



SMART KNOWLEDGE NETWORK
Skills Matching and Route for Training



Lifelong
Learning
Programme

S.M.A.R.T. KNOW. NET.

Skills Matching and Route for Training Knowledge Network
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WP 5 – VALIDATION REPORT ON KN TRANSFER



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1. Purpose and range of application of the document

1.1 Purpose of the Document

This document describes the transfer process of the KN platform at European level and its main results.

1.2 Range of action

The present document represents the basis to develop future usability and transferability of the Smart Know Net platform



2. Architectural information: KN components and functional requirements.

This chapter contains a description of the standards to be used by the partners for the functioning and operating of the system and for the testing phase, data standard, definition of collaboration principles. In this chapter the technological standard prerequisites used to test the KN platform are explained in details. The information reported represents the basis for installing, translate and use the KN software and for its application and pilot testing in the countries partners of the SMART KN project.

2.1 KN Hardware and Software characteristics

2.1.1 Exercise environment

The core system consists of two servers used in a way to separate the Front End layer (accessible from Internet) from the Data layer (RDBMS), and thus to implement an additional level of access control, in order to protect data integrity.

It is recommended to guarantee the network connectivity between the Application Server, the database Server and the corporate LAN by a switch Layer 2 2510 with 24 ports 10/100/1000.

The minimum Hardware required for the functioning of the system has the following characteristics:

- The Front End server with the functions of Application server and Web server has the following characteristics:

CPU	1x Intel Xeon Quadcore E5440 2.83 GHz
RAM	2x 2,00 GB RAM
Controller RAID	Raid 0/1/5 512 MB cache DDR2/533
HD	2x 146 10k GB SAS (RAID 1+0)
NIC	2x rame 10/100/1000

- The Back End server with the function of Database Server has the following characteristics:

CPU	2x Intel Xeon Quadcore E5440 2.83 GHz
RAM	2x 2,00 GB RAM
Controller RAID	Raid 0/1/5 512 MB cache DDR2/533
HD	6x 146 GB 10k SAS 2x 146 GB 10k SAS (RAID 1+0) 4x 146 GB 10k SAS (RAID 5)
NIC	2x rame 10/100/1000



- It is recommended to adopt an UPS (Uninterruptible Power Supply) of 1500-Watt.
- The basic software necessary for the correct functioning of the KN software is the following:
 - Operating system: MS Windows Server 2008 Standard Edition (Build 6001) Service Pack 1 (front-end e back-end sever);
 - Application server: Apache Tomcat 6.0 (front-end server);
 - Relation database management system: MySQL 5.0.17 (back-end server);
 - Java sdk 5_07 – jdk 6u16 (front-end server);
 - Adobe Acrobat Reader 9 (front-end server);
 - Adobe Flash Player 10 (front-end server);
 - MS Office (front-end server).

2.1.2 User environment

Hardware environment

The hardware environment required to use the TOI Smart KN application is a PC connected to Internet.

Software environment

The software environment required to use the TOI Smart KN application is the following:

- Browser internet: Mozilla Firefox 3.6.x or Internet Explorer 7/8,
- Acrobat Reader 9,
- Adobe Flash Player 10,
- MS Excel.

2.2 Application and system security

The application security could be strengthened through a firewall owned by the company and through the protection and security functions included in the S.O. Microsoft Windows Server 2008 Standard Edition.

Protection from possible virus is implemented by choosing an antivirus that the company considers the most suitable for its specific needs.



2.3 Client functions

2.3.1 Functions

The project permits the following functions:

- *Cataloguing*
 - a. *Cataloguing of Sectors of Activity*
 - b. *Cataloguing of Professionals linked to every Sector of Activity*
 - c. *Cataloguing of Skills linked to every Professional.*
- *Survey*
 - a. *Survey of Skills requirements*
 - b. *Survey of Skills availability*
- *Statistical analysis*
 - a. *Statistical analysis of Skills requirements*
 - b. *Statistical analysis of Skills availability*
 - c. *Comparison of the relationship between demand and supply of skills*
 - d. *Identification of training needs evolution*

2.3.2 Cataloguing

2.3.2.1 Cataloguing of Sector of Activity

The project provides tools for the classification of the different Sectors of Activity, including links with external classifications.

Data

- Internal classification
 - Sector of Activity name
 - Sector of Activity code
 - Sector of Activity description
- External classification (multiple)
 - Type of classification (i.e.: ATECO)
 - Sector of Activity
 - Code

Each classification can have multiple external classifications linked.

Each external classification can have one or more internal classifications linked.



2.3.2.2 Classification of Professionals

The project provides tools for the classification of the different Professionals, including possible links with external classifications.

Data

- Internal classification
 - KN Sector of Activity (code)
 - KN Professional
 - KN Code
- External classification (multiple)
 - Type of classification (i.e.: NUP)
 - Name of external Professional
 - External code

Each internal item can have multiple Professionals linked.

Each external Professional can have one or more KN items linked.

2.3.2.3 Skills cataloguing

The project provides tools for the classification of the Skills, including possible links with external classifications.

Data

- Internal classification
 - KN Skill name
 - KN Code
 - KN Skill description
 - KN Alias
- External classification (multiple)
 - External classification kind
 - Skill name
 - Skill code



2.3.2.4 Relationships between Business Sectors and Professionals

The project provides tools for the identification of the relationships between Business Sectors and Professionals.

Every Professional is linked the reference Sector of Activity and possibly the Sectors in which the Professional can be used significantly.

For every Sector of Activity is possible to find the linked Professionals.

2.3.2.5 Relationships between Professionals and Skills

The project provides tools for the identification of the relationships between Professionals and Skills.

For every Professional, Skills are found. It's possible to find Professionals linked to every Skill.

2.3.3 Detection of Skills demands

The project needs some information by the Company, some of them mandatory. The most relevant are:

A. Identifying informations of the demand *(mandatory)*

Protocol

- Association Code
- Progressive Number

Date

- Year Month Day



B. Essential informations (mandatory)

Demand for human resource

- in activity planned

Number of resources to be trained (in activity) or to be selected (planned)

Quantity

Business Sector

- In KN list
 - o *Drop-down list with items of the KN Sector of Activity tab*
- Not in list
 - o *Free text field*

Professional

- In KN list
 - o *Drop-down list with items of the KN Professionals tab linked to the selected Sector of Activity*
- Not in list
 - o *Free text field*

Required skills

- In KN list
 - o *Drop-down list with items of the KN Skills tab linked to the Professional selected*
- Not in list
 - o *Free text field*

Time period in which perform the training (for resources in activity) or in which perform the selection (for planned resources)

- Time period in KN list
 - o *Drop-down list with items of the KN Time Periods tab*



C. Informations on human resources (optional)

Age

- In KN list
 - o *Drop-down list with KN Age brackets tab*
- Not in list
 - o *Free text field*

Educational Qualification (multiple field)

- In KN list
 - o *Drop-down list with KN Educational Qualifications tab*
- Not in list
 - o *Free text field*

Known languages (multiple field)

- In KN list
 - o *Drop-down list with KN Known Languages tab*
- Not in list
 - o *Free text field*

Qualification

- In KN list
 - o *Drop-down list with KN Qualifications tab*
- Not in list
 - o *Free text field*

Work experiences (only for planned resources - multiple field)

- Experience



D. Company informations (optional)

Number of human resources of the Company

- Number
 - o *Drop-down list with items of the KN Number of Resources of the company tab*
- City
 - o *Drop-down list with the item of the KN City tab*

2.4 Constitution of a Technical Group

During the kick off meeting in Rome it was decided to create a “Technical group” inside the partnership. The aim of this group was to cooperate with the Project Management Team and in particular with the Project coordinator and the Researcher in order to deal with, discuss and solve the technical problems/questions that could be occurring during the transfer and the functioning of the platform.

Furthermore, seen from a technical point of view, it is a tool to keep the transfer process and the piloting phase under control.

A mailing list was created in which each partner indicated their person in charge of the technical aspects. Messages concerning the discussion of technical aspects are always sent in copy also to the project coordinator of each partner, to ensure the necessary coordination and communication.

The group communicated through e-mail, Skype and dedicated sessions organized during the partnerships meetings.

The group proved to be a valid tool to carry out a technological project.



3 Documentation

3.1 Installation and guidance documentation

For the transfer process there are two basic documents: “Installation Manual” and “User Manual”. Besides them two other documents were produced: “Convergence Document” and “Transfer reference framework Document”.

3.1.1 Installation Manual

This first document describes the installation and pattern procedure of the web application KN II after the internationalization process. Hardware and software requirements are described in the first part of the Installation Manual and have already been described in the previous chapter of this Report. The guidelines contained in the Installation document are valid for the work group, including development and testing of the current project and for the staff dedicated to the installation and configuration of the web application KN II.

The installation Manual has been drafted for SMART KN project by Esutema to help partners of the project in the installation process of the platform and particularly in the file localization process.

It was considered quite explanatory even for someone with no previous experience in the used technologies. After the installation process the document was slightly revised and integrated following suggestions from the partners.

Both the Installation Manual and the KN platform were translated first into English and then into the respective languages of the project partners.

3.1.2 User Manual

This document belongs to the original version of the project and was translated and adapted by IRFI for the SMART KN project. The information contained in this document is valid for the application Knowledge Network after the internationalization process.

This document describes the steps to be followed for the correct use of the application.

The “User Manual” is structured as follows:

- A general description of the system containing user profiles and access to the system.
- A description of different functionalities: Functional Area “Users” in Users Context; Functional Area “Demands” in Demands Context; Functional Area “Tables” in Tables Context; Functional Area “Cataloguing” in Cataloguing “Context”; Account management; Functionality “Helper”; Help on line.



Both the User Manual and the KN platform were translated first into English and then into the respective languages of the partners.

3.2 Other Documents

During the life cycle of the project two other documents were drafted: the “Convergence” document and the “Transfer reference framework” document.

The first describes the background scenario of the KN application by analysing the market situation in each country and in particular the skills mismatch. It also describes technical aspects such as HW and SW characteristics and requirements, exercise environment, application and system security and client functions. Furthermore, due the technicality of the entire project, it was decided to constitute a “technical” work group. Finally, the document describes the statistical sample of sectors and number of skill demands chosen by each single partner for the testing activities.

The “Transfer reference framework” document describes the program installation, the application deploy, the localization procedures and then analyzes the installation process done by each partner. Its purpose is to assure the transferability and adaptability of the KN platform and a correct localization of the content according to culture and language through the translation of tools.

