Project full title: "Energy Efficiency Knowledge Transfer Framework for Building Retrofitting in the Mediterranean Area

Grant agreement no: 314347

SEVENTH FRAMEWORK PROGRAMME

EeB.NMP.2012-6 - Methodologies for Knowledge transfer within the value chain and particularly to SMEs

ee-WiSE Knowledge Transfer Framework Design

Circulation: Public

Partners: INTROMAC, X-PANEL, POSITIVE ENERGY

Authors: Raúl Vega (INTROMAC), María José Bohórquez (INTROMAC), Elias Kouloumis (X-PANEL), Kostas Sotiropoulos (Positive Energy), and Dimitris Raftopoulos (Positive Energy)

Date: 31/01/2014

Doc. Ref. N°: eeWISE-WP4_D4.2_V10_31012014

COPYRIGHT

VERSION CONTROL

Version	*Date*	*Comment*
01	30th October 2013	eeWISE-WP4_D4.2_V1_30102013
02	23rd December 2013	eeWISE-WP4_D4.2_V5_23122013
03	28th January 2014	eeWISE-WP4_D4.2_V8_28012014
04	31st January 2014	eeWise-WP4_D4.2_V10_31012014

TABLE OF CONTENTS

1. INTRODUCTION

The first stage of the implementation phase in the ee-WiSE Project corresponds to WP4 [Figure 1]. The main objective of the Project is to develop a Knowledge Transfer Framework (KTF) within the value chain in the EE Sector for building retrofitting in the Mediterranean area, and with special attention to SMEs. The biggest outcome is the development of a validated tool of knowledge management and transfer, which will include guidelines for business models, market up-take, inter-sectorial cooperation, and certification and tendering. This deliverable is part of the first version of the final tool (Framework).

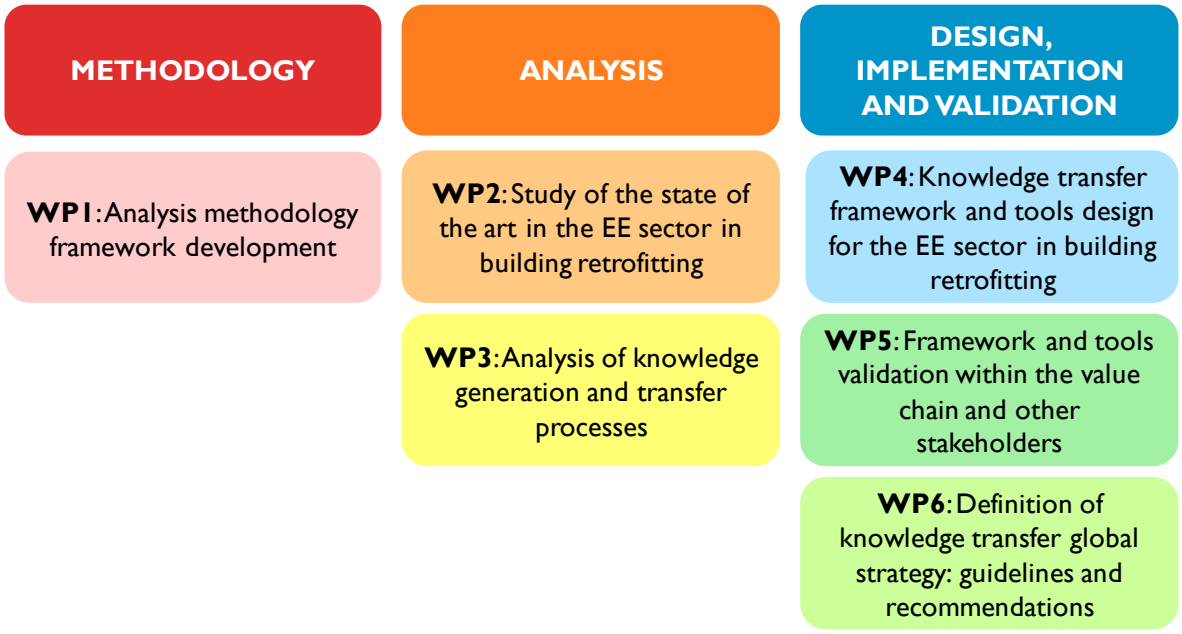

Figure 1: Technical Work Package overview

1.1. Field of application - Scope

WP4 is structured in 2 different parts which are represented by 2 different deliverables:

D4.1: Virtual Knowledge Transfer Tool

This deliverable contains the work carried out in Task 4.1 - the main objective of which is to materialize in ICT terms, the Framework containing the KT tools designed in D4.2.

- Task 4.1 Virtual Knowledge Transfer Tool Design (VKTT) - Task Leader AVACA

This report will describe the expected features and functions of the Knowledge Management (KM) tools, and a step by step plan that forms the basis for the elaboration of this instrument. The Plan will include a checking strategy that evaluates the accomplishment of the required features, and an enhancement plan for further improved versions which may be developed in subsequent months. The KM tools will entail the creation of a manual which describes the Tool's main objective, as well as a guidebook that shows the way it will work. Understandable texts are expected, whether final users are familiar with virtual technologies or not.

D4.2: ee-WiSE Knowledge Transfer Framework Design

This deliverable will explain the development and design of the different tools for Knowledge Transfer (KT) developed in Task 4.2, Task 4.3, Task 4.4, and Task 4.5 described below:

- Task 4.2: Designing of a battery of activities to produce general knowledge dissemination within the value chain - Task Leader X-PANEL
- Task 4.3: Designing of Training Tools to develop and Boost the EE market - Task Leader POSITIVE ENERGY
- Task 4.4: Designing of Inter-Agent activities that promote contact and knowledge generation (cooperation) Task Leader POSITIVE ENERGY
- Task 4.5: Designing of pilot experimental demonstrators activities to connect SMEs with existing R&D knowledge. Task Leader INTROMAC

This document is prepared as a conclusion of WP4, in order to impact positively on at least the following strategic issues:

- Addressing general knowledge needs of the value chain: activities for the knowledge dissemination.
- Improve value chain agents' capabilities, with special attention to SMEs: Training tools to develop and boost the EE market
- Encourage interaction between actors in the value chain to resolve KT problems: inter-agent activities that promote contact and knowledge generation
- Activities to encourage interaction between SMEs and R & D generators to improve get to-market of innovative solutions: Pilot Activities in experimental demonstrator buildings.

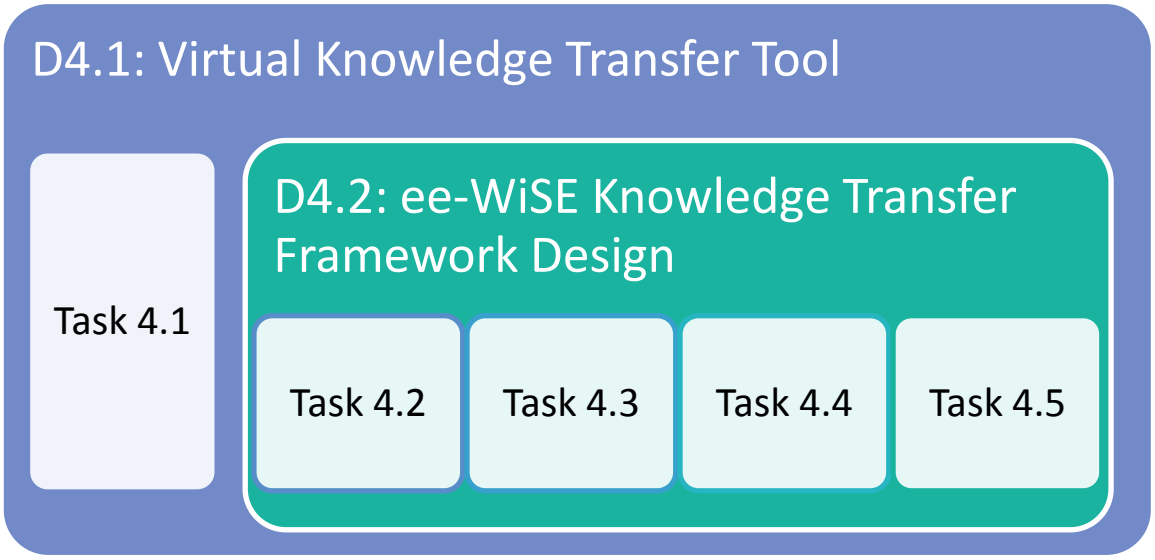

Figure 2: Internal functional basis of WP4 and its tasks.

1.2. ee-WiSE Knowledge Transfer Framework Design

Tasks 4.2, 4.3, 4.4, and 4.5 were designed to develop tools as solutions for KT needs. The Description of Work (DoW) document gives the following description for each one of the tasks:

- *Task 4.2: Designing of a battery of activities to produce general knowledge dissemination within the value chain – Task Leader X-PANEL (Partner n°11)*

  Previously analyzed in WP3 Knowledge Management tools and techniques will be the basis of these activities, which are aimed to take place in the knowledge dissemination phase. These activities will lead to improve knowledge level of all agents involved, solving knowledge needs and gaps detected in previous analysis. Furthermore, designing a communication plan to society will be considered, in order to raise public awareness about the importance of energy efficiency in homes, defining society as an important player in the market. The base for these activities will be the VKTT previously designed in Task 4.1.

- *Task 4.3: Designing of training tools to develop and boost the EE market – Task Leader POSITIVE ENERGY (Partner n°8)*

  Training tools in EE building retrofitting matters will be designed for different profiles, according to knowledge needs to develop market and paying special attention to SMEs as one main target. Moreover, agents will be able to collaborate between each other by consequently opportunities created. These activities will aim to raise knowledge level of SMEs in a practical way within the EE market.

- *Task 4.4: Designing of inter-agent activities that promote contact and knowledge generation (co-creation) Task Leader POSITIVE ENERGY (Partner n°8)*

  Apart from previous activities designed, inter-agent processes will be taken into account. Active participation, complete attendance of players involved and knowledge generation activities enhancement are the main goals for the activities developed at this stage. The role of independent professionals who act as prescribers in the value chain (engineers, architects, etc.), as well as the administrative authorities and certification bodies will be pointed out in this task. Public and/or private financial agents will be considered in funding schemes activities.

- *Task 4.5: Designing of pilot experimental demonstrators activities to connect SMEs with existing R&D knowledge – Task Leader INTROMAC (Partner n°1)*

  The demonstrated lack of relation between SMEs and R&D sources will be filled through these actions. Opportunities to test new developments or technologies using experimental demonstrator buildings will be designed, in order to enhance SMEs to deal with knowledge generated by researchers and encourage the commercial use of innovative energy efficiency measures or solutions. These activities will also focus on solving existing problems in the real application of EE models and solutions.

In this deliverable Tasks 4.2, 4.3, 4.4, and 4.5 are proposed using a horizontal approach implementing the same steps, but focusing on different subjects. Hence, each task addresses the development of a KT solution for a specific area of the EE Building Retrofitting sector:

TASK	TITLE	SUBJECT ADDRESSED
4.2	Designing of a battery of activities to produce general knowledge dissemination within the value chain	Tools to disseminate general EE retrofitting knowledge.
4.3	Designing of Training Tools to develop and Boost the EE market	Tools to boost the market.
4.4	Designing of Inter-Agent activities that promote contact and knowledge generation (cooperation)	Tools to promote professional contact and generate knowledge.
4.5	Designing of pilot experimental demonstrators activities to connect SMEs with existing R&D knowledge	Tools to exploit R&D findings.

Table 1: Subject addressed per task.

Once determined the scope of each task the field of action for each partner involved is clear. Deliverable 4.2 is built upon the same path each task undertakes as horizontal approach. The steps towards the Tools developed in the *ee-WiSE Knowledge Transfer framework Tools* deliverable have been the following:

1. CORRELATING WITH WP3: This is the previous step considered to analyze the needs found in WP3 and distribute them into the different tasks of WP4. [Section 2]

2. IDENTIFYING TOOLS FOR KNOWLEDGE TRANSFER NEEDS: The next step proposes KT activities as possible solutions for each KT need. [Section 3]

3. ICT TRAINING TOOLS FOR LEARNING AND KNOWLEDGE SHARING: An ICT training tools research is undertaken in this step. As a result, the most suitable training tools are identified per need. [Section 4]

4. TOOLS FOR EFFECTIVE KNOWLEDGE TRANSFER: From the basis of a curriculum lesson plan, each KT need has been developed as a KT Tool considering the identified KT activities as solutions (step 2) and its most suitable ICT training tools (step 3). [Section 5]

The Knowledge Transfer Framework design approach based on training tools analysed in section 4 and section 5 of Deliverable 4.2 have a twofold approach - on one hand to become a valuable guide and be considered as a good practice to any organization or agent that intends to develop training engaging material, and on the other hand to present to the involved agents that have the required information, how to transform it into an effective and efficient framework. Furthermore it analyses theoretical structures for someone to gain the key competencies – knowledge, skills and attitudes - that are necessary for personal fulfilment, development, social inclusion, active citizenship and employment, so as to assist the selection of the proper mechanisms and thus incorporating them into the final output of the project. Finally, a set of guidelines, examples, tips and best practices are presented in order to assist the development of a learning process around new ICT means so as to promote effective knowledge transfer.

2. CORRELATING WITH WP3

Work Package 4 is following upon the foundations laid by Work Package 3. During WP3 a thorough study was performed and a set of Best Practices were presented as a result of the study of Knowledge Transfer Needs and identification of possible solutions.

In D3.1, the **needs** detected for effective knowledge transfer through the retrofitting value chain have been classified into groups, as shown in the following figure. Furthermore, these identified needs were also inserted into the questionnaire that was distributed to the value chain members in order for them to classify the importance of each need.

Figure 3: Needs for Knowledge Transfer

This classification was developed by ENERCYA in WP3, through a statistical analysis of questionnaires responses by several stakeholders in the EE sector and different countries in the Mediterranean area (Spain, Greece, Italy, Malta, Cyprus, Turkey and Bulgaria) taking into account the several countries that have participated and the type of agents of the value chain to identify the most important barriers to knowledge transfer. The information obtained from the questionnaires has been organized, studied and analyzed.

Secondly, a study of the three key criteria: frequency, potential and feasibility, was done and later the quantitative assessment of all barriers to knowledge transfer was developed.

The order of importance of all studied barriers to knowledge was concluded in a global ranking of the needs (represented in a chromatic scale) [Table 2] where is possible to identify the definitive importance of different barriers to knowledge transfer, that is, the segmentation and prioritization of the demand detected.

	KNOWLEDGE TRANSFER NEED	TOTAL ASSESSMENT
A5	Training of construction professionals (including architects, civil engineers, building services engineers, project managers, building designers, etc) in retrofit technologies.	9,43
D3	Occupants need financial support to invest in EE retrofitting technology.	9,29
A1	Training of traditional craftsmen on EE retrofitting innovations.	9,10
D1	Increase business motivation through public R&D initiatives and innovation funding.	9,04
D2	Industry needs financial support to take up results of scientific innovation.	8,93
C4	When communicating research results, more focus needs to be given to practical benefits of the retrofit technology.	8,81
C2	Real-life evaluation of research results.	8,22
E2	Evaluation of publicly funded research projects via it's applicability to the end-user.	8,09
C1	Scientists need to have increased contact with the end-users in order to understand the applicability of their research.	7,74
A3	Training the business society to access the knowledge stock.	7,71
B1	Establishing network organisations that will coordinate knowledge transfer from innovation groups and assist in implementing innovation into daily building practice.	7,57
C3	R&D to divert their activity rapidly in response to changes in the market.	7,52
E1	EC guidelines for knowledge dissemination from the research institutions.	7,35
B2	Increased interaction amongst research institutions.	7,26
A4	The business society needs to be aware of tools to manage intellectual property.	7,10
B3	Clustering within the retrofit market to provide integrated solutions.	6,22
A2	Exposing the end users to the technological results of the research organizations.	5,97
B4	Connecting technical commercial advice to EPBD - energy performance and requirements of the actual buildings.	5,57

Table 2: Knowledge transfer needs ranking

2.1. Approach to Knowledge Transfer Tools

Needs and Solutions

Based on the extended analysis of needs and solutions for the Retrofitting value chain developed in D3.1, and in order to connect WP4 tasks with the needs and solutions studied before, a previous analysis of this relation is necessary. Hence, the following table shows a first identification of WP4 tasks with the specified needs while maintaining the priority order given in D3.1.

Matrix: Needs/ Agents/ Tasks		Agents involved directly							
	NEEDS	1. Public Bodies & Finance	2. Knowledge & Products Providers	3. Energy Providers	4. Energy & Retrofitting Services	5. Quality assurance	6. Demand	*Type of knowledge*	WP4 task
A5	Training of construction professionals (including architects, civil engineers, building services engineers, project managers, building designers, etc) in retrofit technologies.	X	X		X			*retrofit tech. training*	4.4
D3	Occupants need financial support to invest in EE retrofitting technology.	X				X	X	*financial*	4.3
A1	Training of traditional craftsmen on EE retrofitting innovations.		X	X	X			*innovation*	4.5
D1	Increase business motivation through public R&D initiatives and innovation funding.	X	X	X	X		X	*policies*	4.4
D2	Industry needs financial support to take up results of scientific innovation.	X	X	X	X	X	X	*financial*	4.3
C4	When communicating research results, more focus needs to be given to practical benefits of the retrofit technology.	X	X	X	X		X	*scientific*	4.5
C2	Real-life evaluation of research results.	X	X		X	X	X	*scientific*	4.5
E2	Evaluation of publicly funded research projects via it's applicability to the end-user.	X	X				X	*policies*	4.4
C1	Scientists need to have increased contact with the end-users in order to understand the applicability of their research.	X	X				X	*communication skills*	4.5
A3	Training the business society to access the knowledge stock.	X	x	X	X			*K. Management Training*	4.4
B1	Establishing network organisations that will coordinate knowledge transfer from innovation groups and assist in implementing innovation into daily building practice.	X	X	X	X	X	X	*cooperation for innovation*	4.4
C3	R&D to divert their activity rapidly in response to changes in the market.	X	X		X		X	*cooperation for innovation*	4.4
E1	EC guidelines for knowledge dissemination from the research institutions.	X	X		X	X	X	*dissemination for R&D projects*	4.2
B2	Increased interaction amongst research institutions.	X	X					*cooperation for innovation*	4.4
A4	The business society needs to be aware of tools to manage intellectual property.	X	X			X		*K sharing initiatives*	4.3
B3	Clustering within the retrofit market to provide integrated solutions.	X	X	X	X		X	*cooperation for integrated sol.*	4.4
A2	Exposing the end users to the technological results of the research organizations.		x	X	X		X	*dissemination to end-users*	4.2
B4	Connecting technical commercial advice to EPBD - energy performance and requirements of the actual buildings.	X	X		X	X	X	*integrated advise*	4.2

Table 3: Matrix for KT Needs, agents and WP4 tasks, sorted in order of priority.

The previous table shows which group of agents are directly involved in the KT activity and what is the type of knowledge being transferred. Depending on their suitability with WP4 tasks' subject addressed [Table 1], needs and tasks are connected so that the development of the tools that rely on each task must accomplish with the needs identified. Table 4 shows a summary of the distribution of needs per task.

	TOOLS DESIGNED IN WP4-TASKS FOR:	Key agents involved	Identified needs
4.2	KT to disseminate general EE retrofitting knowledge (raise awareness)	non technical agents (society, admin...)	E1, A2, B4
4.3	KT to boost the market (raise K for a competitive market)	market agents (SMEs, PO, finance...)	D3, D2, A4
4.4	KT to promote professional contact (and generate K)	technical agents (professional, admin..)	A5, D1, E2, A3, B1, C3, B2, B3
4.5	KT to exploit R&D findings (through experimental buildings)	scientific community + users of scientific K. (SMEs)	A1, C4, C2, C1

KT: Knowledge Transfer

Table 4: Identification of KT needs per task

2.2. Steps to Develope an Effective Knowledge Transfer Framework (Best Practice)

Below is the methodology to be used when setting up a knowledge transfer method that is to be effective in reaching its goals of providing information to the user. This methodology was presented in *D3.1 Knowledge Generation and Transfer Processes Report*. So far, the analysis has undertaken questions n°1, 2 and 3. Now WP4 must go beyond and resume with an analysis of questions n°4 & 5. For the full achievement of the methodology, question n°6 will need to be undertaken. With regards to the ee-WiSE Project, the implementation of the last question will take place in WP5 "*Framework and Tools Validation within the Value Chain and other Stakeholders*".

What knowledge is lacking?	**1. Determine what knowledge must be transferred.** ▪ Which are the technologies for which the end-user lacks knowledge? ▪ What type of knowledge is lacking? (technical, practical, technology adaptability, financial, environmental, policy, etc.)
Why is the knowledge needed?	**2. Be able to articulate why the knowledge must be transferred.** ▪ Why is this knowledge needed? ▪ Will it improve retrofitting take-up? ▪ Will it increase competence of the service providers to provide a better service to the customer? ▪ Will it ensure that the technology is applied in the best possible way?

Knowledge demand & supply.	**3. Identify to whom the knowledge needs to be transferred.** ▪ Which are the agent groups that need to receive this knowledge? ▪ Consider all value chain agents and determine which of them would benefit by receiving the knowledge to be transferred. ▪ Make sure to create a system that will reach out to, invite and disseminate information to all those who would benefit from the knowledge transfer. ▪ Identify the knowledge providers.
Knowledge transfer methods.	**4. Determine how the knowledge will be transferred.** ▪ What is the best method for knowledge transfer considering the knowledge being dealt with? ▪ Does the information need to be demonstrated practically? ▪ Can the knowledge be stored for future reference in a central repository accessible to all the receiving value chain groups?
Execute the knowledge transfer.	**5. Transfer the knowledge.** ▪ Invite the relevant knowledge providers and receivers to become actively engaged in the knowledge transfer process. ▪ Provide knowledge transfer tools that are easily available and easy to employ. ▪ Ensure that all agents are skilled enough to be able to use the knowledge transfer tool effectively. ▪ Promote the knowledge transfer mechanism.
Test the effectiveness of the measures.	**6. Test knowledge transfer by observing its recall and use.** ▪ Actively monitor and quantify the knowledge transfer activity. ▪ How many of the knowledge providers were willing to share information? ▪ What are the reasons for their lack of participation? ▪ Collect feedback from the knowledge providers and receivers. ▪ How many knowledge receivers were actively receiving information? ▪ Where they satisfied with the information provided? ▪ Did they have the possibility to ask for further information on the subject matter? ▪ Was the information provided relevant to the receiver? ▪ Did the information provided make an impact on the receiver's outlook and take-up of retrofitting technologies?

Table 5: Steps to Developing an Effective Knowledge Transfer Framework

3. IDENTIFYING TOOLS FOR KNOWLEDGE TRANSFER NEEDS

This section aims to propose KT activities as possible solutions for each KT need. Each need will be analyzed within its assigned task hereafter. However, it is essential that each KT need determines the specific agents actively involved as *Receivers* and *Providers* of the KT activity. Hence a previous review over the Energy-Efficient Building Retrofitting value chain is incorporated below.

3.1. The Energy-Efficient Building Retrofitting value chain

The agents directly involved in the KT needs were defined in deliverables D1.1 and D2.1. The definition of the value chain was finalized with the agents and groups mentioned below [Figure 4Figure 8].

