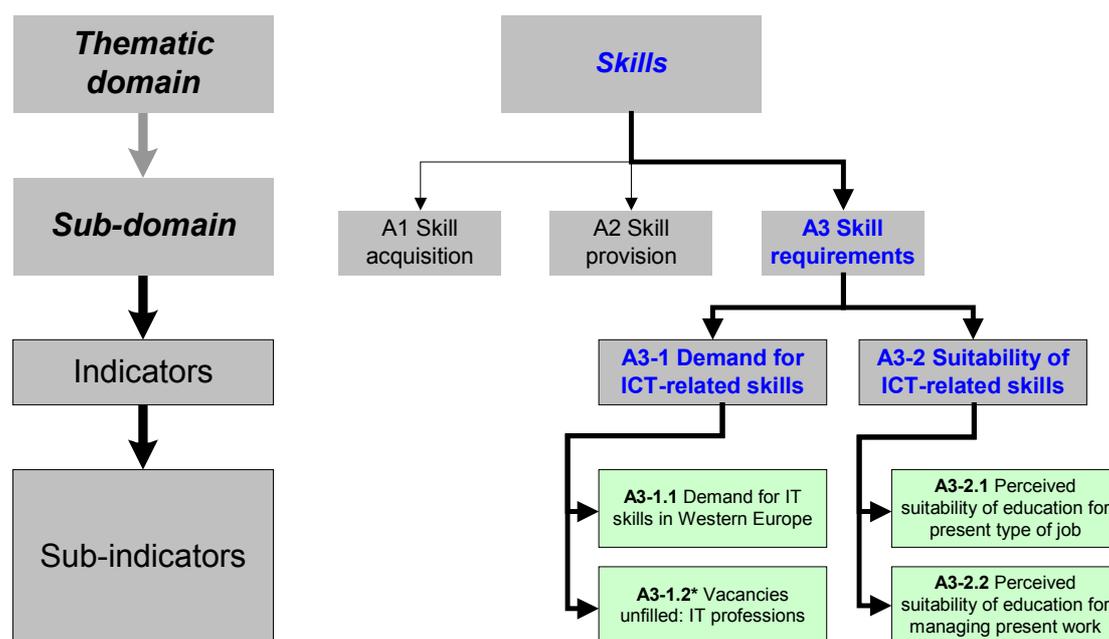
²² See <http://www.ecdl.com>: “The ECDL Foundation works to promote an International certification of industry-standard computing skills. The European Computer Driving Licence Foundation was established by the Council of European Professional Informatics Societies CEPIS, to support and co-ordinate the work of the ECDL organization in each country. Headquartered in Dublin, the ECDLF was established in January 1997 as a not-for-profit company limited by guarantee. It developed naturally from the User Skills Task Force set up earlier by CEPIS and its member societies. Currently, the ECDL licensees in Europe are: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, Latvia, Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland and the UK. ICDL licensees are Australia, Bermuda, Canada, South Africa, UNESCO and Zimbabwe. UNESCO Cairo will implement the ICDL in Egypt, Jordan and UAE. The Foundation is in discussions with partners in the Philippines and the USA amongst others to develop the concept and licence new members.

Name of indicator	A2-3.1 Literacy skills
Definition	<p>Share of 16 to 65 year old population with literacy levels 1, 2, 3, 4, 5.</p> <p>Literacy levels:</p> <p>Level 1: able at most to locate a single straightforward piece of information in simple written materials.</p> <p>Level 2: able to locate pieces of information based on simple matching requiring a low level of inference.</p> <p>Level 3: able to use written materials making low-level inferences taking account of multiple pieces of information.</p> <p>Level 4: able to perform multiple-feature or less straightforward tasks using complex information.</p> <p>Level 5: able to perform complex tasks combining several pieces of information that must be searched for in written material.</p>
Notes	See OECD 1998hci
Sources	IALS
Countries covered	See Table on data sources in section 5.1.1.
Time series available	None yet, planned for future
eEurope relevance	<ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning
Future value	<p>Should be adapted to be applicable to electronic information sources such as the Internet.</p> <p>The IALS is planned to be modified, extending the range of measures to include inter-personal skills (communication, teamwork), problem-solving and other aptitudes (e.g. knowledge of democratic and economic systems, self-esteem) not covered yet.</p>
Links to other indicators	<p>Basis for the following indicators [see OECD 1998 hci: 31f.]:</p> <p>a) Overall distribution of literacy skills in adult population (Percentage performing at each of five levels of measured literacy in three domains)</p> <p>b) Literacy shortfalls by age (Percentage of 16-26 year olds and 46-55 year olds on bottom two literacy levels)</p> <p>c) Literacy by sector and economic activity (Percentage of workers in selected industries with high (4/5) and low (1/2) levels on document scale).</p> <p>d) Literacy by educational attainment (average literacy score in each country of people with respective attainment levels).</p> <p>Background variables such as age, socio-economic status and participation in various educational and other activities available for cross-tabulation.</p>

Skill requirements

Overview Table (including indicators in development)

A3 – Skill requirements (thematic domain: skills)			
No.	Name of indicator	Availability	Main source
A 3 - 1 Demand for ICT-related skills			
A3-1.1	Demand for IT Skills in Western Europe	yes (proprietary)	IDC
A3-1.2*	Vacancies unfilled: IT professions	only in certain countries (e.g. D)	Bundestanstalt für Arbeit (D)
A 3 - 2 Suitability of ICT-related skills			
A3-2.1	Perceived suitability of formal training and education for present type of work (SWET)	yes	ECHP
A3-2.2	Perceived contribution of formal training and education to managing present work (FTEJ)	yes	ECHP



Name of indicator	A3-1.1 Demand for IT Skills in Western Europe
Definition	<p>No exact definition given;</p> <p>“In order to capture the scale of the IT skills shortage, IDC has included both full-time IT related jobs as well as IT generated tasks executed on a partial job description basis. [...] IT work is segmented into activities that have to be performed during the planning, implementation, maintenance, management and training phases.”</p> <p>Types of IT skills included in the analysis are:</p> <ul style="list-style-type: none"> • Applications environments (skills in software applications, also including multi-user ones (e.g. SAP)) • Distributed environments (skills in IT environments, client/server technology (e.g. Windows NT, Unix)) • Internetworking environments (skills in ICTs to underpin business processes through the Internet) • Neutral environments (skills to combine technical with business processes through IT) • host-based environments (skills centred around mainframe technology (e.g. IBM's MVS))
Notes	<p>“From more than 12,000 interviews with information systems (IS) managers across Europe, IDC translates IS spending intentions into the amount of work needed to be done in order to assimilate acquired technology.[...] Validation of this demand profile is performed by investigating trends among “intermediaries”, typically recruitment agencies. IDC estimates that 40-70% of vacancies (depending on the country) are filled by these intermediaries, and trends in their activities provide valuable validation of the demand profile generated by IT spending patterns.”</p>
Sources	IDC (estimates; methodology see IDC 2000: 24; primary data sources only partly revealed)
Countries covered	EU Member States + N, CH
Time series available	Bi-annual (Note: data is proprietary and may not be available to the public)
eEurope relevance	<ul style="list-style-type: none"> • 2b-2 - increase IT training places and courses and promote gender equality in such courses, using ESF where appropriate • 2b-5 – promote a network of learning and training centres for demand-driven ICT training and retraining of postgraduates • 2b-x - general indicator for topic ‘Working in the knowledge based economy’
Future value	Future terms of access to IDC data unknown
Links to other indicators	Broken down by different types of skills (internetworking, applications, distributed, technology neutral, and host-based environments)

Name of indicator	A3-2.1 Perceived suitability of formal training and education for present type of work
Definition	Percentage of individuals in paid employment <i>reporting</i> that formal training and education have provided them with skills needed for their present type of work.
Notes	This indicator is called SWET in West and Hind 2000 (chapter 4).
Sources	ECHP
Countries covered	See Table on data sources in section 5.1.1.
Time series available	Annual
eEurope relevance	<ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning • 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Ensured
Links to other indicators	Various breakdowns possible

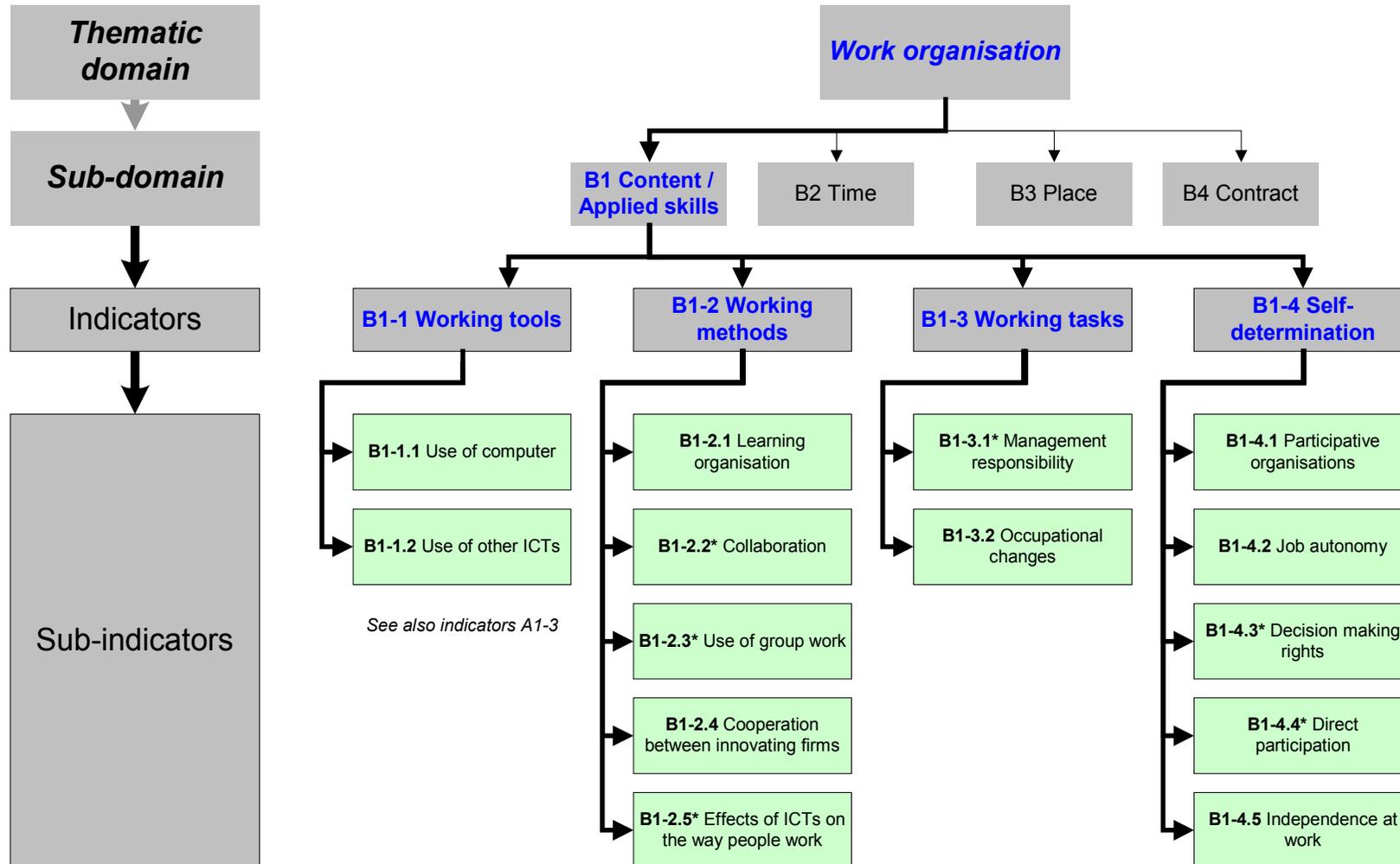
Name of indicator	A3-2.2 Perceived contribution of formal training and education to managing present work
Definition	Percentage of individuals who have had formal training and education reporting that it contributes ‘a lot’ or ‘a fair amount’ to their present work.
Notes	This indicator is called FTEJ in West and Hind 2000 (chapter 4).
Sources	ECHP
Countries covered	See Table on data sources in section 5.1.1.
Time series available	Annual
eEurope relevance	<ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning • 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Ensured
Links to other indicators	Various breakdowns possible

5.1.4 Indicators for work and work organisation

Work content/applied skills

Overview Table (including indicators in development)

B1 –Work content/applied skills (thematic domain: work organisation)			
No.	Name of indicator	Availability	Main source
B 1 - 1 Working tools			
B1-1.1	Use of computer for work	yes	Eurobarometer
B1-1.2*	Use of IT working tools	no (only D)	BIBB/IAB Survey
B 1 - 2 Working methods			
B1-2.1	Learning organisation	yes	ESWCs
B1-2.2*	Collaboration	piloted	ECaTT 1999 GPS
B1-2.3*	Use of group work	piloted	EPOC
B1-2.4	Cooperation between innovating firms	yes	CIS 1997
B1-2.5*	Effects of ICTs on the way people work	piloted	Eurobarometer
B 1 - 3 Working tasks			
B1-3.1*	Management responsibility	piloted	ECaTT 1999
B1-3.2	Occupational changes	yes	ECHP
B 1 - 4 Self-determination			
B1-4.1	Participative organisations	yes	ESWCs
B1-4.2	Job autonomy	yes	ESWCs
B1-4.3*	Decision making rights	piloted	EPOC
B1-4.4*	Direct participation	piloted	EPOC
B1-4.5	Independence at work	yes	ISSP



Name of indicator	B1-1.1 Use of computer for work
Definition	Persons using a personal computer for work as percentage of European working population.
Notes	Differentiation: a) at work b) either at workplace or at home c) at home for work
Sources	Eurobarometer 54.0 / ESDIS
Countries covered	EU Member States
Time series available	To be researched
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	With the convergence of PCs with other appliances for office as well as personal use (e.g. PDAs, Laptops, mobile phones), measurement might become increasingly difficult
Links to other indicators	Data on independent variables for cross-tabulation available; “work with computers” also part of ESWCS 1995 (% of employed persons who work with computers at least half of the time) and 2000 (“Does your main job involve: “Working with computers: PCs, network, mainframe”). See also indicators A1-3.7, A1-3.8, A1-3.9, A1-3.12.

Name of indicator	B1-2.1 Learning organisation
Definition	Share of the employed labour force who are part of a learning organisation; constructed of five questions: “Generally, does your main paid job involve, or not, ... ?” <ul style="list-style-type: none"> • Solving unforeseen problems on your own • Complex tasks • Learning new things • Rotating tasks between yourself and colleagues Over the past 12 months, have you undergone training paid for or provided by your employer, or yourself if you are self-employed, to improve your skills or not? “We can talk of a learning organisation [...] when workers have all of those aspects” (27)
Notes	See Dhondt and Houtman (1997: 16ff.)
Sources	European Working Conditions Survey (ESWCs)
Countries covered	EU Member States
Time series available	1990, 1995, 2000
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 – support greater flexibility in the workplace
Future value	Ensured
Links to other indicators	

Name of indicator	B1-2.4 Cooperation between innovating firms
Definition	<p>Percentage of all innovative firms in the manufacturing sector that co-operate with other firms (competitors, clients or customers, consultative enterprises, suppliers), or with universities or other higher education institutes, or with government or private non-profit research institutes.</p> <p>An innovative firm is defined as one that has introduced technologically new or improved products or services on the market, or technologically new or improved processes. The product should be new to the enterprise, but does not necessarily have to be new to the enterprise's market.</p> <p>Innovation cooperation is defined as active participation in joint R&D and other innovation projects with other organisations. It does not necessarily imply that both partners derive immediate commercial benefit from the venture. Pure contracting out work, where there is no active participation, is not regarded as cooperation.</p>
Notes	<p>"This indicator measures cooperation patterns that may contribute to the strengthening of transfers of knowledge and innovation. Increasingly, innovation relies on the combination of different sources of knowledge and expertise. Some of this may be external to the firm, and can be acquired through co-operation with other firms, as well as through the exploitation of public research by means of links between firms and universities/public research institutes. Such cooperation can help to accelerate the generation of new ideas and their diffusion. Innovation cooperation can have important effects on S&T productivity in firms, through sharing (and thus reducing) the costs of R&D, while at the same time improving the quality of new products and shortening product life cycles." Eurostat 2001tow: 45.</p>
Sources	Community Innovation Survey (1997), see Eurostat 2001tow: 45ff.
Countries covered	EU Member States
Time series available	1997, 2001
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 – support greater flexibility in the workplace
Future value	Ensured
Links to other indicators	-

Name of indicator	B1-3.2 Occupational changes
Definition	Percentage of employed persons who changed occupation at the 1-digit level of ISCO within one year
Notes	-
Sources	ECHP (reported by EUSI)
Countries covered	See Table on data sources in section 5.1.1.
Time series available	Annual since 1995
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 – support greater flexibility in the workplace
Future value	Ensured
Links to other indicators	-

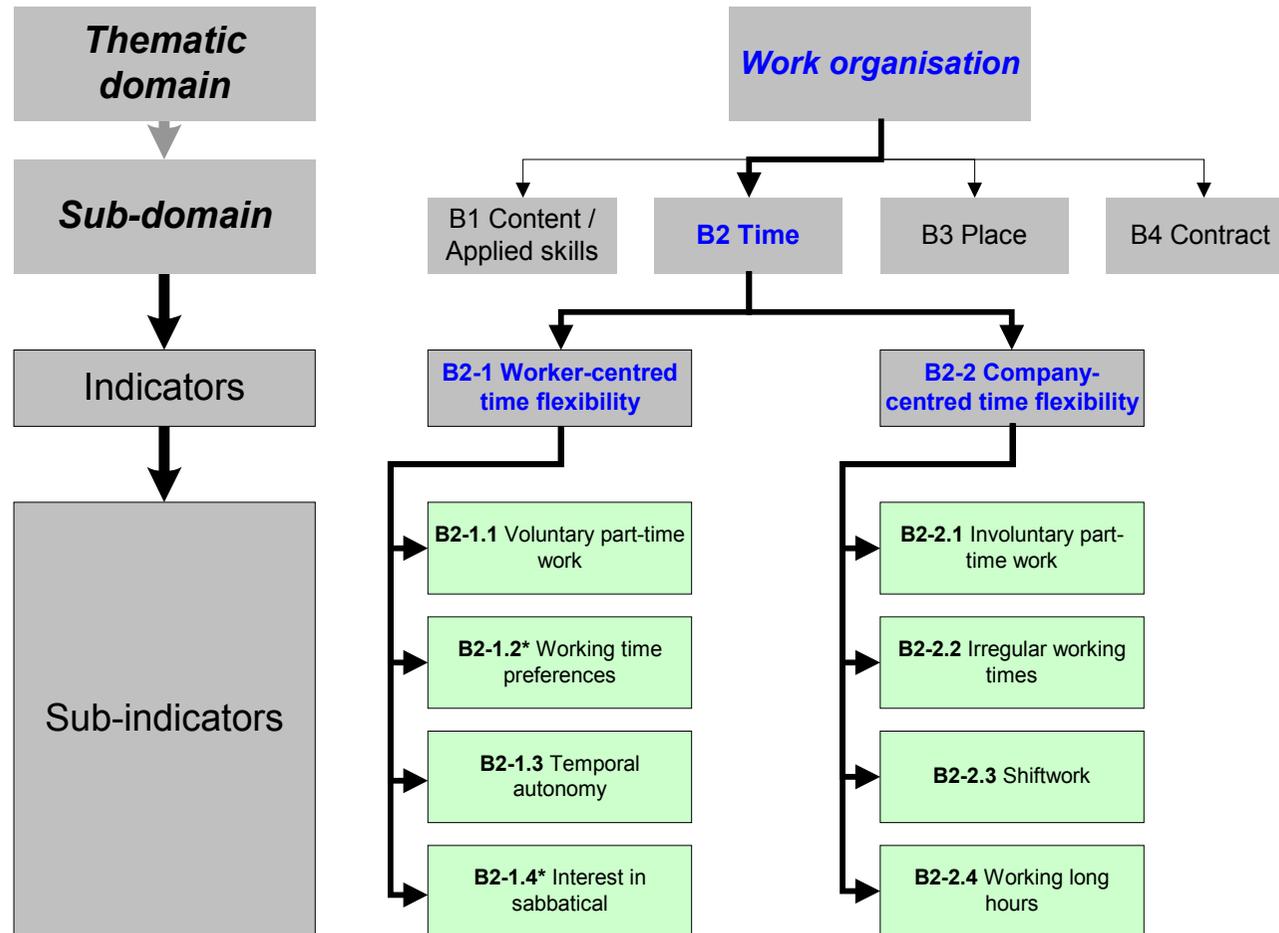
Name of indicator	B1-4.1 Participative organisations
Definition	<p>Share of the employed labour force who can participate in key decisions about the organisation of their work.</p> <p>"Within your workplace, are you able to discuss...?</p> <ul style="list-style-type: none"> • Your working conditions in general • The organisation of your work when changes take place <p>If 'YES', do these exchanges of views take place...?</p> <ul style="list-style-type: none"> • With your colleagues • With your superiors • With staff representatives • With outside experts • On a regular basis • On a formal basis" <p>Construction of composite indicator unclear.</p>
Notes	See Dhondt and Houtman (1997: 16ff.)
Sources	European Working Conditions Survey (ESWCs)
Countries covered	EU Member States
Time series available	1990, 1995, 2000
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 – support greater flexibility in the workplace
Future value	Ensured
Links to other indicators	-

Name of indicator	B1-4.2 Job autonomy
Definition	Share of the employed labour force who have control over their work content; constructed of three questions: "Are you able, or not, to choose or change ... ?" <ul style="list-style-type: none"> • Your order of tasks • Your methods of work • Your speed or rate of work" Construction of composite indicator unclear.
Notes	See Dhondt and Houtman (1997: 16ff.)
Sources	European Working Conditions Survey (ESWCs)
Countries covered	EU Member States
Time series available	1990, 1995, 2000
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 – support greater flexibility in the workplace
Future value	Ensured
Links to other indicators	Compare B1-4.5, B2-1.3.

