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Title: Competence Evaluation and Training for Europe

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Project Financed within the Targeted Socio-Economic Research Programme

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ABSTRACT

This Report presents the results and conclusions of the COMPETE project. COMPETE is a trans-national project funded by the European Commission, under the 'Targeted Socio-Economic Research Programme'. The project represents a collaboration between research, academic, public sector and commercial partners – all of whom have an interest in skills, how to define them and how to apply and accredit them. COMPETE is essentially about three things: Firstly, it has a research agenda. By carrying out field work (such as case studies of innovative skills development and training), and by consulting key stakeholders (such as employers and trades unions); COMPETE aims to improve our understanding of skills and how they can be applied. Secondly, COMPETE feeds the results of this research into the development and testing of practical tools to define, assess and represent skills, with particular reference to the use of new technologies (such as 'portable skills cards'). Thirdly, COMPETE promotes trans-European partnerships and collaboration between government, industry and the research community in relation to skills, training and accreditation. The Report provides: a summary of the key objectives of the project; the methodological approach used; the key results and conclusions of the research; a description of the tools developed as a result of the research, and their validation; a summary of the dissemination and exploitation activities of the project.

1. REPORT SUMMARY

Background and Objectives of the project

- The main policy focus of COMPETE was to contribute towards addressing problems associated with skills gaps that are constraining the drive towards European competitiveness and social cohesion. It addresses particularly Objective 1 of the EU White Paper on Education and Training, and its vision of creating a European Skills Accreditation System. This aims to set up permanent and accessible skill accreditation mechanisms that will allow individuals to validate their knowledge however it has been acquired, on the basis of standardised frameworks of competencies, using personal 'smart cards' (portable skills cards.

- The main objectives of the project focus on:

Ø developing appropriate and effective taxonomies to define the domains of skilled performance;

Ø identifying methods of auditing skills that can provide meaningful assessments of 'skills gaps' at the European level, as well as at the local level;

Ø facilitating an understanding of what forms of training are appropriate in addressing skills gaps, particularly for excluded groups;

Ø promoting an understanding of the ways in which skills can be represented, so that they are intelligible to both workers and employers;

Ø exploring new institutional arrangements to promote collaboration between relevant actors (government, companies, trades unions etc.) on skills definition and accreditation.

- Four key outputs (tools) were planned:

  Ø a skills auditing methodology

  Ø a 'content model' for European competence standards

  Ø good practice guidelines for skills training

  Ø a prototype 'personal skills card'

- However, the research results of the first stage of the project strongly suggested the need for a re-orientation of the planned tools. The revised COMPETE tools are based on the construction of key 'scenarios of use' identified by the research activities.

Methodological Approach

- The COMPETE project combined a set of research tasks, leading to the development of a set of tools which were then validated through action research activities in real-world settings in collaboration with industrial partners. COMPETE was a two-year project in which the sequence of research activities was as follows:

Ø **Stage 1:** State of the art review and synthesis of existing relevant research, leading to the development of a methodological framework for subsequent tasks.

Ø **Stage 2:** Surveys of skills definition, innovative training and accreditation approaches in three main sectors: corporate; SMEs and accreditation agencies.

Ø **Stage 3:** intensive case study analysis in four context areas: the EURES cross-border partnerships; skills development for excluded groups; personal skills cards and automated assessment systems; training experiments in corporate sectors.

Ø **Stage 4:** drawing on the results of Stages 1-3, development of the COMPETE outputs.

Ø **Stage 5:** validation of outputs in action research context, involving selected EURES partnerships, and industrial partners in Italy and the UK.

Ø **Stage 6**: Dissemination of COMPETE outputs, and exploitation plan

Description of project results

- The results of the above research activities strongly supported the necessity of re-shaping the tools and Guidelines originally envisaged for COMPETE.

- The main research results were as follows:

Ø levels of labour mobility within the EU have historically been consistently low in general

Ø in-migration to the EU from 'external' countries has consistently run at a far higher level than inter-EU migration

Ø migration and labour mobility is inherently 'localised' in nature

Ø there is no evidence that these patterns will change dramatically over the foreseeable future (and that the mass diffusion of smartcard technologies will precipitate dramatic changes to these patterns)

Ø employers are far more interested in how 'soft' skills and competences (such as 'personality', 'experience' and 'cross-job skills') are represented than in how formal qualifications are accredited and 'cross-walked' across different European occupational and skills classification systems

Ø companies (particularly those involved in the rapidly-evolving 'knowledge industries') have a real need for skills that facilitate 'just-in-time' learning; the development and utilisation of 'organisational memory', and the incorporation of client feedback

Ø the relationship between skills and social exclusion is complex: training is but one element (albeit an important aspect) of this relationship, and there is a need for a more comprehensive (and more contextualised) set of tools to support skills development for socially excluded groups

Ø developments in Internet-based technologies and interactive knowledge bases have significantly outstripped those in smart-card technologies, leaving the latter as a narrow, specialised technological metaphor

Conclusions and Policy Implications

- The results of the research activities undertaken in work-packages 1, 2 and 3 of COMPETE highlighted the need for a re-alignment of the technical development of the original specification for the COMPETE tools. This realignment encompassed a framework that extends the scope of smartcard technology to encompass a range of 'enabling technologies' intended to promote the foundations of a 'European Skills Development Network'. These enabling technologies include Internet, intranets and digital television (DTV). Five indicative 'scenarios of use' are targeted by COMPETE. These incorporate key target user groups in typical settings that exemplify problems of 'skills gaps' affecting labour mobility and economic competitiveness in the EU. The scenarios of use are as follows:

Ø **SCENARIO 1:** Support for Migrant Workers
Ø **SCENARIO 2:** 'New Jobs for Old' - Tools for Inter-regional partnerships.
Ø **SCENARIO 3:** 'New Opportunities for the Long Term Unemployed' - Public Employment Service support tools
Ø **SCENARIO 4:** 'Human Resources Developer' - Valorising the Company Asset Base
Ø **SCENARIO 5:** 'The Mobile Citizen' - Cross Border Electronic Credentials Authentication tool

- The services provided by COMPETE for these five scenarios of use focus on the 'COMPETE toolkit'. This is comprised of the following:

Ø Elicitation tools, to help users define their specific skills needs
Ø Diagnostic tools that make sense of the elicitation data (for example to conduct skills audits)
Ø Representation tools to make the diagnostic outcomes meaningful (for example to produce a 'skills profile')
Ø Decision analysis and support tools (for example to help users make a choice between job options)
Ø A Data Warehouse, containing data on jobs, labour market information, on-line assessment systems, skills data

Ø User profiling and data mining tools, to match user needs to the information contained in the warehouse

- With the help of this toolkit, users will be able to:

Ø carry out a 'skills audit' for an individual, company or local area
Ø de-construct and re-construct the skills, competences and knowledge associated with a particular occupational profile with reference to a common European skills 'content model'
Ø obtain the latest information on evolving skills and skills gaps particularly in the new 'knowledge industries'
Ø check the authenticity, and 'value', - on-line - of their own or 'third party' qualifications, and references, obtained anywhere in the EU
Ø obtain information on available jobs, available employees and training opportunities, customised to a particular 'user profile'
Ø for companies, match available skills to new business opportunities and customer needs by virtue of 'just in time' skills assessments and 'organisational memory' tools

- The services would be delivered through the European Skills Development Network (E*NET). E*NET has four main constituent organisational elements:

Ø A European Accreditation Authentication Bureau, providing on-line authentication, validation and 'equivalence-checking' of certificates, credentials and references acquired (both formally and informally)
Ø A Secretariat, with responsibility for overall management, administration and monitoring of the network
Ø A Technical Unit, with responsibility for managing, reviewing and updating the technical platforms, tools and support systems. This includes the Skills Data Warehouse, and the COMPETE portal, allowing access to, and providing support tools for, the COMPETE networks and services
Ø A Monitoring Unit with responsibility for collecting, analysing and synthesising European skills data as they emerge .

- These tools were tested in a validation process with target user groups. The validation led to a number of modifications to the tools

Dissemination and Exploitation

- Dissemination activities have covered: the production of a COMPETE 'information pack' (brochure and handouts); development of a dedicated web-site; a ten-minute video outlining the project and its results; conference papers and published articles. Two main exploitation activities have been carried out: the production of a business plan, and the submission of a proposal for funding of the market validation stage to the TEN-TELECOM Programme.

2. BACKGROUND AND OBJECTIVES OF THE PROJECT

2.1 Policy Focus

The main policy focus of COMPETE was to contribute towards addressing problems associated with skills gaps that are constraining the drive towards European competitiveness and social cohesion. It addresses particularly Objective 1 of the EU White Paper on Education and Training, and its vision of creating a European Skills Accreditation System. The European Accreditation System aims to set up permanent and accessible skill accreditation mechanisms that will allow individuals to validate their knowledge however it has been acquired, on the basis of standardised frameworks of competencies. Such a system envisages the use of new technologies, like personal 'smart cards' (portable skills cards) that will allow citizens to record their training, experience and resumes on portable, computer-readable media, in tandem with remote, electronic assessment and testing systems that can allow individuals to obtain qualifications and credentials that in turn can be recorded on their personal skills card.

In this context, a number of problems and problematics were addressed. These focus on:

- the conflicting views on what constitutes skills and competencies, and on the relationship between skills,
- the labour market and social exclusion;
- different approaches regarding how skills can be acquired, accredited and transferred ;
- problems over how skills can be represented and interpreted in different cultures, and organisations;
- and political and institutional differences over standardisation issues.

In turn, COMPETE looked at notions of 'skills gaps'; how to identify them and how to remedy them. This domain is highly contested, reflecting debates about: whether skills are stable attributes, or whether they are contextualised and adaptive from job to job; whether they can be standardised in relation to common core dimensions, and how far they need to be tied to localised economic situations.

In seeking to contribute towards addressing these problems, the main objectives of the project focus on:

- developing appropriate and effective taxonomies to define the domains of skilled performance;
- identifying methods of auditing skills that can provide meaningful assessments of 'skills gaps' at the European level, as well as at the local level
- facilitating an understanding of what forms of training are appropriate in addressing skills gaps, particularly for excluded groups
- promoting an understanding of the ways in which skills can be represented, so that they are intelligible to both workers and employers

- exploring new institutional arrangements to promote collaboration between relevant actors (government, companies, trades unions etc.) on skills definition and accreditation.

2.2 Objectives of COMPETE within the Targeted Socio- Economic Research Programme (TSER)

Within the framework of the TSER work programme, COMPETE is focused primarily in Area II, and specifically addresses Task II.4 - education, training the labour market and economic growth, with respect to:

"Developing a better understanding of training, competence and skill gaps, and economic actors' capability to identify them".

The proposal also touches on other aspects of Area II, including:

- II.1: Lifelong learning and educational goals
- II.3: Educational implications of the European integration process
- II.5: E&Ts contribution to fostering innovation.

In turn, it links to tasks covered by areas I and III of the TSER Programme, including:

- I.4: Electronic trade and transactions (specifically the use of and potential for smart-card technologies in training)
- I.6: Socio-cultural challenges in innovation and change
- III.4: Migration and multicultural societies.

In terms of the strategic orientations of the programme. the proposal primarily covers the issue of work welfare and employment, with particular reference to the redefinition of labour market requirements, and its relation to skill transferability, employability and economic growth. It also explores the issue of competition, change and dialogue, with a specific focus on tensions between globalisation and localisation in shaping economic change, and the role of new partnerships and institutional arrangements in promoting institutional change.

Over-arching objective:

To contribute towards addressing problems associated with skills gaps that are constraining the drive towards European competitiveness. These problems also impinge on efforts within the European Union to encourage social cohesion and integration, since the skills gap militates against mobility of labour and the incorporation of excluded groups into the economy, particularly the long-term unemployed.

Aims

- to address the problem of skills gaps that are militating against the acquisition, and accreditation, of new skills, and the facilitation of life-long learning,
- to explore ways of harnessing developments in information and communication technologies towards promoting the diffusion of new knowledge in the skills domain.

Objectives

The objectives of the project combine a set of research tasks, which in turn feed into the development and testing of tools and guidelines.

- to assess the extent to which skills gaps reflect tensions between globalisation and localisation processes within the changing European economy
- to identify the main factors affecting the promotion of access to and utilisation of new skills, in terms of :

    ⇒ institutional factors, particularly the resistance of institutions to new training and learning arrangements;

    ⇒ socio-cultural factors, particularly the role of 'learning patrimony' in creating resistance to European integration on competence definition and accreditation;

    ⇒ factors affecting the utilisation of information and communication technologies in promoting and accrediting new skills, particularly the use of personal skills cards and on-line assessment systems;

    ⇒ methodological factors, particularly the effectiveness of current psychometric and content models to define and assess skills.

- Undertake intensive case studies in the following strategic areas:

    ⇒ cross-border partnerships promoting skills transferability;

    ⇒ skills definition and transfer in the healthcare and IT industries

    ⇒ the use of personal skills cards and remote assessment systems;

    ⇒ training to promote new skills acquisition for marginalised groups;

    ⇒ experiments involving non-institutional training arrangements for new skills acquisition.

- On the basis of the above research actions, to develop the following outputs:

⇒ a skills auditing methodology applicable to both European and localised settings;

⇒ a generic content model for European competence standards to formulate viable taxonomies of basic and cross functional skills;

⇒ good practice guidelines for cross-job skills training in informal settings;

⇒ specification for portable skills media (e.g. personal skills card).

- Validate the outputs through research actions and 'action research' by collaborating with indicative ongoing projects (a selection of EURES cross-border networks; in-house projects in selected European corporations)

- Disseminate the results to strategic user groups, with a particular emphasis on collaboration with EC DGXXII.

The tools planned for COMPETE were intended to broadly take the following form:

The ***skills auditing methodology*** consists of a set of procedures and a set of instruments to assess the distribution of skills. This focuses on generic or 'cross-job' skills (those that are transferable across workplace sectors and across jobs), but will also take into account the relationship between generic and vocational skills (the 'technical' skills necessary to work within an occupational group; and job-specific skills (for example a particular set of working methods applicable in a company). The audit methodology enables a 'skills profile' to be built up on a number of levels:

- at the individual level (for example to help job-seekers identify career strategies);

- at the organisational level (for example to provide companies with a tool to assess their changing skills needs);

- at the national and trans-national level (for example to provide inputs towards identifying 'skills gaps' in the labour market).

The ***content model*** is an integral part of this skills auditing methodology. It was assumed that the drive towards establishing a European 'skills standards movement' is being constrained by problems and issues around how to define common skills standards, or how to bring about 'parity' and 'equivalence' of qualifications across different member states. Although many of these problems are 'political', there was thought to be a need to develop a generic model that will specify the common 'content' underlying taxonomies of basic and cross-job skills. A key aim of COMPETE was to produce such a content model, one that will applicable across different countries.

A third objective of COMPETE was to produce practical guidelines to help facilitate ***good practice in training provision*** that is aimed at developing basic and generic skills. These Guidelines were targeted particularly at training provision for the socially excluded (such as the long term unemployed and migrant workers). They focus on skills that are acquired informally (including 'on the job' training).

Finally, COMPETE intended to develop a prototype ***personal skills card***. Using 'smart card' technology, the project was scheduled to develop and test, in collaboration with industrial partners, a medium to enable an individuals' personal details; qualifications; work history and experience to be coded and represented in machine-readable format. The card utilises the COMPETE content model and skills auditing methodologies, and will have the capacity to receive and record additional data, for example the results of examinations and tests that are carried out 'on-line'.

2.3 Re-orientation of the project objectives

As the project evolved, there was a significant shift in the objectives of COMPETE. This re-orientation was focused on the latter stage of the project – the development and validation of the COMPETE tools and Guidelines. The major research objectives, which were addressed in the first stage of COMPETE (in workpackages 1, 2 and 3) did not change markedly. However, the conclusions of this research strongly supported the need for a significant re-shaping of the proposed tools and guidelines.

A major result of the COMPETE research activities was to confirm an inherent 'tension' in the aims and objectives of COMPETE (one that was recognised at the onset of the project). Put simply, this tension is derived from, on the one hand, the COMPETE objective of developing and testing applications intended to promote the 'vision' of European labour mobility enshrined in Objective 1 of the of the White Paper (and its emphasis on the widespread diffusion of 'personal skills card technology' as a means of achieving this) and, on the other, the project's investigation of processes militating *against* European labour mobility (for example the effect of 'learning patrimonies' at the level of EU member states; processes of social exclusion, and the influence of cultural contextualisation with regard to skills).

On the basis of the results of the research tasks carried out in WP1 (State of the Art Review); WP2 (Sectoral Surveys) and WP3 (Case Studies), a key conclusion of COMPETE was that the core vision of Objective 1 is essentially unrealistic and unattainable. This is primarily because, *inter alia*:

- levels of labour mobility within the EU have historically been consistently low in general;

- in-migration to the EU from 'external' countries has consistently run at a far higher level than inter-EU migration;

- migration and labour mobility is inherently 'localised' in nature

- there is no evidence that these patterns will change dramatically over the foreseeable future (and that the mass diffusion of smartcard technologies will precipitate dramatic changes to these patterns);

- employers are far more interested in how 'soft' skills and competences (such as 'personality', 'experience' and 'cross-job skills') are represented than in how formal qualifications are accredited and 'cross-walked' across different European occupational and skills classification systems;

- companies (particularly those involved in the rapidly-evolving 'knowledge industries') have a real need for skills that facilitate 'just-in-time' learning; the development and utilisation of 'organisational memory', and the incorporation of client feedback;

- the relationship between skills and social exclusion is complex: training is but one element (albeit an important aspect) of this relationship, and there is a need for a more comprehensive (and more contextualised) set of tools to support skills development for socially excluded groups;

- developments in Internet-based technologies and interactive knowledge bases have significantly outstripped those in smartcard technologies, leaving the latter as a narrow, specialised technological metaphor.