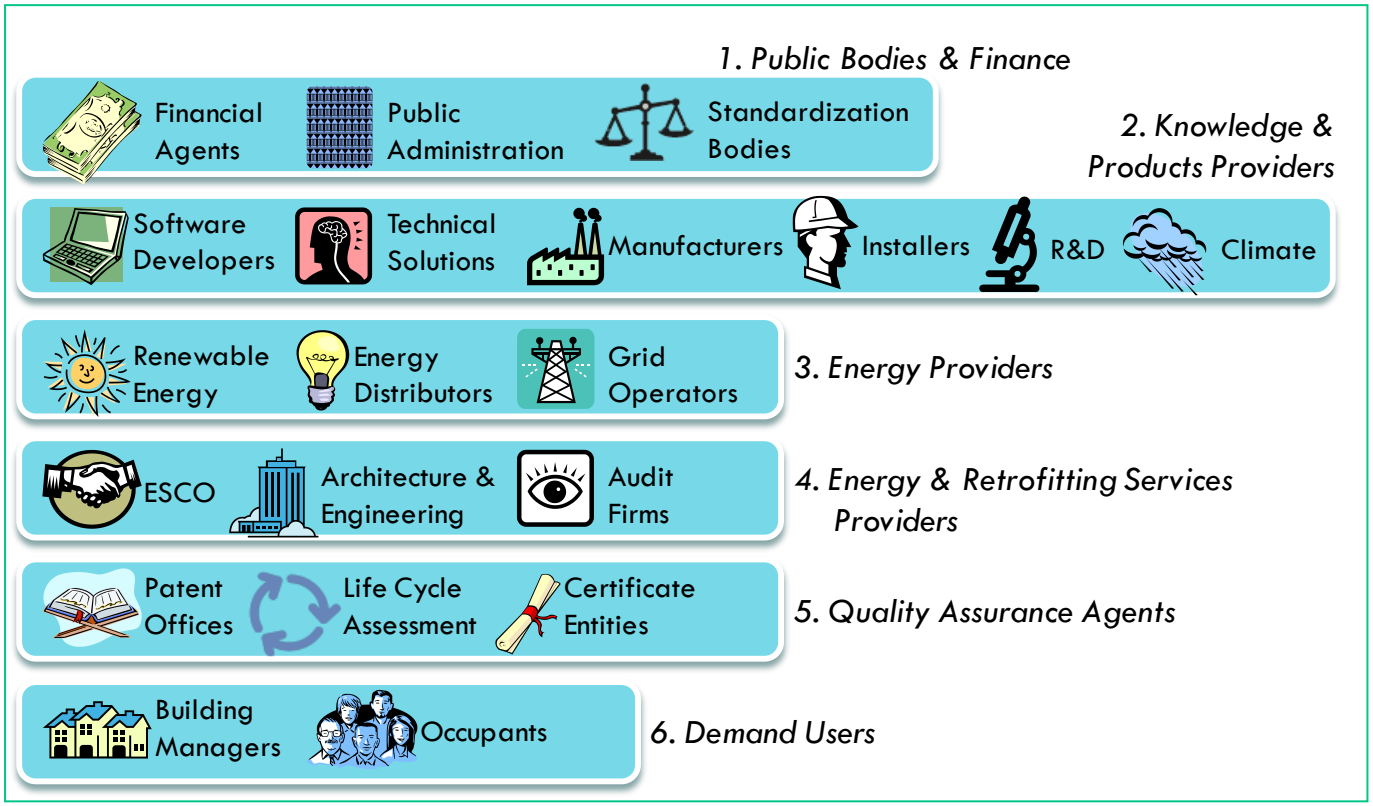

Figure 4: Energy Efficiency Retrofitting Sector's Value chain

The definition of each agent and group is specified as follows:

GROUP 1 - Public Bodies and Finance

This group is formed by the Enabling environment, i.e. infrastructure and policies, institutes and processes that shape the market environment.

- Public administration and authorities (ministries, municipalities, etc.) (PubA) classified as:
  - National authorities,
  - Regional authorities
  - Local authorities
- Standardization bodies (Standard)

- Banks, Financial Agents, Promoters, Subsidizers (Finance)

GROUP 2 - Knowledge and Products Providers

This group is formed by Knowledge and Products Providers:

- Technical solutions developers companies, (TechSol)
- Software developers (Software)
- R&D Institutes, Universities, (R&D)
- Meteorologists (Climate)
- Manufacturers of building elements, building materials (Manufacturer)
- Installers

GROUP 3 - Energy Providers

This group is formed by Energy Providers, from renewable energy companies and electric power transmission grid operators to energy distributors.

- Energy distributors (EDist)
- Renewable energy companies (RenewEn)
- Electric Power Transmission Grid Operators (GridOp)

GROUP 4 - Energy and Retrofitting Services Providers

This group is formed by Energy and Retrofitting Services Providers: Architecture and engineering companies, energy auditing firms and energy service companies.

- Architecture and Engineering Companies (A&E)
- Energy auditing firms (Audit)
- Energy Service Companies (ESCOs)

GROUP 5 - Quality assurance

This group is formed by actors in charge of the quality assurance: Certification bodies, intellectual property bodies and patent offices and life cycle assessment companies.

- Certification bodies (Certificate)
- Intellectual Property bodies and Patent offices (PO)
- Life cycle assessment companies (LCA).

GROUP 6 – Demand

- Homeowners and building users, occupants (Occupants)
- Real Estate agents, householders and building managers (BuildManage)

In order to identify the different tools that will help resolve the KT needs - questions 4 & 5 described in Section 2.2 *Steps to Develope an Effective Knowledge Transfer Framework* - have been explored to conduct an analysis of the best tool for each case. The following sections include this analysis per need, identifying the agents who act as *Receivers* and *Providers* in each case.

- RECEIVER: Agent of the value chain that participates in the KT activity by receiving specific knowledge from the Provider.

- PROVIDER: Agent of the value chain in charge of developing the knowledge that needs to be transferred to the Receivers.

3.2. Knowledge Transfer to disseminate general EE retrofitting knowledge (Task 4.2)

E1. EC guidelines for knowledge dissemination from the research institutions.	
Knowledge receivers: R&D **Knowledge providers:** Pub. Ad. / Gov/ Software/ TechSol/ Manufacture/ Installer/ ESCO/ A&E / Audit / Certificate/ BuildManage/ Occupant **Type of knowledge:** Research Project Results **Solutions (D3.1)** - professional knowledge brokers - knowledge transfer at a cluster level - clear definition of the end-user/target groups	
4. Knowledge transfer methods: Determine how the knowledge will be transferred	
▪ What is the best method for the knowledge transfer considering the knowledge being dealt with?	The set of guidelines regulating the information flow within a research project could include: + having professional knowledge brokers available to assist in the organization of dialogue events to pass on results of research projects, + strategies to implement knowledge transfer at a cluster level and not only at project level, + a clear definition of the end-user/target groups for a particular project defining their needs and potential in order to be able to provide coherent knowledge resulting from a research project that will be included in the public deliverables.
▪ Does the information need to be demonstrated practically?	Model (Demo) Solutions are not applicable for this specific need.
▪ Can the knowledge be stored for future reference in a central repository accessible to all the receiving value chain groups?	The knowledge can be stored in various formats (research papers, educational material, manuals, articles, blogs, etc.) for future reference.
5. Execute the knowledge transfer: Transfer the knowledge.	
▪ Invite the relevant knowledge providers and	The knowledge providers that are affected by need E1 include:

receivers to become actively engaged in the knowledge transfer process	+ Public Admin / GOV + Software Developers / Technical Solutions / Manufacturers / Installers + ESCO / Architect & Engineer / Audit Firms + Certificate Entries + Building Managers / Occupants The knowledge receivers that are affected by need E1 include: + R&D
▪ Provide knowledge transfer tools that are easily available and easy to employ.	Appropriate (easily available and easy to employ) knowledge transfer tools may be based on the 3 projects below that will serve as a reference for the tools: 1. MARIE - Mediterranean Building Rethinking For Energy Efficiency Improvement. The mission of the MARIE project is to co-construct a strategy for energy efficiency in existing buildings in the Mediterranean region. The main idea to replicate here is the development of a model "solution" regarding policy, funding mechanisms, products & services. [http://www.marie-medstrategic.eu/en.html] 2. IRH-Med - Innovative Residential Housing for the Mediterranean. The idea here is to develop common guidelines & policies to improve the competitiveness of innovative and sustainable models for housing that respond to the challenges of a growing population. [http://www.irh-med.eu/] 3. Educa-RUE - Energy Efficiency Paths in Educational Buildings. The project will develop actions (legislation, certification, education, finance, training, information and dissemination) for the implementation of the Directive on local building. Again here the idea is to develop a common model/strategy, but Educa-RUE is more elaborate and addresses also training, certification and dissemination. [http://www.educarue.eu/]
▪ Ensure that all agents are skilled enough to be able to use the knowledge transfer tool effectively.	The availability of professional knowledge brokers who will assist in the organization of dialogue events to pass on results of research projects will ensure that all agents can use the knowledge transfer tools effectively.
▪ Promote the knowledge transfer mechanism.	A clear definition of the end-user/target groups needs and potential will further facilitate the process.

A2. Exposing the end users to the technological results of the research organizations.	
Knowledge receivers: BuildManage/ Occupant **Knowledge providers:** Software/ TechSol/ Manufacture/ Installer/ R&D/ RenewEn/ ESCO/ A&E **Type of knowledge:** Research Results **Solutions (D3.1)** - End-User mobilisation Events, - Training & Education Actions, - Model (Demo) Solutions, or Web / Social Media	
4. Knowledge transfer methods: Determine how the knowledge will be transferred	
▪ What is the best method for the knowledge transfer considering the knowledge being dealt with?	The information dealt with is research results for R&D organisations - research papers on new technological solutions on EE. This information/knowledge can be best transferred through, End-User mobilisation Events, Training & Education Actions, Model (Demo) Solutions, or Web / Social Media.
▪ Does the information need to be demonstrated practically?	Model (Demo) Solutions has been used in different regions / countries (INTEGER Millennium House, PassREg) as a way to effectively transfer knowledge resulting from research.
▪ Can the knowledge be stored for future reference in a central repository accessible to all the receiving value chain groups?	The knowledge can be stored in various formats (research papers, demo videos, educational material, manuals, articles, blogs, etc.) for future reference.
5. Execute the knowledge transfer: Transfer the knowledge.	
▪ Invite the relevant knowledge providers and receivers to become actively engaged in the knowledge transfer process	The knowledge providers that are affected by need A2 include: + Software Developers / Technical Solutions / Manufacturers / Installers / R&D + Renewable Energy + ESCO / Architect & Engineer The knowledge receivers that are affected by need A2 include: + Occupants / Build. Manage.
▪ Provide knowledge transfer tools that are easily available and easy to employ.	Appropriate (easily available and easy to employ) knowledge transfer tools may be based on the 3 projects above with the following aims: 1. ECHO ACTION - to encourage active involvement of end-users, local economic actors, financial institutes, and local energy providers to facilitate the implementation of local energy plans. 2. Social Housing Action - to reduce energy consumption through

	good practices sharing on retrofitting technologies that address energy concerns and changes in behaviour. 3. take your energy back - to mobilise end-users through a Smart-e Buildings campaign (an interactive web portal linked to the main social networks like Twitter and Facebook). The main idea that can be replicated from the above actions is how to mobilise End-Users through: + Information and Dissemination Events, + Training & Education Actions, + Web / Social Media
▪ Ensure that all agents are skilled enough to be able to use the knowledge transfer tool effectively.	For the purpose of ensuring that all agents can use the knowledge transfer tools effectively, specific instructions and information should be provided in printed and electronic form.
▪ Promote the knowledge transfer mechanism.	The tools / actions, as well as, the specific instructions and information (about how to participate in the actions) can be disseminated through electronic or traditional media and be promoted through face to face info-events.

B4. Connecting technical commercial advice to EPBD - energy performance and requirements of the actual buildings.
Knowledge receivers: Pub. Ad. / Gov/ Standard / Software/ TechSol/ Installer/ ESCO/ A&E / Audit **Knowledge providers:** ESCO/ A&E / Audit / Certificate/ Occupant **Type of knowledge:** Technical Commercial Advice **Solutions (D3.1)** - commercial advice in line with national EPBD requirements - clustering framework - offering the relevant and complete information to the consumers
4. Knowledge transfer methods: Determine how the knowledge will be transferred

▪ What is the best method for the knowledge transfer considering the knowledge being dealt with?	The commercial advice that is made available to the end user must be in line with the national EPBD requirements and the national action plan for each country. One method for implementing this solution is to have a network, clustering framework, in which the public authority could guide the business society about what information is required by the building owners. It will then be in the business society's interest to keep competitive by offering the relevant and complete information to the consumers.

▪ Does the information need to be demonstrated practically?	Model (Demo) Solutions has been used in different regions / countries (INTEGER Millennium House, PassREg) as a way to effectively transfer knowledge resulting from research.
▪ Can the knowledge be stored for future reference in a central repository accessible to all the receiving value chain groups?	The knowledge can be stored in various formats (educational material, manuals, articles, etc.) for future reference.
5. Execute the knowledge transfer: Transfer the knowledge.	
▪ Invite the relevant knowledge providers and receivers to become actively engaged in the knowledge transfer process	The knowledge providers that are affected by this need include: + ESCO / Architect & Engineer / Audit Firms + Certificate Entries + Occupants The knowledge receivers that are affected by this need include: + Public Admin / GOV / Standarization + Software Developers / Technical Solutions / Installers + ESCO / Architect & Engineer / Audit Firms
▪ Provide knowledge transfer tools that are easily available and easy to employ.	Appropriate (that are easily available and easy to employ) knowledge transfer tools may be based on the 3 projects above with the following aims: 1. ENEA – Italian National Agency for New Technologies, Energy and Sustainable Economic Development. ENEA provides its support to national enterprises to enhance their technologies, increase their competitiveness and make them more environmentally friendly. [http://old.enea.it/com/ingl/] 2. FOREST - Fostering Efficient long term Supply Partnerships. The project will support businesses through 3 main types of activities: a) a best practice tool-kit, b) business-to-business networking, c) direct capacity building to pilot new supply chain models and partnerships. [http://www.forestprogramme.com/] 3. PadovaFIT! The PadovaFIT! scheme aims to retrofit 2,250 apartments, through a team of experienced local private stakeholders (an ESCO, a cooperative bank, a higher education non-profit foundation and an engineering company). [http://www.padovanet.it/]
▪ Ensure that all agents are skilled enough to be able to use the knowledge transfer tool effectively.	For the purpose of ensuring that all agents can use the knowledge transfer tools effectively, where possible, technical commercial jargon should also include examples of observed energy performance observed reductions for actual buildings in order to better connect to the energy certification.

▪ Promote the knowledge transfer mechanism.	The tools / actions, as well as, the specific instructions and information (about how to participate in the actions) can be disseminated through electronic or traditional media and be promoted through face to face info-events.

3.3. Knowledge Transfer to boost the market (Task 4.3)

D3. Occupants need financial support to invest in EE retrofitting technology.	
Knowledge receivers: Occupants/ Finance **Knowledge providers:** PubA/Gov/Certification Authorities **Type of knowledge:** Financial **Solutions (D3.1)** - The development of appropriate financial instruments to promote the installation of energy efficient housing and retrofit technologies - Control of the eligibility to make use of the financial benefits in each country could be done through a measurement of the building energy efficiency level - Set up of beneficial grants, green loans and tax revisions (value added tax, property tax, income tax).	
4. Knowledge transfer methods: Determine how the knowledge will be transferred	
▪ What is the best method for the knowledge transfer considering the knowledge being dealt with?	One of the best methods could be forums or trainings where experts from R&D, Finance institutions will discuss (explain) the need, opportunities to invest in EE retrofitting technology. Financial institutions should create new products optimal for different occupants, and also government can reduce taxation in energy efficiency buildings.
▪ Does the information need to be demonstrated practically?	Yes, in order to increase the awareness of the project among other occupants. Also to provide the gains/losses of implementing the retrofitting project.
▪ Can the knowledge be stored for future reference in a central repository accessible to all the receiving value chain groups?	Yes, financial institutions that will create new products to support the occupants should be transparent and easily understood by them. Also R&D should be able to explain the needs and the benefits from the investments in EE retrofitting technology.
5. Execute the knowledge transfer: Transfer the knowledge.	
▪ Invite the relevant knowledge providers and receivers to become actively engaged in the knowledge transfer process	Knowledge receivers: Occupants/ Finance Knowledge providers: PubA/Gov/Certification Authorities. A suitable practice can be NewCastle Investment in Housing Retrofit (NEWINRETRO)

▪ Provide knowledge transfer tools that are easily available and easy to employ.	In order to drive the knowledge providers to effectively transfer their technology, guidelines addressed to them must be developed. These guidelines will act as a tool to take the EE technology or product to the traditional workforce and the end users. The guidelines will be designed to be implemented in different type of activities such as: videos of economist that easily explain the existing financial tools, web tools that visualize the ROI (Return Of Investment), Forums, Webinars. Appropriate (that are easily available and easy to employ) knowledge transfer tools may be based on the project NEWINRETRO. [http://warmupnorth.com/]
▪ Ensure that all agents are skilled enough to be able to use the knowledge transfer tool effectively.	As soon as occupants and financial institutions understand the benefits of retrofitting then it will be possible to assess the skills of knowledge transfer.
▪ Promote the knowledge transfer mechanism.	Through the ee-WiSE Knowledge Transfer Framework.

D2. Industry needs financial support to take up results of scientific innovation.

Knowledge receivers: Finance/Gov/ Occupants/

Knowledge providers: Certificate/ TechSol/Manufactures/Installers/ RenewEn/ESCO

Type of knowledge: Financial

Solutions (D3.1)

- Develop the appropriate financial instruments to faster cooperation between industry and R&D entities
- Install an associated quality assurance scheme

4. Knowledge transfer methods: Determine how the knowledge will be transferred	
▪ What is the best method for the knowledge transfer considering the knowledge being dealt with?	The best method is the attendance to expo fairs, seminars where the industry experts and R&D institutes can attend and presents there research which then can be implemented in Educational buildings where the impact can be measured. Also Tax breaks on activities that promote innovation activities.
▪ Does the information need to be demonstrated practically?	Such information cannot be demonstrated in a practical way.
▪ Can the knowledge be stored for future reference in a central repository accessible to all the receiving value	Yes, financial institutions that will create new products to support the Industry should store the knowledge and the impact outcomes of the products in order to investigate future products implementation. Such a Knowledge needs to be available to all

chain groups?	value chain groups and actors in order for them to be familiar whit the available financial tools.
5. Execute the knowledge transfer: Transfer the knowledge.	
▪ Invite the relevant knowledge providers and receivers to become actively engaged in the knowledge transfer process	Knowledge receivers: Finance/Gov/ Occupants Knowledge providers: Certificate/ TechSol/Manufactures/Installers/ RenewEn/ESCO A practice that can solve this issue is Energy Efficiency Paths in Educational Buildings.
▪ Provide knowledge transfer tools that are easily available and easy to employ.	In order to drive the knowledge providers to effectively transfer their technology, guidelines addressed to them must be developed. These guidelines will act as a tool to take the EE technology or new products and material from the R&D institutes and make it available on market. The guidelines will be designed to be implemented across different types of activities such as: videos of economist that easily explain the existing financial tools, web tools Forums, Webinars. Appropriate (that are easily available and easy to employ) knowledge transfer tools may be based on the 1project Energy Efficiency Paths in Educational Buildings. The project will develop actions for the qualification of the technicians and certifiers which will have a key role in the implementation of the Directive on local Buildings.
▪ Ensure that all agents are skilled enough to be able to use the knowledge transfer tool effectively.	As soon as the Financial institutions understand the benefits of retrofitting then it will be possible for them to create the financial tools (loans, investment in EE Companies, etc) to support and to help the Industry to market the results of scientific information.
▪ Promote the knowledge transfer mechanism.	Through the ee-WiSE Knowledge Transfer Framework aiming to implement activities such as R&D funding and networking/clustering schemes offered by public bodies.

A4. The business society needs to be aware of tools to manage intellectual property.

Knowledge receivers: PubA/Gov

Knowledge providers: R&D// Software/Manufacture

Type of knowledge: K sharing initiatives

Solutions (D3.1)

- Revaluate the question of a single European ownership model especially for publicly funded research.
- Initiatives originating from third-party organizations providing consultancy on knowledge sharing would be of further benefit to the business society.
- Intellectual property training. Access to online journals some of which are open access and free.

4. Knowledge transfer methods: Determine how the knowledge will be transferred	
▪ What is the best method for the knowledge transfer considering the knowledge being dealt with?	One of the best methods could be forums or trainings where experts from industry will discuss (explain) how Intellectual property can help the promotion and dissemination of new products and at the same time protect the investment.
▪ Does the information need to be demonstrated practically?	Yes, a practical demonstration of the available tools will help the business society to understand the benefits of the tools and at the same time will expose the innovation to the market.
▪ Can the knowledge be stored for future reference in a central repository accessible to all the receiving value chain groups?	Yes, all patents have to be stored in a common repository for future reference.
5. Execute the knowledge transfer: Transfer the knowledge.	
▪ Invite the relevant knowledge providers and receivers to become actively engaged in the knowledge transfer process	Knowledge receivers: PubA/Gov Knowledge providers: R&D// Software/Manufacture Practice that can be used are (ESCOLIMBURG2020, MARIE)
▪ Provide knowledge transfer tools that are easily available and easy to employ.	In order to drive the knowledge providers to effectively transfer their technology, guidelines addressed to them must be developed. The guidelines will be designed to be implemented in different type of activities such as: videos and podcasts on how to complete the relevant forms for patent submission, the way of use of the repositories of existing patents. Forums that will introduce the audience with the benefits of intellectual property rights. ESCOLIMBURG2020- the project aims to accelerate and upscale the concrete implementation of energy efficiency and renewable energy measures in the public building stock by making use of an

	ESCO-model, relieving the local authorities from complex investment processes. [http://www.escolimburg2020.be/] MARIE- to develop and adopt new regulatory requirements and new institutional tools to achieve the goals established by the new European Directive (EPBD); find new financial mechanisms that can be used to stimulate the thermal rehabilitation of buildings. [http://www.marie-medstrategic.eu/en.html]
▪ Ensure that all agents are skilled enough to be able to use the knowledge transfer tool effectively.	As soon as the Business society understand the benefits of Intellectual property right and then it will be possible to assess the skills of knowledge transfer.
▪ Promote the knowledge transfer mechanism.	Through the ee-WiSE Knowledge Transfer Framework.

3.4. Knowledge Transfer to promote professional contact and generate knowledge (Task 4.4)

A5 Training of construction professionals (including architects, civil engineers, building services engineers, project managers, building designers, etc.) in retrofit technologies	
Knowledge receivers: A&E **Knowledge providers:** A&E/R&D/TechSol/ PubA/ Gov **Type of knowledge:** Retrofit Technology Training **Solutions (D3.1)** - Implement higher level of education for construction professionals. - Increase or adopt Curriculum for Bachelor or Master Degrees.	
4. Knowledge transfer methods: Determine how the knowledge will be transferred	
▪ What is the best method for the knowledge transfer considering the knowledge being dealt with?	One of the best ways is to create events (Presentations) to inform them about the new technologies, materials that can be used nowadays. Also, showing the contrast between old methodology and new ones. Given the fact that they acquired skills through practice there is always something new to learn.
▪ Does the information need to be demonstrated practically?	Of course the information should be demonstrated practically in order to observe the pros/cons of the development. Being experts in the field will be easily for them to give a feedback.
▪ Can the knowledge be stored for future reference in a central repository accessible to all the receiving value chain groups?	Yes. It is crucial to store the knowledge and to transfer it to the new generation of construction professionals. Also Short courses with informal learnings should be provided.

5. Execute the knowledge transfer: Transfer the knowledge.	
▪ Invite the relevant knowledge providers and receivers to become actively engaged in the knowledge transfer process	Knowledge receivers: A&E Knowledge providers: A&E/R&D/ TechSol/ PubA/ Gov Practice that can be used Schneider Electric- Energy University
▪ Provide knowledge transfer tools that are easily available and easy to employ.	As mentioned before architects, civil engineers, building services engineers, project managers, building designers acquired their skills by practice however new courses at universities or revising curriculum for bachelor and master Degree will improve the knowledge transfer. Schneider Electric- Energy University- the Energy university is a free online, educational resource, offering vendor-neutral courses on energy efficiency topics to help the user identify, implement, and monitor efficiency improvements within an organization. Some more examples can be taken from the Project BUILD UP Skills Malta [http://www.buildupskillsmalta.com/]
▪ Ensure that all agents are skilled enough to be able to use the knowledge transfer tool effectively.	As soon the new information will be presented and demonstrated the experienced members will easilybe able to use the knowledge transfer tool. Entry level agents will need to be prepared.
▪ Promote the knowledge transfer mechanism.	Short courses together with informal learnings, forums, seminars.

D1. Increase business motivation through public R&D initiatives and innovation funding.
Knowledge receivers: Occupants/Installers **Knowledge providers:** R&D/Manufacturer/Software/A&E/RenewEN/ **Type of knowledge:** Policies **Solutions (D3.1)** - There is a need for master plans involving public and private actors in R&D activity. - Recommendation to have both plans EU wide and R&D plans that support R&D activities.

4. Knowledge transfer methods: Determine how the knowledge will be transferred	
▪ What is the best method for the knowledge transfer considering the knowledge being dealt with?	Dealing with innovation funding there is a high need of funds. Therefore meetings presentations of the ideas to the shareholders like (banks, financial institutions) are welcome.

▪ Does the information need to be demonstrated practically?	Such information's cannot be demonstrated in a practical way.
▪ Can the knowledge be stored for future reference in a central repository accessible to all the receiving value chain groups?	No, given the fact that each case is different therefore funds will be attracted different.
5. Execute the knowledge transfer: Transfer the knowledge.	
▪ Invite the relevant knowledge providers and receivers to become actively engaged in the knowledge transfer process	Knowledge receivers: Occupants/Installers Knowledge providers: R&D/Manufacturer/Software/A&E/RenewEN/ Practice than can be used MARIE [http://www.marie-medstrategic.eu/en.html]
▪ Provide knowledge transfer tools that are easily available and easy to employ.	In order to drive the knowledge providers to effectively transfer their technology, guidelines addressed to them must be developed. These guidelines will act as a tool to take the EE technology or new products and material from the R&D institutes and make it available on market. The guidelines will be designed to be implemented in different type of activities such as: videos of economist that easily explain the existing financial tools, web tools Forums, Webinars. MARIE- to develop and adopt new regulatory requirements and new institutional tools to achieve the goals established by the new European Directive (EPBD); Find new financial mechanisms that can be used to stimulate the thermal rehabilitation of buildings
▪ Ensure that all agents are skilled enough to be able to use the knowledge transfer tool effectively.	Knowing which are the shareholders in this case, by default all agent are skilled enough to use the knowledge transfer tool.
▪ Promote the knowledge transfer mechanism.	An increase in public R&D funding may be necessary for realizing the benefits of technological change, but at the same time the technological change, providing an opportunity to increase profits, may be the impetus to innovate a new institutional arrangement.