Name of indicator	B1-4.5 Independence at work
Definition	Percentage of employed persons who "strongly agree" or "agree" to the statement "I can work independently" (remaining answer categories: neither agree nor disagree, disagree, strongly disagree). This indicator is called "Autonomy at work" in EUSI.
Notes	Derived from survey (GPS)
Sources	ISSP (reported by EUSI)
Countries covered	See Table on data sources in section 5.1.1.
Time series available	1989, 1997
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 – support greater flexibility in the workplace
Future value	Ensured
Links to other indicators	Compare B1-4.2, B2-1.3

Time of Work**Overview Table (including indicators in development)**

B2 – Time of Work (thematic domain: work organisation)			
No.	Name of indicator	Availability	Main source
B 2 - 1 Worker-centred time flexibility			
B2-1.1	Voluntary part-time work	yes	LFS
B2-1.2*	Working time preferences	piloted	Eurofound Options Survey
B2-1.3	Temporal autonomy	yes	ESWCs
B2-1.4*	Interest in sabbatical	piloted	Eurofound Options Survey
B 2 - 2 Company-centred time flexibility			
B2-2.1	Involuntary part-time work	yes	LFS
B2-2.2	Irregular working times	yes	LFS
B2-2.3	Shiftwork	yes	ESWCs
B2-2.4	Working long hours	yes	ILO



Name of indicator	B2-1.1 Voluntary part-time work
Definition	<p>Percentage of voluntary part-time workers of all employed persons. Voluntary part-time workers are those who <u>not</u> give as reason for part-time job: "Could not find a full-time job".</p> <p>"The distinction between full-time and part-time work should be based on a spontaneous response by the declarant. It is impossible to make a more precise distinction [...] since working hours differ from one Member State to the next and from one branch of activity to the next"; but see Hofmann and Walwei 2000: 5.</p>
Notes	Derived from survey (GPS)
Sources	European Labour Force Survey
Countries covered	EU Member States
Time series available	Annual (quarterly since 1999)
eEurope relevance	<ul style="list-style-type: none"> 2b-4 - support greater flexibility in the workplace
Future value	A definition which is independent from average working hours that are 'usual' in countries/sectors should be found; different methodology needed.
Links to other indicators	<p>Information available on average weekly hours worked.</p> <p>Data on independent variables for cross-tabulation available.</p> <p>Compare B2-2.1.</p>

Name of indicator	B2-1.3 Temporal autonomy
Definition	<p>Share of the employed labour force who have control over their working times;</p> <p>"For each of the following statements, please answer yes or no.</p> <ul style="list-style-type: none"> You can take your break when you wish You are free to decide when to take holidays or days off You can influence your working hours <p>Do you work</p> <ul style="list-style-type: none"> the same number of hours every day? the same number of days every week? fixed starting and finishing times?" <p>Construction of composite indicator unclear</p>
Notes	See Dhondt and Houtman (1997: 16ff.)
Sources	European working conditions survey (ESWCs)
Countries covered	EU Member States
Time series available	1990, 1995, 2000
eEurope relevance	<ul style="list-style-type: none"> 2b-4 – support greater flexibility in the workplace
Future value	Use of a dichotomous scale (yes/no) might not be suitable for the subject.
Links to other indicators	-

Name of indicator	B2-2.1 Involuntary part-time work
Definition	Part-time workers who give as reason for part-time job: "Could not find a full-time job", as percentage of all employed persons. "The distinction between full-time and part-time work should be based on a spontaneous response by the declarant. It is impossible to make a more precise distinction [...] since working hours differ from one Member State to the next and from one branch of activity to the next"; but see Hofmann and Walwei 2000: 5.'
Notes	Derived from survey (GPS); also indicator for "percentage of employees with insecure jobs" (Eurostat 2001task). This indicator is called LFS ₄ in Eurostat 2001task (Annex 2). See also Joint Employment Report 2000 Statistical Annex: 10 (indicator (EO ₉): Share of involuntary part-time employment in relation to total part-time employment rate)
Sources	European Labour Force Survey
Countries covered	EU Member States
Time series available	Annual (quarterly since 1999)
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace
Future value	A definition which is independent from average working hours that are 'usual' in countries/sectors should be found; different methodology needed.
Links to other indicators	Data on independent variables for cross-tabulation available. Compare B2-1.1.

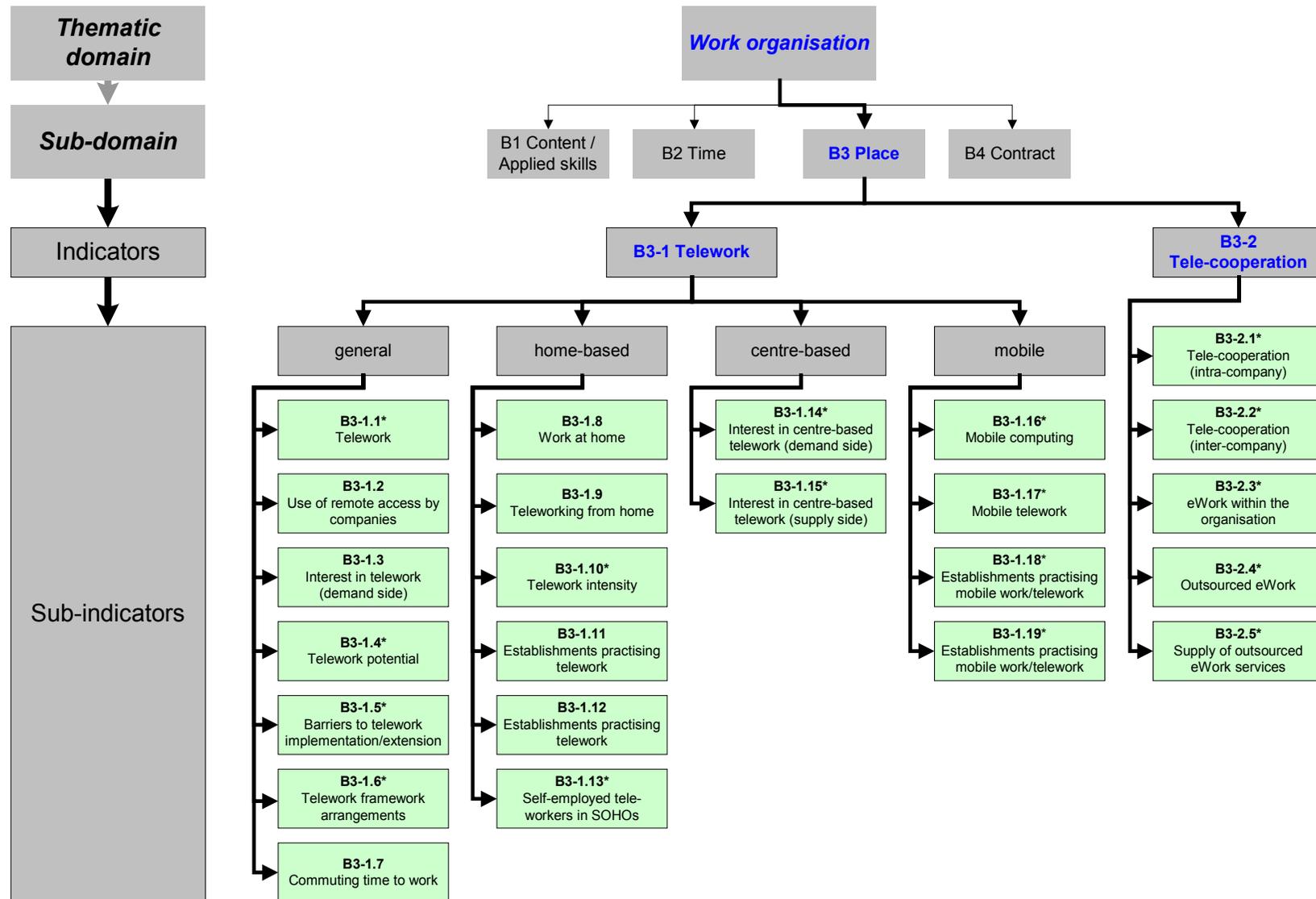
Name of indicator	B2-2.2 Irregular working times
Definition	Working in the evening, at night, on Saturday and/or Sunday; working shifts (see European Commission 2000lfs: 12)
Notes	Derived from survey (GPS)
Sources	European Labour Force Survey
Countries covered	EU Member States
Time series available	Annual (quarterly since 1999)
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace
Future value	Ensured
Links to other indicators	Data on independent variables for cross-tabulation available

Name of indicator	B2-2.3 Shift work
Definition	Percentage of persons in employment who usually work in shifts. “Do you work shifts? IF ‘YES’, do you work...(ONE ANSWER ONLY) <ul style="list-style-type: none"> • (a) split shifts (with a break of at least 4 hours in between) • (b) permanent night shifts • (c) permanent afternoon shifts • (d) permanent morning shifts • (e) alternating morning and afternoon shifts • (f) alternating day and night shifts • (g) alternating morning/afternoon/night shifts • (h) other (SPONTANEOUS)”
Notes	An indicator on night shift work would include only (b), (f) and (g).
Sources	European working conditions survey (ESWCs)
Countries covered	EU Member States
Time series available	1990, 1995, 2000
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 – support greater flexibility in the workplace
Future value	Ensured
Links to other indicators	-

Name of indicator	B2-2.4 Working long hours
Definition	Percentage of persons in employment who usually work more than 40 hours per week.
Notes	-
Sources	ILO Collection of Labour Statistics
Countries covered	EU, USA, Japan, CH, N, and most other OECD countries
Time series available	Annual
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 – support greater flexibility in the workplace
Future value	Ensured
Links to other indicators	-

Place of work**Overview Table (including indicators in development)**

B3 –Place of Work (thematic domain: work organisation)			
No.	Name of indicator	Availability	Main source
B 3 - 1 T e l e w o r k			
general			
B3-1.1*	Telework	piloted	Eurobarometer 54.0
B3-1.2	Use of remote access by companies	yes	DTI Benchmarking Study
B3-1.3	Interest in telework (demand side)	piloted	TELDET 1994, ECaTT 1999 GPS
B3-1.4*	Technical telework potential	piloted	ECaTT 1999 GPS
B3-1.5*	Perceived barriers to telework implementation/ extension	piloted	ECaTT 1999 DMS
B3-1.6*	Telework Framework Agreements	in development	none yet
B3-1.7	Commuting time to work	yes	ESWCs
home-based			
B3-1.8	Work at home	yes	LFS
B3-1.9	Teleworking from home	piloted	TELDET 1994 + ECaTT 1999
B3-1.10*	Intensity of telework from home	piloted	ECaTT 1999 GPS
B3-1.11	Establishments practising telework	piloted	TELDET 1994 + ECaTT 1999
B3-1.12	Establishments interested in telework (supply side)	piloted	TELDET 1994 + ECaTT 1999
B3-1.13*	Self-employed teleworkers in SOHOs	piloted	ECaTT 1999 GPS
centre-based			
B3-1.14*	Interest in centre-based telework (demand side)	piloted	ECaTT 1999 GPS
B3-1.15*	Interest in centre-based telework (supply side)	piloted	ECaTT 1999 GPS
mobile			
B3-1.16*	Mobile computing	piloted	ECaTT 1999 GPS
B3-1.17*	Mobile telework	piloted	ECaTT 1999 GPS
B3-1.18*	Establishments practising mobile work	piloted	ECaTT 1999 DMS
B3-1.19*	Establishments practising mobile telework	piloted	ECaTT 1999 DMS
B 3 - 2 T e l e - c o o p e r a t i o n			
B3-2.1*	Tele-cooperation (inter-company)	piloted	ECaTT 1999 GPS
B3-2.2*	Tele-cooperation (intra-company)	piloted	ECaTT 1999 GPS
B3-2.3*	"eWork" within the organisation (EMERGENCE definition)	piloted	EMERGENCE 2000
B3-2.4*	Outsourced "eWork" (EMERGENCE definition)	piloted	EMERGENCE 2000
B3-2.5*	Supply of outsourced "eWork" services (EMERGENCE definition)	piloted	EMERGENCE 2000



Name of indicator	B3-1.2 Use of remote access by companies
Definition	Share of companies (in different size bands) that use remote access: “Can your employees access your computer system remotely from non-company sites? IF YES: How often is remote access used (rarely/occasionally/quite often/frequently)?”
Notes	Derived from survey, target: IT managers or owners/CEOs (small companies)
Sources	DTI International Benchmarking Study
Countries covered	UK, F, D, I, S, USA, CA, J
Time series available	annually since 1997
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 – support greater flexibility in the workplace
Future value	This is interpreted as an indicator for telework, but definition of telework differs from most other definitions used for surveys.
Links to other indicators	-

Name of indicator	B3-1.3 Interest in telework (demand side)
Definition	<p>Share of all persons in work or looking for work who are interested in (a) permanent home-based telework, (b) alternating home-based telework, (c) supplementary telework.</p> <p>Home-based teleworkers are those who</p> <ul style="list-style-type: none"> • work from home (instead of commuting to a central workplace) for at least one full working day per week; • use a personal computer in the course of their work; • use telecommunications links (phone/ fax/ e-mail) to communicate with their colleagues/ supervisor during work at home; • are either in salaried employment or self-employed in which case their main working place is on the contractor's premises. <p>Individuals who are teleworking from home more than 90% of their overall working time are referred to as permanent teleworkers, while those working from home less than 90% of their overall working time, but more than one full day per week, are referred to as alternating teleworkers.</p> <p>Supplementary teleworkers would fit into the home-based category but for the fact that they spend less than one full day teleworking from home per week.</p>
Notes	Data derived from survey (GPS)
Sources	TELDET 1994, ECaTT 1999
Countries covered	1999: EU except A, B, GR, LUX, P
Time series available	1999; 2002 (planned)
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace
Future value	<p>Indicator needs to be adapted in time to account for differences in the understanding of 'telework' as a concept; alternatively, use indicator that measures only aspects of the concept of telework. As a variable that is applicable over longer periods of time, indicators that measure telework intensity may be preferable.</p>
Links to other indicators	<p>Independent variables available for cross-tabulation: gender, age, household characteristics, types of employment, etc.;</p> <p>ECaTT 1999 does not provide data on churn, i.e. workers who have been teleworking but stopped to do so, or teleworkers who want to stop teleworking.</p>

Name of indicator	B3-1.7 Commuting time to work
Definition	Average time spent commuting per week. "In total, how many minutes per day do you normally spend travelling from home to work and back?"
Notes	Alternatively: share of employed persons with commuting time to work >1h, >2h; see Dhondt and Houtman (1997: 16ff.)
Sources	European Working Conditions Survey (ESWCs)
Countries covered	EU Member States
Time series available	1990, 1995, 2000
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 – support greater flexibility in the workplace
Future value	Ensured, as long as there is a 'main place of work'. In some countries it might be advisable to differentiate between trip to work and trip from work.
Links to other indicators	<p>Could be interpreted as an indicator measuring outcome from the introduction of telework; or measuring demand for telecommuting.</p> <p>Commuting distances are also provided by ECaTT 1999, which also allows for differentiation between teleworkers and non-teleworkers.</p>

Name of indicator	B3-1.8 Work at home
Definition	See notes in European Commission 2000ifs: 11-12.
Notes	Derived from survey (GPS)
Sources	Labour Force Survey
Countries covered	EU Member States
Time series available	LFS: annual (quarterly since 1999)
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 – support greater flexibility in the workplace
Future value	Definition may have to be adapted
Links to other indicators	<p>Independent variables available for cross-tabulation.</p> <p>Data also available from Eurofound Work Options Survey: "In your main job: Do you work mainly at home? [...] Although you do not work mainly at home, do you ever do any paid or unpaid work there for your (main) job?"</p>

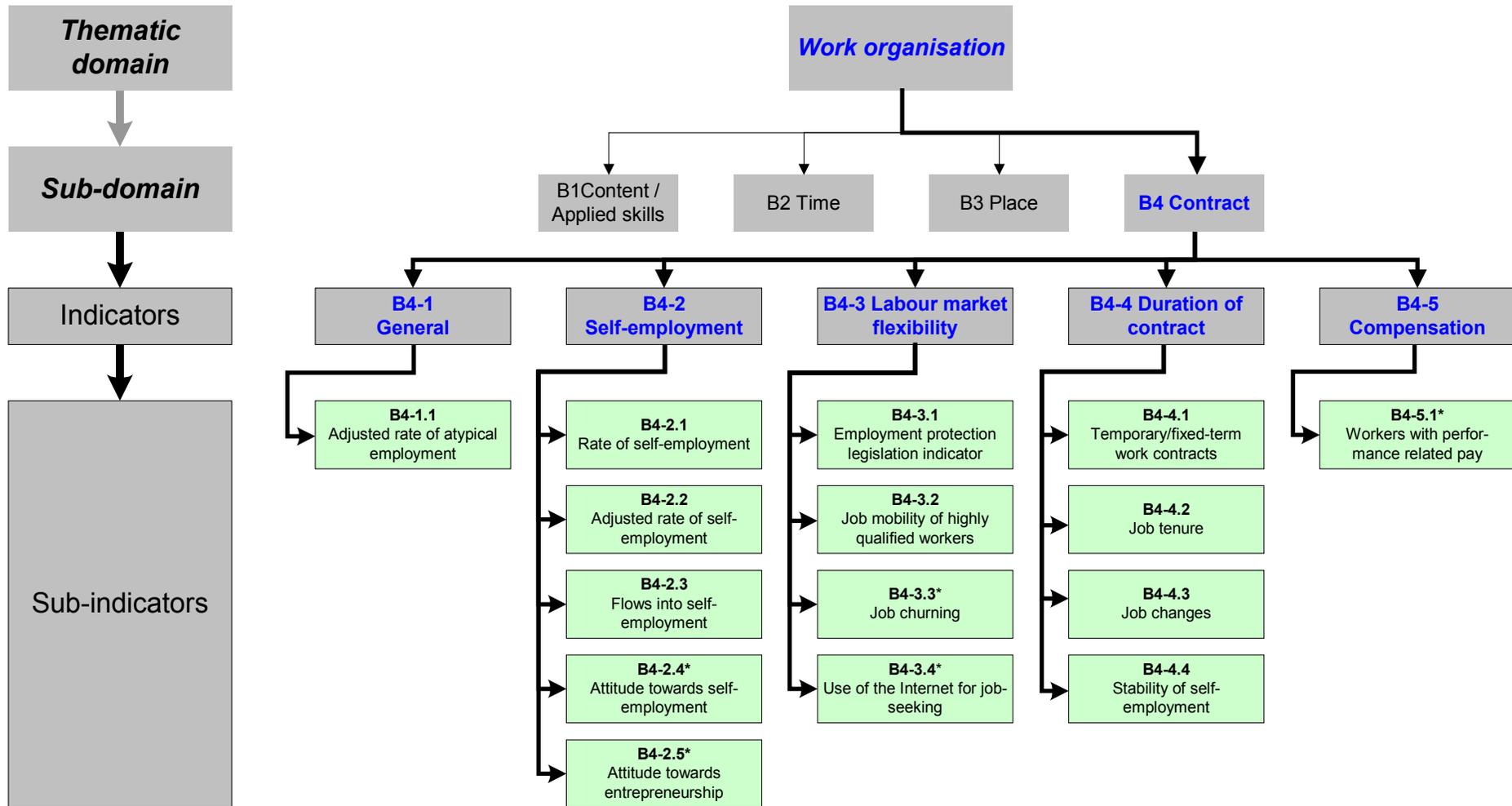
Name of indicator	B3-1.9 Teleworking from home
Definition	<p>Teleworkers as percentage of labour force.</p> <p>Home-based teleworkers are those who</p> <ul style="list-style-type: none"> • work from home (instead of commuting to a central workplace) for at least one full working day per week; • use a personal computer in the course of their work; • use telecommunications links (phone/ fax/ e-mail) to communicate with their colleagues/ supervisor during work at home; • are either in salaried employment or self-employed in which case their main working place is on the contractor's premises. <p>Individuals who are teleworking from home more than 90% of their overall working time are referred to as permanent teleworkers, while those working from home less than 90% of their overall working time, but more than one full day per week, are referred to as alternating teleworkers.</p> <p>Supplementary teleworkers would fit into the home-based category but for the fact that they spend less than one full day teleworking from home per week.</p>
Notes	Data derived from survey (GPS)
Sources	TELDET 1994; ECaTT 1999
Countries covered	1994: D, E, F, I, UK 1999: EU except A, B, GR, LUX, P
Time series available	1994; 1999; 2002 (limited comparability)
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace
Future value	<p>Indicator needs to be adapted in time to account for differences in the understanding of 'telework' as a concept; alternatively, use indicator that measures only aspects of the concept of telework. As a variable that is applicable over longer periods of time, indicators that measure telework intensity may be preferable.</p>
Links to other indicators	<p>Independent variables available for cross-tabulation: gender, age, household characteristics, types of employment, etc.;</p> <p>also available: data on year when telework was started.</p>

Name of indicator	B3-1.11 Establishments practising telework (home-based or by self-employed)
Definition	Share of establishments practising telework; “Establishments with teleworkers are those that have staff who <ul style="list-style-type: none"> • work at a distance from the premises of their employer; • use computers in their work; • transmit work results using telecommunications. Teleworkers can be <ul style="list-style-type: none"> • Permanent teleworkers who spend nearly all their working time at home. • Alternating teleworkers who spend only part of their working time at home, but at least one full working day per week. • Supplementary teleworkers who spend not their regular working time at home but do additional work and preparation teleworking at home. • Self-employed teleworkers who work either for the respondent’s organisation only or for other organisations as well.”
Notes	Size-weighted sampling means that results such as “50% of all establishments” are properly interpreted to mean “establishments accounting for 50% of all employees”.
Sources	TELDET, ECATT
Countries covered	1994: D, E, F, I, UK 1999: EU Member States excl. A, B, EL, LUX, P
Time series available	1994, 1999, 2002 (planned)
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 – support greater flexibility in the workplace
Future value	Indicator needs to be adapted in time to account for differences in the understanding of ‘telework’ as a concept; with the further spread of remote access technology, this indicator might become unworkable.
Links to other indicators	Data available on areas in which telework is practised, and years since telework was introduced.

