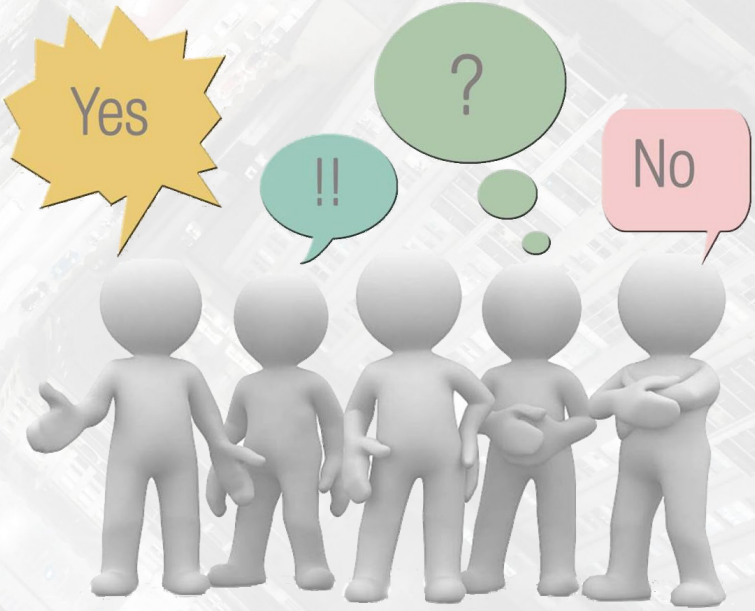
LATs meeting

Booklet 6



NewTREND

NewTREND, Booklet 6: LATs meeting.

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1. Introduction

According to the NewTREND Dissemination Plan, the dissemination activities are targeted to the exchange of information between the target groups and the NewTREND project. WP7 activities enable the transfer of knowledge and know-how between the Target Groups and the NewTREND work packages.

Through several meetings, important market inputs are transferred into the NewTREND Project; at the same time, the collected knowledge of the project is transmitted to the local stakeholders that are the potential end users of the main NewTREND results.

To achieve this objective, in each country project partners form a Local Advisory Team (LAT), an informal working group formed by representatives of the target groups both from the public and private side. The LATs meet to assess and discuss the status of the project and offer advice. The intent is to ensure the development of project results that really meets the needs of the target groups by providing actionable feedback to the NewTREND consortium. A LAT is established in each NewTREND project country, under WP7 Dissemination and Exploitation activities, to ensure a robust exchange of information between target user groups and the NewTREND project.

The main tasks of a LAT are:

- to provide advice from the end user's point of view regarding the project results
- to support the organization of local dissemination events
- to act as multiplier and aggregation system for stakeholders
- to help the project results to reach the market
- to secure development of the project results beyond the project's lifetime

LATs are informal collective working groups established by leveraging previously existing networks, representative of all key target user group. LAT meetings are held at key moments of the project life, they are scheduled at crucial moments of the project to obtain new feedback and involvement from the LAT participants, according to the development timeline.

1.1 Role of LATs

Project partners MUAS (Germany), ABUD (Hungary), UCC (Ireland), iiSBE Italia R&D (Italy), Sant Cugat (Spain) IES (United Kingdom), GO (Finland) have established LATs involving local target groups. LATs act as the link to the local market of the project partners and aim to provide professional support and monitoring for the project.

The LATs are formed by representatives of the target groups, i.e. the potential end users of the projects results, by introducing either expert knowledge or a market perspective. The combination of the experts, in principle, remains constant over the project period, with stakeholders covering the whole spectrum of the subjects addressed in NewTREND. Each LAT is led and moderated by a representative of the local PP. The local PP can also invite other experts to the meetings, according to the requirements of the current specific issues and questions. LATs are informal, collective working groups.

The target groups have been reached through existing networks and direct contacts within the different LATs, meetings and regional conferences. The LATs are potentially an important multiplier and shall act as aggregation system.

1.2 Setting up a LAT

In principle, LATs are composed by a minimum of 8 members, two for each target group. The members of LATs have an advisory role only, and do not directly participate as members of the NewTREND Consortium.

The target groups are:

- Technical organizations
- Financial organizations
- Administration and policy makers
- Occupants

1.3 LATs meeting

One LAT meeting shall take place at each critical stage of the project, and focus on a specific aspect as agreed by the NewTREND partners. The WP7 Leader provides the agenda for the meeting and the necessary material (slides, documents, etc.) to support it, in accordance with other partners involved. A template for the minutes is also provided to guarantee homogeneous reporting.

PPs that organize the meeting (LAT leaders) deliver the minutes at most two weeks after the meeting. The minutes are collected to prepare the present living document, i.e. an overall report of the LATs meeting outcomes.

2. 1st LAT meeting

As mentioned previously, LAT meetings are held at critical stages of the project, to obtain useful feedback from key stakeholders. In particular, the 1st LAT meeting was focused on four key aspects:

- Present the NewTREND project and set up the NewTREND LAT as an informal working group
- Discuss the principles of the integrated methodology
- Evaluate and review Data Manager proposed features
- Evaluate and review Technology Library proposed features

The overall presentation was managed by iiSBE IT R&D as LAT coordinator, while IES and STAM provided specific material to present and open questions on the Data Manager and the Technology Library respectively.

A common agenda was developed based on the harmonised presentation, together with a minutes template, to ensure that all feedback was provided following the same structure across countries.

The 1st LAT meeting was held in autumn 2016, in the dates presented below.

Country	Venue	Date
Finland	Seinäjoki	05/10/2016
Germany	Dachauerstr. 100a, Munich	04/11/2016 (planned)
Hungary	Kondor Béla Community Centre, Budapest	06/10/2016
Italy	Environment Park, Torino	18/10/2016
Spain		20/10/2016 (part A) 04/11/2016 (part B - planned)

AGENDA [Total Time 3:30 hours]

- 1:30 h: Retrofitting & NewTREND workshop

15 mins: Welcome, introduction (tour de table)

45 mins: Workshop: participants' experiences in retrofitting, issues with current process

30 mins: Overview of the NewTREND approach and proposed solutions

- 15 mins: break
- 1:45 hrs: NewTREND ecosystem and tools feedback

15 mins: NewTREND software ecosystem overview and feedback

40 mins: Data Manager presentation and feedback

20 mins: Technology Library presentation and feedback

30 mins: open discussion [returning to early overview NewTREND presentation as needed]

MEMBERS

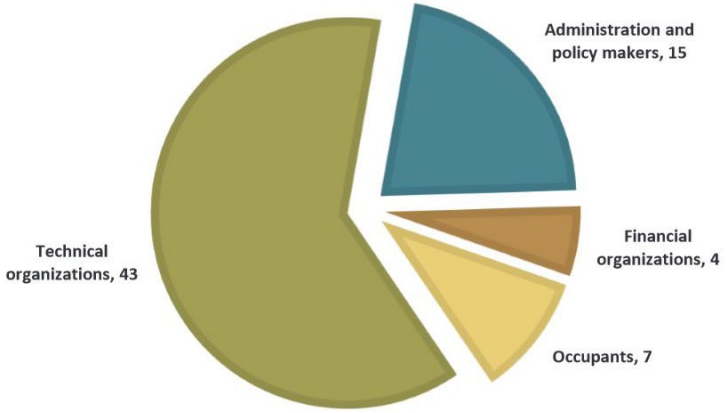


Figure 1: Current LAT members breakdown by profile

2.1 Finland report

The meeting was a joint LAT meeting and community charrette (for task 2.5) and included participants from 6 companies including Granlund Oy, Granlund Consulting Oy, Seinäjoki City, Dental clinic Seinäjoki city, Musical college and Institute of Adult Education. The main focus of the community charrette was to discuss the successes and failures of the building and to discuss the potential for occupant involvement in the upcoming design project. During the course of the meeting the LAT members were asked to provide their individual opinions and experiences with regard to retrofitting and the current performance of the building.

The key objectives were to get occupants to think about the buildings they occupy, and how the buildings could be improved; to understand the building design process in association with building occupants/users' everyday life experience; to explore the existing relationship between the building design team and building occupants/users and how communication can be improved between these two groups; and finally, to help building occupants/users understand the design process and language of design.

Figure 2: Finnish charrette in progress

Summary of the conclusions from the meeting were following:

Regarding the experiences and issues with the current process, the building users prefer to provide feedback via online tools. They stressed the importance of listening to the building uses before the retrofit, and stated that feedback should be requested from a wide range of stakeholders.

Regarding the data manager tool, it was remarked that it should be able to show level of accuracy of the data, and include sensitivity analysis for data collection support. A question was raised on how will KPI's from basic mode be presented, as data can be inaccurate. Furthermore, the possibility of linking images to spaces was seen as interesting (especially linking photographs with IR images and spaces).

Regarding the technology library, technologies which could have different financing schemes (e.g. support for installing PV panels) should have information about such schemes. A suggestion was made to allow the possibility to input technologies currently in use, to aid result filtering and propose corresponding replacement technologies.

Interest was raised on the premium mode of NewTREND, however it was not presented in sufficient detail to further comment. A general comment for the NewTREND ecosystem was that it should guide uses completely

through the project: collecting the data, identifying problems, propose the solutions to the problems (for common technology problems and sub-optimal use) and promote long-term perspective (continuous monitoring of performance and giving feedback to users).