3.3 Test Documentation

Test documentation was composed by:

- a) Monitoring survey requested by the NA (Addressed to the Beneficiary)
- b) Monitoring survey draft by IRFI (Addressed to the partners – see Appendix I)
- c) Description of Installation process in each country (Addressed to the partners)
- d) Evaluation criteria and Validation Questionnaire (Addressed to the partners – see Appendix II and III)

3.3.1 Monitoring survey requested by the NA (Addressed to the Beneficiary)

An internal monitoring Survey was drafted by the NA and filled in by IRFI every 6 months (4 times during the project life).

During the first year the questionnaire was divided in two parts: the first one concerned the activities that had been completed, those that had still to be done still and motivation of possible deviations from initial project as well as possible difference in scheduling of activities. The second part of the questionnaire concerned the financial situation of the project: expenses reported, both in value and in %, of the total amount of the project, in order to keep the budget and the expenses trend under control.



During the second year of activities the survey was done online and structured according to several indicators. It contained less description of activities and more yes/no questions. There were no financial sections, but, in order to maintain the trend of expenses under control, IRFI nevertheless decided to include the second part of the test used by the NA during the first year.

3.3.2 Monitoring survey draft by IRFI (Addressed to the partners)

In addition to Monitoring survey requested by the NA, a survey questionnaire was drafted by the project coordinator (IRFI) and filled in by the partners once during the first year of activities and twice during the second year (three times during the entire project life). This was done in order to keep both the technical and management activities under control, and to detect possible errors, malfunctioning and to monitor in general all project activities carried out by the partners. The questionnaire is herewith enclosed (see Appendix I).

The questionnaire put out in the first year only contained a general section of project management and partnership relationships (Project monitoring with 9 demands).

However, a specific questionnaire to monitor testing activities on the KN platform was added to this general section in the second year. This questionnaire consisted of 10 questions, concerning quantitative as well qualitative information.

The second and the third questionnaires submitted to the partners consisted of two parts:

Section A: Monitoring testing activities on the KN platform (10 questions)

Section B: Project monitoring (9 questions).

3.3.3 Description of Installation process in each country (Addressed to the partners)

With regard to the installation process IRFI did not adopt any particular test, but asked the partners to refer the activities in a descriptive report.

The contents of these documents were assembled in the “Transfer Reference Framework” document mentioned above.

3.3.4 Evaluation criteria and Validation test

Specific questions about a general evaluation of all technical activities of the project were addressed to the partners along with the Validation Test in view of the preparation of the Validation Report. The evaluation questions were divided into items and sub-items and for each of these the partners were asked to indicate positive aspects, negative aspects and suggestions for improvement.



4. Transfer and testing

4.1 Goals and objectives

SMART KNOW NET aims at transferring innovation to the countries of the project partners (geographic dimension). In this regard, the project has been developed by a network of 7 partners (from Italy, Spain, Poland, Greece and Latvia). The idea to transfer the KN tool to other national contexts stemmed from the need detected at European level to tackle the skills mismatch problem and support the elaboration and consolidation of innovative practices in training and continuous professional development.

In this respect, the transfer of the KN approach to other countries is also aimed at developing sustainable mechanisms to assure transferability and adaptability of the benchmarking system. Localization of the content according to culture and language through the translation of the platform has been adopted for the transfer of innovation.

However, as some concepts are better understood in English, and, in order to enhance further transferability, the KN was translated first translated into English and subsequently into the languages of the project partners.

The transfer and testing process of the KN platform aims at assuring transferability and adaptability of the KN platform, a correct localization of the content according to culture and language through the translation of the platform.

4.2 The process

After the translation process from Italian into English, the databases and manuals of the platform, were put onto CD's and delivered to the partners during the second partnership meeting in Zaragoza in June 2011. During this session a representative of the company which created the KN platform was invited to present the installation process and was ready to answer questions and clarify doubts. On this occasion IRFI presented the functionalities of the platform (how to create skill demands, how to link them to professionals etc.). The phase starting with the meeting mentioned above was entirely dedicated to the correct installation of the platform and to the translation of files and their localization. This phase, starting with the meeting mentioned above, was almost concluded with the first conference in Athens (December 2011). The testing phase of the platform itself and its functionalities started in January 2012. On some occasions unexpected errors or difficulties were faced during the installation process as well as during the localization of



the translated files and during the testing phase of the functionalities. They were managed and mostly solved by the technical group and sometimes with the help of the company that designed the software.

The effective test of the platform was undertaken following the statistical sample mentioned in the “Convergence “document. Each participant was asked to express how many skill demands would have been uploaded to the platform and to explain the statistical procedure that had been followed (how many and which sectors had been chosen, how many demands each sector etc.). During the testing phase the technical and the management groups worked together to complete the test activities in the best way. Sometimes misunderstandings concerning functionalities occurred and slight malfunctionings were detected. These were solved thanks the cooperation of the entire partnership (technical and management group) and the support of Eustema.

When the testing phase was concluded and the partners presented their results during the last meeting in Riga, the partners were asked to answer the validation test.

4.2.1 Definition of the statistical sample

Each country participating in the project was asked to define the statistical sample (number, type of sector, type of companies etc) for the piloting activities of the KN software with companies and explain how it was obtained. The sample should be based on the representation of the relevant economic sectors in each region. Companies for implementing the pilot test will be chosen among SMS's.

The parameters used by each single partner are the following:

Italy

6 entrepreneurial associations (the most representative in the Province of Rome):

- Confartigianato and ACAI (Handicrafts)
- Unione Industriali di Roma (Industry)
- Confcooperative/Lazioform and Legacooperative/Service Lazio (Cooperatives associations)
- Federlazio (SME's association).
- Three sectors of activities for each association (for instance: tourism, agriculture, building); 40/50 demands of skills for each sector.

Total demands of skills inserted: 900



Poland

6 entrepreneurial associations:

- 1. Cracow Chamber of Tourism
- 2. Malopolska Chamber of Craft and Entrepreneurship
- 3. Cracow Congregation Merchant
- 4. Guild of Construction Craft
- 5. Accountants Association in Poland – Cracow Branch
- 6. ASPIRE – Association IT and Business Process Services
- One-two sectors of activities for each association (for instance: tourism, building, HORECA, IT); 20 demands of skills for each sector.

Total demands of skills inserted: 200

Greece

8 Entrepreneurial associations

- Young entrepreneurs (Retail sector, food ind etc)
- Panhellenic association of ceramists & potters (POTTERY- CERAMICS)
- Panhellenic association of traditional art & craft producers
- Hellenic federation of silversmiths - goldsmiths - jewellers & watch retailers (POVAKO)
- Clothing manufacturers association
- Manufactures association pan & clothing industries association
- Federation of Fur
- High Tech (ICT, Telecom, Environment, biomedical)

At least one sector of activities, one for each association (for instance: ceramics, pottery, - jewellers, Telecom etc); 0 to 25 demands of skills for each sector. $(8*20 + 8*25)/2$

Total demands of skills inserted: 180

Latvia

8 Entrepreneurial associations:

- Latvian Chamber of Commerce and Industry
- Employers' Confederation of Latvia
- Efficient Consumer Response in Baltic
- Latvian Association of Personnel Management



- The Latvian Information and Communications Technology Association
- Association of Commercial Banks of Latvia
- Latvian Tourism Development Agency
- The Association of Latvian Chemical and Pharmaceutical Industry

At least one sector of activities for each association; 20 demands of skills for each sector.

Total demands of skills inserted: 160

Spain

4 Main entrepreneurial associations in Aragon region:

- Agro food association
- Hospitality services association
- Chemical and plastic industries federation
- Commerce association

At least two sector of activities for each association; around 20 demands of skills for each sector. $(4 \times 2) \times 20$

Total demands of skills inserted = 160

Total demands of skills for the entire pilot testing phase of SMART KN (excluding Italy): 700

4.2.2 Installation testing

Concerning the installation activities, partners were requested to draft a document containing the following information:

1. Introduction
2. installation activities done, possible difficulties encountered and how they were solved
3. follow up steps

Regarding the installation of the application server and the data base server, only slight difficulties solved by the partners themselves, were found. In few cases was the intervention of the technical group asked.

For the Greek partner dealing with IT, P4, there were few minor discrepancies between the installation manual and the installation procedure because of the management tool used.

The installation of the Spanish partner was also successful. P7 Crea installed the software onto two different operating systems in order to check if they could use the application with their resources or needed to invest in new servers.



Only P5 University of Latvia faced some concrete problems because the environment used was Linux and not Windows, as requested in the HD and SW prerequisite document. Then P5 had the system installed by independent service provider (the Institute of Mathematics of the University itself). The program was installed a Windows operating system to ensure the success of the systems functionality.

Since the first installation was successful they tried to install the application in a production environment with changes in the prerequisites in order to check if the software can run with lower resources and the latest versions of the programs. The hardware and software environments are reported in the document "Report on transfer Reference Framework".

In conclusion, the installation of the KN application, concerning all partners, was successful.

Some problems have been fixed through a collaboration between partners and the technical group. The KN application is running successfully and translations into English have been integrated into the system ready to be fully translated in national languages. identify the location of their files, in their national languages, on their servers.

Sometimes small problems regarding file location did occur, but these were successfully solved through the collaboration of the technical group with the external intervention of Eustema.

4.2.3 Operation testing

As already mentioned, the testing phase of the platform and its functionalities was started after the Athens conference (December 2011).

In March 2012 a questionnaire, consisting of 10 questions concerning quantitative as well qualitative information, was submitted to the partners in order to monitor testing activities on KN platform.

Quantitative information was useful to investigate how much time partners were dedicating to working on the platform in order to respect the timetable of activities.

Qualitative information was useful to discover possible difficulties in using the platform as well as possible malfunctioning.

During the partnership meeting in Cracow which took place at the beginning of June 2012 a follow-up for the first test of the platform was done.

Partners inserted about 20 to 40% of skills demands, which they had declared in the statistical sample and which had been distributed by sectors of competence and company dimension identified in terms of staff size. Furthermore, it was requested to attach the excel file downloaded from the software.



Concerning qualitative information, partners were asked:

- Was the data entry easy? 80% yes.
- Which procedure did you use (web or PDF)? 100% chose web procedure.
- Did you use all possible authorizations allowed by the system? 40% yes, 60% no.
- Did you find easy to create a new user or give authorizations? 60% said yes, 20% no, and 20% did not use this function.
- Did you face any technical problems during the testing phase of the software? 100% yes.

The most common problem faced concerned the downloading of Excel and PDF files. During the meeting in Cracow it was agreed that Omegatech, the IT partner, should work with Eustema in this regard to solve it and that results should be shared with all the partnership. The problems with Excel files were easily solved, while with the PDF files Eustema had to work with each partner individually, entering the platform through remote access.

