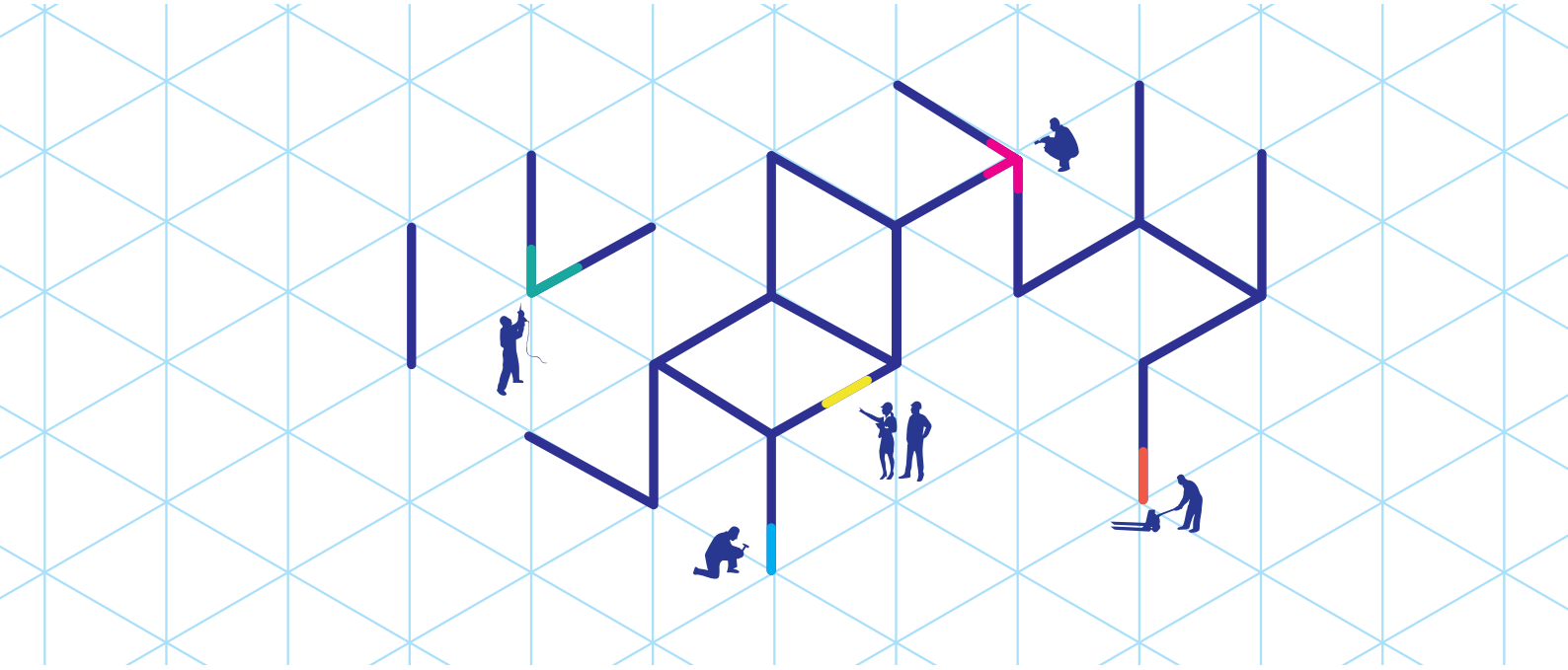
European Commission

BUILD UP Skills



Report to participants

9th EU Exchange Meeting

Athens, 6-7 December 2016

Executive Agency for SMEs

9th EU Exchange Meeting
6 – 7 December 2016, Athens

Report to participants

Authors:
Koen Rademaekers (Trinomics)
Rob Williams (Trinomics)
Irati Artola (Trinomics)
Simonas Gausas (Visionary Analytics)

CONTENT

Preface

This report sets out to harvest the results of the 9th BUILD UP Skills EU Exchange Meeting which took place on 6 and 7 December 2016 at the Crowne Plaza in Athens, Greece.

A total of 60 participants attended the two-day event including 53 BUILD UP Skills project coordinators representing finalised Pillar I projects, ongoing and finalised Pillar II projects as well as H2020 Construction Skills projects.

The event was prepared and facilitated by three consultants from Trinomics (Koen Rademaekers, Rob Williams, and Irati Artola), a senior consultant from Visionary Analytics (Simonas Gausas) and an event manager from GOPAcom (Adama Carr) together with EASME staff (Amandine Lacourt and Gordon Sutherland) under the service contract EASME/H2020/EE/2015/008 "Support for BUILD UP Skills EU exchanges and analysis on construction skills".

The Exchange Meeting consisted of plenary presentations of relevant projects and parallel break-out sessions with in-between time for informal networking and exchange of experience, as well as an interesting site-visit. Great appreciation and thanks is given to all the participants, for their hard work particularly within the Technical Working Groups (TWGs). The team of consultants would also like to particularly thank the Greek BUILD UP Skills coordinator Charalampos Malamatenios and his team for the warm welcome and involvement in organising this successful and enjoyable EU Exchange Meeting.

1 Agenda of the EU Exchange Meeting

The agenda for the two-day meeting was the following:

AGENDA — DAY 1 - December 6th

08:45 – 09:00	**Registration**
09:00 – 09:30	**Plenary Opening Session Day 1** Introduction and welcome by EASME Welcome and key note speeches by representatives of the Greek Energy Ministry, BUILD UP Skills UPSWING - CRES (the Center for Renewable Energy Sources and savings) and the National Organisation for the Certification of Qualifications & Vocational Guidance
09:30 – 11:15	**Parallel session 1: Technical Working Groups (TWGs)** TWG 1 **Finance** (sustainability) | TWG 2 **Mutual recognition** | TWG 3 **Innovative training infrastructures, materials & methods** | TWG 4 **Market acceptance**
11:15 – 11:30	**Coffee break**
11:30 – 12:45	**Parallel session 2: Project presentation** **BUS Finalised projects presentations** BUS Qualibuild - Ireland BUS BUILDEST II - Estonia **BUS Finalised projects presentations II** BUS Qualitrain – Germany BUS Energotrain - Lithuania
12:45 – 13:45	**Lunch break**
13:45 – 15:00	**Parallel session 3: Project presentations and Cooperation** **BUS Finalised projects presentations III** BUS We-Qualify - Cyprus BUS Construye2020 - Spain **Cross-craft understanding** Interactive workshop building on the work at previous Exchange Meetings **Cooperation between H2020 construction skills projects** (BUStoB, ingREeS, MEnS, PROF-TRAC, Train-to-NZEB) Session only open to these 5 projects
15:15 – 16:00	**Remarkable outputs of BUS projects** BUS projects are invited on the stage to pitch their remarkable results in 3 minutes and discuss them with the audience afterwards
16:00 – 16:15	**Coffee break**
16:15 – 18:45	**Site visit** The group will be taken to CRES (the Center for Renewable Energy Sources and savings)
19:00	**Dinner at Koukounari Restaurant** (Address: Mesogion 262, Chalandri 155 62) Voluntary, at own cost (approx. 25€/pp food & drinks included)

AGENDA DAY 2 - December 7th

09:00 – 09:10	**Plenary Opening Session Day 2** Overview of the agenda for the day by EASME and TRINOMICS
09:10 – 09:30	**Skills Panorama** Presented by Ms Stelina Chatzichristou from CEDEFOP
09:30 – 11:00	**Parallel session 4: Technical Working Groups (TWGs)** TWG 1 **Finance** (sustainability) | TWG 2 **Mutual recognition** | TWG 3 **Innovative training infrastructures, materials & methods** | TWG 4 **Market acceptance**
11:00 – 11:15	**Coffee break (including poster presentations)**
11:15 – 12:30	**Plenary Session - Presentation of projects relevant to BUS** Qualicheck Concerted Action on Renewable Energy Sources (CARES) Building up green skills for Trainers from the construction industry Geothermal and Solar Skills in Continuous Vocational Education and Training
12:30 – 13:30	**Lunch break**
13:30 – 13:40	**Communications** Session by contractor on dissemination of the project
13:40 – 13:50	**Plenary session – Presentation by Trinomics** Presentation on the latest BUILD UP skills activities of the contractor
13:50 – 14:30	**Plenary session – wrap up of the work by the TWGs** Plenary gathering in which the Chairs of the TWGs / consultants will report on the results achieved by the TWGs (day 1 and day 2) on one slide
14:30 – 14:45	**Closing by EASME**

2 Key Messages of the Exchange Meeting

2.1 Key messages of Day 1 (6 December 2016)

2.1.1 Plenary Opening Session

Day 1 opened with a short speech by **EASME Senior Project Advisor Gordon Sutherland** who reminded the audience that the main purpose of the EU Exchange Meetings is to share and reflect upon the work that has been done by the individual BUILD UP Skills Projects in the past months and years. He stressed that although reports to EASME are important, what really determines the success of this programme is the actual changes in energy efficiency skills in the construction sector that the BUILD UP Skills projects have managed / are managing to generate. European energy policy is also raising the importance of energy efficiency skills for construction workers. In addition to a revision of the EPBD, the new energy package ("the Winter Package") presented by the Commission end of November 2016 stresses the importance of and needs for training in this regard. The package overall comes with a large set of measures that emphasise a life-cycle perspective on buildings, which looks not only at how buildings are built, but also at how they are operated throughout the entire life cycle, in particular in the digital age.

Mr. Vasileios Kilias, General Director of CRES (Center for Renewable Energy Sources and Saving), provided some insights on the local, Greek context. While the country is still facing the economic crisis that hit Europe a few years ago, there are a few positive developments going on concerning energy efficiency and skills - the development of ESCOs is for instance very promising. Citizen involvement was mentioned as key to set the country's priorities for energy conservation and RES. As such, CRES is working close to citizens to find out what their priorities, wishes, needs are, for that will be key to successfully promote energy efficiency and RES in the country.

Ms. Ioanna Dede, Head of Division for the Certification of Qualifications at EOPPEP (National Organisation for the Certification of Qualifications and Vocational Guidance) reminded the audience of the objective of BUILD UP Skills UPSWING (Greek Pillar II BUILD UP Skills project): to support building workers, building owners, the construction sector and finally benefit society. The role of EOPPEP in the project has been to contribute to updating three occupational profiles: insulation technicians, aluminium and metal constructions craftsmen, and installers-maintainers of burners. EOPPEP is responsible for the certification of these occupational profiles and for accreditation of training and qualification schemes.

2.1.2 Key messages of the Parallel Sessions on Finalised BUS Projects

The following sessions elaborated on the outcomes of four presentations of BUILD UP Skills finalised projects which spelled out their results, main achievements and lessons learnt.

BUS QualiBuild - Ireland (Elisabeth O'Brien)

The course had two main aspects. Developing a foundation course and train the trainers (in the delivery of the foundation course). The **train the trainers** aspect has used a flipped classroom approach, which aims to engage the learners' pre-classroom, enabling debates and poster work within the classroom with additional workshops and site visits. The pilot was delivered in two phases. There was a low intake in phase 1, improving in phase 2 concluding 87 registered and 57 qualified, against a target of 100.

Some of the trainers felt the course needed to be carried out over a longer period of time to allow for a comprehensive study of the content. The trainers have adapted the teaching approach (flipped classroom) to other parts of their work (e.g. apprenticeships).