These key conclusions led to the development of a specification for a different set of tools than originally envisaged for COMPETE. Although the new tools retained some of the elements embodied in the original specification outlined above, they reflect new emphases, in particular the realities of European labour movement processes, and the growth in Internet-based support and information systems to promote labour mobility. The following 'revised' COMPETE tools – based on the construction of key 'scenarios of use' identified by the research activities – were developed and tested with a number of prospective users :

- Tools to Support Migrant Workers
- Tools to promote Inter-regional partnerships.
- Public Employment Service support tools
- Tools to Valorise the Company Asset Base
- Cross Border Electronic Credentials Authentication tool

Another factor influencing the re-orientation of the project was the withdrawal during the project of a key industrial partner – Motorola. As a result of a re-structuring of its business activities the US parent company of Motorola Europe decided to sell its 'smartcard' business to an American competitor. It subsequently 'downsized' its European operations (a process which included the removal of the company personnel who had originally committed the company to involvement in COMPETE). Motorola then informed the COMPETE partners that it no longer had any interest in the project. After exploring possibilities of finding and recruiting a substitute partner, the COMPETE partners ultimately decided to divert Motorola resources into

further research on the patterns and processes of European labour migration, and on researching the expanded menu of COMPETE tools.

The complexities and problems raised by the COMPETE research actions, in combination with the withdrawal of one of the two industrial partners, had a significant effect on the 'action research' element of the project (i.e. the tools development and validation process). On the one hand, the results of the research actions opened up further lines of investigation which needed to be addressed – notably the dynamics of European labour migration – a situation which reduced the time and resources available to develop working tools. In addition, these results called for a much more complex set of technical scenarios for the tools than was originally envisaged. At the same time, the withdrawal of Motorola meant that one of the two COMPETE 'action research' sites became unavailable. Ultimately this meant that the COMPETE tools in their final form were demonstration mock-ups, rather than working demonstrators that were implemented within the organisations of the two industrial partners, as originally intended.

3.0 PROJECT RESULTS: METHODOLOGY

3.1 Overview of Methodological Approach

The COMPETE project combined a set of research tasks, leading to the development of a set of tools which were then validated through action research activities in real-world settings in collaboration with industrial partners. COMPETE was a two-year project in which the sequence of research activities was as follows:

Stage 1: State of the art review and synthesis of existing relevant research, leading to the development of a methodological framework for subsequent tasks.

Stage 2: Surveys of skills definition, innovative training and accreditation approaches in three main sectors: corporate; SMEs and accreditation agencies.

Stage 3: intensive case study analysis in four context areas: the EURES cross-border partnerships; skills development for excluded groups; personal skills cards and automated assessment systems; training experiments in corporate sectors.

Stage 4: drawing on the results of Stages 1-3, development of the COMPETE outputs.

Stage 5: validation of outputs in action research context, involving selected EURES partnerships, and industrial partners in Italy and the UK.

Stage 6: Dissemination of COMPETE outputs, and exploitation plan.

The methodological approach adopted to operationalise the above tasks involved the following:

- multi-method data capture and analysis for research tasks (including interpretative analysis of secondary source data; content analysis of documentation; postal, telephone and on-line surveys; structured interviews and observation)
- iterative prototyping of COMPETE tools (engaging expert and user groups)
- action research validation of outputs
- formative evaluation of the ongoing project activities through on-line electronic Forum, coupled with review workshops.

Table 1 below illustrates the relationship between the project objectives and the methodological approach adopted.

Table 1: Summary of research objectives and methodological approach	
Objective	**Approach**
assess relationship between globalisation, localisation and skills gaps	State of the art review Synthesis of existing research On-line expert 'think tank' Surveys of skill transferability in major companies Case study analysis of migration flows and employer requirements in EURES cross-border partnerships
assess institutional factors affecting access to and utilisation of new skills	State of the art review Synthesis of existing research On-line expert 'think tank' Case study analysis of new partnerships in EURES cross-border partnerships
assess socio-cultural factors affecting access to and utilisation of new skills	Comparative national analysis of competence definition and skills accreditation policies 'Cross-walk' analysis of European and national skills taxonomy frameworks Results of case study analyses
assess factors affecting use of ICTs	State of the art review Synthesis of existing research On-line 'think tank' User needs survey of corporates and SMEs Demonstration of existing systems (e.g. O*NET)
assess effectiveness of current skills taxonomies and content models	State of the art review Synthesis of existing research On-line 'think tank' Surveys of skill transferability in major companies Case study analysis of employer requirements in EURES cross-border partnerships and corporate settings
case study analysis of innovations and practices	Content analysis of relevant documentation Surveys of employers and workers Intensive interviews with key actors Observation of innovative practices (training; on-line assessment)
development of COMPETE outputs	analysis of results of research actions iterative prototyping with experts and users
validation of COMPETE outputs	validation in selected EURES partnerships; PES; social exclusion and with industrial partners. User interviews, observation.

3.2 Methodology

The complexity of the COMPETE project and objectives required the application of a multi-methodological research approach. This is summarised in Table 2. Full details of the methods used are given in the relevant deliverables, i.e.:

- Deliverable 1.1**,** Report on state of the art, and methodological framework
- Deliverable 1.2, European comparative analysis of policy and taxonomies
- Deliverable 2.1 : Report on results of sectoral surveys
- Deliverable 3.1: Report on results of case-studies

The main features of the methodology used are discussed below.

i) Work activity 1.1.

This Review of state of the art involved a systematic interpretative literature review of 126 items (articles; books evaluation reports; policy documents). The items were selected on the basis of twenty 'analytical categories' identified through partners workshop meetings. The categories were selected to represent the key issues of relevance for the COMPETE objectives.

ii) Work activity 1.2

This involved a European comparative analysis of policy and taxonomies - a cross-national comparison of the systems in place in 12 European countries, using a common template. The template allowed for categorisation of the countries on the following dimensions: policy, legislation and regulation (definitions of VET training; key policy and legislation instruments; regulatory bodies; accreditation systems; funding mechanisms for E&T; social inclusion policies and initiatives) provision and the market (school-based; college-based; work-based; informal learning; providers and levels of provision); occupational classification systems (national classification system; regional and local systems; models used); skills taxonomies (skills standards; content models; methodological approach; classification dimensions; accreditation; monitoring). Data gathering techniques included: reviews of available research surveys (e.g. CEDEFOP); content analysis of policy documents; expert interviews.

iii) Work package 2: Sectoral Surveys.

Three key sectors were investigated:

- Large multi-national companies who have a significant level of intra-organisational staff mobility, both geographically and in relation to movement through occupational levels.
- SMEs, particularly those involved in rapidly changing economic sectors.
- Accreditation agencies, i.e. those responsible for providing certification for training.

Table 2: Details of research methods used		
Work package	**Activities**	**Methods**
WP1 State of the Art review	1.1 Literature Review	Review of 126 Publications in 20 analytical categories.
	1.2 Comparative national studies on competence definition and accreditation	Cross-comparison of 12 EU countries on four key comparitors, using common analysis template.
WP2 Sectoral Surveys	2.1 Survey of Large Company skills training and accreditation	Survey of 34 European MNEs. Content analysis of documentation. Structured interviews. Website analysis.
	2.2 Survey of skills training in European SMEs	Statistical analysis of secondary data Interviews and focus groups with 40 SMEs
	2.3 Survey of European Accreditation agencies	Analysis of the outputs of WA 1.2 Content analysis of secondary source material (reports; policy statements; web site material) Interviews with key actors
WP3 Case Studies	3.2 EURES cross-border partnerships	Statistical analysis of 13 EURES Intensive case studies of 6 EURES (Interviews with Euro advisors; Steering Committee members; service users; Observation; statistical analysis of provision and utilisation of databases and job vacancy systems; content analysis of documentary outputs) Short case studies of 3 EURES partnerships
	3.3 Innovative skills training provision for excluded groups	4 intensive case studies: one on employability and mobility management at the Dutch ABN AMRO bank; two on skills training and regeneration in the UK (London and Sheffield); one on migrant workers and transient populations in Greece. Multi-methodological (content analysis; observation; interviews)
	3.4 Smartcards and on-line assessment systems	Content Analysis of 170 web-sites; databases and on-line assessment systems
	3.5 Innovative Industry sectors: IT; healthcare	Intensive case study of the skills management process in IBM face-to-face interviews and analysis of existing printed products/documents
WP4	Development of tools based on 5 ‘scenarios of use’	Iterative prototyping
WP5	Validation of tools	COMPETE web-site Review Workshops Validation workshops

Two main research questions were addressed in ***large company survey***:

- How do large European multi-nationals with locations spread across a number of EU member states, or outside Europe, approach issues such as: cross border labour movement; skills

standardisation across boundaries; the development of core, cross-job and cross-company skills.

- How do large organisations, particularly those in 'leading edge' sectors that are subject to rapid change, monitor changing skills requirements and address emerging 'skills gaps'.

In addition to providing data to address COMPETE research questions, this survey also provided an opportunity for COMPETE to engage key corporate players in the development and exploitation of COMPETE outputs. In this context, the activities covered :

- conventional data gathering (interviews with key actors);
- 'promotion' of COMPETE;
- potential engagement of key organisations in subsequent development and validation of COMPETE outputs;
- exploration of future exploitation of COMPETE outputs.

The organisations targeted reflected a number of considerations: large multinationals with bases in a number of countries; companies aggressively expanding their geographical base; sectoral diversity, and, a range of skills levels. Two sub-groups were identified: a 'core' group of multi-nationals and a 'top-up' group of particular relevance for research question - monitoring changing skills requirements. The Core Group was comprised of a range of economic sectors: Industrial (automobiles ; chemicals ; pharmaceuticals ; aerospace ; IT hardware ; telecoms); Banking and Financial Services ; Services (Travel; Utilities; Retail) ; Public Service/Voluntary Sector. A total of 34 companies were involved in the survey, employing a combined total of 3.7 million people. They covered : Automobile and automotive (5) ; Power (1) ; Petrochemicals (1) ; Pharmaceuticals (2) ; Telecommunications and electronics (5) ; IT (2) ; Miscellaneous industrial (2) ; Airlines (4) ; Financial Services (2) ; Retail (5) ; Other services (2).

For the Survey of skills training in European SME's, as with MNEs, the focus not only included data gathering to address COMPETE research questions, but also encompassed the action research element of the project, i.e. exploring potential demand for COMPETE outputs. The key research questions addressed were:

- What is the relative distribution of core and cross job skills across a range of SME's in different sectors?
- To what extent do SME's engage in skills monitoring behaviours (in relation to changes in occupational structures) and 'skills auditing' in order to remain competitive?
- To what extent is there a market within SME's for COMPETE outputs, particularly a portable skills card.

The bulk of the research effort was focused on the reanalysis of existing secondary data. This included:

- surveys of SMEs carried out under EU Framework programmes (e.g. the DELOS project);
- Surveys carried out by COMPETE partners (e.g. the IGT Annual Survey ; the MMU survey of firms in Northern England);
- National and EU surveys.

In addition, the secondary data analysis was supported by primary data collection, involving:

- a series of 'focus groups' with SME's
- face to face and telephone interviews with SME organisations and relevant experts

The data collection and analysis took the form of a comparative review of four EU countries : Italy, the UK, France and the Netherlands, using a common data capture and reporting template.

iv) Work package 3: Case Studies

The overall methodological approach used in WP3 involved undertaking intensive case studies of four key sectors identified by the COMPETE work-programme. Each sector corresponds to a particular 'work activity' of the overall Work Package 3. In addition to these four 'sectoral' work activities, an initial activity (WA3.1) was devoted to set up and management of the case studies, and a final work activity (WA3.6) was devoted to synthesising the results and translating these results into a framework and specification for the COMPETE tools. This framework and specification is presented in an accompanying report – Deliverable 3.2. The sectors (and associated work activities) were comprised of the following:

- WA3.2 EURES cross-border partnerships
- WA3.3 Innovative skills training provision for excluded groups
- WA3.4 Smartcards and on-line assessment systems
- WA3.5 Innovative Industry sectors: IT.

Overall, the case studies involved a multi-methodological approach, incorporating content analysis of secondary data; interviews with key stakeholders; observation. Details of the methodological approach for each individual case study are contained in the individual case study reports (set out in Deliverable 3.1: Results of Case Studies).

The case study on EURES cross-border partnerships itself consists of an inter-linked set of six 'mini case studies'. The EURES partnerships represented a unique test-bed for COMPETE, because they reflect institutionalised arrangements around cross-border labour migration that has been going on for centuries. On the one hand, they provide the opportunity to study and learn from the 'natural' behaviours of key actors, such as employers and employees. On the other, EURES partnerships embody a range of 'imposed' features that are designed to facilitate cross-border working.

These include partnership infrastructures involving social and institutional actors (European, national and regional authorities; chambers of commerce; trades unions etc); telematics infrastructure providing, for example, on-line job centres; advice to employers and monitoring of labour movements.

In this context, the main research questions addressed were:

i) how do EURES partnerships operate, in terms of trans-border working arrangements; level of cross-border movement; partnership arrangements; telematics infrastructure
ii) what are the benefits of such partnerships from different stakeholder perspectives (employer/employee/migrant workers)
iii) how do stakeholders negotiate on skills definitions; equivalence and accreditation?
iv) What is the value added of partnership infrastructure for cross-border movement and how effective are they?
v) What opportunities for COMPETE products exist within such partnerships?

The overall approach adopted was case study analysis. This entailed a multi-methodological data gathering exercise for a range of 'exemplary' EURES partnerships. The partnerships selected were:

Ø HNFK (UK-BE-FR)
Ø The partnerships bordering the Netherlands (IGA II; EUREGIO Gronau-Eschende /Rijn-Waal Rijn-Maas-Noord (NL-DE)
Ø PYREMED (E-FR)
Ø GALICIA/North Portugal (E-P)
Ø SLLRP (LUX/DE/FR)

The data capture methods included:

- Interviews with Euro advisors (officers who provide day to day support for example for people who are thinking of moving to a job in another EU country);
- Interviews with EURES Steering Committee members;
- Interviews with individual service users (job applicants and firms looking to relocate);
- Statistical analysis of provision and utilisation of databases and job vacancy systems;
- Content analysis of documentary outputs (activity reports; financial documents; minutes).

In addition, a supplementary analysis of the following EURES partnerships was carried out, in order to provide supporting information for the case studies:

Ø EURAZUR (F-IT)
Ø Transtirolia (IT-AU)
Ø ORESUND (DK-SV)

The cases were selected to reflect a range of indicative characteristics of the partnerships. These encompassed old-established v recently formed and evolving partnerships; examples of partnerships addressing structural economic problems (and involving structural funding). They were also selected on logistical grounds to cater for the linguistic and cultural features of the COMPETE partnership and the level of access available to partnership stakeholders.

Innovative skills training provision for excluded groups

As with EURES, this case study was comprised of three 'sub case-studies':

- the ABN-AMRO case study in the Netherlands on employability and mobility, with a special emphasis on employees who do not have the required competencies to fit into the bank;
- the case of Greek migrant workers and transient populations; basic skills training for Eastern European immigrants in Greece;
- the case of Sheffield (UK) where the emphasis is on informal learning and community development and the case of the Digital Learning Ring in London (UK).

The methodology used in the case studies comprises different components: face-to-face interviews with individuals and groups; observation of activities (for example training for Greek migrant workers); content analysis of existing printed products/documents related to the case-study and other relevant quantitative and qualitative data. In each of the case-studies specific interviews checklists were used, however all based on the same research issues. All three sub-case studies included data collected from 'users' (bank employees on training schemes; migrant workers on training schemes; users of the Digital Learning Ring). Across all three examples, data was also collected from the perspective of providers (for example managers of innovative training) in order to provide 'triangulation'.

Innovative industry sectors

This case study focused on the IT sector. It was comprised of an intensive study of the 'skills e-engineering' of a large IT company – IBM. This reflects the position of the IBM Italia Foundation[1] is an associated partner of COMPETE. On the basis of the general objectives in Work Package 3, the specific objective of the case study were:
define the role that the development of internal competencies has had and still has on the market performance of IBM, in terms of adjustment of these competencies to the changes in the company and the market it refers to;
Gather information on the methods of defining - within IBM - the skills, the management, monitoring and development of skills possessed, recognition

[1] The IBM Italia Foundation was constituted in 1990 by IBM with the aim of consolidating the social and cultural commitments expressed by the company in an institutional framework.

and crediting of skills (both formally and, above all, informally) and consequently, their use and valorisation.

The approach used covered the following:

Definition and recognition of skills in IBM: *I*dentification and definition of skills/competencies; tools used for identifying/defining skills; company policy on definition and recognition of skills (both through formal and non-formal paths)

Processes and methods of skills management*: i*dentification of changing skill needs and skill deficiencies; company reactions; tools and practices of skills auditing and monitoring

Analysis of how the skills management process works*: c*ompany policy on skills development (according to the market evolution) and strategies used; consideration of individual aspirations

Description of electronic tools to support the skills management process: aims, methodology, practical use of electronic tools; possible future developments; critical points; transferability and adaptability to COMPETE Tools
The research activity was carried out through face-to-face interviews and analysis of existing printed products/documents related to the case studies (both internal to IBM and external ones).

In detail, the “desk” phase of the case study included:

A preliminary recognisance, carried out with the collaboration of IBM Italia Foundation, using the documentary sources connected to the research matters and essentially followed by IBM personnel;
The development of a check list on which to base the field interviews. Considering the nature and aims of the work, the use of an agile tool was preferred, that essentially covers the four subject areas listed above and guides the interview to providing detailed information on the specific competencies and subjects of the interviewee in question. The interviews were not only designed to discover the company's views and the initiatives employed in the development of internal competencies, but also to discover the personal perception of the interviewees as users of the same information systems used in defining and developing competencies.

Field research activities involved the management of human resources inside IBM Italia, as well as the heads of development of the areas with an elevated need for highly specialised skills. Among the latter, those selected and analysed in detail are the R&D laboratory *Tivoli* (located at the IBM plant in Rome) and the *Java Technology Center,* located at IBM SEMEA South of Bari.

4. DESCRIPTION OF PROJECT RESULTS

As discussed above in section 2.3 of this Report, the results of the above research activities strongly supported the necessity of re-shaping the tools and Guidelines originally envisaged for COMPETE.