Name of indicator	B3-1.12 Establishments interested in telework (supply side)
Definition	<p>Share of establishments that are interested in implementing/extending telework and that have concrete plans to do so in the next 1-2 years;</p> <p>“Establishments with teleworkers are those that have staff who</p> <ul style="list-style-type: none"> • work at a distance from the premises of their employer; • use computers in their work; • transmit work results using telecommunications. <p>Teleworkers can be</p> <ul style="list-style-type: none"> • Permanent teleworkers who spend nearly all their working time at home. • Alternating teleworkers who spend only part of their working time at home, but at least one full working day per week. • Supplementary teleworkers who spend not their regular working time at home but do additional work and preparation teleworking at home. • Self-employed teleworkers who work either for the respondent’s organisation only or for other organisations as well.”
Notes	Size-weighted sampling means that results such as “50% of all establishments” are properly interpreted to mean “establishments accounting for 50% of all employees”.
Sources	TELDET 1994, ECaTT 1999
Countries covered	1994: D, E, F, I, UK 1999: EU Member States excl. A, B, EL, LUX, P
Time series available	1994, 1999, 2002 (planned)
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 – support greater flexibility in the workplace
Future value	Indicator needs to be adapted in time to account for differences in the understanding of ‘telework’ as a concept; with the further spread of remote access technology, this indicator might become unworkable. ECaTT 1999 gives no information on companies that want to reduce their number of teleworkers/abolish telework.
Links to other indicators	-

Work contract**Overview Table (including indicators in development)**

B4 – Contract of Work (thematic domain: work organisation)			
No.	Name of indicator	Availability	Main source
B 4 - 1 G e n e r a l			
B4-1.1	Adjusted rate of atypical employment	yes	LFS
B 4 - 2 S e l f - e m p l o y m e n t			
B4-2.1	Rate of self-employment	yes	LFS
B4-2.2	Adjusted rate of self-employment	yes	LFS
B4-2.3	Flows into self-employment	yes (base data)	OECD
B4-2.4*	Attitude towards self-employment	piloted	Eurobarometer Flash
B4-2.5*	Attitude towards entrepreneurship	piloted	Eurobarometer Flash
B 4 - 3 L a b o u r m a r k e t f l e x i b i l i t y			
B4-3.1	Employment Protection Legislation Indicator	yes	OECD
B4-3.2	Job mobility of highly qualified workers	yes	LFS
B4-3.3*	Job churning	no (only USA)	PPI (USA)
B4-3.4*	Use of the Internet for job-seeking	piloted	Eurobarometer
B 4 - 4 D u r a t i o n o f c o n t r a c t			
B4-4.1	Temporary/fixed-term work contracts	yes	LFS
B4-4.2	Job tenure	yes (base data)	OECD
B4-4.3	Job changes	yes	ECHP
B4-4.4	Stability of self-employment	yes (base data)	OECD
B 4 - 5 C o m p e n s a t i o n			
B4-5.1*	Workers with performance-related pay	no	n.a.



Name of indicator	B4-1.1 Adjusted rate of atypical employment
Definition	Number of persons who are either self-employed (outside farming; without employees), have temporary contracts (excluding trainees/apprentices etc.) or work part-time, as percentage of total number of persons employed.
Notes	-
Sources	Labour Force Survey; IAB (see Hofmann and Walwei 2000: 3)
Countries covered	EU Member States
Time series available	Annual (quarterly since 1999)
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured, but definition of self-employed against employed and seemingly self-employed may have to be adapted to adequately reflect reality; statistical representation of seemingly self-employed unclear.
Links to other indicators	Derived from B4-2.1, B4-4.1, B2-2.1, but excluding overlaps/double counting

Name of indicator	B4-2.1 Rate of self-employment
Definition	Number of self-employed as percentage of total number of persons employed.
Notes	See Joint Employment Report 2000 Statistical Annex: 8. This indicator is called ENT ₂ in Drymoussis (2000)
Sources	Labour Force Survey
Countries covered	EU Member States
Time series available	Annual (quarterly since 1999)
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured, but definition of self-employed against employed and seemingly self-employed may have to be adapted to adequately reflect reality
Links to other indicators	broken down by sex

Name of indicator	B4-2.2 Adjusted rate of self-employment
Definition	Number of self-employed as percentage of total number of persons employed, excluding workers in farming sector and excluding self-employed who have employees.
Notes	-
Sources	Labour Force Survey; Hofmann and Walwei 2000: 6.
Countries covered	EU Member States
Time series available	Annual (quarterly since 1999)
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Ensured, but definition of self-employed against employed and seemingly self-employed may have to be adapted to adequately reflect reality; statistical representation of seemingly self-employed unclear.
Links to other indicators	Derived from B4-2.1 but excluding self-employed in the farming sector and self-employed that have employees (one-person-self-employed or own-account self-employed)

Name of indicator	B4-2.3 Flows into self-employment
Definition	<p>Average annual flows into self-employment from</p> <ul style="list-style-type: none"> • employees • unemployed • persons out of the labour force <p>as percentage of self-employed persons. Unpaid family workers and agricultural sector excluded.</p>
Notes	See OECD Employment Outlook 2000: 168.
Sources	OECD based on Eurostat (LFS) data
Countries covered	EU Member States
Time series available	Base data: annual (but availability of processed data unclear)
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 – support greater flexibility in the workplace • 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Ensured
Links to other indicators	-

Name of indicator	B4-3.1 Employment Protection Legislation Summary Indicator (OECD)
Definition	<p>Indicator for the stringency of labour markets with regard to the 'contract' dimension of work arrangements. The indicator was developed to be able to compare the effect of regulatory labour market regimes between countries. Main ingredients are sub-indicators measuring</p> <ul style="list-style-type: none"> • procedural requirements (refers to the process that has to be followed from the decision to lay off a worker to the actual termination of the contract) • notice and severance pay (refers to three tenure periods beyond any trial period, dismissed on grounds of poor performance or individual dismissal, without fault. The tenure periods are: nine months; four years; and 20 years) • prevailing standards of and penalties for 'unfair' dismissals (includes the conditions that identify an unfair dismissal) • 'objective' reasons under which a fixed-term contract could be offered; • the maximum number of successive renewals of fixed-term contracts; • the maximum cumulated duration of a fixed-term contract. <p>See Nicoletti et al. (2000)</p>
Notes	<p>"The summary indicators are obtained by means of factor analysis, in which each component of the regulatory framework is weighted according to its contribution to the overall variance in the data. These indicators are used to assess the regulatory approaches across countries as well as the interrelations between various sets of regulatory provisions. While regulatory provisions can be classified and assessed from a variety of standpoints, this [indicator] focuses exclusively on the relative friendliness of regulations to market mechanisms: there is no attempt to assess the overall quality of regulations or their aptness in achieving their stated public policy goals. The guiding principle inspiring the conception of the summary indicators of regulations is the likely influence of regulations on the choices and market opportunities of firms."</p>
Sources	OECD
Countries covered	OECD
Time series available	Annual
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	<p>The value of the indicator depends on the extent to which it is accepted by the main stakeholders. See discussion in Scarpetta 2000, Boeri and Garibaldi 2000.</p>
Links to other indicators	Broken down by regular and temporary contracts

Name of indicator	B4.3-2 Job mobility of highly qualified personnel
Definition	<p>Share of employed highly qualified people who have changed job since the previous year, either by changing function, position, occupation or enterprise.</p> <p>Highly qualified personnel are defined as those who fulfil one or other of the following conditions: - successfully completed education at ISCED 6 and 7 according to ISCED (1976 version) or ISCED 5A and 6 according to the 1997 version; - not formally qualified as above but employed in an S&T occupation (only professionals, ISCO 2) where the above qualifications are normally required</p>
Notes	Derived from survey (GPS)
Sources	European Labour Force Survey / Eurostat 2000tow: 48
Countries covered	EU Member States
Time series available	Annual (quarterly since 1999)
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace
Future value	Ensured
Links to other indicators	Data on independent variables for cross-tabulation available (e.g. sector; gender)

Name of indicator	B4-4.1 Temporary/Fixed-term work contracts
Definition	<p>Temporary workers as percentage for total employees;</p> <p>“In the majority of Member States, most jobs are based on written work contracts. In some countries, however, contracts of this type are concluded only in specific cases [...]. Given these institutional discrepancies the concepts of “temporary employment” and “work contract of limited duration describe situations which, in different institutional contexts, may be considered similar. A job may be considered temporary if employer and employee agree that its end is determined by objective conditions such as a specific date, the completion of a task or the return of another employee who has been temporarily replaced. Where there is a work contract of limited duration, it usually states the terms of the end of the contract. The following belong to these categories:</p> <ul style="list-style-type: none"> • persons with seasonal employment; • persons engaged by an agency or employment exchange and hired to a third party to perform a specific task (unless there is a written work contract of unlimited duration with the agency or employment exchange); • persons with specific training contracts. If there are no objective criteria for the end of a job or work contract, this should be considered permanent or of unlimited duration.”
Notes	Based on population survey (GPS)
Sources	Labour Force Survey
Countries covered	EU Member States
Time series available	Annual (quarterly since 1999)
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Ensured
Links to other indicators	Independent variables available for cross-tabulation. The data can also be broken down by reason for holding a temporary work contract (contract for training, voluntary, involuntary).

Name of indicator	B4-4.2 Job tenure
Definition	Average job tenure (no information on exact definition)
Notes	-
Sources	OECD (based on Eurostat (LFS) data for EU, Current Population Survey in the USA and national statistical authorities in other countries, see OECD Employment Outlook 2001.
Countries covered	Most OECD countries
Time series available	Base data: annual (but availability of processed data unclear)
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Ensured
Links to other indicators	Data available for nine individual sectors (ratio of average tenure for each sector to average tenure for all sectors)

Name of indicator	B4-4.3 Job changes
Definition	Percentage of employees (exclusive of persons in apprenticeship) who changed their job during the last 12 months
Notes	-
Sources	ECHP, reported by EUSI
Countries covered	EU + others
Time series available	Annual
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Ensured; but unclear whether “job” is defined clear enough.
Links to other indicators	-

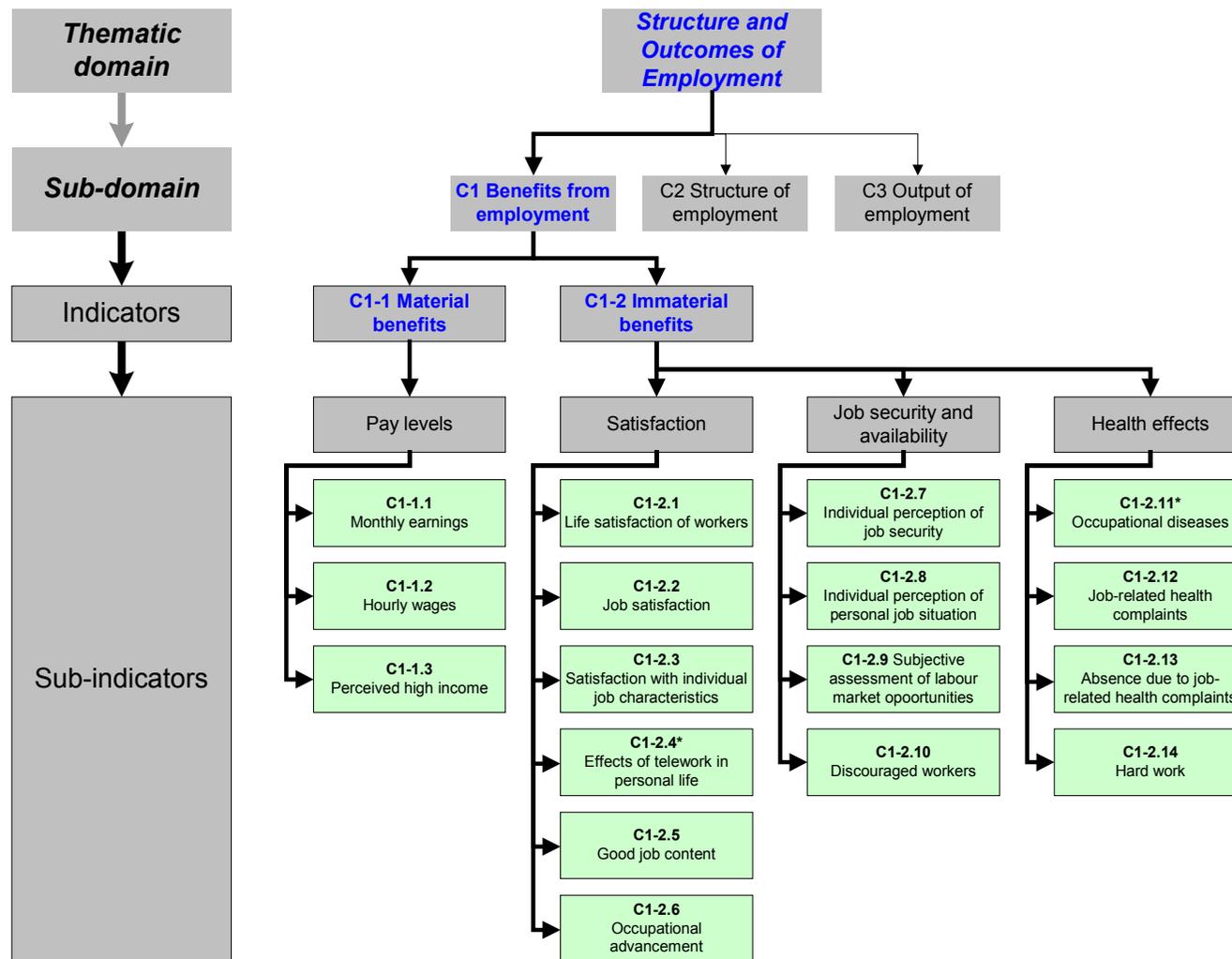
Name of indicator	B4-4.4 Stability of self-employment
Definition	Percentage of persons who were in the same employment status a year earlier, by current employment status (own-account self-employed, employer, employee). Unpaid family workers and agricultural sector excluded.
Notes	See OECD Employment Outlook 2000: 168.
Sources	OECD based on Eurostat (LFS) data
Countries covered	EU Member States
Time series available	Base data: annual (but availability of processed data unclear)
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Ensured
Links to other indicators	-

5.1.5 Indicators for structure and outcomes of employment

Benefits from employment

Overview Table (including indicators in development)

C1 – Benefits from employment (Thematic domain: structure and outcomes of employment)			
No.	Name of indicator	Availability	Main source
C 1 - 1 M a t e r i a l b e n e f i t s			
C1-1.1	Monthly earnings	yes	Eurostat
C1-1.2	Hourly wages	yes	Eurostat
C1-1.3	Perceived high income	yes	ISSP
C 1 - 2 I m m a t e r i a l b e n e f i t s			
Satisfaction			
C1-2.1	Life satisfaction of workers	yes	Eurobarometer
C1-2.2	Job satisfaction	yes	ECHP, ISSP
C1-2.3	Satisfaction with job characteristics	yes	ISSP
C1-2.4*	Effects of telework on personal life	piloted	Eurobarometer
C1-2.5	Good job content	yes	ISSP
C1-2.6	Occupational advancement	yes	ECHP
Job security and availability			
C1-2.7	Individual perception of job security	yes	ISSP
C1-2.8	Individual perception of personal job situation	yes	Eurobarometer
C1-2.9	Subjective assessment of labour market opportunities	yes	ISSP
C1-2.10	Discouraged workers	yes	LFS
Health effects			
C1-2.11*	Occupational diseases	in development	Eurostat
C1-2.12	Job-related health complaints	yes	ESWCs
C1-2.13	Absence due to job-related health complaints	yes	ESWCs
C1-2.14	Hard work	yes	ISSP



Name of indicator	C1-1.1 Monthly earnings
Definition	Average gross monthly earnings of <ul style="list-style-type: none"> • non-manual workers in industry • manual workers in the manufacturing industry in purchasing power parities.
Notes	-
Sources	Eurostat (Eurostat yearbook, data 1989 – 1999, p. 147)
Countries covered	EU-15, JP
Time series available	Annual
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Ensured
Links to other indicators	Breakdowns available for men and women

Name of indicator	C1-1.2 Hourly wages
Definition	Average gross hourly earnings in industry and services.
Notes	Eurostat provides information on average gross hourly earnings of manual workers in industry and on gross monthly earnings of non-manual workers and of manual and non-manual workers together in industry and services.
Sources	Eurostat 2000: Earnings in industry and services hours of work in industry.
Countries covered	EU countries, not all member states.
Time series available	The most recent edition provides data for 1996 – 1998.
eEurope relevance	General relevance for measuring wealth development in ICT industries.
Future value	Ensured.
Links to other indicators	Data are broken down according to NACE Rev.1 (Statistical classification of economic activities in the European community), including all sections and sub-sections plus a number of divisions.

Name of indicator	C1-1.3 Perceived high income
Definition	Percentage of employed persons who "strongly agree" or "agree" to the statement "My income is high" (remaining answer categories: neither agree nor disagree, disagree, strongly disagree)
Notes	Derived from survey (GPS)
Sources	ISSP (reported by EUSI)
Countries covered	See Table on data sources in section 5.1.1.
Time series available	1989, 1997
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured
Links to other indicators	<p>Possibilities to break down data to construct indicators on gender differences (see EUSI, Berger-Schmitt 2001: 49ff.).</p> <p>See also B4-5.1.</p>

Name of indicator	C1-2.1 Life satisfaction of workers
Definition	Eurobarometer Definition: "On the whole, are you very satisfied, fairly satisfied, not very satisfied or not at all satisfied with the life you lead?"
Notes	Derived from survey (GPS)
Sources	Eurobarometer (e.g. 47.1)
Countries covered	EU Member States
Time series available	n.a.
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured. Country comparisons might be affected by cultural differences.
Links to other indicators	<p>Can be broken down by</p> <ul style="list-style-type: none"> • persons in work vs. not in work • self-employed/ temporarily employed/ permanently employed (?) • part-time/ full-time workers (?)

