Deliverable 4.3-1b
International workshop report 2:
Vision Validation Workshop

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PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

SEVENTH FRAMEWORK
PROGRAMME

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1. Executive summary

The first REViSITE vision validation workshop (VW1) was held on the 25th of January 2011 in the VTT laboratories in Espoo, Helsinki, Finland. The workshop saw the participation of ten REViSITE Expert Group (REG) members, an expert panel comprising of a wide range of academic institutions, research centres and companies from across Europe, and all REVISITE consortium members as well as the participation of the Aalto University of Helsinki, experts in the area of smart lighting.

This event represents the second of five workshops[1] organized by REViSITE to interact with experts, aligned to ICT4EE, in order to assess possible cross-sectoral opportunities identified by the project where ICT can positively impact on energy efficiency. This workshop has mainly focused on the assessment of the SMARTT taxonomy and the feedback from the REG on the impact assessment model and the REViSITE Multi-Disciplinary Vision for ICT-enabled Energy Efficiency. The workshop also discussed the findings of the common ICT multi-disciplinary analysis carried out during WP2 "Impact assessment of ICT for energy efficiency" activities.

The opportunity to interact with such experts was invaluable in both validating the value of the developed SMARTT taxonomy and the strategy undertaken for the vision development. The REG participated very actively in the event and offered the consortium several points of discussion and feedback that proved very useful and were in line with the workshop aims.

Key issues discussed during the workshop are briefly listed here and analysed in depth later in the document:

- SMARTT taxonomy feedback

- Impact Assessment Model (IAM) presentation and assessment

- Multi-Disciplinary Vision for ICT-enabled Energy Efficiency development presentation

In conclusion the event was very productive and it provided a variety of important inputs for the REViSITE programme of work, in particular the impact assessment model and the REViSITE vision development.

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[1] The first workshop, the Community Validation workshop, (CW1), was held in Sophia Antipolis, Nice, during June 2010, and all the issues discussed have already been reported in Deliverable D 4.3-1a.

2. Abbreviations

BIM	Building Information Modelling
CMM	Capability Maturity Model
CO	The REViSITE consortium – participant members are listed in Appendix III
CVW	Community and Validation Workshop
DOW	Description of Work
EC	European Commission
ETP	European Technology Platform
IAM	Impact Assessment Model
IAP	Implementation Action Plan
ICT	Information and Communication Technologies
ICT4EE	Information and Communication Technologies for Energy Efficiency
LCA	Life Cycle Assessment
PM	Project Manager
REG	REViSITE Expert Group
SRA	Strategic Research Agenda (the ICT4EE Roadmap)
VW1	Vision Workshop
[REG]	Each name of people listed in Appendix II

3. The aims of the first Validation Workshop (VW1)

The second International Workshop, entitled as the Vision Validation Workshop (VW1) was focused on the assessment of the activities carried out by the project, and, specifically, about the REViSITE Taxonomy assessment, as the main topic, and the REViSITE Vision for ICT for Energy Efficiency development. The VW1 gave the consortium the opportunity to confront the results achieved with the REG members who came to the meeting with an exhaustive knowledge about the discussion topics since they were provided with the main related deliverables in time for assessment. The event was held near the mid-term of the project and contributed very positively to the VW1 aim.

3.1 Purpose and target audience

The main purposes of the 1st validation workshop, the second of the five scheduled by the project, was to assess the taxonomy developed in WP2 and to discuss about the work done so far by the WP3 in relation to the ICT for Energy Efficiency REViSITE Vision.

The audience that took part in the event was represented by the REG with high expertise in each of the different sectors covered by the project. In brief the REG's expertise was in specific areas as follows:

- 2 from Smart Grid
- 2 from Smart Manufacturing
- 5 from Smart Building, and
- 1 from Smart Lighting

3.2 Objectives and scopes

The main objectives of the workshop were:

⇨ **To assess the deliverable 2.1 and 2.2**. The work focused on the development of the SMARTT taxonomy that is common for the four ICT for EE sectors. The different expertise of REG represented the right team for its assessment. Also the IAM has been presented and discussed together with the experts.

⇨ **Potential improvements of the REViSITE vision.** These are potential ideas to overcome any detected gaps in the REViSITE analysis of cross-ICT4EE theme.

3.3 Impacts

The overall work, conducted during the day, impacted positively on what the REViSITE consortium developed so far and offered several inputs that will be considered for the imminent development of the Vision document.

3.4 Outputs

The positive impact of the REG on the day confirmed that the approach adopted by the project respect the common needs of an entire ICT for Energy Efficiency community, and that the results will represent an added value for the future.

Main outputs developed during the working day were related to the assessment of the taxonomy, the IAM and to drive the REViSITE ICT for Energy Efficiency Vision towards a right development path.

4. Description and official records of VW1

4.1 The approach to VW1

The organization of the VW1 was previously discussed during the consortium meeting on the day before. The consortium defined the main scope of the workshop and scheduled the following day as reported. Also the aim to interact, hence discuss with REG, apart from gathering their point of view, was underlined during the consortium meeting.

The VW1 has been divided in three different topics:

1. Brief presentation of the project results and general feedback;

2. Specific presentation on taxonomy and impact assessment model, and vision and specific feedback; and

3. Brainstorming exercises conducted between the consortium and REG members.

The consortium participated in the workshop with 11 members, including an expert on smart lighting, belonging to the Aalto University of Helsinki, subcontractor of VTT.