E2.Evaluation of publicly funded research projects via it's applicability to the end- user.	
Knowledge receivers: PubA/Gov/Build Managers **Knowledge providers:** R&D **Type of knowledge:** Policies **Solutions (D3.1)** - Is to involve the end users in the evaluation of research projects. - By including project evaluation criteria that will rate the final result.	
4. Knowledge transfer methods: Determine how the knowledge will be transferred	
▪ What is the best method for the knowledge transfer considering the knowledge being dealt with?	The best method for dealing with this issue is to create special forums or open events, where the new project will be presented to the society, also will be presented the benefits of the implementation.
▪ Does the information need to be demonstrated practically?	Such information cannot be demonstrated in a practical way.
▪ Can the knowledge be stored for future reference in a central repository accessible to all the receiving value chain groups?	Publicly funded research agendas do not always address the needs of the end-users.
5. Execute the knowledge transfer: Transfer the knowledge.	
▪ Invite the relevant knowledge providers and receivers to become actively engaged in the knowledge transfer process	Knowledge receivers: PubA/Gov/Build Managers Knowledge providers: R&D Best practice Programme for energy-efficient retrofitting of Bulgarian Households, Energy Efficiency in Low Income Housing in the Mediterranean.
▪ Provide knowledge transfer tools that are easily available and easy to employ.	In order to drive the knowledge providers to effectively transfer their technology, guidelines addressed to them must be developed. These guidelines will act as a tool to take the EE technology or new products and material from the R&D institutes and make it available on market. The guidelines will be designed to be implemented in different type of activities such as: videos of economist that easily explain the existing financial tools, web tools Forums, Webinars. Programme for energy-efficient retrofitting of Bulgarian Households – the project covers 36 urban centres for three years period (2012-2015). Financial assistance for the implementation of energy efficiency measures will be provided to home owner association registered under the act of condominium management.

	Energy Efficiency in Low Income Housing in the Mediterranean-development of integrated policies to promote energy efficiency in LIH in the Mediterranean through project result capitalisation. Implementation of a large scale pilot experimentation of technical and financial solutions in 420 low incoming dwellings to improve energy efficiency. Promotion of intelligent energy management system at local and regional level through the experimentation of multi-energy smart meters in 135 low incoming dwellings.
▪ Ensure that all agents are skilled enough to be able to use the knowledge transfer tool effectively.	There is no need to be all skilled. Dealing with end user it will be difficult for them to understand. Therefore will be a need to present the pro/cons of the implementation of the projects.
▪ Promote the knowledge transfer mechanism.	Short courses together with informal learnings, forums, seminars.

A3.Training the business society to access the knowledge stock.	
Knowledge receivers: PubA/Installers/ A&E **Knowledge providers:** TechSol/Manufacturer/Software/ESCO **Type of knowledge**: Knowledge. Management training **Solutions (D3.1)** - Training for staff and enterprises. - Build an educational framework that will provide a qualification to the new generation of knowledge transfer.	
4. Knowledge transfer methods: Determine how the knowledge will be transferred	
▪ What is the best method for the knowledge transfer considering the knowledge being dealt with?	The best method is to create a framework that will provide information about the retrofitting process, types of retrofitting and how it works.
▪ Does the information need to be demonstrated practically?	Assuring that business society is not prepared for this knowledge. There is a need of practice to understand how to deal with it.
▪ Can the knowledge be stored for future reference in a central repository accessible to all the receiving value chain groups?	Yes the knowledge could be stored. And will be used as a base for the future projects.
5. Execute the knowledge transfer: Transfer the knowledge.	
▪ Invite the relevant knowledge providers and receivers to become	Knowledge receivers: PubA/Installers/ A&E

actively engaged in the knowledge transfer process	Knowledge providers: TechSol/Manufacturer/Software/ESCO Best practice Schneider Electric- Energy University, Social Housing Action to Reduce Energy Consumption.
▪ Provide knowledge transfer tools that are easily available and easy to employ.	Create an operation pattern to narrow the gap of knowledge sharing among groups. Schneider Electric- Energy University- the Energy university is a free online, educational resource, offering vendor-neutral courses on energy efficiency topics to help the user identify, implement, and monitor efficiency improvements within an organization. Social Housing Action to Reduce Energy Consumption- share forums were set up for each of the 8 countries involved; training sessions took place , involving 1000 participants, mainly residents, but also energy experts, building managers, housing funds, local authorities, teachers and architecture students
▪ Ensure that all agents are skilled enough to be able to use the knowledge transfer tool effectively.	Knowing the fact that business society will deal with knowledge stock. There will be need of training and practice to be ready to access the Knowledge stock.
▪ Promote the knowledge transfer mechanism.	In order to promote this tool is required (forums, training sessions)

B1. Establishing network organizations that will coordinate knowledge transfer from innovation groups and assist in implementing innovation into daily building practice.

Knowledge receivers: Standard, Pub. Ad., E. Dist., Renew. En., Grid Op., A&E, Audit, ESCO, Installers.
Knowledge providers: R&D, Tech. Sol, Climate, Software, Manufacturers, Standard, Pub. Ad., E. Dist., Renew. En., Grid Op., A&E, Audit, ESCO, Installers.
Type of knowledge: Cooperation for innovation
Solutions (D3.1)

- formation of consortia and energy-efficiency networks
- information transfer through media exposure, organization of exhibitions, documentation archiving, demonstration projects, training plans, networking
- Creation of a EU-wide recognized standardization body.

4. Knowledge transfer methods: Determine how the knowledge will be transferred

▪ What is the best method for the knowledge transfer considering the knowledge being dealt with?	The best method to start a cluster initiative online. The easiest way would be putting together other existing networks in each Mediterranean country. The networks related to each type of agent should be considered. Once created the network can share interesting material from each country like media exposure, organization of exhibitions, documentation archiving, demonstration projects, training plans, and networking. A proposal to request involved entities to join this network can be developed for the consideration of an EU standardization body.
▪ Does the information need to be demonstrated practically?	It is not necessary. The aim is to innovate on daily building practice by connecting these agents with innovative technologies agents.
▪ Can the knowledge be stored for future reference in a central repository accessible to all the receiving value chain groups?	The network can decide to facilitate a library of related contents for the users.
5. Execute the knowledge transfer: Transfer the knowledge.	
▪ Invite the relevant knowledge providers and receivers to become actively engaged in the knowledge transfer process	Agents involved are: Knowledge receivers: Standard, Pub. Ad., E. Dist., Renew. En., Grid Op., A&E, Audit, ESCO, Installers. Knowledge providers: R&D, Tech. Sol, Climate, Software, Manufacturers, Standard, Pub. Ad., E. Dist., Renew. En., Grid Op., A&E, Audit, ESCO, Installers.
▪ Provide knowledge transfer tools that are easily available and easy to employ.	- The tool should establish a connection with other networks in the sector related to daily building practice and with innovation in EE retrofitting. - Should provide K sharing opportunities online, such as forums, debates, etc, or a way to contact each other or publishing news.
▪ Ensure that all agents are skilled enough to be able to use the knowledge transfer tool effectively.	Knowing the fact that member will deal with knowledge stock. There will be need of training and practice to be ready to access the Knowledge stock.
▪ Promote the knowledge transfer mechanism.	Through the ee-WiSE Knowledge Transfer Framework.

C3. R&D to divert their activity rapidly in response to changes in the market.	
Knowledge receivers: Occupant/ Gov/ PubA/ Build Manager/ Installer/ A&E **Knowledge providers:** R&D/ TechSol/ **Type of knowledge:** Cooperation for innovation **Solutions (D3.1)** - Modifications and improvements to the innovation that are resulting from a change originating in response to market feedback - Form academic-industry collaborations to improve the effectiveness of the innovation process.	
4. Knowledge transfer methods: Determine how the knowledge will be transferred	
▪ What is the best method for the knowledge transfer considering the knowledge being dealt with?	One of the best methods could be forums or trainings where experts from R&D and occupants will discuss (explain) the need of new materials and technologies in Building EE and through the use in real buildings the value of each solution will be feed back to the R&D institutes.
▪ Does the information need to be demonstrated practically?	Yes, in order to have the real life experience of innovation and corresponding feedback from the implementation of the innovation, the practical demonstration is a necessity.
▪ Can the knowledge be stored for future reference in a central repository accessible to all the receiving value chain groups?	It is mandatory to store the knowledge for future reference and also in order to achieve solutions when the technology allows it.
5. Execute the knowledge transfer: Transfer the knowledge.	
▪ Invite the relevant knowledge providers and receivers to become actively engaged in the knowledge transfer process	Knowledge receivers: Occupant/ Gov/ PubA/ Build Manager/ Installer/ A&E Knowledge providers: R&D/ TechSol/
▪ Provide knowledge transfer tools that are easily available and easy to employ.	In order to drive the knowledge providers to effectively transfer their technology, guidelines addressed to them must be developed. These guidelines will act as a tool in order to let the R&D understand which are the needs of traditional workforce and the end users. The guidelines will be designed to be implemented in different type of activities such as: - videos in which the problems can be demonstrated, - Forums where the exchange of problems and solutions can be debated, - Webinars for the Academic Industry cooperation.

▪ Ensure that all agents are skilled enough to be able to use the knowledge transfer tool effectively.	R&D has to be in close cooperation with the market actors in order to identify market changes rapidly. To do that the market actors has to build up the communication ability.
▪ Promote the knowledge transfer mechanism.	Through the ee-WiSE Knowledge Transfer Framework.

B2. Increased interaction amongst research institutions.
Knowledge receivers: PubA/Gov **Knowledge providers:** R&D **Type of knowledge:** Cooperation for innovation **Solutions (D3.1)** - movement of academic staff between R&D institutions - creation of knowledge banks, - setting up of online forums, - organization of brokerage events for creating collaborative joint research activities on specific retrofitting topics

4. Knowledge transfer methods: Determine how the knowledge will be transferred	
▪ What is the best method for the knowledge transfer considering the knowledge being dealt with?	The best method is the attendance to expo fairs, where R&D institutes can attend and presents there research. It also applies the creation of knowledge banks, creation of online forums in order that R&D institutes get in touch with the innovation produced in other R&D institutes, and clustering efforts amongst them.
▪ Does the information need to be demonstrated practically?	All the results from R&D institutes need to be presented practically.
▪ Can the knowledge be stored for future reference in a central repository accessible to all the receiving value chain groups?	The knowledge that is generated from R&D institutes has to be stored in a central repository, and to be accessible from other actors in the value chain.
5. Execute the knowledge transfer: Transfer the knowledge.	
▪ Invite the relevant knowledge providers and receivers to become actively engaged in the knowledge transfer process	**Knowledge receivers:** PubA/Gov **Knowledge providers: R&D** **Best Practices EDEA, ENEA**
▪ Provide knowledge	In order to drive the knowledge providers to effectively transfer

transfer tools that are easily available and easy to employ.	their technology, guidelines addressed to them must be developed. These guidelines will act as a tool to disseminate and to make available to the rest of the academic and research community the outcomes of the research. The guidelines will be designed to be implemented in different type of activities such as: videos, podcasts, Forums, Webinars.
▪ Ensure that all agents are skilled enough to be able to use the knowledge transfer tool effectively.	All agents involved in this need should have the same background and the same skills; however it must be considered that R&D institutes are growing in multi-disciplinary approaches.
▪ Promote the knowledge transfer mechanism.	Through the ee-WiSE Knowledge Transfer Framework.

B3. Clustering within the retrofit market to provide integrated solutions.

Knowledge receivers: Occupant/Installer/ Gov/PubA/ Build Manage/ RenewEn/ EDist

Knowledge providers: TechSol/R&D/Manufacturer/

Type of knowledge: Cooperation for integrated solutions

Solutions (D3.1)

- Create regional networking of companies working in retrofitting innovation.

4. Knowledge transfer methods: Determine how the knowledge will be transferred	
▪ What is the best method for the knowledge transfer considering the knowledge being dealt with?	One of the best methods could be forums, Webinars; Videos where experts from industry will discuss (explain) new products, installation procedures to craftsmen, Exhibition where the products can be displayed, and training courses.
▪ Does the information need to be demonstrated practically?	This Specific need is the most crucial and has to be practical demonstrated in order to achieve the maximum knowledge transfer between Value chain actors and groups.
▪ Can the knowledge be stored for future reference in a central repository accessible to all the receiving value chain groups?	Yes the knowledge generation from Clustering can be stored centrally in order to identify the networking paths. The integrated solutions also have to be stored in a central repository system and to be available to all value chain groups.
5. Execute the knowledge transfer: Transfer the knowledge.	
▪ Invite the relevant knowledge providers and receivers to become actively engaged in the	Knowledge receivers: Occupant/Installer/ Gov/PubA/ Build Manage/ RenewEn/ EDist Knowledge providers: TechSol/R&D/Manufacturer

knowledge transfer process	Best practice: Case study : AID system for Thermal Refurbishment of Social Housing Stock in Champagne Ardennes Region; Case Study: Arte Genova Pilot Via Sertoli,9- Shelter Project
▪ Provide knowledge transfer tools that are easily available and easy to employ.	In order to drive the knowledge providers to effectively transfer their technology, guidelines addressed to them must be developed. The guidelines will be designed to be implemented in different type of activities such as: videos podcasts forums and training material regarding the use of the proposed solution Case study: AID system for Thermal Refurbishment of Social Housing Stock in Champagne Ardennes Region- Identifications of needs; Implementation of the partnership, Support to project managers, Financial Engineering, Funding and monitoring of project. Case Study: Arte Genova Pilot Via Sertoli,9- Shelter Project: maintain the thermal comfort conditions inside the units; reduce heat loss; assess, the energy efficiency of each dwelling.
▪ Ensure that all agents are skilled enough to be able to use the knowledge transfer tool effectively.	For each value chain group a different learning curriculum has to be implemented based on the agents Skills.
▪ Promote the knowledge transfer mechanism.	Through the ee-WiSE Knowledge Transfer Framework.

3.5. Knowledge Transfer to exploit R&D findings (Task 4.5)

A1. Training of traditional craftsmen on EE retrofitting innovations.	
Knowledge receivers: Installers, A&E. **Knowledge providers:** R&D, Manufacturers, Tech. Sol, A&E, Renew. En, Software. **Type of knowledge:** **Solutions (D3.1)** - Expose the traditional craftsmen to demonstration projects. - tools for the home-owner and traditional craftsmen for the decision making	
4. Knowledge transfer methods: Determine how the knowledge will be transferred	
▪ What is the best method for the knowledge transfer considering the knowledge being dealt with?	The best method must be a practical activity where traditional craftsmen can experience in person the whole process of the innovative technology, from the installation to the final use and benefits. Experimental buildings are the perfect living lab where this activity can take place. The resources and materials that experimental building projects provide to disseminate results will

	suppose also tools to implement this KT.
▪ Does the information need to be demonstrated practically?	Yes. The dissemination of innovative technologies through experimental building projects will reach craftsmen properly.
▪ Can the knowledge be stored for future reference in a central repository accessible to all the receiving value chain groups?	Yes. The agents that develop EE technologies (R&D, Manufacturers, Tech. Sol, A&E, RenewEn, and Software.) should provide an easy-understanding content of the technology, not only for the traditional craftsmen level, but also for the end users.
5. Execute the knowledge transfer: Transfer the knowledge.	
▪ Invite the relevant knowledge providers and receivers to become actively engaged in the knowledge transfer process	Agents involved are: - Receivers: Installers. - Providers: R&D, Manufacturers, Tech. Sol, Software.
▪ Provide knowledge transfer tools that are easily available and easy to employ.	The tools will have the following features: - Will be related to Experimental Building Projects, thus the exploitation of their buildings and tools to disseminate results is necessary. - Will be linked to training programmes for traditional craftsmen. - Will be accessible to knowledge providers who are, not associated to the projects, in order to provide an easy tool to expose their technology. In order to drive the knowledge providers to effectively transfer their technology, guidelines addressed to them must be developed. The craftsmen also need to be provided with guidelines to inform to the end user about the features of the technology learned to avoid transferring incorrect information.
▪ Ensure that all agents are skilled enough to be able to use the knowledge transfer tool effectively.	- Very specific technical language must be avoided in the dissemination to craftsmen. - Providers and receivers will be able to validate the tool after its use.
▪ Promote the knowledge transfer mechanism.	Through the ee-WiSE Knowledge Transfer Framework.

C4. When communicating research results, more focus needs to be given to practical benefits of the retrofit technology.	
Knowledge receivers: Occupants, Build. Manage, Installers, A&E. **Knowledge providers:** Pub. A., R&D, Tech. Sol, ESCO, Manufacturer, Renew. En, A&E. **Type of knowledge:** Scientific (focusing on practical benefits) **Solutions (D3.1)** - Readily available information from product and technology data sheets. - Knowledge sharing events (encouraged by admin) where the owners and supporting agents of the new retrofit technologies will have the opportunity to present the results of the new technology advances to the rest of the value chain.	
4. Knowledge transfer methods: Determine how the knowledge will be transferred	
▪ What is the best method for the knowledge transfer considering the knowledge being dealt with?	- The best method is translating the information sheet provided with the technology to an additional version addressed to end users in terms of economical savings and comfort. - Sharing events can be considered the best way Public Administrations can carry out the transfer of research results (especially when these come from public funding), involving active participation of owners experimenting EE technologies (especially the ones who benefited from a subsidy). - Additionally, experimental buildings can be the arena of interpretation centres for society, were occupants will be able to visit and experience themselves the technologies installed.
▪ Does the information need to be demonstrated practically?	Yes. Practical benefits will be collected from real life testing. For this aim, experimental buildings and owners experience will provide the source.
▪ Can the knowledge be stored for future reference in a central repository accessible to all the receiving value chain groups?	Yes, as practical benefits' sheets.
5. Execute the knowledge transfer: Transfer the knowledge.	
▪ Invite the relevant knowledge providers and receivers to become actively engaged in the knowledge transfer process	Agents involved are: For the product information sheet method: - Receivers: Occupants, Build. Manage, Installers, A&E. - Providers: R&D, Tech. Sol, Manufacturer, Renew. En, ESCO. For the sharing event method:

	- Receivers: Occupants, Build. Manage, Installers, A&E. - Providers: R&D, Tech. Sol, ESCO, Manufacturer, Renew. En, Occupants, Build. Manage, Installers, A&E. The Public Administration will act as a driver to assist on the sharing event definition.
▪ Provide knowledge transfer tools that are easily available and easy to employ.	The tools will have the following features: - Will be related to Experimental Building Projects, so that the retrofit technologies providers will obtain the practical benefit input from the building testing and expose it. - Will establish as an essential duty after a technology is installed, to gather owners' impressions to present them in terms of economic savings and comfort. - ESCOs can conduct the exposition of owners' impressions on their own while another option is a dual team presentation of owner and the solution provider.
▪ Ensure that all agents are skilled enough to be able to use the knowledge transfer tool effectively.	- Very specific technical language must be avoided when translating experiences from experimental buildings. - For the sharing event, the owners that can clearly manifest the benefits of the technology will be identified.
▪ Promote the knowledge transfer mechanism.	Through the ee-WiSE Knowledge Transfer Framework.

C2. Real-life evaluation of research results.
Knowledge receivers: R&D, Tech. Sol, Manufacturer, Certificate, LCA, Pub. Ad., Occupants, Build. Manage, Installers, A&E. **Knowledge providers:** R&D, Tech. Sol, Manufacturer, Certificate, LCA, Pub. Ad., Finance, PO. **Type of knowledge:** Scientific **Solutions (D3.1)** - Exposing the advances of the research activity to the end users through a stock of buildings that can be used for real-life testing.
4. Knowledge transfer methods: Determine how the knowledge will be transferred

▪ What is the best method for the knowledge transfer considering the knowledge being dealt with?	By means of the Public Administration, EE technologies can be implemented in real life scenarios, so that the scientific knowledge travels back to the knowledge provides.

▪ Does the information need to be demonstrated practically?	Yes. A real-life testing directs to a practical activity.
▪ Can the knowledge be stored for future reference in a central repository accessible to all the receiving value chain groups?	Yes. There will be 2 types of knowledge for 2 types of agents: - Knowledge and Products providers: will be looking for the real-life result of their product. - Occupants: will be looking for the balance results of the benefits acquired in their houses.
5. Execute the knowledge transfer: Transfer the knowledge.	
▪ Invite the relevant knowledge providers and receivers to become actively engaged in the knowledge transfer process	Agents involved are: - Receivers: R&D, Tech. Sol, Manufacturer, Certificate, LCA, Pub. Ad., Occupants, Build. Manage, Installers, A&E. - Providers: R&D, Tech. Sol, Manufacturer, Certificate, LCA, Pub. Ad., Finance, PO. The Public Administration together with Financial entities will act as a driver to assist with additional real-life cases.
▪ Provide knowledge transfer tools that are easily available and easy to employ.	The tools will have the following features: - Provide real life cases: o Real-life experimental buildings: from experimental building projects. o Public buildings: that belongs to the Public Administration. o Residential buildings: from owners that have been encouraged through subsidies and reduced rates. - Will compare the scientific feedback obtained with the owners' impressions and present them to the scientific community and society.
▪ Ensure that all agents are skilled enough to be able to use the knowledge transfer tool effectively.	- Clear information should be given to the end user to persuade them to take part of the scientific evaluation experience.
▪ Promote the knowledge transfer mechanism.	Through the ee-WiSE Knowledge Transfer Framework.

C1. Scientists need to have increased contact with the end-users in order to understand the applicability of their research.	
Knowledge receivers: R&D, Tech. Sol. **Knowledge providers:** Installer, Manufacturer, Pub. A, Occupants. **Type of knowledge:** Communication skills **Solutions (D3.1)** - Training of scientists to improve their communication skills and ensure the recognition of communication efforts.	
4. Knowledge transfer methods: Determine how the knowledge will be transferred	
▪ What is the best method for the knowledge transfer considering the knowledge being dealt with?	Training of scientists to improve their communication skills is the best method to overcome this need. Training will suppose some assistance like guidelines and sheets or short questionnaires to gather feedback from end users.
▪ Does the information need to be demonstrated practically?	A practical experience, like a sharing event, will foster the communication between them. However it is not necessary to have a practical demonstration of communication experiences between R&D and end users.
▪ Can the knowledge be stored for future reference in a central repository accessible to all the receiving value chain groups?	Yes. The occupants' real experiences will be very constructive for the scientific community, and thus a public knowledge base will promote EE technologies based on real-life feedback.
5. Execute the knowledge transfer: Transfer the knowledge.	
▪ Invite the relevant knowledge providers and receivers to become actively engaged in the knowledge transfer process	Agents involved are: - Receivers: R&D, Tech. Sol. - Providers: Installer, Manufacturer, Pub. A, Occupants.
▪ Provide knowledge transfer tools that are easily available and easy to employ.	Easy available tools such as the platforms of experimental building projects should be considered as most of these are intended to interact with users, installers, manufacturers and public administrations, and they would be able to observe how the solution works in a friendly way.
▪ Ensure that all agents are skilled enough to be able to use the knowledge transfer tool effectively.	Ensure clear input from the end user to the R&D and the opposite when communicating about EE solutions.
▪ Promote the knowledge transfer mechanism.	Through the ee-WiSE Knowledge Transfer Framework.

3.6. Additional tools

3.6.1. Communication Plan for Society [Task 4.2]

The Communication Plan is to be used by public administration and similar entities that wish to communicate the benefits and solutions of EE retrofitting to the society.

Following the identified needs of the society, the objectives of the Communication Plan are three-fold:

1. Expose the end-users to the (latest) technological results,
2. Make sure that technical commercial advice disseminated to the end-users follows the Energy Performance of Buildings Directive (EPBD), and
3. Carry out Dissemination actions by following specific EC guidelines.

Based on the best practices and solutions, the following tools/actions are expected to produce the best possible outcomes:

- clearly define end-user/target groups
- transfer knowledge at cluster level (target groups)
- employ specific end-user mobilisation events and training / education actions,
- involve professional knowledge brokers,
- use, where possible, model (demo) solutions,
- follow / support face to face events and training actions with web and social media (newsletters, articles, blogs).