Two other relevant problems were faced: length of the field descriptions (the software had been structured for medium length entries, while in Spanish or Polish some words are longer and were cut). This problem can not be solved without an in-depth intervention in the software configuration. Such an intervention is not possible in this context and is to be seen as a useful suggestion for the future implementation of the tool.

The Polish partner detected a question regarding authorization: in the “tables” area it is possible to create a user with read-only authorization, while the user can still write and delete data. This problem affects the original KN2 platform running in IRFI and therefore, as in the case of the field lengths above, would require an in-depth intervention in the platform.

A complete list of technical problems addressed, and of the way in which they were solved (or whether they are still unsolved) is attached to the present document (see Appendix Nr. 6).

- How did you collect information from the companies? Apart from Partners PDF form, partners used all tools at their disposal (phone calls, face to face interviews, on line questionnaire or feed backs during workshops, etc.).
- Roughly, how much time (in working days) did you dedicate to collecting skills requests (manual activity), uploading them in the KN software (informatics activity) and to the normal management of the system (installation and localization excluded)? Manual - 23 hours; Informatics - 21 hours; Management - 16 hours.

A second questionnaire was submitted by the end of July to monitor if the partners had completed the uploading of the skills requests that had been declared in the statistical sample. Since some



requests were still missing in order to complete the numbers stated in the statistical sample, it was agreed to complete the uploading by September. At the same time partners were requested to fill in the validation test by supplying full explanations and not only short answers. In the middle of October, the results were discussed during the meeting in Riga and these will be commented on in-depth in the following chapters.



5. Objectives and methodology of the evaluation process

In this section some of concepts and definitions used in this document and in the process of the validation are presented. The validation process can have many interpretations and methodologies according to the literature. This section presents the methodology that applied in this document.

5.1. Validation Concept

Validation is the process related to evaluating a system or a component; this can be done during or at the end of the development process to determine whether it satisfies the specified project requirements. Validation means the ICT platform should do what the user really requires. Validation is a collection of analysis and testing activities across the full life cycle and complements the efforts of other quality engineering functions; therefore, validation is a critical task in any engineering project (Wallace and Fujii, 1989).

Validation aims in discover a system defects and assess whether or not the system is useful and usable in operational situation. Validation should establish confidence that the software is fit for its purpose and does what the user really requires (Basili, and Rombach, 1988).

Validation is concerned with checking that a system meets the requirements of the client (Wojeicki, and Strooper). Validation process, which is a part of the broader software process activities, plays a vital role in quality and profitability of the developed product (Farooq and Dumke, 2007).

Validation involves testing software or its specification at the end of the development effort to ensure that it meets its requirements (that it does what it is supposed to). Validation comprehensively analyses and tests software to determine that it performs its intended functions correctly, to ensure that it performs no unintended functions, and to measure its quality and reliability. Validation is a system engineering discipline to evaluate software in a system context.

Validation uses a structured approach to analyse and test the software against all system functions and against hardware, user, and other software interfaces (Wallace and Fujii, 1989).

Validation is an engineering process. The purpose of validation is to demonstrate that a product fulfils its intended use when placed in its intended environment. Validation is performed early and incrementally throughout the product life cycle (Basili, and Rombach, 1988).

5.2. User validation background

The purpose of this test was to gain knowledge about how the Smart KN platform and its services answers to users' expectations, needs, and requirements as well as to the criteria described in the specification of the Smart KN platform.



The user evaluation and validation was done through pre-determined tasks covering the Smart KN platform all user-features. The tasks were performed by User-expertise to validate the availability and feasibility of the Smart KN platform user-functionalities. The purpose of this validation was to gain knowledge in which extent the Smart KN platform and its available user functionalities answer to the user requirements. Additionally the added value for the Smart KN platform users (test bed providers) in the specified functionalities were assessed to evaluate to which extent they will fulfil the identified added values of Smart KN platform for different user groups and to identify further needs for improvement for best usefulness for the two target user-groups, i.e. enterprises and training/educational organisations.

5.3. Smart KN users - Key partners, Users and Beneficiaries

The users of the Smart KN platform have been essentially the test bed owners, that is the project partners.

It should be noted that the Smart KN identified real life direct and indirect beneficiaries as key partners in the project, different customer segments of users and end-users of the facilities: Chamber of Commerce, universities, enterprise, public employment services. These beneficiaries have real life needs that may be met by the Smart KN platform. The use of the Smart KN platform and execution of testing and validation activities within the Smart KN project framework has then included beneficiaries in several different contexts also with different needs.

5.4. Evaluation Methodologies

Evaluation is a process aiming to investigate the significance, value, or quality of something, based on a careful study of both its good and bad features. In many everyday situations, we all make judgments about different things, actions, and events happening around us, without reflecting over whether it should be called evaluation. Usually, evaluations are related to something being valued in a systematic and well-considered manner. Hence, evaluations become a rational process, where methods are followed as a means of gaining control over the different steps in the evaluation process. The main aim of an evaluation is to express a value judgement about the devalued and the evaluation should critically scrutinize the particular object.

There are three different evaluation approaches; 1) objective and result evaluation, 2) process evaluation, and 3) interactive evaluation. The first approach, objective and result evaluation, dominated in the 1950's and the 1960's. In these evaluations, the evaluator measured and described the results in quantitative terms and it was not the evaluator's job to value differences (Guba and Lincoln, 1989). The second approach, process evaluation, was common between the



1970's and the 1980's. Within this approach, the interest was aimed at issues about how the results have been reached. The evaluations were not only focused on describing something, the expectation was to do a qualitative judgment about the thing being evaluated. The third approach, interactive evaluations, developed during the 1980's and the 1990's and had its focus on participation among those influenced by the evaluation. The basic thinking within this approach was that participation by different stakeholders increased the relevance of the evaluation questions and results; therefore, the stakeholders' influence was strengthened. Within this approach, the discussion follows two streams, one stream emphasizes participation as a means to enhance the relevance of the evaluation for the stakeholders through discussions about what the focus of the evaluation is, the other stream emphasize participation as a means of improving stakeholders' situations, especially for groups that might have difficulties making their voice heard.

These trends, within the evaluation area, can be related to the systems development area, starting with methods that were fairly structured in their character, assuming that users could assess their requirements in a structured and complete manner, using quantitative measures. These approaches have evolved into today's methods, acknowledging the fact that users should be involved in the systems development process in an interactive manner, using qualitative methods to elicit user requirements. Evaluations can be used in many different ways: as instrumental, where the evaluation results are used to influence people's mind-sets or actions, as long-term or short-term effects from the evaluation, as guidance for choices, and so forth. Either way, the evaluation should elucidate wholeness and relations, and not focus on isolated issues, and it is the evaluator's duty to make sure that different interests are represented in a reasonable and balanced manner (Lundahl and Öqvist, 2002).

Generally, in any evaluation, it is important to determine when the evaluation will be carried out and why, meaning, to understand if it is a formative or a summative evaluation. A formative evaluation is performed with the intention to change, or improve, something, such as the design of a product (Benyon et al., 2005). A formative approach to evaluation requires communication between stakeholders and the evaluator, because of its goal to change something and with an aim to identify learning possibilities from the situation. In contrast, a summative evaluation is carried out in order to determine the impact of the evaluand (Newman and Lamming, 1995). For example, a summative evaluation could be to study the effect mobile-phones have in people's lives. Anyhow, when deciding the when and why of the evaluation, communication between stakeholders and the evaluator is vital. Furthermore, those working with evaluations should understand how things are related, and realize the fact that how things are related to each other are influenced by



circumstances occurring in the evaluations context. Thus, one step in evaluations is to gain an understanding of the context in which the evaluation is carried out.

5.5. Evaluation of IT and Innovations

Evaluation of an innovative design is a process of systematically collecting data, with the goal to assess how well a design fulfils users' needs, and whether users like it or not. This data gives information about how it feels for a user, or a group of users, to use an innovation for a specific task in a specific context. Hence, evaluations are needed in order to make judgments about whether a user is helped or hindered by the innovation, and if they like it (Newman and Lamming, 1995). Furthermore, the role of evaluations is to make sure that the understanding of user needs occurs throughout the whole development process; however, it can be difficult to know what to focus on during the different stages (Preece et al. 2002). Evaluation performed in the early stages of the design will bring the best pay-off since problems could be easily solved. Ironically, most resources are often invested late in evaluations.

Moreover, most innovation attempts fail if they are truly innovative or exploring the unknown. Therefore, when evaluating innovations, it becomes important to learn from failures, as well as from successes, and to identify implications for the future. It is also important to define the time the innovation needs to have an actual and real impact in its context. For some innovations, the time-span can be months, in other cases years. Many traditional approaches to evaluations have failed to recognize the reactive nature of evaluation. Just as performance factors reward safe, short-term activities, evaluations based on mean scores, instead of on the recognition of a few, but extraordinary accomplishments, work against innovation, and those aiming to explore the unknown. Instead, these approaches reward mediocrity. Failures are usually viewed and treated negatively, with negative consequences for those who have failed, even if the attempt of the innovation was very ambitious. A project claiming to be innovative and have a high level of "success" should be viewed with scepticism, because this probably means that what is being attempted is not very ambitious.

5.6. Evaluation Styles

Preece et al. (2002), classify evaluations, aiming to support interaction design processes, into different styles. These are; "quick and dirty" evaluation, usability testing, field studies and predictive evaluation. A short description of these styles is given below, based on Preece et al. (2002), definition of evaluations. "Quick and dirty" evaluation has the emphasis on fast input about, for example, ideas for new product or design ideas, such as, an icon and this evaluation can be



performed at any stage during the design process. This evaluation is called “quick and dirty”, because it is meant to be carried out during a short period. The usability testing style has its focus on measuring how users perform tasks that have been prepared in advanced, covering the use aspects the system has been designed to support. As the user performs the tasks, the activities can be logged, observed, and recorded. Questionnaires and interviews are used as methods to elicit the users’ perception of the product. These evaluations are controlled by the evaluator and are typically performed in a laboratory. Field study is the third evaluation style. These evaluations are performed in a natural setting with the emphasis on increasing the understanding of what users actually do, and how the technology influences them. Field studies can be used to identify possibilities for new technology, to find out design requirements, to support the introduction of new technology and to evaluate technology. Qualitative methods, such as, interviews, observations, participant observations, and ethnography are used in this paradigm (Newman and Lamming 1995; Preece et al. 2002).