The REG members participating were 10 and their specific expertises are reported in paragraph 5.1 while their attendance is reported in Annex II.

The detailed Agenda is in annex 1.

4.2 Structure and overview

The main organisation of the event has been divided into four different sessions:

- The first session focused on gathering from REG both general feedback about the project, and specifically about D2.1, D2.2 and D3.1

- During the second session CO presented plans for completion of Impact Assessment Model

- Third session focused on plans for the Roadmap development, which included plans for the Vision development, and

- The last session has been implemented through a focused brainstorming exercise carried out by the REG. after dividing them into four groups each one led by a consortium member.

First working time lasted for about 3 hours where active interaction between all participants underlined the interest that experts belonging to different sectors showed toward REViSITE. This part also foresaw the general feedback for the project, and specific for the SMARTT taxonomy and the REViSITE Vision for ICT for Energy Efficiency.

Part of VW1	Input by the CON	Output by the REG
1st Workshop part	REViSITE general presentation	Feedback on the project
	SMARTT taxonomy and impact assessment model presentation	Feedback on SMARTT taxonomy and on IAM
	Strategies implemented for the REViSITE Vision development	Input to better drive the development
2nd Workshop part	Brainstorming exercise explanation	ICTs with the most impact on EE per area

Table 1: Input-Output actions during the working day

4.3 Procedures and Outcomes

4.3.1 First part workshop

The first part of the VW1 foresaw the discussion with REG concerning general feedback about the project, and about the deliverables sent to REG previously – specifically D2.1, D2.2 and D3.1.

The related minutes are reported in annex IV.

To underline the high level of interactivity achieved during the working day, the different discussions have been reported in the minutes appendix, and the REG interventions have been underlined in a grey box.

The procedures adopted were similar to the one used in the previous REViSITE workshop, with the difference of some breakout sessions not performed in CV1.

CO presented to the audience, through the use of slides, the overall information and findings of REViSITE. During presentations REG had the opportunity to comment and feedback on the various topics exposed.

In order of appearance the following presentation took place:
- General presentation of REViSITE
- SMARTT Taxonomy
- Impact Assessment Model
- First steps towards REViSITE Vision Implementation

The workshop began with the **PM** who welcomed the audience and asked for a brief presentation and introduction from all the participants and presented the scheduling of the day agreed by the entire audience.

During presentations the REG interacted with the CO to expose their comments and to ask for clarification about specific and strategic issues undertaken by the project.

The workshop embraced some discussions about the progress in the roadmap and the REViSITE first step at the vision, how the CO is thinking to develop the vision for cross sectoral ICT for Energy Efficiency.

Later, the **PM** asked for a feedback about the documents sent to all the REG following a brief presentation of the project, and the gathering of feedback from REG about the documents sent previously (D2.1 – D2.2 – and D 3.1).

Main questions raised have been related to:

- Why smart lighting and smart building have been considered as separate topics
- Why transport have been excluded by the REViSITE methodology

CO explained these choices were made because REViSITE has been aligned with the expectation of the European Commission expressed in the work programme regarding the topics the projects is intended to cover and research in.

4.3.2 Second part Workshop: brainstorming exercise

The second part of the day has been developed with a brainstorming exercise to investigate about which ICTs technologies, according to the REG and consortium expertises have the major impact on energy efficiency.

The following figure summarises the four specific working groups per theme with the name of participants:
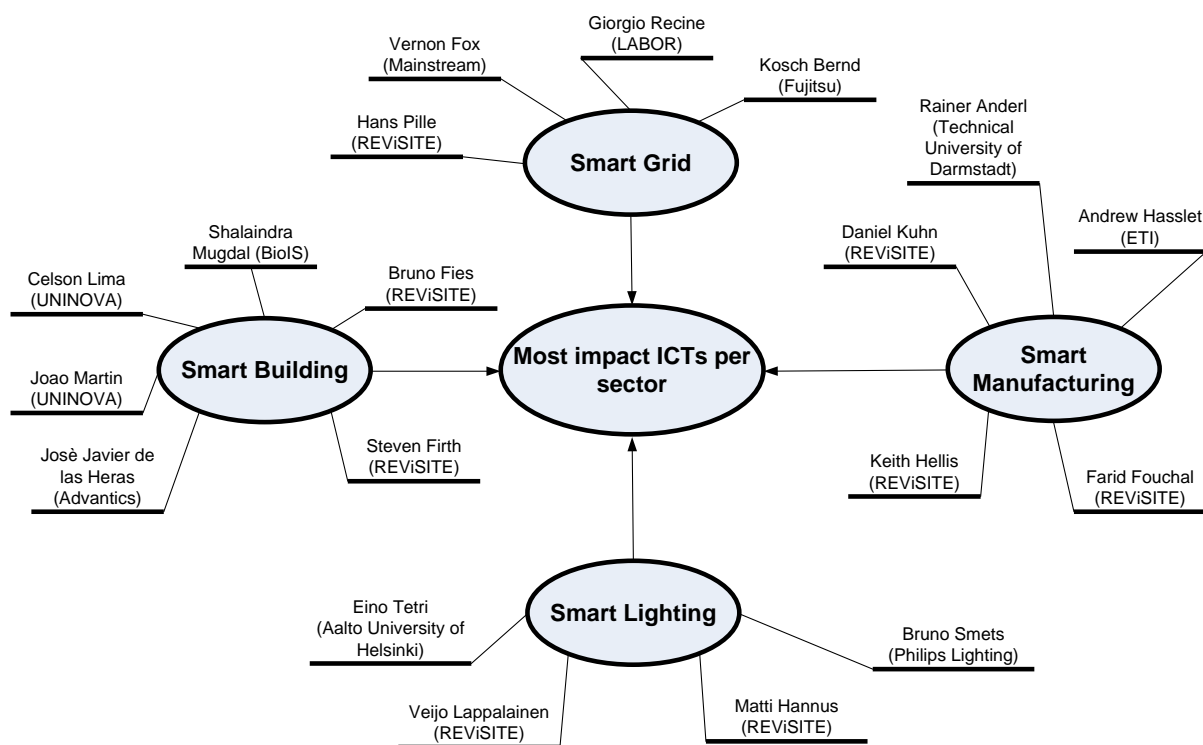
Figure 1: Brainstorming session: working groups