Ideally an EE Communication Plan should employ the following actions:

- End-User mobilisation Events and Training & Education Actions,
- Web-Portal, Social Media support actions, and
- Cluster / Regional EE Projects demonstrating Innovative Retro-Fit Actions.

1. End-User mobilisation Events and Training & Education Actions

Actions here will include info-days and workshops informing building occupants and owners about the latest technological solutions and trends in the EE retro-fitting market. These events will provide necessary information, but will also serve as the starting point for further actions mobilising users to take action and implement EE retro-fit solutions.

The mobilisation events and education actions should be organised with a help of professional knowledge brokers. They can be incorporated in local/ regional events, e.g. energy/ construction exhibitions, etc.

2. Web-Portal, Social Media support actions

The above face to face events should be supported with background material in a user-friendly and easily understandable format, as well as online discussion forums through an appropriate Web-Portal and popular Social Media.

3. Cluster / Regional EE Projects demonstrating Innovative Retrofit Actions

Real action, though will greatly be facilitated, through regional projects bringing different actors together (eg. regional R&D organisations, certification bodies, public authorities, financial organisations, energy providers, EE retro-fitting professionals and technology solution providers and end-users) to design, finance and implement, model EE retro-fit solutions in specific regions under the supervision and political / technical support of local authorities.

Such projects can be designed and implemented based on viable business models where the investment necessary is set against the future economic as well as environmental benefits. Especially now when the European Economies are in recession, such projects can help in reviving the otherwise dead construction industry in many European countries, increasing employment and economic activity.

Where regional EE retrofitting demonstration projects have already been implemented, their results should be disseminated and used in the previously described end-user mobilisation events, as real-life examples of the benefits of EE retrofitting.

4. ICT TRAINING TOOLS FOR LEARNING AND KNOWLEDGE SHARING

Bearing in mind the above analysis based on the previous Work packages of the ee-Wise project and the work that needs to be carried out throughout the forth-coming work packages, the following pages attempt to provide a parameter to the scope of the project that will assist the consortium on obtaining a clear view of the environment for the further development of the work.

The Knowledge Transfer based on training tools approach analyzed on the following pages, aims to become a valuable guide and be considered as a good practice to any organization or agent that intends to develop training material engaging, interesting and attractive for a specific target group according to their needs and expectations, while at the same time valorizing the new information and communication technologies (ICT) available on the world wide web to be used for education and informational activities.

In addition, an approach is made towards the key competencies – knowledge, skills and attitudes- that are necessary for personal fulfilment, development, social inclusion, active citizenship and employment, so as to assist the selection of the proper mechanisms and thus incorporating them into the final output of the project.

Furthermore, having looked upon the environment, the target group, and the needs analysis undertaken from the members of the consortium, the partnership must proceed to the selection of tools and methods that will achieve the ICT tools and the innovative new methods. A view on the advantages, disadvantages, as well as the needs and opinions of the potential learners is made to meet the above mentioned necessity. For this reason, this section concludes with an indicative and not exhaustive presentation of a list of ICT tools that are innovative, effective, awarded and widely accepted in order to assist the development of a learning process around new ICT means so as to promote effective knowledge transfer. Extensive information of the following material can be found in the Annex of deliverable 4.1.

4.1. Methodological background for ICT training tools

- Training Material for the KT needs will be used.
- Training Modules will be designed to be used based on the needs of the target group.
- Profiles and Target groups will be defined
- What aspects of matrix they are addressing will be determined.

The training approach should describe the overall educational framework in which the training process is developed, also to meet the needs of the selected target group as those have been derived through the online survey which is conducted by the partnership (Info deriving from the Questionnaire Analysis).

Since the training tools will be based on the use of the new ICT technologies, this implies the use of interactive learning. Interactive learning means interaction with the resources, readings and information for most of the respondents of the online survey. Also for the respondents another important aspect of the learning process should be the interaction with the tutor / instructor / trainer / facilitator.

Also, the following assumptions should be included when designing training tools focused on the specific target group:

- ✓ Knowledge transfer (transforming knowledge into experiential knowledge) is most effective by small-group consultations and simulation
- ✓ In the course of assessing knowledge significant need appears for immediate feedback, this can be achieved by using online interactive tools and tests
- ✓ Serious consideration should be given to the use of video material in the learning process, since it is considered an extremely appealing tools when describing technical issues

Another parameter that the training tools should take into consideration is the *learning characteristics of the adult learners*. Adults:

- ✓ Prefer to acquire knowledge through experience (Hands-on-job Training, Learning by doing)
- ✓ Prefer to learn with e-tools that offer high level of interactivity
- ✓ Prefer the whole experience should be as user friendly as possible and additionally to attract them, having in mind the demanding working schedule.

A specified framework must be designed in order to assist in achieving the learning goals set that also takes into consideration the adult learning characteristics described above. To do so, certain aspects of training theory must be taken into account, such as carefully designed training activities the learners will perform, selection of teaching models to be used as guidelines for the learning process, what resources will be available to the participants of the learning experience, etc. A most known and widely used framework is the one suggested by Robert Gagne, which categorizes the whole approach in 3 main categories: Analysis, Design and finally Evaluation [Figure 5].

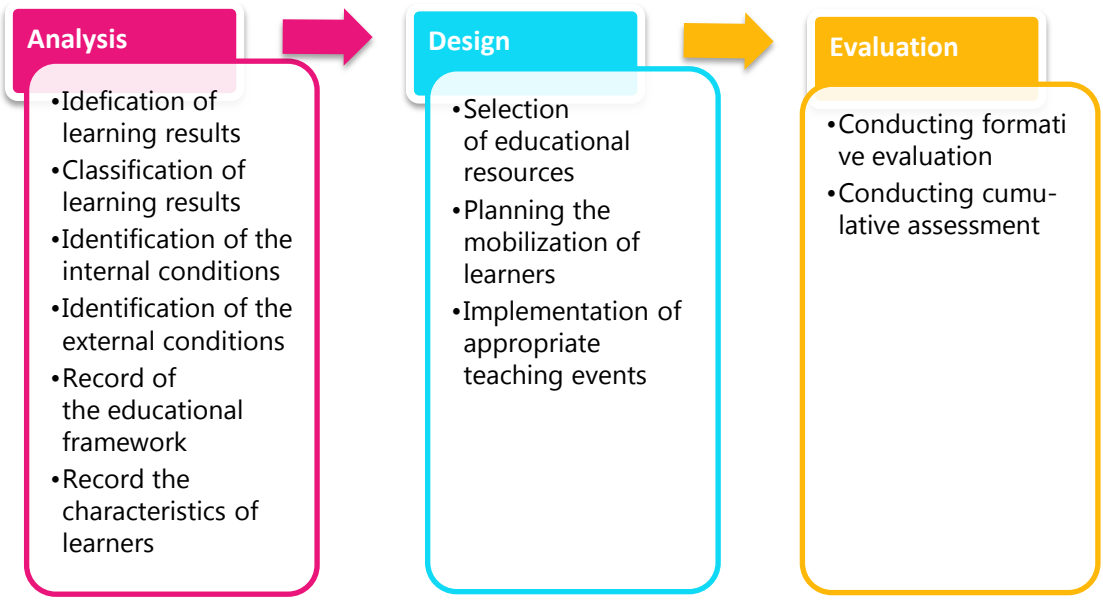

Figure 5: Robert Gagne's Instructional Design Model

Aiming to improve the engagement of learners which is the goal during the learning process, it is important to devote time, effort and thought to shape the environment and plan each class session/learning module taking into account the learning factor, information technology, personnel, general philosophy, educational schedule, etc with view to enhance the active participation of the learners whether in a classroom or through ICT tools.

4.1.1. Description of the Target group features

In order to properly define the learning goals of the training material, the special features of this target group have to be firstly identified. These features function as basic guidelines on how the learning objectives should be structured and thus developed accordingly. The features of the target group could be:

Cognitive features

In terms of cognitive features (knowledge) the adult learners have the following characteristics:

- ✓ Most likely they have basic knowledge of ICT literacy (how to turn on a PC, and navigate in the operating system and system folders)
- ✓ Their knowledge around sophisticated issues may vary
- ✓ The way they prefer to learn, varies
- ✓ The learners may have some knowledge of educational and social circumstances of the region they live in (due to their career choices)

Psychosocial features

Psychosocial features describe the socio-economical situation of a person as well as his / her beliefs, and the way of thinking. The adult learners have the following characteristics:

- ✓ The learners take part into a non-formal form of education
- ✓ The learners are precarious workers / part time workers / unemployed / entrepreneurs
- ✓ Their views about e-learning and technology in general, vary
- ✓ They are interested about cultural issues of the country they live in, as well as cultural issues and customs of other countries

Demographic features

When it comes to the demographics features analysis, the features that must be described are the mother language of the learner, her / his ethnic background, etc. In these terms the adult learners have the following characteristics:

- ✓ The way they prefer to learn, varies

Another parameter that needs to be include at the design phase of the training tools are the Key Competences and the learning objectives of each tool/ module.

4.1.2. Key Competences and learning objectives

Key competencies are not to be considered only for the young people, but for all ages and should be considered as well after the compulsory education and training, equipping them for working life, whilst forming a basis for further learning. Adults ought throughout their lives to indulge into a process of developing and updating their skills not only for business matters, but for their interpersonal development (lifelong learning). The training tools should be formed in such a way that the learners by the end of the learning process will have acquired those key competences that are needed in the labor market, in a way that is extremely appealing and interesting for them.

Key Competences

The acquisition of key competences fits in with the principles of equality and access for all. The EU reference framework also applies in particular to disadvantaged groups whose educational potential requires support. Examples of such groups include people with low basic skills, early school leavers, the long-term unemployed, people with disabilities, immigrants, elderly people, women who have left the professional field and re-enter after a long period, etc.

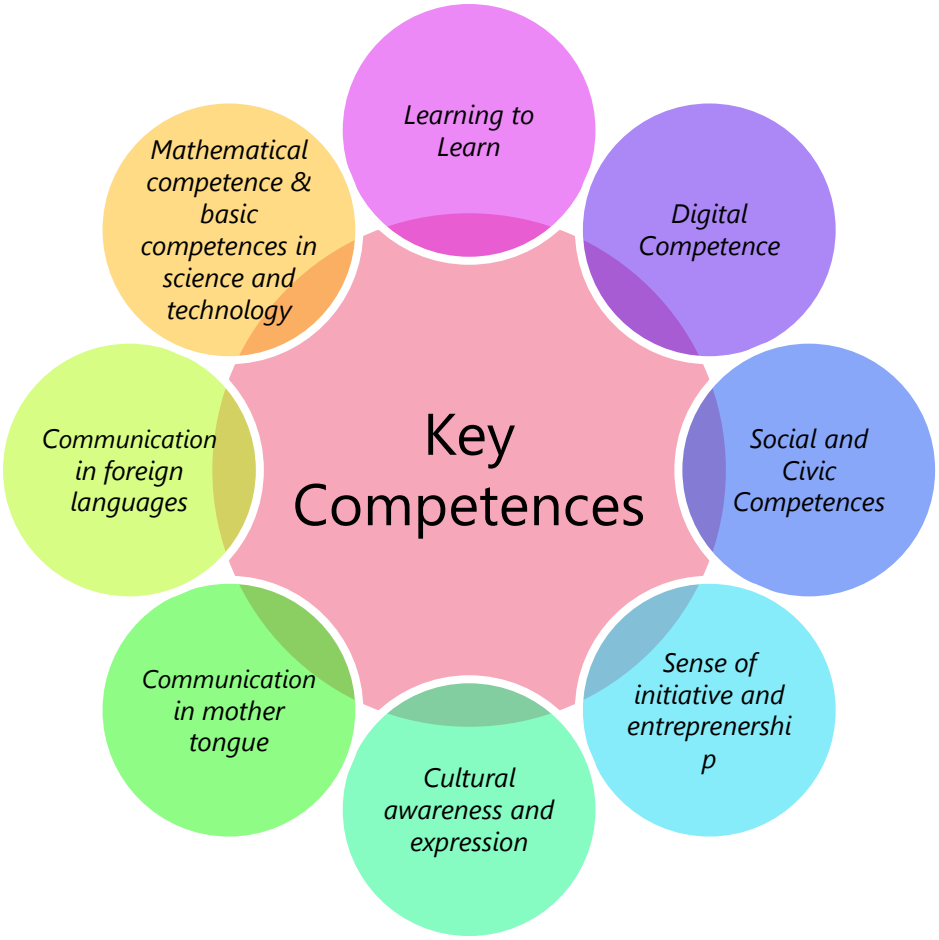

Figure 6: The 8 Key Competences

These key competences are all interdependent, and the emphasis in each case is on critical thinking, creativity, initiative, problem solving, risk assessment, decision taking and constructive management of feelings. These key competences provide a reference framework to support National and European efforts to achieve the objectives they define. This framework is mainly intended for policy makers, education and training providers, employers and learners. The status of the above stated Key Competencies is not obligatory, but rather is to be used as a reference by all EU Member States and their education and training organizations and actors in their effort to:

- ✓ Provide a basis for future learning: initial education and training offer all young people the means to develop the key competences to a level that equips them for adult and working life
- ✓ Offer the appropriate provision to young disadvantaged people in their training so that they can fulfil their educational potential
- ✓ Possibility to adults to develop and update their key competences throughout their lives, particularly priority target groups

- ✓ Provide the necessary infrastructure for continuing education and training of adults
- ✓ Ensure access to education and training and the labor market though suitable measures and that there is support for learners depending on their specific needs and competences
- ✓ Achieve coherence of adult education and training provision through close links between the policies concerned.

Learning Objectives Classification

As in every training exercise, in the proposed one as well, the results should be quantifiable, so to examine whether or not they have been achieved and consequently the necessary improvement actions to be undertaken. The most common and easy way is the segmentation of the whole course in learning objectives, which are located in three basic domains. Those three domains are: the cognitive, the affective and the psycho motor domain. The goals are described below, which the learners must achieve in those thematic sectors by the end of the training approach.

1. Learning objectives aimed at the Cognitive domain: In this segment the learning goals should be described in terms of mental skills (Knowledge).

2. Learning objectives aimed at the Affective domain: In this segment the learning goals should be described in relation to feelings or emotional areas (Attitude).

3. Learning objectives aimed at the Psychomotor domain: Lastly, in this segment the learning goals have to be described in terms of manual or physical skills (Skills).

4.2. Analysis of ICT tools with collaboration activities

- For each of the training tools what collaboration can exist
- If they do not allow collaboration why not and if they can be extended, how

4.2.1. ICT-based tools and methods used widely in learning approaches

This section approaches the various Information and Communication Technologies used in the learning process with different ways, but always to achieve the same goal. Each table describes and presents each one of the means, how it is used, presents the advantages and disadvantages and finally its correlation to the Key Competencies as they were recognised at EU level.

"Video in learning courses"

Title:	**"Video in ICT learning courses"**
Description	
Video can be used as a great compliment to almost all of ICT based learning courses. Some of the ways that video can be used in the courses are: · Narration · Vignettes of experts providing advice/tips as it relates to the course's content · Showing role-plays · Simulations, etc.	

Advantages (+)	Disadvantages (-)
· Interesting · Direct approach · Engaging · Asynchronous e-learning · More concentrated knowledge · Requires low familiarity with ICT · Can offer simulation of real life experiences	· Technical issues (different formats, size, etc) · Passive interaction · Requires stable internet connection · Requires extra time to be prepared · Requires extra time to set the learning material and content
Competencies acquired	
· Communication in the mother tongue · Communication in foreign languages · Digital Competence · Learning to Learn · Cultural awareness and expression	
Required skills to develop video learning courses	**Required knowledge to develop video learning courses**
· *communication skills to* discuss the necessary processes, understand and follow instructions · *learning skills to* improve techniques for producing video art through practice and respond appropriately to requirements · *planning and organizing skills to* prepare and set up resources and work space · *self-management skills to* set own skill development goals	· *technological background and competencies*, so as to efficiently select proper materials, tools and equipment commonly used for video art · knowledge of learning material and methods that shall be combined for the proper result · major styles of video art and the work of key practitioners relevant to individual area · intellectual property considerations for any person making creative work · ways of minimizing waste in the use of video art technologies
Required skills and competences to attend video learning courses	
· Familiarity with the tools and technology required · Ability to adjust to innovations · Efficient physical ability of seeing and hearing	
Best Practices	
Videolectures.net, ocw.mit.edu	
Videos related to energy efficient retrofitting	
http://www.youtube.com/watch?v=GMW5Lrg9VmM http://www.youtube.com/watch?v=3bR9Derxxog http://www.youtube.com/watch?v=96WqrcK2OmM http://www.youtube.com/watch?v=EMdZr-TAga0 http://www.youtube.com/watch?v=bubzyD0tuoI http://www.youtube.com/watch?v=XNCMwhYKdtM http://www.youtube.com/watch?v=Hkg-8H17sck	

"Simulation"

<table>
<tr><th>Title:</th><th colspan="2">"Simulation"</th></tr>
<tr><td>Description</td><td colspan="2"></td></tr>
<tr><td colspan="3">A simulation in the learning process is a reproduction of an event / situation. Simulations can be produced in all fields through computer games, role-plays, or building models. Provides an immersive learning experience, is suitable for people with disabilities is suitable for all people with different cultural backgrounds.</td></tr>
<tr><td colspan="2">Advantages (+)</td><td>Disadvantages (-)</td></tr>
<tr><td colspan="2">· Cost effective
· Friendly to trainer and trainee
· Offers real life experiences
· Fun
· Trainee works at his/hers own pace
· No programming skills required (plenty of available software)
· Self-teaching through self-discovery
· Easy soft skills training
· Appealing
· Can be used for people with disabilities</td><td>· Time consuming
· No social interaction (person to computer, instead of person to person)</td></tr>
<tr><td colspan="3">Competencies acquired</td></tr>
<tr><td colspan="3">· Communication in the mother tongue
· Communication in foreign languages
· Digital Competence
· Learning to Learn
· Cultural awareness and expression
· Social and civic competences
· Sense of initiative and entrepreneurship</td></tr>
<tr><td>Required skills to develop simulation learning courses</td><td colspan="2">Required knowledge to develop simulation learning courses</td></tr>
<tr><td>· communication skills to efficiently understand and reproduce required processes
· learning skills to continuously improve techniques for simulation processes and respond appropriately to feedback on own work
· planning and organizing skills to prepare and set up resources and work space
· self-management skills to set own skill development goals</td><td colspan="2">· technological background and competencies, so as to efficiently select proper tools and utilize all available features
· deep knowledge of learning material and methods that shall be combined for the proper result
· typical work space and equipment requirements for the production of courses
· intellectual property considerations for any person making creative work</td></tr>
<tr><td colspan="3">Required skills and competences to attend simulation learning courses</td></tr>
</table>

· Familiarity with the tools and technology required · Ability to adjust to innovations
Best Practices OpenSimulator.org OpenWonderland.org Edusim3d.com OpenCobalt.org
Simulation related to energy efficient retrofitting
http://apps1.eere.energy.gov/buildings/energyplus/

"Audio in learning"

Title:	"Audio in learning"
Description	
Audio in learning can be used in various forms (audio books, audio snippets, etc) and it makes it easy for example to take multiple books with wherever you go. Audio learning allows you to finally "read" all material wanted but never had the time for.	
Advantages (+)	**Disadvantages (-)**
· Less expensive · Higher assimilation · Improvement of listening, speaking & comprehension skills · Increased interest · Mobility · Convenience · Increased spatial intelligence · Easily accessible	· Poor & passive interaction skills · Lack of self-assessment of the learning process, with the exception of language learning · Low or no collaboration · Requires high degree of discipline
Competencies acquired	
· Communication in the mother tongue · Communication in foreign languages · Digital Competence · Learning to Learn · Social and civic competences · Cultural awareness and expression	
Required skills to develop audio-based learning courses	**Required knowledge to develop audio-based learning courses**
· great level of oral communication skills · learning skills to continuously improve techniques and utilize proper respond appropriately to feedback on own work · planning and organizing skills to prepare and set up resources and	· technological background and competencies, so as to efficiently select proper tools and utilize all available features · deep knowledge of learning material and methods that shall be combined for the proper result · typical work space and equipment

work space · self-management skills to set own skill development goals	requirements for the production of courses · intellectual property considerations for any person making creative work
Required skills and competences to attend audio-based learning courses	
· Efficient physical ability of hearing · Familiarity with the tools and technology required	
Best Practices	
Audacity.net Power Sound Editor	

"Podcasts" (audio lectures)

Title:	"Podcasts" - (audio lectures)
Description	
Same as the previous section.	
Advantages (+)	**Disadvantages (-)**
· Portability – mobility · Convenience · Asynchronous learning · No extensive technical knowledge · Always available · More attractive than reading · Suitable for visually challenged people	· Passive interaction skills · No image provision · Requires extra time to be properly produced
Competencies acquired	
· Communication in the mother tongue · Communication in foreign languages · Digital Competence · Learning to Learn · Social and civic competences · Cultural awareness and expression	
Required skills to develop podcasts	**Required knowledge to develop podcasts**
· great level of oral communication skills · learning skills to continuously improve techniques and utilize proper respond appropriately to feedback on own work · planning and organizing skills to prepare and set up resources and work space · self-management skills to set own	· technological background and competencies, so as to efficiently select proper tools and utilize all available features · deep knowledge of learning material and methods that shall be combined for the proper result · typical work space and equipment requirements for the production of courses

skill development goals	· intellectual property considerations for any person making creative work
Required skills and competences to attend podcasts	
· Efficient physical ability of hearing · Familiarity with the tools and technology required	
Best Practices	
Juice Receiver Podcast Generator	
Podcasts related to energy efficient retrofitting	
https://itunes.apple.com/cy/podcast/hph039-planning-phased-retrofit/id548674350?i=224483719&mt=2 https://itunes.apple.com/cy/podcast/u.k.-green-investment-bank/id351439388?i=131112192&mt=2 https://itunes.apple.com/cy/podcast/new-business-opportunities/id274303095?i=229740856&mt=2 https://itunes.apple.com/cy/podcast/link-between-dsm-wind-energy/id274303095?i=62213156&mt=2	

"e-learning courses" (synchronous, asynchronous)

Title:	"e-learning courses" - (synchronous, asynchronous)
Description	
e-learning described in a short phrase is a continuum of learning processes and practices enhanced by Information and Communication Technologies (ICT), in order to improve the quality of learning". **Synchronous Learning** In the Synchronous Learning the trainee participates in real time learning via an intranet or the Internet. **Asynchronous Learning** In Asynchronous training the trainer can prepare the educational materials and store it to an electronic medium (LCMS/LMS), while afterwards the learner can take the learning material anywhere and at any time he / she chooses to. **Blended Learning** Finally, the term Blended learning describes the learning model of learning which implements both asynchronous communication technologies and conventional education structures. In this model of learning, learners usually begin the education process at conventional educational structures and then access content and communicate with the trainer using Internet technologies.	
Advantages (+)	**Disadvantages (-)**
· Asynchronous learning · Convenience · Cost effective · Increased availability of educational opportunities · No commuting · Self-paced knowledge	· Self-discipline · Basic ICT literacy · Internet access and equipment · Not suitable for all science subjects (e.g. nursing clinicals) · Social isolation

· Personalized education material · Synchronized and updated information · Increased collaboration between instructor and learners · Less intimidating – risk free environment · Learn while working · Ongoing access to resources · Increased retention · Easily managed	
Competencies acquired	
· Communication in the mother tongue · Communication in foreign languages · Mathematical competence and basic competences in science and technology · Digital Competence · Learning to Learn	
Required skills to develop asynchronous learning courses	**Required knowledge to develop asynchronous learning courses**
· communication skills to efficiently reproduce educative processes through technological means · learning skills to continuously improve techniques and combine them appropriately · planning and organizing skills to prepare and set up resources and work space so as to achieve proper results in good time · self-management skills to set own skill development goals	· technological background and competencies, so as to efficiently select proper tools and utilize all available features · deep knowledge of learning material and methods that shall be combined for the proper result · typical work space and equipment requirements for the production of courses · intellectual property considerations for any person making creative work
Required skills and competences to attend asynchronous learning courses	
· Efficient web access through internet or intranet · Familiarity with the tools and technology required	
Best Practices Moodle.org	

Mobile learning (mlearning)