Predictive evaluation means that experts apply their knowledge of the typical user, in order to predict usability problems. The key feature is that users do not take part in the evaluation and this makes the process relatively quick and inexpensive. Heuristic evaluation, in which an expert, or experts, tests the product with the help of defined heuristics, is a popular method within this style (Preece et al, 2002). Each of these styles of evaluation, described above, is connected to techniques, or methods, and these techniques can be used in different ways within the different styles. The techniques are: observing users, asking users for their opinion, asking experts for their opinion, testing users’ performance and modelling users’ task performance to predict the efficiency of a user interface.

However, performing an empirical evaluation demands thorough planning, users need to be contacted and the evaluation needs to be performed at times when users are available. It can take days to set up even the simplest evaluation, but the results may make it all worthwhile. Independent of the evaluation techniques being used in the evaluation, it is always necessary to plan, execute, analyse and document the results from the evaluation since they will be fed back into the design, hence, they have to be trustworthy (Newman & Lamming, 1995; Preece et al, 2002). The evaluation styles described above focus on evaluating the evaluand based on some universal usability criteria. The individual user-situation and context is of subordinate significance as long as the product can be used by the target user. However, focusing on usability could lead to an ignorance of the benefits and effects of the product or service on an overarching level (Löwgren and Stolterman 2004).



5.7. Methodology for validation

Looking at some of the presents definitions and procedures in this document, the approach to do the project evaluation was defined.

One of the common sense on all the validation definitions is that the validation is to ensure that “you built the right thing”, and the verification is to ensures that “you built it right”. Thinking in this two points and the vision of create a validation with focus on the users, the user see if the system is built as he expected. i.e. the user see the functionalities and tells if the right thing is build; and a validation with focus on the technical features, i.e. a technician see if all separated modules are built right.

Validation activities can be applied to all aspects of the product in any of its intended environments, such as operation, training, manufacturing, maintenance, and support services. The methods employed to accomplish validation can be applied to work products as well as to the product and product components. (Throughout the process areas, where we use the terms product and product component, their intended meanings also encompass services and their components.) The work products (e.g., requirements, designs, and prototypes) should be selected on the basis of which are the best predictors of how well the product and product component will satisfy user needs and thus validation is performed early and incrementally throughout the product lifecycle.

The validation environment should represent the intended environment for the product and product components as well as represent the intended environment suitable for validation activities with work products.

Validation demonstrates that the product, as provided, will fulfil its intended use; whereas, verification addresses whether the work product properly reflects the specified requirements. In other words, verification ensures that “you built it right”; whereas, validation ensures that “you built the right thing.” Validation activities use approaches similar to verification (e.g., test, analysis, inspection, demonstration, or simulation). Often, the end users and other relevant stakeholders are involved in the validation activities. Both validation and verification activities often run concurrently and may use portions of the same environment.

Whenever possible, validation should be accomplished using the product or product component operating in its intended environment. The entire environment can be used or only part of it. However, validation issues can be discovered early in the life of the project using work products by involving relevant stakeholders. Validation activities for services can be applied to work products such as proposals, service catalogs, statements of work, and service records.



When validation issues are identified, they are referred to the processes associated with the Requirements Development, Technical Solution, or Project Monitoring and Control process areas for resolution.

The specific practices of this process area build on each other in the following way:

- The Select Products for Validation specific practice enables the identification of the product or product component to be validated and the methods to be used to perform the validation.
- The Establish the Validation Environment specific practice enables the determination of the environment that will be used to carry out the validation.
- The Establish Validation Procedures and Criteria specific practice enables the development of validation procedures and criteria that are aligned with the characteristics of selected products, customer constraints on validation, methods, and the validation environment.
- The Perform Validation specific practice enables the performance of validation according to the methods, procedures, and criteria.

5.7.1 Select Products for Validation

In this validation step the products and product components are selected for validation on the basis of their relationship to user needs. For each component, the scope of the validation should be determined (operational behaviour, maintenance, user interface).

Some examples of products and product components that can be validated include the following:

- Product and product component requirements and designs
- Product and product components (e.g., system, hardware units, software, and service documentation)
- User interfaces
- User manuals
- Training materials
- Process documentation

In this phase, the validation methods are selected too. The validation methods address the development, maintenance, support, and training for the product or product component as appropriate, so validation methods can include the following:

- Discussions with the users, in the context of a formal review (project meetings)
- Prototype demonstrations
- Functional demonstrations (e.g., system, hardware units, software, service documentation, and user interfaces)



- Pilots of users materials
- Analyses of product and product components (e.g., user analyses).

5.7.2 Establish the Validation Environment

The requirements for the validation environment are driven by the product or product components selected, by the type of the work products (e.g., design, prototype, and final version), and by the methods of validation.

These requirements are provided to the requirements development processes for development. The validation environment may include the reuse of existing resources. In this case, arrangements for the use of these resources must be made. Examples of the type of elements in a validation environment include the following:

- Recording tools for analysis and replay
- Facilities and customer-supplied products
- The skilled people to operate or use all the preceding elements
- Real systems
- Dedicated test environment

5.7.3 Establish Validation Procedures and Criteria

Validation procedures and criteria are defined to ensure that the product or product component will fulfil its intended use when placed in its intended environment. Acceptance test cases and procedures may meet the need for validation procedures.

The validation procedures and criteria include test and evaluation of maintenance, and support services. Examples of sources for validation criteria include the following:

- Product and product component requirements
- Standards
- Customer acceptance criteria
- Thresholds of performance deviation.

5.7.4 Product Validation

After the products, the environment, the methods and the procedures are selected, the validation process can began.

This process is performed in two steps: the actual validation and the results analysis.

To be acceptable to users, a product or product component must perform as expected in its intended operational environment.



Validation activities are performed and the resulting data are collected according to the established methods, procedures, and criteria.

The as-run validation procedures should be documented and the deviations occurring during the execution should be noted, as appropriate.

The data resulting from validation tests or evaluations are analysed against the defined validation criteria. Analysis reports indicate whether the needs were met; in the case of deficiencies, these reports document the degree of success or failure and categorize probable cause of failure. The collected test, inspection, or review results are compared with established evaluation criteria to determine whether to proceed or to address requirements or design issues in the requirements development or technical solution processes.

Analysis reports or as-run validation documentation may also indicate that bad test results are due to a validation procedure problem or a validation environment problem.

- Typical Work Products
- Validation deficiency reports
- Validation issues
- Procedure change request

5.8. Application of the Methodology on the Smart KN project

5.8.1 Select Products for Validation

Looking at the Smart KN project as a whole, and going down to the core services applications, the platform was divided in some components ensuring a good granularity to cover all features inside the platform.

The list of product components is following:

- Smart KN interface
- Smart KN experiment manager tools
- Resource directory
- Monitoring
- Data manager
- Smart KN architecture
- Facility Connectors
- Data lifecycle manager



The choice of methodologies takes the nature of the component and the level of interaction with the user, facing this topic, from this part of the validation, the methods are divided in user focused validation and the technical analyses validation.

5.8.2 Method used for Smart KN user validation

For this validation the heuristic evaluation method was used. The evaluation is formative and aims at giving guidance on the transfer and adaption of the Smart KN platform.

The methodological approach to evaluation and validation was aimed at:

- getting at the exceptions, including unintended consequences, given that a quantitative research approach is not relevant and will hide true achievements;
- providing an understanding of the complex processes involved, as well as to help identify learning and implications from successes and failures;
- being flexible enough to be open to chances and unexpected findings, which, especially regarding innovations, can represent the key outcomes. For that kind of questions, qualitative methods are usually most suitable, possibly in combination with other approaches.

It was then an iterative process starting at the beginning of the project as described in the previous chapters.

The test persons were asked to perform a number of activities. Feedbacks from the test persons were identified factors that need to be considered in the adaptation and improvement of the platform in order to create a more useful and acceptable system from the user perspective.

The fulfilment of the technical requirements was validated by unit- and integration tests done during the product development. This purely technical validation is out of the scope of the present document.

For the validation environment in the user validation, it was composed by the actual Smart KN platform application to test the its functionalities.

These tests were operated by expert users in the role as experimenter and as test bed owner, and the more technical validation was monitored by IRFI experts.

A final survey was carried out at the end of the project using likert scale and eliciting open comment on the following issues:

- Software transfer: this section of the questionnaire gave partners (test bed owners) the opportunity to tell their reactions to Smart KN software transfer phase and related activities (initial phase of the project).
- Testing process: this section of the questionnaire gave partners the opportunity to tell their



reactions to Smart KN software transfer phase and related activities (initial phase of the project).

- Partners' reactions using the system: this section of the questionnaire gave partners the opportunity to tell their reactions to the system they used. The responses helped to understand what aspects of the Smart KN system users are particularly concerned about and the aspects that satisfied them.
- Smes reactions: this section of the questionnaire gave partners the opportunity to tell small and medium sized enterprises' reactions to the Smart KN tool.
- Final considerations: this section of the questionnaire gave the opportunity to describe their experience in participating to the Smart KN project.

A complete list of all questions and answers in the Smart KN Survey is available in Appendix III, IV, and V.

All participants of the survey have been provided with detailed description of project results achieved so far. All of them were invited and most of them participated in the final meeting where the results were presented by the project team members.

In the following section summaries of the most important conclusions concerning each of the validated components and aspects are given.



6. Evaluation results

IRFI has provided assistance and support to the tester in each step of the project, from the input of data to the generation of reports, responding to the error reporting within three working days and testing the correct operations of the platform (Table 1).

Table 1– Information effectiveness (0=strongly agree - 7 strongly disagree)

	EL	LV	PL	ES
<i>The information was effective in helping me complete the tasks.</i>	2	1	0	1

The coordination activity of the project team was able to meet the scheduled deadlines and perform efficiently all tasks required, achieving all the project objectives.

Overall the Smart KN system received a positive feedback (Table 2).

Table 2- Overall satisfaction. Mean and standard deviation (0=strongly agree - 7 strongly disagree)

	M	SD
<i>Overall, I would recommend Smart KN system to my colleagues</i>	1,75	2,87

The whole system is a tool focused on expert users. Nevertheless this did not hinder the usability (Table 3).

Table 3 – Easiness to use. (0=strongly agree - 7 strongly disagree)

	EL	LV	PL	ES	M	SD	M (LV excluded)	SD (LV)
<i>1. Overall, I am satisfied with how easy it is to use this system.</i>	2	7	0	1	2,5	3,11	1,00	1,00
<i>2. It was simple to use this system.</i>	2	6	0	1	2,25	2,63	1,00	1,00

Latvian partner feedback is affected by major difficulties occurred during the transfer process due to interoperability problems:

Prerequisites were defined too high, because system works on less powerful server. That was one of the reasons for delaying the start of transferring software. Software was tested only on Windows powered server, what forced to search specific hosting service. It would be better if software was tested on more than one operating system, for example, Linux. It



is almost not possible to configure identical server to be sure that delivered software CD is completely ready to install without extra configuration. It was difficult to fix errors, because software updates were in form of separate files and lines in code. It would be better if the software was installed on one server and partners could connect to it via internet, translate vocabulary online, and define their users. Software error correction would be more effective as it could be done in one place and software updates were available to all partners at once (Latvia).