The Foundation Energy Skills course (FES) provided an accreditation at EQF level. The FES course provides a learners' manual available online and in hard copy and requires independent reading, reviewing of videos and other visual materials. The delivery is over a 3-day period (with 21-24 contact hours) with one of the days based at a demonstration workshop. The course is delivered over 5 or 6 weeks in an evening or day capacity. The participants have been (mainly) blue collar workers, with some white collar. Uptake was initially slower than anticipated, however this was addressed with active and targeted marketing, which improved take up. There have been 14 pilot courses run all around Ireland instead of the 10 initially foreseen.

To evaluate the work, the participants filled in pre- and post- (training) questionnaires and there have been telephone interviews with staff and employers. The practical elements and the ability to award continuous professional development (CPD) hours have both been important. In terms of practical delivery, weekdays are more popular in urban areas, though evenings/weekends are more popular in rural areas. The workers support and require an online platform to display their skills and a construction skill workers register (CWSR) was developed although still at early stages. The project also included a website for workers to register their skills, for customers and employers to find staff. 47 people have registered to date. The communication campaign has been important, the website has had 14,000 hits with the short practical videos (4000 views) being particularly popular.

With regard to the long-term sustainability of the project, the view is that future take up should be higher than expected. There is a need for a national organisation to take over the project and this likely requires government support. The Irish Further Education and Training Authority (SOLAS) will be a key player as they already have links to the training venues.

BUS BUILDEST II – Estonia (Liina Henning)

A key strength of the project has been its consortium. It includes Tallinn university (provides expertise similarly to energy agencies in other countries), an NGO (education - vocational training centres), two large employers unions – HVAC engineering and construction employers union (in charge of certification) and a certification agency. The central principle of the project is to work with existing training systems and improve them. There are 28 relevant professional standards in Estonia, all of which were due for review, so the opportunity existed to adjust their content to include energy efficiency skills.

The consortium included bodies that could publicise and promote the idea of getting these qualifications. The BUS Pillar I project in Estonia already highlighted that there were high numbers of non-qualified workers in construction – so along with existing professionals they were a target and were covered in five of the adapted training courses in the Pillar II project. Courses were also adapted for more highly skilled workers, with a focus at site foreman level. The project has also supported training of trainers, this was relatively long and demanding – 108 hrs, but is viewed as a success, with trainers happy about the number of tools they got for their future work. Some (about 50%) went on to pilot (16+8 hours) of training (for trainees) – for a total number of 350+ participants. The project has also produced 20 units of video training.

In order to be sustainable, the training content needs to be on the list of training courses that is financed / supported by the government. This list is agreed every 6 months. In the spring of 2017 47 courses are being offered, which should get about 500 people trained. To continue this into the future, the Ministry of Education and Research has assigned Euro 800k financing per year to training of non-qualified, un-employed or in risk of un-employment target groups in the sector of construction. Courses are free to the participants, though they don't get paid travel or learning time.

A problem has been the low motivation to learn from blue collar workers. A project success story has been the visual learning materials (videos). Trainers and companies have been very positive on these, for both low and higher skilled learners, as they tend to speed up the training. With these videos trainers need methodological support, such as learning outcomes, introductory slides and questions to test learning outcomes.

BUS Qualitrain – Germany (Iris Pfeiffer)

BUS Qualitrain aimed at the design and implementation of large-scale qualification and training schemes as well as accompanying measures which ensure a sustainable system of lifelong qualification of blue-collar workers in the building sector. The focus of this project was on fostering systemic thinking and interfaces between trades (i.e. cross-craft training). Besides a one-day train-the-trainer course on cross-craft understanding and a free-of-charge train-the-trainer online learning tool, the project has also developed a cross-craft training course consisting of six modules and, importantly, created one stop shop for craft persons (esp. in SMEs) on these issues.

The developed cross-craft training course is a CVET course that can be taken anytime following the traditional training (e.g. VET programme). This course benefits both employees (increase of qualification) and employers (additional guarantee that their investment will have high returns). It is expected that in the following years SMEs will pay for the training course offered by interested training centres of which approximately 500 exist across all Germany.

The project disseminated its results through so-called circular letters, that is making use of pre-existing channels and mailing lists of professional organisations, people from the crafts sector and the scientific community.

BUS Energotrain – Lithuania (Mantas Jonauskis)

The main object of Energotrain was the setting up of a voluntary certification scheme for the development and recognition of professional competences and skills of the building workforce in Lithuania in relation to NZEB requirements. The project focused on the following areas: photovoltaic systems; solar thermal power plants; floor, radiator, and convector heating systems; radiant heating systems; low-voltage electrical equipment; windows and doors; flat and pitched roofs; rendered and ventilated facades; aluminum glass facades; and mechanical airflow ventilation systems.

Some of the project's outputs read:

- 12 training programmes developed
- 36 teachers trained
- 90 blue-collar workers certified
- 140 internal and external meetings held

- 14 sets of requirements for competences
- 77 enterprises and organisations involved

Mantas emphasised the importance for the project to follow a demand-driven approach (requirements of public and private customers for technology and competences) in developing qualification and training schemes, piloting, certifying and issuing competence passes. One of the key remaining challenges to be tackled after the end of the project is the wider marketing of the certification scheme and its expansion to higher qualification levels and segments of the sector that are not yet covered by the project. The other key challenges include introduction of a sector-wide ID card and of a new information system for management of these cards.

As for as the continuation of the project, the partners are currently considering:

- Wider marketing for the training and certification scheme
- How much the fee should be for the training and certification scheme (during the project this was made available for free).
- How to expand the scheme vertically (to higher education levels) and horizontally (to other areas currently not covered)
- New information systems (e.g. a mobile digital badge that shows the skills for a certain blue-collar worker has, an ID card for construction workers).

BUS We-Qualify – Cyprus (Marios Petrakkas)

In Cyprus, according to the «Roadmap» developed as part of Build Up Skills Pillar I project, it was estimated that at least 4.500 construction employees need to acquire green skills in 13 different skillsets up to 2020. Against this backdrop, We-Qualify has developed three trainings consisting of 24 hours of theory and 9 hours of practical exercise training each, for three types of professionals: windows installers and sun protection systems, workers in the field of installation of biomass small-scale boilers and stoves, and thermal insulation workers.

The We-Qualify project was one of the three nominated projects for the most successful European Projects of 2016, in the Public Domain category, for the promotion of clean, safe and efficient energy in Europe. However, the project did not fully manage to achieve the targets set in the beginning for training (the target was 125 people but they achieved 92) and certification (the target was 92 certified workers, but they achieved 76). The reason for this was that workers are sometimes already being trained in these areas within their companies, or by the specific product suppliers themselves.

The feedback of the workers that followed the trainings shows that the thermal insulation and biomass small-scale boilers and stoves trainings were the two best rated, in terms of the extent to which the trainings improved the knowledge and skills of the trainees (trainees thought that their skills has improved ‘medium’ to ‘very much’). Particularly thermal insulation trainees (71%) believe that they will put into practice what they learnt (for the other two professions only around the half thought that they will apply their new knowledge and skills in the work they do). According to the surveyed trainees the We-Qualify certificate would provide the most competitive advantage for the thermal insulation and windows and blinds training courses.

BUS Construye2020 – Spain (Javier Gonzalez)

When the 20-20-20 goals of the EU were published, Spain had to translate those goals to the Spanish reality, which resulted in identifying the skills gap. The current situation in Spain is that there are several people with primary education and university education, but there is a gap of people with a middle level of education. The Spanish BUILD UP Skills projects have been targeted at these.

The BUILD UP Skills Construye 2020 project (Pillar II) developed 9 training programmes and produced some didactical resources, including an app for mobile devices showing building workers a series of good practices related to the different steps of a building's renovation.

Some of the key results of Construye 2020 include:

- 2500 downloads of the App (available also in English);
- Webinars (in Spanish) on good practices on energy efficiency and energy renovation of buildings;
- 8 Didactical manuals – downloadable from the website on PDF;
- 25 courses;
- 429 trainees trained;
- 1430 hours training given;
- Upgrade of the BUS qualification platform developed under Pillar I;
- Website including: and observatory of skills needs in the construction sector (updated on the basis of a questionnaire to companies), a training platform, a platform helping home owners to calculate the energy level of their homes and to construction companies in view of renovation works.

The project's results have been disseminated through the "Ruta Construye" campaign in 15 major Spanish cities and major national media, directly or indirectly reaching out to nearly 12 million people.

The follow up to the project is still a question. The new training schemes developed will be partly ensuring continuation. The costs of these trainings will be covered by funding from the Spanish government. The consortium is developing MOOCS as well.

2.1.3 Key messages cross-craft understanding

The aim of this parallel session was to continue the discussion initiated at the 7th and 8th BUS EU Exchange Meetings on the topic of cross-craft understanding (CCU). At the beginning, the moderator shortly presented the topic of CCU including the need for CCU, difference between CCU and multi-skilling and soft/ basic/ transferable knowledge and skills, as well as the results of the discussions on CCU during the 7 and 8th EU exchange meetings.

The key objective of this session was to illustrate the issue of cross-craft understanding for a pre-identified real-life situation: *How to guarantee a highly airtight building envelop can be guaranteed in the context of requirements for NZEBs?* It has been established that the lack of knowledge of workers can often result in less air-tight building (e.g. thermal bridges, gaps in insulation or air leaks). Improving individual craftsmen's knowledge & skills will not be enough – craftsmen should know each other's functions and how to interact in an effective manner. Participants were asked to think how to address this question well before the event. During the session three groups of participants were formed to discuss and report on a number of possible solutions with regard to ensuring CCU in this

particular case including: Identification of training needs; selection of participants; role of the trainer(s); training content; training method; place of training; duration of training; and assessment of training, etc. The results from the group discussions are provided below.

Group 1 (reported by Theocharis Tsoutsos):

- **Identification of training needs:** identify bad cases/ mistakes in the form of sequences of processes; recommendations of possible solutions, possibly also speak about new practices and new legal framework (national, European);
- **Selection of participants:** focus on blue-collar workers;
- **Role of the trainer(s):** as much practical as possible; in some cases even a long-time experienced technician;
- **Content of the training:** similarly, as much practical as possible – present typical mistakes and carry out a blower-door test to prove mistakes to workers and facilitate their learning process; in addition, older workers could present the right way of carrying out selected tasks; potentially the blower door test is an efficient check test although expensive in some countries;
- **Duration of the training**: 4-16 hours; if there is a need for additional duration, then distance training and self-assessment activities could be foreseen;
- **Assessment of training**: check the building at the end of structural work; alternatively create "technical" mistakes and ask the trainees to discover them.

Group 2 (reported by Robertas Encius and Alexander Deliyannis):

- **Identification of training needs:** the need is for craftsmen to know and implement mainstream practices regarding air-tightness as much as possible;
- **Selection of participants:** all craftsmen;
- **Content of the training**: training should focus on different elements of air-tightness including insulation, roof, window/ doors, joints, pipes and electricity cabling;
- **Method of the training:** intensity and depth of training should depend on how far a particular occupation is involved in air-tightness operations. For example, bricklayer is directly involved thus needs to receive an in-depth training. Other occupations (e.g. electricians) that are not directly involved in air-tightness processes may only need some update of their knowledge with the help of theoretical lessons and simulations with a model building, so that they better understand the consequences of non-airtight construction.
- **Duration of the training**: 4-8 hours;
- **Assessment of training:** blower door test;
- **Idea:** seek to rent some unfinished high energy class building with some air-tightness problems and try to solve them during the training.