<table>
<tr><th>Title:</th><th colspan="2">“Mobile learning” (mlearning)</th></tr>
<tr><td>Description</td><td colspan="2"></td></tr>
<tr><td colspan="3">The term mLearning, or "mobile learning" covers: learning with portable technologies including but not limited to handheld computers, MP3 players, notebooks, tablets and mobile phones. mlearning focuses on the mobility of the learner, interacting with portable technologies, and learning that reflects a focus on how society and its institutions can accommodate and support an increasingly mobile population.</td></tr>
<tr><td colspan="2">Advantages (+)</td><td>Disadvantages (-)</td></tr>
<tr><td colspan="2">· Portable – mobility
· Immediate application of knowledge
· No commuting
· Convenience
· Support of rich media (when necessary)
· Easy access to expertise
· Interaction
· Synchronized and updated information
· Engaging
· Quick access to resources
· Addictive
· New trend with increased human resources to its development</td><td>· Fragmented learning experience – distractions
· Lack of self-assessment of the learning process (at this point)
· Usability (small screens, access to internet connection)
· Expensive equipment (smartphones, tablets, goggles, etc)
· Protection and security issues (personal data)
· High ICT literacy – adaptability
· Increased cost & effort for proper educational material</td></tr>
<tr><td colspan="3">Competencies acquired</td></tr>
<tr><td colspan="3">· Digital Competence
· Learning to Learn</td></tr>
<tr><td colspan="2">Required skills to use mobile learning</td><td>Required knowledge to use mobile learning</td></tr>
<tr><td colspan="2">· communication skills to efficiently reproduce educative processes through mobile technologies
· learning skills to continuously improve techniques and combine them appropriately
· planning and organizing skills to prepare and set up resources and work space so as to achieve proper results in good time
· self-management skills to set own skill development goals</td><td>· technological background and competencies, so as to efficiently select proper tools and utilize all available features
· deep knowledge of learning material and methods that shall be combined for the proper result
· typical work space and equipment requirements for the production of courses
· intellectual property considerations for any person making creative work</td></tr>
<tr><td colspan="3">Required skills and competences to attend mobile learning</td></tr>
<tr><td colspan="3">· Efficient web access through internet or intranet
· Familiarity with the tools and technology required</td></tr>
</table>

Best Practices
mole-project

"Educational Games"

Title:	"Educational Games"
Description	
Educational games are games that have been designed and created to teach people about a certain subject, expand concepts, reinforce development, understand a historical event or culture, or assist them in learning a skill (competence) as they play.	
Advantages (+)	**Disadvantages (-)**
· Engaging to all ages · Promote teamwork & cooperative creative endeavor · Practice problem-solving skills, creative thinking & cognitive processing · Encourage cooperative & competitive behavior · Increase short and long-term memory · Relaxing · Preparation for the real world (too expensive to reproduce in classroom) · Knowledge remains	· Social isolation · Addictive · Poor social interaction skills · Retain learning in favor of finishing the game · Expensive to produce
Competencies acquired	
· Communication in the mother tongue · Communication in foreign languages · Mathematical competence and basic competences in science and technology · Digital Competence · Learning to Learn · Cultural awareness and expression	
Required skills to develop Educational Games	**Required knowledge to develop Educational Games**
· good level of creativity and imagination, in order to efficiently reproduce educative processes through gaming technologies · learning skills to continuously improve techniques and combine them appropriately · planning and organizing skills to prepare and set up resources and work space so as to achieve proper results in good time	· technological background and competencies, so as to efficiently select proper tools for development and utilize all available features · deep knowledge of learning material and methods that shall be combined with gaming techniques for the proper result · typical work space and equipment requirements for the production of courses

· self-management skills to set own skill development goals	· intellectual property considerations for any person making creative work
Required skills and competences to attend Educational Games	
· Familiarity with the tools and technology required · Adjustment to innovations	
Best Practices	
Scratch	
Educational Games related to energy efficient retrofitting	
http://www.ngridenergyworld.com/eew/	

"Augmented Reality applications & software, Virtual Reality worlds"

Title:	"Augmented Reality applications & software", "Virtual Reality worlds"
Description	
Augmented Reality (AR) is a term for a live direct or indirect view of a physical, real-world environment whose elements are augmented by computer-generated sensory input such as sound, video, graphics or GPS data. It is related to a more general concept called mediated reality, in which a view of reality is modified (possibly even diminished rather than augmented) by a computer. The technology functions by enhancing one's current perception of reality. **Virtual reality (VR)** is a term that applies to computer-simulated environments that can simulate physical presence in places in the real world, as well as in imaginary worlds. Most current virtual reality environments are primarily visual experiences, displayed either on a computer screen or through special stereoscopic displays, but some simulations include additional sensory information, such as sound through speakers or headphones.	
Advantages (+)	**Disadvantages (-)**
· Engaging to all ages · Addictive · Practice problem-solving skills, creative thinking & cognitive processing · Knowledge remains · Increase short and long-term memory · Preparation for the real world (too expensive to reproduce in classroom) · Highly interesting environment	· Increased cost & effort for proper educational material · Digital literacy · Expensive equipment
Competencies acquired	
· Communication in the mother tongue · Communication in foreign languages · Digital Competence · Learning to Learn · Social and civic competences · Cultural awareness and expression	

Required skills to develop Augmented Reality applications & software, Virtual Reality worlds	**Required knowledge to develop Augmented Reality applications & software, Virtual Reality worlds**
· good level of creativity and imagination, in order to efficiently reproduce educative processes through real-world environments · learning skills to continuously improve techniques and combine them appropriately · planning and organizing skills to prepare and set up resources and work space so as to achieve proper results in good time · self-management skills to set own skill development goals	· technological background and competencies, so as to efficiently select proper tools for development and utilize all available features · deep knowledge of learning material and methods that shall be combined with real – world simulation techniques for the proper result · typical work space and equipment requirements for the production of courses · intellectual property considerations for any person making creative work
Required skills and competences to attend Augmented Reality applications & software, Virtual Reality worlds	
· Familiarity with the tools and technology required · Adjustment to innovations	
Best Practices	
OpenSGToolbox	

"Communication Tools"

Title:	"Communication tools"
Description	
Communication tools can be considered as every tool, software, application etc that provides direct audio or/and video connection between the trainers and the trainees, in addition, the same tools can offer communication between the group of trainees for collaborative sessions.	
Advantages (+)	**Disadvantages (-)**
· Less expensive · Direct · Improvement of listening, speaking & comprehension skills · Convenience · No extensive technical knowledge · Suitable for visually challenged people · Personalised · Increased collaboration between instructor and learners · Risk free environment · Interaction	· Requires one trainer per trainee · Increased time for the trainer compared to classes ·

· Encourage cooperative behavior	
Competencies acquired	
· Communication in the mother tongue · Communication in foreign languages · Digital Competence · Social and civic competences	
Required skills to develop courses based on Communication tools	**Required knowledge to develop courses based on Communication tools**
· good level of oral and writing communication skills · ability to adjust and correspond immediately · learning skills to continuously improve techniques and combine them appropriately · planning and organizing skills to prepare and set up resources and work space so as to achieve proper results in good time · self-management skills to set own skill development goals	· technological background and competencies, so as to efficiently select proper tools for development and utilize all available features · deep knowledge of learning material and methods that shall be combined with real – time communication tools · typical work space and equipment requirements for the production of courses
Required skills and competences to attend courses based on Communication tools	
· Efficient web access through internet or intranet · Familiarity with the tools and technology required · Good ability to cooperate	
Best Practices	
Openmeetings	

"Blog-based learning, social networking sites, community portals"

Title:	"Blog-based learning", "social networking sites", "community portals"
Description	
Blogs, social networking sites and community portals all have in common one thing: they are all available online. **Blogs** are websites that host frequent posts and can be of any subject, the material included is mostly text, audio, video, presentations, etc and are very easy to navigate through. **A social network** is a social structure made up of individuals (or organizations) called "nodes", which are tied (connected) by one or more specific types of interdependency, such as friendship, kinship, common interest, financial exchange, dislike, sexual relationships, or relationships of beliefs, knowledge or prestige. **Community portal or links page** is a web site that functions as a point of access to information in the World Wide Web. A portal presents information from diverse sources in a	

unified way. Apart from the standard search engine feature, web portals offer other services such as e-mail, news, stock prices, information, databases and entertainment.	
Advantages (+)	**Disadvantages (-)**
· Asynchronous · Convenience · Cost effective · Self-paced knowledge · Personalized education material · Updated information · Ongoing access to resources	· Basic ICT literacy · Internet access and equipment · Social isolation · indirect
Competencies acquired	
· Communication in the mother tongue · Communication in foreign languages · Digital Competence · Learning to Learn · Social and civic competences	
Required skills to develop courses based on "Blog-based learning", "social networking sites", "community portals"	**Required knowledge to develop courses based on "Blog-based learning", "social networking sites", "community portals"**
· good level of writing communication skills · ability to adjust and correspond to in multicultural ways · learning skills to continuously improve techniques and combine them appropriately · planning and organizing skills to prepare and set up resources and work space so as to achieve proper results in good time · self-management skills to set own skill development goals	· technological background and competencies, so as to efficiently select proper tools for development and utilize all available features · deep knowledge of learning material and methods that shall be combined with social networking communication tools · typical work space and equipment requirements for the production of courses
Required skills and competences to attend courses based on "Blog-based learning", "social networking sites", "community portals"	
· Efficient web access through internet or intranet · Familiarity with the tools and technology required · Good ability to cooperate · Proper social behaviour	
Best Practices	
WordPress	
Blogs and articles related to energy efficient retrofitting	
http://www.washingtonpost.com/blogs/wonkblog/wp/2013/02/13/u-s-homes-are-getting-more-efficient-but-still-use-just-as-much-energy/ http://energy.gov/articles/energy-saver-101-infographic-home-heating http://www.energyefficiencymatters.org/#	

"Wiki Tools"

Title:	"Wiki Tools"
Description	
A wiki is a website that allows the creation and editing of any number of interlinked web pages via a web browser using a simplified markup language or a WYSIWYG text editor. Wiki tools have a great way of assisting the learning experience and overall offer a solid support towards the ones that chose to use them.	
Advantages (+)	**Disadvantages (-)**
· Anyone can edit · Easy to use and learn · Wikis are instantaneous so there is no need to wait for a publisher to create a new edition or update information · People located in different parts of the world can work on the same document · The wiki software keeps track of every edit made and it's a simple process to revert back to a previous version of an article · Widens access to the power of web publishing to non-technical users · The wiki has no predetermined structure - consequently it is a flexible tool which can be used for a wide range of applications · There are a wide range of open source software wiki's to choose from so licensing costs shouldn't be a barrier to installing an institutional wiki	· Anyone can edit so this may be too open for some applications, for example confidential documentation. However it is possible to regulate user access · Open to SPAM if not managed properly · Requires Internet connectivity to collaborate · The flexibility of a wiki's structure can mean that information becomes disorganized · The usual guidelines for healthy computer use apply
Competencies acquired	
· Digital Competence · Learning to Learn · Cultural awareness and expression	
Required skills to develop courses based on Wiki Tools	**Required knowledge to develop courses based on Wiki Tools**
· good level of writing communication skills · learning skills to continuously improve techniques and combine them appropriately · planning and organizing skills to prepare and set up resources and work space so as to achieve proper	· technological background and competencies, so as to efficiently select proper tools for development and utilize all available features · deep knowledge of learning material and methods that shall be combined with cooperative tools · intellectual property considerations

results in good time · self-management skills to set own skill development goals	for any person making creative work
Required skills and competences to attend courses based on Wiki Tools	
· Efficient web access through internet or intranet · Familiarity with the tools and technology required · Good ability to cooperate · Proper social behaviour	
Best Practices	
Qwiki.com etherpad.com	
Wikis related to energy efficient retrofitting	
http://en.wikipedia.org/wiki/Passive_solar_heating http://en.wikipedia.org/wiki/Heat_pump http://en.wikipedia.org/wiki/Green_building	

"Mind mapping"

Title:	"Mind mapping"
Description	
Concept mapping or also called mind mapping software is used to create diagrams of relationships between concepts, ideas or other pieces of information. It has been suggested that the mind mapping technique can improve learning / study efficiency up to 15% over conventional note taking.	
Advantages (+)	**Disadvantages (-)**
· Generates more ideas · Make new connections · Improves memory · Make use of the whole brain · Stores more information · Can incorporate additional documents (links, files, etc) · Rearrange order are appropriate with least effort · Creativity · Innovation · Changing ways of work	· Not applicable to all · Time consuming (at first stages) · Not easy to pass to someone else who was not present at the design of the mind map
Competencies acquired	
· Learning to Learn	
Required skills to develop courses based on Mind mapping	**Required knowledge to develop courses based on Mind mapping**
· learning skills to continuously improve techniques and combine them appropriately	· technological background and competencies, so as to efficiently select proper tools for development

· planning and organizing skills to prepare and set up resources and work space so as to achieve proper results in good time · self-management skills to set own skill development goals	and utilize all available features · deep knowledge of learning material and suitable mind mapping methods that shall be combined to achieve proper results · intellectual property considerations for any person making creative work
Required skills and competences to attend courses based on Mind mapping	
· Familiarity with the tools and technology required · Good ability to cooperate	
Best Practices	
Mindmeister	
Mind mapping related to energy efficient retrofitting	
http://www.mindmapart.com/energy-saving-mind-map-jane-genovese/	

"Webinars, web meetings, online conferences"

Title:	"Webinars, web meetings, online conferences"
Description	
The term Web conferencing / Webinar refers to a service that allows conferencing events, meetings, workshops, etc to be shared with remote locations. Most vendors also provide either a recorded copy of the event, or a means for a subscriber to record the event.	
Advantages (+)	**Disadvantages (-)**
· full audiovisual & action features · real-time interactivity · no commuting · cost effectiveness · flexibility · convenient · participation	· computer literacy
Competencies acquired	
· Communication in the mother tongue · Communication in foreign languages · Learning to Learn · Social and civic competences	
Required skills to develop courses based on online conferences	**Required knowledge to develop courses based on online conferences**
· good level of oral and writing communication skills · ability to adjust and correspond immediately · learning skills to continuously improve techniques and combine them appropriately · planning and organizing skills to	· technological background and competencies, so as to efficiently select proper tools for development and utilize all available features · deep knowledge of learning material and methods that shall be combined with online tools · intellectual property considerations

prepare and set up resources and work space so as to achieve proper results in good time · self-management skills to set own skill development goals	for any person making creative work
Required skills and competences to attend courses based on online conferences	
· Efficient web access through internet or intranet · Familiarity with the tools and technology required · Good ability to cooperate · Proper social behavior	
Best Practices	
Free Web Meeting BigBlueButton	
Webinars related to energy efficient retrofitting	
http://www1.eere.energy.gov/buildings/webinar_archives.html	

"e-book"

Title:	"e-book"
Description	
An electronic book (also e-book, ebook, electronic book, digital book) is a book-length publication in digital form, consisting of text, images, or both, and produced on, published through, and readable on computers or other electronic devices.	
Advantages (+)	**Disadvantages (-)**
· Delivered instantaneously · No commuting · E-books take up less space, need no space to store · Portable · Can be accessed anywhere · Can be stored and carried from one place to another more safely · Include links for easy access to more information and related websites · Searchable · Multimedia: e-books can be interactive and contain audio, video and animations · E-books are printable · Fonts can be resized · With specific software it is possible to turn some of the e-books into audio books · It is very simple and easy to purchase and download an e-book. People living in big modernized cities, in a remote village in a far away country or on a small island, can	· Little computer literacy is required · Can be lost if not backed up (hard drive failure) · E-book readers cost money · Eyestrain · Not all the books are available in ebook format

equally access an e-book. · It is possible to purchase an e-book 24/7/365, from anywhere	
Competencies acquired	
· Digital Competence · Learning to Learn	
Required skills to develop e-books	**Required knowledge to develop e-books**
· good level of writing communication skills · learning skills to continuously improve techniques and combine them appropriately · planning and organizing skills to prepare and set up resources and work space so as to achieve proper results in good time · self-management skills to set own skill development goals	· technological background and competencies, so as to efficiently select proper tools for development and utilize all available features · deep knowledge of learning material and methods that shall be adjusted to create ebook · intellectual property considerations for any person making creative work
Required skills and competences to attend courses based on e-books	
· Efficient web access through internet or intranet · Familiarity with the tools and technology required · Efficient physical ability	
Best Practices	
Sigil	
E-books related to energy efficient retrofitting	
http://www.ngridenergyworld.com/efficiency/t_book.html http://www.ngridenergyworld.com/environment/t_book.html http://www.bounceenergy.com/docs/ebook-diy-energyefficiency.pdf http://books.google.com.cy/books?id=OfiMKyFV8JIC&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false	

"Online forums"

Title:	"Online forums"
Description	
An online forum (or message board), is an online discussion website where people can hold conversations in the form of posted messages. The difference from a chat room is in that messages are at least temporarily archived.	
Advantages (+)	**Disadvantages (-)**
· Always available · Handle same questions once · Information source · Intellectual exchange · Enhances cooperation and communication	· Certain familiarity with the forum setup, computer literacy · Reduced concentration and focus · Reduced productivity · Chronic procrastination · Being distracted by endless debates

· Contribution of many people with better results · Builds relationships between visitors · No scheduling problems or interruptions · Each person can participate at the time that suits them · Hold concurrent conversations · People can participate in multiple conversations at the same time · Meet in larger groups · By breaking into sub-groups, large groups can easily meet online · In-built record-keeping	& idle gossip · Impaired social skills, neglected relationships, and a weakened social circle (a consequence of substituting online socialization for face-to-face conversations) · Lack of real-time interface · Forum management is time consuming · Requires high participation in order to be efficient and meaningful · Contribution comments are sometimes with poorer language
Competencies acquired	
· Communication in the mother tongue · Communication in foreign languages · Mathematical competence and basic competences in science and technology · Learning to Learn · Social and civic competences	
Required skills to develop courses based on online forums	**Required knowledge to develop courses based on online forums**
· good level of oral and writing communication skills · ability to adjust and correspond immediately · learning skills to continuously improve techniques and combine them appropriately · planning and organizing skills to prepare and set up resources and work space so as to achieve proper results in good time · self-management skills to set own skill development goals	· technological background and competencies, so as to efficiently select proper tools for development and utilize all available features · deep knowledge of learning material and methods that shall be combined with online tools · intellectual property considerations for any person making creative work
Required skills and competences to attend courses based on online forums	
· Efficient web access through internet or intranet · Familiarity with the tools and technology required · Good ability to cooperate · Proper social behaviour	
Best Practices	
phpbb bbpress	
Forums related to energy efficient retrofitting	
http://www.greenbiz.com/blog/2012/12/04/policy-and-incentives-drive-energy-efficiency-retrofits	

The following diagram shows the different ICT interactive-training tools that the learner can use, divided in categories and giving examples for each.

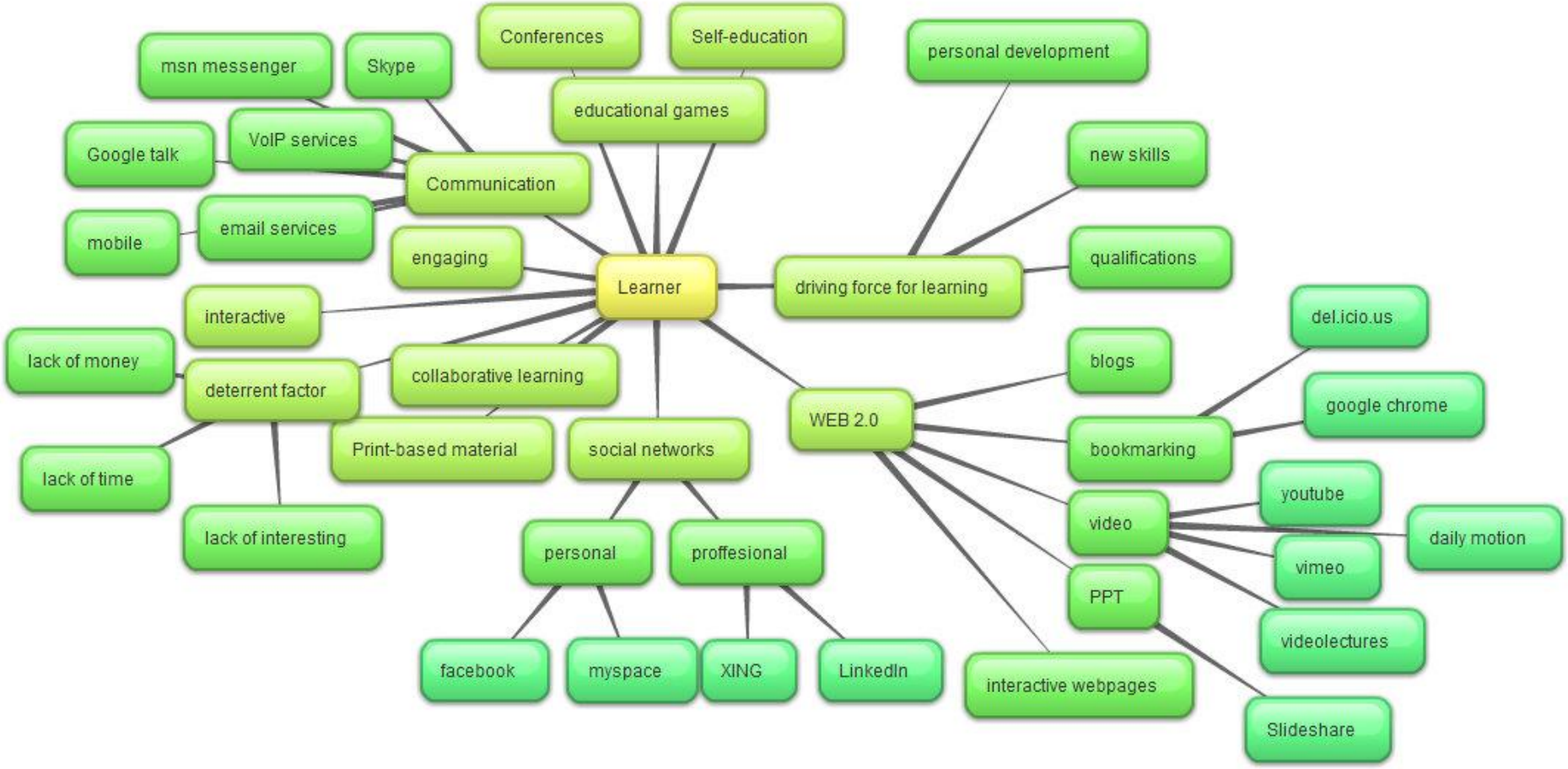

Figure 7: Diagram: ICT interactions relative to learning

4.1. Selection of ICT training tools

After identifying the previous ICT training tools, it was decided amongst the ee-WiSE partners which tools were more suitable for each knowledge transfer need. For this, each partner provided his/her preferred tool from the point of view of specific agents, playing the role of "Receiver" (R) or "Provider" (P) depending on the need. The answers where compiled in 2 matrices presenting the votes of each ICT training tool per need and per agent (Figure 6 & Figure 8)

MOST VOTED TOOLS PER NEED				"Video in learning courses"	"Simulation"	"Audio in learning"	"Podcasts" (audio lectures)	"e-learning courses" (synchronous, asynchronous)	Mobile learning (mlearning)	"Educational Games"	"Augmented Reality applications & software, Virtual	"Communication Tools"	"Blog-based learning, social networking sites, community portals"	"Wiki Tools"	"Mind mapping"	"Webinars, web meetings, online conferences"	"e-book"	"Online forums"
Task 4.2	E1	EC guidelines for knowledge dissemination from the research institutions.	R		1		1	1				1				1		
			P	1	4		3	4				8	5	1		6	6	5
	A2	Exposing the end users to the technological results of the research organizations.	R	2		1	1	1		1		4	3	1		3	2	2
			P	2	6		2			3	4		2			3	1	
	B4	Connecting technical commercial advice to EPBD - energy performance and requirements of the actual buildings.	R				4	2		1		1	1	1	2	1	2	2
			P	1	2		1	1	2	2	1	3	3	1	1	5	1	3

Table 6: Piece of matrix results per need

MOST VOTED TOOLS PER AGENT			"Video in learning courses"	"Simulation"	"Audio in learning"	"Podcasts" (audio lectures)	"e-learning courses" (synchronous, asynchronous)	Mobile learning (mlearning)	"Educational Games"	"Augmented Reality applications & software, Virtual	"Communication Tools"	"Blog-based learning, social networking sites, community portals"	"Wiki Tools"	"Mind mapping"	"Webinars, web meetings, online conferences"	"e-book"	"Online forums"
wledge & Products Providers	Technical Solutions	R					4		2	1	4	3	1	1	3	1	5
		P	5	2	1	2	6	1	4	2	6	5	2	1	7	6	5
	Manufacturers	R									1				1		
		P	2	3		1		2	1	2	2	1	2	2	4	1	3
	Installers	R	4	1		1	2	1	1		2		2	1	3	5	1
		P	1	2		2	1		1			2			2	1	3
	R&D	R	2	2		1	6	1		1	5	3		1	2	1	2
		P	4	11		1	5	1	1	4	9	5	2		8	2	7

Table 7: Piece of matrix results per agent

Each one of these matrices was summarized in a final table exposing the 3 "most voted" ICT training tools, and an additional one distinguishing answers from receivers and providers in each case. The tables below show these ranking results. The results out of this matrices will be employed in the functioning of the Framework itself, such as the favourite tools per agent, per agent as receiver/ provider, etc.