2.2 Germany report

The meeting started with welcoming the participants. Participants introduced themselves, followed by a short presentation about meeting's agenda and the work shop objectives.

The NewTREND project scope and objectives were presented, followed by a presentation of NewTREND modes and the methodological framework, the software tools (data manager and analysis tools), the stakeholder and occupant engagement through the E-collaboration platform (Technical library, before after comparison, User questionnaire and opinion pool).

Figure 3: 1ST German LAT meeting

After the presentation and open dissection between the participants took place. The feedback to the presented slides is summarized below.

NEWTREND SCOPE AND OBJECTIVES: the participants highlighted that NewTREND is addressing a relevant topic in the sphere of building retrofitting and that the possibility of sharing building information through a common platform is important and would help accelerate the retrofitting process. However, it is still unclear for the participants what target group is the platform intending to address: whether it is intended to be used by municipalities, real estate companies, faculty managers, project managers or planning offices.

NEWTREND APPROACH AND MODES: the majority of participants found both basic and premium mode most useful. A preference on focusing on the further and more detailed development of the basic mode was expressed by the participants, as Basic mode would be very useful in the early design stage and in the decision making process. The participants have highlighted a real market need for such a tool that addresses early design phase in energy retrofitting projects. However, some of the experts have casted some doubts about the accuracy and reliability of the basic mode. Due to the face that the basic mode relies to great extent on default values and pre-programmed occupancy schedules for generating the results. They stressed the need of finding the right balance between the accuracy of the results and the effort of collecting and inputting the data. Some of the attending engineers argued that an experienced engineer would be able to give a more accurate assumption of the current state of the building without the use of the software. Therefore, they see the need of developing a plausibility check method for the generated results.

The attendees don't see that added value of using the advanced mode as currently planned in the IDM at the moment, as they believe that the analysis functions the advanced mode is offering can be replaced with existing specialized tools. They instead prefer an extension of the basic mode principle to a little more detail. The attendees also mentioned, that NewTREND Tools cannot cover all simulations and planning processes done with different existing tool sin one tool. Instead, NewTREND should take advantage of already existing external tools by providing high interoperability functions and common interfaces to exchange (export and import) data from the DIM with specialized external desktop tools (e.g. detailed HVAC heat flows simulation, tender and quantity tools, heat network pressure simulations, etc.).

The concept of premium mode was found to be interesting; however, it gave the impression as if it's trying to replace existing facility management applications which also should not be focus of NewTREND.

Therefore, in the opinions of the LAT Members NewTREND should in the later more detailed design and implementation stages of the IDM more act like a central hub to share information. The models in the DIM

and the simulation & design hub should be focussed to the early design stages and cover only a lower level of detail (e.g. simplified simulations using more defaults instead of detailed simulation using real pipe length or duct positions in the models). For these detailed purposes NewTREND should provide interfaces in order to connect NewTREND to different needed external tools for these purposes (e.g IFC export and import into IES VE desktop tool). However, the results of the detailed analysis can again be uploaded on the NewTREND CDP as raw data files (e.g. .csv export from external tools).

NEWTREND SOFTWARE TOOL: the participants highly praised the concept of the data manager tool and opined that such data collection tool would be very helpful in accelerating the process of retrofitting and minimizing conflicts between planners. They highlighted the fact that such a tool in combination with DIM Server can serve as a databank or database for real-estate companies that own a large number of building stock. The compatibility and interoperability of data in the platform is essential aspects that need to be covered in order to ensure the success of the tool. Moreover, the level of accuracy must be chosen very carefully and depends of the focus of the tool. User may be swamped if they need to enter and collect very detailed data or huge amounts of information. More useful would be to limit the Data Manager to the main focus inputs which have the highest relevance to the energy simulation results. Less important inputs may be automatically inferred by defaults.

OCCUPANT ENGAGEMENT: the occupant engagement methods and approaches proposed by NewTREND were greeted positively. The participants highlighted the need of educating and training the occupant about how to best use their building and they stressed the importance of developing a clear and simple communication method to ensure that the occupant doesn't lose interest in maintaining the building. However, one of the challenging aspects that can face the applicability of such tools is that fact that in rented spaces, the occupant of the space is constantly changing and might not have a direct interest in the building performance, thus such tools would be not used by such occupants. The participants casted some doubts regarding the usefulness of the technical library, as they believe such information are widely available in the internet on dedicated websites that is updated regularly.

GENERAL COMMENTS: the experts stressed on importance of good visual communication and ease of use of the platform, especially in the early design and decision making phase.

The economic efficiency of following such an approach is yet to be proven.

The targeted group/segment needs to be better identified.

2.3 Hungary report

The LAT meeting agenda was introduced, followed by an explanation of the main NewTREND concept and goals. A summary of the new integrated methodology was given, the main objects of NewTREND were explained so as the participatory design approach and energy related aspects from the early design, the demonstration activities.

The participants introduced themselves and explained their experience in retrofitting projects. Most of them have already been involved in retrofitting projects, mostly within the KEHOP framework. KEHOP (formerly KEOP) is the Environment and Energy Efficiency Operative Program that supports public institutions, churches, NGOs, utility companies to realize higher energy efficiency.

The group summarized what has already been done in the retrofitting process of the NewTREND case study (Bókay school), what is the expected timeline: for the tender construction plans had to be handed in. These plans were prepared during the summer of 2016. The tender has been under 'content review' since the 29th of August. After the results will be revealed (the time is unknown); the grant agreement has to be signed. The expected time for that is December 2016. After the signature the contractor has to realize the retrofitting measures in a five-month time, it means by May. However, it is possible to delay the signature by 60 days, it is more ideal to do the refurbishment during the summer of 2017. From the perspective of NewTREND monitoring, it would be useful as well. The support intensity of KEHOP for this case is 70%, it means 100 million HUF.

The explanation of the integrated design methodology, NewTREND approach and the importance of the communication between the stakeholders was continued. After that basic information about BIM and DIM, neighbourhood scale synergies, the key performance indicators, the simulation and the demonstration activity were presented.

One of the participants questioned the usefulness of NewTREND project in case of Bókay school, as the design and tendering process have already been finished, but others stated that it can be useful in other phases of a retrofitting process: it was agreed that NewTREND platform can be a useful tool to collect monitoring data.

Participants emphasized that NewTREND can be useful in the decision-making phase at neighbourhood scale, to identify which buildings need refurbishment the most. Currently most of the refurbishments are financed from Operative Programs, but the budget of this financing scheme will end soon, therefore they need to be more efficient, and NewTREND can help in that. In general, they found the approach of NewTREND proper, but it depends on the project type and depth how it could be actually used.

Regarding Bókay school it has been revealed that measuring and monitoring activity is great to perform, however the end-users of the school don't have any motivation regarding energy efficiency, as they don't know how much they consume and don't have a financial benefit when they consume less.

Some of them mentioned the importance of comfort issues in retrofitting projects, it was said that it is often neglected, but it is as important as money. The consideration of comfort can be an innovative side of NewTREND.

Participants agreed that the design process of a retrofitting is often not coordinated efficiently and NewTREND can be a useful tool to overcome this problem. It can be also important to inform the citizens about the renovation process and the measures to be taken.

If the consumption is measured before and after the retrofit, they can diagnose whether the retrofitting was successful or not. Therefore, the approach of NewTREND, considering the whole life cycle is needed.

From a technical perspective, it was recommended that the NewTREND project consider and clarify some fundamental attributes of the existing building, before any calculation and simulation etc. Therefore, the highest level and most fundamental categorization of buildings should be: heritage or non-heritage. The next tier should be: free-standing or closed row. These basic features determine important retrofit intervention possibilities, such as: thermal insulation, window replacement as examples. Then, the building function (school, office, storage etc.), potentially even more refined, with further sub-categories within the function, e.g.: residential building: estate type, condominium/ urban rehabilitation, family house.

Further basic building attributes to be given should be: daylighting / building orientation, any whether there is an already existing water-proofing layer. These constraints and aspects should appear in the tool.

A final comment on the proposed NewTREND Collaborative Design Platform is that it can be very useful and help co-ordination of different trades and stakeholders, but it cannot completely replace face-to-face meetings; although it might be viable if they all see the same documentation whilst having an online meeting.

2.4 Italy report

The meeting opened with a broad discussion on integrated design. In particular, participants focused on key principles, and on how to optimise and coordinate team roles that are key elements to ensure a truly integrated process. The LAT members have different backgrounds and roles, and thus were able to offer a wide variety of opinions, experiences and lessons learnt.

Figure 4: 1st Italian LAT meeting

For several of the participating designers, integrated design has been the usual process for at least a decade, especially for private, non-residential projects of a large size, cost and complexity. In Italy, the requirements of Protocollo ITACA assessment for residential, school, retail, office and tall buildings lead necessarily to the implementation of integrated design principles. In particular, it is often the design team to push for the adoption of integrated processes and the involvement of all key stakeholders from the start, while the clients tend to misunderstand its importance and are put off by the start-up costs and complexity.

In particular, for designers of large retail projects, an emerging practice sees the establishment of a formal project manager role, which subcontracts all other design team members and organises the information flow. These project managers have a strong control via contractual obligations which positively affect compliance to requirements and delivery time. For contractors, such a figure is always present, as part of the construction company's personnel.