Group 3 (reported by Christiane Conrady):

- **Content of the training:** context of nZEB including principles of airtightness and handling of the appropriated air-tightness material;
- **Precondition for successful practice of airtightness-rules:** Architects have to draw specifications following air-tightness rules and transfer them properly to on-site foremen and site managers;
- **Participants of the training:** focused on workers. Small companies will send workers to training. Large companies will send foremen and site managers to training who can then transfer their knowledge to blue collar workers on site;
- **Method of the training**: practical training for workers and online training for quality assessors, architects and building managers. The key recommendation is that if training provider have to train workers with varying qualification they need to adapt their training methods to the different targets groups, e.g. more practical and less difficult to blue collars and more theoretical and more complex to white collars (e.g. assessors, architects and building managers);
- **Recommendation**: use of blower-door test for improving the cross-craft understanding: a) practical demonstration to learn from mistakes and b) assessment of the training.

There was overall a very lively discussion within the groups. Solutions proposed by groups were followed by a concrete example case – **the experience from the Austrian BUS CrossCraft project** as presented by Georg Trnka, Coordinator of the project**.** The project was aimed at developing a qualification scheme for cross craft trainings of professionals in the construction industry. The main focus of the scheme was on reaching NZEB standard (esp. ensuring airtight building envelope) and developing training with a large-scale and long-term approach. The project developed five on-site/ off-site modules for cross craft training, each with a different focus and length: cross craft on-site training (lasting 3-4 hours); basic off-site training (lasting 2 days); advanced training modules off-site (lasting 1 day) focusing on renovation of old buildings and RES; compact off-site course (4 days)

incorporating basic and advanced modules; and on-site quality coach training (3 days) for experienced craftsmen. The most important part of Georg's presentation was on challenges and lessons learnt including the following:

- It is important to keep trainings short in order to reach a large number of participants. Strong market demand existed only for the short on-site trainings; the cross craft on-site training together with the implementation of a blower door test (which lasted only 3-4 hrs) became the bestseller course. Meanwhile, the implementation of the two to four days' off-site trainings proved to be exceptionally difficult all over Austria. The likely reason were the impacts of the economic crisis on the Austrian construction sector: construction companies reduced their fixed employees to a minimum (to reduce fixed costs); SMEs were less likely to allow their workers to attend further training courses as they needed them continuously on-site. However, it was not so easy to find a proper building site to implement the short onsite trainings. Luxembourg experience of using a dedicated didactic building may be relevant here;
- The longer courses (2-4 days) were least successful. However, direct marketing of such course to SMEs proved to be the best marketing and promotion technique. Fairs, websites, newsletters or even active promotion by professional associations did not work in this case. One of the likely reasons were that the benefits of the cross-craft training are not crystal clear for potential learners (as no hard skill will be acquired during the training). Nevertheless, the content and structure of the two days Cross Craft training modules showed up to be very attractive for SMEs. Thus, education providers will integrate the two-day Basic Cross Craft training module in their training offers.
- To increase demand, the content of longer-term courses should be integrated in existing training programmes. The 3-day Quality Coach training may be integrated in training offers of the Austrian labor market service, while the content of the 4-day Compact off-site course may be integrated in the already existing VET trainings programmes for general foreman and timber constructors.
- General rule is that if no widely accepted certificate (e.g. an European certificate following ISO/IEC 17024) can be provided after completion of the course, the latter should be kept as short as possible.

2.1.4 Key messages of the parallel session on the ongoing H2020 construction skills projects

The purpose of the session was for the H2020 construction skills projects to update each other on their progress and any cooperation that there has been between the projects.

IngREeS

The project builds on the status quo analysis and national roadmaps developed in the framework of the BUILD UP Skills Pillar I projects in Slovakia and Czech Republic, this time focussing on the training needs of middle and senior level professionals. The goal is to have 700 people trained as a result of the project. Training delivery started in early 2017 but an upturn in construction has made it somewhat harder to attract the target audience (qualified professionals) to training.

Partners found out that an important issue was the length of training and trying to come out with an acceptable balance. The aim is also to make the training available across numerous regions. On the training modules, the original plan to produce 20 was reviewed to 15, to avoid duplication. Each

training module is 2 hour long, with supporting text and questions. Selected experts review the material to ensure there is no overlap, that it is up to date and reflects demand.

Partners have prepared two sets of training of trainers, i.e. in Czech Republic and Slovakia. They have been cooperating with the Austrian project Cross Craft (IEE) and the H2020 project Train to NZEB and are considering to integrate certain parts of these projects into ingREeS. They are also considering to integrate some of H2020 Prof-Trac results into their modules. The training material has been produced in English and German, although 4 parts (focussed on local legislation) were only produced in Slovak only (e.g. legislation). The training modules are not yet public.

MENS

The project is targeting building professionals, and aims to produce cross discipline learning at the post graduate level (level 7). A key point is that the training includes educational activities with hands-on demonstrations and experience. The project is targeted at women and the unemployed.

The courses are to be delivered in 10 countries, with a common structure for all countries, building on past experience within the consortium, market research and consultation with stakeholders. All MEnS courses have been credited to 10 ECTS. The training involves 40-50 hours in class, followed by an assignment (done in cooperation with the trainers), and finally an exam and the requirement to present the assignment. The project has developed an online portal, which is designed to be a learning point and to enable exchange of material.

The project aims to target 1800 professionals. The first session reached 364 people with the second session reaching about the same level. The third session is still to be done. Most of those reached to date have been engineers, with about 1/3 coming from the public sector and around 50% women or unemployed. The project also offers a set of 3-4 day intensive courses. Three have been completed in London, Cyprus, and Denmark. There is still one to be delivered (in Brussels).

As regards cooperation the project has held a Joint progress meeting with Prof-Trac. They have also shared a database with them and are planning a common event in March in Valencia.

Prof-Trac

The overall goal is to offer a solution to NZEB training needs. This is done via an open platform including CPD development materials. The project is developing a voluntary EU training scheme which is shareable between countries. The project includes a mapping of skills needs, and the use of materials from other projects. A central aspect is a train the trainers programme, with the hope that this will cascade down from the national level.

The project is also producing some visual materials that will be made available on the website, for others to use (free of charge). The project is producing an online database of training materials, grouped by theme (e.g. energy management, energy production, energy reduction and interdisciplinary).

The train the trainers aspect has already been delivered twice, with a third round due in January. Seven national training programmes have also been developed. There is an upcoming action to produce

a task (rather than profession) related qualification, which is designed to help overcome the national differences in the roles of professions.

It is hoped that these materials can be integrated into the BUS adviser app (at EU level). Promotional efforts are also under way to get other projects to use the material. This has included collaborations with BUStoB, Train to NZEB, IngREeS, MEnS and BUGs (a Spanish project)

BUStoB

The project came out of the Pillar I project in the Netherlands which identified numerous skills gaps. The project is developing 70 modules, with an online e-learning platform, to allow multiple users.
Two modules have already been developed, with 12 due by the end of the year. The idea is that the content of these modules is validated by users as well as the project partners. The Advisor app is on line in NL and BE. The design and shell of this may be offered to other countries to populate it themselves. A key benefit of using e-learning is the ease of access, but the drawback is the difficulty of promoting it and the fact that the training is non-mandatory.

A potential way in which the project could be made sustainable is by the links that are offered to more in depth training once the online modules have been completed. Another important aspect of long term sustainability is the need to keep material up to date.

The project has been working with MENS and PROF-TRAC, with the aim to share the training materials between the projects, and to make it accessible to all who register.

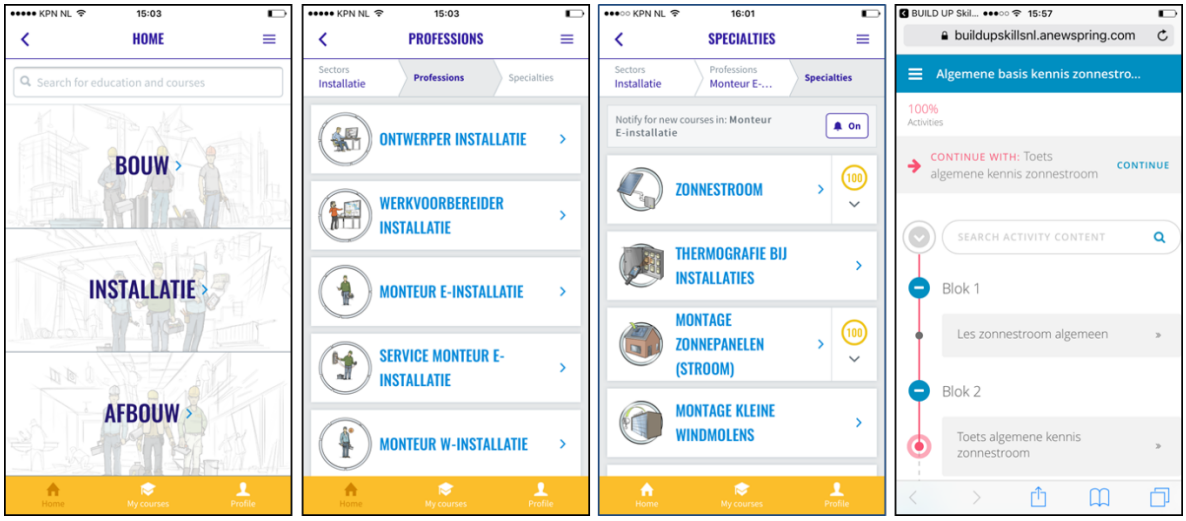
Train to NZEB

The key aim of the project is to set up five training centres. Progress on each of these is as follows:
Bulgaria: It has been agreed that the centre is to be set up in the University of Architecture in Sofia. The site has good visibility and has overcome some initial co-operation difficulties. This has enabled energy efficiency content to be added to the university training courses. Czech Republic: A centre is running in the Architecture and Building foundation in Prague. A key issue here has been that market research indicates that there is very low (even no) demand for any training that is charged for. The intention is to overcome this through partially supporting the courses. Romania: A centre is in place at the URBAN-INCERC building in Bucharest. It has been officially opened with more than 60 guests attending; the training courses will start in early 2017. In parallel, a training centre in Brasov has been set up, focusing on training courses for PV installers. Turkey: Set up in Ege University, using their trainers and cooperation with the local industry. Facilities are already in place. Ukraine: Very successful, largely due to the high national priority on energy efficiency. Set up in Kiev University of Architecture, using trainers from the university and MDI, plus cooperation with local industry. Launched and first courses conducted. The project has been sharing materials with IngREeS, MEnS and PROF-TRAC.