The main research results were as follows:

- levels of labour mobility within the EU have historically been consistently low in general

- in-migration to the EU from 'external' countries has consistently run at a far higher level than inter-EU migration

- migration and labour mobility is inherently 'localised' in nature

- there is no evidence that these patterns will change dramatically over the foreseeable future (and that the mass diffusion of smartcard technologies will precipitate dramatic changes to these patterns)

- employers are far more interested in how 'soft' skills and competences (such as 'personality', 'experience' and 'cross-job skills') are represented than in how formal qualifications are accredited and 'cross-walked' across different European occupational and skills classification systems

- companies (particularly those involved in the rapdily-evolving 'knwoledge industries') have a real need for skills that facilitate 'just-in-time' learning; the development and utilisation of 'organisational memory', and the incorporation of client feedback

- the relationship between skills and social exclusion is complex: training is but one element (albeit an important aspect) of this relationship, and there is a need for a more comprehensive (and more contextualised) set of tools to support skills development for socially excluded groups

- developments in Internet-based technologies and interactive knowledge bases have significantly outstripped those in smartcard technologies, leaving the latter as a narrow, specialised technological metaphor

These key conclusions led to the development of a specification for a different set of tools than originally envisaged for COMPETE. Although the new tools retained some of the elements embodied in the original specification outlined above, they reflect new emphases, in particular the realities of European labour movement processes, and the growth in Internet-based support and information systems to promote labour mobility. The following 'revised' COMPETE tools – based on the construction of key 'scenarios of use' identified by the research activities – were developed and tested with a number of prospective users :

- Tools to Support Migrant Workers
- Tools to promote Inter-regional partnerships.
- Public Employment Service support tools
- Tools to Valorise the Company Asset Base
- Cross Border Electronic Credentials Authentication tool

They represent different configurations of target users in different settings. These were identified as a result of the COMPETE policy reviews specified above, and two ‘design workshops’ undertaken by the partnership. On the basis of these reviews, a technical specification for the tools was drawn up (presented in full in COMPETE Deliverable 3.2: Framework and Specification for Tools and Guidelines).

This formed the basis of iterative prototyping of ‘mock-ups’ of the tools, which were housed on the COMPETE web site. These were validated in three stages, in collaboration with the COMPETE industrial partner (IBM) and with selected user groups. Stage 1 consisted of verification of the concepts for the COMPETE tools. This verification process took the form of ‘storyboards’ of the tools being reviewed as part of an interview process involving respondents from user groups (large companies; SMEs; EURES partnerships; public employment services). Stage 2 consisted of a series of validation workshops, in which the tools were presented to review panels of potential target users. On the basis of these validation workshops, modifications were made to the COMPETE mock-ups, which were then presented at a final series of validation workshops. These took the form of focus groups with key users. These involved: a workshop for migrant workers, held in Athens; a workshop for EURES cross-border agencies and regional development agencies, held in Saarbrucken; a workshop for Public Employment Service officers, held in Sheffield, UK, and a workshop for IBM systems engineers and human resource managers, held in Milan.

This conclusion arose as a result of several iterations of ‘policy reviews’ undertaken by the COMPETE partnership as part of the formative evaluation and review of the project. The revised tools and Guidelines are described in detail below.

5. CONCLUSIONS AND POLICY IMPLICATIONS

5.1 Review of State of the Art

5.1.1 The Policy Context of the Review

The COMPETE project is situated within key policy agendas, which have become increasingly important at both the national and European contexts. There are four distinct policy agendas of relevance to the aims and objectives of COMPETE, and which shape the orientation of this literature review. Firstly, it relates to current policy on maintaining and improving the economic competitiveness of both nation states and the European Union as a whole, in view of the effects of increased globalisation and rapid technological change. A key concern here has been problems associated with 'skills gaps' in the labour force, which are thought to impede (or slow down) the competitiveness of the European economies.

Secondly, COMPETE addresses policy issues that link competitiveness and human capital to education and training practices. As it has been argued, poor economic growth is directly linked to the lack of integration between education and work. To promote integration, recent policy initiatives have proposed an increasing mix of employment-linked vocational training; the creation of bridging courses and accreditation arrangements between education and training providers and the creation of a more open and flexible 'lifelong learning' system.

Thirdly, COMPETE relates to recent policy initiatives designed to promote greater mobility for European citizens, and to reduce geographical and cultural barriers within Europe. It doing so, it addresses particularly Objective 1 of the EU White Paper on Education and Training, which proposes the creation of a European Skills Accreditation System. The System aims to set up skill accreditation mechanisms that will allow individuals to validate their knowledge however it has been acquired, using *standardised frameworks of competencies*. Such a system envisages the use of new technologies, like personal 'smart cards' (portable skills cards) that will allow citizens to record their training, experience and résumé on portable, computer-readable media. It also proposes the use of remote, electronic assessment and testing systems to allow individuals to obtain qualifications and credentials that in turn can be recorded on their personal skills card

Mobility for citizens is also linked to a fourth policy issue with which COMPETE is associated: how to reduce problems of social exclusion. Specifically, COMPETE explores how the use of new technologies, new methods of training and new ways of representing skills can increase the participation of 'excluded groups' (for example the long-term unemployed and migrant workers) in more formal education and training and help improve their employability.

5.1.2 Key issues shaping the Review

Against this policy background, the literature review attempted to shed some light on aspects relating to skills acquisition, assessment and accreditation that are pertinent to COMPETE and its likely outputs, with particular reference to the development of a skills database and a portable personal skills media (PSM). In doing so, the review highlights a number of issues and constraints that need to be taken into account when developing such media and accompanying methodologies.

The skills database, taxonomy and related PSM address a number of goals that are defined by these policies. For example, by establishing an accurate profile of the skills, competence and knowledge of the individual, the COMPETE tools can contribute to increased effectiveness of the recruitment process. They can help reduce the possibility of 'skills mismatching' not only at organisational but also at sectoral, regional and national levels. Similarly, the tools can be used to develop audit instruments to identify the repertoire and/or bundle of skills and competences of a labour pool at a particular locality, i.e. company, sector, region, nation state or even the EU as a whole. The Personal Skills Media can directly contribute to improved manpower planning at these different levels as well as to the design of better-targeted training programmes. To do so, however, a PSM needs to be linked to a skills database which would allow the profiling and auditing of skills on a continuous basis in an iterative process involving all the relevant stakeholders, e.g. companies, regional development agencies, skills observatories, job agencies, etc. The database could be then used not only for mapping out the existing skills of the workforce (and/or current skills requirements of jobs) but also for forecasting future skills needs. Indeed, a functioning skills database and profiling system could provide on-line predictions of future skills trends and information on pathways to relevant training, which in turn, could promote and facilitate training activities in companies (especially SMEs), sectors, regions and/or nations.

The skills database needs to accommodate the tensions arising, on the one hand, from the imperatives and constraints that the global economy imposes on all nations and, on the other, from the need for these nations to respond in a way best suited to their individual and localised needs. In this sense, both the PSM and the skills database should be designed with a view to achieving transparency rather than imposing uniformity. In other words, both the PSM and the database should be flexible enough to allow scope for innovation and its transfer/diffusion.

To this effect, in the current political climate it is clear that any skills database (and PSM) should be transparency-based, i.e. providing a means for individuals to move from one skills environment to another rather than a new standard replacing national qualifications and skills standards. In the prevailing technological environment it is clear that any PSM would be an electronic entry point to a skills database. This would require the selection or development of a trans-national database-able skill taxonomy. It would open up the possibility for on-line input of training and education outcomes. It would be compatible with on-line matching of vacancies with job seekers. It could be used for firm, sector, regional and national skills audits.

These prospects mean that any PSM would have to be backed up by a system which kept both personal records and the skills taxonomy updated, and which was available by electronic media to employers, employees, job seekers, trainers, government and development agencies.

However, it is important to be aware of the limitations of such a database (and the accompanying PSM). One problem is that, despite the appearance of an increasing 'economic convergence' precipitated by market globalisation, there are always distinctive core competencies and organisational capabilities that are inextricably linked with, among other things, a particularly 'localised' work context and/or organisation. Another problem is how to identify and represent the non-formal aspects of learning and skills acquisition. Linked to this problem are issues around 'cognitive dissonance' between employees and managers in relation to the definition of skills and training. For example, workers often consider that the problem solving aspects which arise within 'low skill' jobs mean that they contain more skills than are recognised by senior management, who consider them more straight-forward than is actually the case. This to some extent reflects the broader problematic of how skills are related to social exclusion. Female employees, for instance, tend to take their social, interpersonal and communications skills more for granted than their male counterparts, and so undervalue them. Similarly, the prior knowledge of immigrant, technologically unemployed or marginal groups is often not adequately identified, recognised and evaluated. This, in turn, leads to further attrition of skills and inappropriate patterns of retraining. Whilst the provision of on-line education and accreditation is recognised as a valuable means for drawing such groups into skills upgrading and for extending coverage to wider areas (e.g. the family and/or community), there are a number of problems – like accessibility to ICT infrastructure – that need to be taken into account.

Finally, the design of skills-focused ICT systems, such as those envisaged in COMPETE, needs to take into account the great variety and diversity of cultural and learning patrimonies that currently exist across the EU. As it is widely known, existing VET and accreditation systems are the result of deeply embedded systems of governance and social relations as well as of widely differing structures of society and economy. Within such a varied and diverse context, where different factors interact with different societal and economic configurations, a transparency-based skills taxonomy and database can only be seen as an attempt to create a comparative 'space' within which individuals can move from one national model to another with minimal friction.

5.1.3 Concerns addressed by COMPETE and the Literature Review

From the above discussion, it follows that the COMPETE project – and the tools it was proposed to develop - faced a number of significant concerns:

§ The initial justification for COMPETE to improve the mobility of labour. For example, a PSM must increase the ability of workers to find employment outside their home country using the skills, which they have acquired. Migration, including migration into the EU, should not be associated with a step down the skills ladder.

§ Improvements in the efficiency of the selection process for employers. The COMPETE tools should make a real difference to the employer's ability to judge the value of an applicant from a different skills environment.

§ There must be an infrastructure, which would facilitate the use of any COMPETE tools by SMEs. The introduction or maintenance of the tools should not burden small and medium sized enterprises.

§ The COMPETE tools must be designed in such a way as to assist in the process of improvement and valorisation of the skills of all sectors of the population, for two reasons:

In addressing social exclusion it is necessary to evaluate the prior knowledge and peripheral skills of those excluded or at risk of exclusion and to utilise them to the maximum both within work or within training.

In order for firms to begin to move into the knowledge society, it is also necessary for them to begin to treat their skills base as an asset base.

§ The COMPETE tools must contribute to the process of mapping and modelling the new skills that are being developed in the most innovative areas of the economy.

5.1.4 Key Research Topics identified by the Review

The literature review highlighted a number of theoretical, conceptual and practical problems. These were taken into account when developing the research methodologies for COMPETE that in turn fed into the development and evaluation of the COMPETE tools. These topics formed the basis of the research activities carried in workpackage 2 (Sectoral Surveys) and workpackage 3 (Case Studies). In these workpackages, COMPETE explored the following key research topics:

- The variability of mechanisms that take individuals from education to work transitions in EU member states; and the variability of skills definition and accreditation systems;
- The extent to which employees and employers perceptions of skills are similar, and the extent to which what employees learn is actually used at work;
- The extent to which skills are 'embedded' in everyday cultural life, and how skills that are acquired informally can be identified and used;
- How organisations assess their skills needs and how they carry out training designed to fill a 'skills gap';
- The effectiveness of current methods for describing and assessing skills; and
- How 'cross-border' labour migration works in practice.

Set against these theoretical and conceptual issues, there were a number of important 'technical' and practical problems identified by the literature review. The main practical issues faced by COMPETE – and particularly the tools to be developed by the project - are:

- How to develop skills classifications that are equally applicable in different EU countries;
- How to represent work and life experiences in ways that are intelligible to interested parties (for example employers) who are from another organisation, culture, country;
- How to adapt training, skills description and accreditation procedures to different contexts of use;
- How to overcome problems of access to new technologies – particularly for the socially excluded;
- How to facilitate the development and use of innovative skills development practices; and
- How to introduce systems which do not introduce undue burdens for SMEs.

5.2 Cross-National Comparison of EU training and accreditation systems

5.2.1 Key findings

Underpinned by, among other things, the principles of human capital theory and driven by a host of factors - from globalisation and rapid technological change to concerns about social equity and the removal of barriers to participation (e.g. to the labour market), all member states have increasingly focused their efforts and interventions on the supply side of skills. This has meant that across the board there has been a concerted effort in the up-skilling of the EU population. This has taken the form of policies aimed at both the young and the older segments of the population. For example, there has been a major drive on all member states designed to increase the number of young people who stayed on at school (beyond compulsory education) as well as to enhance the quality of initial training and education (and entry qualifications) so as to ensure a smooth and effective school-to-work transition. In the same vein, efforts have been directed at increasing the provision and improving the quality of continuing vocational training not only for those in employment but also for those who want to return to work. Finally, there is a strong emphasis on providing the necessary skills to those excluded from the labour market via a wide range of programmes.

It is against this background that developments in VET systems across the European Union should be viewed. Although these are in a state of flux and change there are a number of common underlying themes that cut across polices and programmes pursued both within the context of deregulatory Anglo-Saxon new-liberalism (e.g. the UK) and the more regulatory/corporatist continental approaches (e.g. Nordic countries, Germany). Apart from on a focus on enhancing the supply-side of skills described above other developments include the increasing decentralisation of vocational education and training provision as well as of the delivery of labour market programmes (e.g. increasingly responsibility for the implementation of VET policy, the relevant allocation of resources/funding and the actual identification and

determination of training content is being devolved to regional bodies and/or local authorities), efforts to improve the quality and relevance of vocational training provision (e.g. through quality assurance mechanisms, training standards and the professionalisation of trainers), and the growing interests in the various forms of non-formal and/or informal learning (as opposed to formalised learning).

Another area where Member States seem to converge is in their effort to make education and training provision more responsive and relevant to the needs of the labour market and the world of work. A common approach in this respect has been the greater involvement of social partners in the identification of training needs and relevant training course requirements as well as in the provision of training and the determination of policy. Although for certain member states involving social partners in the sphere of training has been a long-standing tradition (e.g. Nordic countries), for others this signified a significant change. As a result, training is assuming a growing importance as a key issue in collective bargaining. Another policy response to the need for training that is relevant to the changing requirements of work has been the development and use of instruments/methodologies for forecasting skills requirements (often again through the involvement of the social partners either directly or in an advisory capacity). Regular contact between local schools and colleges on the one hand and local employers/businesses on the other has been another way of ensuring the labour market relevance of skills as has been greater access to and improved quality of career counselling and guidance to both school and adult population.

As far as young people are concerned, and in order to enhance their access to initial vocational training member states have been reforming their VET systems in a number of ways. For example, efforts have been directed at improving the scope and quality of vocational guidance and career counselling at schools and colleges; at establishing a more coherent accreditation systems that encompasses both academic and vocational qualifications and at pursuing parity of esteem between academic and vocational qualifications; at providing clear progression routes which make it easier for someone to switch from a vocational training programme to a general or academic one and/or to go on such a programme once his/her initial vocational training is completed.

A centrepiece in the policies targeted at the young have been the various configurations of apprenticeship and/or traineeship schemes. Across the board there has been a widespread policy of expansion of such schemes in the belief that they provide an effective link between vocational education and training and the world of work. Moreover, this policy can be seen within the context of a more general trend across the EU to encourage young people to opt for vocational training at both upper secondary and tertiary levels. It is thus not surprising that the development of apprenticeships remains an important part of employment policy in the EU and featured prominently in the National Actions Plans produced annually by Member States.

Having said that, one should note that countries vary considerably in the way they approach the concept of apprenticeship. On the one end of the spectrum one can find countries such as Germany and Denmark with a long and well-established apprenticeship tradition (albeit it different in the way it is being operationalised in practice). On the other hand in other Scandinavian countries (e.g. Sweden) apprenticeships are much less common. Similarly, with the exception of Portugal, apprenticeships in a number of Mediterranean countries (e.g. Greece) apprenticeships are monitored on an ad hoc basis, resulting in very low rates of take-up on the part of young people. Other member states can be found in the middle, with the UK being closer the low end of the spectrum and countries such as France, Ireland and the Netherlands towards the upper end. However, it would a mistake to think that the various apprenticeship programmes are the only mechanism that member states have at their disposal for enhancing the education and training of the young. Indeed, EU countries have opted for a varied approach, which combines a number of other forms of work-linked training, most usually different 'alternance' schemes (e.g. France, Finland, Denmark, Ireland, Sweden, and the UK). These schemes in their varied configurations combine classroom teaching with workplace training.

Another common theme across the EU countries is the drive for an increased investment in education and training not only by the Government (through public expenditure) but also by the employers and (more importantly) by the individuals themselves. The latter are encouraged to invest on an on-going basis in their own learning and development so as to enhance their employability and their chances of remaining in work. Across the European Union one can find a wide and varied range of mechanisms aimed at encouraging investment in training not only by companies but by individuals as well. One of the most well-known instruments has been the training levy according to which a set percentage of the company's payroll is earmarked to fund training activities (France, Belgium, Denmark etc.). Other measures include training-related tax-free allowances (Austria), grants (Sweden) and relief from social contributions (Italy, Portugal), as well as tax incentives (Spain, Netherlands). Some countries have also created special funds (financed by levies on companies) to finance vocational training (Belgium, France, Denmark).

Significantly, most member states have been reconsidering the way education and training, and particularly vocational training is being funded. This has been deemed necessary against a background of tight budgetary constraints, growing political emphasis on lifelong learning and a focus on employability (as opposed to lifetime employment). As a result, in their effort to promote investment in vocational training member states have been, among other things, trying to consolidate training provision through legislative framework (as opposed to central government regulation); introducing devolved/decentralised funding regimes (in order to enhance the responsiveness of the training providers); introducing the 'purchaser/provider' concept alongside an element of competition between public and private providers; supporting the greater involvement of social partners in the realm of training and the inclusion of the latter in collective bargaining; and finally, by

developing new types of funding mechanisms aimed to foster economic' rationality' among providers.

As far as the individuals are concerned, apart from the provision of financial help in the form of grants and low-interest of interest-free loans (the UK, the Netherlands), across the European Union there has been an increased emphasis on their entitlement to training leave that can help them improve their skills portfolio. Having said that it should be noted that the actual policies in the Member States vary considerably, from France and Denmark where this entitlement is firmly established as well as Germany where training leave is covered by collective bargaining to countries where the debate has just started (the UK, Italy).