However, such an approach is of difficult implementation for smaller projects, and particularly problematic to implement for small design teams, which are typical in the Italian market. Furthermore, the entire integrated

principle cannot be applied in public procurement, due to the structure of funding and the rigid design step procedures. The result is particularly negative for contractors, as all delays, redesigns and extra costs accumulate and must be dealt with in the construction phase.

To foster a broader culture of integrated planning, the Polytechnic of Turin has for several years trained its building engineering students in its application. The purpose is to generate a shared mindset among professionals, which in the future will ensure that all team members will be able to play their role and participate in the broader process.

The conversation then moved on managing the data collection process. The first raised issue was the low rates of BIM use in Italy, with two key causes identified: first and foremost, the low level of compatibility among models developed with different software, which lower the effectiveness of BIM and discourage broader adoption; and secondly, the lack of resources to train personnel adequately, especially for smaller design teams, which are typical of the Italian construction sector.

When discussing the proposed NewTREND Data Manager, participants agreed that in basic mode the user could accept less accurate data, in particular suggesting to provide information on the reliability for transparency; for advanced mode and detailed design, ideally a BIM model should be uploaded already containing all necessary data, and any changes that affect an originally uploaded model should be easily identifiable to avoid confusion in the process. Additional information upload such as appending pictures is seen as a useful tool for technical reporting of the construction phase, and further monitoring; however such a capability would be managed by expert users, with approval processes to allow appending only new and relevant information to rooms.

The proposed NewTREND Technology Library was positively commented, in particular when it presents new and innovative technologies which are not commonplace and on which it is difficult to gather a full informative package. For these technologies, it is especially relevant to document lessons learnt and valuable use cases, to facilitate their applications in other projects.

Concerns were raised on the inclusion of approximate costs, as there is the risk of low data confidence, especially given the high variability of the cost of the same construction technology due to transport, amounts provided, etc. Thus a risk was identified in providing a misleading cost value to the client, which could then lead to broader budgeting issues.

2.5 Spain report

PART A: OCTOBER 20TH 2016

People attending the meeting were really engaged with the main goal of the NewTREND project, most of them had experience in retrofitting, some of them from the point of view of public administration and others from the user side and design process. All of them agreed on the need that cities have to engage private sector on the retrofitting process in order to achieve the goals expected in terms of energy consumption reduction, moreover all of them agreed on how difficult is to offer feasible solutions.

Data acquisition was widely debated, from their point of view the lack of information is one of the main challenges that project must face: in Spain most of private buildings have only basic information geometry, there might be public buildings or company buildings with more detailed information but it will be difficult to find buildings with BIM model. If there are some buildings with BIM information they likely don't need any kind of retrofitting. It'd be highly appreciated the assessment of how useful NewTREND project will be in those cases with basic information in comparison with those with more detailed info.

The collaborative way proposed from the beginning of the design process was highly accepted as a new way of retrofitting process including aspects not included in the traditional design process. Some of the participants found it difficult to define KPIs as useful in all countries or even in all kind of buildings, in particular to compare buildings or even cities.

The technology library was considered a key point to engage final users, only one issue was discussed: how technical the library is going to be, and whether only engineers and architects are going to understand the meaning of the concepts. A suggestion was raised to include two kind of libraries, one for technical users and another in plain language for final users, to let them test their building and their possibilities without the need of technical support.

PART B: NOVEMBER 4TH 2016

After a short introduction of all the attendants, the organisers explained the general goal of the project and why the meeting had been called, after that all participants explained briefly their experience in retrofitting and what did they expect from the meeting or what could be their contribution in general terms. Participants were made aware of the confidentiality of the information that would be presented. It was noted that there were people coming from different sectors, different experiences and with different approaches of what a retrofitting project ought to be.

The organisers explained the overview of the project, the different ap-

proaches and the proposed solutions, and the three pilots in order to make participants aware of the diversity of buildings NewTREND is focussing on.

At this stage of the presentation, all participants agreed with the scope of the project and how the inclusion of energy issues since the beginning to the design process will increase the quality of the project; participatory design was highly appreciated as a valuable contribution to the project. There were different approaches about how to solve the financial issues needed to carry out the retrofitting.

When the methodology and data acquisition was explained, a long discussion took place and participants could hardly agree on what was the best. When it came to talk about the level of detail of the NewTREND project most of them agreed on the huge gap between NewTREND Basic and Advanced. Some even questioned the use of BIM as a input since there's no specific experience, at least in Spain, of using BIM as a tool in building management. Another issue that arose was that for participants it is considered easier to have building monitoring than BIM modelling of buildings. That led to a suggestion of a new level between basic and advanced including monitoring instead of BIM modelling.

Key performance indicators were highly validated and some questions arose about the possibility of including non energy related indicators to evaluate the feasibility in terms of return on investment.

The data manager tool didn't generate debate in itself, the debate was focused not in the tool but in the data to be included and the way it will be included. When the technical library and the technologies assessment were presented, both had very good acceptance but some suggestions came out to be included if all the partners agree on them. Time was spent diving into the online mock up.

Once all topics were discussed the meeting ended, not without asking the participants' opinion and to keep working with the organisers in this project.

3. 2nd LAT meeting

The first LAT was pioneer of the series of meetings set by NewTREND Project and for the organization of this second meeting has been taken into account the lesson learned during the first one. Taking advantage of the positive results in terms of feedback obtained from the first LAT, the 2nd LAT meeting was organized by Project Partners with greater awareness. This LAT meetings was held at the end of the second year of the NewTREND Project, to obtain useful feedback from key stakeholders. 2nd LAT meeting was focused on three main aspects which have been agreed taking into account partners' needs about the feedback they wished to receive. Following, the main arguments summarized:

- The IDM project phases, the communication and participation models developed in WP2 –T2.6 asking the LAT for feedback in regard to the applicability of the IDM communication and participation models in the project based on the their experience and the IDM manual developed in T2.7;
- The Technology Library developed in WP4- T4.2, asking the LAT for survey on previous experience with technology libraries, for Technology update functionalities and for Links with other NewTRENDinfo;
- Case Studies presentation going through the three demo projects presentation showing general information about each of the three and asking the LAT participants suggestion about the level of occupant involvement into retrofitting project, the end-user satisfaction of current building, etc.

As for the first LAT, also in this case the overall presentation was managed by iiSBE IT R&D as LAT coordinator; specific material was requested to the partners involved in the aspects described before. In particular:

- MUAS has provided supporting documents about the results of Task 2.6 "Integrated retrofit design methodology" and about the IDM manual developed in D2.7;
- ABUD has provided supporting documents about the explanation, advantages and benefit of the activity about the application of the NewTREND methodology and tool in the pilot project and about Pilot project 1 in Hungary (name, site, general information, images, retrofit actions description, technologies description, synergies in the neighbourhood framework);
- GO has provided a supporting document about Pilot project 2 in Finland;
- SANT CUGAT has provided a supporting document about Pilot project 3 in Spain;
- STAM has provided a video presenting the Technology Library to make participants familiar with it;
- iiSBE IT R&D has provided a document with a brief description of the progress of the NewTREND Project and a supporting power point concerning the information on the LATs role and 2nd LATs specific objective.

All these supporting documents have been merged into one Power Point presentation which was used by partners as a common basis to lead the second LAT meeting. A common agenda was developed based on the harmonised presentation, together with a minutes template, to ensure that all feedback was provided following the same structure across countries. The 2nd LAT meeting was held mainly in the period between June and

July 2017 while for MUAS was performed in November 2017; below the dates are showed.

Country	Venue	Date
Finland	Granlund Pohjanmaa – Seinäjoki office	02/06/2017
Germany	Dachauerstr. 100a, Munich	24/11/2017
Hungary	Képzéskoordinációs Iroda – Training Coordination Office (Budapest, Üllői st. 317.)	28/06/2017
Italy	Environment Park, Torino	17/07/2017
Spain	City council, Ajuntament Sant Cugat del Vallès	13/07/2017

AGENDA [Total Time 3:30 hours]

- 1:30 h: 1ST PART - Retrofitting & NewTREND workshop

10 mins: Welcome, introduction (tour de table)

20 mins: Introductory session and developments of the project

60 mins: Integrated Retrofit Design Methodology and IDM Manual

- 1:30 h: 2ND PART - Retrofitting & NewTREND workshop

45 mins: Technology Library development

45 mins: Case Studies in NewTREND Project

MEMBERS

50 have been the total number of the participants to the 2nd LAT meeting. Pie chart below describes the distribution of members in their specific membership area and organisation. The distribution in terms of "number of people for category to which they belong", it is so distributed:

- 30 members in Technical Organization/Professionals;
- 9 members in Administration/Policy Maker;
- 9 members in Financial;
- 2 members in Occupant.