2.1.5 *Key messages of the Plenary Session on Remarkable Outputs of BUS projects*

This session consisted of 3-minute pitches of 6 BUILD UP Skills project coordinators who had some remarkable outputs to present. Participants prepared one supporting slide to support their speech or showed a video / website. The items presented were:

- **BUILD UP Skills NL: the BUILD UP Skills Advisory App** (Jan Cromwijk)
  The App helps increase the knowledge and skills of professionals in the construction and installation sector. This concerns professionals with Intermediate Vocational Education level, who are directly involved in the energetic sustainability of the built environment in the period of 2012-2020. The app addresses various professions and specialties and looks as follows.



- **BUS SWEBUILD (Sweden): the Energibyggare software tool** (Sara Karlsson and Per-Johan Wik), available here.
  The Energibyggare (Energy Builder in English) is a four-hour interactive web-based training in the field of energy-efficient construction and renewable energy including themes such as air tightness, moisture, thermal insulation, installations. The training is aimed at all professionals working on the construction site. Each module consists of text, images, narration, videos, animations, interactive exercises and quizzes. The training is accessible via a computer, tablet or mobile phone.
- **BUS BRICKS (Italy): Job Training (AOJT) system** (Anna Moreno) – see video here.
  The video explains the innovative system developed by the BUILD UP SKILLS BRICKS project to qualify the workers at the construction site. The worker can through this system identify his knowledge gaps and decide what e-learning courses to follow. These e-learning courses are built around modules and include intermediate and final tests.
- **BUS FORCE (Latvia): training module on deep renovation of apartment buildings** (Agris Kamenders)
  The following figures illustrate the characteristics of the training module, whose success is largely due to “The Power of Touch”.

Field visits

Experience from real projects

Get to know and try out

Building as one system and interactions between different trades

Nationally recognized

Good quality, high comfort, long lasting solution

- **The Supply Chain Sustainability School** (Richard Bayliss), sponsored by CITB (the UK Sector Skills Council and Industry Training Board for the construction industry)

  The School has enabled the its Partners to take a common and consistent approach to suppliers' training and qualification around sustainability issues. The main characteristics of the School are illustrated in the figure below. Its key principles are:

  . It is voluntary
  . It provides carrots rather than sticks
  . It is does not require pre-qualification
  . It is supplier driven, allowing develop at own pace
  . It is based on trust
  . It is confidential for each supplier
  . It provides several free resources

- **BUS I-TOWN (Italy): a survey in the field of life-long learning needs** (Rossella Martino) responded by 901 people in Italy concluded that new roles are needed in the construction sector, that current workers need to develop their skills / knowledge in the fields of energy efficiency, sustainability and green building. For that reason, a map that supports the necessity of lifelong learning, requalification and specialisation has been developed within the project.

2.2 Key Messages of Day 2 (7 December 2016)

2.2.1 Key messages of the Skills Panorama Plenary Session by CEDEFOP (Stelina Chatzichristou)

According to CEDEFOP forecast for trends in sectors and relevant to the BUILD UP Skills projects, it is foreseen that approximately six percent of the EU labour force in 2025 will be accrued to the construction sector (as in 2015). While the available workers in this sector will be mostly craft and related trades workers, the demand for technicians and associated professionals is expected to increase. The estimate is that the demand for highly qualified workers could double, becoming one third of the total jobs in construction.

In today's globalised and fast-changing economy, "skills" encompass more than qualifications, as the demand for types of skills such as 'soft', 'green', and 'digital' is increasing across sectors and occupations. Understanding and having information on trends of 'skills' is key, as it supports evidence-based decisions and more efficient investments for a range of stakeholders, from policy makers to citizens, while supporting better skill matching.

The Skills Panorama, an initiative of the European Commission, is an online platform that offers a central access point to high quality 'skills intelligence' in the EU, i.e. quantitative and qualitative information meaningfully synthesised, to support such decisions. Visitors can navigate the platform and use the *"explore data" tool* to learn more on skill themes (i.e. Labour Market Context, Future Jobs, People and Skills, Matching Skills and Jobs), sectors, occupations and EU countries. The tool provides access to historical trends, facilitates the assessment of the current situation, as well as a look into the future. Information is offered in *dashboards* that visitors can configure according to their needs.

Additionally, one can find skills-relevant information through *Analytical highlights* (that offer up-to-date succinct analysis about a skill, a group of skills, a sector, an occupation or an EU country); *Useful resources* (such as documents, websites, and glossaries); a *Blog (*where experts on skills share their insights on related topics; and *News and Events* in the field of skills in Europe. Another great advantage of the platform stands for the availability of unique, Cedefop research and project results, such as the well-known forecast, the European Survey on Jobs and Skills, which is the first pan-European survey on skills mismatch, the Making Skills Work Index and the Mismatch Priority Occupations per EU country.

During the presentation, the CEDEFOP expert navigated the Skills Panorama and demonstrated its core elements to the audience. Ms Chatzichristou also informed the audience that sectoral skills evidence stemming from relevant projects and surveys can be included in the Skills Panorama. Interested actors are welcome to consult the practical framework available on the platform and contact the Skills Panorama team (skills-panorama@cedefop.europa.eu).

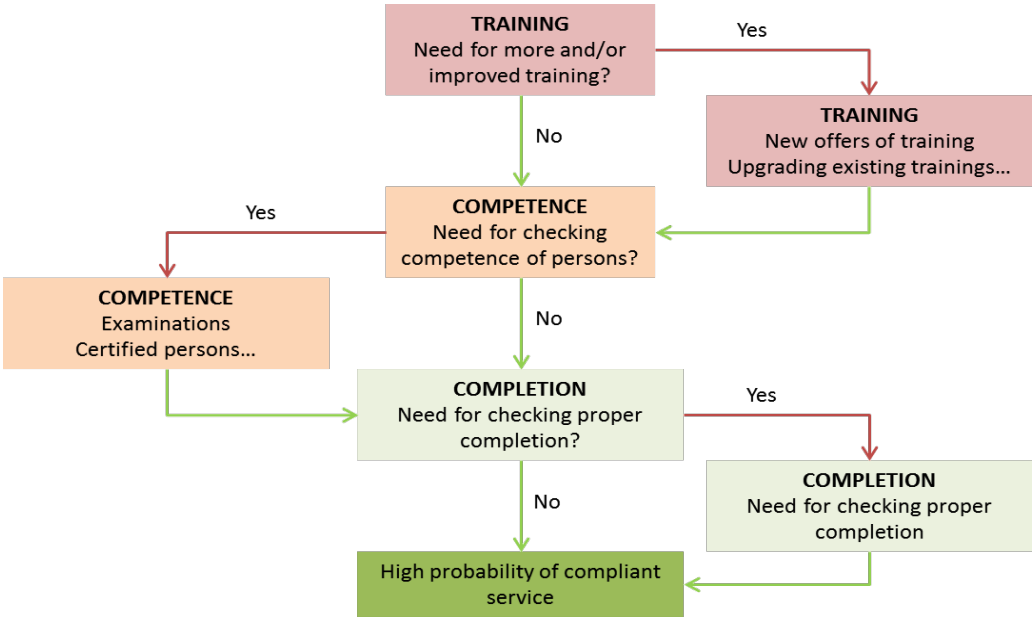
2.2.2 *Key messages of the Plenary Session on Relevant Projects for BUS*

QUALICHeCK (Marianna Papaglastra)

QUALICHeCK's main objective is to set up a series of actions which should result in more attention and practical initiatives for actual compliance of the EPC input data for new and renovated buildings, and for achieving a better quality of the works.

The 10 new field studies conducted by QUALICHeCK (each on samples of 25+ buildings) showcase and quantify specific quality problems and non-compliance issues. These field studies were complemented by an analysis of 31 existing studies in different countries. Specific case studies were presented to highlight problems found in various countries concerning transmission characteristics, summer comfort, ventilation and air tightness, and renewables in multi-energy systems.

Overall it is concluded, among other things, that more ambitious and sophisticated regulations and systems/technologies are more difficult to implement in practice, therefore highlighting the need for training on the one hand, and for integrated frameworks which ensure the application of the acquired skills in practice, on the other.



More specifically, good quality is hindered by:

- Poor specifications at the level of projects, standards or/and regulations
- Lack of competence
- Critical financial conditions and timing
- Lack of quality control and enforcement of compliance

All these aspects should be addressed in parallel in order to drive the market towards higher energy efficiency of the buildings.

Within this context, QUALICHeCK has set up a series of guidelines which can lead towards improved energy performance. These include specific good practice examples to be implemented and supported by government, financial institutions and society, and suggest training as one of the key aspects which should be fostered to achieve the desired outcomes.

The outputs of QUALICHeCK (factsheets, booklets, reports, workshops, webinars, etc.) are freely accessible at www.qualicheck-platform.eu.

Key messages of the Concerted Action on Renewable Energy Sources (CA-RES) (Antonio Joyce)

The Concerted Action for the Renewable Energy Sources Directive (CA-RES) is a structured and confidential dialogue between national authorities responsible for the implementation of the European Directive on Renewable Energy Sources (hereafter RES Directive). In the CA-RES, participating countries exchange experience and best practices, participate in a cross-learning process and develop common approaches.

Article 14.3 – part 1 of the European RES Directive mentioned that Member States should have ensured by 31 December 2012, that they have certification schemes or equivalent qualification schemes in place. These would help ensure mutual recognition and allow for the mobility of workers. In this sense, the exchange of information between CARES and BUS projects is fundamental, in order to reach the mutual recognition objective.

Against this backdrop, in 2013 the CA-RES analysed the status of schemes and created factsheets for each country listing aspects of those schemes such as individual/company, mandatory/voluntary, level of education and so on. CA-RES also developed a flowchart for the implementation of certification.

In 2014, a CA-RES survey answered by 22 Member States indicated that the benefits of mutual recognitions are:

- Compliance with the Directive
- Facilitates an open market and develops demand
- Knowledge/good practice exchange across countries
- Greater employment opportunities in a wider market
- Greater conformity checks across countries

- Greater competition leading to lowing prices
- Larger numbers of renewables installed.

In 2016, Guidelines for the process of Mutual Recognition of Installers were developed in the framework of CA-RES.

Following the presentation, it was clarified that the deadline of 31 December 2012 set in the Directive was not met, in the sense that there were no complete schemes implemented in every EU country by then. The work is still going on and lots of progress has been made in the past years. Some opinions from the audience suggested that workers are the most affected by this, since the lack of such certification in various countries is hindering labour mobility of workers across Europe.

Key messages of the Sector Skills Alliance project BuS.Trainers (Javier Gonzalez)

BuS. Trainers stands for Building up green Skills for Trainers from the Construction industry. It concerns a very new project, whose kick off took place mid- December 2016 (after the EU Exchange Meeting in Athens). The idea for the project emerged at one of the past EU Exchange Meetings, after a presentation of the funding opportunities under Erasmus+. As a result, BuS. Trainers brings together South-European sectoral organisations and VET providers to develop and deliver a training system for Vocational Trainers (teachers of home building and civil engineering, construction works and crafts) so that they are able to better train / teach their trainees in sustainable construction.

Two specific objectives of the projects are:

- To implement a platform to build a community and support teachers in their continuous professional development; and
- To develop a new European sectoral qualification standard (Green VET Trainer at construction) following the EQF methodology, ECVET and EQAVET principles.

The project's methodology is articulated in four steps:

- define the profile of the trainers
- develop the qualification "BuS. Trainer"
- define the learning outcomes on green skills needed
- summarise the above into a tool (“BUS Trainers”)
- validate the tool with pilot trainings.