The exercise has been organised as follows:

1. The REG and the consortium together will brainstorm about which, according to the various specific sector expertise, are the major ICTs technologies impacting on energy efficiency.

2. One representative per each group, hence four, would report the results of the session,

3. The entire participants discuss, agreeing or not, about the results obtained.

The following table summarizes the results:

ICT TECH impact	Smart Grids	Smart Buildings	Smart Manufacturing	Smart Lighting
Technology with most impact for sector	Monitoring and Control of distribution networks	BIM: extension of BIM→ Real time building management system	Decision Support Tools	Lighting Control Integration with day-lighting
Second Technology with most impact for sector	Energy Market Scale	Proactive Technologies → smart devices	Planning and Design tools	Total building design Methods, Tools, Templates Utilisation of integrated solutions (lighting + components)
Third Technology with most impact for sector	Prosumer Interface	Standards → High and low level interoperability	Scheduling activities (ERP, SAP) with respect to EE	Maintenance support Working conditions and performance monitoring Lighting facility management
Fourth Technology with most impact for sector			ICT Tool for Control systems (EE path, Factory equipment)	

Table 2: ICT Technologies impacting the most per each sector

The overall discussion foresaw the agreement of the entire communities about the results developed by the single working group.

These results represent a great point for proving the cross-sectoral approach of the ICT for Energy Efficiency applicable to the all four sectors, and that the taxonomy suits perfectly to the overall sectors.

4.4 Discussion and feedback from REG

As the overall discussion has already been reported into the minutes (Appendix IV), the following reports on the main outcomes in relation to the various issues addressed by the consortium.

4.4.1 About the REViSITE taxonomy and impact assessment methodology

Most comments and feedback about the taxonomy came out during the presentation given to the REG by the CO where a strong interaction and participation gave the project some focus points to assess the work carried out and how to improve the overall development. The main points are:

- The SMARTT taxonomy could represent a great added value for the overall standard settings between all the ICT for energy efficiency areas.

- The impact assessment model should consider, also if not indicated in the Description of Work (DoW), the impact brought by the transport sector into the various areas.

During the same session also many doubts, from the REG perspective, have been clarified in order to facilitate and simplify the understanding of the aim of the taxonomy and IAM development. Once clarification was made, the entire REG understood and could assess positively the potential of such work.

4.4.2 About the REViSITE methodology

As per the previously discussed topics, the taxonomy and the IAM, also for the methodology used, REG underlined the need to take in consideration issues related to the transport and logistics. In particular REG commented:

- The REViSITE methodology should be broad and consider the other sectors such as transport (at least think about it if not possible to talk about it).

In respect to this observation CO clearly responded that the transport sector, although if not explicitly, is taken into consideration both in the taxonomy and IAM.

4.4.3 About the overall project

The overall feedbacks about the project were extremely positive.

REG members, during and after the workshop expressed their positive feeling towards the action REViSITE is undertaking and underlined the importance and the added value that some further actions can provide to the project. Although there were some issues raised such as:

- Why lighting is considered a separate sector from Smart Building,
- Why transport sector is not considered.

the clarification about these issues, together with some more technical and specific related to Taxonomy, IAM and Vision future development (reported in the paragraph 4.3.1 and in appendix IV), allowed the audience to better see the REViSITE objectives. The CO also took into consideration the suggestion to add into each deliverable a development summary, to be sent to REG, together with the deliverable, in order to offer a better vision of the entire structure and history. Also the deliverable will be sent earlier in order to offer the REG the possibility to have more time for their analysis and evaluation.

4.5 REG post-event feedback

After the end of the workshop, the consortium published a questionnaire focused on main aspects of the project and on the event evaluation.

The link to questionnaire (http://www.surveymonkey.com/s/REVISITE) was sent out to all REG members gathering a response percentage of the 50% (5 out of 10).

In the specific the questionnaire foresaw an open question related to the workshop day, that is:

'Please provide us feedback, comments and suggestions for future better workshop organisation'

Following the comments and feedback gathered:

- 'More time for sector(s) based subgroups work/brainstorming. Receive specific requests in advance.'

- 'Everything has been perfect during the first two workshops. Looking forward to meeting all of you again!'

- Share information earlier in time, focusing on the issues to be discussed with the REG.

All these comments will be used in the near coming future for a better scheduling and organisation of the next VW2.