At the same time that the trend towards decentralisation of training provision gains greater momentum, at the other end of the spectrum there is a strengthening of national qualifications standards as a way of ensuring that there is consistency/quality and a common framework within which local and/or regional providers of training will operate. Across the European Union there has been a growing recognition of the need for a coherent system of accreditation of both vocational training and non-formal (e.g. work-based) as well as informal learning. As a result, there has been a major emphasis on developing proper systems of skills accreditation capable of assessing and recognising skills and competences acquired not only through formalised/structured training routes but also through non-formal/informal learning. To this end, a number of Member States have opted for output-based or performance based systems which define the level and content of a specific competence but are flexible as to how this competence is acquired. Clearly, in this case, the methodology used to assess and validate the way prior knowledge and experience have been acquired is a crucial element of the new systems. Indeed, this has been accepted by a host of countries, which have introduced such systems. These countries include the UK, France, Ireland, Finland, the Netherlands, and more recently, Spain and Italy.

Not surprisingly, the study highlighted a variety of national systems of (vocational) qualifications across the EU, each reflecting the particular socio-economic, political and cultural history of the country in question. Thus, in France it is collective agreements that tend to define the qualifications requirements for particular jobs. On the other hand, Germany with its long-established apprenticeship schemes has developed structured training programmes, which someone needs to follow successfully if he/she is to be allowed entry to a certain trade. In the UK the system of National Vocational Qualifications aims to contribute towards the development of an integrated national systems of qualifications. Spain and Ireland have gone down similar routes. Related to the above is the increased importance of modularisation and the use of forms of modular training in a number of countries (e.g. the UK, France, Spain, the Netherlands).

Finally, one should not ignore the importance attached by member states to education and training (mainly vocational) as a major policy instrument in facilitating social inclusion and integration (or re-integration) into the labour

market. Indeed, all member states have over the years used vocational training measures to help disadvantaged groups (most notably the young and the long-term unemployed) enter or re-enter the labour market. Since unemployment rates tend to be higher among the younger people (those under 25), it is not surprising that a lot of energy across the EU has been channelled towards offering vocational guidance to and introducing specific training measures for the young. For example, in the UK the New Deal for young people apart from offering the young person an option of full-time education and training, includes a training element (day release for training purposes once a week in all the other options. In Ireland the Youthreach programmes enables those leaving school without qualifications to receive two years of training combined with work experience. Similarly, in Spain social guarantee programmes aim at encouraging young people with little or no education to participate in training or gain work experience. Apart from the young, member states have directed their efforts at tackling issues surrounding the long-term unemployed, people with disabilities, people from ethnic minorities and 'older' workers at risk.

The above discussion (and the more detailed one that follows) highlights just some of the issues that confront EU countries today and outlined some of the policy responses that this study has been able to identify. However, it should be noted that the this report provides just a snapshot of what is a very fluid and unstable situation, with almost all the VET systems being currently in a state of flux. For example, even while this report was being prepared a number of countries had just, or were in the process to reform their systems (Spain, Greece, the UK, Finland, the Netherlands, Denmark). As a result, the discussion presented here and the conclusions drawn should be treated with caution and in the light of continuous change.

5.2.2 Summary of the cross-national comparison

As indicated above, the cross-national comparison undertaken in COMPETE workpackage 1 involved a systematic analysis of the VET and accreditation systems of 12 EU member states, in terms of the following variables:

- policy, legislation and regulation (definitions of VET training; key policy and legislation instruments; regulatory bodies; accreditation systems; funding mechanisms for E&T; social inclusion policies and initiatives)
- provision and the market (school-based; college-based; work-based; informal learning; providers and levels of provision);
- occupational classification systems (national classification systems;
- regional and local systems; models used);
- skills taxonomies (skills standards; content models;
- methodological approach; classification dimensions; accreditation; monitoring)

The Tables below provide an overview of the relative positions of a range of these countries on the analysis dimensions.

Table 3: Position of selected member states on policy and legislation dimensions

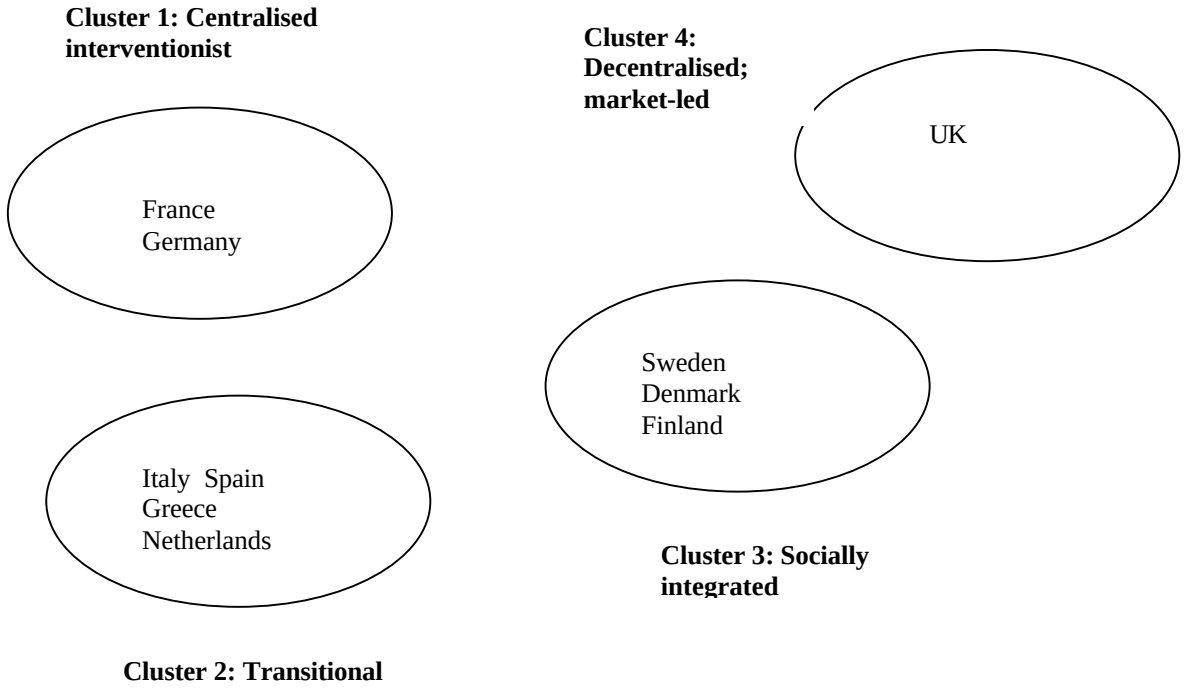
highly legislated	**transitional**	**broad framework**	**loosely regulated**
FR, DE	GR, NL, FIN	ES, IT, IR	UK
social partnership	**Balanced**	**Govt. – led**	**Employer-led**
DE, DK, NL	FR, GR, IT	IRE, FIN, SWE	UK
strongly interventionist	**interventionist**	**regulated market**	**market-led**
FR, SWE	IT	DE, AUS	UK
central funded	**dual training**	**neo-corporatist**	**liberal**
FR	DE	DK	UK
centralised control	**federalised**	**mixed**	**de-centralised**
FR	DE, IT	FIN, SWE, NL	UK

Table 3 shows the relative positions of selected states on 'policy and legislation' dimensions, i.e.:

- extent to which VET systems reflect strong regulation and legislation
- the orientation of partnerships involved in VET systems (at one end of the spectrum, systems dominated by 'social partnerships', and at the other, employer-driven systems)
- degree of state intervention (from strongly regulated to 'market-led' systems)
- the broad funding approach to VET (centrally funded to a 'liberalist' model)
- the broad power/control basis of the VET system (centralised; devolved to federal/regional agencies; mixed and de-centralised).

On this basis, although it must be stressed that all EU member states are in a state of constant evolution, it is possible to cluster them in terms of common features as shown in Figure 1 below**.**

Figure 1: VET System clusters



As the Figure shows, four broad configurations can be identified. Cluster 1, typified by conditions in France and Germany, is characterised by a highly legislated, significantly centralised, government funded and centrally-controlled learning infrastructure. Cluster 2 represents a 'transitional' group, which is moving towards hybrid systems based on some degree of regulation and centralisation, but increasingly influenced by new forms of partnerships involving private and social agencies. Cluster 3 represents what might be termed the 'Scandinavian model', and reflects a high degree of social integration of learning (the importance of social partners; an emphasis on informal and life-long learning; mixed funding models). At the extreme, Cluster 4 (the UK) reflects a more market-led, de-centralised regime.

However, there does not appear to be a simple match between the degree of centralisation and regulation of CET systems and their accreditation features.

Table 4: Features of Accreditation Systems in selected member states

central delivery	**local delivery**	**mixed**	**de-centralised**
FR, IT	BE	NL	UK, DE, IRE
unsystematic	**criteria-referenced**	**portfolio**	**active citizenship**
ES, PT	NL, UK	FR	SWE, DK

As Table 4 shows, although accreditation in France is elaborated and delivered through centralised institutions, in Germany, there is considerable devolution of authority for accreditation. However, accreditation of prior learning in France has evolved with a focus on 'individual portfolios', in contrast to the UK where there has been a drive to standardise accreditation

of non-formal learning in relation to criteria-referenced frameworks. In Scandinavia, the importance of prior and non-formal learning as a constituent part of a more general process of linking learning with 'active citizenship' is consistent with the 'socially integrated' character of the VET system.

There is even less discernible linkage between these generic VET system features and the ways in which member states approach issues of occupational and skills classification. Table 5 illustrates the diversity and complexity of the occupational classification systems currently in use in an indicative range of EU member states.

Table 5: Types of Occupational Classification Systems

Country	System	Approach	N. occ. titles	N. major groups
UK	SOC	Job performance and competence based	23,000	9
GR	ISCO-88	Occupational characteristics	657	10
ES	LOGSE	Qualifications associated with Professional Profiles	6,000	20
PT	NOS	Economic sectors	1,700	-
FR	PARODI/NEB	Hybrid – qualifications and knowledge	-	-

Although recent drives by the EU to impose some degree of 'top-down' standardisation of occupational classification systems, for example through ISCO-88 and its successors, have had some impact, as Table 3 shows, there is still considerable diversity. The main distinguishing factor which separates the different approaches is rooted in different ontological perspectives of what constitutes work. In the UK, occupational classification is primarily derived from assessments of the competences associated with particular jobs. In Spain, classification systems build on understandings of a core group of around 20 'professional profiles'. In France meanwhile, the traditional dominance of qualifications-based classification systems (linked to technical 'degrees') is now moving towards a hybrid system that incorporates perspectives on 'knowledge' associated with particular work activities. In turn, there is similar variation in the ways in which member states approach skills taxonomies, as Table 6 shows.

Table 6: Skills Taxonomies in selected member states

Country	Approach	Dimensions
UK	Competency	Generic (transferable across occupational groups) Vocational (specific to a job) Basic (numeracy, literacy)
NL	Competency	Vocational Further Development Social and cultural
IT	Skills standards	Basic (computers' languages, law) Cross-sectional (diagnosis; problem-solving) Technical-professional (process-based)
FIN	Transparency	Productive (technical) Normative (adaptability) Motivation and socio-cultural Innovative

There are broadly three main philosophies underlying skills classification and development approaches in the EU.: competence-based (which aims to un-pick occupations in relation to broad types and levels of competencies); standardisation (where benchmarks are effectively set through qualifications like national apprenticeship standards), and transparency-based, where the aim is to translate qualifications and certificates into easily-understood 'reflectors' of aptitude, experience and adaptability. Against this background, definitions and constructs of skills and competences are highly variable and highly contextualised. For example, as Table 4 shows, 'basic skills' in the UK (such as literacy and numeracy) are radically different from what constitutes basic skills in Italy (computer literacy, languages and law). Similarly, skills taxonomies reflect the learning patrimonies of their cultural context. In both the Netherlands and Finland, for example, social and cultural competences are prioritised as meta-level constructs.

Two key issues for COMPETE can be drawn from these results. Firstly, the complexity and the context-dependent nature of VET, accreditation and occupational/skills classification systems make it highly unlikely that 'skills standardisation' based on cross-walking and convergence between the systems in place in member states, is a realistic, or desirable, goal for COMPETE. This can to some extent be seen as a reflection of the complex 'learning patrimonies' associated with the cultural differentiation of vocational training and accreditation across Europe. A second the key problem for COMPETE is therefore to capture these kinds of 'patrimonies'; make them intelligible to users of COMPETE tools, and more importantly, find some way of drawing out the implications of these patrimonies with regard to factors such as the 'equivalence' of different qualifications. On the basis of a representation of the 'learning patrimony' of a member state, users of the COMPETE tools should be able to gain some sense of the value of qualifications issued within that member state; the way the accreditation system works; the way that work-based and informal learning is organised and accredited.

5.3 Results of the Sectoral Surveys

5.3.1 Key points and conclusions of the Survey of Large Companies

There is no consistent consensus on what constitutes ‘competences’ across organisations, cross-nationally, or even within the same organisation. A key distinction (and confusion) is between ‘behavioural’ competences, associated with ‘personality’ factors such as team working, and ‘skill’ competences related to job function. Similarly, definitions of ‘skill’ are rooted in organisational and cultural patrimonies. In some countries ‘skill’ is applied only to lower levels of employee (for example non-managerial or ‘shop floor’ workers).

In manufacturing sectors, skills systems are closely aligned with specific processes and products. In this sense, companies tend to think of ‘competences’ as ‘skills ladders’ – which means a scale of usefulness of workers in a particular production process. Similarly, in the IT sector, competences are closely related to experience and expertise in a particular software system. Generally, across all sectors – particularly service industries, and at the managerial level generally - competence systems are becoming more and more to mean expertise and immersion in a particular ‘business model’.

In part, because of the importance of this ‘global internal skill system’, there is no real demand for a European-level public ‘skills standardisation’ system. Indeed, there is strong evidence of resistance to ideas of open access to proprietorial skills systems. This is because firms are afraid that competitors could reverse engineer their products; that disclosure of skills could lead to ‘headhunting’ of valuable staff, and that publication of desired skills attributes could lead to potential job applicants ‘cloning’ desired skills.

Against this background, most large MNEs do not currently experience major problems or deficiencies in the area of cross border labour movement, skills standardisation across boundaries, or the development of core, cross-job and cross-company skills. Either they are conglomerates who allow their constituent divisions to operate within the context of local ‘patrimonies’ ; they have a global skills system which is very closely tailored to fit their specific product and process mix, and they train internally to this model, which is part of their competitive advantage and is not something they wish to divulge; or they operate a system introduced by one of the major ‘system providers’ which is a customised version of a complete organisational and communicational template.

At the managerial level, nearly all of the firms are or will shortly be operating a global competency system that will make their managerial and higher technical staff globally transferable. They do not find that skills, qualifications or languages are significant barriers to cross border movement compared to family problems of housing and education for children.

In terms of 'skills gaps', the evidence suggests that there is no real perception of particular 'bottlenecks' in the labour market. The crucial point is that for large companies, skills requirements are not generated by passive adaptation to external changes in markets but by corporate strategies and plans that are to some degree speculative. Skills are integrated with product development and are part of a long-term strategy of developing the firm's competitive advantage. As a result, large companies are more interested in 'experience' and 'adaptability' to the business model than qualifications per se.

Large Multi-national companies are not currently likely to be interested in investing their time and money in the development of a pan-European competency system. They will not generally want to divulge proprietorial knowledge for this purpose. They would be prepared to use such a system for some grades of workers if it existed, but not for either management and higher technical workers or for production or public interface workers in their key product areas.

A factor which has emerged from the survey which is of critical importance for the COMPETE project is the degree to which skills development is becoming hidden within proprietorial product-and-process development strategies. The development of competitive advantage in specialist manufacturing, franchising, system provision and product–related training leads to the intensification of skills of those close to these developments and therefore tends to lead to the deepening of the exclusion of those unemployed or employed in low-skill areas.

5.3.2 Key points and conclusions of the Survey of SMEs

In general human resources issues and decisions tend to be part of a generic package of decisions overseen by owner-managers. The main preoccupation of owner-managers in relation to both skills development and training focuses on two things: ***strategic positioning***, which is primarily concerned with building niche markets and network relations; and ***change and renewal***, which is typically a mixture of adaptation and developing markets, or responding to crises.

In the IT sector, as with larger companies, analysis of customer needs is more and more the focus of skills requirements, in a sector which is more than most susceptible to rapid technical obsolescence. This, coupled with the necessity to compete in markets that require 'personalised solutions', privileges on on-the-job training as a means of building up required competences.

In this context, key *job-specific* competences prioritised by SMEs in the IT sector focus on: customer needs analysis; knowledge of technologies; project development; knowledge of market trends. In turn, the *cross-job* type competencies prioritised include: project management; team working; knowledge of foreign languages (especially English). The two key over-arching competence areas identified by the COMPETE research are: adaptability to rapid changes (not only concerning the use of technologies but

also the organisation of work); knowledge of the "business model" of the company.

However, as with large companies, key competences identified by SMEs reflect national and organisational learning patrimonies. In France, for example, expertise in the social dimensions of ICTs is a valued cross-job skill. In the Netherlands, because the IT SME sector is strongly geared to internal supply chain markets, cross-job skills are largely mediated through the business models of key large companies.

SME recruitment in the IT sector is characterised by an increasing emphasis on indirect acquisition of skilled staff, through: the growth of *virtual recruitment (*Internet Newsgroups and virtual job centres)*;* the increase in temporary collaboration with highly qualified free-lance professionals (through tele-working for example. *Direct recruitment* is principally used in cases where the company intends to recruit young people entering their first job experience, or the company is searching for specialised qualified personnel. Although in this latter case recruiting is often done using interviews, centred on psychological and motivational attitudes, word of mouth references are important too.

There is prevailing concern within the SME sector, particularly within IT, that SMEs face a major 'training deficit' in the short to medium term. Demographic factors leading to a shortage of younger people generally (and hence an anticipated lack of innovation), coupled with rapid technological change are expected to create a situation where demand for new skills will outstrip supply. It is thought this situation will be exacerbated by, firstly, the lack of flexibility in training supply – still dominated by the 'formal' education and training infrastructure and, secondly, the 'discipline-focused' nature of qualifications, which remains structured around professional branches. Against this background, the costs – both real and opportunity – of formal training remain a major problem for SMEs.

The results of the COMPETE survey of SMEs have some important implications for the development of COMPETE tools. Firstly, although in principle SMEs would welcome systems and mechanisms that could enhance their skills management strategies, this interest is not reflected in a perceived demand for tools to promote cross-border mobility, or systems to promote 'cross-walking' of formal qualifications. The real needs are, firstly, for information delivery and 'data-mining' systems to facilitate monitoring of markets and opportunities; secondly, for skills auditing models and systems that would enable SMEs to assess their human capital assets, and thirdly for systems that can cross-match potential employees to vacancies (for example through on-line c.v. repositories and virtual 'job centres').