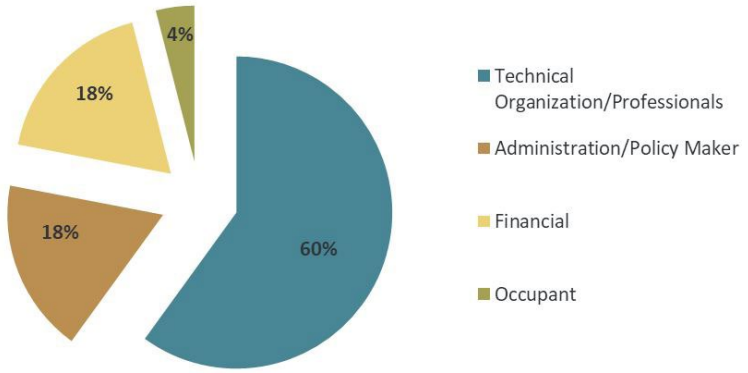


Figure 5: Current LAT members breakdown by profile

3.1 Finland report

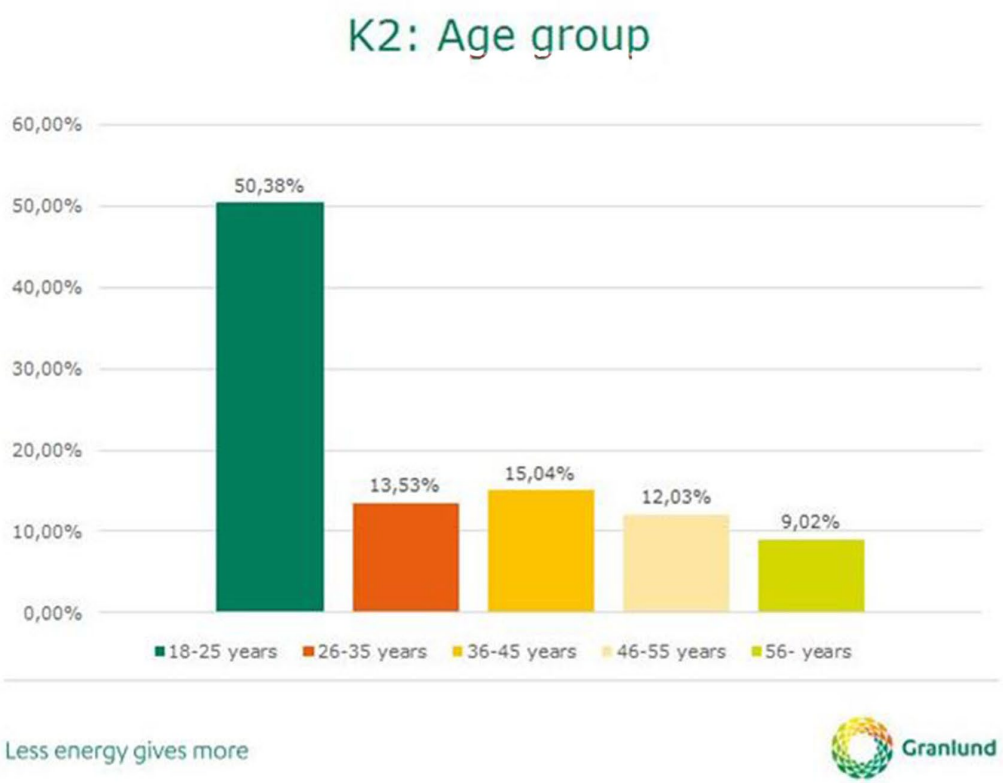
The Finnish LAT was conducted before the production of the common Power Point for the presentation, for this reason some of the topics discussed differ from those common to everyone.

In particular, the Finnish LAT focused on two key aspects: the first is about results from the occupant survey obtained through the building user questionnaire and the second is the potential renewable energy retrofits in Seinäjoki Pilot site, in Finland.

Concerning the building user questionnaire on Seinäjoki pilot site, the slides that summarize the percentage of respondents man/woman to the interview, the age of the respondents, the organization to which they belong and their relative position, their degree of satisfaction in terms of comfort into the spaces of the pilot area, building surrounding condition and the condition of all the building envelope included doors, windows, facade, etc. have been shown.

Other questions were about the perception of safety into the spaces of the buildings, about the indoor air quality, temperature and internal/external adequacy of lighting level. The last part of the questionnaire was about the perception of noise condition in the buildings of the Finnish pilot area.

After the presentation several feedback were collected, participants complained a too high temperature in summer and too low in winter, several problems with humidity, bad smell from sewers and ventilation, indoor air quality bad, drafty windows and they proposed a more ergonomic furniture and that the interior design should be more interesting and more motivating.



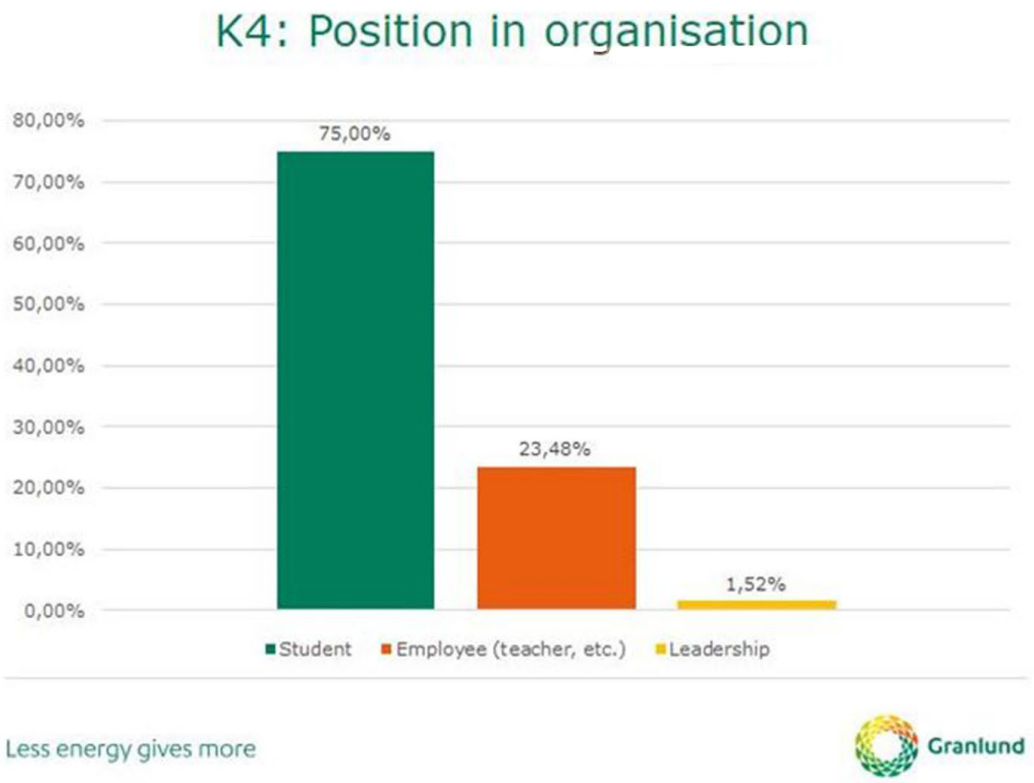
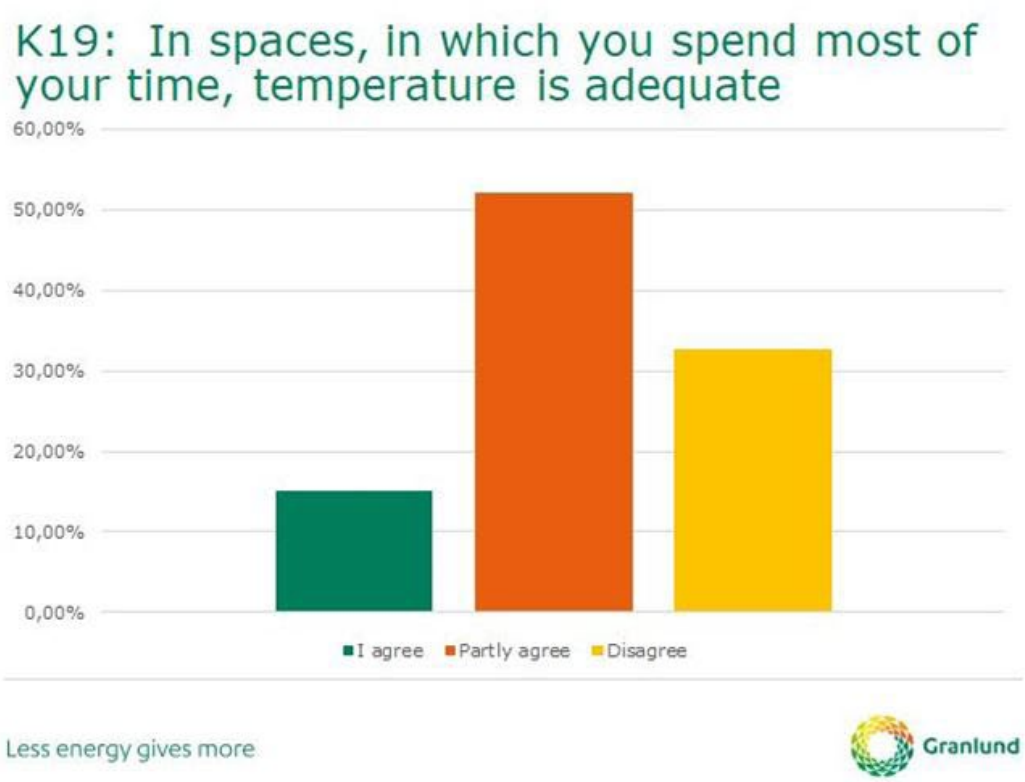