Name of indicator	C1-2.2 Job satisfaction
Definition	Mean on a scale from 1 = "not satisfied at all" to 6 = "fully satisfied"
Notes	Derived from survey (GPS); see Clark 1998.
Sources	ECHP (reported by EUSI)
Countries covered	See Table on data sources in section 5.1.1.
Time series available	Annually since 1994
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured
Links to other indicators	<p>Means are also available for:</p> <ul style="list-style-type: none"> • satisfaction with type of job • satisfaction with distance to job • satisfaction with working times • satisfaction with job security • satisfaction with working conditions. <p>Possibilities to break down data to construct indicators on regional disparities and gender differences (see EUSI, Berger-Schmitt 2001: 49ff.); no reported break down for different types of work and use of ICTs</p>

Name of indicator	C1-2.3 Satisfaction with job characteristics
Definition	<p>Percentage of employed persons who are "fairly satisfied", "very satisfied" or "completely satisfied" (remaining answer categories: neither satisfied nor dissatisfied, fairly dissatisfied, very dissatisfied, completely dissatisfied) with:</p> <ul style="list-style-type: none"> • their job • type of work • distance to job • working times • job security • working conditions.
Notes	Derived from survey (GPS) ; see Clark 1998
Sources	ISSP (reported by EUSI)
Countries covered	See Table on data sources in section 5.1.1.
Time series available	1989, 1997
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured
Links to other indicators	<p>Possibilities to break down data to construct indicators on gender differences (see EUSI, Berger-Schmitt 2001: 49ff.); no reported break down for different types of work and use of ICTs</p>

Name of indicator	C1-2.5 Good job content
Definition	<p>Based on answers to the six following questions.</p> <p>A) How often are you bored at work? (Never, Hardly ever, Sometimes, Often, Always)</p> <p>B) Statements about the respondent's job: My job is interesting</p> <p>C) Statements about the respondent's job: In my job I can help other people</p> <p>D) Statements about the respondent's job: My job is useful to society</p> <p>E) Statements about the respondent's job: I can work independently</p> <p>All coded as: 1. Strongly agree, 2. Agree, 3. Neither agree nor disagree, 4. Disagree, 5. Strongly disagree</p> <p>F) And which of the following statements about your work is most true?</p> <ul style="list-style-type: none"> • My job allows me to design or plan most of my daily work • My job allows me to design or plan parts of my daily work • My job does not really allow me to design or plan my daily work <p>Dichotomous variables were created, with 1 representing (for bored at work) Never or Hardly ever, (for the four statement questions) Strongly Agree or Agree, and (for the design of daily work) the designing of most or part of daily work. The sum of these six dummies, which runs from zero to six, is a positive measure of job content.</p>
Notes	Derived from survey (GPS)
Sources	ISSP (reported by OECD in Clark 1998: 26-27)
Countries covered	See Table on data sources in section 5.1.1.
Time series available	1989, 1997
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured
Links to other indicators	Possibilities to break down data to construct indicators on gender differences (see EUSI, Berger-Schmitt 2001: 49ff.)

Name of indicator	C1-2.6 Occupational advancement
Definition	Percentage of employed persons who consider their present job as “much better” or “somewhat better” than their former job (remaining answer categories: about the same, worse).
Notes	Derived from survey (GPS)
Sources	ECHP (reported by EUSI)
Countries covered	See Table on data sources in section 5.1.1.
Time series available	Annual since 1994
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Ensured
Links to other indicators	<p>Possibilities to break down data to construct indicators on regional disparities and gender differences (see EUSI, Berger-Schmitt 2001: 49ff.);</p> <p>An other source of data for "high opportunities for advancement" is the ISSP (see Clark 1998: 25):</p> <p>Statements about the respondent's job: My opportunities for advancement are high. Scale: strongly agree, agree, neither agree nor disagree, disagree, strongly disagree.</p>

Name of indicator	C1-2.7 Individual perception of job security
Definition	Percentage of employed who “strongly agree” or “agree” to the statement “my job is secure” (remaining answer categories: neither agree nor disagree, disagree, strongly disagree)
Notes	Derived from survey (GPS)
Sources	ISSP; reported by EUSI
Countries covered	EU Member States (some countries missing)
Time series available	1989, 1997
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Ensured
Links to other indicators	<p>Possibilities to break down data to construct indicators on gender differences (see EUSI, Berger-Schmitt 2001: 49ff.).</p> <p>Data on this indicator is also available from the Eurofound Work Options of the Future Survey 1998:</p> <p>Percentage of employed persons who affirm:</p> <p>(a) “Do you worry about the security of your present job?”</p> <p>(b) “If you were looking for a new job now: Would it be easy, difficult or practically impossible for you to get a job you would find acceptable?”</p>

Name of indicator	C1-2.8 Individual perception of personal job situation
Definition	Share of the labour force who expect the coming year to be better/the same/worse than the last with regard to the personal job situation; “What are your expectations for the year to come: will [year] be better, worse or the same when it comes to your personal job situation?”
Notes	Data derived from survey (GPS)
Sources	Eurobarometer 54.0
Countries covered	EU Member States
Time series available	Twice annually
eEurope relevance	<ul style="list-style-type: none"> 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Ensured
Links to other indicators	Independent variables for cross-tabulation available

Name of indicator	C1-2.9 Subjective assessment of labour market opportunities
Definition	Percentage of people considering it “very easy” or “fairly easy” to find an acceptable job if they were looking actively (remaining answer categories: neither easy nor difficult, fairly difficult, very difficult)
Notes	Derived from survey (GPS)
Sources	ISSP; reported by EUSI
Countries covered	EU Member States (some countries missing)
Time series available	1989, 1997
eEurope relevance	<ul style="list-style-type: none"> 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Ensured
Links to other indicators	Possibilities to break down data to construct indicators on gender differences (see EUSI, Berger-Schmitt 2001: 49ff.)

Name of indicator	C1-2.10 Discouraged workers
Definition	Proportion of inactive population who would like to work but think no job is available; Inactive persons are those aged 15 and older who are neither employed nor unemployed (see figure in European Commission 2000ifs: 14). Basis: Recommendation of the 13th International Conference of Labour Statisticians, convened 1982 by the ILO.
Notes	Derived from survey (GPS); compare indicator “discouraged workers” from EUSI (Berger-Schmitt 2001: 48)
Sources	Labour Force Survey
Countries covered	EU Member States
Time series available	Annual, quarterly since 1999
eEurope relevance	<ul style="list-style-type: none"> 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Ensured
Links to other indicators	Independent variables for cross-tabulation available.

Name of indicator	C1-2.12 Job-related health complaints
Definition	Percentage of employees reporting at least one of the following health problems caused by their job: ear problems, eye problems, skin problems, backache, headaches, stomach ache, muscular pain in arms or legs, respiratory problems, allergies, heart disease.
Notes	See EUSI ²³
Sources	European working conditions survey (ESWCs)
Countries covered	EU Member States
Time series available	1995, 2000
eEurope relevance	<ul style="list-style-type: none"> 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Ensured
Links to other indicators	-

Name of indicator	C1-2.13 Absence due to job-related health complaints
Definition	Percentage of employees reporting days of absence over the past 12 months due to health problems caused by their job.
Notes	See EUSI ²⁴
Sources	European working conditions survey (ESWCs)
Countries covered	EU Member States
Time series available	1995, 2000
eEurope relevance	<ul style="list-style-type: none"> 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Ensured
Links to other indicators	-

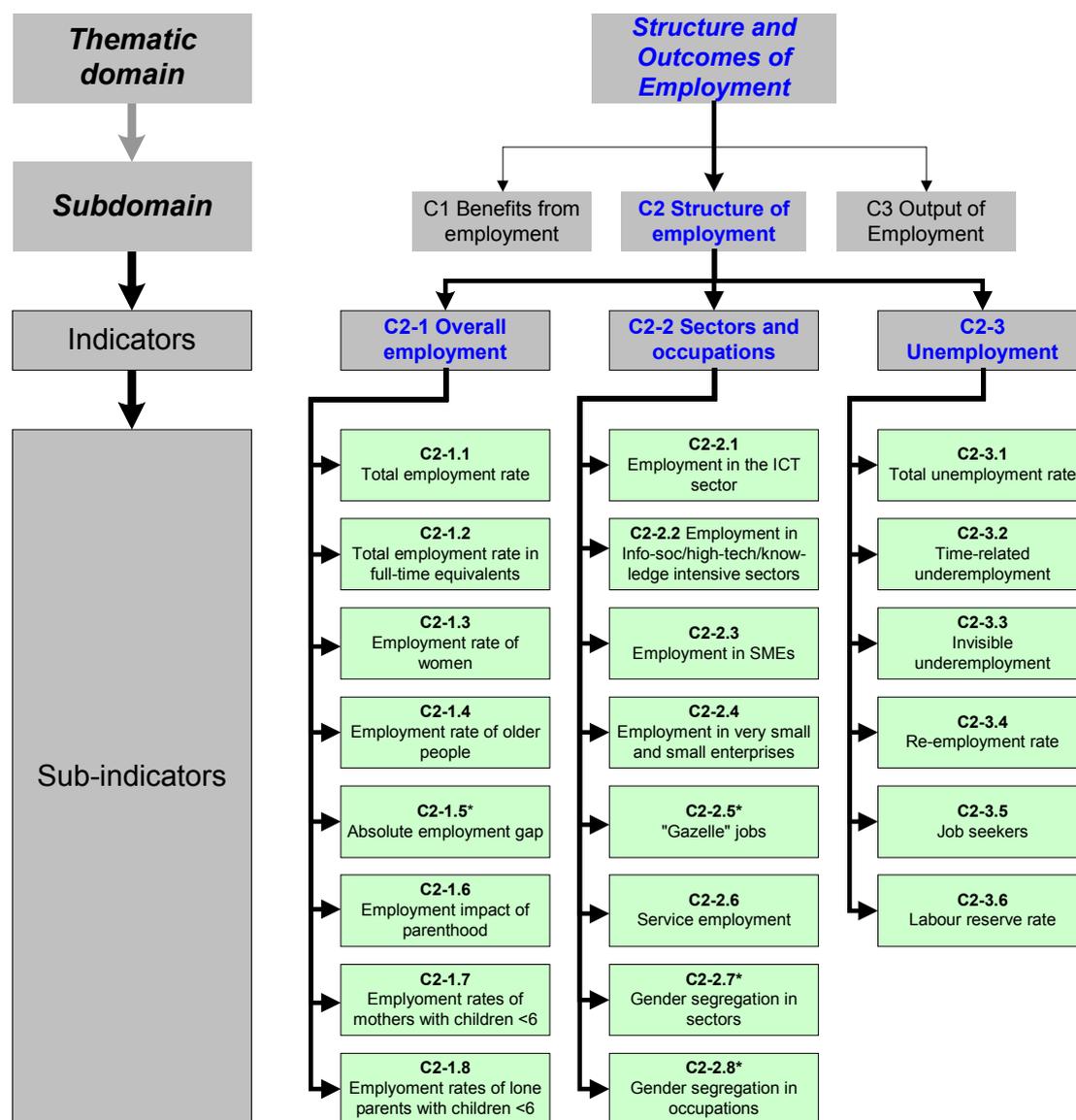
²³ http://www.gesis.org/en/social_monitoring/social_indicators/EU_Reporting/pdf_files/emplgd5.pdf

²⁴ http://www.gesis.org/en/social_monitoring/social_indicators/EU_Reporting/pdf_files/emplgd5.pdf

Name of indicator	C1-2.14 Hard work
Definition	<p>Based on answers to the six following questions.</p> <ul style="list-style-type: none"> • How often do you come home from work exhausted? • How often do you have to do hard physical work? • How often do you find your work stressful? • How often do you work in dangerous conditions? • How often do you work in unhealthy conditions? • How often do you work in physically unpleasant conditions? <p>All of these are coded as 1. Always, 2. Often, 3. Sometimes, 4. Hardly ever, 5. Never</p> <p>Dichotomous variables were created, with 1 representing Always, Often or Sometimes, and 0 representing Hardly ever or Never. Then the sum of these six dummies was calculated. The resulting variable (which is analogous to the Caseness scale of individual well-being in Psychology) counts the number of times (out of six) the respondent reports a 'bad' outcome with respect to job unpleasantness or difficulty. This variable runs from zero, for those with no such outcomes, to six, for those whose jobs are at least sometimes unpleasant on all of the six criteria above. This method allows six separate, but related, job measures to be combined into one (Clark 1998: 25-26).</p>
Notes	Derived from survey (GPS)
Sources	ISSP; reported by OECD (see Clark 1998: 25-26).
Countries covered	EU Member States (some countries missing)
Time series available	1989, 1997
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured
Links to other indicators	Possibilities to break down data to construct indicators on gender differences (see EUSI, Berger-Schmitt 2001: 49ff.)

Level and structure of employment**Overview Table (including indicators in development)**

C2 – Level and structure of employment (Thematic domain: structure and outcomes of employment)			
No.	Name of indicator	Availability	Main source
C 2 - 1 Overall employment			
C2-1.1	Total employment rate	yes	ESA95
C2-1.2	Total employment rate (full-time equivalents)	yes	LFS/Eurostat
C2-1.3	Employment rate of women	yes	ESA95
C2-1.4	Employment rate of older people	yes	ESA95
C2-1.5*	Absolute employment gap	in development	LFS
C2-1.6	Employment impact of parenthood	yes	LFS
C2-1.7	Employment rates of mothers with child(ren) aged under 6	yes	OECD
C2-1.8	Employment rate of lone-parents with child(ren) aged under 6	yes	OECD
C 2 - 2 Sectors and occupations			
C2-2.1	Employment in the ICT sector	yes	OECD
C2-2.2	Share and growth of employment in the Information Society, high-tech and knowledge-intensive sectors	yes	LFS
C2-2.3	Rate of employment in SMEs	yes	LFS
C2-2.4	Employment in very small and small enterprises	yes	Eurostat
C2-2.5*	“Gazelle” jobs	no (only USA)	Cognetics
C2-2.6	Rate and share of employment in services	yes	LFS
C2-2.7*	Index of gender segregation in sectors	in development	LFS
C2-2.8*	Index of gender segregation in occupations	in development	LFS
C 2 - 3 Unemployment			
C2-3.1	Total unemployment rate	yes	Eurostat
C2-3.2	Time-related underemployment	yes	LFS
C2-3.3	Invisible underemployment	yes	ECHP
C2-3.4	Re-employment rate	yes	EUSI
C2-3.5	Job seekers	yes	ISSP
C2-3.6	Labour reserve rate	yes	LFS



Name of indicator	C2-1.1 Total employment rate
Definition	Persons in employment in age bracket 15-64 years as proportion (%) of total population in the same age bracket
Notes	See Joint Employment Report 2000 Statistical Annex: 2 "Standard index to measure one major performance target of the Employment Strategy. All groups between 15 to 64 years are included, as is the commonest practice in the literature"
Sources	Eurostat Benchmark Employment Series, European System of Accounts 1995 (ESA95) ²⁵
Countries covered	In all EU Member States; comparable with ILO/OECD sources
Time series available	Annual
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured
Links to other indicators	To be broken down in gender; age (brackets 15-24, 25-54, 55-64).

Name of indicator	C2-1.2 Total employment rate (full-time equivalents)
Definition	Total hours worked divided by the average annual number of hours worked in full-time jobs, calculated as a proportion of total population in the 15-64 age bracket (%)
Notes	See Joint Employment Report 2000 Statistical Annex: 2 "Indicator to complement the reading of the employment rate, by taking into account the differences in the average number of hours worked per occupied individual."
Sources	LFS / Eurostat Estimates
Countries covered	In all EU Member States; comparable with ILO/OECD sources.
Time series available	Annual
eEurope relevance	<ul style="list-style-type: none"> • 2b-x - general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured as long as there is distinction between full-time and part-time jobs is maintained.
Links to other indicators	To be broken down in gender; age (brackets 15-24, 25-54, 55-64)

²⁵ See http://tilastokeskus.fi/tk/tp_db/astika/english/e42010.html.

Name of indicator	C2-1.3 Employment rate of women
Definition	Women in employment in age bracket 15-64 years as proportion (%) of total population in the same age bracket
Notes	See Joint Employment Report 2000 Statistical Annex: 2
Sources	Eurostat Benchmark Employment Series, European System of Accounts 1995 (ESA95) ²⁶
Countries covered	In all EU Member States; comparable with ILO/OECD sources.
Time series available	Annual
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Ensured
Links to other indicators	-

Name of indicator	C2-1.4 Employment rate of older people
Definition	Persons in employment in age bracket 55-64 years as proportion (%) of total population in the same age bracket
Notes	See Joint Employment Report 2000 Statistical Annex: 2 “Additional performance indicator to monitor policy objectives and recommendations related to maintaining older people in working life”.
Sources	European System of Accounts 1995 (ESA95) see http://tilastokeskus.fi/tk/tp_db/astika/english/e42010.html
Countries covered	In all EU Member States; comparable with ILO/OECD sources.
Time series available	Annual
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Ensured
Links to other indicators	-

²⁶ See http://tilastokeskus.fi/tk/tp_db/astika/english/e42010.html

Name of indicator	C2-1.6 Employment impact of parenthood
Definition	The absolute difference in employment rates without the presence of any children and with the presence of a child aged 0-6 (age group 20-50)
Notes	See Joint Employment Report 2000 Statistical Annex: 10 (here, this indicator is called EO ₇)
Sources	LFS
Countries covered	EU Member States
Time series available	Annual, quarterly since 1999
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 – support greater flexibility in the workplace
Future value	Ensured
Links to other indicators	Broken down by sex; Indicator for gender gap in the employment impact of parenthood (EO ₈): Ratio between the EO ₇ indicators for women and men

Name of indicator	C2-1.7 Employment rates of mothers with child(ren) aged under 6
Definition	Employment rates of mothers in families with child(ren) aged under 6. Includes only families with no-one aged over 60. Multi-family households excluded.
Notes	See OECD Employment Outlook 2001: 134
Sources	OECD on the basis of Eurostat (LFS) data
Countries covered	most EU Member States, CD, USA
Time series available	1989, 1999
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured
Links to other indicators	-

Name of indicator	C2-1.8 Employment rate of lone-parents with child(ren) aged under 6
Definition	Employment rate of lone-parents with child(ren) aged under 6. Includes only families with no-one aged over 60. Multi-family households excluded.
Notes	See OECD Employment Outlook 2001: 134
Sources	OECD on the basis of Eurostat (LFS) data
Countries covered	Most EU Member States, CD, USA
Time series available	1989, 1999
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured
Links to other indicators	-

Name of indicator	C2-2.1 Employment in the ICT sector
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Definition	Employment in the ICT sector as a share of business sector ²⁷
Notes	-
Sources	OECD (see OECD 2000meas: 13)
Countries covered	OECD
Time series available	Annual
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Ensured
Links to other indicators	-

²⁷ OECD definition of ICT sector: “The agreed definition of the ICT sector was based on the following principles: For manufacturing industries, the products of a candidate industry: (a) Must be intended to fulfil the function of information processing and communication including transmission and display. (b) Must use electronic processing to detect, measure and/or record physical phenomena or to control a physical process. For services industries, the products of a candidate industry: (a) Must be intended to enable the function of information processing and communication by electronic means. Adoption of these principles led to a definition based on the industrial classes of revision 3 of the International Standard Industrial Classification (ISIC). The classes included in the definition are as follows: Manufacturing: 3000 – Office, accounting and computing machinery; 3130 – Insulated wire and cable; 3210 – Electronic valves and tubes and other electronic components; 3220 – Television and radio transmitters and apparatus for line telephony and line telegraphy; 3230 – Television and radio receivers, sound or video recording or reproducing apparatus, and associated goods; 3312 – Instruments and appliances for measuring, checking, testing, navigating and other purposes, except industrial process equipment; 3313 – Industrial process control equipment. Services: 5150 – Wholesaling of machinery, equipment and supplies (where possible, Member countries were asked to limit this class to include only the wholesaling of ICT goods as shown in the Manufacturing component of the definition shown above); 7123 – Renting of office machinery and equipment (including computers); 6420 – Telecommunications; 72 – Computer and related activities.