Nevertheless this difficulty gave to the partnership opportunity to find a cost effective solution for the interoperability between systems.

In general, the user friendliness of the product was given high ratings, but the workflow could be made even easier for people not familiar with the product:

The system is easy to use. All the end users admitted that it was not a time consuming or a difficult task to update the system. Comparing it with similar commercially available systems they use, they did not found any shortcomings (Greece).

Differences in jargon also caused minor difficulties where professionals in related fields use different terms for the same phenomena:

The installation of the platform took us more time and effort than expected due to some cultural and encoding problems. After the adjustments made we think that the installation of the platform is not a difficult task (Greece).

Sometimes it has been very hard to find the correct information, as companies do not ask for skills on their job offers, but for level of studies, years of experience, etc. They are not used to talk on these terms. Therefore, we needed to ask again and help them to interpret their needs according to the project (Spain).

The vision to integrate users and providers is one of the main advantages with Smart KN. This is however not yet fully working, but rather an important goal to strive for. The idea involves much complexity, and hence it is important to offer an environment which is easy and intuitive to use, both for experimenters and for testbed owners. Consequently, the platform must meet both user groups' needs. Both groups have very different needs and it is important to understand them well when designing the flow and content of the portal.

A pan-European scope of the project was appreciated and the project met partners' expectations which were very high (Table 4).



Table 4 — Expectations. (0=strongly agree - 7 strongly disagree)

	EL	LV	PL	ES	<i>M for row</i>	<i>SD for row</i>
<i>My expectations at the beginning of the project were very high</i>	2	0	1	0	0,75	0,96
<i>The project approach has met my expectations</i>	1	0	1	1	0,75	0,50

The main added value of Smart KN results was attributed to the long term assessment:

It is the first such tool in Greece for capturing the real market demands. The Smes that offered their demands for the system, they hesitated in the beginning to give this information, telling us several times that it is not a job offer. We have to explain that it is a tool for capturing market needs and the orientation of the training courses towards those real needs. They found the idea very interesting and especially the fact that they need staff with expertise is specific skills that cannot be identified by academic curriculums (Greece). SMEs recognize advantages created by constant monitoring of job market. They state that observing it allows them to be more precise when describing job opportunities (Poland) Just few of them, as companies are more interested in years of experience, level of studies, languages, rather than skills. Things are changing, but very slow (Spain)

The solutions offered by Smart KN have permitted to guarantee a reliable, safe and continuous database.

Comments and answers shown that Smart KN has the potential to give increased valuable information of great use in all phases of skill updates planning and which today are difficult to get. To attract users, user interface must be made more flexible and easy to handle.

The pan-european character of Smart KN was highly acknowledged as the product can provide background conditions data for national/regional skill needs assessments.

The immediate value of the tools – as perceived by using partners – refers but is not limited to the possibility to access through a unique repository all available information regarding skill needs and also to improve skill update planning through data comparison and integration.

Smart KN has also demonstrated that it is possible to integrate data to obtain predictions regarding skill needs evolution.

In addition, the downscaling results of Smart KN for the Greek, Spanish and Polish area provide information not available up to now, data that will be useful not only for trainer planners, recruiters, smes but also for policy makers as well.



Greek partner considers project results to be potentially useful for policy makers, however, unless having consolidated results of the Greek pilot – due to project limited time span - it is hard to decide on the concrete application of the results in policy making processes:

The impact in the Greek Market and the Greek policy makers was very high. The representatives of the Greek manpower Organization found the system very interesting and inline with their goals. The SMEs and their representatives identified great potential in the system, especially for bridging the gaps between job demands and offers.

For Smart KN long-term sustainability the socio-economical values are core. This perspective concerns aspects such as efficiency, effectiveness and benefits from the professional user's perspective.

As such Smart KN can be seen as a pioneering platform, demonstrating that the Smart KN approach can be extended to other countries.

The exploitation of Smart KN needs now to to achieve widely usage. For this step the academic and business community already demonstrated great interest.

7. Conclusion

Developing validation practices is about valuing a life-long and life-wide approach to learning by enabling an in-depth modernisation of education and training systems to create open, flexible learning environments.

It contributes to enhances the importance of a paradigm shift towards learning outcomes. We witness an emulation of European and national strategies, guidelines and tools to support this shift like the European Qualifications Framework and its national developments. Yet according to the Council, lifelong learning strategies remain rarely coherent and comprehensive and keep on focusing on specific sectors or target groups. There is still a long way to go to acknowledge and coordinate validation practices for long life learning. As for the terminology of validation, the term should be clearly defined in the framework of a sustained support for a real life-wide learning approach with bridges between sectors and actors, starting with a clear mention of skill assessment in the Commission's new funding programme "Erasmus for all".

Concerning the implementation of those practices, funding and sustainability remain uncertain and trust has to be fostered. Further progress remains crucial, as well as a better use of existing tools and of innovative ones. Grassroots initiatives have a key role to play in that sense with a solid partnership to be established between stakeholders.



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Appendix I – Monitoring survey (First year and second year)

First year

Reasons for participating in the project

1. *When your organisation decided to take part in the project, what were the major expectations as to project results?*

[free text]

2. *One year (8 months) passed by, do you think that those expectations are still valid or do you think that they have changed meanwhile?*

NO

YES

Please provide an explanation

[free text]

3. *What were/are the major challenges of the project according to you?*

[free text]

Project activities

4. *If you think to project progress until now, do you think that project development is coherent with what planned within the initial proposal (in terms of results achieved, timing, ...)?*

YES

NO

If no, please provide an explanation on divergences (highlighting the reasons, eventual alternative solutions adopted, coherence between what implemented and what planned, ...)

[free text]



5. Do you think that the activities addressed (planned to be addressed) to external stakeholders thus far had the potential to involve them sufficiently and to make project results usable at the end of project implementation?

YES

NO

If **yes**, please provide suggestions on how to involve or further increase the involvement of stakeholders and, consequently, sustainability and usability of project results beyond project lifetime.

[free text]

If **no**, please provide your point of view on this topic and suggest improvements for the future

[free text]

6. Do you think that the Documents provided for the activities of the project were enough clear, understandable, complete and the related instruction easy to be followed?

YES

NO

If **no**, please explain why and suggest improvements for the future.

[free text]

Partnership functioning

7. Internal functioning of the partnership

	Grading ¹			
1. Overall project management				
2. Communication among partners				
3. Coordination of project meetings				
4. Coordination of on a distance activities				
5. Provision of documents (clarity, usability)				
6. Active involvement/pro-activity of partners				

For each issue graded 3 (fair) or 4 (scarce), provide an explanation and suggest improvements

[free text]

¹ The scale to be used is as follows: 1 = very good, 2 = good; 3 = fair; 4 = scarce



8. Partnership co-operation

	Grading²			
1. Level of communication among partners				
2. Quality of communication among partners				
3. Level of problem-solving capacity ³				
4. Active involvement/pro-activity of partners				
5. European added value				

For each issue graded 3 (fair) or 4 (scarce), provide an explanation and suggest improvements

[free text]

Any other issue to be taken into account

9. Comment upon any strength or weakness of the project and suggest eventual improvements or solutions

[free text]

² The scale to be used is as follows: 1= very good, 2 = good; 3 = fair; 4 = scarce

³ In particular, how the partnership is able to react to changing situations – if compared to the initial proposal – and what are the solutions found in order to develop expected project results



Second year

PART A: MONITORING TESTING ACTIVITIES ON KN PLATFORM

Testing activities on KN platform

1. *By the date of 23th of March how many skills demands did you upload in the Smart KN platform?(a second test was done by the date of the 31st of July 2012)*

Nr.

2. *Please distribute them by sectors of competence (those mentioned in your statistical sample) and by company dimension in terms of staff employed (enclose in addition the excel file downloaded from the software)*

Partner nr. P.....						
Sectors / Company dimension (in terms of nr. of employees)	Sector 1 (please specify)	Sector 2 (please specify)	Sector 3 (please specify)	Sector 4 (please specify)	Sector 5 (please specify)	TOTAL
>10						
11 - 50						
51 - 250						
>250						

3. *Was the data entry easy?*

YES

NO

[If not, please, explain why]

4. *Which procedure did you use to upload the skills demands (web or pdf)?*

Nr. of demands uploaded by the WEB procedure	
Nr. of demands uploaded by the PDF procedure	

5. *Did you use all possible authorizations allowed by the system (Administrator – Supervisor – User)?*

YES

NO

[If not, please, explain why. In both cases indicate which authorizations you used and how many.]



6. Did you find easy to create a new user or give a permission?

YES

NO

[If not, please, explain why]

7. Did you face any technical problem during the testing phase of the software (installation and localisation excluded)?

YES

NO

[If yes, please, specify]

8. How did you collect information from the companies?

- a) by asking them to fill in the PDF form;
- b) by phone interview;
- c) by personal interview (face to face)
- d) others (please specify)

9. Which type of feedback about the Smart KN tool did you receive from the companies interviewed?

[free text]

10. How much time (expressed in working days) did you roughly dedicate to collect skills demands (manual activity), to upload them in the KN software (informatics activity) and to the normal management of the system (installation and localisation excluded)

Type of activities	Working days
Manual activities	
Informatics activities	
Normal management of the system	



PART B: PROJECT MONITORING

Reasons for participating in the project

1. *When your organisation decided to take part in the project, what were the major expectations as to project results?*

[free text]

2. *18 months passed by, do you think that those expectations are still valid or do you think that they have changed meanwhile?*

NO

YES

Please provide an explanation

[free text]

3. *What were/are the major challenges of the project according to you?*

[free text]

Project activities

4. *If you think to project progress until now, do you think that project development is coherent with what planned within the initial proposal (in terms of results achieved, timing, ...)?*

YES

NO

If no, please provide an explanation on divergences (highlighting the reasons, eventual alternative solutions adopted, coherence between what implemented and what planned, ...)

[free text]

5. *Do you think that the activities addressed (planned to be addressed) to external stakeholders thus far had the potential to involve them sufficiently and to make project results usable at the end of project implementation?*

YES

NO

If yes, please provide suggestions on how to involve or further increase the involvement of stakeholders and, consequently, sustainability and usability of project results beyond project lifetime.