Such systems would need to address the following SME requirements :

⇒ systems which reflect the growing importance of cross-job skills compared to core skills;
⇒ skills representation, auditing and training tools that emphasise complex project-management; customer needs analysis;

⇒ systems that can capture and represent experiences of on-the-job training and self-learning and that work with this material to promote shared knowledge production and organisational learning;
⇒ systems that facilitate ‘Just-in-time’ competence development; that are ‘Ready-to-use’ (the tools must provide easily intelligible information); that ‘Fit-like-a-glove’ (can be "tailored" to the specific characteristics of the individual SME) and are ‘energy efficient’ (in terms of costs and organisational impact within the company).

5.3.3 Conclusions of the accreditation survey

The legal responsibility for the accreditation of qualifications presents a very complex situation with several layers of provision in each country. A basic distinction is between countries whose accreditation systems are relatively stabilised – for example Germany – and the more de-centralised states like the UK. This basic situation has made it very difficult to drive forward political, policy and legal initiatives designed to facilitate equivalence and parity in qualifications. One important aspect of these different ‘accreditation patrimonies’ is in relation to how VET is assessed. For example, in the United Kingdom, National Vocational Qualifications are outcome-based and developed around defined competences which must be demonstrated (preferably in the workplace).

This reflects how systems of vocational education and training, and therefore the accompanying systems and procedures of accreditation are not static but involve a dynamic series of relationships, which change and develop according to perspectives and the needs of societies. Recent reforms have been initiated from different starting points but have in fact often worked towards similar goals. These include: increasing the overall proportion of the working population with recognised qualifications; increasing the number of qualified young people entering the labour market and their level of qualification; improving access to education and training courses and to qualifications for unemployed adults; developing VET qualifications which emphasise both personal development as well as employment compatibility.

Accreditation for continuing education and training presents similar problems to that of formal education. On the one hand, continuing education presents similar problems of parity and equivalence. At the same time, continuing education that is not part of national systems, but which have value on the labour market, is difficult to assess on a pan-European level. Whereas recognised vocational qualifications are intended to ensure the mobility of the individual, private certificates, awarded by large companies, for example, may on the contrary limit the individual to a particular firm or occupational sector.

Past and current initiatives to promote standardisation of accreditation systems and procedures across the EU tend to be instrumental in approach. They explicitly focus on developing common validation methodologies intended to lead towards the development of a common European Skills Accreditation System. Objective 1 of the White Paper on Education and

Training is a good example of this 'instrumental' mentality, with its focus on the use of 'personal skills cards' as a device to promote skills standardisation.

However, it is doubtful whether such methodologies and instruments can provide a European Accreditation system with the necessary legitimacy. As experiences in building new forms of 'learning partnerships' in Australia, Ireland and the UK have demonstrated, institutional reforms – the creation of the political, institutional and social basis of methodologies - have to be elaborated. In this context, it is important to note that a legal basis (the creation of laws and formal regulations) is not necessarily the same as a legitimate basis (the acceptance of the system). In many respects, the creation of a system for the recognition of prior and non-formal learning is the same as changing the social definition of skills. This cannot purely be done through formal decrees and legal changes, but must include systematic and transparent communication between those central to the social definition of competencies and skills.

A basic dilemma of transparency is illustrated by the COMPETE research into accreditation issues, as illustrated by recent European initiatives such as those related to 'Objective 1'. The research suggests that, rather than concentrating effort in effecting what is beginning to look like an unachievable 'top-down' standardisation system, a decentralised, bottom-up approach to the validation of skills is necessary in order to reflect the existing national and/or sectoral diversity and complexity on a European level.

5.3.4 Overall Conclusions from the Sectoral Surveys

- Comparison of the results of the three constituent research activities of WP2 reveals a striking dissonance between the perceptions, experiences and needs of companies – both large and small – and the accreditation systems in which these two constituencies have to operate in order to maximise their human capital asset bases.

- On the one hand, both supply mechanisms (as represented by education and training providers; government and the accreditation system) and demand mechanisms (as represented by employers) share common values and objectives: the need to more effectively bridge 'school to work' transitions; the need to identify, represent, accredit and apply prior, informal and work-based learning; the importance of flexible, cross-job skills; the need for continuous monitoring and analysis of evolving skills associated with rapid changes in economic structure and practices – particularly in the 'knowledge industries'.

- However, the European accreditation system is fragmented; lacks a common infrastructure; policy base and institutional arrangements, and is insufficiently flexible to adjust to the rapid changes of the evolving European labour market. Its preoccupation with the parity and equivalence of formal qualifications and its top-down and instrumental approach to a skills agenda for Europe clash with a clear call by employers, large and small for a focus on 'behavioural' rather than

'occupational' competences; the recognition of informal and on-the-job learning and the need for transparency rather than standardisation.

- In the face of these inherent tensions, it is unlikely that the vision of a highly mobile European labour market, supported by a common skills classification system underpinned by a telematics infrastructure and personal skills cards, is a tenable one. Indeed, there is little evidence that employers perceive either a significant demand for highly mobile workers or the need for a public skills standardisation system. As discussed above, this does not preclude the development of skills assessment and representation systems. Indeed the results of WP2 confirm a high level of potential demand for skills auditing tools. It does mean, however, that the original specifications for such tools envisaged by the COMPETE project require radical review.

5.4 Results of the Case Studies

5.4.1 Short description of the case studies

WP3 involved undertaking intensive case studies of four key sectors identified by the COMPETE work-programme The sectors (and associated work activities) were comprised of the following:

- WA3.2 EURES cross-border partnerships
- WA3.3 Innovative skills training provision for excluded groups
- WA3.4 Smartcards and on-line assessment systems
- WA3.5 Innovative Industry sectors: IT.

To place the results of these case studies in context, this section of the Report begins with a short description of each.

EURES

EURES stands for European Employment Services and is a European network bringing together the European Commission and the Public Employment Services in the European Economic Area. Furthermore, social partners are involved and other bodies concerned with employment issues (such as trade unions, employers' organisations and local and regional authorities). This network was launched in 1993, but has its roots back in 1968 when the European Commission agreed on the rights and duties for the member states considering co-operation between member states in the field of employment.

Participation in EURES is obligatory for the member states. The objectives of the network are multiple, i.e:

- to provide information, counselling and assistance to placement/recruitment at a European level;
- to provide information to potentially mobile workers on the living and working conditions in all the countries in the European Economic Area;

- to offer advice and guidance on how to look for a job and the possibilities that exist for finding work in another country;
- to provide a job placement service for job seekers;
- to offer a recruitment and information service to employers who wish to recruit in other countries.

The approximately 450 Euro advisors are the backbone of EURES and are specialists in labour market, EU and cross-border employment. They have an expertise in practical, legal and administrative matters related to cross-border and transnational mobility. A distinction is made between the transnational activities and the cross-border activities. Transnational activities are related to labour mobility beyond the boundaries of the cross-border zone (e.g. mobility between Spain and the UK).
At European level there is a co-ordination unit; at national level, there is a EURES manager for each type of employment service.

The EURES partnerships represent a unique test-bed for COMPETE, because they reflect institutionalised arrangements around cross-border labour migration that has been going on for centuries. On the one hand, they provide the opportunity to study and learn from the 'natural' behaviours of key actors, such as employers and employees. On the other, EURES partnerships embody a range of 'imposed' features that are designed to facilitate cross-border working.

The main research questions addressed were:

- how do EURES partnerships operate, in terms of trans-border working arrangements; level of cross-border movement; partnership arrangements; telematics infrastructure
- what are the benefits of such partnerships from different stakeholder perspectives (employer/employee/migrant workers)
- how do stakeholders negotiate on skills definitions; equivalence and accreditation?
- what is the value added of partnership infrastructure for cross-border movement and how effective are they?
- what opportunities for COMPETE products exist within such partnerships?

For this case study different sub-cases were undertaken of which a synthesis report can be found in this deliverable under annex.

Innovative skills training provision for groups at risk

This case study is composed of 4 sub-cases:

- one on employability and mobility management at the Dutch ABN AMRO bank;
- two on skills training and regeneration in the UK (London and Sheffield) based on promoting community empowerment and using ICT as a mechanism to help to develop empowerment;
- one on migrant workers and transient populations in Greece.

ABN AMRO bank (NL)

Throughout the years, the goals of the bank have changed a great deal and are still changing into a direction whereby the emphasis is on 'selling products'. Occupations and functions are re-engineered towards 'higher value added' and 'customer-led' service activities. This movement is creating a pool of workers 'at risk' who are in danger of losing their jobs through skills redundancy. In 1994 'Vision 2000' was developed in which the 'new' culture and vision of the bank was described. *Employability* was chosen as one of the core concepts, which is considered as the availability and value of a person for the bank, now and in the future. To enhance and improve the employability of all employees, the bank pursues a *mobility* policy. This mobility policy is meant to improve the employability of all staff members. In the frame of mobility, Mobility Centres are active, where employees can go to get guidance in their career development. These Mobility Centres are meant *to ensure that the right person is at the right place at the right time* and this complementary to the 'regular' training activities organised by the bank.

The main objective of this small-scale case study was to analyse the strategies and instruments used by the bank in the framework of employability and mobility.

The Digital Ring (London - UK)

The Digital Ring is an telematics-based information system and services intended to promote learning by residents of typically disadvantaged housing estates in UK cities. One of the key elements of the initiative is a truck equipped with computers, facilitators and software visiting each of the sites involved every week. This is an initiative of the Peabody Trust organisation; a national organisation with its headquarters in London. This organisation is working with local authorities, the voluntary sector and other public bodies, e.g. to combat social exclusion, to combat poverty, to help local people and organisations to build communities that bring people together and enrich their lives. The target population is very mixed, however, most of them are unemployed.

The MATREC and MCDT (Sheffield – UK)

The Manor Training and Resource Centre (MATREC) and the Manor and Castle Development Trust (MCDT) are located in the central area of Sheffield, a northern industrial English town. This case addresses a particular problematic issue of skills regeneration, turning around two generations of low self-esteem associated with long-term unemployment. It also recognises the fundamental importance of place and community as a key dimension within which linkages, spin-offs and interconnectivities of the learning system emerge and develop. MATREC evolved as a network, which provides training in job skills for the unemployed and socially marginalised, and internships with local companies to provide work tasters for young people excluded from school. The project is based on empowerment and the organisation is

community owned. The initiative has been successful in attracting funds from different sources (regional, national, European). MCDT has evolved out of MATREC. A key feature of this initiative is its holistic approach to regeneration. It promotes citizenship and the development of the social capital by encouraging the residents to become involved by sitting on committees. As part of the broader context of Sheffield as a Learning City both initiatives aim to address the needs of its locality through partnership by supporting lifelong learning and to promote social and economic regeneration.

Migrant workers and transient populations (Greece)

The aim of this case study was to examine the socio-cultural conditions, constraints and variables that may lead a group of immigrants to successful or ineffectual economic integration. Furthermore, the attempts for the enhancing of the employability of the particular group through the acquisition of new skills, will be examined. Since the dissolution of the USSR, more than 180,000 Greeks living there have been forced by war, social upheaval and poor living conditions to immigrate to Greece. The arrival of large numbers of Greeks from the ex-USSR , in the last decade, have added a new problem to the already existing social and economic problems of the country. Now living in Greece, Pontians face serious cultural, social , economic and even linguistic problems since they speak an older Greek idiom or only Russian. An estimated of 100,000 Pontians now live mainly in Attika in harsh conditions despite the fact that they are all hard working and relatively well educated people. They don't speak the Greek language. Their degrees may not be recognised by the Greek Ministry of Education and even if they are recognised, they are not equivalent to the curricula of Greek Universities or Technical Schools. As a result, the majority of them find themselves in part-time jobs that do not correspond to their education, in open markets selling small objects, or in unemployment. As a response to these needs the Ministry of Education and a number of different organisations have organised language and vocational training seminars. However, there is a general feeling that all these attempts have not provided the expected outcomes. From personal contacts with the different Associations it seems that there has not been a needs assessment procedure in order to direct their vocational training.

Innovative skills training provision in the IT sector

The objective of this case study was to define the role that the development of internal competencies has had and still has on the market performance of IBM, in terms of adjustment of these competencies to the changes in the company and the market it refers to. Within this case-study information was gathered on the methods of defining within IBM the skills, the management, monitoring and development of skills possessed, recognition and crediting of skills (both formally and informally) and consequently, their use and valorisation.
The profound changes in the market conditions that took place in the early 90ies led IBM to redesign its entire organisational setting to deal with what seemed to be the most critical moment of its whole company history. The company underwent rapid changes at the top. An immediate stop was put on

the movement towards total decentralisation and the number of personnel was reduced significantly in order to improve the competitiveness of the company and get faster and more efficient response to meet market needs. The Customer Relationship Management was designed and launched in 1994 and include a complex collection of sub-processes, professional roles and technological tools concerning the work of over a 1000 employees.

State of the art on portable skills media

This state-of-the-art review should be considered as a database with references to on-line systems. Themes dealt with are on-line job-search, job advertisement and skills sites, smartcards, automated assessment tests of knowledge and competencies and labour market and employment services initiatives. Within Europe there has been an explosion of on-line job matching services within state employment mediation services, run by private employment agencies, run by sectoral professional associations, etc. In the domain of smartcards, examples were found in the financial and in the health sector. Reference is also made to O'Net, the United States Occupational Information network. Initiatives in the domain of automated assessment tests of knowledge and competencies are also listed, with special reference to those co-funded by the European Commission.

5.4.2 Key Issues and Lessons for COMPETE

The major issues identified by the results of the case studies can be categorised under the following headings:

- labour mobility: factors stimulating and inhibiting mobility of labour;
- integration: factors stimulating and inhibiting integration;
- accreditation issues;
- employability and skills development in organisational contexts;
- informal learning from a community development perspective.

Labour mobility

Conventional definitions of 'mobility' within the context of skills training generally focus on two types of outcome indicators: the extent to which such training leads to increasing participation (for example by building a bridge to subsequent further formal training), and the extent to which it promotes increased flexibility within the labour market. In the case of COMPETE, this flexibility is implicitly assumed to be associated with the wider European sphere of labour mobility, and the relaxation of national barriers to migration.

Evidence from the EURES case studies suggests that transnational labour movement is driven by 5 main factors. The first 2 are of a *socially mediated* nature, while the 3 others highlight *individual-focused* factors governing transnational migration:

- classical push-pull dynamics related to unemployment, differences in standard of living and quality of life;
- cultural and kinship drivers;
- educational advancement;
- career development;
- personal development.

The dynamics of cross-border labour migration mirrors to some extent that of transborder migration, but there is a clearer distinction between institutional and individual factors. The two main institutional factors are:

- *Political/institutional* comprising on the one hand systemic political factors associated with the institutionalisation of cultural and geographical tensions and on the other hand interventionist factors associated with specific measures such as re-generation strategies.
- *Time-distance* effects.

The individual factors affecting cross-border movement include *income differentials*, *quality of life* and *bazaar and illegal economies*.

The barriers to labour movement vary once again according to the nature of the labour movement, i.e. being it transnational or cross-border. In the case of transnational movement, a distinction can be made between factors militating against the initial impetus to move, and those factors that undermine 'settling' in the chosen point of migration. Thus the main reasons why most people stay where they are quite simple: *inertia and localisation effects*. Our analysis of the dynamics of migration (both inside cross-border regions and more generally) suggests that cultural and kinship ties are a strong deterrent to migration. For those who do contemplate moving to another country, however, a key obstacle is the associated transaction costs. These include 'direct costs' – the real costs of selling and buying property; transportation and shipping costs – opportunity costs – for example stepping off the promotion ladder – and social costs – like giving up family and friends. This is why key trans-EU migrant groups include, on the one hand, students and highly mobile professionals, and on the other, highly marginalised, poorly skilled, unemployed people.

Another major obstacle is language and cultural constraints. Many of the enquiries taken by Euro advisors, for example, relate to questions around 'how can I learn a foreign language quickly'? Particularly in the UK, where language skills run at a low level in general, anxieties around not being able to understand 'foreigners' and fears about learning to adapt to another culture are a major disincentive to migration.

Having overcome the obstacles to migration, the factors that subsequently create problems for trans-national migrants (and which frequently lead them to return to their country of origin) are:

- differentials in cost of living;
- cultural isolation and discrimination;
- educational and career factors.

In contrast to trans-national migration, obstacles to cross-border mobility focus more fundamentally on technical issues. These include problems around ‘double taxation’; social security regulations; residence regulations. The lack of information on vacancies and opportunities seems to be a relatively minor constraint – although the evidence is that it is more of a constraint for less qualified workers. The highly qualified appear to have a greater range of information-search and information analysis skills, which makes them more ‘self-sufficient’ with regard to job seeking.

Economic integration – the Greek case

On the basis of the Greek case the following main socio-cultural constraints to economic integration identified by the study are:

- *Poor knowledge of the Greek language .*The communication difficulties Pontians have in using the Greek language, both spoken and written, create obstacles at the certification of their education titles, the acquaintance with different technology and employment methods and their social life.

- *Problems of identity.* There is an ambiguity concerning their identity or what they think of themselves to be and how they are regarded by the Greek society.

- *Lack of knowledge of the social system.*

- *Incompatibility of their previous education level and professional specialities with the demands of the labour market.* These people have gained knowledge and work experience within different structures and systems without obtaining vocational skills and qualifications that would render them in a higher or at least the same position in comparison to the local potential employees.

- *Different underlying philosophy of the two labour markets.* The two countries are clearly characterised by different employment conditions (closed and open labour markets) which result to the inability of future employees to easily adopt to the new environment.

- *Economic fluctuations.* The increasing number of illegal immigrants from the Third World countries and the Balkans, the increasing flow of Greek graduates from both Greek and foreign universities and the stabilising programme for the reduction of inflation and the budget deficits implemented by the state, were some of the main factors that have resulted to a surplus of labour and to an inability of the Greek economy to absorb more labour force to employment status.

- *Lack of skill accreditation and classification procedures.* Greece has not yet developed skill accreditation and classification procedures in the area of continuing training.