5. Event Evaluation

5.1 Event participation

The total number of attendees for VW1 was 21, with 10 REG (appendix II) and 11 persons from the consortium. The REG members and their expertise is reported in the following table:

N	Expert	Smart Grids	Smart Manufacturing	Smart Buildings	Smart Lighting	ICT
1	Prof. Dr-Ing. Reiner Anderl		X			
2	Andrew Haslett		X			
3	Bernd Kosch			X		X
4	Bruno Smets				X	
5	Celson Lima			X		
6	Giorgio Recine	X				
7	Joao Martins			X		
8	Mr. Josè J. De las Heras			X		
9	Shailendra Mugdal			X		X
10	Vernon Fox	X				
TOTAL by AREA		2	2	5	1	2

Table 3: REG members and expertise

5.2 Impact on the VW1 scopes

The VW1 impacted positively on the scope foresaw by the consortium. Differently from the first Community workshop, this one was more delicate and important for the on-going activities. Interactions with such experts produced the following impact on REViSITE:

- A better and deeper description about the ICT in Smart Manufacturing

- To deeply consider the Market View for the IAM

5.3 Comments on the VW1 event

The CO considered this workshop a very fruitful one. The audience participating showed a high level of interest in REViSITE activities and through the continuous interaction emerged during the workshop many inputs have been gathered for the ongoing activities of the project.

5.3.1 REG Comments

To assess the overall outcome of the vision validation workshop the consortium designed a questionnaire sent to all the REG members.

REG's comments have already been reported in paragraph 4.5.

5.3.2 Chairman assessment and global evaluation

The workshop was a very productive and fruitful event. The consortium was able to obtain from the REG an expert view on the development of the work within REViSITE particularly in relation to the SMARTT taxonomy, the IAM and the REViSITE vision. The very useful and helpful feedback we obtained from the REG will guide the next stages of the project. This gave confidence to the consortium that the project is going on the right track, which in addition to the peer review process we apply for all key deliverables we gained a much clearer view for the way forward.

6. Conclusion and recommendations

6.1 Conclusion and lessons learnt

VW1 represented the second of the planned workshops in REViSITE and the first workshop based on discussion related to the achieved results of the project. The REG feedback was positive concerning the overall approach and methodologies developed by REViSITE CO, whilst recognising the complexity of the project's scope.

The brainstorming exercises undertaken within the breakout sessions with the REG were very productive in identifying the top 3 ICTs having most impact on energy efficiency for each of the four sectors. These results have been used to identify the potential cross sectoral ICTs which helped in guiding the development of the multi-disciplinary vision for ICT enabled energy efficiency

The workshop had a positive assessment about the developed REViSITE SMARTT taxonomy and the Impact Assessment Model and it also provided very useful suggestions for the REViSITE cross sectoral Vision for ICT for Energy Efficiency. In particular, the workshop provided the consortium with the following important recommendations for the future:

- To focus on all energy demands, including electricity and heating

- To continue to use the SMARTT taxonomy, which is considered robust, as a method to classify ICTs in the current and future project deliverable

- To develop the vision with reference to the recent existing EU-wide sector-specific visions already published

- To highlight the work of the European Institute of Innovation & Technology[2] and their 'KICs'[3] on Carbon and Energy and to find a way to cooperate

The feedback and the discussions developed during the workshop strengthened the already well-developed foundation of the project (through the use of the SMARTT taxonomy) and provided the consortium with clear guidance for the REViSITE Vision for Multi-disciplinary ICT-enabled Energy Efficiency.

6.2 Recommended issues for the next REG workshops

Before closing the day, CO asked for some improvements that could be undertaken for the scheduling and the organisation of the following workshop, VW2. As already mentioned during the minutes, the main outputs related to these issues are following reported:

- To send the documents to be discussed previously in time

- Add a summary page for the deliverable

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[2] The EIT is a new independent community body which was set up to address Europe's innovation gap. We aim to rapidly emerge as a key driver of EU sustainable growth and competitiveness through the stimulation of world-leading innovation.

[3] Knowledge and Innovation Communities (KICs) are to become key drivers of sustainable economic growth and competitiveness across Europe through world-leading innovation.

- Consider more time for the brainstorming sessions
- Provide more detailed expectations to the REG

7. Input for D3.1

7.1 Input for D3.1 – Vision for Multi-disciplinary ICT-enabled Energy Efficiency

During the workshop we gathered the following feedback about the REViSITE Vision:

- There is the need for more recent documents to be used in the revision of the existing one.

- There is difficulty in distinguishing in the deliverables between background material and original research.

- Provide a final vision in a 5-10 page document, so that it is clear and to the point especially for the EC who may use the findings for directing future research.

These suggestions have been taken into consideration for the development of D3.1

Apart from these feedback and suggestions we also gathered other inputs from the REG, using the questionnaire we sent to all of them, and where a section was precisely devoted to the vision.

We precisely asked: '*In one or two sentences describe your vision for ICT4EE'*

The gathered answers were 5 out of 10, and the answers related to the vision are following reported:

- My vision of ICT4EE (namely on Smart Buildings) relies on two basic principles: optimization and consumer awareness. For both, one must have reliable (qualitatively and quantitatively) data, proper algorithms, enough control capabilities and good visualization tools.

- The use of ICT is fundamental for the implementation of an energy generation/consumption system in which the use of RES and Distributed Generation is highly diffused. This is possible only with efficient Demand Response and Demand Side Management.

- Regarding buildings, ICT4EE vision must rely on full interoperability between all the different components from the conceptual stage up to the usage. That means including BIM for improving accuracy in simulations and networking technologies for adapting all the different products in an energy management system.