		MOST VOTED TOOLS PER NEED		Ranking Results per Need 1°	Ranking Results per Need 2°	Ranking Results per Need 3°	Ranking Results (Receiver/ Provider) 1°	Ranking Results (Receiver/ Provider) 2°	Ranking Results (Receiver/ Provider) 3°
Task 4.2	E1	EC guidelines for knowledge dissemination from the research institutions.	R	Communication Tools	Webinars, web meetings, online conferences	e-book	Communication Tools	Webinars, web meetings, online	e-learning courses (synchronous,
			P				Communication Tools	Webinars, web meetings, online	e-book
	A2	Exposing the end users to the technological results of the research organizations.	R	Webinars, web meetings, online conferences	Simulation	Blog-based learning, social networking sites, community	Communication Tools	Webinars, web meetings, online	Blog-based learning, social networking sites,
			P				Simulation	Augmented Reality applications & software,	Webinars, web meetings, online
	B4	Connecting technical commercial advice to EPBD - energy performance and requirements of the actual buildings.	R	Webinars, web meetings, online conferences	Online forums	Podcasts (audio lectures)	Podcasts (audio lectures)	Online forums	Mind mapping
			P				Webinars, web meetings, online	Online forums	Blog-based learning, social networking sites,
Task 4.3	D3	Occupants need financial support to invest in EE retrofitting technology.	R	Communication Tools	Webinars, web meetings, online conferences	Video in learning courses	Communication Tools	Webinars, web meetings, online	Video in learning courses
			P				Podcasts (audio lectures)	Communication Tools	Wiki tools
	D2	Industry needs financial support to take up results of scientific innovation.	R	Webinars, web meetings, online conferences	Communication Tools	Blog-based learning, social networking sites, community	Webinars, web meetings, online	Blog-based learning, social networking sites,	Communication Tools
			P				Communication Tools	Online forums	Webinars, web meetings, online
	A4	The business society needs to be aware of tools to manage intellectual property.	R	Blog-based learning, social networking sites, community	Webinars, web meetings, online conferences	Mobile learning (mlearning)	Blog-based learning, social networking sites,	Webinars, web meetings, online	
			P				Blog-based learning, social networking sites,	Webinars, web meetings, online	Mobile learning (mlearning)
	A5	Training of construction professionals (including architects, civil engineers, building services engineers, project managers, building designers, etc) in retrofit	R	Webinars, web meetings, online conferences	Simulation	e-learning courses (synchronous, asynchronous)	Webinars, web meetings, online	Simulation	e-learning courses (synchronous,
			P				Simulation	Webinars, web meetings, online	Educational Games
	D1	Increase business motivation through public R&D initiatives and innovation funding.	R	Webinars, web meetings, online conferences	Communication Tools	Video in learning courses	Webinars, web meetings, online	Communication Tools	Video in learning courses
			P				Webinars, web meetings, online	Communication Tools	Augmented Reality applications & software,
	E2	Evaluation of publicly funded research projects via it's applicability to the end-user.	R	Blog-based learning, social networking sites, community	Online forums	Simulation	Online forums	Blog-based learning, social networking sites,	Webinars, web meetings, online
			P				Simulation	Blog-based learning, social networking sites,	Podcasts (audio lectures)

Task 4.4	A3	Training the business society to access the knowledge stock.	R	Webinars, web meetings, online conferences	Educational Games	Video in learning courses	Webinars, web meetings, online	Video in learning courses	Educational Games
			P				Webinars, web meetings, online	Educational Games	e-learning courses (synchronous,
	B1	Establishing network organisations that will coordinate knowledge transfer from innovation groups and assist in implementing innovation into	R	Online forums	Webinars, web meetings, online conferences	Blog-based learning, social networking sites, community	Webinars, web meetings, online	Online forums	Blog-based learning, social networking sites,
			P				Online forums	Blog-based learning, social networking sites,	Wiki tools
	C3	R&D to divert their activity rapidly in response to changes in the market.	R	Blog-based learning, social networking sites, community	Webinars, web meetings, online conferences	Video in learning courses	Blog-based learning, social networking sites,	Webinars, web meetings, online	Video in learning courses
			P				Blog-based learning, social networking sites,	Webinars, web meetings, online	Online forums
	B2	Increased interaction amongst research institutions.	R	Online forums	Communication Tools	Webinars, web meetings, online conferences	Webinars, web meetings, online	Online forums	e-learning courses (synchronous,
			P				Communication Tools	Online forums	Blog-based learning, social networking sites,
	B3	Clustering within the retrofit market to provide integrated solutions.	R	Video in learning courses	Webinars, web meetings, online conferences	Online forums	Webinars, web meetings, online	Blog-based learning, social networking sites,	Video in learning courses
			P				Video in learning courses	Webinars, web meetings, online	Online forums
Task 4.5	A1	Training of traditional craftsmen on EE retrofitting innovations.	R	Simulation	Video in learning courses	e-book	Simulation	Video in learning courses	Webinars, web meetings, online
			P				Simulation	Educational Games	Video in learning courses
	C4	When communicating research results, more focus needs to be given to practical benefits of the retrofit technology.	R	Online forums	e-learning courses (synchronous, asynchronous)	Blog-based learning, social networking sites, community	Online forums	Blog-based learning, social networking sites,	Video in learning courses
			P				Online forums	e-learning courses (synchronous,	e-book
	C2	Real-life evaluation of research results.	R	Communication Tools	Blog-based learning, social networking sites, community	Webinars, web meetings, online conferences	Communication Tools	Blog-based learning, social networking sites,	Online forums
			P				Communication Tools	Blog-based learning, social networking sites,	Webinars, web meetings, online
	C1	Scientists need to have increased contact with the end-users in order to understand the applicability of their research.	R	Webinars, web meetings, online conferences	Online forums	Communication Tools	Communication Tools	Online forums	Blog-based learning, social networking sites,
			P				Blog-based learning, social networking sites,	Webinars, web meetings, online	Online forums

Table 8: Ranking results per need and role

Ranking Results per Agent

MOST VOTED TOOLS PER AGENT			1º	2º	3º
Public Bodies & Finance	Financial Agents	R	Podcasts (audio lectures)	Blog-based learning, social networking sites, community portals	Online forums
		P			
	Public Admin.	R	Blog-based learning, social networking sites, community portals	Podcasts (audio lectures)	Webinars, web meetings, online conferences
		P			
	GOV	R	Podcasts (audio lectures)	Blog-based learning, social networking sites, community portals	Online forums
		P			
	Standarization	R	Blog-based learning, social networking sites, community portals	Podcasts (audio lectures)	Webinars, web meetings, online conferences
		P			
. Knowledge & Products Providers	Software Developers	R	Online forums	e-learning courses"(synchronous, asynchronous)	Communication Tools
		P			
	Technical Solutions	R	Online forums	e-learning courses"(synchronous, asynchronous)	Communication Tools
		P			
	Manufacturers	R	Webinars, web meetings, online conferences	Communication Tools	Online forums
		P			
	Installers	R	e-book	Webinars, web meetings, online conferences	Video in learning courses
		P			
	R&D	R	Communication Tools	Simulation	e-learning courses"(synchronous, asynchronous)
		P			
	Climate	R	Communication Tools	Simulation	e-learning courses"(synchronous, asynchronous)
		P			

Ranking Results (Receiver/ Provider)

1º	2º	3º
Podcasts (audio lectures)	Blog-based learning, social networking sites, community	Online forums
Podcasts (audio lectures)	Simulation	Educational Games
Webinars, web meetings, online conferences	Blog-based learning, social networking sites, community	Online forums
Blog-based learning, social networking sites, community	Podcasts (audio lectures)	Communication Tools
Podcasts (audio lectures)	Blog-based learning, social networking sites, community	Online forums
Podcasts (audio lectures)	Simulation	Educational Games
Webinars, web meetings, online conferences	Blog-based learning, social networking sites, community	Online forums
Blog-based learning, social networking sites, community	Podcasts (audio lectures)	Communication Tools
Online forums	e-learning courses"(synchronous,	Communication Tools
Webinars, web meetings, online conferences	e-learning courses"(synchronous,	Communication Tools
Online forums	e-learning courses"(synchronous,	Communication Tools
Webinars, web meetings, online conferences	e-learning courses"(synchronous,	Communication Tools
Webinars, web meetings, online conferences	Communication Tools	Video in learning courses
Webinars, web meetings, online conferences	Online forums	Communication Tools
e-book	Video in learning courses	Webinars, web meetings, online conferences
Online forums	Webinars, web meetings, online conferences	Podcasts (audio lectures)
e-learning courses"(synchronous,	Communication Tools	Wiki tools
Simulation	Communication Tools	Online forums
e-learning courses"(synchronous,	Communication Tools	Wiki tools
Simulation	Communication Tools	Online forums

Energy Providers	Renewable Energy	R	Webinars, web meetings, online conferences	Blog-based learning, social networking sites, community portals	e-learning courses"(synchronous, asynchronous)	Webinars, web meetings, online conferences	Blog-based learning, social networking sites, community	e-learning courses"(synchronous,
		P				Webinars, web meetings, online conferences	Communication Tools	Podcasts (audio lectures)
	Energy Dsitributors	R	Webinars, web meetings, online conferences	Blog-based learning, social networking sites, community portals	e-learning courses"(synchronous, asynchronous)	Webinars, web meetings, online conferences	Blog-based learning, social networking sites, community	e-learning courses"(synchronous,
		P				Webinars, web meetings, online conferences	Communication Tools	Podcasts (audio lectures)
	Grid Operators	R	Webinars, web meetings, online conferences	Blog-based learning, social networking sites, community portals	e-learning courses"(synchronous, asynchronous)	Webinars, web meetings, online conferences	Blog-based learning, social networking sites, community	e-learning courses"(synchronous,
		P				Webinars, web meetings, online conferences	Communication Tools	Podcasts (audio lectures)
Energy & Retrofitting Services	ESCO	R	Webinars, web meetings, online conferences	Communication Tools	Simulation	Webinars, web meetings, online conferences	Communication Tools	Simulation
		P				Webinars, web meetings, online conferences	Simulation	e-book
	Architect. & Engineer.	R	Webinars, web meetings, online conferences	Simulation	Video in learning courses	Webinars, web meetings, online conferences	Simulation	Video in learning courses
		P				Simulation	Video in learning courses	Online forums
	Audit Firms	R	Webinars, web meetings, online conferences	Communication Tools	Simulation	Webinars, web meetings, online conferences	Communication Tools	Simulation
		P				Webinars, web meetings, online conferences	Simulation	e-book
Quality assurance	Patent Offices	R	Online forums	Webinars, web meetings, online conferences	Communication Tools	Webinars, web meetings, online conferences	Online forums	Mobile learning (mlearning)
		P				e-learning courses"(synchronous,	Mind mapping	Blog-based learning, social networking sites, community
	Life Cycle Assessment	R	Online forums	Webinars, web meetings, online conferences	Communication Tools	Webinars, web meetings, online conferences	Online forums	Mobile learning (mlearning)
		P				e-learning courses"(synchronous,	Mind mapping	Communication Tools
	Certificate entities	R	Online forums	Webinars, web meetings, online conferences	Communication Tools	Webinars, web meetings, online conferences	Online forums	Mobile learning (mlearning)
		P				Online forums	e-book	Communication Tools
Demand	Building Managers	R	Blog-based learning, social networking sites, community portals	Webinars, web meetings, online conferences	Online forums	Blog-based learning, social networking sites, community	Webinars, web meetings, online conferences	Online forums
		P				Blog-based learning, social networking sites, community	Webinars, web meetings, online conferences	Online forums
	Occupants	R	Blog-based learning, social networking sites, community portals	Webinars, web meetings, online conferences	Online forums	Blog-based learning, social networking sites, community	Webinars, web meetings, online conferences	Online forums
		P				Blog-based learning, social networking sites, community	Webinars, web meetings, online conferences	Online forums

Table 9: Ranking results per agent and role

5. TOOLS FOR EFFECTIVE KNOWLEDGE TRANSFER

This section will finally show the output for the tools for effective knowledge transfer, which will consider and merge:

1. **KT activities:** These are the ***Tools for Knowledge Transfer Needs (Section 3)***. The KT tools identified refer to *KT activities* to solve the KT specific needs studied in WP3.
2. **Training methods**: These are the ***ICT Training Tools (Section 4)***. The ICT training tools expose basically the best training methods for the needs.

Graphically explained, with the figure below it can be noted that KT activities and Training methods are identified considering the KT needs, and that the combination of these 2 findings will provide a comprehensive and an effective tool for Knowledge Transfer. This will be the KT – ICT Tool, which will provide a set of guidelines or recommendations to assist receivers and providers of knowledge to implement the KT activities using Training methods.

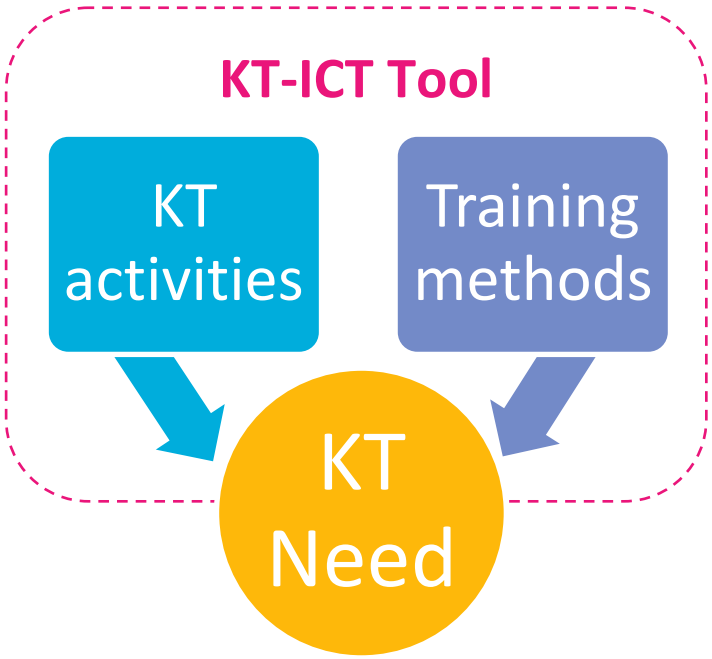

Figure 8: Knowledge Transfer ICT tool

5.1. KT-ICT Tools' Structure

5.1.1. Guidelines for creating a Lesson Curriculum

In order to follow a structure a lesson curriculum can be applicable as a the KT-ICT tool methodology, considering as well training methods, type of course materials, training schedule and the evaluation of the training impact.

Lesson Curriculum

Summary:	A concise summary of the course, stating what it will be achieved through and why people need it. This section will help in identifying and keeping track of the development phase, but also it can be used in order to get the attention of the target audience.
Target Audience:	Here a description of the target group should be provided. Think about the type of people the course is aimed for, what is their skill level? (Beginner, intermediate, advanced), what do they like / need and why is this training content important to them?
Agent:	The main agent from the value Chain that this Lesson/ Tool is focused to
Other Agents involvement:	All the other Agents from the value Chain that this Lesson / Tool is focused to as well
Objective(s):	In that section the objectives of the specific training tool / activity should be recorder and presented to the end user. Usually they are presented as bullets
Result(s) desired/ Learning Outcomes:	This is an area that lets a lot of great training courses down. Many aren't developed with specific learning outcomes (or learning objectives), so the end result is often an obscure takeaway message. This will leave you with an unsatisfied audience and a lot more questions to answer. Learning outcomes are actually really easy to write, they need to be specific and focus on the participant. The best way to approach them is to think in terms of what your learner should be able to do at the end of the training. e.g.: In this article I will teach you how to use a lesson plan. By the end of this article, you will be able to design a customised lesson plan for a training course that leaves your audience raving to all their friends.
Time:	The goal in this section is to indicate the level of commitment required by the participant in terms of minutes / hours / days / weeks (i.e. approximately 6 hours total, or 2 hours per week for 3 weeks etc.).
Training Type/ method:	The format of the training tool is closely linked to the duration and relates to the way you plan to offer your training content. It could be in a classroom setting (through the use of an online webinar event), using hosted video or audio, learner workbooks (electronic or print), or via a structured eLearning platform. You can be as creative as you like with the format of your training by mixing different delivery types to suit the outcome that you are trying to achieve, and keep things interesting for your audience at the same time.
Key Competences Covered:	Key competences for lifelong learning are a combination of knowledge, skills and attitudes appropriate to the context. They are particularly necessary for

	personal fulfilment and development, social inclusion, active citizenship and last but not least employment. The European Union highly active and sensitized on the issue of competencies either for education, work or training proceeded on making important recommendation on Key competencies for Life Long Learning and proceeded in producing an eight (8) key competency list on Life Long Learning for all Member States to use and benefit from. Here the Key competences of the EU reference framework should be presented: • Communication in mother tongue • Communication in foreign languages • Mathematical competence and basic competences in science and technology • Digital Competence • Learning to Learn • Social and Civic Competences • Sense of initiative and entrepreneurship Cultural awareness and expression
Participant Requirements:	Depending on the type of training course you are planning to offer, this may or may not be necessary. Consider any materials, equipment, software or other resources that participants will require in order to undertake your training course and list each. If these are items that your audience will need to purchase, you might like to put in some leg work and make a list of all the best deals for them, particularly if there are some cheaper alternatives that work just as well.
Material Needed:	It should list any resources that you will need in order to deliver the course (i.e. reference materials, workbooks that need to be made ahead of time, online or other electronic resources like video or audio, props or other tools that help you better demonstrate a concept).
Pre-requisites:	Sometimes it is necessary to establish a baseline of knowledge prior to delivering your course, so that everyone is at a similar level and more time can be devoted to achieving your desired learning outcomes. List any pre-reading or review of other reference materials that participants should do prior to undertaking your course. This might also include reviewing websites, watching online videos, or completing a survey with information that is used during the course.
Trainer Skills and Roles:	This section identifies the specific roles and responsibilities required to deliver the training.

Table 10: Guidelines for creating a Lesson Curriculum

Training Methods

This section describes the training methods that can be utilized.

Training Method	Features
Case study	Participants practice problem-solving with relevant examples. Participants demonstrate high-level cognitive skills (e.g., evaluation, analysis), and form arguments and counterarguments.
Coaching	Participants apply knowledge on the job, unlock participant potential, increase knowledge sharing and reinforce other training methods.
Discussion	Participants evaluate two or more positions on an issue, practice critical thinking, draw on learner knowledge and expertise, form arguments and defend positions. Some discussions consist of an expert panel, which allows learners to understand discipline nuances and areas of debate, relate knowledge to real world examples and listen to different opinions on a topic.
Labs	Participants receive and respond to immediate feedback, develop process skills, practice physical or manual skills and evaluate results of own work.
Lecture	Conveys information to supplement reading or self-study, responds to student misconceptions or difficulties, and stimulates interest in a new area.
Online learning	Allows geographically dispersed participants to learn, often at their own pace, through online technologies or delivery methods (e.g.: webinars, podcasts, videos).
Simulation	Demonstrates in person or via technology the application of participant knowledge to different scenarios (laboratory setting or role plays). A clinical setting (real or simulated) would be required for a subject matter expert (SME) to facilitate the exercise and give feedback.
Small group activities	Provides hands-on skill building and problem-solving. Participants are divided into small groups and assigned a timed task to complete as a team. The output of these activities will be shared with the larger group and used as input to the next segment of the module.
Role Plays	Provides a simulated experience in the situation being acted out. Gives opportunities for participants to develop solutions to unpredictable situations and conditions.

Table 11: Training Methods

Course Materials

This section describes the course materials that will be used.

Administrative materials	
Accreditation/ certification materials	• Each credentialing and continuing education body has its own requirements and forms required to request credit for a course
Course description/ agenda	• May be two separate documents or one combined document • Describes the course content • Sets expectations for the course • Includes duration, breaks, objectives, prerequisites

Course evaluations	• Kirkpatrick Level 1 Reaction – Measures participant's reaction to various aspects of the training including satisfaction with content, instructors, learning environment and appropriateness of material for learner group • Measure the achievement of learning objectives
Course registration forms	• Requests participant demographic information • Confirms registrant has taken prerequisites or meets other requirements (e.g.: rank, education, certification)
Invitation or course announcement/ advertisement	• Announce the course and requests the presence of the recipient • Should include course objectives; target audience (if mandatory, this should be noted); location, date and time of course (may include transportation options and/or a map)
Participant records	• Records should be created and maintained in a secure environment • Academic records are governed by multiple regulations, laws and accreditation standards • Official records may include: • Dates of enrolment • Courses taken, with the units of credit or time allotted to each subject • Examination results
Pre- and/or post-assessment exams	• Level 2 Learning – Pre- and/or Post-Assessment measures knowledge gained during the training • Measures the achievement of learning objectives
Sign In Sheet	• Participants document training attendance
Learner Materials	
Activities and Exercises	• Provide immediate practice opportunity for new skills • Allow instructor/facilitator to monitor transfer of learning and adjust pace • May include scenarios or real-world examples
Handouts	• Include pertinent course summaries to be used for reference during and after the course
Job Aids	• Graphics, flow charts, process flows, checklists to be used for quick reference after the course
Manuals	• Support course instruction • Provide post-course reference
Presentations	• Used to support verbal presentation • Reach visual learners
Visual aids	• Flip charts, posters to be used for posting frequently referenced training concepts
Workbooks	• Provide post-course reference
Instructor materials	
Attendee list	• Allows instructor to prepare for and tailor group exercises to the number of participants
Contact list	• List of important points of contact (e.g.: training team members, computer and technology support, venue managers, dining and hotel information)
Facilitator guides	• Provide clear guidance and procedural notes on the event timing, content, delivery style and delivery methods instructors/facilitators should follow • Support consistent delivery from session to session and between different

	instructors • Describes equipment and supply needs • Background on a specific technical topic, guidance and questions to raise on role playing exercise
Instructor notes	• Provides direction to the facilitator regarding: ○ Ideas, points and examples the instructor may use during content delivery ○ Frequently asked questions and appropriate answers ○ How to set up exercises ○ How to de-brief exercises ○ References for the content presented

Table 12: Course Material

Training Schedule

This section can be used to develop a timeline for developing and delivering training. The schedule also includes necessary coordination and logistics tasks.

Timeline	Activity
Time period	
Time period	
Time period	

Table 13: Training Schedule

Evaluation of Training Impact

This section describes the process that will be used to determine how training has influenced a participant's performance and how that impact translates into results for the larger targeted group.

Kirkpatrick Level		Description	Data Collection Methods
Level 1	Reaction	The degree to which participants react favourably to the training.	
Level 2	Learning	To what degree participants acquire the intended knowledge, skills, attitudes, confidence and commitment based on their participation in a training event.	
Level 3	Behaviour	To what degree participants apply what they learned during training when they return to duty.	
Level 4	Results	To what degree targeted outcomes occur as a result of the training event and subsequent reinforcement.	

Table 14: Evaluation of the training impact

Empty Lesson Template

From the Guidelines to create a lesson template, the empty template is the first resource that should be considered to develop a proper training material.

Summary:	
Target Audience:	
Agent:	
Other Agents involvement:	
Objective(s):	
Result(s) desired/ Learning Outcomes:	
Time:	
Training Type/ method:	
Key Competences Covered:	
Participant Requirements:	
Material Needed:	
Pre-requisites:	
Trainer Skills and Roles:	

Table 15: Lesson Plan Empty Template

5.1.2. Implementation

With the feedback gathered from the ee-WiSE consortium regarding their "favourite ICT tool" exposed in section 4.3, the results per need were selected as most suitable regarding the development of the KT-ICT tool. This is because this result considers all the agents involved regardless of their "Receiver" or "Provider" role in the KT problem studied.

The empty template has been adapted and organized to provide the relevant information that should take part of the KT-ICT tool, including the guidelines. Each adapted template has been completed per need and some material example has been included. Therefore, the lesson templates presented in the next sections, have considered all the training material features explained above, the favourite choices per need, and the particular analysis of each one of the needs in the previous sections. As a result, these lesson templates are the best way to expose the integrated KT-ICT tool, as the most valuable output of Deliverable 4.2 to the ee-WiSE Project.