Given the complexity of these issues the Greek State has implemented a number of programmes for the social and economic integration of the Pontians. In relation to the basic skill training a number of organisations have implemented language learning and vocational training programmes to the Repatriated Greeks. However, until very recently (up until 1995) these programmes were provided in a not very organised and systematic employment framework that supports both the unemployed and the employers. The confrontation of the problems faced by the target group was characterised by fragmentation, lack of central designing and of appropriate policies, as well as lack of co-ordination of the different organisations. In addition, the actions taken were of one-dimensional approach and were directed to interventions of traditional type. As a result, even if particular actions were successfully implemented, the aim of integration and re-integration to the social and economic web has not been succeeded.

However important changes have been made (mainly with the establishment of new structures) in the area of continuing vocational training towards its modernisation and rational operation. Nevertheless, these structures are quite new and their results have not been yet recognised. The main problems lie on the poor links between measures taken for repatriates and existing training practices and materials. Repatriates tend not to be involved in the design or development of project activities whereas there are weak links between training providers and the labour market. Finally there is a need for better co-ordination between agencies and sharing of best practices as well as diagnostic skills and mechanisms for the promotion of employment.

A key conclusion is of this research and of the Sheffield case is that training initiatives are in themselves not sufficient to attack social exclusion. The training itself needs to be geared to ancillary support services (for example child care). The range of available courses/services (e.g. job placements) could be expanded to meet the needs/choices of participants. Most importantly, training needs to be geared to realistic expectations and outcomes. For those looking for work training is not always enough – they need support in finding work, for example.

Accreditation issues

In relation to accreditation generally, a common consensus is that, beyond occupational sectors that require legally-certificated credentials (for example physicians), *the main issue is not what qualifications you have but what experience you have*. This holds true even at higher levels of education, for example in the IT sector, experience on particular systems or software programmes is more significant than a degree. This said, there is still a strong recognition amongst employers, employers associations and trades unions, that training is becoming more important, and that systems to make intelligible the different cultural and legal constructions of qualifications are necessary. Within EURES Euro advisors have a key role in negotiating accreditation recognition for clients, and in matching up skills demand with supply. The key

'skills gap' areas identified by the EURES fieldwork were in: IT; healthcare (especially nursing); construction; hotel and services.

Employability and skills development in organisational contexts

Management of competencies and derived variants are core issues in HRM developments. In both the IBM and the ABM AMRO cases re-designing the processes of 'sales' and 'support to customers' was prominent in the last decade. This re-designing was done to respond better to the needs of the market and the company. In both cases, inventories were made of required and available competencies. The personal competence profile of each individual is used for skills development purposes and for career development. To keep the individual employee optimal employable is the major challenge (see also field work in work package 2).

A lot of organisations (including the ABN AMRO and IBM) are involved in competency-oriented HRM, as well as (as an implication of the first) in competency-oriented training- and development trajectories for individuals and groups in the organisation. Organisations determine in the first place their core-competencies and on the basis of this competency-profiles are developed. These competency-profiles are then translated to individual functions (see commercial functions in the Dutch bank).

However, evidence in practice shows that the introduction of such competency-systems should be incorporated in a larger system of HRM whereby line-managers are coached in the use of these systems. Furthermore, one of the dangers of competency management is that it can lead to bureaucracy. If competencies have to be determined on the basis of a 'grass-roots' model, a lot of paperwork is involved. A major point of attention here is to limit this exercise to the very basis of it.

Implications for COMPETE tools

Two key factors emerge from the EURES case study conclusions. Firstly, the relatively low level of labour migration generally, and secondly, the multi-dimensional nature of the labour market process.

In terms of levels of movement (and hence potential demand for COMPETE tools and services – particularly the 'personal skills card'), there is clear evidence of a low overall level of current demand. In turn, the case for future large scale demand is unconvincing, not least because of the spatially-located nature of cultural identity. People are simply resistance to moving, and there is no clear evidence to support the view that making mobility easier will make European citizens more mobile.

Secondly, it is clear that labour markets, work processes and migration dynamics are complex. They do not focus on a single issue of promoting skills standardisation; nor is the 'citizen' or worker the only, or most significant, user for potential COMPETE tools. Rather, there are complex configurations of stakeholders working in distinctive scenarios each of which reflects different

needs and different applications. These scenarios include: the provision of labour market information and analysis (both generic and customised to different scenarios of use); the provision of training and information about training; skills analysis and representation methods and tools, and profiling systems to enable the matching of information and services to particular user profiles. Given this complexity, key potential user groups can nevertheless be identified. These are:

- students and young highly-mobile new graduates,
- mobile professional 'high flyers',
- low-paid; low skilled,
- seasonal workers,
- skills-gap sectors (healthcare; construction; IT; hotel & tourism).

Set against this is what appears to be a political and institutional vacuum for the kinds of services COMPETE could provide. It reflects a lack of collaborative working; narrow stakeholder interests; a poor organisational infrastructure. This vacuum is reinforced by the uneven and relatively low level of utilisation of EURES technical infrastructure. In terms of delivery systems and applications, therefore, there appears to be a demand for:

- distributed databases that allow for the co-production of knowledge, and supporting Internet-based platforms and client-server technology
- representation software that can represent experience and cultural context, rather than formal qualifications

The relationship between 'mobility' and 'social inclusion' is highly complex. This became clear from the UK cases: innovative skills development initiatives for the socially excluded are not primarily intended to promote geographical mobility but to attack the structural and cognitive processes that lock the disadvantaged – particularly the long-term unemployed – into a self-perpetuating, and difficult to break, cycle of deprivation. Why the innovative actions described in these case-studies appear to have some positive impact on such processes, it has more to do with, firstly, promoting personal mobility by providing individuals with the tools to 'reconstruct their own identity' and, secondly providing the community with the tools to attack the socio-economic stratification systems that limit their freedom of movement within the labour market.

At the same time, it is also clear that such innovations do have an impact on geographical mobility (since there is an inextricable linkage between geographical and social structures). On the one hand, there is a strong case to support a strategy that uses skills development technologies to empower and enhance the skills base of the community in order to help retain key members of that community, and prevent a steady haemorrhage of de-population. On the other, there is some evidence that improving the skills base does promote a certain degree of migration, where individuals may use their newly-acquired skills to seek 'a better job and a better life' elsewhere. This clearly can have a further debilitating effect on the community. Still further, there is also evidence that initiatives like the ones described above

can have a ‘gentrification effect’ on depressed communities. As a result of environmental, educational and economic improvements, in-migration (typically of affluent, ‘middle class’ newcomers) can happen – and this can also have an effect of creating a new socio-economic ‘apartheid’ between the indigenous community and the new arrivals. What is clear is that further research is required on the multiplier, substitution and displacement effects of these types of innovative actions. It is also clear that the COMPETE tools should not confine themselves to a narrow definition of mobility as ‘migration’ but should include a focus on facilitating the social and personal mobility of the excluded in order to *reinforce* rather than undermine community attachment.

In terms of the specific skills necessary to address the mechanisms of social exclusion, the evidence strongly suggests that technical skills (linked to specific occupations) and cross-job skills are less important than: meta-cognitive skills (learning to learn); information handling and processing skills and presentational skills in facilitating the empowerment of the socially excluded. indeed, formal qualifications and accreditation are considered less significant by the individuals participating in the initiatives than the improvements in confidence and self-esteem – both individually and collectively – that access to learning technologies provides. This is not least because a significant proportion of participants are not really interested in learning as a bridge to promote transition pathways to more formal education or to better jobs.

The evidence also suggests that *innovative skills training for social exclusion does not work very well if it takes place in a vacuum.* It has to be embedded within a holistic and strategic environment in which learning is linked to associated strands of community life – such as environmental improvements; health and political engagement.

This also implies *that the institutional framework* – for example innovative partnerships that deliver skills development as part of a package of community regeneration (typically linked to funding arrangements like the Single Regeneration Budget in the UK, or EU Structural Funds) – *is at least as important as technology*. In turn technological tools (such as on-line skills training, skills assessment systems and electronic accreditation media) need to be embedded within a set of social provision – childcare; training funding support; linkages with job-finding databases – if they are to be successful.

Another issue resulting from these case-studies is that there are already a lot of instruments on the market in the domain of competency-management; on-line job searches and on-line skills assessment. The COMPETE tools developed should have a specific added value, as explained earlier.

5.5 COMPETE tools development

5.5.1 Key Research Conclusions Shaping the Framework and Specification for COMPETE tools

As discussed above, the results of the research activities undertaken in workpackages 1, 2 and 3 of COMPETE highlighted the need for a re-alignment of the technical development of the original specification for the COMPETE tools. The key issues shaping this re-alignment were:

- the 'mobility' issue
- the skills standardisation issue: definitions of skills and competences and their taxonomic classification
- how skills, particularly those acquired 'informally', can be accredited
- how to make skills intelligible to workers and employers
- what forms of training are appropriate in addressing skills gaps, particularly for excluded groups
- the need for a 'personal skills card' and on-line assessment systems
- the 'content model'

Mobility

The COMPETE research confirmed that labour mobility is a complex multidimensional process. Migration is socially contextualised rather than purely driven by economic rationalism. There is no 'free flow' of labour throughout Europe, but clearly-marked and historically-defined 'traffic routes' that have their origins in cultural identity. What is striking about migration processes is the dominance of 'inertia' over 'movement'. The overwhelming majority of European citizens prefer to stay where they are than move somewhere else. There is no evidence to support the proposition that 'personal skills cards' and other initiatives designed to promote 'smoother' labour mobility would make a significant difference to historical levels of migration. In terms of levels of movement (and hence potential demand for COMPETE tools and services – particularly the 'personal skills card'), there is therefore clear evidence of a low overall level of current demand, and there is no clear evidence to support the view that making mobility easier will make European citizens more mobile.

What initiatives like COMPETE can help achieve is to help make the choices available to European citizens less restrictive. Also, despite the evidence that, in broad terms, the level of intra-EU labour mobility is low, there is some evidence that there is a significant trans-national movement of staff within and between large organisations.

In this context, the COMPETE results suggest that the main factors restraining mobility currently are: linguistic and cultural dissonance; the unevenness in the distribution of 'life resources' (housing; education; medical care etc); differences in the taxation and social security systems of member states, and fear of being 'excluded'. The COMPETE tools must address these

issues if they are to make a contribution to expanding access to such resources for citizens.

Skills Standardisation

'Top-down' systems (involving, for example, 'cross-walking' between different classification systems) is likely to be of limited value in promoting convergence of European occupational and skills classification systems. Despite several decades of effort, attempts to 'cross-walk' EU occupational classification systems and skills taxonomies have had very modest results in terms of delivering a genuine, comprehensive, workable common European classification system.

Almost all the systems in use in the EU attempt to disengage 'work' form its social and cultural context. This exacerbates the problem of making skills from different cultures intelligible.

There is no real evidence of a recognition by employers of a need for a 'public access' European skills standards system. This is partly because firms are afraid that competitors could reverse engineer their products; that disclosure of skills could lead to 'headhunting' of valuable staff, and that publication of desired skills attributes could lead to potential job applicants 'cloning' desired skills.

Therefore, the COMPETE tools should be based on a more flexible taxonomic skills classification system for Europe which engages with key actors like companies in identifying evolving core and generic skills, rather than attempts retrospectively to impose a 'top-down' convergence on existing classification systems. This would entail constructing an 'evolving knowledge base' in which new and emergent skills are identified and reified by partnerships between employers, employees and other stakeholders in a 'European Skills Network'. However, this would still require the development of an initial common set of 'core competences' to get the ball rolling.

Accreditation

Like skills standardisation, achieving European standardisation of accreditation procedures and outcomes is virtually impossible in the current climate. Learning patrimonies are a major obstacle to a common European Accreditation System.

If a European accreditation system were to exist, it would therefore need to provide, inter alia: an accurate representation of the national systems of classification of occupations; an accurate representation of the structure of work as it evolves; online accreditation of prior learning; monitoring of changes in the characteristics of the labour market; provide input to the design of future jobs. Such a system would inevitably have to focus on building 'transparency' into the definition and accreditation of skills rather than directing resources towards finding the 'Holy Grail' of equivalence. However, as with 'skills standardisation', there is still some demand for developing a

core set of ‘accreditation standards’ that can provide leverage to promote European convergence.

Skills intelligibility

The evidence suggests that there is no real perception of particular ‘skills gaps’ in the labour market. Companies’ skills requirements are not generated by passive adaptation to external changes in markets but by corporate strategies and plans that are to some degree speculative. Skills are integrated with product development and are part of a long-term strategy of developing the firm’s competitive advantage. As a result, companies are more interested in ‘experience’ and ‘adaptability’ to the business model than qualifications per se.

It therefore follows that a skills auditing system should be part of an evolving developmental strategy in which future market opportunities are identified in tandem with an analysis or inventory of existing and future skills, and associated training needs. This type of ‘evolutionary’ skills auditing process requires data inputs that are derived from continuous monitoring of economic developments and labour market trends.

This underlines a need for tools that reflect the growing importance of cross-job skills, and which can capture and represent experiences of on-the-job training and self-learning. Whilst this does not preclude the use of a ‘smartcard medium’, the representation would need to reflect ‘experiential’ as well as ‘formal’ qualifications. Employers are more interested in how ‘soft’ skills and competences (such as ‘personality’, ‘experience’ and ‘cross-job skills’) are represented than in how formal qualifications are accredited and ‘cross-walked’ across different European occupational and skills classification systems. However, there is still scope for developing systems that monitor and make intelligible to companies changes in occupational structures and processes, leading to new evolving ‘technical’ skills. This in turn implies regular monitoring of economic and labour market developments in order to identify potential areas of ‘vulnerability’ and take the necessary action (for example by promoting re-training).

Skills gaps and social exclusion

Outside the organisational setting, skills development initiatives aimed more broadly at socially excluded groups inevitably require the formation of innovative partnerships in order to be successful. These partnerships should prioritise the inclusion of the target groups themselves as co-collaborators in the development of new skills ‘asset bases’. The most effective way of improving the asset base of the socially excluded is to provide basic building blocks rather than technical qualifications. Technical skills (linked to specific occupations) and cross-job skills are less important than: meta-cognitive skills (learning to learn); information handling and processing skills and presentational skills

But social exclusion is not simply about training. Top-down and instrumental approaches that emphasise widening participation (by bridging it to formal qualifications, for example) are unlikely to succeed. If training is provided, it has to be embedded within a holistic and strategic environment in which learning is linked to associated strands of community life – such as environmental improvements; health and political engagement, and it has to be designed in part by target users themselves.

The COMPETE content model and the personal skills card

An assumption of the original 'vision' for COMPETE was that it would be possible to develop a common 'content model'. This would provide the framework for the assessment constructs and instruments used in the skills auditing methodology. It would specify the common 'content' underlying taxonomies of basic and cross-job skills, and would be applicable across different countries. The results of the COMPETE research makes it clear that such a 'common content model' is both unfeasible and undesirable, because, in line with common occupational and skills standardisation systems, a common content model would have to accommodate the complex cultural and organisational 'patrimonies' that shape the language of skills across different EU states. Secondly, most organisations, both large and small, have a global skills system which is very closely tailored to fit their specific product and process mix, and they train internally to this model. Content has to be adaptive both to the organisational and socio-cultural context in which it operates, and also to changes in the evolution of work.

This supports the case for the development of a content model that is context-sensitive and adaptive in response to inputs derived from data monitoring systems and evolving knowledge bases. At the same time, however, the COMPETE research has identified a number of 'commonalities' with regard to the types of skills 'assessment dimensions' key actors (such as employers) regard as important in developing useful content models to implement 'skills audits'.

The COMPETE 'content model' derived from the research results therefore moves away from the notion of a 'static' taxonomic classification system (against which skills originating from the constituent classification systems of different member states can be 'cross-walked'). In keeping with the newer content models like the US Department of Labour's O*NET system, it envisages instead an 'institutional framework' that provides the environment for the development of an 'evolving knowledge base' of skills, centred around a common cores set of competence indicators.

Similarly, the evidence suggests that the 'personal skills card' conceived in its original conception should be regarded as only one element of the COMPETE 'toolkit'. This application should focus on providing authentication of formal qualifications, as well as informal and self-certificated competences, and supporting information (for example the authenticity of job references). A 'smartcard' could provide the mechanism for verification of core competences as well as 'flexible' skills, and for a limited element of cross-walking between

different taxonomies of core competences. It would therefore have four constituent elements: authentication of formal qualifications; informal learning; references (i.e. testimonials) and the results of on-line assessment of competences

In turn, the COMPETE tools should make provision for two sets of 'skills assessment' applications. The first one focuses entirely on issues of the verification and authentication of 'formal' qualifications. The second deals with developing and applying a 'competency profile'.

5.5.2 The Framework and Specification for the COMPETE tools

The COMPETE framework extends the scope of smartcard technology to encompass a range of 'enabling technologies' intended to promote the foundations of a 'European Skills Development Network'. These enabling technologies include Internet, intranets and digital television (DTV). Five indicative 'scenarios of use' are targeted by COMPETE. These incorporate key target user groups in typical settings that exemplify problems of 'skills gaps' affecting labour mobility and economic competitiveness in the EU. The scenarios of use are as follows:

- SCENARIO 1: Support for Migrant Workers
- SCENARIO 2: 'New Jobs for Old' - Tools for Inter-regional partnerships.
- SCENARIO 3: 'New Opportunities for the Long Term Unemployed' - Public Employment Service support tools
- SCENARIO 4: 'Human Resources Developer' - Valorising the Company Asset Base
- SCENARIO 5: 'The Mobile Citizen' - Cross Border Electronic Credentials Authentication tool

The target users and the needs addressed by the five 'service scenarios' are summarised in the Table below.