- While renewable energy will solve the climate problem in the long-term, EE provides the only short-term solution and ICT is its most important enabler. Guidance and control is what ICT should offer.

All these answers will be used and aligned within the ICT for Energy Efficiency common Vision in course of development by the REViSITE project.

8. Appendices

Appendix I: Agenda of the VW1

Start	Dur	Description	Led by
9:00	0:30	Arrival, coffee	
9:30	0:10	Welcome, organisation, agenda	VTT & LOU
9:40	0:20	Project status and targets for the day	LOU
10:00	0:45	Comments by REG on D2.1, D2.2 and D3.1 (3' each – on a single PowerPoint slide)	REG members
10:45	0:30	Break (Coffee)	
11:15	0:30	ICT4EE impact assessment – model development	INTEL
11:45	0:45	Impact assessment workshop – part 1	INTEL
12:30	1:00	Lunch, Cabinet Spinno, VTT main building	
13:30	0:30	Visit to VTT labs	
14:00	1:00	Impact assessment workshop – part 2	INTEL
15:00	0:30	Break (Coffee)	
15:30	0:10	Plan for the RTD Roadmap	VTT
15:40	0:20	Remaining steps to finalise D3.1 Vision	LOU
16:00	0:50	Discussion	
16:50	0:10	Update on the next REViSITE Workshop	LOU
17:00		End of meeting	

Appendix II: Expert Members Group attending the VW1.

REViSITE
Roadmap Enabling Vision
and Strategy for ICT-enabled
Energy Efficiency

Name	Organisation	Signature
Anderl Reiner	TU Darmstadt, Germany	
Andrew Haslett	ETI, United Kingdom	
Bernd Kosch	Fujitsu	
Bruno Smets	Philips Lighting, The Netherland	
Celson Lima	Uninova	
Giorgo Recine	Labor Srl, Italy	
João Martins	Uninova	
José Javier de las Heras	Advantics	
Shailandra Mugdal	Bio Intelligence Service S.A.S., France	
Vernon Fox	Mainstream Renewable Power, Ireland	

Espoo, Finland 25ᵗʰ January 2011

REViSITE

GA No.: 248705

SEVENTH FRAMEWORK PROGRAMME

Appendix III: Consortium Participants

Name	Institution
Tarek Hassan	Loughborough University
Keith Ellis	Intel Labs
Daniel Kuhn	Fraunhofer
Hans Pille	Kema Consulting
Matti Hannus	VTT
Veijo Lappalainen	VTT
Eino Tetri	Aalto University of Helsinki
Antonio Feraco	INNOVA SpA
Bruno Fies	CSTB
Farid Fouchal	Loughborough University
Steven Firth	Loughborough University

Appendix IV: Minutes of the VW1 (extracts from discussions)

REG *I think it is quite tough to follow the work in the position we are, when I got the documents few month after your development, we have a very precise idea in terms of time information but we didn't know what happened before, and sometimes when I was assessing the documents I got difficulties to figure out what is behind the work, hence sometimes the evaluation cannot be that precise in this sense. Maybe one thing that could help us to read the document in the evaluation is to have the document in a page with the target objectives, the major points, because sometimes when the document is not so well structured is not so easy to understand what is the very point of this document. A sort of major summary with the main topics of the documents in a page, it will also help us in being more precise in assessing the document.*

CO*: in all the deliverables we deliver we have a summary page.*

CO*: something we can do for the future is to create a document flux. It could be a good exercise to see the various steps of the documents.*

Followed the REViSITE brief presentation.

REG:

What is the purpose of a common taxonomy? What is it should be used for?

CO*: 'It will be deeply explained later by the presentation related to the D2.1 and D2.2, but in few words it is a way of structuring and of categorization of the work of REViSITE in terms of categorising ICTs and RTDs under common grounds for the target sectors'*

CO*: 'I will better explain it in the WP2 presentation; essentially four different sectors with four different specific languages each, different terminology for ICTs, what we tried to do is to give them a common way to structure those ICTs to make them communicate easier, not an easy task.'*

Following this first discussion a general organization of the project, its work package and respective leader description was delivered to the audience together with the impact the project will have.

*This event represents the second workshop and it is labelled as the **vision workshop**. The project is at an advanced stage of the impact assessment model of ICT for energy efficiency. The main activity will be regarding the impact assessment methodology and the presentation of the actual status for the vision implementation.*

REViSITE does expect from REG, first of all some fruitful discussions through the workshop and some feedback about the deliverables sent for peer review.

The expected outcomes of the project are the cross sectors roadmap, the SMARTT taxonomy, and the common methodology for the ICT assessment methodology, the consolidated community and, it is also expected to raise awareness and promote ICT for Energy Efficiency as a cross sectoral and cross disciplinary path. This is what REViSITE is aiming to achieve together today and in the long term.

REG
*'I have very fundamental questions **regarding the scope**:*
1. Why is lighting a separate topic?