		MOST VOTED TOOLS PER NEED		Ranking Results per Need 1°	2°	3°
Task 4.2	E1	EC guidelines for knowledge dissemination from the research institutions.	R P	Communication Tools	Webinars, web meetings, online conferences	e-book
	A2	Exposing the end users to the technological results of the research organizations.	R P	Webinars, web meetings, online conferences	Simulation	Blog-based learning, social networking sites, community
	B4	Connecting technical commercial advice to EPBD - energy performance and requirements of the actual buildings.	R P	Webinars, web meetings, online conferences	Online forums	Podcasts (audio lectures)
Task 4.3	D3	Occupants need financial support to invest in EE retrofitting technology.	R P	Communication Tools	Webinars, web meetings, online conferences	Video in learning courses
	D2	Industry needs financial support to take up results of scientific innovation.	R P	Webinars, web meetings, online conferences	Communication Tools	Blog-based learning, social networking sites, community
	A4	The business society needs to be aware of tools to manage intellectual property.	R P	Blog-based learning, social networking sites, community	Webinars, web meetings, online conferences	Mobile learning (mlearning)
Task 4.4	A5	Training of construction professionals (including architects, civil engineers, building services engineers, project managers, building designers, etc) in retrofit	R P	Webinars, web meetings, online conferences	Simulation	e-learning courses (synchronous, asynchronous)
	D1	Increase business motivation through public R&D initiatives and innovation funding.	R P	Webinars, web meetings, online conferences	Communication Tools	Video in learning courses
	E2	Evaluation of publicly funded research projects via it's applicability to the end-user.	R P	Blog-based learning, social networking sites, community	Online forums	Simulation
	A3	Training the business society to access the knowledge stock.	R P	Webinars, web meetings, online conferences	Educational Games	Video in learning courses
	B1	Establishing network organisations that will coordinate knowledge transfer from innovation groups and assist in implementing innovation into	R P	Online forums	Webinars, web meetings, online conferences	Blog-based learning, social networking sites, community
	C3	R&D to divert their activity rapidly in response to changes in the market.	R P	Blog-based learning, social networking sites, community	Webinars, web meetings, online conferences	Video in learning courses
	B2	Increased interaction amongst research institutions.	R P	Online forums	Communication Tools	Webinars, web meetings, online conferences
	B3	Clustering within the retrofit market to provide integrated solutions.	R P	Video in learning courses	Webinars, web meetings, online conferences	Online forums
Task 4.5	A1	Training of traditional craftsmen on EE retrofitting innovations.	R P	Simulation	Video in learning courses	e-book
	C4	When communicating research results, more focus needs to be given to practical benefits of the retrofit technology.	R P	Online forums	e-learning courses (synchronous, asynchronous)	Blog-based learning, social networking sites, community
	C2	Real-life evaluation of research results.	R P	Communication Tools	Blog-based learning, social networking sites, community	Webinars, web meetings, online conferences
	C1	Scientists need to have increased contact with the end-users in order to understand the applicability of their research.	R P	Webinars, web meetings, online conferences	Online forums	Communication Tools

Table 16: Lesson Plan Empty Template

5.2. KT-ICT Tools to disseminate general EE retrofitting knowledge (Task 4.2)

Summary:	E1 - EC guidelines for knowledge dissemination from the research institutions					
Providers	Public Bodies Finance	Knowledge Product Providers	Energy Providers	Energy Retrofitting Services	Quality Assurance	Demand
	Public Admin	Software Developers		ESCO	Certificate Entries	Building Managers
	GOV	Technical Solutions		Architect & Engineer		Occupants
		Manufacturers		Audit Firms		
		Installers				
Receivers	Public Bodies Finance	Knowledge Product Providers	Energy Providers	Energy Retrofitting Services	Quality Assurance	Demand
		R&D				
What to be achieved:	Assist research institutions in understanding and adopting EC defined guidelines for disseminating research results					
Result(s) desired/ Learning Outcomes	EC guidelines on knowledge dissemination in a clear and precise format (possibly "dictated" by funded project guidelines with regard to dissemination / exploitation of research project results)					
Training Type/ method (ICT Tools):	Communication Tools	Webinars, web meetings, online conferences	e-book			
Participant Requirements:	Members of R&D departments from Universities, Research Centres, Companies and other Organisations that carry out research activities and have research results they need to disseminate					
Material Needed:	EC guidelines on dissemination / exploitation of research project results in an appropriate format (webinars, online forums, blog based learning, e-book)					
Guidelines/ Recommendations	▪ Include references to the feedback received from users (public bodies, product / service providers, quality assurance, occupants) in the guidelines ▪ Provide direct audio or/and video connection between the trainers and the trainees ▪ Use Web conferencing / Webinar as another option ▪ Enable communcation / training in remote locations through web conferencing events, meetings, workshops ▪ Provide either a recorded copy of the event, or a means for a subscriber to record the event					
Links	http://ec.europa.eu/invest-in-research/pdf/download_en/knowledge_transfe_07.pdf http://ec.europa.eu/invest-in-research/pdf/download_en/ip_recommendation.pdf https://www.surrey.ac.uk/ces/files/David-Huw_Owen_Powerpoint.pdf					

Summary:	A2 - Exposing the end users to the technological results of the research organizations					
Providers	Public Bodies Finance	Knowledge Product Providers	Energy Providers	Energy Retrofitting Services	Quality Assurance	Demand
		Software Developers	Renewable Energy	ESCO		
		Technical Solutions		Architect & Engineer		
		Manufacturers				
		Installers				
		R&D				
Receivers	Public Bodies Finance	Knowledge Product Providers	Energy Providers	Energy Retrofitting Services	Quality Assurance	Demand
						Building Managers
						Occupants
What to be achieved:	The specific knowledge transfer actions aim to inform building occupants and owners about the latest technological solutions and trends in the EE retro-fitting market. Real demonstration projects can also be designed and implemented based on viable business models where the investment necessary is set against the future economic as well as environmental benefits					
Result(s) desired/ Learning Outcomes:	Case studies have shown that real action is greatly facilitated, through regional projects bringing different actors together, to design, finance and implement, model EE retro-fit solutions in specific regions under the supervision and political / technical support of local authorities					
Training Type/ method (ICT Tools):	Webinars, web meetings, online conferences	Simulation	Blog- Based Learning			
Participant Requirements:	Participants should include End-Users such as Building Managers and Occupants					
Material Needed:	Educational Material, Simulation Solutions, Leaflets, Data concerning Financial, EE Technologies, Building Regulations and Certification					
Guidelines/ Recommendations	▪ Present learning material in a simple and concise manner, avoiding scientific language and technical jargon ▪ Make use of EC guidelines for research results dissemination for valuable feedback / ideas ▪ Employ Web conferencing / Webinar learning tools which offer options for online or offline (pre-recorded events) communcation / training in remote locations ▪ Use simulation tools as another preferred option which can be produced in all fields through computer games, role-plays, or building models ▪ Create an immersive learning experience through simulation tools which are suitable for all people with different cultural backgrounds					
Links	http://www.youtube.com/watch?v=uSL5QmRKyOA http://energy.gov/articles/energy-saver-101-infographic-home-heating http://www.ngridenergyworld.com/efficiency/t_book.html					

Summary:	B4 - Connecting technical commercial advice to EPBD - energy performance and requirements of the actual buildings					
Providers	Public Bodies Finance	Knowledge Product Providers	Energy Providers	Energy Retrofitting Services	Quality Assurance	Demand
				ESCO	Certificate Entries	Occupants
				Architect & Engineer		
				Audit Firms		
Receivers	Public Bodies Finance	Knowledge Product Providers	Energy Providers	Energy Retrofitting Services	Quality Assurance	Demand
	Public Admin	Software Developers		ESCO		
	GOV	Technical Solutions		Architect & Engineer		
	Standarization	Installers		Audit Firms		
What to be achieved:	The specific knowledge transfer actions aim to connect technical commercial advice to the Energy Performance of Buildings Directive, ie. the energy performance and requirements of the actual buildings					
Result(s) desired/ Learning Outcomes:	The knowledge will be transfered through targeted events (webinars, web meetings, online conferences, forums and audio lectures) which will provide the necessary technical information, but will also serve as a starting point for further actions mobilising public bodies and product / service providers to adopt the specific requirements of the EPBD					
Training Type/ method (ICT Tools):	Webinars, Web Meeting, Online Conferences	Online forums	Podcasts (audio lectures)			
Participant Requirements:	The target audience includes, Public Admininstration, Government & Standarization Bodies, Software Developers, Technical Solution Providers, Instalers, ESCOs, Architects & Engineers and Audit Firms					
Material Needed:	Educational Material, Audio Lectures, Brochures, Leaflets, Data concerning EE Technologies and Building Regulations and Certification					
Guidelines/ Recommendations	▪ Please bear in mind that the audience is technically competent so scientific jargon maybe used in the learning material ▪ Employ Web conferencing / Webinar learning tools which offer options for online or offline (pre-recorded events) communcation / training in remote locations ▪ Include Online Forums and Podcasts in your "toolbox" as two other popular options ▪ Handle similar issues once, enable contributions from many users and avoid scheduling problems or interruptions through the use of online Forums / discussions ▪ Use Podcasts as a less expensive tool to offer a mobile, interesting and convenient way for accessing information / training material					
Links	http://www.youtube.com/watch?v=GHk2Tk9E6AI http://www.bre.co.uk/filelibrary/Scotland/Energy_Performance_of_Buildings_Directive_(EPBD).pdf http://www.building.co.uk/is-the-government-ready-for-the-epbd?/5036193.article					

Summary:	4.2 Communication Plan for Society					
Providers	**Public Bodies Finance**	**Knowledge Product Providers**	**Energy Providers**	**Energy Retrofitting Services**	**Quality Assurance**	**Demand**
	Financial Agents	Software Developers	Renewable Energy	ESCO	Life Cycle Assessment	
	Public Admin	Technical Solutions	Energy Distributors	Architect & Engineer	Certificate Entries	
	GOV	Manufacturers	Grid Operators	Audit Firms		
	Standarization	R&D				
		Climate				
Receivers	**Public Bodies Finance**	**Knowledge Product Providers**	**Energy Providers**	**Energy Retrofitting Services**	**Quality Assurance**	**Demand**
	Financial Agents	Software Developers	Renewable Energy			**Building Managers**
	GOV	Technical Solutions	Energy Distributors			**Occupants**
		Manufacturers	Grid Operators			
		Installers				
What to be achieved:	The Communication Plan is to be used by public administration and similar entities that wish to communicate the benefits and solutions of EE retrofitting to the society					
Result(s) desired/ Learning	Ideally an EE Communication Plan should employ actions relating to, a) End-User mobilisation and Training / Education events, b) Web-Portal, Social Media support, and c) Cluster / Regional EE Projects demonstarting Innovative Retro-Fit initiatives					
Training Type/ method (ICT Tools):	Educational Games	Webinars, Web Meeting, Online Conferences	Simulation			
Participant Requirements:	Actions will greatly be facilitated, through regional projects bringing different actors together (eg. regional R&D organisations, certification bodies, public authorities, financial organisations, energy providers, EE retro-fitting professionals & technology solution providers and end-users), to implement, model EE retro-fit solutions in specific regions under the supervision and political support of local authorities.					
Material Needed:	Educational Material, Educational Games, Simulation Solutions, Data concerning Financial, Standartisation, EE Technologies, Local Climate, Energy, Building Regulations and Certification					
Guidelines/ Recommendations	▪ Address Public Authorities and End-Users (Occupants) as the main actors in a Communication Plan for Society ▪ Enchance the Communication Process through the involvement of other actors (product / service providers or professionals) ▪ Make innovative Retro-Fit Technology Solutions more explicit through real life Cluster / Regional EE Demonstartion Projects ▪ Bear in mind that the most preferred option of learning is Educational Games which can be engaging to all ages ▪ Encourage cooperative, creative & competitive behaviour, through Educational Games as a more interesting way to enhance the retention of knowledge					
Links	http://www.marie-medstrategic.eu/en.html http://www.takeyourenergyback.eu/home.html http://www.eaci-projects.eu/iee/page/Page.jsp?op=project_detail&prid=2599					

5.3. KT-ICT Tools to boost the market (Task 4.3)

Summary:	**C3. R&D to divert their activity rapidly in response to changes in the market.**					
Providers	**Public Bodies Finance**	**Knowledge Product Providers**	**Energy Providers**	**Energy Retrofitting Services**	**Quality Assurance**	**Demand**
		Technical Solutions				Building Managers
		Manufacturers				Occupants
		Installers				
		R&D				
Receivers	**Public Bodies Finance**	**Knowledge Product Providers**	**Energy Providers**	**Energy Retrofitting Services**	**Quality Assurance**	**Demand**
	Public Admin	Technical Solutions		Architect & Engineer		
	GOV	R&D				
What to be achieved:	▪ Drive the knowledge providers to effectively transfer their technology. ▪Transform Guidelines as tools for R&D to find needs from the tradional workforce and the end user.					
Result(s) desired/ Learning Outcomes:	▪ Research institutions and companies responsible for engaging in research and development should be constantly updated and information of changes in the market to change its research adapted to the real needs. ▪ In many cases, projects are being funded and directed for a particular purpose, but should be flexible enough to change its order with the aim to adapt to the changes that arise from the constant innovation of energy retrofitting sector. ▪ Sometimes the problem of some research projects is its long duration.					
Time:	The knowledge provider has to state the duration in order to achive knowledge tranfer using the material					
Training Type/ method (ICT Tools):	Blog-based learning, social networking sites, community	Webinars, web meetings, online conferences	Video in learning courses			
Participant Profile:	Members of R&D departments, Experties in the field. (Depending on the learning material more requirments has to be difined by the provider of the material)					
Material Needed:	Videos, Presentations on the topic, Samples, it is needed also a platform on which create the blog-based learning.					
Guidelines/ Recommendations	▪Create a mechanism (Forum, etc)that will feedback the R&D institutes with the market needs . ▪ If you are related to an experimental building, allow visitors for a living demonstration in order to produce impulse the training experience and assist connecting EE directly to the market. ▪ Keep the experimental building updated by collaborating with solutions designers to test their EE measures.					
Links	http://www.youtube.com/watch?v=Vxb8IFuhlel ; http://www.youtube.com/watch?v=-8VWuSZPwKs; http://www.youtube.com/watch?v=NBbNEcnHTMk ;					

Summary:	B2. Increased interaction amongst research institutions.					
Providers	Public Bodies Finance	Knowledge Product Providers	Energy Providers	Energy Retrofitting Services	Quality Assurance	Demand
		R&D				
Receivers	Public Bodies Finance	Knowledge Product Providers	Energy Providers	Energy Retrofitting Services	Quality Assurance	Demand
	Public Admin	R&D				
	GOV					
What to be achieved:	▪ To create and attend expo fairs, where R&D institutes presents their research ▪ Creation of knowledge banks ▪ Creation of online forums in order that R&D institutes get in touch with the innovation produced in other R&D institutes.					
Result(s) desired/ Learning Outcomes:	▪ It is required the involvement of value chain agents that might be large and complex organisations in their nature, for example public administration bodies, universities, and ultimately cluster frameworks that will involve a large number of entities of different natures and different capacities and interests ▪ When implementing any of the knowledge management solutions, it is necessary to define strict working areas and modes of operation in order to safeguard the knowledge management rights of each of the individual agents themselves.					
Training Type/ method (ICT Tools):	Video In Learning Courses	Podcast (audio lectures)	Webinars, Web Meeting, Online Conferences			
Participant Profile:	PubA,Gov, R&D					
Material Needed:	Videos, Presentations on the topic, Samples, Audio lectures.					
Guidelines/ Recommendations	▪ Create a Database with all the already developed EE solutions ▪ Create an open Calendar with all EE events which can be uptaded from all the involed agents ▪ Keep always a visual explanation of how the EE system works and is installed. ▪ Use videos apart for the e-material to disseminate EE building components and systems if you are a solutions designer. ▪ Experimental building projects have a lot of useful demonstration material for EE training. ▪ If you are related to an experimental building, allow visitors for a living demonstration in order to produce impulse the training experience and assist connecting EE directly to the market. ▪ Keep the experimental building updated by collaborating with solutions designers to test their EE measures.					
Links	www.proyectoedea.com/en/ ; www.enea.it ; http://www.youtube.com/watch?v=t5Dm6Dxn6B4					

Summary:	B3. Clustering within the retrofit market to provide integrated solutions.					
Providers	Public Bodies Finance	Knowledge Product Providers	Energy Providers	Energy Retrofitting Services	Quality Assurance	Demand
		Software Developers	Renewable Energy	Architect & Engineer		
		Technical Solutions	Energy Distributors			
		Manufacturers				
		R&D				
Receivers	Public Bodies Finance	Knowledge Product Providers	Energy Providers	Energy Retrofitting Services	Quality Assurance	Demand
	Public Admin	Installers		ESCO		Building Managers
	GOV			Architect & Engineer		Occupants
What to be achieved:	▪ The aim is to create regional networking of companies working in retrofitting innovation, since this can lead to a diffusion of innovative technologies due to its social impact. ▪ Networking should create synergies to stimulate innovation.					
Result(s) desired/ Learning Outcomes:	▪ Different companies engaged in the production of materials or labor devoted to energy retrofitting should unite their products, human and knowledge to generate products or solutions that facilitate the implementation of technical solutions and economically viable for the building user ▪ The business society should use knowledge from technicians and research institutions to bring to market more efficient solutions with a future in the sector. ▪ Several elements from different agents of the value chain makes necessary the knowledge transfer between them, and the union of forces to create materials or solutions more economic and feasible, and to facilitate energy rehabilitation. ▪Capital investments are needed and they are difficult to obtain.					
Training Type/ method (ICT Tools):	Video in learning courses	Webinars, web meetings, online conferences	Online forums			
Participant Profile:	Target Audience includes :Occupant, Installer, Gov, PubA, Build Manage, TechSol, R&D, Manufacturer					
Material Needed:	Material reaquired for this issue is video clips about retrfoting, presentations bout how society deals with energy efficiency. Topics that cover the needs the retrofit.					
Guidelines/ Recommendations	▪ Keep always a visual explanation of how the EE system works and is installed. ▪ Notice that simulation tools are the favorite choice for this Knowledge, so software developers need to get involved. ▪ Use videos apart for the e-material to disseminate EE building components and systems if you are a solutions designer. ▪ Experimental building projects have a lot of useful demonstration material for EE training. ▪ If you are related to an experimental building, allow visitors for a living demonstration in order to produce impulse the training experience and assist connecting EE directly to the market. ▪ Keep the experimental building updated by collaborating with solutions designers to test their EE measures.					
Links	www.powerhouseeurope.eu/nc/cases_resources/case_studies/single_view/?tx_phecasestudies_pi3%5Bid%5D=106					

Summary:	B1. Establishing network organisations that will coordinate knowledge transfer from innovation groups and assist in implementing innovation into daily building practice.					
Providers	Public Bodies Finance	Knowledge Product Providers	Energy Providers	Energy Retrofitting Services	Quality Assurance	Demand
		Software Developers			Patent Offices	
		Technical Solutions			Life Cycle Assessment	
		Manufacturers				
		R&D				
		Climate				
Receivers	Public Bodies Finance	Knowledge Product Providers	Energy Providers	Energy Retrofitting Services	Quality Assurance	Demand
	Financial Agents	Installers	Renewable Energy	ESCO	Certificate Entries	Building Managers
	Public Admin		Energy Distributors	Architect & Engineer		Occupants
	Standarization		Grid Operators	Audit Firms		
	GOV					
What to be achieved:	▪ Providing access to networks to all members of the construction industry (from builders, installers, managers, technicians, etc.) is easier that all members of the value chain can have instant access to the knowledge necessary to carry out a energy retrofitting strategy. ▪ Create a virtual knowledge network, it can be difficult because the complexity of their creation and is necessary to kept up to date knowledge always. ▪ If a virtual network would be created the platform should have people who update the data, otherwise it would not help.					
Result(s) desired/ Learning Outcomes:	▪ Information transfer through media exposure, organisation of exhibitions, documentation archiving, demonstration projects, training plans, networking, etc. ▪ A scenario could also be created in which it would be obligatory for governments, non-governmental organizations, universities, companies and other institutions to join these networks through an EU-wide recognised standardisation body.					
Training Type/ method (ICT Tools):	Online forums	Webinars, web meetings, online conferences	Blog-based learning, social networking sites, community			
Participant Profile:	Participants in this case are Pub. Ad., E. Dist., Renew. En., Grid Op., A&E, Audit, ESCO, Installers, R&D, Tech. Sol, Climate, Software, Manufacturers, Standard, Pub. Ad., E. Dist., Renew. En., Grid Op., A&E, Audit, ESCO, Installers.					
Material Needed:	Presentations, podcasts ,platform to create the forums and platform to create blogs					
Guidelines/ Recommendations	▪ Should be created open discussions with moderators that will advise , learn how to deal with the topics ▪ Keep always a visual explanation of how the EE system works and is installed. ▪ Notice that even though the simulation tools are not the favorite choice for this Knowledge, a very fast simulated outcame on the results of EE will create lot of advandages ▪ Experimental building projects have a lot of useful demonstration material for EE training. ▪ If you are related to an experimental building, allow visitors for a living demonstration in order to produce impulse the training experience and assist connecting EE directly to the market. ▪ Keep the experimental building updated by collaborating with solutions designers to test their EE measures.					
Links	http://www.youtube.com/watch?v=yfsDetHMiow ; http://www.youtube.com/watch?v=1WjBilqyTxU ; http://www.youtube.com/watch?v=cN6YrrqaLIM ; http://www.construction21.eu/					

Summary:	A3. Training the business society to access the knowledge stock.					
Providers	**Public Bodies Finance**	**Knowledge Product Providers**	**Energy Providers**	**Energy Retrofitting Services**	**Quality Assurance**	**Demand**
		Software Developers	Renewable Energy	ESCO		
		Technical Solutions				
		Manufacturers				
Receivers	**Public Bodies Finance**	**Knowledge Product Providers**	**Energy Providers**	**Energy Retrofitting Services**	**Quality Assurance**	**Demand**
	Public Admin	Installers		Architect & Engineer		
What to be achieved:	▪ It is necessary to raise awareness among companies managers, because they must devote economic and personal resources to the acquisition of knowledge and so access the existing knowledge stock. ▪ By raising awareness in the acquisition of knowledge, it can improve knowledge transfer between members of the value chain.					
Result(s) desired/ Learning	▪ To create a framework that will provide information about the retrofitting process, types of retrofitting and how it works.					
Training Type/ method (ICT Tools):	Webinars, web meetings, online conferences	Educational Games	Video in learning courses			
Participant Profiles:	PubA/Installers/ A&E TechSol/Manufacturer/Software/ESCO					
Material Needed:	Educational Material, Simulation Solutions, videos, leaflets with instructions and brochures with simple drawings.					
Guidelines/ Recommendations	▪ Material should be clear and easy to adopt by the memebers ▪ Keep always a visual explanation of how the EE system works and is installed. ▪ Notice that Educational Game tools are among the favorite choice for this Knowledge, so software developers need to get involved. ▪ Use videos apart for the e-material to disseminate EE building components and systems if you are a solutions designer. ▪ Experimental building projects have a lot of useful demonstration material for EE training. ▪ If you are related to an experimental building, allow visitors for a living demonstration in order to produce impulse the training experience and assist connecting EE directly to the market. ▪ Keep the experimental building updated by collaborating with solutions designers to test their EE measures.					
Links	www2.schneider-electric.com/sites/corporate/en/products-services/training/energy-university/energy-university.page , www.socialhousingaction.com ; www.eaci-projects.eu/iee/page/Page.jsp?op=project_detail&prid=1724					

Summary:	E2. Evaluation of publicly funded research projects via it's applicability to the end-user.					
Providers	Public Bodies Finance	Knowledge Product Providers	Energy Providers	Energy Retrofitting Services	Quality Assurance	Demand
		R&D				
Receivers	Public Bodies Finance	Knowledge Product Providers	Energy Providers	Energy Retrofitting Services	Quality Assurance	Demand
	Public Admin					Building Managers
	GOV					
What to be achieved:	▪ Creat platform to show the end user (most interested in the rehabilitation of their homes and buildings) what kind of tools are advisable to improve energy efficiency in their buildings and to obtain a good thermal comfort inside. ▪ Since it has been allocated financial means to finance these projects, they need to be reached the greatest number of people, especially, who must start jumpstart the energy retrofitting process.					
Result(s) desired/ Learning Outcomes:	▪ Within the European Union there are research projects on energy retrofitting which have concluded as a result the demonstration of efficient installations, construction systems or good practices to give to end users of the houses.					
Training Type/ method (ICT Tools):	Blog-based learning, social networking sites, community	Online forums	Simulation			
Participant Profile:	Members that should attend are : R&D , Public Administration, Government					
Material Needed:	Simulation solutions, transparent information how to deal with the projects, how to search for the information in the database, Platform for the forums					
Guidelines/ Recommendations	▪ Language that is used should be clear ▪ Create a easily accesible FAQ Forum with who to use EE measures ▪ Keep always a visual explanation of how the EE system works and is installed. ▪ Notice that simulation tools is among the the favorite choice for this Knowledge, so software developers need to get involved. ▪ Use videos apart for the e-material to disseminate EE building components and systems if you are a solutions designer. ▪ Experimental building projects have a lot of useful demonstration material for EE trainingespecialy for building managers. ▪ If you are related to an experimental building, allow visitors for a living demonstration in order to produce impulse the training experience and assist connecting EE directly to the market. ▪ Keep the experimental building updated by collaborating with solutions designers to test their EE measures.					
Links	www.elih-med.eu/Layout/elih-med; fund.corpbank.bg ; http://www.youtube.com/watch?v=sQ_mndyVY6A					