Name of indicator	C2-2.2 Share and growth of employment in the Information Society, high-tech and knowledge-intensive sectors
Definition	<ul style="list-style-type: none"> • High-tech sectors: aerospace, computers and office machinery, electronics-communications, pharmaceuticals, scientific instruments, motor vehicles, electrical machinery, chemicals, other transport equipment and non-electrical machinery; see Eurostat 2000tow: 8 • Knowledge intensive services: communication services (post and telecommunications, software, media, Internet...), financing, insurance, real estate and business services (including consulting and R&D), community, social and personal services (including education and health); see Eurostat 2000tow: 8 • Information Society sector: the above sectors plus IT manufacturing (see ESDIS 2001: 9)
Notes	Share of jobs in these sectors is also of interest.
Sources	Labour Force Survey, Eurostat 2000, 2001sst; see ESDIS and Eurostat 2001tow
Countries covered	EU Member States
Time series available	Annual (quarterly since 1999)
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Definition of high-tech and knowledge-intensive may need to be adapted. “Using the highly aggregated 2 digit level of the NACE (or ISIC) classification does not allow a fine distinction between those services that may be highly knowledge intensive and those which are not. Further improvements in the classification of these services will be necessary.” (Eurostat 2001tow: 58)
Links to other indicators	-

Name of indicator	C2-2.3 Rate of Employment in SMEs
Definition	Persons employed in SMEs as percentage of total number of persons employed, by sex.
Notes	See Joint Employment Report 2000 Statistical Annex: 8 (here, this indicator is called ENT ₁).
Sources	LFS (source for data input) (in future possibly Structural Business Statistics)
Countries covered	EU Member States
Time series available	Annual (quarterly since 1999)
eEurope relevance	<ul style="list-style-type: none"> • 2b-x - general indicator for topic ‘Working in the knowledge based economy’
Future value	-
Links to other indicators	Broken down by sex

Name of indicator	C2-2.4 Employment in very small and small enterprises
Definition	Persons employed in non-agricultural enterprises with 0-9 employees (very small) or 10-49 employees (small) as a percentage of the total population currently employed in non-agricultural enterprises
Notes	Newest data available
Sources	Eurostat (SME Tabular Database), reported in "Enterprises in Europe"
Countries covered	EU Member States
Time series available	Every 2 years, newest data available in 2001: 1997
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 – support greater flexibility in the workplace • 2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured
Links to other indicators	-

Name of indicator	C2-2.6 Rate and share of employment in services
Definition	Percentage of persons employed in services between 15-64 out of total population in the same age bracket; Percentage of persons employed in services out of total number of persons employed
Notes	See Joint Employment Report 2000 Statistical Annex: 8. This indicator is called ENT ₃ in Drymoussis 2000.
Sources	Labour Force Survey
Countries covered	EU Member States
Time series available	Annual (quarterly since 1999)
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured, but definition of service sector employment may have to be adapted to adequately reflect reality
Links to other indicators	Broken down by sex

Name of indicator	C2-3.1 Total unemployment rate
Definition	Total unemployed individuals (ILO definition) as a share of total active population
Notes	See Joint Employment Report 2000 Statistical Annex: 2
Sources	Eurostat/ Unemployed Harmonised Series
Countries covered	In all EU Member States; comparable with ILO data etc.
Time series available	yes
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured
Links to other indicators	-

Name of indicator	C2-3.2 Time-related underemployment
Definition	Involuntary part-time and temporary short-time
Notes	<p>The original definition of time-related underemployment, according to the 16th International Conference of Labour Statisticians (ICLS) 1998, "comprises all persons aged 15 and over who:</p> <p>(a) during the reference week were willing to work additional hours, to work additional hours means that they wanted another job in addition to their current job (s), wanted another job with more hours instead of their current job or wanted to increase the total number of hours worked in their current job(s),</p> <p>(b) were available to work additional hours within a period corresponding with the usual term of notice, given opportunities for additional work and</p> <p>(c) during the reference week worked actually less than a threshold relating to working time.</p> <p>Because data according to this definition will be available only from 2001 onwards, a proxy measure is used. This proxy measure consists of involuntary part-time employment and temporary short-time employment (number of hours actually worked in the reference week is less than normal due to economic or technical reasons)." (van Bastelaer 2000: 4)</p>
Sources	Labour Force Survey, see van Bastelaer 2000: 6
Countries covered	EU Member States
Time series available	Annual (quarterly since 1999)
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured
Links to other indicators	Broken down by gender and age; other independent variables available

Name of indicator	C2-3.3 Invisible Underemployment
Definition	Percentage of individuals aged 16 years and over whose main activity is paid employment (at least 15 hours per week), reporting that they believe they have skills or qualifications to do a more demanding job.
Notes	See West and Hind 2000 (chapter 4), indicator SDJ
Sources	ECHP, reported by EUSI
Countries covered	See Table on data sources in section 5.1.1.
Time series available	Annual
eEurope relevance	<ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning • 2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured
Links to other indicators	Different breakdowns possible

Name of indicator	C2-3.4 Re-employment rate
Definition	Percentage of unemployed 12 months prior to the survey who are employed at the date of the survey
Notes	-
Sources	EUSI based on various national and supra-national sources ²⁸
Countries covered	EU + others
Time series available	Most: annual
eEurope relevance	<ul style="list-style-type: none"> 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Ensured
Links to other indicators	-

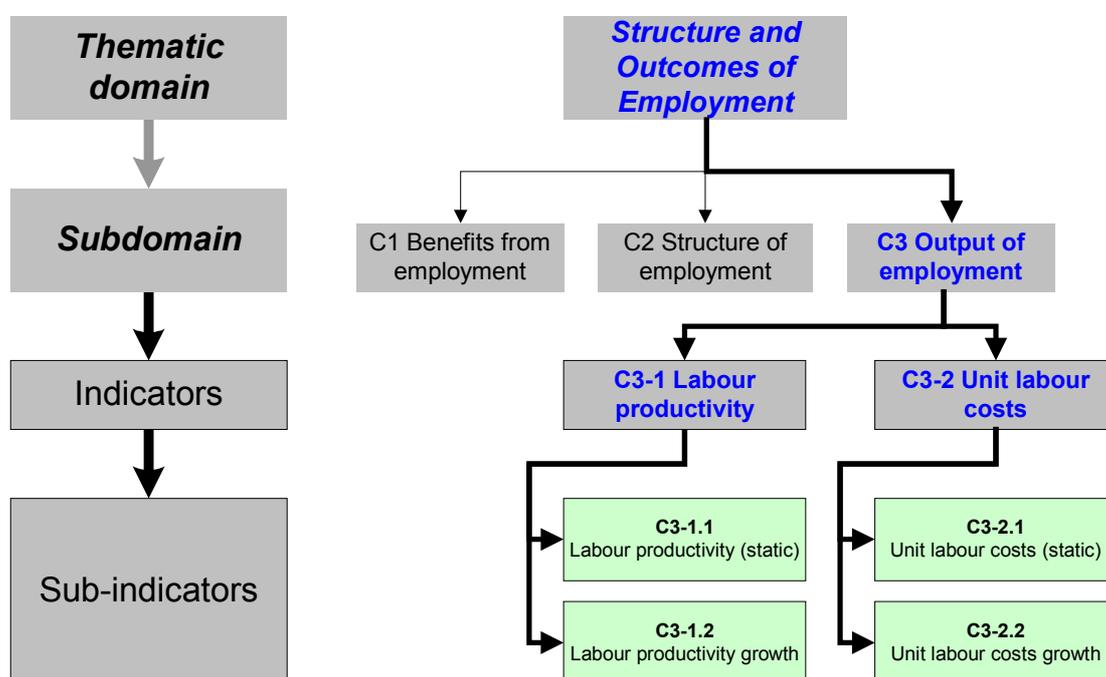
Name of indicator	C2-3.5 Job seekers
Definition	Percentage of currently not employed or marginally employed (less than 10 hours/week) persons aged less than 60 years who are “currently looking for a job”
Notes	Based on GPS
Sources	ISSP, reported by EUSI
Countries covered	EU (some countries missing) + others
Time series available	Not yet (1997 data only), planned for future
eEurope relevance	<ul style="list-style-type: none"> 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Ensured; but unclear whether “job” is defined clear enough.
Links to other indicators	-

Name of indicator	C2-3.6 Labour reserve rate
Definition	<p>All non-participants (persons outside the labour force) between 15 and 64 who want a job (including passive job seekers) and are available.</p> <p>The reference population for the labour reserve is the working age population because changes in the labour reserve rate will depend only on flows in or out the labour reserve (the numerator).</p>
Notes	-
Sources	Labour Force Survey, see van Bastelaer 2000: 6
Countries covered	EU Member States
Time series available	Annual (quarterly since 1999)
eEurope relevance	<ul style="list-style-type: none"> 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Ensured
Links to other indicators	Broken down by gender and age; other independent variables available

²⁸ See http://www.gesis.org/en/social_monitoring/social_indicators/EU_Reporting/pdf_files/emplgd12.pdf

Output of employment

C3 – Output of employment (Thematic domain: structure and outcomes of employment)			
No.	Name of indicator	Availability	Main source
C 3 - 1 Labour productivity			
C3-1.1	Labour productivity (static)	yes	OECD
C3-1.2	Labour productivity growth	yes	ESA95
C 3 - 2 Unit labour costs			
C3-2.1	Unit labour costs (static)	yes	ILO KILM
C3-2.2	Unit labour costs growth	yes	ILO KILM



Name of indicator	C3-1.1 Labour productivity (static)
Definition	Output per unit of labour input. ²⁹ Commonly: GDP of a certain year per hours worked of all employees in that year. Alternatively: GDP per persons employed.
Notes	The OECD (Employment Outlook 2001, p. 225, footnote a) notes that hours actually worked are only intended for comparisons over time, not for comparisons in a given year, because of differences in their sources. For international comparison, the GDP values in national currencies are transformed to a single currency by using purchasing power parities, not exchange rates.
Sources	OECD Science, Technology and Industry (STI) Scoreboard (2001), chapter D, particularly pp. 116 – 119, 122 – 123. ILO, KILM (2001 issue forthcoming).
Countries covered	OECD STI: OECD countries. KILM: Major developed, transition and developing economies.
Time series available	OECD STI (2001) presents data for 1950, 1973 and 1999. KILM (2001) presents data for 1980 and the 1990s; the related Groningen Growth and Development Center provides data going back to 1960 for most non-OECD countries and to 1950 for many OECD countries. ³⁰
eEurope relevance	General: effects of ICT investments on productivity.
Future value	Ensured.
Links to other indicators	OECD STI (2001) data are broken down by industry. KILM (2001) data are broken down by manufacturing, transport and communication, and trade.

²⁹ Cf. ILO Key Indicators of the Labour Market (KILM), No. 17.

³⁰ Ark/Monnikhof (2000), p. 14.

Name of indicator	C3-1.2 Labour productivity growth
Definition	Growth of GDP per hour worked.
Notes	See Joint Employment Report 2000 Statistical Annex: 3 "Measure of the employment-intensity of growth; indicator relating the total volume of output growth with the additional labour demanded to produce it."
Sources	OECD Science, Technology and Industry (STI) Scoreboard (2001), pp. 120 – 121. ILO, KILM (2001 issue forthcoming), as a database. See also ESA 95 ³¹
Countries covered	OECD STI: OECD countries. KILM: Major developed, transition and developing economies. ESA: In all EU Member States; comparable with ILO/OECD sources.
Time series available	OECD STI (2001) presents data for 1950, 1973 and 1999. KILM (2001) presents data for 1980 and the 1990s; the related Groningen Growth and Development Center provides data going back to 1960 for most non-OECD countries and to 1950 for many OECD countries. ³² ESA: Annual.
eEurope relevance	2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured.
Links to other indicators	OECD STI (2001) data are broken down by industry. KILM (2001) data are broken down by manufacturing, transport and communication, and trade.

Name of indicator	C3-2.1 Unit labour costs (static)
Definition	Labour compensation per unit of gross value added produced.
Notes	"Total labour compensation is measured to include not only gross wages and salaries of employees, but also other costs of labour that are paid by employers, including employers' contributions to social security and pension schemes." (KILM)
Source	ILO Key Indicators of the Labour Market (2001).
Countries covered	Major developed, transition and developing economies.
Time series available	KILM (2001) presents data for 1980 and the 1990s; the related Groningen Growth and Development Center provides data going back to 1960 for most non-OECD countries and to 1950 for many OECD countries. ³³
eEurope relevance	<ul style="list-style-type: none"> 2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured.
Links to other indicators	KILM (2001) data are broken down by manufacturing, transport and communication, and trade.

³¹ See http://tilastokeskus.fi/tk/tp_db/astika/english/e44680.html

³² Ark/Monnikhof (2000), p. 14.

³³ Ark/Monnikhof (2000), p. 14.

Name of indicator	C3-2.2 Unit labour cost growth
Definition	Growth of labour compensation per unit of gross value added produced in %.
Notes	Growth of unit labour costs can also be expressed in real terms; labour compensation being adjusted by labour productivity and gross value added by the GDP deflator. Cf. Joint Employment Report 2000, Statistical Annex 3: "Measure of productivity-adjusted labour costs: composite index which combines changes in the total cost of labour, in real terms, and those in labour productivity".
Sources	ILO Key Indicators of the Labour Market (2001); ESA 95.
Countries covered	KILM: Major developed, transition and developing economies. ESA 95: All EU member states.
Time series available	KILM (2001) presents data for 1980 and the 1990s; the related Groningen Growth and Development Center provides data going back to 1960 for most non-OECD countries and to 1950 for many OECD countries. ³⁴
eEurope relevance	<ul style="list-style-type: none"> 2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured.
Links to other indicators	KILM (2001) data are broken down by manufacturing, transport and communication, and trade.

5.2 Indicators currently under development

This chapter lists indicators which have been developed and in most cases also piloted already, but for which no time-series, cross-country data is available yet. This represents a common problem with the large majority of indicators in use already: timeliness of information, and regularity of data gathering. Many of the surveys which use the most innovative indicators are conducted only once in several years, or they are one-off exercises without any prospect of producing time-series data.

Skill indicators under development

Skill acquisition

Name of indicator	A1-2.2* Intensity rate of education and training
Definition	Ratio of number of hours of training to total adult population
Notes	See Drymoussis 2000: 9 (LLL _{2,1}) "Taking into account the variety of training (i.e. courses, seminars, on-the-job training, distance learning, conferences, etc) included in the definition of continuing adult education and training, it would be useful also to measure the intensity of training. With data drawn from the LFS, it is possible to express intensity, in terms of hours of training. Then one can combine the joint effect of participation rates with the average hours spent per trainee on the various forms of training to formulate a synthetic indicator measuring the

³⁴ Ark/Monnikhof (2000), p. 14.

	<p>average hours of training by the entire workforce.</p> <p>However, reservations may be expressed on whether the number of hours in training for all forms of training is a reliable measure of intensity. Further work is needed so as to ensure (Eurostat) data accuracy and consistency in using hours of training as a measure of intensity. The aggregation problem related to different types of learning activities should not be underestimated. ”</p>
Sources	LFS (source for data input; indicator is not in use yet)
Countries covered	EU Member States
Time series available	Annual (quarterly since 1999)
eEurope relevance	<ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning
Future value	Problems with regard to accuracy of definition and data consistency have to be solved.
Links to other indicators	Broken down by by sex, age groups (25-34, 35-44, and 45-64) and working status (employed, unemployed, inactive)

Name of indicator	A1-2.9* Job-related training on the initiative of the employer – Companies offering training
Definition	Share of the companies where the personnel followed courses in the previous weeks/months
Notes	-
Sources	CVTS (but data is not yet published; see Eurostat 2001task). This indicator is called CVT ₁ in Eurostat 2001task.
Countries covered	EU Member States
Time series available	Annual (proposed)
eEurope relevance	<ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning • 2b-2 – increase IT training places and courses and promote gender equality in such courses, using ESF where appropriate • 2b-4 - support greater flexibility in the workplace
Future value	Definition of training measures to be checked for future applicability
Links to other indicators	-

Name of indicator	A1-2.10* Job-related training on the initiative of the employer – Access rate and training intensity
Definition	[number of participants]/[number of personnel]; [hours of training]/[hours worked] (averages or overall)
Notes	This indicator gives the share of the trained personnel.
Sources	CVTS (but data is not yet published; see Eurostat 2001task). This indicator is called CVT ₂ and CVT ₆ in Eurostat 2001task.
Countries covered	EU Member States
Time series available	Annual (proposed)
eEurope relevance	<ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning • 2b-2 – increase IT training places and courses and promote gender equality in such courses, using ESF where appropriate • 2b-4 - support greater flexibility in the workplace
Future value	Definition of training measures to be checked for future applicability
Links to other indicators	-

Name of indicator	A1-2.11* Time spent of continual vocational education and training within working hours
Definition	<p>"How much time did you dedicate to the following learning activities?"</p> <p>(a) Attending courses, lectures, seminars, conferences, etc.</p> <p>(b) Attending workshops, (scientific) exhibitions, etc.</p> <p>(c) Learning within self-organised groups (together with colleagues, friends etc.)</p> <p>(d) Self-learning by making use of different media, such as</p> <ul style="list-style-type: none"> • Print Media (books, professional magazines, other printed learning material) • Computer (offline, e.g. CD-ROM based learning software) • Internet (e.g. Internet Based Training, investigations online) • Educational broadcasting • Other media or self-learning without media"
Notes	See Eurostat 2000task: Annex 2
Sources	German Time Use Survey 2001/02
Countries covered	Germany, proposed for European Time Use Survey
Time series available	1 st round of data collection ca. 4/2001 – 3/2001
eEurope relevance	<ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning • 2b-4 - support greater flexibility in the workplace
Future value	Inclusion into EU-TUS not likely to happen in the near future
Links to other indicators	-

Name of indicator	A1-2.13* Impact of enterprise-based training
Definition	Quantifiable effects of training on e.g. enterprise performance, earnings and job tenure.
Notes	"Gives some indication, but not in a standardised form, of the extent to which firms and employees gain identifiable benefits from training" (OECD 1998hci: 74)
Sources	Only data from dispersed and non-standardised sources yet.
Countries covered	None yet
Time series available	None yet
eEurope relevance	<ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning • 2b-4 - support greater flexibility in the workplace
Future value	Standardisation necessary.
Links to other indicators	-

Name of indicator	A1-3.1* Rate of student access to computers
Definition	Number of students per computer by education level (primary, secondary)
Notes	<p>see Joint Employment Report 2000 Statistical Annex: 7 and Drymoussis 2000: 11</p> <p>“Data availability for calculating indicators in this field is a major problem. For the time being, there is no Community source concerning the use of ICT in initial education and training. Even if common indicators are kept to a minimum, national data seem to be insufficient to allow for appropriate coverage. Some indicators proposed in the Communication on Strategies for Jobs in Information Society would be useful in developing the appropriate data for monitoring developments in the future. In several Member States, specific surveys would be needed. Eurostat has already asked the National Statistical Services to provide information with quantitative data in this field. There is a clear need for improving the statistical base in this area and for the development of new data sources.”</p> <p>This indicator is called LLL₄ in the Statistical Annex to Joint Employment Report 2000</p>
Sources	“OECD or national data” (see Joint Employment Report 2000 Statistical Annex: 7)
Countries covered	EU Member States
Time series available	Not in use yet
eEurope relevance	<ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning
Future value	this is a readiness indicator; intensity and impact indicators will become more pressing in the future
Links to other indicators	-

Name of indicator	A1-3.7* Staff access to ICTs
Definition	Share of establishments that give the majority of their office workers access to external e-mail, the Internet, an Intranet, video conferencing.
Notes	-
Sources	ECaTT DMS (establishment survey) 1999
Countries covered	EU Member States excl. A, B, EL, LUX, P
Time series available	One-off (regular survey in preparation)
eEurope relevance	<ul style="list-style-type: none"> • 2b-1 - give the labour force the chance to become digitally literate through life long learning • 2b-4 - support greater flexibility in the workplace
Future value	List of ICTs to be adapted to new developments
Links to other indicators	<p>Data is also available from the EOS Telecommunication Survey (see EU Commission 2000sit: 38), but including only small companies.</p> <p>“How many employees have Internet access?”</p> <p>“What is the proportion of staff, having access to the Internet?”</p>

Name of indicator	A1-3.8* Workplaces equipped with PC
Definition	Percentage of workplaces equipped with PC
Notes	Derived from survey (DMS); see http://europa.eu.int/comm/enterprise/ict/statistics/surveys-indicators.htm
Sources	Use of ICT in Nordic enterprises 1999/2000
Countries covered	DK, FIN, N, S
Time series available	n.a.
eEurope relevance	<ul style="list-style-type: none"> 2b-1 – give the labour force the chance to become digitally literate through life long learning
Future value	Ensured as long as definition is clear and adequate
Links to other indicators	Compare ECaTT and Eurobarometer 54.0. Data is also available from the EOS Telecommunication Survey (see EU Commission 2000sit), but including only small companies.

Name of indicator	A1-3.9* Workplaces linked to the Internet
Definition	Percentage of workplaces linked to the Internet
Notes	Derived from survey (DMS); see http://europa.eu.int/comm/enterprise/ict/statistics/surveys-indicators.htm
Sources	Use of ICT in Nordic enterprises 1999/2000 ???
Countries covered	DK, FIN, N, S
Time series available	n.a.
eEurope relevance	<ul style="list-style-type: none"> 2b-1 – give the labour force the chance to become digitally literate through life long learning
Future value	Ensured as long as definition is clear and adequate
Links to other indicators	Compare ECaTT and Eurobarometer 54.0; Data is also available from the EOS Telecommunication Survey (see EU Commission 2000sit), but including only small companies.