Scenario	Service	Target Users	Needs addressed
1	Support for Migrant Workers	Migrant workers; NGOs; Government agencies	Advocacy services; skills auditing; finding the right training; help in cultural adaptation
2	Tools for Inter-regional partnerships	EURES partnerships; regional development agencies	Labour market skills audit; labour market monitoring; cross-border placements
3	Public Employment Service support tools	PES services	Re-training long term unemployed; trans-European collaboration on labour market and skills data
4	Human Resources Developer	Large organisations SMEs	'Just in time' skills Organisational memory Client feedback Skills monitoring
5	Cross Border Electronic Credentials Authentication tool	Mobile EU citizens Employers	Authentication of certificates, work experience and references

The services provided by COMPETE for these five scenarios of use focus on the 'COMPETE toolkit'. This is comprised of the following:

- Elicitation tools, to help users define their specific skills needs
- Diagnostic tools that make sense of the elicitation data (for example to conduct skills audits)
- Representation tools to make the diagnostic outcomes meaningful (for example to produce a 'skills profile')
- Decision analysis and support tools (for example to help users make a choice between job options)
- A Data Warehouse, containing data on jobs, labour market information, on-line assessment systems, skills data
- User profiling and data mining tools, to match user needs to the information contained in the warehouse

With the help of this toolkit, users will be able to:

- carry out a 'skills audit' for an individual, company or local area
- de-construct and re-construct the skills, competences and knowledge associated with a particular occupational profile with reference to a common European skills 'content model'
- obtain the latest information on evolving skills and skills gaps particularly in the new 'knowledge industries'
- check the authenticity, and 'value', - on-line - of their own or 'third party' qualifications, and references, obtained anywhere in the EU
- obtain information on available jobs, available employees and training opportunities, customised to a particular 'user profile'
- for companies, match available skills to new business opportunities and customer needs by virtue of 'just in time' skills assessments and 'organisational memory' tools

The services would be delivered through the European Skills Development Network (E*NET). E*NET has three main constituent organisational elements:

- A European Accreditation Authentication Bureau, providing on-line authentication, validation and 'equivalence-checking' of certificates, credentials and references acquired (both formally and informally)
- A Secretariat, with responsibility for overall management, administration and monitoring of the network
- A Technical Unit, with responsibility for managing, reviewing and updating the technical platforms, tools and support systems. This includes the Skills Data Warehouse, and the COMPETE portal, allowing access to, and providing support tools for, the COMPETE networks and services.

The main delivery platform for the COMPETE services adopts client-server technology via the COMPETE portal. However, COMPETE is a multi-

environment service with access possible through Digital Television, remote smartcard readers and CD-ROM.

The Table below provides a summary of the tools.

The COMPETE toolkit

Toolset	Tools	Functionalities
A. Elicitation	A1. Case history.	On-line semi-structured interview schedule
	A2. Critical task analysis	Schedule to identify tacit knowledge
	A3. User Profiling	Schedule to elicit data on users
B. Diagnostic	B1. Skills auditing	Indicators to assess skills and competences
	B2. Job Analysis	Allows de-construction of occupational characteristics
	B3. Needs Analysis	Assessment of user needs
	B4. Skills congruence	Assesses 'goodness of fit' between skills demand and supply
	B5. Skills assessment	On line 'examination'
C. Representation	C1. Content model	The 'template' that defines skills auditing indicators
	C2. Skills Profile	Outcome of skills auditing process
	C3. Digital resum	Electronic cv
	C4. Digital accreditation	Encrypted digital qualification
D. Decision Analysis and Support	D1. Work value profiler	Self-reported prioritisation of occupational preferences and expectancies
	D2. Skills 'matchmaker'	Optimisation of occupational options (e.g. in regional re-generation scenario)
	D3. Cross-walker	Compares formal qualifications from one 'patrimony' with another, or occupational and/or skills attributes from different classification systems
	D4. Option analysis	Helps user decide on options (e.g. job or training)
E. User Profiling and data-mining	E1. Meta-spider	Intelligent user profiling system with memory that allows personalised data-mining of web 'metadata'
	E2. Web navigator	Object-oriented web navigation tool
F. Information Repositories	F1. On line vacancies	Database providing access to on-line jobs
	F2. On line resum	Database to post and access individual/regional cv's
	F3. Training offers	Database of training providers
	F4. Legal & welfare	Database of organisations providing legal and welfare advice
	F5. Amenities	'Yellow Pages' of amenities within a particular area
	F6. Skills database	Evolving knowledge base of outcomes of skills auditing process
	F7. Monitoring system	Regular 'skills surveys' and their outcomes
	F8. Authentication data	Repository of qualifications data
G. Outcome	G1. Action Plan	Outcome of skills diagnostic processes

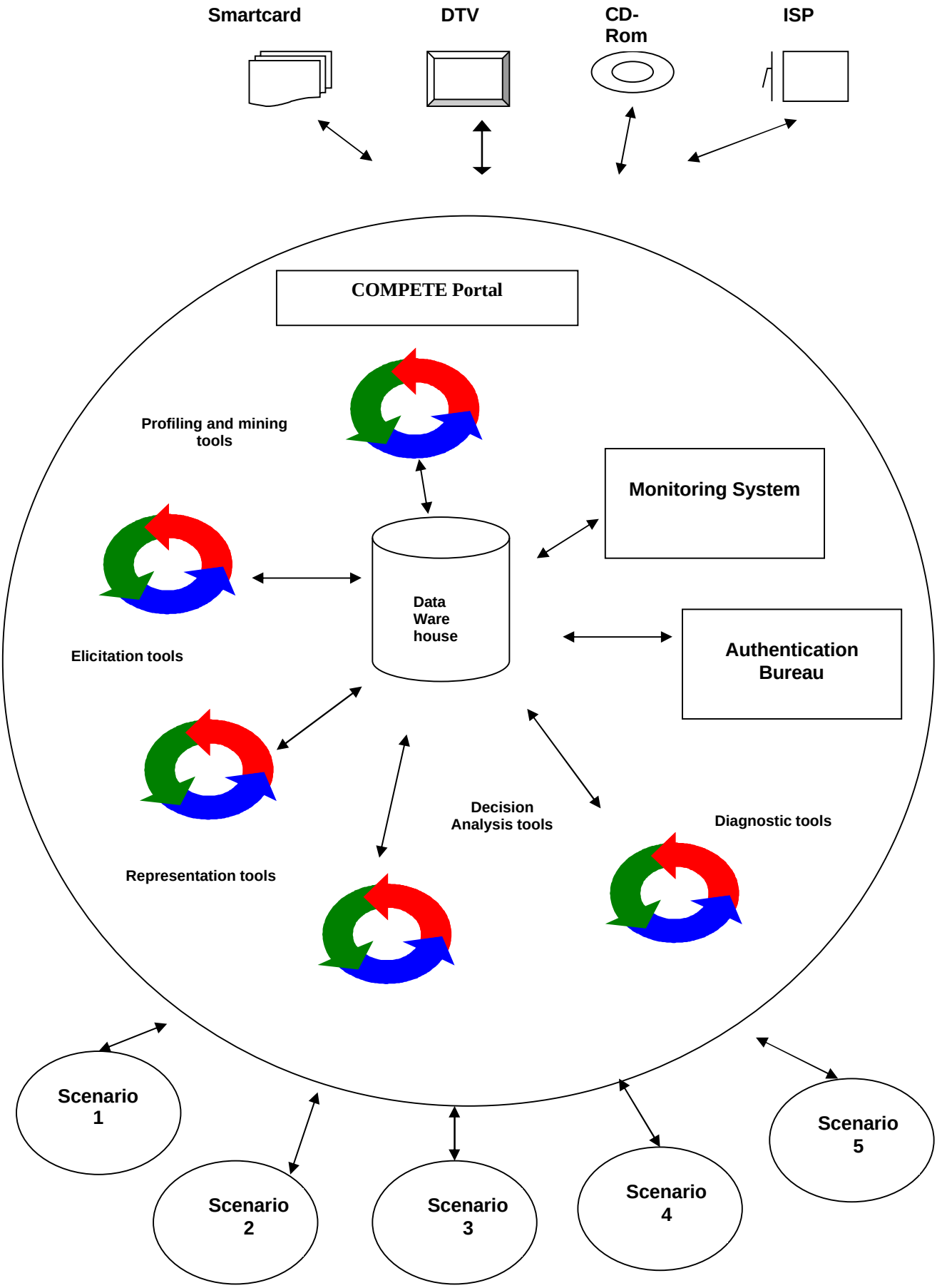
The configuration of the COMPETE toolkit with regard to the five scenarios is shown below in Table 2.

Table 2: Configuration of COMPETE toolkit

Tools	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
A1. Case history.	X		X		X
A2. Critical task analysis	X		X	X	
A3. User Profiling		X		X	X
B1. Skills auditing	X	X	X	X	
B2. Job Analysis		X		X	
B3.Needs Analysis		X		X	
B4. Skills congruence		X		X	
B5. Skills assessment					X
C1. Content model	X	X	X	X	X
C2. Skills Profile	X	X	X	X	
C3. Digital resum⌈		X			X
C4. Digital accreditation					X
D1. Work value profiler	X		X		
D2. Skills 'matchmaker'	X		X	X	
D3. Cross-walker	X				X
D4. Option analysis	X		X		
E1. Meta-spider	X	X	X	X	X
E2. Web navigator	X	X	X	X	
F1. On line vacancies	X		X	X	
F2. On line resum⌈				X	
F3. Training offers	X	X	X	X	
F4. Legal & welfare	X				
F5. Amenities		X			
F6. Skills database				X	
F7. Monitoring system				X	
F8. Authentication data					X
G1. Action Plan	X		X	X	

The five scenarios represent 'archetypal' configurations of a broader system of European-wide skills development and monitoring networks that would need to put into place to promote the 'European Skills Development Network' (E*NET). This in effect constitutes the COMPETE 'content model'. The five scenarios represent 'access points' to this network, and localised adaptations of the COMPETE content model. These localised adaptations will comprise the market validation sites in the project. A schematic representation of the network is shown In Figure 1 below.

Figure 1: E*NET – the European Skills Development Network (COMPETE Content Model)



As Figure 1 shows, E*NET provides for a set of institutional arrangements and socio-technical platforms to promote a 'European skills movement'. In practice, this would require an organisational framework at the supra-national level, which would co-ordinate, through a common 'secretariat', the systems and services. This common secretariat would form the basis for an emerging European 'skills movement' that would be intended to drive forward a process of 'negotiated convergence', based on developing transparency between currently non-converging national systems. In technological terms, E*NET would operate through a dedicated COMPETE 'portal' situated on a central server. The portal provides access to the COMPETE toolkits and services, including:

- the 'skills development' tools described above, and comprised of: the elicitation, representation, decision analysis and diagnostic tools

and

- User profiling and data-mining tools that provide a user interface with the Data Warehouse.

The Data Warehouse is comprised of the following segments (Table 3)

Table 3: Data Warehouse segments

Segment	**Functions**
1. Metacontent	Category-structured database of existing skills-related material (typically websites) in the form of 'metadata' (e.g. on line job sites)
2. Resources Library	Material developed through 'scenarios'. Includes: learning patrimony and qualifications data; labour market data; training offers; amenities; legal and welfare.
3. Skills Database	Contains the results of skills auditing processes undertaken by users (via 'scenarios')
4. Monitoring survey data	Contains results of regular labour market and skills monitoring processes undertaken by users (via 'scenarios')

- In addition, the Authentication bureau allows for verification of qualifications and references in the form of digitally encrypted signatures

- Access (input and output) to E*NET is possible through a range of delivery platforms, as indicated in Figure 1, through: smartcard/reader systems; digital TV; ISP and CD-ROM hybrid systems.

The five scenarios represent contextualised 'local' versions of the COMPETE portal (for the purposes of market validation). Users act as both 'knowledge providers' and 'knowledge consumers' of E*NET. Thus, individuals, organisations, regional development agencies, cross-border partnerships provide 'knowledge' in the form of cv'c, skills data and so on. COMPETE adds

value to this data and re-supplies this 'value added knowledge to these user groups, who also act as consumers.

Within E*NET, COMPETE acts as a socio-technical infrastructure linking a network of knowledge editors to a central knowledge-based management system using the Internet, smartcards, DTV and CD-ROM. It would aim simultaneously to offer intelligent searching and a portal to knowledge editors, to give access to information to users, and tools for managing the knowledge base. This COMPETE portal would provide knowledge editors and users with a Web front-end to all services (discussion groups, video conferencing, etc.) and resources. The approach would be to use XML-based metadata descriptions to wrap up all information sources in a homogeneous user interface that supports the capture, retrieval and management of information.

The skills elicitation, assessment and profiling tools are proprietary systems developed by the COMPETE project and can be seen on http://compete.guinet.com

The organisational asset base valorising tools have been developed using 'enriched documents' systems, examples of which can be seen at: www.kalif.org

In addition, COMPETE incorporated the US DOL O*NET system, which can be used to provide 'triangulation' of skills assessment outcomes. This is available at: www.doleta.gov/programs/onet/

5.6 Validation of the COMPETE tools

5.6.1 Initial approach

The initial Objectives of WP5, as stated in the COMPETE work-plan, were:

- To provide an action research context to test the project outputs developed in WP4, through implementing them in live on-going pilot projects.

- Utilising the project outputs, to provide strategic support to the user organisations involved in the pilot project in the form of technical assistance, expertise and know-how.

- On the basis of the validation results, to modify and revise the tools and good practice guidelines accordingly.

The approach was to evaluate the products developed in WP4 in five research sites, in collaboration with the associate partners involved in the project. The aim was to critically assess the potential value of these products within the context of the day to day activities of the user organisations involved in the project. Key assessment criteria tested were effectiveness, appropriateness, socio-cultural and organisational relevance and transferability: pedagogic effectiveness, technological appropriateness, usability, cost-effectiveness. The key methodology identified was the use of *focus groups* meetings and seminars with the project users and expert groups.

5.6.2 Revised approach

This initial approach was radically modified in the light of the results of the research activities carried out in the first phase of COMPETE (in workpackages 1, 2 and 3) and in response to changes that occurred in the structure of the project.

As indicated elsewhere [1] the original specification for the COMPETE tools envisaged the use of smartcard technology as the basic generic delivery platform for COMPETE users. The idea was that it would integrate the results of the constituent COMPETE tools to enable an individuals' personal details; qualifications; work history and experience to be coded and represented in machine-readable format. Thus the card was intended to utilise the COMPETE content model and skills auditing methodologies, and have the capacity to receive and record additional data, for example the results of examinations and tests that are carried out 'on-line'

However, the main research conclusions of COMPETE suggested that this conceptualisation was inadequate, for the reasons outlined above in Section 4.5.

[1] **Deliverable 3.2: Framework and specification for tools and Guidelines**

A second key factor was the withdrawal from the project of one of our two industrial Associate Partners – Motorola. This company originally agreed to participate in COMPETE for two main reasons: firstly because smartcard production was a major corporate business operation, and secondly because the Motorola UK CEO was heavily involved in skills assessment initiatives, both inside the company and as a key actor in other relevant activities (such as the UK 'University for Industry'). However, during 1999, Motorola sold their smartcard operations to an American company, and withdrew from COMEPET, on the basis that it no longer reflected their interest. This meant that one of the two main sites in which the validation was to take place was no longer available.

Our response to this changed context was to develop a new validation approach in three phases, based on the following:

- Phase 1: storyboarding of five scenarios; initial testing of storyboards with a sample of stakeholders (through interviews)
- Phase 2: development of the scenarios in the form of five 'mini pilot demonstrators'; downloading of demonstrators to the COMPETE web site; initial validation of tools in first validation workshop, involving a 'user panel' – drawn from collaborators who have already participated in the COMPETE research tasks
- Phase 3: a series of five validation workshops (one for each scenario) towards the end of the validation process, the aim of which is to finalise the tools, and to provide inputs towards the implementation of an exploitation and dissemination strategy.

Phase 1 involved interviews with representatives of thirty-four major multi-nationals, with twenty SME owner managers; representatives of 10 NGO's providing services for migrant workers; twelve Euro advisors and fifteen 'high flyer' young citizens based in Brussels.

Phase 2 involved a one-day workshop with all the COMPETE partners, together with ten stakeholder representatives of the five scenarios.

Phase 3 was comprised of five separate one-day workshops for each COMPETE scenario, involving a focus group of the target audience. Table 1 below summarises the workshops.

Table 1: The phase 3 workshops

SCENARIO	Focus Group	Location	Partner
1: Support for Migrant Workers	Migrant worker NGOs Government agencies Researchers	Athens, GR	NSPH
2: 'New Jobs for Old' - Tools for Inter-regional partnerships.	PES officials Euroadvisors	Sheffield, UK	MMU
3: 'New Opportunities for the Long Term Unemployed' - Public Employment Service support tools	EURES co-ordinators Regional Development	Saarbrucken, G	CCIP

	Agencies		
4: 'Human Resources Developer' - Valorising the Company Asset Base	IBM HR managers IBM systems and training personnel	Milano, IT	IBM/IGT
5: 'The Mobile Citizen' - Cross Border Electronic Credentials Authentication tool	Smartcard/software companies Young Eurocitizens	London, UK Brussels, BE	TI/GUINET

Each workshop was to focus on three themes:

- Presentation of relevant COMPETE research findings for the particular scenario context
- Demonstration of COMPETE tools, showing how they can contribute to the problems addressed
- Next steps: possibilities for further development (including new projects and partnerships).

5.6.3 Main conclusions of the validation process

- The validation results broadly supported the overall framework for the COMPETE tools, as well as many of the functionalities developed. However, three sets of modifications to the tools were identified by the validation**:** Firstly, the overall institutional basis of the 'European Skills Development Network'; second the generic and technological platform; thirdly, specific modifications to the five scenarios.

A major obstacle that needs to be addressed is the 'transparency-equivalence problem'. All the COMPETE research points to the need for a transparency-based skills standardisation system for Europe that can reconcile the different culturally-based 'learning patrimonies' that shape qualifications in different states. However, in order to develop the basis for skills standardisation, it is necessary to have an initial common core content model that can be used as the benchmark for comparisons. This provides an argument for incorporating data collection exercises that will 'kick start' the movement towards transparency. These do not have to be large scale surveys, but can begin at least with a meta-analysis of available data, for example from CEDEFOP.

Another key issue is what role does COMPETE play in the institutional framework that will handle digital certificates and provide the 'trust basis' for skills authentication?

The solution is to provide COMPETE services through a European Skills Development Network (E*NET). E*NET has four main constitutent organisational elements:

- A European Accreditation Authentication Bureau, providing on-line authentication, validation and 'equivalence-checking' of certificates, credentials and references acquired (both formally and informally)
- A Secretariat, with responsibility for overall management, administration and monitoring of the network
- A Technical Unit, with responsibility for managing, reviewing and updating the technical platforms, tools and support systems. This includes the Skills Data Warehouse, and the COMPETE portal, allowing access to, and providing support tools for, the COMPETE networks and services.
- A Monitoring Unit, which will initially have a data collection function – the outcome of which will be the construction of the initial 'common content model' and benchmarking system. Subsequently, the task of the Unit is to synthesise the data on skills provided by clients.