Figure 6: User questionnaires, results from the occupant survey



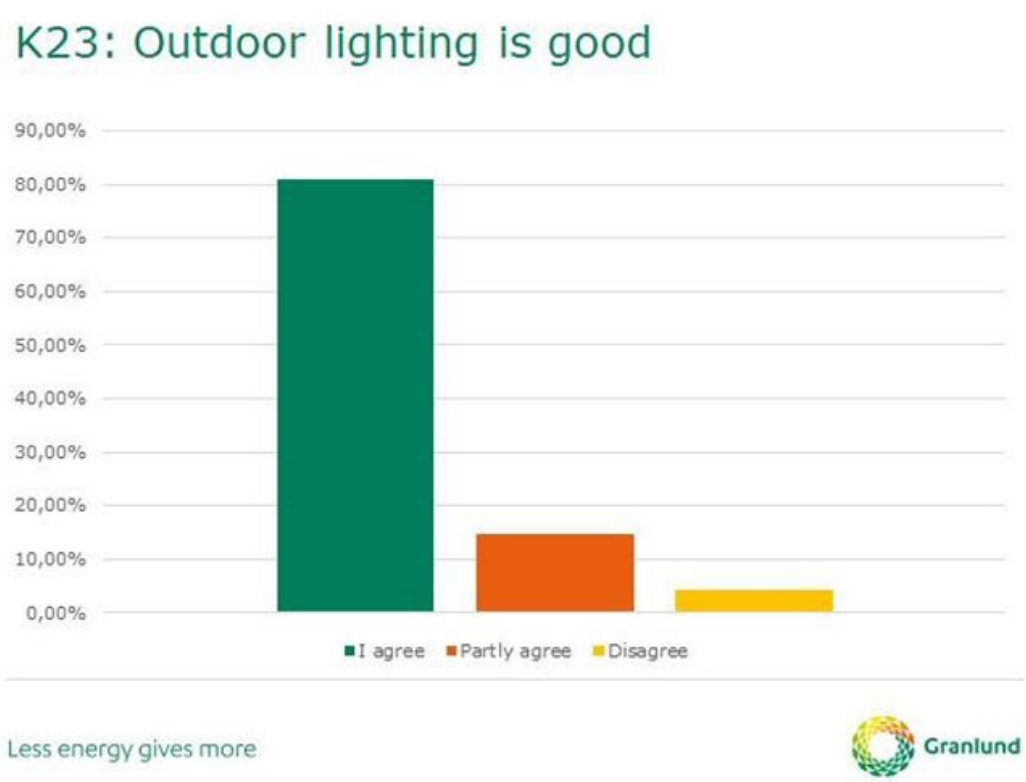


Figure 7: User questionnaires, results from the occupant survey

Next step involved the feasibility studies about retrofit simulations in the pilot area. Simulations concerning hypotheses of replacement of inner window have been shown, together with the installation of a HVAC system and the predisposition of 1200 m2 surface of solar PV panels for renewable energy production. Retrofit simulation also includes adding to the building an hybrid heating system (combination of ground-source heat pump and existing district heating network). During the LAT meeting was told that in the summer drillings in building structures are going to be made to assess their condition and as well check for possible thermal bridges.

About future measurements was told that in coming autumn/winter thermal measurements are going to be performed and further user feedback is going to be collected using advanced interactive methods (such as Granlund Pulse).

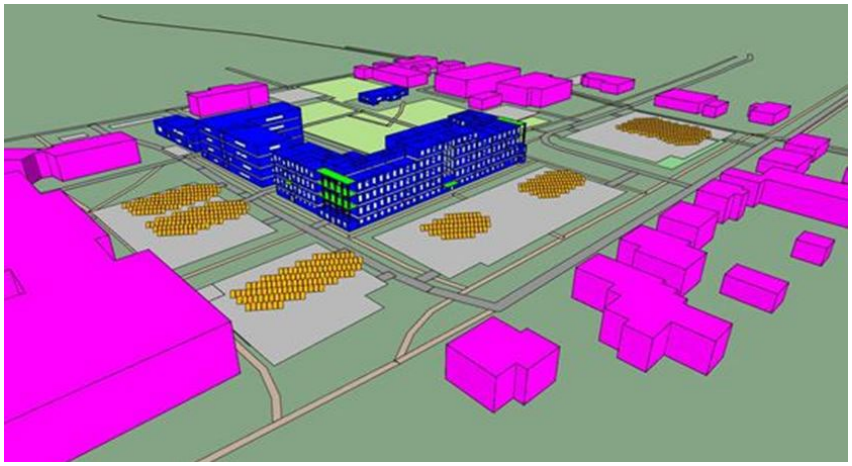


Figure 8: Retrofit simulations in the pilot area

3.2 Germany report

The German LAT was conducted by MUAS and started with the welcoming to the participants and a quick introduction to the project. The meeting participants introduced themselves accompanied with short presentation about meeting's agenda and the goals of the workshop.

After that were presented briefly the project scope and objectives of NewTREND, followed by a presentation of NewTREND Integrated Design Methodology in which the IDM phases and the corresponding communication and participation models and profiles developed in D2.6 were briefly described. Furthermore, the user manual developed in D2.7 and NewTREND technology library were presented in the meeting. After the presentation, an open discussion between the participants took place. The LAT members considered the general scope and objectives of the project favourable. They identified as a main challenge of the NewTREND project the different languages in terms of technical and practical work between the different involved stakeholders in renovation projects. For example, architects think from the perspective of a building design while HVAC planners, electric planners or craftsmen have a more technical view. In practice, these different languages in real projects often do not fit together and can cause major issues if the coordination and communication is not efficient between the different stakeholders. Hence, the NewTREND project must overcome this gab by providing a useful methodology and toolset considering all of these requirements.

Figure 9: 2nd German Meeting

Concerning NewTREND Integrated Design Methodology, the construction site manager mentioned that the diagnosis phase in real projects is an iterative loop, as during the renovation project new information appear while the construction works progress. For example, after removing the ceiling covering or floor covering the HVAC systems and pipes only can be inspected, and added to the models, in a more detailed way. This allows to re-run the diagnosis phase in order to update the previous results with the new information. For the time frame the participants proposed to increase the estimated time frame for data collection for a single renovation project per building up at least to two month for simple buildings (residential) and up to 4 month for more complex buildings (e.g. non-residential). A Researcher of the University of Munich mentioned that using default values in the basic mode might be critical, as the accuracy of the results on single building level needs to be ensured. He suggest having a solid validation of the basic mode results during the demo site testing within the NewTREND project.

The construction site manager emphasized the risk of old-fashioned companies not being able to use the NewTREND methodology and tools, as they may be to modern and complex for planners working still with traditional methods instead of BIM. To overcome this issue, he proposes to provide comprehensive training material and training lessons to users in order to avoid fears using the project results in practice. Concerning the NewTREND IDM phases the LAT experts expressed the wish to allow a later contextualization of the proposed phases with national standards like the HOAI in Germany. As the current approach is not fully in line with the German standard HOAI it might be hard to apply the full methodology in Germany. However, the LAT experts appreciated that the IDM must be applicable for the whole EU and contextualization may be done during the exploitation phase in each country.

In relation to the Data Manager tool, the project developer involved in the LAT meeting mentioned that, for the Gewofag housing company, which is managing 30.000 apartments in the City of Munich, no data about the energy demand of the buildings is available and can be analysed so far. Moreover, the availability of existing floor plans and building descriptions is poor and for less than 5% of the renovations available in an adequate and updated format and sufficient quality. However, Gewofag has a huge amount of building data scattered around in different departments (planning, facility management, portfolio management, financial administration) aspects like rental fees, energy billing, year of construction, rented building area, deterioration status, etc. Although this data is available Gewofag is not able to capitalize the data to derive valuable knowledge from it, as no big data analytic processes are available. Hence, in Gewofag renovation projects at the beginning detailed and cost-intensive expert opinions on the building current state have to be developed which are a seen as bottleneck for quick and efficient renovation. Moreover, due to their high cost and time effort they cannot be compiled for the whole building stock in a meaningful time.

Figure 10: Participants to the German 2nd LAT meeting

The participants also highlighted, that the data manager tool in housing companies may be used for portfolio management and for strategic decisions before sending experts for a detailed analysis in the building. Moreover, the LAT experts emphasized, that the data manager tool must allow coupling models from different subsection of the building. As most critical they consider the linkage of geometrical models with HVAC models and electric design models as the interfaces as in practice mostly not existing.

Another argument discussed was the NewTREND Technology Library, LAT participants appreciated the general approach and design of the NewTREND Technology Library. However, after detailed testing a lot of question emerged, in which way the library can be used in practice in planning and who exactly will be the main user. Especially the cost calculation was identified as very misleading in the current website of the library as it is not clearly stated which cost are calculated and to which units / quantities the displayed cost are referring. Moreover, some of the cost calculations show wrong units and it is not clear on what the units are representing (e.g. gross or net cost, cost as per €/ m2 or total cost in €, per m2 floor area, per component area, per PV panel area, etc.?). Furthermore, the budget filter should be linked to the real building geometries derived from the BIM model to show valuable results of the building renovation cost instead of only operating a multiplication by total floor area. Hence, the participants stressed that NewTREND Technology Library must be reviewed in terms of operability and displayed units / calculations. Moreover, more hints on how to use the library website should be included like mouser-overs or help buttons and the use of abbreviation or acronyms like “RES” instead of “Renewable Energy Systems” should be better explained or replaced. As user manual would be very helpful as well. Finally it was highlighted, that the type of building in the library may not be useful, as it currently is not implying any filters and therefore has no result.