> *2. Why is traffic and transport, which for EU is efficiency topic with probably the biggest carbon impact not part of this project?'*

CO in respect of the question 1 of **REG**

1. *'Lighting can hardly be considered as part of buildings, but we can consider that there is internal lighting for buildings and external lighting like street lighting, several initiatives, internal to the EU Commission, addresses lighting as a separate discipline. There have been major players involved in that as well.'*

> **REG:** *'Lighting at the moment has a considerable attention from EU commission for two reasons. 1. Because there is a transition from classical lighting to LED lighting, hence for the digitalization of lighting where is possible, so the relation with ICT is big, and when you put lighting in context of building you are completely right, and lighting can take, depending on kind of building, 10% of energy consumption in residential area, but in offices will be 40% , so from that respect it is a component contributing to a large extend support and it's a one where payback times are very short, and maybe this is because in the new digital agenda has some action points regarding the lighting, so it's not only pushed for the moment from the Commission ; so from a rationale point of view you could argue that it shouldn't be a separate sector.'*

> **REG:** *'It is not only the EU Commission to push towards lighting as separate discipline, there is a new trend in a lot of conferences where there are new topics addressed in lighting as a separate sector.'*

CO in respect of the question 2 of **REG**

2. *'About transportation, European Commission is organised into Units, and each unit produces calls in relation to specific sectors, this was purely to address the call, and transportation was handle by a different unit of European Commission. It is absolutely right that transportation is an important sector impacting very strongly the European Union. We are hoping that within the knowledge we are producing there will be complementarities related to transportation, but the short answer is this is the way how things are organised '*

CO in respect of the question 2 of **REG**

'There a lot of other initiatives looking at transport and logistics, hence it has already been addressed by other initiatives, and the call we applied for focused on the topics covered by REViSITE.

> **REG:**
>
> *'An interesting extension to the points that have been raised here, there is a lot of point of resolution within the methodology which addresses specific things, even at the grid level when we talk about the smart grids there is a political level, solution are required, such as having a standard mechanism, for the super grids, may be technologies already exist but they have to be put together, as a PAN EU level.*
>
> *It's very interesting, there is a potential solution and I think that the outputs from REViSITE should facilitate the structure of their at all.'*

CO explained that the comments done will be taken onboard and check how they will cope within the REViSITE methodology, although the project is a CA, and within the time scheduled and the allocated resources we are not able to investigate in depth all the issues

arisen here. Especially into the specific research agenda the CO can check how to incorporate those issues.

> **REG**
>
> *'This discussion brings to a very important question that means 'Can you develop a concept for Energy Efficiency other than a holistic one?'*

CO stated that it is a cross-sectoral approach, and of course we cannot use a non-holistic approach.

The workshop moved to the comments related to the deliverable D2.1 and D2.2 focused on the SMARTT Taxonomy development and the Impact Assessment Model for ICT4EE, discussed together with results.

CO underlined that the model used in the project is not a model in a mathematical sense, but is more a model in the sense of framework and approach. It is very much related with qualitative information, and not quantitative. The model is more dealing with the heuristics of the four different sectors.

REViSITE used Life Cycle thinking and an adapted Capability Maturity Model.

Life Cycle thinking has been used, and helped in understanding what precisely REViSITE is going to cover within this action.

CO needed a way to communicate between the four specific sectors, so REViSITE developed a common taxonomy and came out with the SMARTT taxonomy.

CO:

'We simplified a life cycle of a product for our purpose, and for each specific sector. We wanted to say we are going to look at the intersection of each phase and we shall deal with the industry within itself but not specific for each sectors.

CO explained how the different categories of the implemented taxonomy relate with the different phases of the life cycle in each sectors – manufacturing, building, etc. –.

> **REG:**
>
> *'I don't see the difference between the resource and process management and the technical integration layers.'*
>
> *'I mean that the taxonomy has to be simplest as possible to be understood by people from each different factors.'*

CO:

'Even to focus in ICT in one particular category, depending on the level of your own organization, it can be very hard to describe where it then sits, the ICTs are very broad, hence you have to rely them to a specific contest and, then, try to make a judgement on where to place them. But typically with technical integration REViSITE is referring about typical middleware software. We are very much aligned with who will use the taxonomy. We find that the approach used is quite useful and understood by all.'

> **REG:**
>
> *'What about the material construction phase?'*

CO:

'*We are not excluding the material construction phase, we are not excluding the calculation of body care in the materials, but we are not considering it as a separate issue, in the design phase think about the type of materials you are going to use in terms of energy and sustainability.*

REG:

'*Life cycle thinking makes you think to Life Cycle Analysis, but what you describe here is input output analysis and if you are more explicit about life cycle thinking and the balance between life cycle analysis and input output analysis, perhaps with people that are familiar with those concepts, you can have a very high problem within your end of life of materials, in explaining it, and have also a very high problem in the end of the life cycle thinking. '*

CO:

'*We want to include ICT that allows to make decision of the disposal of manufacturing, we didn't want to think about ICT as part of it.*'

REG:

'*Are you looking at the energy embodied in products? Or are you looking at energy used in manufacturing processes?*'

CO:

'*In manufacturing processes*'

REG:

'*The description of manufacturing says nothing about energy.*'

CO:

'*It will be better addressed in the deliverable in D2.2.*'

CO:

'*Our main focus is not on manufacturing technologies that can save energy, it is on ICTs technologies that can enable energy savings.*

Where we see the most benefit in ICT in manufacturing as per energy savings in on usage phases due to some of the visualization tools that allows you to save energy during the manufacturing process.'

Essentially what we wanted to do here is to build a common language.'

CO continued with the explanation of the CMM used for the IAM developed by REViSITE.