[free text]

If no, please provide your point of view on this topic and suggest improvements for the future



[free text]

6. Do you think that the Documents provided for the activities of the project were enough clear, understandable, complete and the related instruction easy to be followed?

YES

NO

If **no**, please explain why and suggest improvements for the future.

[free text]

Partnership functioning

7. Internal functioning of the partnership

	Grading ⁴			
1. Overall project management				
2. Communication among partners				
3. Coordination of project meetings				
4. Coordination of on a distance activities				
5. Provision of documents (clarity, usability)				
6. Active involvement/pro-activity of partners				

For each issue graded 3 (fair) or 4 (scarce), provide an explanation and suggest improvements

[free text]

8. Partnership co-operation

	Grading ⁵			
1. Level of communication among partners				
2. Quality of communication among partners				
3. Level of problem-solving capacity ⁶				
4. Active involvement/pro-activity of partners				
5. European added value				

⁴ The scale to be used is as follows: 1 = very good, 2 = good; 3 = fair; 4 = scarce

⁵ The scale to be used is as follows: 1 = very good, 2 = good; 3 = fair; 4 = scarce

⁶ In particular, how the partnership is able to react to changing situations – if compared to the initial proposal – and what are the solutions found in order to develop expected project results



For each issue graded 3 (fair) or 4 (scarce), provide an explanation and suggest improvements

[free text]

Any other issue to be taken into account

9. Comment upon any strength or weakness of the project and suggest eventual improvements or solutions

[free text]



Appendix II – Evaluation criteria

Item	Sub-Item	Partner activities	Positive Aspects	Negative Aspects	Suggestions for improving
Technical environment	<ul style="list-style-type: none"> - Technical organization - Hardware and software - Time to prepare 				
Transfer of software	<ul style="list-style-type: none"> - Technical organization - Time to install - User friendliness 				
Localisation process	<ul style="list-style-type: none"> - Technical Organization - Easy to use process - Time to localise 				
Functional aspects	<ul style="list-style-type: none"> - Suitability to local environment - Needs of specific adaptations 				
Statistical approach	<ul style="list-style-type: none"> - Statistical Sample criteria 				
Cataloguing	<ul style="list-style-type: none"> - Professionals and jobs definitions - Professionals and job preloaded - Professionals and jobs loaded during the test 				
Test environment	<ul style="list-style-type: none"> - Organization for testing - Time for testing - Number of demands, of professionals, and of skills 				
General aspects	<ul style="list-style-type: none"> - Stakeholder participation - User satisfaction - Usability in real environment 				



Appendix III – Validation questionnaire

SECTION I Software transfer- Instructions and Items.

This section of the questionnaire gives you an opportunity to tell us your reactions to Smart KN software transfer phase and related activities (initial phase of the project).

To as great a degree as possible, think about all the activities you carried out during the software transfer phase while you answer these questions.

For each of the statements below, circle the rating of your choice. Please write comments to elaborate on your answers. It is very important you add your comments.

1. Overall, I am satisfied with the ease of completing this task.

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
-----------------------	----------	----------	----------	----------	----------	----------	----------	----------	--------------------------

COMMENTS:

2. Overall, I am satisfied with the amount of time it took to complete this task.

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
-----------------------	----------	----------	----------	----------	----------	----------	----------	----------	--------------------------

COMMENTS:

3. Overall, I am satisfied with the support information (on-line and off line help, messages, documentation) when completing this task.

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
-----------------------	----------	----------	----------	----------	----------	----------	----------	----------	--------------------------

COMMENTS:



SECTION II Testing the system. - Instructions and Items.

This section of the questionnaire gives you an opportunity to tell us your reactions to Smart KN software transfer phase and related activities (initial phase of the project).

To as great a degree as possible, think about all the activities you carried out during the Smart KN testing phase while you answer these questions.

For each of the items below, please circle the response that best describes your experience with the testing phase. If a statement does not apply to you, circle N/A. Please write comments to elaborate on your answers. It is very important you add your comments.

1. Time to Complete Task

1 = Acceptable as is -- less time than expected

2 = Acceptable as is -- about right

3 = Needs slight improvement

4 = Needs moderate improvement

5 = Needs a lot of improvement

NA = Unable to evaluate

COMMENTS:

2. Ease of Performing Tasks

1 = Acceptable as is -- very easy

2 = Acceptable as is -- easy

3 = Needs slight improvement

4 = Needs moderate improvement

5 = Needs a lot of improvement

NA = Unable to evaluate

COMMENTS:

3. Satisfaction with Instructions/Publications

1 = Acceptable as is -- very satisfied

2 = Acceptable as is -- satisfied

3 = Needs slight improvement

4 = Needs moderate improvement

5 = Needs a lot of improvement

NA = Unable to evaluate

COMMENTS:



SECTION III Testing phase. Partners' reactions using the system - Instructions and Items.

This section of the questionnaire gives you an opportunity to tell us your reactions to the system you used. Your responses will help us understand what aspects of the Smart KN system you are particularly concerned about and the aspects that satisfy you.

To as great a degree as possible, think about all the tasks that you have done with the system during the testing phase while you answer these questions.

Please read each statement and indicate how strongly you agree or disagree with the statement by circling a number on the scale. Please write comments to elaborate on your answers. It is very important you add your comments.

1. Overall, I am satisfied with how easy it is to use this system.

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
-----------------------	----------	----------	----------	----------	----------	----------	----------	----------	--------------------------

COMMENTS:

2. It was simple to use this system.

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
-----------------------	----------	----------	----------	----------	----------	----------	----------	----------	--------------------------

COMMENTS:

3. I could effectively complete the tasks and scenarios using this system.

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
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COMMENTS:

4. I was able to complete the tasks and scenarios quickly using this system.

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
-----------------------	----------	----------	----------	----------	----------	----------	----------	----------	--------------------------

COMMENTS:

5. I was able to efficiently complete the tasks and scenarios using this system.

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
-----------------------	----------	----------	----------	----------	----------	----------	----------	----------	--------------------------

COMMENTS:



6. I felt comfortable using this system.

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
-----------------------	----------	----------	----------	----------	----------	----------	----------	----------	--------------------------

COMMENTS:

7. It was easy to learn to use this system.

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
-----------------------	----------	----------	----------	----------	----------	----------	----------	----------	--------------------------

COMMENTS:

8. The system helped me to finish tasks more efficiently comparing other tools

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
-----------------------	----------	----------	----------	----------	----------	----------	----------	----------	--------------------------

COMMENTS:

9. The system gave error messages that clearly told me how to fix problems.

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
-----------------------	----------	----------	----------	----------	----------	----------	----------	----------	--------------------------

COMMENTS:

10. Whenever I made a mistake using the system, I could recover easily and quickly.

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
-----------------------	----------	----------	----------	----------	----------	----------	----------	----------	--------------------------

COMMENTS:

11. The information (such as on-line help, on-screen messages and other documentation) provided with this system was clear.

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
-----------------------	----------	----------	----------	----------	----------	----------	----------	----------	--------------------------

COMMENTS:

12. It was easy to find the information I needed.

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
-----------------------	----------	----------	----------	----------	----------	----------	----------	----------	--------------------------

COMMENTS:



13. The information provided for the system was easy to understand.

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
-----------------------	----------	----------	----------	----------	----------	----------	----------	----------	--------------------------

COMMENTS:

14. The information was effective in helping me complete the tasks.

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
-----------------------	----------	----------	----------	----------	----------	----------	----------	----------	--------------------------

COMMENTS:

15. The organization of information on the system screens was clear.

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
-----------------------	----------	----------	----------	----------	----------	----------	----------	----------	--------------------------

COMMENTS:

Note: The interface includes those items that you use to interact with the system. For example, some components of the interface are the keyboard, the mouse, the screens (including their use of graphics and language).

16. The interface of this system was pleasant.

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
-----------------------	----------	----------	----------	----------	----------	----------	----------	----------	--------------------------

COMMENTS:

17. I liked using the interface of this system.

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
-----------------------	----------	----------	----------	----------	----------	----------	----------	----------	--------------------------

COMMENTS:

18. This system has all the functions and capabilities I expect it to have.

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
-----------------------	----------	----------	----------	----------	----------	----------	----------	----------	--------------------------

COMMENTS:

19. Overall, I am satisfied with this system.

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
-----------------------	----------	----------	----------	----------	----------	----------	----------	----------	--------------------------

COMMENTS:



SECTION IV Smes reactions - Instructions and Items.

This section of the questionnaire gives you an opportunity to tell us smes reactions to the Smart KN tool. Your responses will help us understand what aspects of the system smes are particularly concerned about and the aspects that satisfy them.

- 1. Do the users (smes) see the advantage of the Smart KN Tool? Please explain.***

- 2. Can the participants (smes) use the Smart KN tool efficiently and properly? Please explain.***

- 3. Which changes and additions will improve the usability of the Smart KN Tool?***



SECTION V Final consideration- Instructions.

This section of the questionnaire gives you an opportunity to describe your experience in participating to this project. Please read each statement and indicate how strongly you agree or disagree with the statement by circling a number on the scale. Please write comments to elaborate on your answers. It is very important you add your comments.

1. My expectations at the beginning of the project were very high

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
-----------------------	----------	----------	----------	----------	----------	----------	----------	----------	--------------------------

COMMENTS:

2. The project approach has met my expectations

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
-----------------------	----------	----------	----------	----------	----------	----------	----------	----------	--------------------------

COMMENTS:

3. The project results have met my expectations

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
-----------------------	----------	----------	----------	----------	----------	----------	----------	----------	--------------------------

COMMENTS:

4. Overall, I am satisfied with this project

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
-----------------------	----------	----------	----------	----------	----------	----------	----------	----------	--------------------------

COMMENTS:

5. Overall, I would recommend Smart KN system to my colleagues

STRONGLY AGREE	0	1	2	3	4	5	6	7	STRONGLY DISAGREE
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COMMENTS:

If you want to give any final comment, please do so (optional).