A key feature of the COMPETE technological delivery platform is that it would need to integrate *stable technologies*. The principle delivery platform for the services uses client-server technology. The user interfaces connecting the delivery platform with the COMPETE tools and the data warehouse – are industry standard. This allows the integration of information from many different sources - Word processor, HTML, Database, PDF into a common, searchable database which delivers that data seamlessly through the web site. The target platform for end-users will be Netscape 4 or Internet Explorer 4. From our data on current public/consumer-based sites it can be seen that this accounts for approximately 95% of all users. Data stored in the data warehouse (training provision; skills data and so on) will primarily be in the form of meta-data, using as a standard the World-Wide Web Consortium's Resource Description Framework. RDF provides for the expression of metadata in XML, and is already in use on the WWW. The qualifications and references authentication services will adopt existing 126 bit encryption standards.

The platform will provide the following:

1. Core Content Model – a competence-based standardisation framework that will provide the basis for skills elicitation, assessment and profiling tools;

2. Web site portal, providing access to the applications tools and services and data-warehouse and data-mining systems and the Authentication services of the European Skills Development Network ;

3. Data warehouse – an evolving information repository, and navigation and user profiling tools, containing metadata;

4. Skills elicitation, assessment and profiling tools;

5. Collaboration networks, focusing on the PES and EURES partnerships, and also including the US Department of Labour O*NET system

Modifications to the five COMPETE scenarios are as follows:

Scenario 1: Support for migrant workers

1. Technical Systems require support services – 'cultural intermediaries' ('advocates' to provide human interface with technology; translation support)
2. Incorporate machine translation tool (SYSTRAN or Babel) to provide automatic translation of metadata abstracts.
3. Provide template for translation services for large primary content.
4. Incorporate multimedia video clips elicitation tools on work experience.
5. Supplement user-centred case history tools with on-line 'objective' skills assessment software.
6. Modify free text boxes. Substitute with multiple choice drop-down menus.

Scenario 2: Regional Re-generation

1. Incorporation of 'common indicators' as baseline for collecting data on labour markets.

Scenario 3: PES Support tools

1. Use kiosks as access platform.
2. Use check boxes not free text to construct client case history.
3. Elaborate tool to elicit prior learning profile for client – checklist of simple easily understandable competence elements (DIY etc).

Scenario 4: Valorising the company asset base.

1. Use enriched document software to develop distributed knowledge database and organisational memory.
2. Interface enriched document software with O*NET skills assessment tools.

Scenario 5: Electronic credentials authentication tool

1. Incorporate digital c.v. on personal skills card.
2. Use open systems platform – multiple access to digital certificate authorisation database via Internet.

6. DISSEMINATION AND EXPLOITATION OF RESULTS

6.1 Overview

The COMPETE dissemination and exploitation approach incorporated three main elements. First, the potential for exploitation of the various project outputs and results is embedded in the project design. Central to the design conception is a co-ordinating group of potential users (the Associate Partners) who provide a reference point for the development and validation of COMPETE outputs, thereby ensuring the relevance of the innovative tools and methodologies to their needs and the needs of the market. Through ongoing concertation and dissemination activities as part of an iterative cycle of developing generic tools and guidelines, the intention was to encourage interest in the COMPETE outputs and their further development, following completion of the project. The plans for dissemination included a) focus group workshops for practitioners organised by COMPETE as part of its own concertation activities, and b) workshops and other events that are organised as part of the TSER programme, and which are aimed at the wider research and practitioner community. Second, the research partners were to disseminate the findings from their focused studies and critical assessments through journal articles, papers delivered to conferences and other academic channels. Finally, as part of WP6, resources are built in to COMPETE to enable a business plan to be drawn up in order to take further the development of the practical tools and Guidelines initiated by the project.

6.2 Dissemination

The main dissemination mechanisms used in COMPETE were as follows:

- the COMPETE information package;
- the Website;
- the COMPETE video
- participation in events;
- organisation of events;
- articles and publications.

COMPETE information package

A dedicated information pack was produced. This comprised of: a COMPETE brochure and inserts (with the COMPETE logo and headed notepaper), together with summaries of the main research activities.

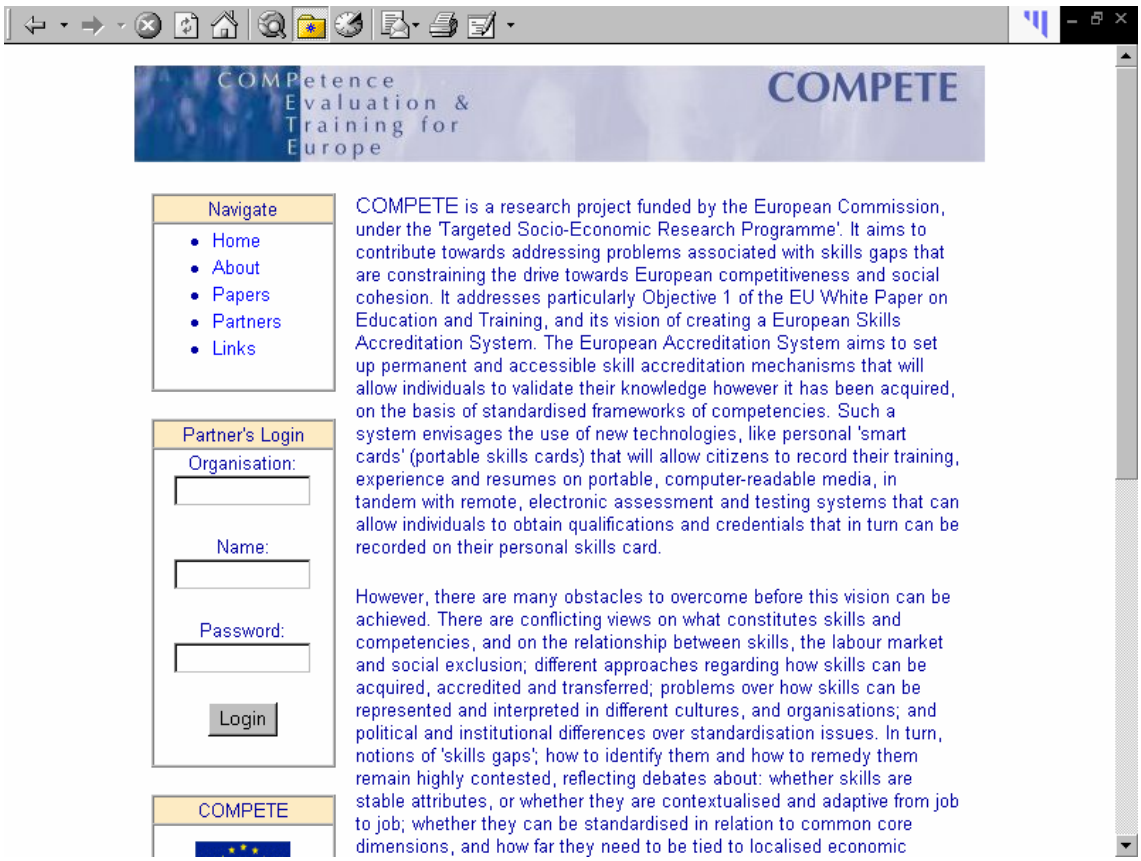
Website

A dedicated website was set up. This is comprised of the following different functions:

- internally: a knowledge pool;

- externally: information to a wider public; dissemination of outputs and concertation with various groups of stakeholders;
- internally and externally: links with other relevant sites.
- document storage and download of COMPETE Deliverables
- repository for COMPETE tools

As shown in the illustration below.



COMPETE video

A ten minute video of COMPETE has been produced. This illustrates : the initial objectives of the project; the work carried out; the research results; the COMPETE tools. It is available in the following formats: VHS; CD-ROM.

Other activities

The remaining dissemination activities were: events and written articles and publications. The events were comprised of two main sets of activity: firstly, the workshops carried out as part of the validation phase of COMPETE (outlined above in Section 5), and secondly, opportunistic events (for example relevant conferences and workshops). A list of the events and the articles produced is set out in the Table below.

Partners	***Description***	***Time period***
Update of current information package		
P. Mandi (NSPH) D. Danau (ECWS)	Contribute to the update of inserts Adaptation and translation of the information package	July-August 2000 January 2000
Further development of Website		
B.Jones/B.Miller (MMU) GUINET	Add on document download Incorporate COMPETE tools Expand knowledge pool	June-Sep 2000
Participation in events		
B. Jones/B.Miller(MMU)	EU seminar "Towards Learning Society" Lisbon CEDFOP AGORA 5 Experts Panel with Hadjivassiliou, K "New methods of skills definition and accreditation: personal skills medium in the USA & Europe"	May 2000
P. Mandi, D. Agrafiotis (NSPH) Noreen O'Shea (CCIP) B. Jones/B.Miller MMU) IGT/IBM TI/GUINET	Contact stakeholders, organize events, write reports Organisation of workshop for regional settings Stakeholder group Pub Employment Services Workshop, Organisational tool Workshop, Authentication tool	Jul –Sep 2000
Articles and publications		
P. Mandi, D. Agrafiotis (NSPH) B.Jones/B/.Miller (MMU) B.Jones/B/.Miller (MMU J Cullen, TI J Cullen, TI J Cullen, TI	Announcement of the project to migration related organisations Book chapter in Welfare, Risk & Citizenship: a reader (Routledge) Paper, COMPETE: European Movement Towards a Competency-Based Skills Taxonomy and a Personal Skills Medium. Conference on Skills, Miami Paper: 'Smartcards and European labour migration'. EU Conference on education and the Mediterranean Countries, Marseilles Collaborative Learning in small firms: why skills standards don't work. Paper, International Small	Aug – Sep 200 Sep 2000 Feb 2000 Dec 98 Nov 98

	Business Conference 98.	
J Cullen, TI	Paper : Why Learning Technologies Don't Work, EU Learning Telematics Conference, Munchen, Germany	Jun 99
J Cullen, TI	Clusters and co-laboratories: the myth and reality of institutional learning'. Ind. & Higher Ed	Dec 00
J Cullen, TI	Understanding the Cultural Logic Of EU Programmes'. Paper, Herrenalb US/EU conference on technology policy evaluation	Nov 00
	Re-shaping Identity: The Wider Benefits of Learning". Paper, Conference on Research and Policy on Lifelong Learning, London	Nov 00
D. Danau, S. Timmermans (ECWS)	article on the project in "NEWS" the newsletter of ECW	1999
	article on employability & mobility within the frame of COMPETE and the ABN AMRO case in "NEWS", the newsletter of ECWS	July 2000
	article on COMPETE with the main conclusions and outcomes of the project in "NEWS", the newsletter of ECWS	December 2000

6.3 Exploitation

6.3.1 Summary

Two main exploitation initiatives have been developed:

- Firstly, completion of the business plan for COMPETE.

- secondly, using the business plan, submission of a proposal for funding for market validation of COMPETE within the TEN-TELECOM Programme. This new project is called COMPETENT.

6.3.2 The COMPETE Business Plan

Market sectors

The COMPETE services address the following market segments:

- European citizens, and in particular: the socially excluded (long term unemployed and migrant workers;) cross-border commuters and those looking for work in other EU countries; those looking to increase their skills base
- NGO's and other support agencies providing services for socially excluded groups
- European businesses (particularly in the evolving knowledge industries)
- Public Employment Services (PES)

- Regional Development Agencies (particularly cross-border agencies such as EURES)
- Government Departments (employment, education and training departments)

In this context, the COMPETE market is comprised of two types of users: direct (end) users, for example citizens and firms who wish to run a check on the authenticity and value of credentials; and indirect (intermediary) users, for example PES officers searching skills databases on behalf of a client.

The main competitors for COMPETE services are:

- the companies currently offering occupational profiling and skills assessment on the web
- on-line 'job centres', virtual recruitment agencies
- government departments and private enterprises offering labour market data and analysis
- O*NET.

We have already carried out a detailed competitor analysis of this competing supply. We reviewed 135 web-based applications, across all EU member states and including the USA, Canada and Australia. As indicated above, our assessment of this supply is that – very few sites are interactive; the functionalities of these tools and services are limited. Nearly all of these systems use search engines and hierarchical nestings based on verbal designations of jobs, skills and sectors. They do not represent progress towards a competency-based, transparent electronic skills-profile-matching service. Some sites do match CVs to jobs, and circularise both parties about matches, but these also use verbal self-reporting. Indeed, one of COMPETE's added value aspects is its capacity to act as a gateway across these disparate sites, and to provide 'peer-reviewed' evaluation of their value via the COMPETE portal. In this sense, COMPETE acts as a 'content manager' for the different communities involved in the skills domain. In the case of O*NET, our research has concluded that, although the system is relatively sophisticated, it is highly 'Americanised' and of limited use for the European context. Furthermore, as a 'top-down' system , it works on standardisation rather than transparency, and is unsuited to the problems of cultural contextualisation prevalent in Europe.

Product definition and reasons for demand

COMPETE product are comprised of three types:

- software applications and tools
- value added information services and consultancy
- intangible value added services

The ***applications and tools*** consist of:

- skills elicitation; representation and assessment tools
- company ‘asset valorisation’ systems’ (based on ‘enriched document’ knowledge management systems)

These can be configured as stand alone systems for single users in the following settings: company in-house; PES offices; EURES drop-in centres; NGOs.

The ***Information services*** are comprised of:

- On line Certificate, credential and reference checking
- Digital cv’s for individual citizens, companies and regional development agencies (incorporating skills audits and profiles)
- Brokerage services to on-line cv posting sites; job vacancy sites; employment support sites
- Monitoring and analysis of skills trends in selected strategic economic sectors
- Skills auditing and profiling consultancy for companies, regional development agencies

The ***intangible value added services*** focus on:

- Promoting the development and sustainability of an EU wide Skills Development and Accreditation Network
- Promoting a common ‘content model’ for EU member states
- Promoting convergence of occupational and skills classifications systems through a ‘transparency’ approach

As indicated by the results of COMPETE, there is a demonstrable need, and demand for, the services that COMPETE will deliver.

For *companies,* considerable cost-benefits will be accrued in terms of:

- ‘benchmarking’ against the skills development trends of market leaders
- identifying skills gaps and developing suitable training strategies
- ensuring new recruits are fully qualified and experienced
- matching new products and customer needs to the right skills availability

For *citizens*, COMPETE will help:

- identify marketable and transferable skills they may not know they had (through unpicking prior learning, work-based learning and informal learning)
- identify appropriate training opportunities
- self-marketing on EU-wide on-line job sites
- assess the value of certificates in another country

For *socially excluded groups*, COMPETE will contribute to:

- providing access to support and information services
- re-training
- identifying jobs suited to their real skills

For *Public Employment Services*, COMPETE will:

- generate real cost-benefits by improving the efficiency of client consultations
- add value by reinforcing collaborative working with other service providers on a cross-sectoral and trans-national basis

For *regional development and cross-border agencies*, COMPETE will:

- make a valuable contribution to developing and implementing more effective regeneration and employment creation strategies.

Manufacturing costs and forecasts of profitability

The expected costs of the COMPETE services are estimated to run at: 2 m Euro in the market validation phase, and running at around 3 million Euro per annum over a five year market deployment period. These costs are comprised of: equipment (servers; authentication and smartcard reading hardware); server hosting and website support; content review appraisals; staff costs; administrative costs; accommodation and overhead costs for the Secretariat and Authentication Bureau; marketing and publicity; R&D and software upgrades and systems review and support. The estimated revenue streams are expected to reach around 1 million Euro in the first phase of operations, rising to 28 million Euro in year 5 (this is contingent on a significant growth in the number of subscribers to COMPETE – projected at 1000 in Year 5, at an annual fee of 25,000 Euro.)

Financing Plan

Following the Market Validation phase COMPETE will move to its market deployment phase. A key objective of the market validation phase will be to test our initial assumptions in the business model, and following any refinements that need to be made, put into place appropriate financial structure. We expect COMPENT revenue will originate from six main sources:

1. Software licences for the skills elicitation, assessment and profiling tools, and the knowledge management system.
2. Subscriptions to the E*NET ‘user club’, which would provide regular analysis of occupational change, using data derived from the COMPETE evolving knowledge base
3. Fees for checking of qualifications and references
4. Core funding from employment and training agencies and from regional development agencies
5. Consultancy fees, derived from implementing bespoke skills audits
6. e-commerce revenue (joint marketing of related web sites; advertising etc).

As part of the business planning phase, we would expect by the end of this phase to have completed initial negotiations with potential investors (venture capitalists; European Investment Bank) for the deployment phase.

6.3.3 COMPETENT

The COMPETENT proposal submitted tot he TEN-TELECOM Programme provides for the first stage of the 'market validation' necessary to begin to create the European Skills Development Network. It involves the core group of partners from COMPETE, together with additional telecommunications organisations, and market sector representatives (for example CardEurope – the European smartcard manufacturer's trade organisation).

The main objectives of COMPETENT are:

- **Building on the results of the COMPETE project, to develop a Business Plan for COMPETENT**
- **To develop and validate the technical, operational and organisational infrastructure for the European Skills Development Network, together with access and support tools**
- **To validate the market feasibility of the infrastructure, network and tools in five indicative applications scenarios**
- **On the basis of the validation outcomes, to prepare an Action Plan for initial market deployment of COMPETENT**

The overall objective of COMPETENT is to **roll out a skills development network and associated services for European employers, public employment services and cross-border agencies, and to promote the mobility of European citizens.**

7. Acknowledgements and References

7.1 Acknowledgements

COMPETE has proved to be an extremely complex, and difficult project. Its original objectives changed significantly as the project evolved, and it posed considerable challengers for the participants involved.

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7.2 References

The list of COMPETE Deliverables is as follows:

1.1	Report on state of the art, and methodological framework
1.2	European comparative analysis of policy and taxonomies
2.1	Report on Results of Sectoral Surveys
3.1	Report on results of case studies
3.2	Framework and specification for tools and Guidelines
4.1	Prototype Audit Methodology
4.2	Prototype Generic Content Model
4.3	Prototype Good Practice Guidelines
4.4	Prototype Skillscard specification
5.1	Report on validation of COMPETE tools and Guidelines, and final tools and Guidelines
6.2	Final Report on COMPETE Project

A full list of references used in the project is provided in:

D1.1, Report on state of the art, and methodological framework

D1.2, European comparative analysis of policy and taxonomies

D2.1, Report on Results of Sectoral Surveys

D3.1, Report on results of case studies

A bibliography of key texts is shown overleaf.

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