REG

'*When you speak about behaviour, the 15 percentage of consumption in UK is based on Heating and the solution stays more in improving control than in changing behaviour. So when you speak about behaviour do you mean that people should behave differently or in relation to the control system of heating, for example?*'

CO

'*We do refer to the ICT related to the control system, allowing for an energy efficiency improvement.*'

After the overall presentation CO asked the REG to show us the comments on the deliverables sent.

> **REG**:
>
> *'The overall approach, and the contents is sound.*
>
> *It is not clear where the benefits you talk about are consumer value benefits or producer value benefits, or also political benefits, and for me it should be more consumer benefits focused.*
>
> *Lighting is valuable as a separate sector, but sometimes it has to be included in smart building, as in designing of a building the lighting system is an integral part of the design.'*

> **REG:**
>
> *'You should also be aware about the European Institute of Technology Initiatives (EIT), because EIT has established a so called KICs, Knowledge and Innovation Communities, and there is one KIC active on plant, and it could perfectly fill into your roadmap approach.'*

> **REG**:
>
> *'The major problem today, since we have many technologies waiting for implementation, is that there is no interest in using those technologies because of different reasons, one is that there is no sufficient payback on using those technologies, but there are also areas where when you look at the market structure (and **the market is a completely missing part in your analysis**) that has certain forces that drives the use of such technologies. Analyse who has interest in driving energy efficiency technologies into the market would be a valuable strategy.*
>
> *When you look at the smart grid at least in Europe, at the specific market situation, there is no regulation for such market, and the major companies will not want it.*
>
> *When I read the document I took it for granted that: there is a technology, and we will show it to the world, and the world will adopt it. But this has to be looked carefully.'*

> **REG:**
>
> *'The economic part should be considered, such as the market structure and the market forces, that drives decisions in implementing technologies, and strongly it should be integrated into your approach.'*
>
> *'The market perspective could be considered into the levels of the maturity model.'*

Appendix IV: Workshop proceedings

Sample of questionnaires gathered

List specifically for each main category of the SMARTT taxonomy below 2 or 3 ICTs you see as having

Specification & Design			Materialisation (as per REVISITE definition)			Automation & op
ICT n.1	ICT n.2	ICT n.3	ICT n.1	ICT n.2	ICT n.3	ICT n.1
(Smart Buildings) Enhanced BIM including on-line real-time information (namely from smart meter wireless sensors)	(Smart Buildings) Building and occupancy modelling and simulation, which is essential for real-time forecasting of energy needs		(Smart Buildings) Real-time wireless communications integrating smart sensors	(Smart Buildings) Decision support and visualization consumer awareness tools aiming to changing consumers' energy habits		(Smart Buildings) Wireless sensor networks, integrating their information for physical (e.g. renewable power generators, electrical protection devices, electrical storage devices, etc.) and virtual devices (e.g. building management and weather forecasting systems).
standardization of EMS and BMS communication protocols	simulation and forecasting of loads and generation (both electric and heat/cold) for applicaton of Demand Response		real time communication on power line at high distance and high data rate, supporting IP network and integration with local WSNs			integration into EMS and BMS of smart appliances and dispersed load measurements (power and heat/cold)
Integration of BIM models into real time decision making processes for EE in buildings	Building Model Infrastructure Implementation as a UML profile using ecore models leveraging the power of the Eclipse platform and its modelling possibilities, creating a DSL (Domain Specific Language)		Augmented reality –supported visualitation	Embedded sensors into materials (RFID?)		IPv6 as enabling technology for real integration of new devices (wireless sensors) and legacy systems
--- none --- EE-related Specification and Design is an old topic			--- none --- very low impact of ICT on EE			EE-optimzed Supply Chain Management
specification	simulation		mangement & control			automated m0nitoring & control

Section 2

the greatest potential impact on EE within the EU. Where possible please elaborate on your choice.

erations decision support		Resource and process management			Techni
ICT n.2	ICT n.3	ICT n.1	ICT n.2	ICT n.3	ICT n.1
(Smart Buildings) "Inexpensive" distributed smart energy metering, enabling real-time assessment.	(Smart Buildings) Optimal control based on real-time forecasting (for both, energy production and consumption)	(Smart Buildings) Integrating real-time data with process planning, namely maintenance procedures.	(Smart Buildings) Knowledge sharing for short, medium and long term estimations (short - energy efficiency improved by accurate installation control) (medium - performance optimization by learning occupants' behaviour, which may include, for instance, predictive control actions on energy storage renewable production) (long - investments decision, namely on energy production and maintenance activities).		(Smart Buildings) The use of IEC 61850 standard protocol as a data model for the communication between systems and devices, describing each Intelligent Electronic Device (IED) as an abstract object with specific functions and capabilities and, therefore, guaranteeing the interoperability between them.
decision support system and user interface for proactive consumption/generation	automatic actuation based on price signals for: demand response capacity (load shifting), micro-CHP generation, storage through heat/cold store and electric vehicles				
Real time energy management systems based on wireless protocols (IEEE 802.15.4)		WSN integration with ERP = Internet of Things	Cloud services for B2B		IPv6 as enabling technology for real integration of new devices (wireless sensors) and legacy systems
EE-optimized car-navigation with real time traffic information and forecasting	Digital-Tachograph-based truck-driver monitoring and education	Demand-Response in SMART Grids, including weather-based price-setting			--- none --- old ICT concept, proven to be ineffective in most application fields, no obvious *realistic* benefit for EE
decision support & visualization					technical integration & interoperability