Some of the main innovative aspects of the project are its ICT and ‘open’ training approach (free of cost for trainees) and the fact that the trainings are tailored to the trainee. Next to that, the project includes the development of a ‘Green Tag’ accreditation with which a pool of talented trainers will be awarded, as well as the Memorandum of Understanding (MoU) to be developed to promote mutual recognition across various EU Member States.

The project would as such generate benefits for the construction sector (e.g. better skilled workforce, better VET trainings) as well as society (e.g. modernising VET, supporting teachers for life-long learning, promoting open knowledge, enhancing innovation and quality, tackling skills gaps in VET trainers).

Key messages of Geothermal and Solar Skills in Continuous Vocational Education and Training (Marini Markaki)

The Geothermal and Solar Skills in Continuous Vocational Education and Training (GSSkills) was another new project presented, which had its kick off mid December 2016 (after the EU Exchange Meeting in Athens).

The project will design two European core curricula (EQF level 4-5) for Geothermal and Solar energy system installers, the two corresponding VET programmes, as well as two qualification standards for evaluation and certification. It will support the implementation, delivery, evaluation and certification of the trainings.

Some of the specific objectives of the projects are lifelong learning and mobility, enhance creativity and innovation, develop world-class VET, and ensure that at least 15% of adults participate in lifelong learning.

Some of the quantifiable expected results are:

- the involvement of 200 workers (in 4 countries);
- the implementation of 40 trainings (in 10 countries); and
- the involvement of 200 companies (in 4 countries).

2.2.3 *Key messages of the plenary session on Communications (Adama Carr, GOPA)*

Adama presented some tips that BUILD UP Skills project coordinators can implement to improve the communication of their project's results. This communication can be done online or offline. In any case, the first thing is to understand your audience – who is your project relevant for and what are they looking for? Based on that, you can create content for your audience (e.g. create tabs for different audience groups in your website) and decide which communications channels you will use. Overall, a website with an easy URL and using multipliers i.e. the BUILD UP Skills identity, newsletter, social media etc. to attract more people are little tricks. An additional way to promote project results can be to engage with local and national media. By providing these with a story ("how does this help", "how does this improve people's lives", i.e. providing an angle instead of detailed content, which is more suited for a press release), communication can have a real impact.

2.2.4 *Key messages of the plenary session presentation (Koen Rademaekers, Trinomics)*

The aim of this session was to inform BUILD UP Skills coordinators on the progress of the work Trinomics is doing to support EASME with implementing EU Exchange Meetings and monitoring / evaluating the BUILD UP Skills programme itself. The key developments since the last meeting were:

- Trinomics is distributing a **BUILD UP Skills newsletter** every two months. Project coordinators are encouraged to send news and events related to their BUILD UP Skills projects or any other relevant, related projects; the next issues are expected in January 2017 and March 2017.
- The BUILD UP Skills **social media** activities (i.e. Facebook, Twitter) have been ceased in the past months and will be resumed when the communications strategy of the contractor is approved.
- The new **BUILD UP Skills website is about to be launched.** The 'old' website has been fully integrated into the BUILD UP portal. The new site will feature updated national pages,

including country factsheets for which Trinomics will kindly request BUILD UP Skills coordinators to provide / confirm information;

- New trainings are being planned by GOPAcom concerning the BUILD UP Skills **collaborative platform** (BUILD UP Skills Community - http://community.buildupskills.eu) in January and February 2017. The platform is meant to be used by BUILD UP Skills project coordinators as a communication and information sharing platform.
- A **brochure / leaflet and a cartoon-like video** are being developed for further promoting the BUILD UP Skills projects.
- Trinomics is continuing to work on the **monitoring and evaluation of BUILD UP Skills projects** (assessment of the extent to which projects have achieved their objectives & targets). Project coordinators will be contacted between end of 2016 and Summer 2017 for providing information when such is incomplete, unclear, etc.
- **The next -and last- EU Exchange Meeting** will be held at the Bilderberg Hotel in Rotterdam, the Netherlands, on 30-31 May 2017. It was stressed that key for this meeting is that the Technical Working Groups present concrete outputs.

3 Technical Working Groups

This section synthesises the outcomes of the four Technical Working Groups during the two sessions (Parallel session 1 from 9:30 to 11:15 on Day 1 and Parallel session 4 from 9:30 to 11:00 on Day 2) dedicated to these thematic groups at the 9th EU exchange meeting.

3.1 Technical Working Group 1 – Finance (sustainability)

Chair: Karoly Matolcsy (HU)

Vice-Chair: Elisabeth O'Brien (IE)

Consultant: Koen Rademaekers (Trinomics), Irati Artola (Trinomics)

EASME: Gordon Sutherland

Participants: Theocharis Tsoutsos (EL), Giovanni Carapella (IT), Liina Henning (EE), Agris Kamenders (LV), Ivana Banjad Pečur (Croatia)

3.1.1 Agenda

The agenda of the two sessions within this TWG was as follows:

Day 1 (9:30-11:15)

- Intro (9:30-9:35)
- Presentation results from survey by Trinomics (9:35-9:50)
- Discussing the results of the survey (9:50-11:05)
- Preparing for Day 2 & closing of Day 1 (11:05-11:15)

Day 2 (9:30-11:00)

- Intro to the day (9:30-9:35)
- Drawing conclusions from survey results (9:35-10:00)
- Formulating recommendations for project coordinators based on conclusions (10:00-10:20)
- Priorities - what direction to focus on- & defining way forward for the work within TWG1 (10:20-10:45)

- Homework until 10th EU Exchange Meeting & closing (10:45-11:00)

3.1.2 Key discussions

On **Day 1**, the results of the survey were discussed.

First, there was some disappointment that only 9 member states filled in the survey (and three of the nine were already part of TWG1). Secondly, not all information received by the survey was correct and as it was done on an anonymous basis, we couldn't trace back the participants. For Greece, for example, Theocharis mentioned that several elements were not complete (and he had no idea where the information was coming from). Important lesson form this survey is that we should double-check all the information again with the key BUS representatives in each country.

We discussed the survey along the three main topics:

Financing trainings in the construction sector in each of the countries: there is an agreement that overall, European and then national funds are they primary ways of financing trainings. The possibilities for funding trainings vary among countries.

Best Practice case for financing trainings: there is no one-size fits-all best case of financing training. The best-practice trainings are sometimes financed by the EU, sometimes by the State through its Ministry of employment or equivalent or energy agency, by employers through a vocational training contribution or through company revenues, or trainees pay for these themselves. Regarding training providers, in several cases these are training centers, primarily privately owned (otherwise a public trustee). Other specific training providers mentioned are universities / research institutions, living labs, or State-owned quality control and building companies. The majority of best-cases of financing training target blue collars. The number of trainees per training is between 7 and 40, although the most common number is between 10 and 20. Best cases in financing training are found for shorter trainings of 16-50 hours as well as in longer trainings of 240 hours and 400 hours. There is no obvious correlation between the target group and the length of the training offered.

Mandatory trainings: nearly all countries have mandatory trainings in place. These are diverse, yet some are recurrent. The mandatory safety training for blue collar workers seems the most common training, followed by the mandatory first entry training / basic training in the building sector for blue collar workers. After those, mandatory training for non-environmentally friendly technologies / hazardous components and mandatory certification for professionals / type of works are the most common.

Day 2 was very different from Day 1 with brainstorming and in-depth discussions about how to deal with the sustainability issue of trainings in the different countries. We know from the earlier sessions and the survey that in most EU countries there is some national funding available and in some countries, it is even regulated (trainings are paid indirectly by the employers as a percentage of the total taxes). As such, the key question seems to be much more about how to attract (if you can't make it compulsory) the construction workers to let them follow trainings. The idea of TWG1 is to come with a canvas of best practices based on the structure below.

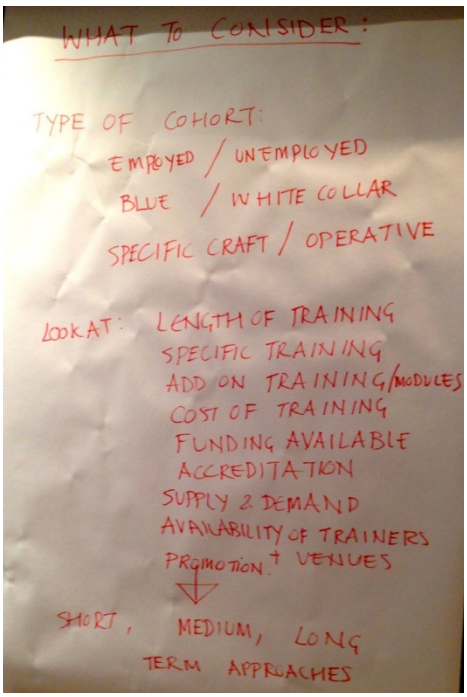
When asking yourself the question how to encourage workers to take up training, there should be made a clear distinction between retrofitting or new dwellings and between who you want to attract/provide

the training for (employed versus unemployed, blue versus white collar workers (site managers /foreman) and specific craft/operative).

When preparing a training, you should consider the following:

- how is the black-market in your country working and can you offer something distinctive to the workers following your training; this means that at the same time you should also try to educate the final consumers and the decision makers (architects, site managers, etc).
- length of training
- specific training
- add on training/modules
- cost of training
- is there funding available
- accreditation/value (certification) – number of hours involved + cost
- supply and demand issues
- availability of trainers + venues (which is becoming an important issue in several countries)
- promotion (updated / innovative products)
- construction industry involvement – materials/products

The final aim of TWG1 is to come with an overview of best practices and potential measures – we have split them up in short, medium and long term measures.



Short term measures:

- focus on blue collar + site managers: provide a general training of 3 days when hired by construction company – later add-ons, eventually on site; should lead to certification or becoming mandatory
- promotion: hand in hand with the construction sector (or sector associations)
- grants and other financial incentives: make it compulsory to show evidence that works has been done by certified or trained workers
- green public procurement

- bank-loan scenario – bank give loans for training at nearly zero %

Medium term measures:

- sustainability funding plans / private funding
- updating training material/products by manufacturers reviewed
- making a link to ESCO's / building companies

Long term measures:

- create value/recognition
- education/training in schools
- getting mandatory training for all workers – regulation

3.1.3 *Action points and next steps*

Action points are straightforward. Given the above canvas, we will prepare a draft report to be discussed at the next EU exchange meeting.

3.2 Technical Working Group 2 – Mutual recognition

Chair: Frantisek Doktor
Vice-Chair: Anna Moreno
Consultant (contractor): Irati Artola (Trinomics)
EASME: Amandine Lacourt (Day 2)
Participants: Mariya Zheleva (BG), Bojan Milovanovic (HR), Stavroula Tournaki (EL), Reet Linnas (EE), Marios Petrakkas (Cyprus), Orlando Vitolo (IT), Rossella Martino (IT), Liina Henning (EE) (Day 2), Antonio Joyce (External), Ioanna Dede (External, Day 1).