Summary:	D1. Increase business motivation through public R&D initiatives and innovation funding.					
Providers	Public Bodies Finance	Knowledge Product Providers	Energy Providers	Energy Retrofitting Services	Quality Assurance	Demand
	Financial Agents	Software Developers				
		Manufacturers				
		R&D				
		Climate				
Receivers	Public Bodies Finance	Knowledge Product Providers	Energy Providers	Energy Retrofitting Services	Quality Assurance	Demand
	Public Admin	Technical Solutions	Renewable Energy	ESCO		Occupants
	GOV	Instalers	Energy Distributors	Architect & Engineer		
			Grid Operators			
What to be achieved:	▪ The government should support more resources for innovation funding for SMEs, as they generally must use their own resources to cover these matters. ▪ Research institutes, universities and administration (as public or semi-public bodies), obtain resources for this purpose, but to promote the financing or private sector could increase the production of rehabilitation techniques and energy resources, generating employment otherwise directed research in the private sector.					
Result(s) desired/ Learning	▪ Dealing with innovation funding there is a high need of funds. Therefore meetings presenting the ideas to the shareholders like (banks, financial institutions) are welcome.					
Training Type/ method (ICT Tools):	Webinars, web meetings, online conferences	Communication Tools	Video in learning courses			
Participant Profile:	Occupants, Installers, R&D, Manufacturer, Software, A&E, RenewEN					
Material Needed:	Leaflets , videos, basic start materials about bank products,					
Guidelines/ Recommendations	▪ Learning material should be presented in a simple manner. ▪ Keep always a visual explanation of how the EE system works and is installed. ▪ Create Public funded websites in which new ideas can be funed either for financial institutes or VC's ▪ Notice that simulation tools are not among the favorite choice for this Knowledge, but specific agents will be helped for these tools ▪ Use videos apart for the e-material to disseminate EE building components and systems if you are a solutions designer. ▪ Experimental building projects have a lot of useful demonstration material for EE training. ▪ If you are related to an experimental building, allow visitors for a living demonstration in order to produce impulse the training experience and assist connecting EE directly to the market. ▪ Keep the experimental building updated by collaborating with solutions designers to test their EE measures.					
Links	www.marie-medstrategic.eu/en/success-stories-or-best-practices/best-practices.html http://www.kickstarter.com/					

Summary:	**A5. Training of construction professionals (including architects, civil engineers, building services engineers, project managers, building designers, etc) in retrofit technologies.**					
Providers	**Public Bodies Finance**	**Knowledge Product Providers**	**Energy Providers**	**Energy Retrofitting Services**	**Quality Assurance**	**Demand**
	Public Admin	Technical Solutions		Architect & Engineer		
	GOV	R&D				
Receivers	**Public Bodies Finance**	**Knowledge Product Providers**	**Energy Providers**	**Energy Retrofitting Services**	**Quality Assurance**	**Demand**
				Architect & Engineer		
What to be achieved:	▪ Train technicians is very important, but the building user not always 100% confident in their recommendations about energy retrofitting, because the difference of price compared to traditional rehabilitation (cheaper) and lack of awareness about energy savings through retrofitting. ▪ It is necessary to train the technicians because they have to propose and design new and efficient technologies, it would be a good start in the knowledge transfer that training activities are proposed to help standardization of technical knowledge at the European level.					
Result(s) desired/ Learning Outcomes:	▪ Increased and adapted curriculum for Bachelors and Masters degrees in energy efficient construction technology will be necessary. ▪ Furthermore, short-courses together with other informal learning events such as seminars and workshops would serve to provide further educational opportunities.					
Training Type/ method (ICT Tools):	Webinars, web meetings, online conferences	Simulation	e-learning courses (synchronous, asynchronous)			
Participant Profile:	Participants are: PubA, Gov, A&E, R&D.					
Material Needed:	Presentations.					
Guidelines/ Recommendations	▪ Keep always a visual explanation of how the EE system works and is installed. ▪ Notice that simulation tools are the favorite choice for this Knowledge, so software developers need to get involved. ▪ Use videos apart for the e-material to disseminate EE building components and systems if you are a solutions designer. ▪ Experimental building projects have a lot of useful demonstration material for EE training. ▪ If you are related to an experimental building, allow visitors for a living demonstration in order to produce impulse the training experience and assist connecting EE directly to the market. ▪ Keep the experimental building updated by collaborating with solutions designers to test their EE measures.					
Links	www2.schneider-electric.com/sites/corporate/en/products-services/training/energy-university/energy-university.page ; http://www.youtube.com/watch?v=chl5_z-gkWg ;					

5.4. KT-ICT Tools to promote professional contact and generate knowledge (Task 4.4)

Summary:	**A4. The business society needs to be aware of tools to manage intellectual property.**					
Providers	**Public Bodies Finance**	**Knowledge Product Providers**	**Energy Providers**	**Energy Retrofitting Services**	**Quality Assurance**	**Demand**
		Technical Solutions			Patent Offices	
		Manufacturers				
		R&D				
Receivers	**Public Bodies Finance**	**Knowledge Product Providers**	**Energy Providers**	**Energy Retrofitting Services**	**Quality Assurance**	**Demand**
	Public Admin					
	GOV					
What to be achieved:	▪ The intellectual property of the company must be constantly updated and those company managers should be to establish the suitable methodology for knowledge flow and be renewed with the emergence of new technologies. ▪ Competitive companies should not have to ignore the intellectual property, and that professionalism will be increased and their ability to act will be enhanced.					
Result(s) desired/ Learning Outcomes:	▪ The need to publish and make results freely available is often viewed as being incompatible with industry's need to keep information confidential and protected by intellectual property rights such as patents. However, experience shows that promoting innovation and disseminating new knowledge can be compatible, provided that intellectual property issues are understood and managed professionally.					
Training Type/ method (ICT Tools):	Blog-based learning, social networking sites, community	Webinars, web meetings, online conferences	Mobile learning (mlearning)			
Participant Profile:	PubA, Gov, R&D, Software, Manufacture					
Material Needed:	Forums or trainings where experts from industry will discuss (explain) how Intellectual property can help the promotion and dissemination of new products and at the same time protect the investment.					
Guidelines/ Recommendati	▪ Create the apropriate material that disseminates the Intellectual property procedures					
Links	www.marie-medstrategic.eu/en/success-stories-or-best-practices/best-practices.html ; www.limburg.be; http://www.eaci-projects.eu/iee/page/Page.jsp?op=project_detail&prid=2600					

Summary:	D2. Industry needs financial support to take up results of scientific innovation.					
Providers	**Public Bodies Finance**	**Knowledge Product Providers**	**Energy Providers**	**Energy Retrofitting Services**	**Quality Assurance**	**Demand**
		Technical Solutions	Renewable Energy	ESCO	Life Cycle Assessment	
		Manufacturers			Certificate Entries	
		Installers				
Receivers	**Public Bodies Finance**	**Knowledge Product Providers**	**Energy Providers**	**Energy Retrofitting Services**	**Quality Assurance**	**Demand**
	Financial Agents					Occupants
	Public Admin					
	GOV					
What to be achieved:	▪ Typically innovation is transformed into items or products that have a high initial cost and companies or research organizations cannot be able to fund. Because of this, many research efforts are frustrated and remain mere ideas or theoretical data not reach implement. ▪ Public bodies should create or promote a funding system that will drive appropriately the results of the investigation and solve the barrier of knowledge transfer. ▪ Funding could help to show the research efforts, so that the knowledge base through innovation is transformed into elements that help the end user about energy retrofitting.					
Result(s) desired/ Learning Outcomes:	▪ Development of appropriate financial instruments to foster cooperation between industry and R&D entities. ▪ These instruments can for example include the setting up of grants for promotion of innovative products, tax revisions on items related to innovation sourcing (e.g. attendance to expo fairs, seminars, patent fees). ▪To control financial benefits, it might be appropriate to install an associated quality assurance scheme to ensure the actual diffusion and implementation of the retrofit.					
Training Type/ method (ICT Tools):	Webinars, web meetings, online conferences	Communication Tools	Blog-based learning, social networking sites, community			
Participant Profile:	Finance, Gov, Occupants, Certificate, TechSol, Manufactures, Installers, RenewEn, ESCO					
Material Needed:	Information how to interract with financial instutions. Knwoledge of financial products					
Guidelines/ Recommendations	▪ Financial Institutions has to comunicate the new financial products ▪ Financial institutes has to be close to the EE Market and Industry					
Links	www.eaci-projects.eu/iee/page/Page.jsp?op=project_detail&prid=1519 ; http://www.youtube.com/watch?v=8kUih_t9aCs					

Summary:	D3. Occupants need financial support to invest in EE retrofitting technology.					
Providers	,	Knowledge Product Providers	Energy Providers	Energy Retrofitting Services	Quality Assurance	Demand
	Public Admin				Certificate Entries	
	GOV					
Receivers	Public Bodies Finance	Knowledge Product Providers	Energy Providers	Energy Retrofitting Services	Quality Assurance	Demand
	Financial Agents					Occupants
What to be achieved:	▪ The users of the buildings are the largest group of the value chain and, therefore the most important. They are who decide in most cases about the energy retrofitting kind in their housings or buildings. ▪ The public administration should financially support to users who want to implement rehabilitation technologies, rewarding them for wanting to contribute to the development and improvement of knowledge in the value chain. ▪ Due to the lack of energy awareness of these agents in the value chain, financial assistance may be the key to a large number venture to implement in your home.					
Result(s) desired/ Learning Outcomes:	▪ Creating forums or trainings where experts from R&D, Finance institutions will discuss (explain) the need, opportunities to invest in EE retrofitting technology. ▪Financial institutions should create new products optimal for different occupants, and also government can reduce taxation in energy efficiency buildings.					
Training Type/ method (ICT Tools):	Communication Tools	Webinars, web meetings, online conferences	Video in learning courses			
Participant Requirements:	Occupants, Finance, PubA, Gov, Certification Authorities					
Material Needed:						
Guidelines/ Recommendations	▪ The produced material that promotes the financial products has to be in a understadable form the Occupants prespactive. ▪ The Finacial products has to be transparent ▪ Notice that simulation / games tools are not among the favorite choice for this Knowledge, but it can be easy for the occupants to understand the Pros /Cons of the EE retrofiting technology ▪ Use videos apart for the e-material to disseminate EE building components and systems if you are a solutions designer. ▪ Experimental building projects have a lot of useful demonstration material for EE training. ▪ If you are related to an experimental building, allow visitors for a living demonstration in order to produce impulse the training experience and assist connecting EE directly to the market. ▪ Keep the experimental building updated by collaborating with solutions designers to test their EE measures.					
Links	www.warmupnorth.com/;www.eaci-projects.eu/iee/page/Page.jsp?op=project_detail&prid=2533; http://www.youtube.com/watch?v=P9I8zingLjE ; http://www.youtube.com/watch?v=W_YIrxBHukM					

5.5. KT-ICT Tools to exploit R&D findings (Task 4.5)

<table>
<tr><td>Summary:</td><td colspan="6">A1 - Training of traditional craftsmen on EE retrofitting innovations.</td></tr>
<tr><td rowspan="7">Energy Retrofitting Services</td><td>Quality Assurance</td><td>Demand</td><td>Energy Providers</td><td>Energy Retrofitting Services</td><td>Quality Assurance</td><td>Demand</td></tr>
<tr><td></td><td>Software Developers</td><td>Renewable Energy</td><td>Architect & Engineer</td><td></td><td></td></tr>
<tr><td></td><td>Technical Solutions</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Manufacturers</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>R&D</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="7">Energy Retrofitting Services</td><td>Quality Assurance</td><td>Demand</td><td>Energy Providers</td><td>Energy Retrofitting Services</td><td>Quality Assurance</td><td>Demand</td></tr>
<tr><td></td><td>Installers</td><td></td><td>Architect & Engineer</td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>What to be achieved:</td><td colspan="6">The aim is to involve traditional craftsmen with innovative Energy Efficiency systems and techniques that can be implemented in building retrofitting.</td></tr>
<tr><td>Result(s) desired/ Learning Outcomes:</td><td colspan="6">▪ Increase of the energy efficiency knowledge among installers and professionals of the construction sector.
▪ Expose traditional craftsmen to demonstration projects.
▪ Provide tools for the home-owner and craftsmen for decision making.
▪ Integrate Energy Efficient concepts in the traditional construction.</td></tr>
<tr><td>Training Type/ method (ICT Tools):</td><td>Simulation</td><td>Video in learning courses</td><td>e-book</td><td></td><td></td><td></td></tr>
<tr><td>Participant Requirements:</td><td colspan="6">Traditional installers, architects and engineers aware of only basic EE concepts.</td></tr>
<tr><td>Material Needed:</td><td colspan="6">brochures with simple explanations, e-material, simulation tools and videos, that contain demonstration of EE measures.</td></tr>
<tr><td>Tips</td><td colspan="6">▪ Keep always a visual and simple explanation of how the EE system works and is installed.
▪ Notice that simulation tools are the favorite choice for this Knowledge, so software developers need to get involved.
▪ Use videos apart for the e-material to disseminate EE building components and systems if you are a solutions designer.
▪ Experimental building projects have a lot of useful demonstration material for EE training.
▪ If you are related to an experimental building, allow visitors for a living demonstration in order to produce impulse the training experience and assist connecting EE directly to the market.
▪ Keep the experimental building updated by collaborating with solutions designers to test their EE measures.</td></tr>
<tr><td>Links</td><td colspan="6">http://www.proyectoedea.com/en/
http://e4rsim2.aidico.es/
http://www.arfrisol.es/ARFRISOLportal/
http://www.youtube.com/playlist?list=UUclfsCdMjBezViybZ19sG2A
http://www.u4energy.eu/web/guest/33</td></tr>
</table>

Summary:	C4 - When communicating research results, more focus needs to be given to practical benefits of the retrofit technology.					
Providers	Energy Retrofitting Services	Quality Assurance	Demand	Energy Retrofitting Services	Quality Assurance	Demand
	Renewable Energy	ESCO	Renewable Energy	ESCO		
		Manufacturers		Architect & Engineer		
		R&D				
Receivers	Public Bodies Finance	Knowledge Product Providers	Energy Providers	Energy Retrofitting Services	Quality Assurance	Demand
		Installers		Architect & Engineer		Building Managers
						Occupants
What to be achieved:	The objective is that agents involved in research, or capable to implement research results within their activity, present these results in a friendly way to society, this is, in terms of economical savings and comfort.					
Result(s) desired/ Learning Outcomes:	▪ Reasearch results will not get stuck in the technical side of the value chain and will flow towards the agents in charge of the decision making. ▪ Installers and Architects & Engineers will improve communication skills to demonstrate to end-users the benefits of EE solutions in a more attractive way.					
Training Type/ method (ICT Tools):	Online forums	e-learning courses (synchronous, asynchronous)	Blog-based learning, social networking sites, community portals			
Participant Requirements:	Anyone who wants to save energy in their house, including Architects & Engineers and Installers who can assist house-owners on EE decision making.					
Material Needed:	Forums and community portals are the most familiar tools for end-users, but e-material is also welcomed.					
Guidelines/ Recommendations	▪ If you are a Public Admin, foster opinion exchange in community websites between end-users regarding benefits on EE R&D results experienced. End-users listen to other end-users! ▪ Translate your results of energy or CO2 saving data, and include economical savings and comfort level information. ▪ Include images with the information you provide. ▪ Develop a "social" version of your information sheet avoiding technical language and including more interesting parameters for society.					
Links	http://www.ase.org/blog/top-10-energy-efficiency-smartphone-apps https://www.gov.uk/government/news/save-energy-cash-this-winter http://www.smarthome.com/forum/default.asp http://blog.togetherwesave.com/					

Summary:	C2 - Real-life evaluation of research results.					
Providers	**Public Bodies Finance**	**Knowledge Product Providers**	**Energy Providers**	**Energy Retrofitting Services**	**Quality Assurance**	**Demand**
	Financial Agents	Technical Solutions			Patent Offices	
	Public Admin	Manufacturers			Life Cycle Assessment	
		R&D			Certificate Entries	
Receivers	**Public Bodies Finance**	**Knowledge Product Providers**	**Energy Providers**	**Energy Retrofitting Services**	**Quality Assurance**	**Demand**
	Public Admin	Technical Solutions		Architect & Engineer	Life Cycle Assessment	Building Managers
		Manufacturers			Certificate Entries	Occupants
		Installers				
		R&D				
What to be achieved:	The aim is to take the knowledge out of the labs and complete the testing of EE solutions in existing buildings in a real life scenario.					
Result(s) desired/ Learning	▪ Assist the solutions designers to optimize the final product considering new and random parameters. ▪ Involve demand agents with EE by experiencing energy saving measures.					
Training Type/ method (ICT Tools):	Communication Tools	Blog-based learning, social networking sites, community portals	Webinars, web meetings, online conferences			
Participant Requirements:	End-users to test EE solutions, agents that aprticipate in the design, public bodies and quality agents to optimize the process.					
Material Needed:	Guidelines, comunity websites, and online events.					
Guidelines/ Recommendations	▪ If you are a Public Admin you can develop a program to promote collaboration between house-owners and solutions designers, considering support of finantial agents. ▪ If you are a Quality assurance agent, provide assistance for certificates in the real-life testing approach. ▪ If you are a solutions designer, develop easy understandable material that explains the system and its monitoring process. ▪ Also, look up for a way to gather the user's experiences and translate them into technical input to improve the technology. ▪ Experimental building projects are sometimes existing buildings and should be considered.					
Links	http://enercitee.eu/Sub-Projects/RIEEB---Regional-Impact-with-Energy-Efficient-Buildings,57/ http://www.renov.proyectoedea.com/es/content/objetivos-0 www.esesh.eu or www.e3soho.eu					

Summary:	C1 - Scientists need to have increased contact with the end-users in order to understand the applicability of their research.					
Providers	Public Bodies Finance	Knowledge Product Providers	Energy Providers	Energy Retrofitting Services	Quality Assurance	Demand
	Public Admin	Manufacturers				Occupants
		Installers				
Receivers	Public Bodies Finance	Knowledge Product Providers	Energy Providers	Energy Retrofitting Services	Quality Assurance	Demand
		Technical Solutions				
		R&D				
What to be achieved:	The objective is to improve communication skills in scientists and ensure recognition of communication efforts.					
Result(s) desired/ Learning Outcomes:	▪ Increase interaction between scientists and the agents at the end of the value chain. ▪ Create new communication channels between agents to improve EE solutions with their feedback.					
Training Type/ method (ICT Tools):	Webinars, web meetings, online conferences	Online forums	Communication Tools			
Participant Requirements:	EE solutions designers for building retrofitting.					
Material Needed:	Online events and forums or any communication tool where scientist and end-users are able to interact.					
Guidelines/ Recommendations	▪ Use simple questionnaires with scale question type. ▪ If you are an occupant, make sure the feedback provided is related to the analyzed technology. ▪ If you are a Manufacturer or Installer, you can provide valuable feedback to scientists regarding the technology production and implementations processes. ▪ If you are a Public Admin, your feeback is important regarding the chances the EE technology has to success in society and to receive an investment incentive. ▪ Public Admin, need to moderate the communication channels and foster scientist to participate on them. ▪ Also, Public Admin cam gather this feedback, and traslate it into summarized guidelines for scientist to improve comminication skills.					
Links	http://bookshop.europa.eu/en/energy-cbWmMKABstNjAAAAEjNZEY4e5L/					

6. CONCLUSIONS

The main objective of ***ee-WiSE Project*** is to identify the best way of Knowledge Transfer at the EE sector regarding building retrofitting, for each agent involved at the value chain, always bearing in mind that SMEs are the main targeted subjects and taking into consideration the special conditions of the Mediterranean area. The ee-WiSE KTF is based on the work done in previous stages of the project: knowledge transfer flows analysis (WP2), knowledge needs analysis, best practices and potential solutions (WP3).

The KTF is effectively a web-based platform that consists of a number of ICT Tools that can be accessed through the project web-platform [www.ee-wise.eu] (Figure 9). In order to address the needs identified in WP3 a lesson guideline is developed for each need, specifying in detail:

- who the providers and receivers of knowledge are,
- the type as well as the format in which the knowledge should be transmitted, and
- based on the opinion of consortium partners (in their role as providers and receivers of knowledge themselves in the EE value chain) the most appropriate ICT Tools.

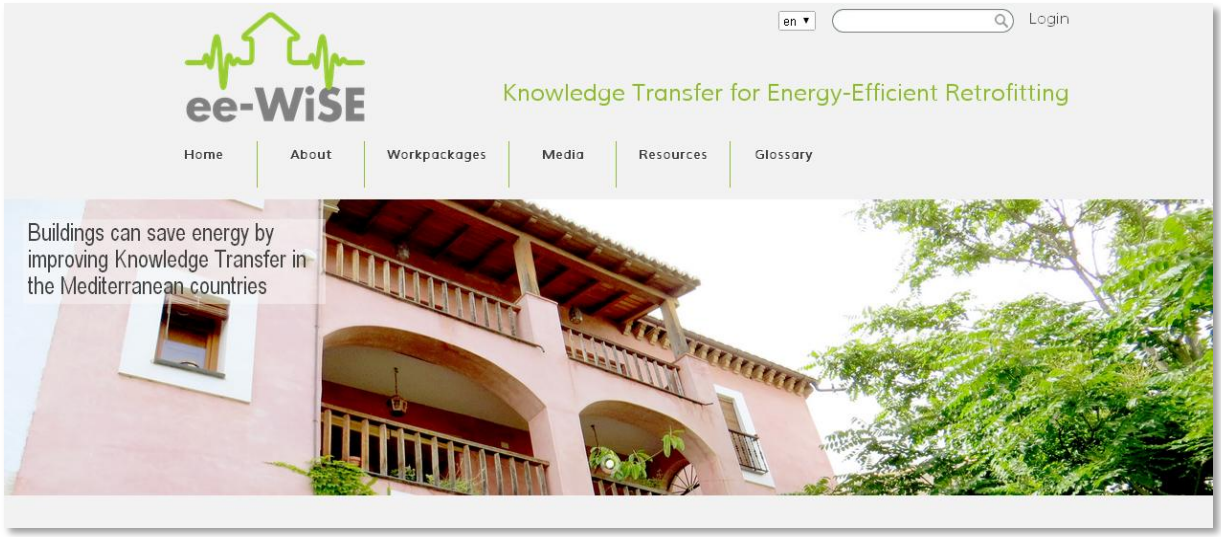

Figure 9: ee.WiSE website

WP4 is the first milestone to define an approach that will lead to appropriate solutions for overcoming the Knowledge transfer gaps in the Energy Efficiency sector. Moreover the KTF proposed in WP4 gives the opportunity to effectively share and disseminate the new knowledge produced, by all value chain actors and especially to the SME value chain agents.

The degree to which the lesson guidelines of WP4 (Section 5) provide adequate guidance to organizations (acting as knowledge providers) to develop engaging, and effective training material will be validated in WP5 "*Framework and Tools Validation within the Value Chain and other Stakeholders*". In effect WP5 will determine whether the hypothesis of the ee-WiSE initiative is valid, that is, whether the gaps in the system, formulated into specific needs can be effectively addressed, through the input provided by the lesson guidelines, and the use of the recommended ICT Tools within the Knowledge Transfer Framework developed.

The practical based evidences obtained through WP5 validation experiences will lead to the formulation of *WP6 "Definition of the Knowledge Transfer Global Strategy: Guidelines and Recommendations"*. Still, this knowledge and information should be formulated in a practical, useful and easy way, so to maximize it usage and thus the project's impact. The most appropriate solution that would increase to the maximum degree the above is the development of a business model (WP6) , that will include answers on the following 3 questions:

a. *How to generate new knowledge,*
b. *How to effectively share this knowledge and*
c. *And how to disseminate and use it.*

In any case, the recommendations and guidelines report will address these issues from a perspective of the different parts of the value chain, including the EE market up-take, cross-sectorial cooperation, and standardization, public procurement and certification. Policy recommendation concerning the promotion and support for sustainable business models in the sector that reduce risks will be given a special attention, with an important focus on how to successfully develop multi-skilled SMEs' partnerships.

Summarizing, deliverable 4.2 demonstrated the training methods and activities that reflect the ways agents of the Energy efficiency value chain prefer to learn and presented the ways they could gain knowledge and overcome the already identified breakpoints of the knowledge transfer process. The training approach supports the use of e-material because it is easier to reach out a greater number of potential trainees and also demonstrate the benefits from the use of e-material in the best way, which is, hands on job rather than a theoretical approach.

The above approach had been based on the prerequisite that in the new era is shown a more solid interest for mobility possibilities and on-the-go approaches. This, if seen in parallel with the necessity for new skills for the new range of jobs created worldwide, clearly shows the need for digital literate people in all age groups and from all agents of the value chain, people that will have digital competencies to support the EE EU sector.