Name of indicator	A1-3.10* PC access at home
Definition	Share of the population (14+) who at home have access to a (a) PC/Mac (b) PC/Mac that is connected online to somewhere else, e.g. the Internet.
Notes	Data derived from survey (GPS)
Sources	ECaTT 1999
Countries covered	1999: EU except A, B, GR, LUX, P
Time series available	1999; 2002 (planned)
eEurope relevance	<ul style="list-style-type: none"> 2b-1 – give the labour force the chance to become digitally literate through life long learning
Future value	Spread of computers that are not work stations (e.g. PDAs) and other appliances with Internet access has to be acknowledged when using the indicator in future surveys.
Links to other indicators	Independent variables available for cross-tabulation: gender, age, household characteristics, types of employment, etc.

Name of indicator	A1-3.11* PC user experience – use of PC anywhere
Definition	Share of the population (14+) who have used a PC or other computer in the month prior to the survey.
Notes	Data derived from survey (GPS)
Sources	ECaTT 1999
Countries covered	1999: EU except A, B, GR, LUX, P
Time series available	1999; 2002 (planned)
eEurope relevance	<ul style="list-style-type: none"> • 2b-1 – give the labour force the chance to become digitally literate through life long learning
Future value	Wording has to be adapted to account for new developments (spread of computers that are not work stations (e.g. PDAs) and other appliances with functional similarity to a computer).
Links to other indicators	Independent variables available for cross-tabulation: gender, age, household characteristics, types of employment, etc.

Name of indicator	A1-3.12* E-mail user experience
Definition	Share of the population (14+) who have send or received e-mails either at place of work, at home, or elsewhere, in the month prior to the survey. Purpose of using e-mail (for business, for private purposes, for both, for neither).
Notes	Data derived from survey (GPS)
Sources	ECaTT 1999
Countries covered	1999: EU except A, B, GR, LUX, P
Time series available	1999; 2002 (planned)
eEurope relevance	<ul style="list-style-type: none"> • 2b-1 – give the labour force the chance to become digitally literate through life long learning
Future value	It has to be checked if e-mail applications are always identified as such by users.
Links to other indicators	Independent variables available for cross-tabulation: gender, age, household characteristics, types of employment, etc.

Skill provision

Name of indicator	A2-2.4* Percentage of workforce with (at least) basic IT training
Definition	Percentage of labour force ³⁵ that has received computer training (not specified in more detail)
Notes	See List of eEurope Benchmarking indicators (European Commission, 2000list): Indicator 11
Sources	Suggested: "Sample survey/ Eurobarometer"
Countries covered	EU Member States
Time series available	n.a.
eEurope relevance	<ul style="list-style-type: none"> • 2b-1 – give the labour force the chance to become digitally literate through life long learning • 2b-2 - increase IT training places and courses and promote gender equality in such courses, using ESF where appropriate • 2b-6 – set up public Internet access points in public places and establish multimedia telecentres in all communities providing access to training and e-work facilities
Future value	Definition has to be checked for updatability.
Links to other indicators	-

Skill requirements

Name of indicator	A3-1.2* Vacancies unfilled: IT professions
Definition	Number of vacancies for IT professionals unfilled at time of the survey. This includes IT professionals in the IT sector itself as well as in other sectors of the economy.
Notes	Data derived from company survey.
Sources	IHK Forum Rhein/Main. This source is quoted here as an example of the national or regional data that is available for this indicator (see Schmid et al. 2000).
Countries covered	Available only for German region Rhein/Main
Time series available	No
eEurope relevance	<ul style="list-style-type: none"> • 2b-2 - increase IT training places and courses and promote gender equality in such courses, using ESF where appropriate
Future value	If data is to be gathered across countries, comparability and uniformity of definitions used has to be taken into consideration.
Links to other indicators	-

*Indicators for work organisation under development***Work content/applied skills**

Name of indicator	B1-1.2* Use of IT working tools
Definition	Use of IT working tools at the workplace:

³⁵ Labour force incl. unemployed

	<ul style="list-style-type: none"> • mobile phone • fax machine • PC/terminal • PC/terminal in LAN or connected to mainframe • PC/terminal with access to external networks such as the Internet • mobile computer • scanner, plotter • computer-controlled machines • ISDN phone • computer cash register • and others <p>Differentiation between main working tool and occasional working tool.</p>
Notes	-
Sources	BIBB/IAB Qualification and Employment Situation Survey
Countries covered	D only
Time series available	1979, 1985/86, 1991/92, 1998/99
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	List of working tools has to be adapted and extended continuously. This has happened already since the survey was initiated.
Links to other indicators	-

Name of indicator	B1-2.2* Collaboration
Definition	Share of persons in work who have regular external contacts (exchange information and communicate with people outside the organisation – customers or clients, suppliers, other business partners)
Notes	Derived from survey (GPS)
Sources	ECaTT 1999
Countries covered	EU Member States excl. A, B, EL, LUX, P
Time series available	None yet
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace
Future value	Ensured
Links to other indicators	can be disaggregated by gender, social status, etc.

Name of indicator	B1-2.3* Use of group work
Definition	Share of organisations using group work (3 categories: weak group delegation; medium group delegation and team-based); alternatively: share of workplaces that are involved in group delegation. Compound indicator consisting of: <ul style="list-style-type: none"> percentage of employees working in groups the extent to which the groups are entitled to take decisions on their own (the number of 'decision rights', see B1-4.3*). Calculation arithmetics for clustering unknown.
Notes	Derived from survey (DMS)
Sources	EPOC 1996
Countries covered	See Table on data sources in section 5.1.1.
Time series available	n.a.
eEurope relevance	<ul style="list-style-type: none"> 2b-4 - support greater flexibility in the workplace
Future value	Ensured
Links to other indicators	B1-9

Name of indicator	B1-2.5* Effects of ICTs on the way people work
Definition	<p>"Has using a computer, the e-mail/the Internet changed the way you work, or not? (IF "YES") In what way?"</p> <ul style="list-style-type: none"> You have more contacts with people outside your company You have less contacts with people outside your company You work more closely with your colleagues You work less closely with your colleagues You use more skills in your job You use less skills in your job You have more responsibilities in your job You have less responsibilities in your job You carry out more tasks in one day You carry out less tasks in one day It is easier to combine work and private life It is more difficult to combine work and private life You made savings, notably on mail Other (SPONTANEOUS)"
Notes	Data derived from survey (GPS)
Sources	Eurobarometer 54.0 (see ESDIS Report)
Countries covered	EU Member States
Time series available	n.a.
eEurope relevance	<ul style="list-style-type: none"> 2b-4 – support greater flexibility in the workplace 2b-x – general indicator for topic 'Working in the knowledge based economy'
Future value	List of reply options is not comprehensive and needs to be adapted to changes in public opinion and scientific research on impacts of ICTs on work
Links to other indicators	Broken down by sex

Name of indicator	B1-3.1* Management responsibility
Definition	Share of persons in work who have managerial responsibility or supervise work done by other people
Notes	Derived from survey (GPS)
Sources	ECaTT 1999
Countries covered	EU Member States excl. A, B, EL, LUX, P
Time series available	None yet
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace
Future value	Ensured
Links to other indicators	Data can be disaggregated by gender, social status, etc.

Name of indicator	B1-4.3* Decision making rights
Definition	Share of organisations in which groups have decision making rights over: <ul style="list-style-type: none"> • allocation of work • scheduling of work • quality of work • time keeping • attendance and absence control • job rotation • coordinating work with other groups • improving work processes
Notes	Derived from survey (DMS)
Sources	EPOC 1996
Countries covered	See Table on data sources in section 5.1.1.
Time series available	n.a.
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace
Future value	Ensured
Links to other indicators	B1-8

Name of indicator	B1-4.4* Direct participation
Definition	Share of workplaces with direct participation in: <ul style="list-style-type: none"> • allocation of work • scheduling of work • quality of work • time keeping • attendance and absence control • job rotation • coordinating work with other groups • improving work processes
Notes	Derived from survey (DMS)
Sources	EPOC 1996
Countries covered	See Table on data sources in section 5.1.1.
Time series available	n.a.
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace
Future value	Ensured
Links to other indicators	B1-8

Time of Work

Name of indicator	B2-1.2* Working time preferences
Definition	<p>"In total, how many hours per week do you work at present - on average? [...] Provided that you (and your partner) could make a free choice so far as working hours are concerned and taking into account the need to earn your living: How many hours per week would YOU prefer to work at present?"</p> <p>and other related questions.</p>
Notes	Derived from survey (GPS)
Sources	Eurofound Work Options of the Future Survey
Countries covered	EU Member States
Time series available	None yet
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace
Future value	Ensured
Links to other indicators	Data on independent variables for cross-tabulation available. Similar indicators available based on data from ECATT (1999), see Korte and Gareis (2001).

Name of indicator	B2-3* Interest in sabbatical
Definition	<p>“Apart from your regular holidays - do you think that from time to time it would be useful to have a longer break of several weeks or months from your paid work in order to do other things? Afterwards you would have the right to return to your job. [...] Do you think that in principle it would be possible to take such a break from your present job? [...] Provided that your employer would offer you such a break, would you make use of it if you were to receive NO PAY for this period, i.e. it would be unpaid leave? [...] And if your employer or another institution would pay you HALF OF YOUR PRESENT NET INCOME during such a break – would you then make use of it?”</p> <p>and other related questions</p>
Notes	Derived from survey (GPS)
Sources	Eurofound Work Options of the Future Survey
Countries covered	EU Member States
Time series available	None yet.
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace
Future value	Ensured, but actual use should also be included in questionnaire
Links to other indicators	Data on independent variables for cross-tabulation available

Place of Work

Name of indicator	B3-1.1* Telework
Definition	<p>Percentage of teleworkers of all employed persons.</p> <p>“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” (+ distinction between regularly and occasionally)</p>
Notes	<p>Data derived from survey (GPS)</p> <p>“The indicator may be revisited to include wider forms of telework” (European Commission, 2000list: 8) Indicator 13</p>
Sources	Eurobarometer 54.0 (see ESDIS Report)
Countries covered	EU Member States
Time series available	To be researched.
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 – support greater flexibility in the workplace
Future value	<p>Indicator needs to be adapted in time to account for differences in the understanding of ‘telework’ as a concept;</p> <p>‘regularly’ and ‘occasionally’ and ‘normal places of activity’ should be specified in future surveys. The indicator is only useful as long as ‘normal places of activity’ can still be properly distinguished from other work locations such as the home.</p>
Links to other indicators	Broken down by gender, category of occupation, users and non-users of computers, etc.

Name of indicator	B3-1.4* Technical telework potential
Definition	Share of persons in paid work who <ul style="list-style-type: none"> • on average spend more than 6 hours a week doing any kind of office work; <i>and</i> • on average spend more or less than 6 hours a week doing work which could be done at a desk – paperwork, writing, reading, working with pictures, or using the telephone; <i>and</i> • on average spend more or less than six hours a week doing work on a computer or using a computer-controlled machine.
Notes	Data derived from survey (GPS)
Sources	ECaTT 1999
Countries covered	1999: EU except A, B, GR, LUX, P
Time series available	1999; 2002 (planned)
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace
Future value	The results of piloting the indicator did show only a very small correlation between technical potential for and current penetration of telework. The value of this indicator may, therefore, be limited.
Links to other indicators	Independent variables available for cross-tabulation: gender, age, household characteristics, types of employment, etc.

Name of indicator	B3-1.5* Perceived barriers to telework implementation/ extension
Definition	Share of establishments that consider each of the following possible barriers as very important or important as a barrier to telework: <ul style="list-style-type: none"> • insufficient knowledge among managers of how to plan and organise telework • the expense of computing equipment and telecommunications services • reasons relating to productivity or work quality • the difficulties of managing and supervising teleworkers • problems organising communication with teleworkers • health, safety, insurance or legal problems • data security problems • lack of any pressure to change current practice • employees would not want to telework • resistance from trade unions
Notes	Size-weighted sampling means that results such as "50% of all establishments" are properly interpreted to mean "establishments accounting for 50% of all employees".
Sources	ECaTT
Countries covered	EU Member States excl. A, B, EL, LUX, P
Time series available	1999, 2002 (planned)
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 – support greater flexibility in the workplace
Future value	Ensured
Links to other indicators	-

Name of indicator	B3-1.6* Telework Framework Agreements
Definition	<p>Percentage of the workforce covered by telework framework agreements</p> <p>Telework definition: "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" (+ distinction between regularly and occasionally)</p>
Notes	See European Commission (2000list: 8) Indicator 13
Sources	Not decided yet (suggested: Eurobarometer)
Countries covered	EU Member States
Time series available	Not yet; suggested for annual survey
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 – support greater flexibility in the workplace
Future value	<p>Definition of "framework agreements" needs to be devised to allow for changes to the content of such agreements. country-wide collective agreements (between social partners?); collective agreements at company level?</p>
Links to other indicators	-

Name of indicator	B3-1.10* Intensity of telework from home
Definition	<p>Share of home-based teleworkers who spend about one day, about 2 days, about 3-4 days or almost all of their time working from home.</p> <p>Home-based teleworkers are those who</p> <ul style="list-style-type: none"> • work from home (instead of commuting to a central workplace) for at least one full working day per week; • use a personal computer in the course of their work; • use telecommunications links (phone/ fax/ e-mail) to communicate with their colleagues/ supervisor during work at home; • are either in salaried employment or self-employed in which case their main working place is on the contractor's premises. <p>Supplementary teleworkers excluded.</p>
Notes	Data derived from survey (GPS)
Sources	ECaTT 1999
Countries covered	1999: EU except A, B, GR, LUX, P
Time series available	1999; 2002 (planned)
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace
Future value	<p>Indicator needs to be adapted in time to account for differences in the understanding of 'telework' as a concept; alternatively, use indicator that measures only aspects of the concept of telework. As a variable that is applicable over longer periods of time, indicators that measure telework intensity may be preferable.</p>
Links to other indicators	Independent variables available for cross-tabulation: gender, age, household characteristics, types of employment, etc.

Name of indicator	B3-1.13* Self-employed teleworkers in SOHOs
Definition	Self-employed teleworkers in SOHOs are those <ul style="list-style-type: none"> • who are self-employed or effectively self-employed (e.g. persons employed by own company or employed by organisation they have considerable managing power over); • whose main place of work is at home or they claim not to have a main place of work; • who use advanced ICT for communicating with clients and/or (other) business partners.
Notes	Data derived from survey (GPS)
Sources	ECaTT 1999
Countries covered	1999: EU except A, B, GR, LUX, P
Time series available	1999; 2002 (planned)
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace
Future value	Indicator needs to be adapted in time to account for differences in the understanding of 'telework' as a concept; alternatively, use indicator that measures only aspects of the concept of telework.
Links to other indicators	Independent variables available for cross-tabulation: gender, age, household characteristics, types of employment, etc.

Name of indicator	B3-1.14* Interest in centre-based telework (demand side)
Definition	Share of all persons in paid work or looking for paid work who are interested in centre-based telework. Centre-based telework is when teleworkers do not work at home, but in an office provided near their home, a so-called telecottage or telecentre. They do all their work there, in the company of teleworkers from other departments or companies.
Notes	Data derived from survey (GPS)
Sources	ECaTT 1999
Countries covered	1999: EU except A, B, GR, LUX, P
Time series available	1999; 2002 (planned)
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace
Future value	Indicator needs to be adapted in time to account for differences in the understanding of 'telework' as a concept; alternatively, use indicator that measures only aspects of the concept of telework. As a variable that is applicable over longer periods of time, indicators that measure telework intensity may be preferable.
Links to other indicators	Independent variables available for cross-tabulation: gender, age, household characteristics, types of employment, etc.

Name of indicator	B3-1.15* Interest in centre-based telework (supply side)
Definition	Share of establishments that are interested in telework and that have concrete plans to do so in the next 1-2 years; “Establishments with teleworkers are those that have staff who <ul style="list-style-type: none"> • work at a distance from the premises of their employer; • use computers in their work; • transmit work results using telecommunications. [...] <p>There is also a kind of telework where the employees do not work at home, but in an office provided near their home, a so-called telecottage or telecentre. [...] Would you be interested or not interested in this type of telework?”</p>
Notes	Size-weighted sampling means that results such as “50% of all establishments” are properly interpreted to mean “establishments accounting for 50% of all employees”.
Sources	ECaTT
Countries covered	EU Member States excl. A, B, EL, LUX, P
Time series available	1999, 2002 (planned)
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 – support greater flexibility in the workplace
Future value	Indicator needs to be adapted in time to account for differences in the understanding of ‘telework’ as a concept; with the further spread of remote access technology, this indicator might become unworkable. ECaTT 1999 gives no information on companies that want to reduce their number of teleworkers/abolish telework.
Links to other indicators	Data on practice of centre-based telework exists (e.g. Freudenreich et al. 1997; see also indicator B3-2.3*), but measurability depends on clear-cut definitions whose availability is debatable (see Gareis and Korte 1999).

Name of indicator	B3-1.16* Mobile computing
Definition	Users of mobile computing are those who <ul style="list-style-type: none"> • work at least 10 hours per week away from home and from main place of work, e.g. on business trips, in the field, travelling or on customer’s premises; • use a notebook or other computing device when doing so.
Notes	Data derived from survey (GPS)
Sources	ECaTT 1999
Countries covered	1999: EU except A, B, GR, LUX, P
Time series available	1999; 2002 (planned)
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace
Future value	Threshold may have to be revised. As a variable that is applicable over longer periods of time, indicators that measure mobile computing <i>intensity</i> may be preferable.
Links to other indicators	Independent variables available for cross-tabulation: gender, age, household characteristics, types of employment, etc.;

Name of indicator	B3-1.17* Mobile telework
Definition	Mobile teleworkers are those who <ul style="list-style-type: none"> • work at least 10 hours per week away from home and from main place of work, e.g. on business trips, in the field, travelling or on customer's premises; • use online computer connections when doing so.
Notes	Data derived from survey (GPS)
Sources	ECaTT 1999
Countries covered	1999: EU except A, B, GR, LUX, P
Time series available	1999; 2002 (planned)
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace
Future value	Threshold may have to be revised. As a variable that is applicable over longer periods of time, indicators that measure mobile telework <i>intensity</i> may be preferable.
Links to other indicators	Independent variables available for cross-tabulation: gender, age, household characteristics, types of employment, etc.; Other indicators based on this one and B3-1 (see Gareis 2000), e.g. <ul style="list-style-type: none"> • mobile teleworkers in % of all regular teleworkers The U.K. Labour Force Survey uses a different approach to measure mobile teleworkers (see Office for National Statistics 2001): "(In your main job) do you work mainly... <ul style="list-style-type: none"> • in your own home • in the same grounds or buildings as your home • in different places using home as a base • or somewhere quite separate from home? "(In your main job), have you spent at least one FULL day in the seven days ending last Sunday working... <ul style="list-style-type: none"> • in your own home • in the same grounds or buildings as your home • in different places using home as a base "Would it be possible to work at home (or use home as a base) without using both a telephone and a computer? <ul style="list-style-type: none"> • yes • no

Name of indicator	B3-1.18* Establishments practising mobile work
Definition	Share of establishments practising mobile work. "Establishments with mobile workers are those that have staff who work away from the company's premises, i.e. in the field or on customer's premises for more than 10 hours a week."
Notes	Size-weighted sampling means that results such as "50% of all establishments" are properly interpreted to mean "establishments accounting for 50% of all employees".
Sources	ECaTT
Countries covered	EU Member States excl. A, B, EL, LUX, P
Time series available	1999, 2002 (planned)
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 – support greater flexibility in the workplace
Future value	Threshold may have to be revised. As a variable that is applicable over longer periods of time, indicators that measure mobile telework <i>intensity</i> may be preferable.
Links to other indicators	Compare indicator used in DTI (2000) "Businesses that offer remote access to their employees" (Q: "Can your employees access your computer system remotely when they're away from the office?")

Name of indicator	B3-1.19* Establishments practising mobile telework
Definition	Share of establishments practising mobile telework. " Establishments with mobile workers are those that <ul style="list-style-type: none"> • have staff who work away from the company's premises, i.e. in the field or on customer's premises for more than 10 hours a week. Establishments with mobile teleworkers are those who <ul style="list-style-type: none"> • have equipped some of their mobile workers to have online access to company in-formation systems form outside of the company's premises."
Notes	Size-weighted sampling means that results such as "50% of all establishments" are properly interpreted to mean "establishments accounting for 50% of all employees".
Sources	ECaTT
Countries covered	EU Member States excl. A, B, EL, LUX, P
Time series available	1999, 2002 (planned)
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 – support greater flexibility in the workplace
Future value	Threshold may have to be revised. As a variable that is applicable over longer periods of time, indicators that measure mobile telework <i>intensity</i> may be preferable.
Links to other indicators	Other indicators based on this one (see Gareis 2000), e.g. <ul style="list-style-type: none"> • establishments with mobile teleworkers in % of establishments with mobile workers; • establishments intending to increase their number of teleworkers in the next two years.