Appendix IV – Quantitative data tables

SECTION I Software transfer	EL	LV	PL	ES	<i>M for row</i>	<i>SD for row</i>	<i>M (LV excluded) for row</i>	<i>SD (LV excluded) for row</i>
1. Overall, I am satisfied with the ease of completing this task.	3	6	1	3	3,25	2,06	2,33	1,15
2. Overall, I am satisfied with the amount of time it took to complete this task.	3	6	0	0	2,25	2,87	1,00	1,73
3. Overall, I am satisfied with the support information (on-line and off line help, messages, documentation) when completing this task.	4	2	0	2	2	1,63	2,00	2,00
<i>M for column</i>	3,33	4,67	0,33	1,67				
<i>DS for column</i>	0,58	2,31	0,58	1,53				
LEGENDA: 0=strongly agree - 7 strongly disagree								



SECTION II Testing the system					<i>M for row</i>	<i>SD for row</i>	<i>M (LV excluded) for row</i>	<i>SD (LV excluded) for row</i>
1. Time to Complete Task	2	5	2	2	2,75	1,50	2,00	0,00
2. Ease of Performing Tasks	2	3	3	2	2,5	0,58	2,33	0,58
3. Satisfaction with Instructions/Publications	2	3	1	2	2	0,82	1,67	0,58
<i>M for column</i>	2,00	3,67	2,00	2,00				
<i>DS for column</i>	2,00	3,22	2,00	2,00				
<p align="center">LEGENDA Q1</p> <p>1 = Acceptable as is -- less time than expected 2 = Acceptable as is -- about right 3 = Needs slight improvement 4 = Needs moderate improvement 5 = Needs a lot of improvement NA = Unable to evaluate</p>	<p align="center">LEGENDA Q2</p> <p>1 = Acceptable as is -- very easy 2 = Acceptable as is -- easy 3 = Needs slight improvement 4 = Needs moderate improvement 5 = Needs a lot of improvement NA = Unable to evaluate</p>			<p align="center">LEGENDA Q3</p> <p>1 = Acceptable as is -- very satisfied 2 = Acceptable as is -- satisfied 3 = Needs slight improvement 4 = Needs moderate improvement 5 = Needs a lot of improvement NA = Unable to evaluate</p>				



SECTION III Testing phase	EL	LV	PL	ES	<i>M for row</i>	<i>SD for row</i>	<i>M (LV excluded) for row</i>	<i>SD (LV excluded) for row</i>
1. Overall, I am satisfied with how easy it is to use this system.	2	7	0	1	2,5	3,11	1,00	1,00
2. It was simple to use this system.	2	6	0	1	2,25	2,63	1,00	1,00
3. I could effectively complete the tasks and scenarios using this system.	1	5	0	0	1,5	2,38	0,33	0,58
4. I was able to complete the tasks and scenarios quickly using this system.	1	7	0	1	2,25	3,20	0,67	0,58
5. I was able to efficiently complete the tasks and scenarios using this system.	1	3	0	0	1	1,41	0,33	0,58
6. I felt comfortable using this system.	3	6	0	0	2,25	2,87	1,00	1,73
7. It was easy to learn to use this system.	1	4		1	2	1,73	1,00	0,00
8. The system helped me to finish tasks more efficiently comparing other tools	3			4	3,5	0,71	3,50	0,71
9. The system gave error messages that clearly told me how to fix problems.	3	2	0	4	2,25	1,71	2,33	2,08
10. Whenever I made a mistake using the system, I could recover easily and quickly	3	5	0	0	2	2,45	1,00	1,73
11. The information (such as on-line help, on-screen messages and other documentation) provided with this system was clear.	2	1	0	0	0,75	0,96	0,67	1,15
12. It was easy to find the information I needed.	3	1	0	1	1,25	1,26	1,33	1,53
13. The information provided for the system was easy to understand.	2	1	0	0	0,75	0,96	0,67	1,15



14. The information was effective in helping me complete the tasks.	2	1	0	1	1	0,82	1,00	1,00
15. The organization of information on the system screens was clear.	3	1	0	0	1	1,41	1,00	1,73
16. The interface of this system was pleasant.	3	4	2	3	3	0,82	2,67	0,58
17. I liked using the interface of this system	3	6	1	1	2,75	2,36	1,67	1,15
18. This system has all the functions and capabilities I expect it to have.	3	6	1	2	3	2,16	2,00	1,00
19. Overall, I am satisfied with this system.	2	6	0	1	2,25	2,63	1,00	1,00
M for column	2,26	4,00	0,24	1,11				
DS for column	0,81	2,30	0,56	1,29				
LEGENDA: 0=strongly agree - 7 strongly disagree								



SECTION V Final consideration	EL	LV	PL	ES	<i>M for row</i>	<i>SD for row</i>	<i>M (LV excluded) for row</i>	<i>SD (LV excluded) for row</i>
1. My expectations at the beginning of the project were very high	2	0	1	0	0,75	0,96	1,00	1,00
2. The project approach has met my expectations	1	0	1	1	0,75	0,50	1,00	0,00
3. The project results have met my expectations	1	5	1	0	1,75	2,22	0,67	0,58
4. Overall, I am satisfied with this project	1	5	1	0	1,75	2,22	0,67	0,58
5. Overall, I would recommend Smart KN system to my colleagues	0	6	1	0	1,75	2,87	0,33	0,58
<i>M for column</i>	1,00	3,20	1,00	0,20				
<i>DS for column</i>	0,80	3,84	1,00	0,24				
LEGENDA: 0=strongly agree - 7 strongly disagree								



Appendix V – Qualitative data tables

SECTION I Software transfer	EL	LV	PL	ES
<p>1. Overall, I am satisfied with the ease of completing this task.</p>	<p>The installation of the platform took us more time and effort than expected due to some cultural and encoding problems. After the adjustments made we think that the installation of the platform is not a difficult task.</p>	<p>Prerequisites were defined too high, because system works on less powerful server. That was one of the reasons for delaying the start of transferring software. Software was tested only on Windows powered server, what forced to search specific hosting service. It would be better if software was tested on more than one operating system, for example, Linux. It is almost not possible to configure identical server to be sure that delivered software CD is completely ready to install without extra configuration. It was difficult to fix errors, because software updates were in form of separate files and lines in code. It would be better if the software was installed on one server and</p>	<p>Deployment of the platform was quite easy and standard. Some minor difficulties arose due to differences in translation from Italian to English and then again to host's local language but it didn't affected the task in general</p>	<p>Sometimes it has been very hard to find the correct information, as companies do not ask for skills on their job offers, but for level of studies, years of experience, etc. They are not used to talk on these terms. Therefore, we needed to ask again and help them to interpret their needs according to the project.</p>



		partners could connect to it via internet, translate vocabulary online, and define their users. Software error correction would be more effective as it could be done in one place and software updates were available to all partners at once.		
2. Overall, I am satisfied with the amount of time it took to complete this task.	The installation of the platform took us more time and effort than expected due to some cultural and encoding problems. After the adjustments made we think that the installation of the platform is not a difficult task.	Installation process took too much time because of unexpected errors, updates and complicated pre defined server configuration	Step-by-step guide allowed for quick and simple deployment	It was time enough to complete it
3. Overall, I am satisfied with the support information (on-line and off line help, messages, documentation) when completing this task.	The installation instruction needed improvements. After the problems identified and solved, the support information is now adequate for upcoming installations.	Support information from developers was delayed and not completely helped to solve the problems in installation process. Support from other partners instead was very useful	Help from the technical staff of the Leader Partner was essential and quick which resulted in fluent work progress. Both user and installation manual were useful source of information and served their purpose	There were some delays when asking for help (problems with the platform, etc.)



SECTION II Testing the system	EL	LV	PL	ES
1. Time to Complete Task	To add more demands in the system is a fairly simple task. The end users from EOMMEX and OMEGATECH that undertook the role to add data into the system did not come across any special problems. The time they spend for each task was acceptable and comparable to other online applications they already use.	Testing the system took more time because of unexpected errors. After solving problems testing continued normally.	Testing phase was quick. It took some time to fill in all possible lists for users to select from but in general that was expected at the beginning of platform usage	It was time enough to do it.



<p>2. Ease of Performing Tasks</p>	<p>To add more demands in the system and manage them is a fairly simple task. The users from EOMMEX and OMEGATECH that undertook the role to test the system did not come across any special problems. They found the interface easy to use after reading the manual. After the completion of the first 2 tasks, they did not have to look at the manual when performing similar tasks again. They did not have to ask for technical assistance and generally they managed to finish all the tasks they had to insert into the system. Unassisted task completion rate (task completed without any help of the administrator and without referring at the manual more than 2 times per task/task given) was about 94%, while assisted task completion rate(task completed/task given) was 100%.</p>	<p>Most tasks were easy to perform</p>	<p>: Easy in general. We had some difficulties with granting different rights to different types of users. Also creating user accounts could be automated so that only user inserts his personal information and administrator just validate his account</p>	
<p>3. Satisfaction with Instructions/Publications</p>	<p>The manual is analytical enough and adequate for the end user to learn how to use the system. It is also very well structure for all the system roles.</p>	<p>In users manual most steps were written clearly and it helped to test system functionality</p>		<p>Instructions were ok</p>



SECTION III Testing phase	EL	LV	PL	ES
<p>1. Overall, I am satisfied with how easy it is to use this system.</p>	<p>The system is easy to use. All the end users admitted that it was not a time consuming or a difficult task to update the system. Comparing it with similar commercially available systems they use, they did not found any shortcomings.</p>	<p>Usage of the system is not user oriented. Entering of data and creation of the catalogues (business sectors, skills, and occupations) requires numerous actions and a lot of time. In some cases there were problems to make changes in the list of skills (for example, required skills not listed above).</p>		<p>After some initial problems and mistakes that were solved with the practice, we are satisfied with the usability of the system.</p>
<p>2. It was simple to use this system.</p>	<p>They found the interface easy to use after reading the manual.</p>	<p>Usage of the system is not user oriented. Entering of data and creation of the catalogues (business sectors, skills, and occupations) requires numerous actions and a lot of time. In some cases there were problems to make changes in the list of skills (for example, required skills not listed above).</p>		<p>Yes, after facing some common barriers that were solved with the practice itself</p>



<p>3. I could effectively complete the tasks and scenarios using this system.</p>	<p>It was easy to add additional demands after completing a couple of them with the use of the manual.</p>	<p>Due to system installation problems and complicated data entering, we collected data by interviews and online questionnaire. Therefore entering of the data was provided by administrator</p>		<p>Yes, no problem</p>
<p>4. I was able to complete the tasks and scenarios quickly using this system.</p>	<p>It was easy to add additional demands after completing a couple of them in a very short time.</p>			<p>At the beginning, not as quick as wished, but after some attempts, everything ran smoothly.</p>
<p>5. I was able to efficiently complete the tasks and scenarios using this system.</p>	<p>Unassisted task completion rate (task completed without any help of the administrator and without referring at the manual more than 2 times per task/task given) was about 94%, while assisted task completion rate(task completed/task given) was 100%.</p>			<p>Yes, there was no problem on it, and we had time enough to do it.</p>
<p>6. I felt comfortable using this system.</p>	<p>The only remark here is that the user does not easily understand what will be the benefit for him adding his demands in the system</p>			<p>You get used to it quickly.</p>