Figure 11: Participants to the German 2nd LAT meeting

Concerning the occupant engagement, the LAT experts see the most important part of the occupants involvement during the early design and the post-occupancy phase. Especially after renovation measures are finished in Gewofag projects occupants often misuse the new installed technologies like ventilation systems. For example, they open the windows during the heating season for the whole day although the ventilation system with

heat recovery is running. Hence, the participants greeted the NewTREND methods for occupants involvement and the strategies to avoid misuse of new technologies by occupants.

Finally, some general comments emerged; the LAT members highlighted, that the NewTREND approach may also be extended for including further GIS data beside building models like district heating pipes, sewage channels in order to allow a more complete planning and visualization in the neighbourhood. Moreover, it was mentioned that public authorities in Germany in the most cases are not working digital but still analogue data (e.g. submission of forms). The too slowly progressing digitalization in the public administration may be an obstacle for the NewTREND approach as these stakeholders may not be able to fully use the new technologies as they are still depending on analogue processes.

3.3 Hungary report

The goal of the meeting was to receive feedback on the applicability of NewTREND approach and components to retrofitting praxis of Hungary, and to raise awareness across a wide cross-section of stakeholders – as potential users.

The LAT meeting was introduced by a brief overview of the entire project, than it is followed a presentation of the integrated design methodology, the display of the Technology Library video, and after the presentation of the three demo sites, with a focus on Bókay School. Segments of discussion were injected for each subtopic of the agenda.

Figure 12: 2nd Hungarian LAT meeting

Talking about the Integrated Retrofit Design Methodology, many of the participants say that the district approach is relevant for billion HUF scale projects. They say that there is a higher chance of district-scale interventions when either the ownership, management or retrofitting responsibility is shared. For example: school districts, municipally owned buildings, estates.

Many retrofitting projects are co-funded or funded through grants and other external incentives. These schemes give clear requirements regarding the interventions and the indicators, leaving asset managers with choosing the technologies accordingly, and to measure only the data required to define said indicators. This has implications for the attitudes towards previously uncommon practices like deeper stakeholder involvement throughout the lifecycle and advanced, continuous monitoring and modelling of key performance indicators which are part of the key value propositions of NewTREND.

Urban management bodies are generally positive and curious, but they cannot communicate the benefits of using these practises. When faced with the question, is this feature or that functionality a promising idea, there is usually agreement, but nothing more. When asked when could this feature/functionality be applied, the response is: for larger projects only. This attitude, coupled with the fact that a grant-based development prescripts their use might give us the false picture of what practises are really absorbed into Hungarian retrofitting.

Urban management operates under strict budget, and activities like harvesting more data and opening up the development process have values under the radar. As their benefits are seen as externalities, they are acknowledged and strived for, but the municipality “will not pay for it”. In EU funded projects, the approach is different. With sufficient intensity of support, any activity can become “feasible” – pseudo-feasible in a sense that the local government does not lose money on it. This became clear when looking at the phases of IDM: all invited parties unanimously agreed that there is little effort for measuring performance and stakeholder involvement in the post-intervention period. However, they also agreed that there should be.

The organizer of the Hungarian LAT asks to the participants their thought about NewTREND modes and all the reply agree about the fact that advanced and premium modes are only an extra cost and Hungarian public building / district retrofitting projects only need to comply to regulations, for which basic mode is enough. The responses suggest that the benefits of more detailed modes at municipality level are unclear.

Concerning the IDM structure, architects agree with the fact that many retrofitting projects are co-funded or funded through grants and other external incentives, an extra phase for competing for grants, fundraising would be useful. The point of view of the urban management is that a retrofitting of a building means that the lifestyle must adapt to the changing

environment as well, which needs to be curated, NewTREND is expected to be the tool providing know-how for educating users for their occupancy, however, it is an extra cost, and the municipality would not pay for it.

So the final question is: in which stakeholder can we find/plant an interest to curate inhabitants? There is no clear party bearing responsibility for post-intervention phases.

Communication and participation methods are explained by the moderator, questions arising from the topic are about the extent of participation offered by NewTREND tools, involving users in the design process and about the utility of the online tools. There are differing perceptions about the extent of participation currently, which suggests that there is an asymmetry of information flow among the stakeholders. The values of involvement are acknowledged, so the expectations from NewTREND is to strengthen dialogue.

Moving on to the topic of the IDM Manual, moderator asks to the participants if they have used or they would use a similar manual for actual project. For urban management the manual could be useful for a new next project while school teacher says language barrier is an issue and it could be used to educate children on sustainable living. Teachers had in fact the idea to use the IDM manual to teach sustainable living for their pupils – making them potential post-occupancy personnel for refurbishment projects. It is clear, that involvement throughout the lifecycle is not something that a municipality can easily plan its budget for, but it is not necessarily a problem. There is an unnamed stakeholder group similar to the teachers in every retrofit project who have personal interest in carrying out participation measures. Arming them with the material that they understand, and they can disseminate could become one of the edges NewTREND can gain.

This is an interesting opportunity: stakeholders with a sense of environmental responsibility could be recruited for the critical post-intervention phases to curate the change of behavior mentioned earlier. This means a distinct project profile could be added to NewTREND covering them.

Concerning feedback on the functions of the Technology Library, judging from the responses the experts expect more sophisticated, data analytic tools; the municipality does not want it to be a one-time static database, while the users did not reply anything at all.

Both the integrated design methodology and the technical library reverberated in a single target group: urban management. The technical language renders the library hardly usable for non-expert users. Designers during the session suggested reporting, comparing, collecting functions. It is true that so far, the only database related functionality the library offers are filtering, and linking solutions database to cases database. Without any further analytic features, the library will only be a list, competing with open-source solutions databases that also focuses on solution application. On the other end, users have different language, different terms and criteria.

They do not discuss the thermal performance with the terminology, the KPIs, or the technologies presented by NewTREND, but through everyday problems and use-cases. The library suits decision makers, who need quick, easy-to-digest information about the usual suspects of the market.

Figure 13: Participants to the Hungarian 2nd LAT meeting

Going to the final arguments of the LAT, that are the Case studies of the pilot project areas, moderator asks if case studies are useful and representative and in particular if Bókay School is typical for Hungarian retrofit projects.

From the point of view of the urban management heritage protection is common for public buildings and retrofit processes are similar, meaning the project is representative. School teachers say that there are values in the place which are not protected by law, yet acknowledged by users, they must be protected as well. For them, the staff is not sufficiently involved in decision making and more information is needed on scheduling of the construction. On the contrary school district disagrees with teachers: he says that they survey tasks to be done with priorities, which they build into their plans, they will receive technical responsibilities and they will manage buildings.

Stakeholder communication during the retrofitting is not really developed and stakeholders for the duration of retrofitting leaving the rights and responsibilities of some parties unclear. This became evident as the workshop briefly turned into an impromptu town hall, with the teachers asking questions from the urban management. Regarding decision making, the teachers felt that their staff is often presented with facts, rather than questions, to which the School district objected. According to their representative, several surveys are regularly conducted among the staff, which delineates

tasks with priorities. The higher priority tasks have budget allocated to them, but lower priority items are often delayed also, the processing of the surveys is closed, contributing to a perception that decision making is top-down – although by that, the School district unintentionally confirmed that it is. The teachers were eager to share their comfort related experience to designers, as the current practise uses higher level bodies as intermediaries. On a separate occasion, when discussion the applicability of laser-scanning, the urban management team noted that it is very expensive, and only billion HUF projects can afford it.

After the formal workshop however, the representative of the surveyor company mentioned that there is a false perception of laser-scanning costs. These experiences mean that stakeholders across the project do not have the interfaces to share their information and/or resources which hinders perceived and real involvement, and delays innovation. During the final discussion on NewTREND Project evaluation, following aspects have come to light as weaknesses and missing parts:

- From urban management: choosing a technical solution does not necessarily come from considering requirements for the project, but the limitations of strict grant technical prescriptions.
- From urban management: grants also make certain activities feasible, which are otherwise not. With sufficient intensity of support, any activity can become “feasible” – pseudo-feasible in a sense that the local government does not lose money on it. These activities do not carry on beyond the project scope of the grant.
- From architect/users: the technical indicators do not necessarily overlap with user satisfaction, and they are expressed differently, which might result in a communication barrier.

Judging from the meeting, NewTREND can gain potential edge on the market by building on its strength: the overcoming the communication gap among stakeholders. On the other hand, in the Hungarian context, the heavy reliance on grants to finance retrofit projects limit the applicability of participation measures, promotes prescriptive measures and solutions instead of performance ones.