Name of indicator	B3-2.1* Tele-cooperation (intra-company)
Definition	Share of workers <ul style="list-style-type: none"> • who collaborate with externals (not located on the same site) at all, using e-mail, video-conferencing, the transfer of computer files or share joint databases (e.g. Intranet) – occasional tele-cooperation; • who use e-mail for collaboration with others not located on the same site daily, or use video-conferencing or file sharing at least once a week – regular tele-cooperation.
Notes	Data derived from survey (GPS)
Sources	ECaTT 1999
Countries covered	1999: EU except A, B, GR, LUX, P
Time series available	1999; 2002 (planned)
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace
Future value	Ensured, but workers may increasingly be not aware of the place where the working partner is located, and of the technology used for communication.
Links to other indicators	Can be broken down by ICT used for collaboration (e-mail, fax, video conference, file transfer); independent variables available for cross-tabulation: gender, age, household characteristics, types of employment, etc.

Name of indicator	B3-2.1 Tele-cooperation (inter-company)
Definition	Share of workers <ul style="list-style-type: none"> • who collaborate with same-company workers not located on the same site (but in other establishments) at all, using e-mail, video-conferencing, the transfer of computer files or share joint databases (e.g. Intranet) – occasional tele-cooperation; • who use e-mail for collaboration with others not located on the same site daily, or use video-conferencing or file sharing at least once a week – regular tele-cooperation.
Notes	Data derived from survey (GPS)
Sources	ECaTT 1999
Countries covered	1999: EU except A, B, GR, LUX, P
Time series available	1999; 2002 (planned)
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace
Future value	Ensured, but workers may increasingly be not aware of the place where the working partner is located, and of the technology used for communication.
Links to other indicators	Can be broken down by ICT used for collaboration (e-mail, fax, video conference, file transfer); independent variables available for cross-tabulation: gender, age, household characteristics, types of employment, etc.

Name of indicator	B3-2.3* "eWork" within the organisation (EMERGENCE definition)
Definition	<p>"eWork" is "any activity that involves the processing of information and its delivery via a telecommunications link that is carried out away from the main premises of an organisation. This might be carried out in-house (i.e. by an employee of the organisation) or outsourced (i.e. by a subcontractor). It may also be carried out either away from traditional office-type premises by an individual working in isolation (e.g. at home or from multiple locations) or in office-type premises by a group of workers working together in a shared space."³⁶ (compare Huws 2001)</p> <p>Types of "eWork" within the organisation include (differentiated data available):</p> <ul style="list-style-type: none"> • employees working in remote back-offices • multi-locational teleworking employees • home-based teleworking employees • remote call centre in company-owned back office (outside own region) • employees working in telecentres, telecottages or other office premises owned by third parties • call centre employees in telecottage or telecentre
Notes	Data derived from survey (DMS)
Sources	EMERGENCE Employer Survey (see Huws & O'Regan 2001)
Countries covered	EU Member States plus HU, PL, CZ
Time series available	2001
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace
Future value	"eWork" definition is very vulnerable to changes in definitions, technological developments, etc.
Links to other indicators	Breakdown by function available.

³⁶ Source: <http://www.emergence.nu/news/employer.html>

Name of indicator	B3-2.4* Outsourced "eWork" (EMERGENCE definition)
Definition	<p>"eWork" is "any activity that involves the processing of information and its delivery via a telecommunications link that is carried out away from the main premises of an organisation. This might be carried out in-house (i.e. by an employee of the organisation) or outsourced (i.e. by a subcontractor). It may also be carried out either away from traditional office-type premises by an individual working in isolation (e.g. at home or from multiple locations) or in office-type premises by a group of workers working together in a shared space."³⁷ (compare Huws 2001)</p> <p>Types of outsourced "eWork" include (diferentiated data available):</p> <ul style="list-style-type: none"> • e-lancers • e-outsourcing within own region • e-outsourcing to other region in own country • e-outsourcing to companies in other countries • outsourced call-centre • outsourced call-centre with telecoms link
Notes	Data derived from survey (DMS)
Sources	EMERGENCE Employer Survey (see Huws & O'Regan 2001)
Countries covered	EU Member States plus HU, PL, CZ
Time series available	2001
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace
Future value	"eWork" definition is very vulnerable to changes in definitions, technological developments, etc.
Links to other indicators	Indicator encompassing all "eWork" (B3-15 and B3-16) available. Breakdown by function available.

³⁷ Source: <http://www.emergence.nu/news/employer.html>

Name of indicator	B3-2.5* Supply of outsourced "eWork" services (EMERGENCE definition)
Definition	<p>"eWork" is "any activity that involves the processing of information and its delivery via a telecommunications link that is carried out away from the main premises of an organisation. This might be carried out in-house (i.e. by an employee of the organisation) or outsourced (i.e. by a subcontractor). It may also be carried out either away from traditional office-type premises by an individual working in isolation (e.g. at home or from multiple locations) or in office-type premises by a group of workers working together in a shared space."³⁸ (compare Huws 2001)</p> <p>Types of supplied outsourced "eWork" services ("eServices") include (differentiated data available):</p> <ul style="list-style-type: none"> • customer services • sales • DP/typing • software development & support • accounting and finance • management, training and human resources • design, editorial and creative
Notes	Data derived from survey (DMS)
Sources	EMERGENCE Employer Survey (see Huws & O'Regan 2001)
Countries covered	EU Member States plus HU, PL, CZ
Time series available	2001
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace
Future value	"eWork" definition is very vulnerable to changes in definitions, technological developments, etc.
Links to other indicators	-

³⁸ Source: <http://www.emergence.nu/news/employer.html>

Work contract

Name of indicator	B4-2.4* Attitude towards self-employment
Definition	Share of population 15+ who would prefer to be self-employed; “Suppose you could choose between different kinds of jobs. Which one would you prefer : employee or self-employed/independent”
Notes	Derived from survey (GPS)
Sources	Eurobarometer Flash n° 83 “Entrepreneurship”
Countries covered	EU Member States + USA
Time series available	One-off
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Ensured as long there is a clear distinction between self-employment and dependent employment status
Links to other indicators	<p>Broken down by regular and temporary contract.</p> <p>A similar indicator is used in the Eurofound Work Options of the Future Survey:</p> <p>Preferred employment status (dependent employee; self-employed; no preference) today and in five years (in percentage of presently employed persons and persons who intend/wish to take up work within the next five years).</p> <p>“What would you think of being self-employed [working as an employee] at present? Would you prefer this to working as an employee [being self-employed]? Would you accept this if there was no other choice? Or would self-employment be unacceptable for you?”</p> <p>Data can be broken down by regular and temporary contracts.</p>

Name of indicator	B4-2.5* Attitude towards entrepreneurship
Definition	Share of population 15+ who agree with a number of statements about entrepreneurship; “Do you strongly agree, agree, disagree or strongly disagree with the following statements? <ul style="list-style-type: none"> • People who started their own business and failed should be given a second chance. • It is difficult to start one's own business due to a lack of available financial support. • It is difficult to obtain sufficient information on how to start a business. • The economic climate is not favourable for people who want to start their own business. • It is difficult to start one's own business due to the complex administrative procedures. • One should not start a business if there is a risk it might fail.”
Notes	Derived from survey (GPS)
Sources	Eurobarometer Flash n° 83 “Entrepreneurship”
Countries covered	EU Member States + USA
Time series available	One-off
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Ensured
Links to other indicators	Broken down by regular and temporary contracts

Name of indicator	B4-3.3* Job churning
Definition	Number of jobs created plus number of jobs destroyed, as a percentage of all jobs.
Notes	“Steady growth in employment masks the constant churning of job creation and destruction, as less innovative and efficient companies downsize or go out of business and more innovative and efficient companies grow and take their place. While such turbulence increases the economic risk faced by workers, companies, and even regions, it is also a major driver of economic innovation and growth.” (Atkinson et al. 1999: 22)
Sources	Progressive Policy Institute based on Dun & Bradstreet (see Atkinson et al. 1999) and on U.S. Census Bureau (Atkinson and Court 1998).
Countries covered	USA
Time series available	n.a.
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace • 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Unknown because conditions for access to data are not known
Links to other indicators	-

Name of indicator	B4-3.4* Use of the Internet for job-seeking
Definition	EUROBAROMETER 54.0: Do you use a computer? IF YES What do you use a computer for? Reply option: "... looking for a job on the Internet"
Notes	Derived from survey (GPS)
Sources	Eurobarometer 53.0, 54.0 (see ESDIS)
Countries covered	EU Member States
Time series available	To be researched
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace
Future value	This is a readiness indicator; intensity and impact indicators will become more pressing in the future
Links to other indicators	Independent variables for cross-tabulation available. Comparable data also available from ECaTT 1999 (GPS).

Name of indicator	B4-5.1* Workers with performance-related pay
Definition	Share of workers whose remuneration includes: <ul style="list-style-type: none"> • Piece rate or productivity payments • Payments based on the overall performance of the company (profit sharing scheme) where you work • Payments based on the overall performance of a group • Income from shares in the company you work for.
Notes	For presentation of results, see Paoli and Merllié 2001. Data only given for each of the remuneration methods, no aggregation available.
Sources	ESWCs
Countries covered	EU Member States
Time series available	1990, 1995, 2000
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace
Future value	Questions might have to be adapted to include new, innovative types of performance-related pay in the future.
Links to other indicators	<p>There is also an indicator available for companies offering performance-related pay, from the Cranfield HRM survey (see Brewster and Hegewisch 1994):</p> <p>Do you offer any of the following incentive schemes?</p> <ul style="list-style-type: none"> • Employee share options • Profit sharing • Group bonus schemes • Individual bonus/commission • Merit/performance related pay <p>Differentiated according to managerial, professional technical, clerical and manual staff.</p>

*Indicators for structure and outcomes of employment in development***Benefits from employment**

Name of indicator	C1-2.4* Effects of telework in personal life
Definition	Closed question: "In what ways does telework affect you personally?"; reply options: <ul style="list-style-type: none"> • You are more productive in your job • You are less productive in your job • It increases the sense of autonomy in your job • It decreases the sense of autonomy in your job • You have more social interaction • You have less social interaction • It is easier to combine work and private life • It is more difficult to combine work and private life • It reduces the need to commute • It increases the need to commute • Other (SPONTANEOUS)"
Notes	Data derived from survey (GPS)
Sources	Eurobarometer 54.0 (see ESDIS Report)
Countries covered	EU Member States
Time series available	To be researched
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 – support greater flexibility in the workplace
Future value	List of reply options is not comprehensive and needs to be adapted to changes in the public opinion of advantages/disadvantages of telework
Links to other indicators	Broken down by sex.

Name of indicator	C1-2.11* Occupational diseases
Definition	Number of recognised cases of occupational diseases, by group of diagnosis and age.
Notes	Further reading: Working paper: population and social conditions. European statistics on occupational diseases. Evaluation of the 1995 pilot data. Key data on health, 2000, Eurostat.
Sources	Eurostat (Eurostat yearbook, data 1989 – 1999, p. 67)
Countries covered	EU-15
Time series available	Data only for 1995. In 1999 the LFS contained an ad hoc module on accidents at work and occupational diseases.
eEurope relevance	<ul style="list-style-type: none"> • 2b-x – general indicator for topic ‘Working in the knowledge based economy’
Future value	Relevant if diseases related to the use of ICT are accounted for in great enough detail (e.g. eye disorders from screen work, allergic effects and cancer from ICT chemicals)
Links to other indicators	Broken down by age groups; no reported break down for different types of work and use of ICTs

Level and structure of employment

Name of indicator	C2-1.5* Absolute Employment Gap
Definition	Difference in employment rates between women and men in absolute figures (percentage points)
Notes	See Joint Employment Report 2000 Statistical Annex: 10 (here, this indicator is called EO ₂).
Sources	LFS
Countries covered	EU Member States
Time series available	Annual (quarterly since 1999)
eEurope relevance	2b-x - general indicator for topic ‘Working in the knowledge based economy’
Future value	Ensured
Links to other indicators	-

Name of indicator	C2-2.5* "Gazelle" jobs
Definition	Jobs in "gazelle" companies (companies with annual sales revenue that has grown 20 percent or more for four straight years) as a share of total employment.
Notes	"The degree to which an economy is composed of new, rapidly growing firms known as gazelles is indicative of the degree to which the state's economy is dynamic and adaptive. The relatively small number of fast-growing firms of all sizes account for the lion's share of new jobs created in the 1990s in the USA" (Atkinson et al 1999: 21).
Sources	The New Economy Index (Atkinson & Court 1998), based on 1997 data from Cognetics
Countries covered	USA only
Time series available	n.a.
eEurope relevance	<ul style="list-style-type: none"> • 2b-4 - support greater flexibility in the workplace
Future value	Ensured, as long as data basis is stable.
Links to other indicators	-

Name of indicator	C2-2.7* Index of gender segregation in sectors
Definition	The average national share of employment for women and men is applied to each sector, the differences are added up to produce a total amount of gender imbalance. This figure is presented as a proportion of total employment.
Notes	See Joint Employment Report 2000 Statistical Annex: 10 (here, this indicator is called EO ₄).
Sources	LFS (NACE classification)
Countries covered	EU Member States
Time series available	Annual (quarterly since 1999)
eEurope relevance	<ul style="list-style-type: none"> • 2b-x - general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured
Links to other indicators	-

Name of indicator	C2-2.8* Index of gender segregation in occupations
Definition	The average national share of employment for women and men is applied to each occupation, the differences are added up to produce a total amount of gender imbalance. This figure is presented as a proportion of total employment.
Notes	See Joint Employment Report 2000 Statistical Annex: 10 (here, this indicator is called EO ₃).
Sources	LFS (ISCO classification)
Countries covered	EU Member States
Time series available	Annual (quarterly since 1999)
eEurope relevance	<ul style="list-style-type: none"> • 2b-x - general indicator for topic 'Working in the knowledge based economy'
Future value	Ensured
Links to other indicators	-

5.3 Key policy documents

5.3.1 Overview of relevant policy documents

Policy documents of relevance stem from the European Commission and its Statistical Office (Eurostat), other supranational institutions such as the OECD and ILO, as well as the governments of EU Member States.

Title of document	Author	Region	Year	Type of document *
E U R O P E A N U N I O N				
The European Employment Strategy	EC	EU	1999	Action Plan
The Joint Employment Report	EC	EU	annual	Evaluation
Employment in Europe	EC	EU	annual	Documentation
Guidelines for Member States' Employment Policies + Recommendations for the Year x	EC / European Council	EU	annual	Action Plan
National Action Plans for Employment	EU Govern-ments	EU	annual	Action Plan
New European Labour Markets, Open to All, with Access for All	EC	EU	2001	Action Plan
Job Opportunities in the Information Society	EC	EU	1998	Report
Strategies for Jobs in the Information Society	EC	EU	2000	Action Plan
Community Policies in Support of Employment	EC	EU	2000	Documentation
Status Report on New Ways to Work in the Knowledge Economy	EC, DGC	EU	annual	Documentation
Social Policy Agenda	EU	EU	2000	Action Plan
The Social Situation in the EU 2000	EC / Eurostat	EU	2001	Documentation
Scoreboard on Implementing the Social Policy Agenda	EC	EU	2001	Evaluation
Living Conditions in Europe – Statistical pocketbook	EC	EU	2000	Documentation
e-Inclusion: The Information Society's Potential for Social Inclusion in Europe	EC	EU	2001	Documentation
Employment and Social Policies: a Framework for Investing in Quality	EC	EU	2001	Action Plan
A Memorandum on Lifelong Learning	EC	EU	2000	Action Plan
Report of the Eurostat Task Force on Measuring Lifelong Learning	Eurostat	EU + global	2001	Report
The eLearning Action Plan – Designing Tomorrow's Education	EC	EU	2001	Action Plan
O E C D				
World Employment Outlook	OECD	OECD	annual	Report
Labour Market Policies: New Challenges – Lifelong Learning to Maintain Employability	OECD	OECD	1997	Report
E-Learning: The Partnership Challenge	OECD	OECD	2001	Report
Learning to Bridge the Digital Divide	OECD	OECD	2001	Report
The Well-being of Nations: The Role of Human and Social Capital	OECD	OECD	2001	Report

Title of document	Author	Region	Year	Type of document *
I L O				
World Employment Report	ILO	global	annual	Report
The Public Employment Service in a Changing Labour Market	ILO	global	2000	Report
U N E S C O				
World Culture Report	UNESCO	global	2-yearly	Report
World Education Report	UNESCO	global	2-yearly	Report
World Communication and Information Report	UNESCO	global	2-yearly	Report
Learning: the Treasure Within	UNESCO	global	1996	Report
Education for the twenty-first century: issues and prospects	UNESCO	global	1998	Report
S e l e c t e d c o u n t r i e s				
Futurework Report - Trends and Challenges for Work in the 21st Century	US Dept. of Labor	USA	2000	Report
A Nation of Opportunity - Strategies for Building America's 21st Century Workforce	21st Century Workforce Commission	USA	2000	Report/Green Paper
Telework and the New Workplace of the 21st Century	US Dept. of Labor	USA	2001	Report
The Dutch Digital Delta	Gvt. of the Netherlands	NL	1999	Other (White Paper)
Education in place: power and creativity for the knowledge society	Min. of Education	NL	2000	Action Plan
The Entrepreneurial Society - More opportunities and fewer obstacles for entrepreneurship	Min. of Economic Affairs	NL	2000	Action Plan
Competing with ICT Competencies - Know-how and Innovation for the Dutch Digital Delta	Min. of Economic Affairs	NL	2000	Action Plan
The Learning Age - a Renaissance for a New Britain	UK Government	UK	1998	Green Paper
Empowering the Learning Community, the Government's Response to the Education and Libraries Task Group Report	UK Government	UK	2000	Action Plan
Learning for the Twenty-first Century	Dept. for Education	UK	1997	Report
Creating Learning Cultures: Next Steps in Achieving the Learning Age	Dept. for Education	UK	1998	Report
The Challenges of ICT in Finnish Education	Sitra - National Fund for Research and Development	FIN	1999	Evaluation
From Information Society to Knowledge-based Society - Employment by Innovation	Finnish Ministry of Labour	FIN	2000	Report
Information Strategy for Education and Research 2000-2004 – Implementation Plan	Finnish Ministry of Education	FIN	2000	Action Plan
National Action Plan for Employment 2001	Ministry of Labour	FIN	2001	Action Plan
An Information Society For All	Ministry of Industry, Employment and Communications	S	2000	Action Plan

Title of document	Author	Region	Year	Type of document *
The Development of IT skills	Ministry of Industry, Employment and Communications	S	2000	Report
Facts about information and communications technology in Sweden 2001	Swedish Institute for Transport & Communications Analysis	S	2001	Report
The Second Report of the Expert Group on Future Skills Needs	FORFÁS Ireland	IRL	2000	Report
Future Demand for IT&T Skills in Australia, 1999-2004	Australian Government, IT&T Skills Task Force	AUS	1999	Report

* categories: Report, Documentation, Green Paper, Action Plan, Evaluation, Other

5.3.2 Policy documents at EU level

The EU employment policy (see Figure 2), reflected in the annual guidelines for national employment policies of its Member States which are endorsed at the autumn European Council for the following year, follow a “four pillar” structure:

- Improving employability (I)
- Developing entrepreneurship and job creation (II)
- Encouraging adaptability of businesses and their employees (III)
- Strengthening equal opportunities policies for women and men (IV)

The four-pillar structure was invented at the extraordinary Luxembourg Summit on employment, held at the end of 1997, and is described in more detail below (see box below). The Commission’s guidelines are reflected in the National action plans submitted by each Member State. The Joint Employment Report reports on the Member States’ activities and the extent to which targets have been met in the preceding year. Also published annually, “Employment in Europe” takes a more general view on changes in the EU labour market, detached from the annual Employment Policy cycle.

Documents that derive from the European Commission’s Social Policy strand also take a special interest in employment issues³⁹. The Social Policy Agenda was a result of the Lisbon European Council (March 23-24, 2000) which called for Europe to become “the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and *greater social cohesion*” (our emphasis). The agenda proposes fields of action and concrete targets for the 5-year period 2000-2005. It asks for “integrated indicators and benchmarks” to be developed. The Lisbon summit demanded an annual progress reports on implementation of the agenda. The first such report (Scoreboard on implementing the Social Policy Agenda) was published in February 2001.