3.2.1 *Agenda*

Day 1 (9:30-11:15)

- Intro (9:30-9:35)
- Presentation of the method for the spreadsheet of learning outcomes (9:45-10:00) – Anna

- Presentation of Skills Bank project and discussion (10:00-10:45) - Frantisek
- Preparing for Day 2 & closing of Day 1 (10:45-11:15)

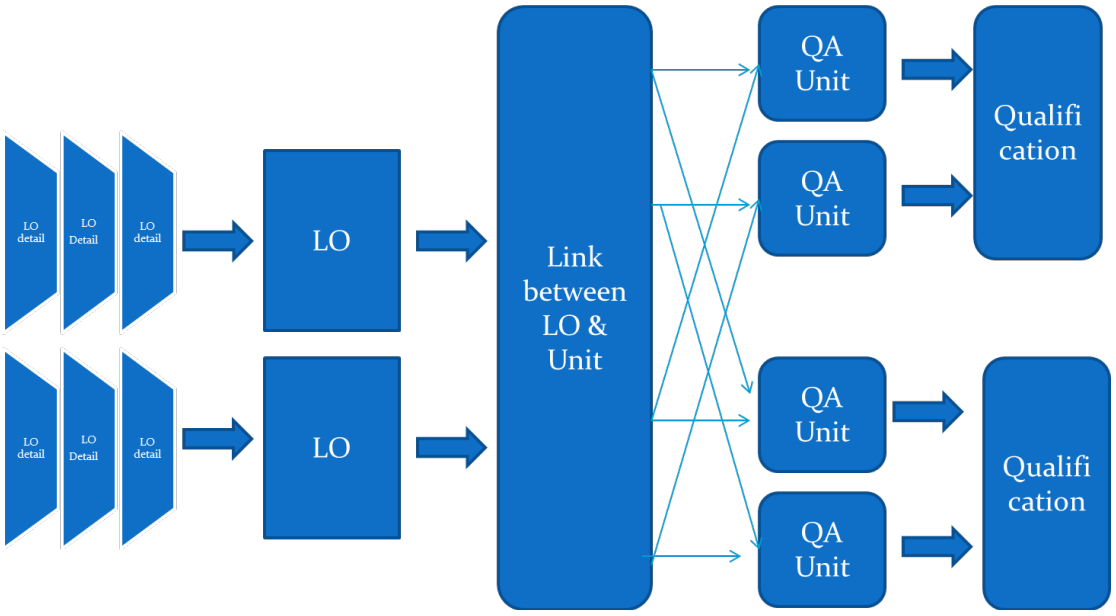
Day 2 (9:30-11:00)

- Intro (9:30-9:35)
- Diving into the spreadsheet of learning outcomes for thermal insulation (9:35-10:45)
    a. Discussion / identification of 'essential' and 'desirable' common competences, perhaps for European standard
    b. Discussion feasibility of implementing changes (in the insulation standard) in countries
- Wrap up, identifying homework / next steps until 10th EU Exchange Meeting & closing (10:45-11:00)

3.2.2 Key discussions

Day 1 kicked off with a go-around-the-table of all participants, some of which were new to the group. The group discussion therefore started with a bit of background explanation about the methodology and logic used to develop the spreadsheet in Excel that this group has been discussing in the past months (as preparation for the 9th EU Exchange Meeting), listing the learning outcomes for the thermal insulation qualification. This sheet was developed by the Vice-Chair of this group based on the subjects that this qualification encompasses in Italy and is meant for the other countries represented in the TWG to populate. The sheet is also supposed to indicate how long (e.g. hours) it takes to understand each of the (category of) subjects listed. So far, the only profile received has been that of Cyprus and this already shows differences regarding the kinds of insulation covered by the qualification in each country, or regarding the EQF level that thermal insulation qualification is considered at.

After that methodological discussion, the Skills Bank project was presented by the Chair of the group. It concerns a registry currently in use by the chemical industry, which could serve as inspiration for the thermal insulation example that this TWG currently is dealing with. The idea would be that if an insulation professional is registered in such a Skills Bank, employers would be able to easily compare and assess potential employees. Such skills bank would serve other target groups as well (e.g. course providers) but that was not dealt with in detail. The way such a Bank works is by defining a set of descriptors in order to describe a qualification. Units of learning (QA) are created, and by linking those to learning outcomes (LO), the description of a qualification can be determined.



The following figure illustrates an example of the way the system of the Skills Bank presents a qualification:

Title of the Qualification	**Master Floristry Craftsperson**				
Total ECVET Points	**100**				
EQF Level					
NQF Level	**AT**	**DE**	**FR**	**NO**	**SI**
Units of Learning outcomes	**U1**	**Accounting and Controlling**			
	U2	**Budgeting, Calculation and Financing**			
	U3	**Entrepreneurship**			
	U4	**Human Resources Management**			
	U5	**Tutoring**			
	U6	**Marketing and Sales Management**			
	U7	**Customer services and support**			
	U8	**Floristry production**			
	U9	**Assessment, quality assurance and documentation of process and product**			
	U10	**Quality and Security Management**			
	U11	**Vocationally-specific Business Administration**			
	U12	**Communication in an international context (*country specific unit*)**			
Cross sectional Learning Outcomes	To acquire the learning outcomes properly the following qualifications are essential: ▪ s/he is able to act with social and ecological responsibility, ▪ s/he is able to adopt a quality management, ▪ s/he is able to use information and communication technology.				

Day 2 further focused on taking the Excel spreadsheet developed for the thermal insulation qualification. For such purpose, the group went one by one through the (subjects) listed therein, discussing whether those could be considered 'knowledge' or 'skills' and whether they can be considered 'core' or 'complementary'. As the Group dived into the Excel file, new (categories of) subjects emerged to be added to the file. For example, sustainable energy knowledge should be some of the basic knowledge that anyone working with thermal insulation should have. Aspects such as safety at work and the like were also mentioned. This led in turn to a discussion on previous learning recognition, which concluded that the worker may already have some of these knowledge / skills -from

a previous training- which would mean he does not need to go through those items again (learning modules should be flexible to allow for this).

A key message in TWG2 was that there is a need for an extended BUILD UP Skills initiative or a new European action that allows taking such an approach to the next level. Something similar to the way that Pillar I of BUILD UP Skills was set up, with strong support at the country level was proposed. Developing the Excel file further would for instance mean that the different subjects listed should be illustrated through pictures (not words), which would be more appealing as well as understandable for anyone in the EU regardless of the language they speak. Eventually, the exercise should allow to come up with a potential design of the qualification for thermal insulation that can be common for all the EU members.

3.2.3 Action points and next steps

- The Excel file needs to be adjusted, updated and reshuffled according to the discussions the group had. The Vice-Chair of the group is willing to do this. This updated Excel file should be then circulated to everyone in the group.
- All the TWG2 members should try to contribute to the exercise by filling out the Excel file for their country (to serve this purpose Trinomics will circulate again the guiding document accompanying the Excel sheet which explains how to approach this task).

3.3 Technical Working Group 3 – Innovative training methods and incentives

Chair: Helder Goncalves
Vice-Chair: Peter Op't Veld (not present)
Consultant: Simonas Gausas (Visionary Analytics)
EASME: Amandine Lacourt
Participants: Iris Pfeiffer (DE), Attila Laszlo Zoltan (HU), Javier López González (ES), Alexander Stankov (BG), Sara Karlsson (SE), Tomas Majtner (CZ), Robertas Encius (LT), Charalampos Malamatenios (EL), Stavroula Tournaki (AT), Helder Gonçalves (PT), Henri Le Marois (FR, not present), Alexis Sikora (LU), Ruud Geerligs (NL), Grigoris Papagiannis (EL), Giorgos Christoforidis (EL), Marianna Papaglastra (EL) and Stelina Chatzichristou (EL).

3.3.1 Agenda

Day 1 (9:30-11:15)

- Introduction (9:30-9:35): what has been done and what we are going to do during this event;
- Presentation of final results of the general survey (9:35-9:50);
- Four presentations by participants and discussion of experiences with selected training infrastructures, materials or methods (9:50-11:05):
    1. Alexis Sikora, BUILD UP Skills Pillar II project LUXBUILD, Training methods - Hands-on or direct practical training – Work-based training (incl. use of innovative training materials);
    2. Javier Gonzalez, BUILD UP Skills Pillar II project CONSTRUYE 2020, Training materials – use of mobile applications (incl. links, if any, with work-based training);
    3. Attila Laszlo Zoltan, BUILD UP Skills Pillar II project TRAINBUD, Training infrastructure – Study visits (in terms of "benchmarking" tasks in relation to other EU projects, partners' projects and good practice);
    4. Sara Karlsson, BUILD UP Skills Pillar II project SWEBUILD, Training materials – Online modules for trainers.
- Closing of Day 1 and preparing for Day 2 (11:05-11:15).

Day 2 (9:30-11:00)

- Intro (9:30-9:35): wrap up of Day 1 and brief introduction to Day 2;
- Four presentations by participants and discussion of experiences with selected training infrastructures, materials or methods (9:35-10:30):
    1. Tomáš Funtík, Horizon 2020 Construction skills project INGREES, Training methods – Blended learning;
    2. Iris Pfeiffer, BUILD UP Skills Pillar II project QUALITRAIN, Training materials - Train the trainer Online Learning Tool;
    3. Irmeli Mikkonen, BUILD UP Skills Pillar II project BEEP, Training methods – work-based training;
    4. Ruud Geerlings, BUILD UP Skills Pillar II project BUSTOB, interim results of the project focusing on e-learning.
- Presentation of interim results of the specific survey including short discussion on main features of the database of training activities of the BUS projects (10:30-10:55);
- Closing of Day 2 & next steps until 10th EU Exchange Meeting (10:55-11:00).

3.3.2 Key discussions

So far this TWG has carried out and discussed the results of a general survey of project coordinators collecting information about the training activities developed within each project and the specific characteristics of training infrastructures, materials and methods used or to be used. The group also had the opportunity to discuss experiences of more advanced projects and brainstormed questions for the second (specific) survey that is collecting more in-depth information about each main type of training infrastructure, materials, methods reported in the general survey.

This meeting was built on previous results and allowed for a more in-depth approach by covering the following aspects:

- In-depth discussion of the final results of the general survey including level of progress of training activities of all surveyed projects, their target groups, characteristics of training courses, overview

of dominating training infrastructures, materials and methods, assessment of training needs and monitoring of training results;

- Discussion of experiences of more advanced projects or projects applying unconventional types of training infrastructures, materials or methods. All presentations focused on innovativeness, transferability, strengths & weaknesses as well as any recommendations/ insights. Key messages of the presentations and subsequent discussions were the following (the list is illustrative rather than exhaustive):
    - The traditional approach (e.g. in case of training methods – classroom training) should not be substituted, but blended with other training approaches (e.g. mobile app). Mixing of training methods, materials and infrastructures proved to be more effective in training both trainers and workers (e.g. mixing self-learning via mobile app or internet tool with more practical face-to-face exercises and on-site trainings);
    - In design stage of training it is important to find the right balance between different compromises (e.g. downloadable file or internet-based mobile app);
    - Pilots should be always carried out before mainstreaming any approach on a larger scale;
    - All necessary feedback from users including workers and their companies should be collected during or immediately after completion of training;
    - Training should target different levels of knowledge and skills (e.g. opportunity for learners to read or explore more in e-learning tools). Some infrastructures, materials or methods are not appropriate for all workers (e.g. mobile apps might not always be popular among blue collars who prefer practical training);
    - Ideally training offer needs to be constantly updated;
    - Dissemination of training should be innovative (e.g. bus travelling across key cities or sites; onsite training ambassador – an experienced worker who becomes the face of the training, speaking in different languages to the workers and to the management).
- Presentation of the draft results of the specific survey collecting in-depth information about the main type of training infrastructures, materials, methods applied in projects. Presentation of the draft results included the overall logic of the survey, the types of training infrastructures, materials and methods targeted by the survey, their average innovativeness, replicability, availability of feedback and common strengths and weaknesses as assessed by project coordinators;
- Presentation of the draft database on training activities of projects including its information sources, structure and expectations/ needs of users. With regard to the latter participants have indicated the following:
    - Web version of the database is much better than a MS Excel file if the aim is to disseminate results. It was considered that a simplified version of the database could be uploaded on the web and a full one could be available in downloadable MS Excel file;
    - In addition to the type of training infrastructures, materials or methods, users should also have the opportunity to filter information by countries, areas of content and target groups;
    - The database should provide links to relevant outputs of projects (e.g. mobile app);

Ideally, there should be a possibility to update the information provided.