In conclusion, the LAT workshop pointed at benefit communication as a major challenge for all NewTREND components to overcome. To promote the novel communication and participation methods, as well as techniques of data gathering and collaborative work, NewTREND needs to address asymmetric information flows. The solutions must carry benefits defined by their manufacturers, they must respond to technical problems acknowledged by urban management, and be translated to day-to-day problems encountered by users.

3.4 Italy report

The meeting opened with an overview of the NewTREND project, progress and main achievements of the project were presented as well. The Integrated Design Methodology and the software tools supporting it were shortly described during the opening session. The moderator highlighted the IDM “participatory approach”, aimed at ensuring stakeholders and end-user engagement in all the phases of neighbourhood scale retrofitting projects.

During the LAT meeting many interesting aspects emerged and participants discussed on which might be the strengths and weaknesses of NewTREND methodology and tools in relation to the main features that normally occur in the restructuring projects they are currently operating on. All participants agreed that the NewTREND system can play a key role in spreading in Italy a more targeted approach to find the most effective solutions in retrofitting projects with regard to energy and cost efficiency and overall sustainability performance.

Participants highlight, in particular, the role that NewTREND tools can play in managing the financial aspects of a retrofitting project because they help to define cost-effective financial plans and reliable cost-benefit analyses.

Figure 14: 2nd Italian LAT meeting

One of the first topic discussed was the Integrated Retrofit Design Methodology. An overview of the Integrated Design Methodology (IDM) is presented, the moderator highlights the main innovative features of the IDM approach and then asks a first question to the participants about a possible future of the IDM in their concrete professional context. Many participants claimed that there is a "cultural" shortage in Italy if compared with the participatory approach underlying the IDM methodology. Only

in some cases the project manager “role” is present and communication among the various stakeholders involved is often lacking.

A professional from an architecture studio, involved in different retrofitting projects, claims that in his experience rarely a single project manager follows all the development phases of the retrofitting project. The situation is more critical if, for a commercial building with a single owner, there are several tenants: in every step of the project the approach is different because there are different management styles and cultures and it is more and more difficult to identify a single project manager.

A designer illustrates a case on which his company is currently working on: the owner is a real estate fund with five different tenants. Each tenant wanted to install a different automatic control system. The moderator reiterates that the NewTREND model works effectively if there is one owner, one process manager and all the involved stakeholders acting synergistically.

A work director of an engineering company points out that the methodology and tools provided by NewTREND can be really useful to support the process manager to bring together all actors involved in the retrofitting process to achieve a shared economic goal by improving building energy efficiency. In his opinion it is mainly applicable to large customers because it makes clear the economic gains mostly if you have complex and large projects.

More participants point out that the IDM methodology includes a "Handover and Close Out Phase" which is crucial for handing over the project to the end user. In Italy this aspect is often considered secondary, while it is really important to ensure a good in-use phase. A technician from a great design studio, who currently is working on renovation projects of shopping malls, points out that many aspects of NewTREND IDM methodology are related to the Protocollo ITACA pre-evaluation phase (editor’s note: Protocollo ITACA is the Italian National public assessment system). The moderator confirms the possibility of linking the Protocollo ITACA to the NewTREND system, indicators could be included in the NewTREND software. Then the performance targets must be fixed and, by using the NewTREND simulation software, you can create and then compare various scenarios and decide which scenario best meets your requirements.

The "in-use" phase is crucial to optimize building performance, the designer claims that the critical issues emerging during the in-use phase are even more evident for large shopping malls, where you can have several owners or a single owner with several tenants. In both cases, each tenant/owner has different “’in-use” approaches. A shared manager for the in-use phase would be necessary: he should monitor the consumption of the different tenants to identify critical aspects and enforce rules. It would be desirable to define a regulation that should be used to ensure that the different tenants behave consistently with the energy performances envisaged during the design phase. The Constructors Association representatives opens a discussion about the size and type of buildings suitable to apply the NewTREND system. He argues that it seems difficult to apply these tools to a small-medium residential building. It seems more suitable when you need to make non-ordinary retrofitting works and it can be very useful for commercial or office buildings. Large-scale interventions justify cost and commitment that seem remarkable if you have to use the NewTREND system. The Constructors Association representatives states that in his professional experience, to use just a single part/component of the NewTREND system can be more useful: for example, only the component that verifies the economic savings associated with the application of a particular technology. In this case, a developer can use this tool to analyse the different scenarios for a retrofitting project and to have the resulting business plan. He claims that the NewTREND tools may also be useful to set up a financing plan to apply to a bank.

The analysis carried out through the NewTREND system provides to the bank concrete and reliable data to fund the project. The designer states that from this point of view, the NewTREND system could have a great added value because it not only generates energy savings, but also allows tax relief or economic incentives from the public bodies. So the higher costs incurred by using the system could be covered by financial incentives.

A professional from an engineering company claims that the use of the NewTREND system should be made mandatory in Italy. This would help to spread an integrated design approach based on BIM and would stimulate the development of the most effective energy retrofitting solutions. More in general, all the participants appreciated the importance given in the IDM methodology to the role of end-users and a large number of questions were asked about the two "handover and close out" and "in-use" phases, which the participants consider crucial to ensure the effectiveness of the implemented energy retrofitting solutions.

Manual describing the developed of the collaborative design system was the next topic; moderator describes an overview of the IDM Manual and of the various sections composing it. The hands-on test of the interactive PDF manual follows. During the presentation participants ask lot of questions to better understand the use of the manual, they express a positive opinion on the usefulness and easiness of using the IDM Manual. However they feel that a more thorough examination is needed to express themselves on parts to be improved or to be included.

Concerning the aspect of the energy-saving on building management, a design company technician points out that in Italy there are still few examples having this energy-saving focus. For him, consumption needs to be monitored and users must be made aware of the impact of their behaviours. This applies to both residential buildings and commercial buildings (offices and retail). A professional from an engineering company describes

its experience related to the negative attitude of entrepreneurs towards energy saving: until 2015 there was in Italy a law obligation to analyse the production processes energy consumption.

Even when the analysis showed great energetic inefficiencies that could be easily solved, the entrepreneur refused to intervene to improve energy performance in production processes.

Figure 15: 2nd Italian LAT meeting, presentation of retrofitting solution

The moderator points out that it is important to perform “dynamic” energy simulations. In the NewTREND system the simulations are made in dynamic mode. Normally the calculations made during the design phase are "rough". DG Energy is standing on a dynamic simulation based regulation.

The other important topic of the 2nd LAT meeting was related to the Technology Library and the video on it was showed.

The participants agreed that such a tool can definitely be useful in defining the different scenarios, also providing precise information on the costs associated with the different technology solutions. The innovative technologies showed by the NewTREND Library and the comparison at European level, were considered by many of the participants the most significant elements of this tool. Lot of them suggested to include information about the environmental impact of the products. During this session many participants raised numerous issues regarding data exchange and software interoperability and asked lot of questions regarding the interface for data exchange between the Technology Library and other NewTREND software components (BIM, simulation, etc.).

The design studio representative claims that such a tool can definitely be useful in defining the different scenarios, also providing precise information on the costs associated with the different technology solutions. The representative of the engineering company states that is probably the developer to get the most benefit from using this tool. Some participants do not agree because the designer also takes advantage of the Technology Library. Many participants ask for further explanations about the interface for data exchange between the Technology Library and other NewTREND components (BIM, simulation software, etc.). The representative of an engineering company asks if information about the environmental impact of the products is included in the Technology Library. The moderator states that this information is partially included at present and it will be further enhanced in the future. Many participants agree on the importance to have this information on environmental impact included into the Technology Library.

The innovative technologies showed by the NewTREND Library and the comparison at European level are considered by many of the participants the most significant elements of this tool.

Last session of the meeting was dedicated to the three Case Studies carried out in NewTREND in pilot project areas. Participants asked a number of technical and procedural questions and made many comments about the pilot projects described.

Moderator presents briefly what are the advantages and benefits of applying the NewTREND methodology in the pilot projects and illustrates what is offered and what is required for case studies. Each case study is then described in detail; participants ask a number of technical questions about the retrofitting measures adopted and the technologies applied. In some cases, the participants critically make comment on the insulation performance and the thermal transmittance values of some buildings when compared with the construction year of the building itself. The procedural aspects of refurbishment, as well as the role of stakeholders and the relationship between public and private in building management are also of great interest.

Figure 16: 2nd Italian LAT meeting, presentation of the case studies

During the final discussion have been brought to light some final considerations both in terms of strengths for the project and weaknesses.

Some participants in fact expressed doubts about the applicability of NewTREND software in small retrofitting projects: it seems to be more suitable for large-scale retrofitting works. However, they stated that they would be interested in "customized" versions that would also be applied to small-scale building retrofitting projects.

Others believe that in Italy the NewTREND methodology should be made mandatory at least in public building retrofitting interventions because this would contribute to increase and spread out the “culture” and awareness about the energy efficiency issues. This lack of awareness concerns many different actors involved in the process: professionals, decision makers, private entrepreneurs, end users. During the hands-on test of the interactive PDF manual on the IDM methodology many participants expressed a positive opinion on its usefulness and clearness.