Section 2

List specifically for each main category of the SMARTT taxonomy

| ical integration | | Trading & Transactional management | | |
ICT n.2	ICT n.3	ICT n.1	ICT n.2	ICT n.3
(Smart Buildings) Efforts to standardized the various wireless protocols.		(Smart Buildings) Implementing several degrees of energy awareness (citizens, apartments, offices, buildings, blocks, districts) through appropriate applications.	(Smart Buildings) Optimized EMS (Energy Management Systems) through appropriate energy trading procedures with the energy suppliers.	
		HW and SW for the implementation of Intra-day electricity markets	HW and SW for communication between aggregators and clients for managing Demand Response and generation capacity, bidding to the wholesale market	
Smartphones platforms support for data exchange (Android, iOS, etc.)		Cloud platform for citizen involvement in EE decisions	IPv6 as safer protocol for exchanging information, and even money!	
		Real-time electricity trading platform for end-users (would require regulatory action that enables real-time ... facility energy management		

Section 2

> **In your view, what are the ICTs which can be used across the four target sectors to improve energy efficiency?**

(Smart Buildings) Energy awareness packages – Consumers (citizens) are the "Roseta Stone" for energy efficiency. One must find out how to address distinct types of users (speaking different "languages") in order to pass them the unique massage of energy awareness.

ICTs technologies that are needed in all sectors and can contribute to EE are the ones related to load (and generation) measurement, communication, forecasting and actuation.   These technologies (partly described in the previously mentioned fields) could allow: 1. Communication grid-building 2. Communication electricity and heat/cold loads   3. Communication with micro-CHP, heat/cold storage, electric vehicles

Internet of Things paradigm can achieve a real integration between processes among the four target sectors. The aim is to know everything anywhere, anytime.

unclear, what this question means. Sensor-networks are certainly a relevant ICT for all the target-sectors, but each sector will have its own specific application-level ICT-scenario.

automated monitoring & control

Section 2

In one or two sentences describe your vision for ICT4EE

My vision of ICT4EE (namely on Smart Buildings) relays on two basic principles: optimization and consumer awareness. For both, one must have reliable (qualitatively and quantitatively) data, proper algorithms, enough control capabilities and good visualization tools.

The use of ICT is fundamental for the implementation of an energy generation/consumption system in which the use of RES and Distributed Generation is highly diffused. This is possible only with efficient Demand Response and Demand Side Management.

Regarding buildings, ICT4EE vision must relay on a full interoperability between all the different components from the conceptual stage up to the usage. That means including BIM for improving accuracy in simulations and networking technologies for adapting all the different products in an energy management system

While renewable energy will solve the climate problem in the long-term, EE provides the only short-term solution and ICT is its most important enabler. However, parts of the ICT4EE-discussion are unrealistic and/or insignificant. Focus is far more important than academic completeness

Guidance and control is what ICT should offer

Section 3

Please describe (if applicable) how your vision aligns to any of the SMARTT taxonomy categories					
1 Specification & Design	2. Materialisation (as per REViSITE definition)	3. Automation & operational decision support	4. Resource and process management	5. Technical integration	6. Trading & Transactional management
(Smart Buildings) Adequate modeling and simulation is essential for efficient control.	(Smart Buildings) Energy data and real-time communications are essential for efficient control.	(Smart Buildings) Proper control algorithms (monitoring and control) are essential for establishing trust and confidence on automation and operational decision support.	(Smart Buildings) Knowledge access is essential to create consumer awareness.	(Smart Buildings) Proper control algorithms need adequate technical integration.	(Smart Buildings) Adequate algorithms for energy efficiency need trading features.
a system which is capable to simulate the consumption and generation patterns at different levels: buildings, VPP, supergrid	a DSS is capable of forecasting and estimating possible actuation strategies and their impact at different levels	system is equipped with smart meters/actuators for main electricity loads (in buildings, electric vehids) and HVAC, as well as generators (RES or micro-CHP). High speed communication provides the	the generation and demand response capacities are aggregated at district level or via an aggregator to allow matching of generation and consumption patterns		price signals are provided by the electricity market and clients can bid on the wholesale market (in case via aggregator) to get electricity at low price and automatically adapt their consumption patterns
insignificant, because not a new topic	insignificant	This should be the clear focus. It is the key topic for ICT in the EE discussion	can be important in specific areas	irrelevant	can be a key area, if regulatory activity creates new market-structures
decision making support is key - once a solution is chosen ones need to live with it for a long period of time	the complexity of the solution in most cases results in suboptimal performance	intervention in complex systems is difficult to understand so automation becomes key			will be dtermined by the business models that really fly

Section 3

Please provide us feedback, comments and suggestions for future better workshop organisation

Just a few minor comments on the re-edited document... - Along the text there is still "REVISITE will...", giving the impression that REVISITE is still in an earlier stage of development. - On pag. 44 there is no name for example 2. - On the same page, the last table line shouldn't have "Possible rebound effects"?
more time for sector(s) based subgroups work/brainstorming. receive specific requests in advance
Everything has been perfect during the first two workshops. Looking forward to meeting all of you again!

Avoid the impression that external interests are influencing the work and concepts of REVISITE, e.g. - selection of areas including "lighting" bur excluding "traffic" (in sharp contrast to the common discussion - and with representation of a lighting-company in REVISITE) - inappropriate example (virtualization as an ICT4EE) with embedded company "commercials" (Intel, DELL)

Share information much earlier in time, indicate the real issues to be discusses with the advisory board

Session 4