3.3.3 *Action points and next steps*

The next steps include the finalisation of the specific surveys (as there are still few replies missing in each of the specific surveys) and finalisation of the database on training activities of BUS Pillar II/ Horizon 2020 Construction Skills projects considering the above-outlined expectations/ needs and preparation of its presentation at the 10th BUS EU exchange meeting.

3.4 Technical Working Group 4 – Market acceptance

Chair: Dragomir Tzanev (BG)
Vice-Chair: J. Cromwijk, (NL)
Consultant: Rob Williams (Trinomics)
EASME: Gordon Sutherland

Participants: Christiane Conrady (LU), Mantas Jonauskis (LT), Per-Johan Wik (SE), Georg Trnka (AT), Jiri Karasek (CZ), Tomas Funtik (SK), Richard Bayliss (UK), Horia Petran (RO), Andro Goblon (SI), Jadranka Arizankovska (MK), Peter Smulders (NL), Daniela Petrescu (PL), Alexander Delyannis (External)

3.4.1 *Agenda*

Day 1 (9:30-11:15)

- A short introduction to the business plan canvas concept (Andro), With some examples from specific parts of Jan and Dragomir's projects
- Interactive session, in the form of 'guided instruction' with Andro (plus others) helping each one of the TWG members prepare a business model canvas for their project.

Day 2 (9:30-11:00)

- A short introduction to the value proposition canvas concept (Andro).
- Interactive session, in the form of 'guided instruction' with Andro (plus others) helping each one of the TWG members prepare a value proposition canvas for their project.

3.4.2 *Key discussion*

On **Day 1** Rob Williams described the purpose of the event and handed over to Andro Goblon, a group member and expert on the business canvas approach. Andro gave an introduction to the nature of the approach. Everyone had been asked to look at the website http://www.businessmodelgeneration.com/canvas/bmc and a brief introductory video https://www.youtube.com/watch?v=QoAOzMTLP5s in advance.

Exercise one - a business model for a tree

Andro asked everyone to try and quickly prepare a Business model for a tree (using a blank canvas and sticky notes). Andro gave some useful tips to those trying this. Such as one idea per sticky note, start where ever you like (in the structure), don't mix past and present. Different customer segments, need to be done separately. Pictures can be better than words.

Exercise two - Business model for Facebook

Andro then asked everyone (in groups of 3 to 4) to try and draft a business model canvas for Facebook. During this exercise, he provided more useful tips in the process, such as the use of 3 colours in the post it notes, to differentiate previous, present and future factors and issues/

Exercise three Business models for their own BUS projects

Each participant was then asked to try and develop a business model for their own project.

A number of common issues emerged from the attempts to produce the business plans. Examples of these issues were:

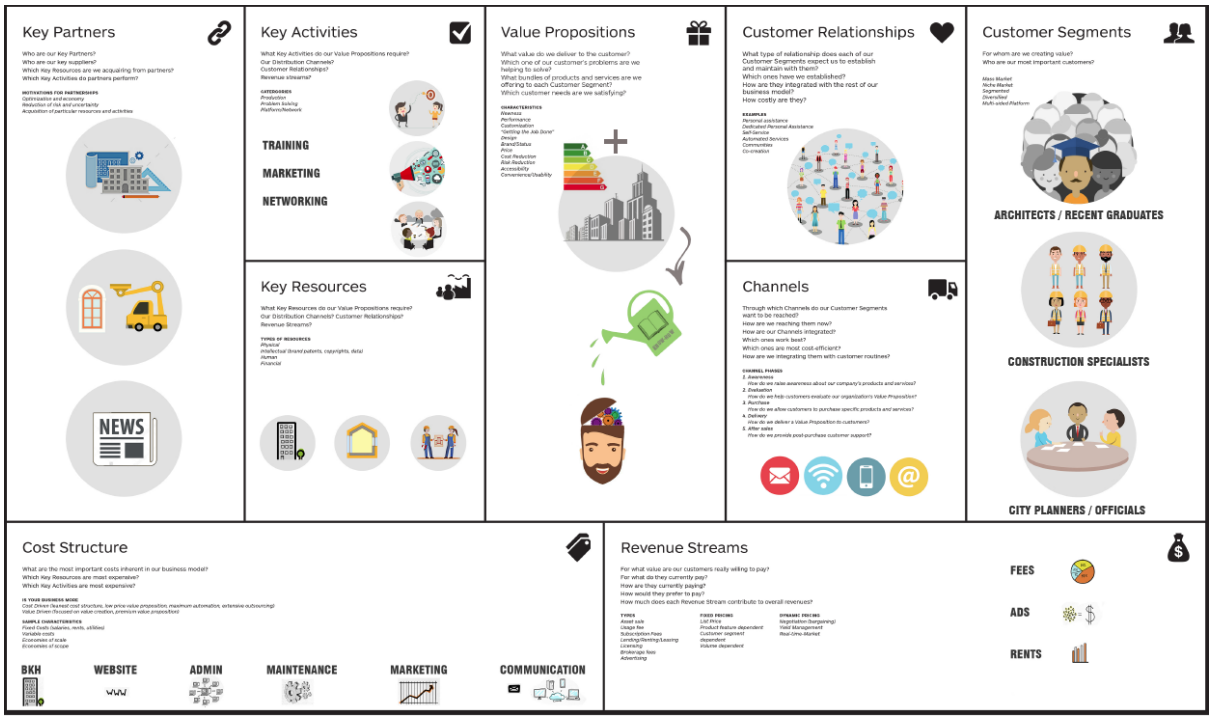
- The importance of the need to put yourself in the shoes of your customer – so you can think about what they might want / get from the courses / services being offered.
- The important role played by numerous partners, including the media.
- The need to consider wider possible revenue streams, such as fees for training requires a market, private sponsors, use of facilities (rent when facilities not used) certification fees,
- The business plan should be considered as a dynamic process, whatever is written down does not need to stay that way for ever, change may be necessary, in line with external circumstances and customer needs (and wants).
- The business plan needs testing with real customers, and the best delivery typically varies by end group.

Andro concluded the sessions by giving example of some wider analysis that can be done around the side of the business plan. For example, a common follow on step from a business canvas would be a swot analysis.

Day 2

Exercise one – presenting the business plan canvas

The session began with a discussion of what had been achieved on day one and Andro also gave guidance on how the approach was useful for developing a short presentation (i.e. a pitch) for the projects. This process was helped by Dragomir presenting a canvas he had developed in advance for his own project.

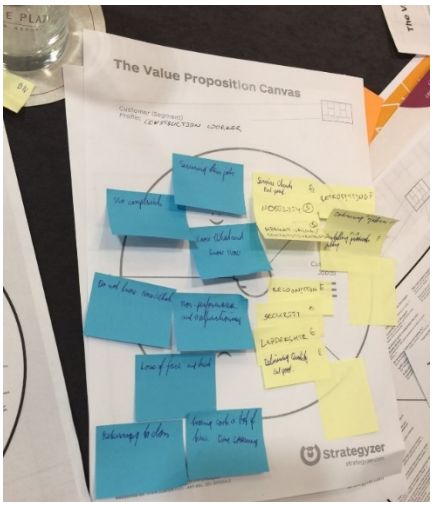


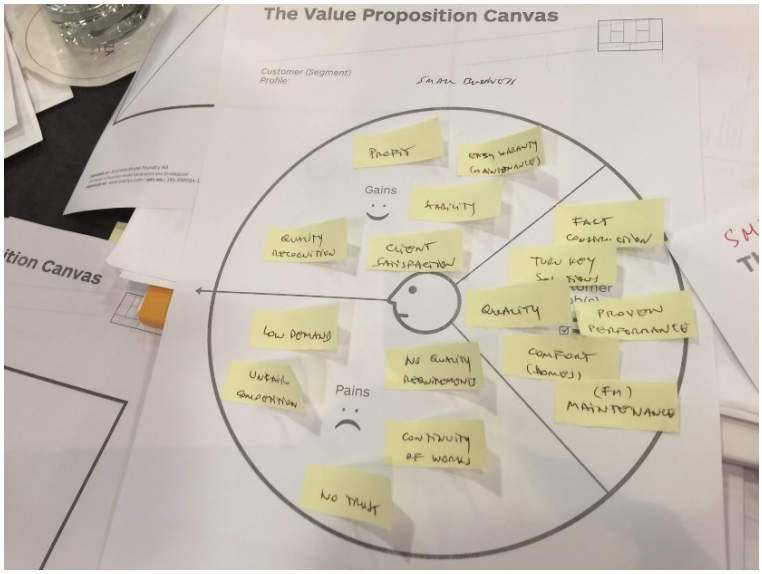
Exercise two – considering the value proposition in more detail

This exercise focussed on the value proposition – what the BUS projects offer and how this matches with the jobs (and pains and gains) of the target audiences. This exercise required everyone to think about the value proposition of the BUS projects– what they are offering the users. The point was also made that there is a wider group of influences outside the business plan canvas – economic, social, political etc. that need to be considered.

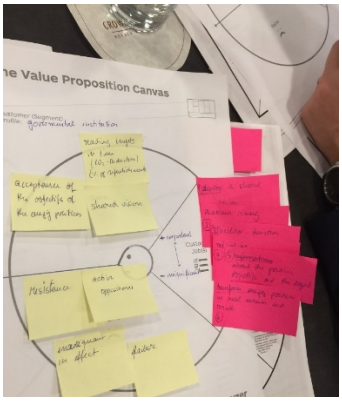
The participants split into 4 groups and prepared customer jobs, pains and gains for the following four customer groups – construction workers, small businesses (who employ construction workers), investors (those responsible for financing the construction of buildings), government agencies (responsible for much training and energy in buildings policy and regulation.