<p>7. It was easy to learn to use this system.</p>	<p>They found the interface easy to use after reading the manual. After the completion of the first 2 tasks, they did not have to look at the manual when performing similar tasks again.</p>			<p>You need time to get use to it. It is not very complicate, but it takes some time</p>
<p>8. The system helped me to finish tasks more efficiently comparing other tools</p>	<p>Comparing it with similar commercially available systems they use, they did not found any shortcomings. It can easily stand in the Greek Market as a Job matching and training orientation tool</p>			<p>Not really. I have no noticed too many differences between other tools</p>
<p>9. The system gave error messages that clearly told me how to fix problems.</p>	<p>Not all the times. Some error messages were very generic. But all errors were solved, so it is already improved.</p>			<p>They tell which is the problem, not how to fix it.</p>
<p>10. Whenever I made a mistake using the system, I could recover easily and quickly</p>	<p>It is easy to recover errors. The users have full rights to their records, so they can correct erroneous data entries easily.</p>			<p>Yes, but only once you get used to the system</p>



11. The information (such as on-line help, on-screen messages and other documentation) provided with this system was clear.	The manuals are very analytical and helpful. They guided the users in the first tasks adequately and effectively, as they had not to refer many times again to them to complete their tasks			
12. It was easy to find the information I needed.	For End users it is easy. For Administrators and other roles is a little bit more complicated, but with the help of the manual it is easy to understand and find the information you need			You have to look for a bit, but it is not too bad
13. The information provided for the system was easy to understand.	The information was easy to understand			
14. The information was effective in helping me complete the tasks.	The manuals are very analytical and helpful. They guided the users in the first tasks adequately and effectively, as they had not to refer many times again to them to complete their tasks.			Yes, but using the user manual



<p>15. The organization of information on the system screens was clear.</p>	<p>The information is well organized. The only problem was the length of some graphical buttons that need to become a little longer because some Greek Works are much longer than the Italian and English ones</p>	<p>Organization of information on the system screens was clear, unless they were not used on a wider computer monitor</p>		
<p>16. The interface of this system was pleasant.</p>	<p>The only problem was the length of some graphical buttons that need to become a little longer because some Greek Works are much longer than the Italian and English ones</p>		<p>Not enough space for item titles after the translation to the local language causes abnormal usage of abbreviations</p>	<p>The only problem I see is that words in Spanish are much longer than English words, therefore some words don't appear totally, and have no sense. The same happens with some sentences, we cannot read it, just the beginning</p>



<p>17. I liked using the interface of this system</p>			<p>It would be helpful if the platform scaled little better with the screen resolution size. On larger screen resolutions working space is wasted on blank spaces</p>	<p>I like it, but it would be better if adaptation of long words and sentences would be possible. Especially for future users</p>
<p>18. This system has all the functions and capabilities I expect it to have.</p>	<p>For its indented use it has all the functions and records needed to have. It could help if the name of the organization that has the specific demand could be inserted in the system, even if it was not visible to all users</p>	<p>The system has a tool for information collection, but it does not offer options to get primary results (demand of specific skills, characteristics of business sector ect.). It is not possible to use data file in Excel format for information summarization and analysis</p>	<p>It would be easier if there were a function allowing acceptance of more than one proposed objects in skill demand instead of selecting and accepting them one by one.</p>	<p>I would add some improvements referred to lists of demands of skills. See next point 3</p>
<p>19. Overall, I am satisfied with this system.</p>	<p>For its indented use it has all the functions and records needed to have</p>			<p>The only fault is the thing explained in question number 16. Apart from that, I am satisfied.</p>



SECTION IV Smes reactions	EL	LV	PL	ES
<p>1. Do the users (smes) see the advantage of the Smart KN Tool? Please explain.</p>	<p>It is the first such tool in Greece for capturing the real market demands. The Smes that offered their demands for the system, they hesitated in the beginning to give this information, telling us several times that it is not a job offer. We have to explain that it is a tool for capturing market needs and the orientation of the training courses towards those real needs. They found the idea very interesting and especially the fact that they need staff with expertise is specific skills that cannot be identified by academic curriculums</p>	<p>During the system installation process and testing phase we indicated data entering problems. Because of complexity of the data entering, we made decision to collect information in other ways (online questionnaires and interviews). All collected information was entered by administrator. SMEs did not use Smart KN Tool.</p>	<p>SMEs recognize advantages created by constant monitoring of job market. They state that observing it allows them to be more precise when describing job opportunities</p>	<p>Just few of them, as companies are more interested in years of experience, level of studies, languages, rather than skills. Things are changing, but very slow.</p>



<p>2. Can the participants (smes) use the Smart KN tool efficiently and properly? Please explain.</p>	<p>IT was easy for SMEs to use the system efficiently. It was easy to use, the manual was very helpful and the interface was user friendly. They all used the online version to fill in demands. The only comment was that they did not understand the added value of the system. "And now what?" was their question that we had to answer after they had submitted their demand in the system.</p>		<p>They have no issues using it in the way it was design to.</p>	<p>The uploading of information into the tool was made directly by CREA staff, as we receive job offers directly from the companies. Therefore, they did not use it. Nevertheless, we think that they won't have any problem to use it efficiently and properly.</p>
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<p>3. Which changes and additions will improve the usability of the Smart KN Tool?</p>	<p>Some information text after the insertion of the demand. The user to be able to insert the company name (apart from user name) in the system. • The user interface should become more adaptive to command names</p>		<p>SMEs stated that usability of the platform will thrive only if it will be constantly fed with up-to-date information from the job market. They see third party organisations as someone who should keep on working on those types of tools side-by-side with SMEs</p>	<p>Including the possibility to break down data, that is to say, to be able to have lists of demands of skills by sector, by location of the company (region, for example), by professionals, etc. Or by a combination of some of them. • Be able to read every word and sentence, especially, those in boxes, that now, it is impossible to read. • Remove the need of including a code for each new sector, professional, skills, educational qualification, etc. It is useless and it disturbs the data uploading as you are not able to remember last code included</p>
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SECTION V Final consideration	EL	LV	PL	ES
<p>1. My expectations at the beginning of the project were very high</p>	<p>As it is a new, innovative idea, at the beginning the goals were not so clear. After the kick off meeting our expectations were shifted up, since we identified a new approach for minimizing the gaps between offer and demand in the job market</p>			<p>Yes, because you always want to work in a useful project with a strong partnership.</p>
<p>2.The project approach has met my expectations</p>	<p>The impact in the Greek Market and the Greek policy makers was very high. The representatives of the Greek manpower Organization found the system very interesting and inline with their goals. The SMEs and their representatives identified great potential in the system, especially for bridging the gaps between job demands and offers</p>			<p>Yes, although I would have liked to work also in other aspects, like knowing a bit deeper what each country is doing to facilitate the matching between professional abilities offered by the education and training system, and companies' demands</p>



<p>3. The project results have met my expectations</p>	<p>The system is fully functional and works as a tool for capturing SMEs' needs. We are optimistic for its further exploitation, especially in the current economic situation.</p>			<p>The result (platform) is what expected</p>
<p>4. Overall, I am satisfied with this project</p>	<p>The project runs smoothly, the cooperation of the partners is very effective and the project management very well organized for such a complicated project with many partners and a lot of technical issues.</p>			<p>The only thing is that we could have exploited more the potential of the project website.</p>
<p>5. Overall, I would recommend Smart KN system to my colleagues</p>	<p>Smart KN is high innovative and we disseminate it in every chance to VET providers, policy makers, Chambers and SMEs associations and representatives</p>			<p>It could be useful for some institutions</p>



Appendix VI – Technical issues

- **ISSUE 01 - 29/07/2011 by Olivia Del Amo, solved by Eustema**

ISSUE: Manual doesn't contain the default login credentials for the administrator ("admin", "irfiadmin")

SOLUTION: Eustema sends via mail the credentials; doesn't update the manual

STATUS: solved

- **ISSUE 02 - 13/09/2011 by Nikos Papastamatiou, solved by Nikos Papastamatiou**

ISSUE: Login doesn't work

SOLUTION: Give full access to user root or other user created

STATUS: solved

- **ISSUE 03 – 21/10/2011 by Olivia del Amo, solved by Eustema**

ISSUE: translation not possible because of the file "resource.properties" file not present in the original installation CD.

SOLUTION: Eustema sends the missing file and instructions on 02/11/2011. Further details sent by Andres Yubero on 14/11/2011

STATUS: solved

- **ISSUE 04 – 25/10/2011 by Marek Pustula, solved by Eustema**

ISSUE: On user creation, a message of error sending mail appears.

SOLUTION: Instructions sent on 29/11/2011

STATUS: solved

- **ISSUE 05 – 05/12/2011 by Marek Pustula, solved by Andres Yubero**

ISSUE: on user creation, the created user doesn't appear on users list

SOLUTION: Instructions sent on 15/12/2011

STATUS: solved

- **ISSUE 06 – solved by Andres Yubero**

ISSUE: the translation doesn't visualize correctly

SOLUTION: Modify the character set from ANSI to UTF-8. Select every database table; select "Alter table" and then "UTF-8-default collation" in the field "collation". Instructions sent on 19/01/2012

STATUS: solved



- **ISSUE 07**

ISSUE: even if applying the above changes, results can't be seen on the site

SOLUTION: Delete cookies and temporary internet files. Try a different browser

STATUS: solved

- **ISSUE 08**

ISSUE: files are translated, new language has been selected, but system can't visualize translated materials

SOLUTION: check if resource files' filenames have been changed (for example in directory "en_EN" has been renamed in "de_DE" if a translation in german is planned), then check if translated resources are in the correct place

STATUS: solved

- **ISSUE 09**

ISSUE: the application doesn't work

SOLUTION: check if Tomcat server is up. Check if the connection string of the file mysql-init.txt is correct

STATUS: solved

- **ISSUE 10 - 20/06/2012 by Olivia Del Amo and others**

ISSUE: impossibile to download reports in xls and pdf format

SOLUTION: Eustema works in collaboration with Omegatech to find a solution for the issue affecting all the partners

STATUS: solved (XLS download solved, PDF download not solved, error message)

- **ISSUE 11 - 12/06/2012 by Olivia del Amo**

ISSUE: the space available for the fields' descriptions is too short for some translations

SOLUTION: not available

STATUS: issue open

- **ISSUE 12 - 12/06/2012 by Marek Pustula**

ISSUE: in "tables" area it's possible to create an user with read-only authorizations, but the user can anyway write and delete data. This problem is affecting the original KN2 platform running in IRFI.

SOLUTION: not available

STATUS: issue open