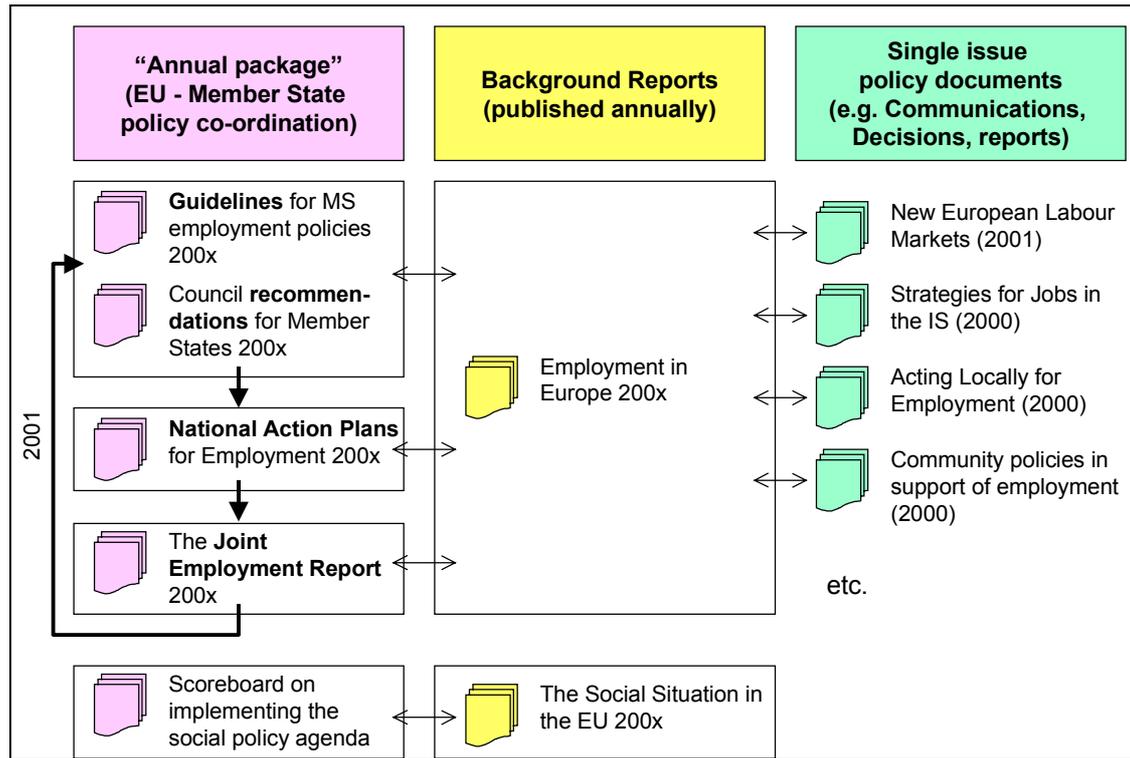
“The social situation in the European Union” (to be published annually) presents data from a number of sources including the EU Labour Force Survey in the area of employment. For preparing the document, fifteen key indicators were selected to describe the social situation in

³⁹ Social inclusion is dealt with in a separate topic in SIBIS. For this reason, only an overview of relevant documents and policies is given in this paper.

the EU, based a number of EU legislative and policy papers. A statistical pocketbook accompanies the document.

1998's "Job opportunities in the Information Society" and 2000's "Strategies for jobs in the Information Society" are papers exploring the potential opened up by ICTs to support the EU employment policy. These documents contain analysis, best practice and recommendations to Member States, including targets, deadlines and indicators for measuring. "Benchmarking Report following up the 'Strategies for jobs in the Information Society'" documents data on some of the indicators that were suggested in the original document, derived from the November 2000 Eurobarometer Survey, and investigation by the ESDIS group of experts.

Figure 2: Systematics of European policy documents on work, employment and skills



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"New European Labour Markets, Open to All, with Access for All" is a framework document by the Commission outlining the need for action on supporting the development of cross-border labour markets in the EU. The main focus is on the significance of barriers to labour mobility as well as mismatches between supply and demand which are in danger of stifling EU employment growth. A High-level Skills and Mobility Task Force has been put together which is asked to improve the "understanding of the characteristics and drivers of new European labour markets. More information and data is necessary on individual and business needs and demands and on the operation of these markets" (16). The Task Force will develop an action plan to the Spring 2002 European Council.⁴⁰

The Directorate Information Society has published annual status reports on new ways to work (formerly Status Report on European Telework) since 1998. These documents give an overview over mainly telework-related developments, events and activities in the preceding year, and contain EU statistics on the subject.

Lifelong learning and eLearning are the focus of documents that discuss actions in the field of education for participation in the labour market. The Memorandum on Lifelong Learning [13] is the result of a process that started with the European Year of Lifelong Learning 1996 and

⁴⁰ For information on the Task Force see http://europa.eu.int/comm/employment_social/news/2001/jun/153_en.html.

Luxembourg Summit on employment in 1997. Since the Employment Guidelines for the year 2000, the focus on education and training, in particular Lifelong Learning, has been strengthened. The Guidelines include recommendations for Member States to set targets to achieve progressively higher participation rates in training, including eLearning measures (some targets were already suggested in the document).

The Memorandum on Lifelong Learning stresses that “indicators that reflect the full meaning of lifelong learning as defined in this Memorandum are not presently available” (20). Partly to redress this problem, a Task Force on Measuring Lifelong Learning has been set up by Eurostat which published its report in February 2001. This Task Force also included participants from the OECD, ILO and UNESCO to ensure that indicators to be developed are applicable throughout the world and not only in EU Member States. Their report discusses in detail ways “of measuring lifelong learning to meet policy requirements of the European Commission”. It especially stresses the need for a better classification of learning activities (building on ISCED97) which must also encompass non-formal and informal learning activities.

The eLearning Action Plan published in March 2001 follows on from the “eLearning. Designing tomorrow’s education” initiative started in May 2000 and complements the eEuropa Action Plan. The document includes suggestions for concerted key measures for each of its lines of action (infrastructure, training, services and content, cooperation).

Among the EU policy documents not mentioned yet, the most important are those relating to the eEurope initiative launched in December 1999, in particular the eEurope Action Plan from June 2000 (see SIBIS deliverables 1.2 and 1.3)

The Four Pillars of EU Employment Policy

In the new section on “horizontal objectives”, the Employment Guidelines 2001 address (as one of the five objectives described) the need for quantitative indicators:⁴¹ “The Member States and the Commission should strengthen the development of quantitative common indicators in order to evaluate adequately progress under all four pillars and to underpin the setting of benchmarks and the identification of good practice. The Social Partners should develop appropriate indicators and benchmarks and supporting statistical databases to measure progress in the actions for which they are responsible.”

The SIBIS project sets out to serve this explicit demand for indicators in the area of work, employment and skills, but keeping in mind a clear focus on developments that touch on the impact of ICTs and the Information Society. In order to do so we use the “four pillars” of the EU employment guidelines as a help to identify and select indicators that reflect the impact of ICTs and for which the supply of data would provide high value for EU policy making. These four pillars are:

- Improving employability (I)
- Developing entrepreneurship and job creation (II)
- Encouraging adaptability of businesses and their employees (III)
- Strengthening equal opportunities policies for women and men (IV)

Pillar I - Improving employability

This pillar stresses the need in EU and national employment policies for a transition from passive measures to active measures, in order to make more EU citizens (in particular women) return to the labour market. Another important strand are policies to enable active ageing including “appropriate measures such as maintaining work capacity, lifelong learning and [...] flexible work arrangements, so that older workers are also able to remain and participate actively in working life. In the 2001 Guidelines Lifelong Learning takes a more prominent role as the key term to describe the goal of developing skills

⁴¹ EC (2000): Employment Guidelines 2001. Proposal for Council Decision.

for the “new labour markets”. Additionally, active policies to improve matching on labour markets are demanded from EU Member States.

ICTs are considered to play a major role inside of this pillar, in particular with regard to Lifelong Learning, the development of skills related to the Information Society, and efforts to improve the efficiency of job matching.

Pillar II - Developing entrepreneurship and job creation

This pillar is only of low direct relevance for our Topic as its main theme is to make it easier to start up and run (small) businesses. The intensity and success of entrepreneurial activities in the EU has, of course, indirect responsibility for the creation of jobs in innovative parts of the economy, but this is basically a question of abolishing administrative barriers and making regulation more efficient.

A question of some importance concerns the extent of employment in industries that supply ICTs and, in particular, the role of start-ups and SMEs in these industries (see Employment in Europe 1998: 99-112).

Pillar III - Encouraging adaptability of businesses and their employees

This pillar concerns the organisation of work in companies and thereby touches upon a large number of organisational innovations that have been made possible by ICTs. It also touches on the issue of Lifelong Learning insofar this takes place inside of employment relationships, i.e. in parallel with working (either as a supplement, or as an integral part of the work itself).

A key word here is “modernisation of work”, which is also one of the three main challenges listed by the eEurope Action Plan. The concept of modernisation, however, does not lend itself easily to measurement as operationalisation requires a clear consensus about what ‘modern’ means. Currently the objective is only described in vague terms and clearly lacks appropriate indicators. Guideline No. 14 indicates the following concepts to approach this objective (for instance):

- “flexible working arrangements”
- “achieving the right balance between flexibility and security” (what is called ‘adaptability’ in the European Employment Policy)
- “increasing the quality of jobs”
- “Subjects to be covered may, for example, include the introduction of new technologies, new forms of work (e.g. telework) and working time issues such as the expression of working time as an annual figure, the reduction of working time, the reduction of overtime, the development of part-time working, and access to career brakes”.

As the last points makes explicit, ICTs are a central tool for achieving modernisation of work. Often they present possible solutions to the challenge of increasing the flexibility of work arrangements without sacrificing security and equality.

Pillar IV - Strengthening equal opportunities policies for women and men

The EU Employment Guidelines mention gender mainstreaming as a major objective of employment policies. Mapping Information Society developments must take into account gender differences in access to and use of ICTs. The best way to monitor the relationship between Information Society developments and gender issues in our Topic appears to be to seek for statistics that allow for gender differentiation throughout our indicator development work.

This pillar also stresses the role of arrangements that reconcile work and family life, as a measure to improve women’s position in the labour market. ICTs can help meet this requirement, e.g. by making possible different types of telework. However, care must be taken not to generalise from instances in which ICTs have benefited those who have to reconcile work and family life. There is also evidence of

ICT-supported work forms that may turn out to be harmful to gender equality insofar that women are represented above-average in them, such as some call centre employment.

Although this pillar explicitly mentions only gender disparities, opening up the Information Society for all also implies the need to monitor the extent to which groups on the margin such as the disabled, immigrants, 'late life' learners and other learners with special education needs participate in the Information Society (see also the Social Policy Agenda from 28.6.2000). This, again, can best be achieved by providing data that allows for disaggregation and in-depth analysis of smaller subgroups. In particular, the methodology for data gathering must be checked to ensure that margin groups are not systematically misrepresented in the sample drawn (as would be the case e.g. in Internet user surveys).

5.3.3 Policy documents from the OECD

Among the policy documents from other sources than the EU, OECD's World Employment Outlook 2000 is of great interest for our effort. It contains in-depth analysis of developments and trends in labour market issues as well as extensive statistical sections. The Employment Outlook each year highlights selected issues which are analysed in detail. The 2000 Edition has an extensive section on self-employment.

The OECD has dealt extensively with Lifelong Learning since the OECD Ministers of Labour at their Meeting in Paris in October 1997 endorsed a strategy for Lifelong Learning "to ensure that initial education and training provides a sound foundation for further learning, and that opportunities for learning during adulthood are available to all who want them" (OECD 2001e-I: 23). The latest major OECD report on the issue is "E-Learning: The Partnership Challenge" which discusses what educational multimedia content providers, technology enablers and policy makers from the education sector can do to overcome market difficulties and how best public-private partnerships can be formed to promote the development of high-quality educational software.

The OECD also collects harmonised data on education indicators and publishes them annually (see chapter **Fehler! Verweisquelle konnte nicht gefunden werden.**), together with further analysis. The 2000 edition of the Information Technology Outlook examined the issue of e-commerce "readiness" across OECD countries, including analysis of ICT skills and employment.

The notion of the digital divide is one of the key interests of the OECD, documented in the publication. The main conclusion from this work is that it is necessary but not sufficient to provide avenues to information and knowledge. What is more important is to empower people with appropriate educational, cognitive and behavioural skills and tools so that they can access information and knowledge efficiently, effectively and wisely. With regard to indicator development this means that indicators measuring disparities in skill endowment and in usage intensity between different segments of the population are of critical importance.

5.3.4 Policy documents from the ILO

The International Labour Organisation has been at the core of activities for the development, negotiation and application of standards such as international guidelines on macro-economic labour statistics. Among the standards endorsed by the International Conferences of Labour Statisticians (ICLS) are the following:

- Guidelines concerning the implications of employment promotion schemes on the measurement of employment and unemployment, 14th ICLS, 1987

- Guidelines concerning treatment in employment and unemployment statistics of persons on extended absences from work, 16th ICLS, October 1998
- Guidelines concerning dissemination practices for labour statistics, 16th ICLS, October 1998

The ICLS has also issued a number of Resolutions⁴² which include definitions on key labour market terms.

A key document from the ILO is the World Employment Report, published annually. It contains an analysis of labour market developments (with a special focus on non-OECD countries) and statistics. The ILO asks experts in the field which is the focus of the respective year's Report to contribute essays on key aspects. The 2001 edition discusses Information Society and Digital Economy developments in depth.

The ILO recently set up a new so-called InFocus Programme on Skills, Knowledge and Employability⁴³. The Programme seeks to promote greater investment in skills and training to support enhanced and equal access to "productive and decent work". ILO vehicles in this respect are advocacy, knowledge development and services to ILO constituents. Special emphasis is put on training strategies that support the integration of groups that may be disadvantaged in the labour market. Continuous work on the subject of how to improve the effectiveness of Public Employment Services (PES) has resulted in the publication 'The Public Employment Service in a Changing Labour Market'.

5.3.5 Policy documents from other UN Organisations

According to its mandate, the functions of UNESCO, the United Nations Educational, Scientific and Cultural Organization, include the production of prospective studies (what forms of education, science, culture and communication for tomorrow's world?) and the setting of standards (preparation and adoption of international instruments and statutory recommendations). The most important UNESCO standard for our research is the International Standard Classification of Education (a UNESCO classification) (ISCED)⁴⁴ which also includes further education activities, although not in sufficient enough detail as yet.

UNESCO has been very active in the field of developing policy recommendations with regard to lifelong learning. The Task Force on Education for the Twenty-first Century has stressed Four Pillars of Education which it believes have to form the backbone of education for the future: Learning to know, Learning to do, Learning to live together, Learning to be. UNESCO believes that these four pillars cannot be anchored solely in one phase in a person's life or in a single place: "There is a need to re-think when in people's lives education should be provided, and the fields that such education should cover."⁴⁵ The document outlining the OECD approach towards viewing education in a broader context ("Learning: the Treasure Within") was already published in 1996, and updated in 1998 ("Education for the twenty-first century: issues and prospects").

Key documents issued by UNESCO and published biannually are the World Culture Report (on cultural policies, the preservation of cultural heritage and cultural diversity, and measurement issues, supplemented by a selection of cultural statistics); the World Communication and Information Report (which takes a special focus on developing countries' participation in the upcoming Information Society); and the World Education Report, one of the most renowned publications on the state of primary, secondary and further education in all parts of the world (the 2000 Report is subtitled "The right to education: towards education for all throughout life").

⁴² See <http://www.ilo.org/public/english/bureau/stat/res/index.htm>.

⁴³ See <http://www.ilo.org/public/english/employment/skills/>

⁴⁴ See OECD (1999) *Classifying Educational Programmes - Manual for ISCED-97 Implementation in OECD Countries -- 1999 Edition*, OECD.

⁴⁵ Source: <http://www.unesco.org/delors/fourpil.htm>

5.3.6 Policy documents on national level

In this chapter, only a few outstanding policy documents from selected countries can be mentioned. For a more extensive listing see the report of the ESIS project⁴⁶, as well as SIBIS Deliverable 1⁴⁷. In the latter, the following countries were identified as being 'European leaders' with respect to policies devoted to innovation in the field of work, employment and skills: The Netherlands, the Nordic countries and the USA. Looking especially at particular issues, one may add the U.K. which has been very active in the field of lifelong learning-related policies, and Australia and Ireland which have published advanced analyses of current and future skill needs in the Information Society, and devised policies based on the results.

The U.S. government has published a number of reports on progress in work-related matters, the most important of which is the "Futurework Report" which combines in-depth analysis of current and future trends in the labour market with an agenda for policy-making. "A Nation of Opportunity: Strategies for Building America's 21st Century Workforce" focuses on recommendations and was prepared by a commission of experts appointed by the President and Congress. "Telework and the New Workplace of the 21st Century" deals, in particular, with the issues surrounding remote working and telecommuting, and outlines the US governments approach towards these ways of working.

"Benchmarking Adult Literacy in America" is a report that presents data from the International Adult Literacy Survey (IALS) from an U.S. standpoint, comparing the U.S. with regard to the skills of adults with 21 other nations. It also contains suggestions, based on the results, for how to improve the country's literacy performance. The suggested "10 Tools for Action" are include the promotion of cultures of life-long and life-wide learning; access to adult education for all citizens; literacy-rich environments at work and at home; workplace literacy programs; and access to information and communication technologies.

The Dutch government has outlined its policy on shaping the Information Society in the White Paper 'The Dutch Digital Delta' in 1999, a successor of the original 1994 National Action Programme for Information Superhighways (NAP). 'The Dutch Digital Delta' stresses that the Netherlands needs an excellent ICT base in order to realise its ambitions to become one of the most competitive and dynamic knowledge economies in the world. The document identifies five main pillars on which the Netherlands' strategy for the future should rest: the (tele)communications infrastructure, know-how and innovation, access and skills, regulatory issues, and ICT in the public sector. The second topic relates to 'Know-how and Innovation' in the field of ICT. "Competing with ICT Competencies - Know-how and Innovation for the Dutch Digital Delta" is an Action Plan related to the second of these pillars.

"The Entrepreneurial Society - More opportunities and fewer obstacles for entrepreneurship" outlines the demand for entrepreneurial activities, and presents the government's policies for fostering new self-employment and very small companies.

Benchmarking the Netherlands 2000 is an analysis of the country's comparative standing with regard to Information Society developments, and includes a large section on labour market issues. "Education in place: power and creativity for the knowledge society" is a document that outlines the direction of the changes that are needed in the Dutch government's opinion in order to allow the education system to respond to the challenges of the 21st century, with a special emphasis on lifelong learning.

The U.K. government has taken an active role in shaping the discussion on lifelong learning requirements in the country, and setting up policies to deal with the issue. A central document is the Department for Education and Employment's 1998 Green Paper "The Learning Age - a

⁴⁶ Chatrie, I. and Wright, P. (2000) 'Public Strategies for the Information Society in the Member States of the European Union', ESIS Report, Bruxelles: European Commission, DG Information Society.

⁴⁷ Every EU Member State as well as most OECD countries have published high-level documents describing key challenges resulting from current IT-related developments and policy approaches towards working in the Information Society. These are listed in SIBIS deliverables 1.2 and 1.3.

Renaissance for a New Britain". In response to it, a National Advisory Group for Continuing Education and Lifelong Learning was set up which has by now published two reports with comprehensive recommendations ("Learning for the Twenty-first Century" and "Creating Learning Cultures"). The U.K. government believes that libraries have an important role to play in fostering lifelong learning. A Education and Libraries Task Group was initiated that has published a set of recommendations, taken up by the government in its publication "Empowering the Learning Community, the Government's Response to the Education and Libraries Task Group Report".

In Finland, which is commonly regarded as the most advanced country world-wide with regard to the use of ICTs, the Finnish Ministry of Labour has initiated a Knowledge Society Team in 1999 which has presented Final Report "From Information Society to Knowledge-based Society" in 2000, including a number of proposals for future policy-making. "The Challenges of ICT in Finnish Education" is the report of an assessment project undertaken at the request of the Finnish Parliament's Committee for the Future, and outlines the challenges the information society places on education and learning. Other key documents from Finland are the annual Action Plans of the Finnish Ministry of Education (e.g. "Information Strategy for Education and Research 2000-2004 – Implementation Plan") and the Ministry of Labour ("Finland's National Action Plan for Employment 2001").

The Swedish government's ambition for Sweden to "be the first country to comprise an information society for all" is laid out in a Government Bill "An Information Society For All" and a number of documents (e.g. "An Information Society for All - a Publication about the Swedish IT Policy") identifying IT policy goals, orientation and priority areas. Main objectives are to strengthen a) confidence in IT, b) competence in IT application and c) accessibility to the services of the information society. "The Development of IT Skills" is a publication about one of the priority areas of Swedish IT-policy. Facts about information and communications technology in Sweden 2001" is a comprehensive collection of statistics on the production and use of ICTs in Swedish economy and society, also containing references to the situation in other countries.

Advanced analyses of the skill needs that arise from the development towards the Information Society come also from other countries, among them the National Policy and Advisory Board for Enterprise, Trade, Science, Technology & Innovation in Ireland ("First and Second Report of the Expert Group on Future Skills Needs") and Australia's IT& T Skills Task Force ("Future Demand for IT&T Skills in Australia, 1999-2004").

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