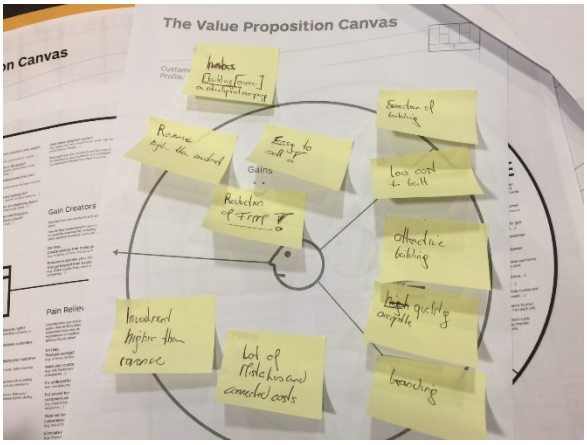
The exercise required the groups to think about the jobs of each group and then to prioritise these jobs. The groups then thought about the pains (the things which can go wrong / hinder these jobs) and gains (the things which make these jobs easier) of the top priority jobs.





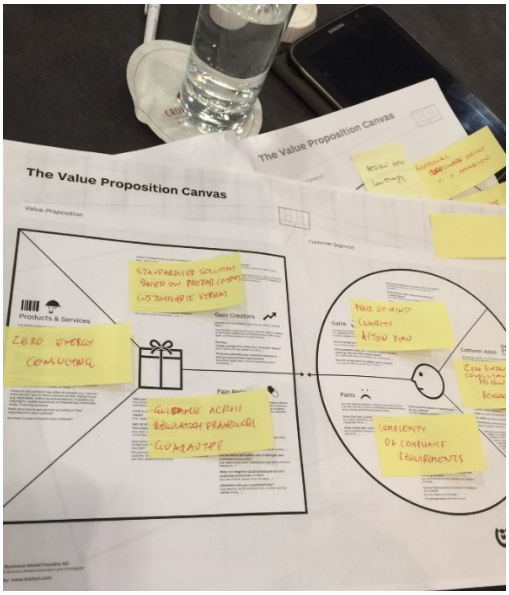
Jobs, pains and gains for construction workers and small businesses





Jobs, pains and gains for government institutions and investors

The exercise them moved on to matching the value propositions of the actual BUS projects (as developed the previous day) with the jobs, pains and gains of the four groups. This process made it clear that without this match and channels to deliver it, the projects would be unlikely to work.



Value proposition vs. jobs, pains and gains.

3.4.3 Action points and next steps

The session then concluded with a brief discussion of what outputs TWG4 wants to end up with. We have:

- Survey and discussions from the first two meetings (to be expanded with more surveys)
- Business plans and value propositions from today

We discussed what else we might do. The ideas included:

- Cost models – business plan exercise has shown that there may be a lack of funds to pay for training.
- It may also be possible to compare the examples of good practice / successes with the business plans – to show how the cost barriers are overcome. This approach of combining the examples with the business plan sounded promising.
- Other idea – how to engage the target audience – e.g. HR departments / staff at construction companies.

It was agreed that the group would need a follow up conversation prior to the next (and final) meeting in May 2017. This discussion needs to take place in early February.

4 Feedback from participants

This section presents the results of the 30 feedback forms collected from participants on Day 2 at the end of the EU Exchange Meeting. The feedback received is primarily positive as spelled out in the following paragraphs. The forms did not manage to collect as much qualitative feedback (i.e. comments, suggestions) as we would have wished for, probably due to the fact that they were distributed when everyone was getting ready to leave. A way to solve this could be that for evaluating the 10th EU Exchange meeting, feedback forms are circulated as an online survey instead.

Meeting organisation

In a scale of *1- not useful at all; 2 - mediocre; 3 - neutral; 4 - good; 5 - very good*, the overall meeting organisation has been rated between 'good' (49% of responses) to 'very good' (45% of responses), which was the maximum score. Overall, even more time needs to be allowed for breaks and for networking, discussions, interacting with each other.

Plenary sessions

Plenary sessions were mostly good (52% of responses) and very good (36% of responses). The Skills Panorama presentation was the best rated one, followed by the Remarkable Outputs session (in which BUS coordinators themselves presented their most outstanding outputs in 3-minutes pitches) and then by that of Trinomics, on the project activities update. The feedback suggests that the Opening Session on Day 1 could have been better. Some advice to improve the Relevant Projects session (if to be included in future meetings) is to ensure shorter and more presentations that are fully relevant to BUS.

Technical Working Groups

All TWG sessions and ongoing work were rated as either 'good' or 'very good' (two highest scores). TWG1, which was rated as very good (76% of the responses), may improve even further by ensuring that the deliverables foreseen in the TWG are meaningful and by ensuring everyone in the group feels informed about the ongoing and upcoming work. The work within TWG2 is between good (64% of the responses) and very good (41%). The deliverables foreseen for this TWG are the aspect best valued by its members. Some of its members would be willing to try another TWG during the next EU Exchange Meeting; some are neutral about that idea. TWG3 scores good (58% of the responses) to very good (40%). The way the group was managed at the EU Exchange Meeting and the deliverables foreseen are the Group's utmost strengths. A bit more follow up in between EU Exchange Meetings could be further enhancing for this TWG. The Group may also benefit from setting clear responsibilities, timeframe, etc. TWG4 was rated between good (48%) and very good (49%) as well. A bit more follow up between EU Exchange Meetings – for examples by sharing business models prepared by participants before the upcoming meetings- would be further enhancing.

Parallel sessions

The parallel sessions / workshops were the least successful part of the 9th EU Exchange Meeting despite they were rated as being good (54% of responses) to very good (28%). The presentation skills of lecturers are key to ensure that the presentations are interesting. Next to that, information presented should be much more targeted to the need of BUS project coordinators, focusing on what is really

interesting to them and avoiding long presentations with information that they already know or can find on the website. For Finalised Projects presentations for instance, lessons learnt, mistakes, experience gained is much more interesting that general information on the objectives of the project, deliverables, etc. A concrete suggestion for the session on cooperation between the H2020 construction skills projects is that instead of presenting the projects all over again, the focus is set on specific subjects next time. Someone suggested that PPT presentations are circulated upfront to the meeting, so that BUILD UP Skills project coordinators can decide which they want to attend.[1]

Site visit & dinner

The site visit and dinner were rated as 'very good' by the majority (41% of the responses). BUS project coordinators are demanding concerning the type of projects they want to visit. For many, the site visit was not too impressive and we should ensure that the choice in this regard for the 10th EU Exchange Meeting concerns a very innovative, state-of-the-art site. Importantly, the site visit should be also way shorter. The organised dinner in Greece was overall successful and participants are very willing to participate in a dinner in the Rotterdam Exchange Meeting as well.

Non-BUS projects

There was no non-BUILD UP Skills projects proposed for the next meeting. Individual comments suggested that it may be worth involving European Trade Associations in the EU Exchange Meetings as well as the Hungarian Certification and Monitoring System supported by several EU project / refrigeration craftsmen.

[1] This is in practice very hard as it would mean that we need to collect our presentation even before the online registration for the EU Exchange Meeting is open (this is unlikely to work in terms of timeframe for the contractor as well as for the BUS project coordinators to have their presentations ready by then).

Annex 1 - List of participants

LAST NAME	First Name	Organisation	Country	Signature
ARIZANKOVSKA	Jadranka	Economic Chamber of Macedonia	Republic of Macedonia	
ARTOLA	Irati	Trinomics	Netherlands	
BANJAD PEČUR	Ivana	University of Zagreb, Faculty of Civil Engineering	Croatia	
BAYLISS	Richard	CITB	United Kingdom	
CARAPELLA	Giovanni	FORMEDIL	Italy	
CARR	Adama	GOPA Com.	Belgium	
CHATZICHRISTOU	Stelina	CEDEFOP	Greece	
CHRISTOFORIDIS	Giorgos	Aristotle University of Thessaloniki	Greece	
CONRADY	Christiane	myenergy G.I.E.	Luxembourg	
CROMWIJK	Jan	OTIB	Netherlands	
DELIYANNIS	Alexander	Sympraxis Team	Greece	
DOKTOR	Frantisek	ZSPS	Slovakia	
ENCIUS	Robertas	SPSC	Lithuania	
FUNTIK	Tomas	SKSI	Slovakia	
GAUSAS	Simonas	Visionary	Lithuania	
GEERLIGS	Ruud	SBRCURnet	Netherlands	
GOBLON	Andro	Construction Cluster of Slovenia	Slovenia	
GONÇALVES	Helder	LNEG	Portugal	
GONZÁLEZ LÓPEZ	Javier	Fundación Laboral de la Construcción	Spain	
HENNING	Liina	Tallinn University of Technology	Estonia	

JONAUSKIS	Mantas	Regional Innovation Management Centre	Lithuania	
JOYCE	António	LNEG	Portugal	
KAMENDERS	Agris	Riga Panning Reagion	Latvia	
KARÁSEK	Jiří	SEVEn	Czech Republic	
KARLSSON	Sara	Teknologisk institut	Sweden	
LACOURT	Amandine	EASME	Belgium	
LE MAROIS	Henri	Alliance Villes Emploi	France	
LINNAS	Reet	Tallinn University of Technology	Estonia	
MAJTNER	Tomas	SPS	Czech Republic	
MALAMATENIOS	Charalampos	Centre for Renewable Energy Sources & Saving (CRES)	Greece	
MARKAKI	Marini	Technological Institute of Crete	Greece	
MARTINO	Rossella	FORMEDIL	Italy	
MATOLCSY	Karoly	ÉMI	Hungary	
MIKKONEN	Irmeli	Motiva Services	Finland	
MILOVANOVIC	Bojan	University of Zagreb, Faculty of Civil Engineering	Croatia	
MORENO	Anna	ENEA	Italy	
O'BRIEN	Elisabeth	LIT	Ireland	
PAPAGIANNIS	Grigoris	Aristotle University of Thessaloniki	Greece	
PAPAGLASTRA	Marianna	Sympraxis Team	Greece	
PETRAKKAS	Marios	Cyprus Energy Agency	Cyprus	
PETRAN	Horia	NIRD URBAN-INCERC	Romania	
PFEIFFER	Iris	ZDH - German Confederation of Skilled Crafts and Small Businesses	Germany	
PIERZCHALSKA	Dorota	KAPE S.A.	Poland	
RADEMAEKERS	Koen	Trinomics	Netherlands	
SIKORA	Alexis	IFSB	Luxembourg	
SMULDERS	Peter	OTIB	Netherlands	

STANKOV	Alexander	DZZD EnEffect Group	Bulgaria	
SUTHERLAND	Gordon	EASME	Belgium	
TOURNAKI	Stavroula	Technical University Of Crete	~~Austria~~ GREECE	
TRNKA	Georg	Austrian Energy Agency	Austria	
TSOUTSOS	Theocharis	Technical University Of Crete	Greece	
TZANEV	Dragomr	Center for Energy Efficiency EnEffect	Bulgaria	
VITOLO	Orlando	FORMEDIL	Italy	
WIK	Per-Johan	Energy Agencies of Sweden	Sweden	
WILLIAMS	Rob	Trinomics	United Kingdom	
ZHELEVA	Mariya	Bulgarian Construction Chamber	Bulgaria	
ZOLTAN	Attila Laszlo	Hungarian Coordinating Association for Building Machinery	Hungary	

Vezirgianni Georgia CRES Greece

Dede Ioanna ΕΟΡΡΕΡ Greece

Karapidakis Emmanuel TEIC Greece

Annex 2 - Pictures from the site visit to the CRES (Center for Renewable Energy Sources and savings)


taurus instruments


taurus instruments