3.5 Spain report

People attending the meeting were all different from those of the previous LAT and it is important to underline the presence among the participants of an end user, whose comments are very important at this stage of the project. The 2nd LAT meeting was introduced by a complete overview of the entire project because some of the participants did not know very well NewTREND Project, followed by a presentation of the integrated design methodology. Then the moderator showed the Technology Library video and after that most of the conversation was about the Case Studies.

In fact, particular attention was given to the Case Studies analysis with a special focus on 7 Mar de la Xina Street, Pins del Vallès School and on two private houses in Les Planes neighbourhood, the Spanish Case Studies.

Segments of discussion were injected for each subtopic of the agenda. The goal of the meeting was to receive feedback on the applicability of NewTREND approach and components to retrofitting praxis of Spain, and to raise awareness across a wide cross-section of stakeholders, as potential users.

Figure 17: 2nd Spanish LAT meeting

Concerning the Integrated Retrofit Design Methodology several feedbacks were collected in relation to the program and the retrofit process. The responsible for energy management and the responsible for urbanization and management of buildings, in relation to the different options/proposals to the possible actions, they ask what weight the program gives to each concept and if it is possible to modify this weight of each concept. The commercial Director says that it’s important that the process can be done at the district level in order to ensure the participation of the whole neighbourhood and of the end users.

From the point of view of the Director Division Buildings, it is very interesting that there is a financial part in the program and he thinks it would give him added value. Some problem of participation and little commitment on the part of their occupants/users, are highlighted by an end user of the neighbour of 7 Mar de la Xina Street but he considers that this tool could help in this aspect.

A civil Engineer adds some practical consideration concerning the fact that usually, it is considered that the buildings are symmetrical, namely, it is assumed that all the façades have the same characteristics when it could be the case that they were different according to their orientation.

In relation to the three modes of NewTREND (basic, advanced & premium) the civil engineer emphasizes an important aspect related to the BIM approach, she thinks that it will be difficult to make a BIM of the buildings if it is not obligatory normatively because supposes an extra cost to the projects.

At this point, speaking of the expenditure, a new topic appears: the Director Division Buildings underlines that the return on investment in energy

rehabilitation projects are very bad and unattractive. This is because calculations do not take into account the revaluation of the building when it improves its efficiency after rehabilitation. It is necessary to consider that the buildings are an asset that is depreciating over time and rehabilitation gives it value. The responsible for urbanization and management of buildings totally agrees with the previous opinion. Set as an example the installation of an elevator in a building, this action in fact does not give an economic return, but it increases the value of the property. In the opinion of the Director Division Buildings and of the civil engineer the environmental awareness is currently the only way to motivate performing energy improvements actions.

Returning to the subject of the three modes, the responsible for urbanization and management of buildings thinks it will be difficult for elderly people to get involved in participating in the platform. Director Division Buildings agrees with him and says it is true, but fortunately every time people are more technologically prepared.

Figure 18: 2nd Spanish LAT meeting presentation

Technology Library was widely debated and in relation to that the responsible for urbanization and management of buildings says that sometimes it is complicated to know the characteristics of the façade (the library gives you possibilities according to the year of construction).

More in general they all agree about the importance and the utility to have this library always up to date and this can be the key to the success and operation of the program.

The responsible for energy management says that he knows other similar libraries with whom he has worked. They have its strong and weak points, but the problem is that sometimes he has to work with more than one library at the same time, so the suggestion is that there would be necessary to have a single software with only one library that contained everything.

The last part of the meeting focused on three Case Studies. General comments coming from the participants are about the importance to apply passive improvement measures to model buildings.

While, in relation to the Spanish pilot areas, the end user's point of view was strongly taken into account (the end user comes from the neighbour of 7 Mar de la Xina Street). In fact, he has given interesting feedback on the performance of the buildings and consequently, relevant suggestions in order to improve the situation of the buildings. He says that he illumination of common spaces through detectors currently does not work properly and predicting modifications in this aspect can be positive. While the civil engineer of the Pins del Vallès School proposes to put awnings on the sunniest façade. It is a cheap, not energy expenditure and very effective solution.

4. 3rd LAT meeting

The 3rd LAT meeting takes place in a key moment of the project that matches with its conclusion, very important to obtain feedback from the stakeholders which, during the three years of the development of the project, they have participated and have been involved in these training and information LATs meetings. The main issue addressed during the third LAT dealt mainly with the operation of the different components of the NewTREND platform (Collaborative Design Platform, Data Manager, DIM Server, Simulation Design Hub, Acoustic and Thermal Module) trying to gather from the participants, critical suggestions about the exploitation and the future application of the NewTREND's Tools.

The 3rd LAT ha also anticipated the contents of the next one, the fourth, which became necessary as in the month of July, in which the third LAT was held for most of the partners, the NewTREND's platform was not yet fully operational and needed some adjustment. The fourth and last LAT meeting of the project, was carried out in conjunction with the planned training activity. Credentials access to the platform have been given to the stakeholders involved and they have been able, through their own account, to test each of its functions, its potential, investigating each of his characteristic. Feedback collected during this activity have been very useful.

The organization of the content and the production of the necessary material to perform the 3rd LAT have required a heavy investment of time and a great effort from all the partners involved. As anticipated in the previous paragraph, the objective of the 3rd LAT was to show the operability of the different tools of the NewTREND platform. This LAT meetings was held at the end of the third year of the NewTREND Project, to obtain useful feedback from key stakeholders concerning the tools developed during the project.

A common agenda was prepared together with an harmonised Power Point presentation.

The 3rd LAT meeting was focused on the operability of the NewTREND platform but, as for the previous LATs, also in this case the overall presentation was managed by iiSBE IT R&D as LAT coordinator. A Power Point presentation has been produced by iiSBE and it was focused on a project overview. The obtained outputs of every Work Package have been briefly displayed and a little time was dedicated also to the activities which were left to be completed. An important part of the presentation was dedicated to the to the three pilot projects, actually have been described the testing activities carried out, the measurements, technical developments and also the planned measures in the design phase.

Coming back to the tools of the platform, in order to make easily under-

standable to the stakeholders the aggregation of the different tools and their operation, have been produced some demo videos able to provide the function, the objective, the interface and the connection of a given tool within the NewTREND's platform. In particular, four separate videos have been realised, listed below::

- Collaborative Design Platform (CDP), produced by STAM;
- Data Manager (DM) and Simulation Design Hub (SDH), produced by IES;
- DIM Server, produced by UCD;
- Acoustic data collection, produced by UCD and UNIVPM.

Demo videos have been accompanied by specific talking points that allowed the presenters, in the LATs organized in the different countries, to correctly explain the operability and characteristics of that specific tool.

After displaying the demo videos, the "Detailed Surveys" have been delivered to the participants. As illustrated in the text taken from the DoW in task 6.4 "evaluation and upgrade of the methodology and tools", the Detailed Surveys that address specific actions and design stage will also be created to support the developer team in the upgrade of the tool. The goal of these detailed interviews is to help developers to improve the tool thanks and through the valuable suggestions coming from the experimentation of the functions of the NewTREND platform by potential stakeholders. The stakeholders involved in this phase and in this activity are mainly the subjects who took part in the previous LATs and know well enough the project, his goals and the tools being developed.

The Detailed Surveys created have been delivered to the four target groups involved (professionals, financial organizations, administration and policy makers, occupants); they are questionnaires that require mainly perceptual feedback, since the stakeholders involved have seen only some demos, showing the operation of the different components of the NewTREND platform. Feedback provided are not related to the real experimentation of the platform's functionalities, however, these are questions that allow to look critically at what is the exploitation and the future application of the NewTREND's Tool.

Four questionnaires have been distributed, one for each target groups.

The last part of the LAT has been devoted to anticipating the training activity planned in August, furthermore, the 4th LAT will feature a training session for users of the NewTREND toolset.

The 3rd LAT meeting was held mainly in the period between May and June 2018; below the dates of the meetings are showed.

Country	Venue	Date
Finland	Granlund Seinäjoki office	29/05/2018
Germany	MUAS Campus, Karlstr. 6, Munich	26/07/2018
Hungary	TUD18 Training and coordination centre	21/06/2018
Italy	Energy Center, Torino	04/06/2018
Spain	Ajuntament de Sant Cugat del Vallès	18/06/2018
UK/Ireland	IES Dublin Office	25/06/2018

Each Partner involved in the LAT activity, has produced a short summary of the outputs of the meeting; in the following pages there are the public reports collected from the NewTREND third LAT.

MEMBERS

As has also been said repeatedly in the previous LATs, the target groups involved in the meetings are:

- Technical organizations and professionals;
- Administration and policy makers;
- Financial organizations;
- Occupants.

52 are the total number of participants of this 3rd LAT meeting, the current breakdown of the LAT members by profile is shown in the graph below[1]. Pie chart below describes the distribution of members in their specific membership area and organisation. As for the previous meetings, the most populated area is the one of the professionals and technical organization, while the category less populated is the one of the occupants.

As mentioned before, the distribution in terms of "number of people for category to which they belong", it is so distributed:

- 35 members in Technical Organization/Professionals;
- 9 members in Administration/Policy Maker;
- 4 members in Financial;
- 4 members in Occupant.

Pie chart below describes the percentage distribution of the stakeholders involved in the 3rd LAT meetings of the project partners.

[1] Currently based on information from Finland, Spain, Germany, Hungary, Dublin/UK and Italy.

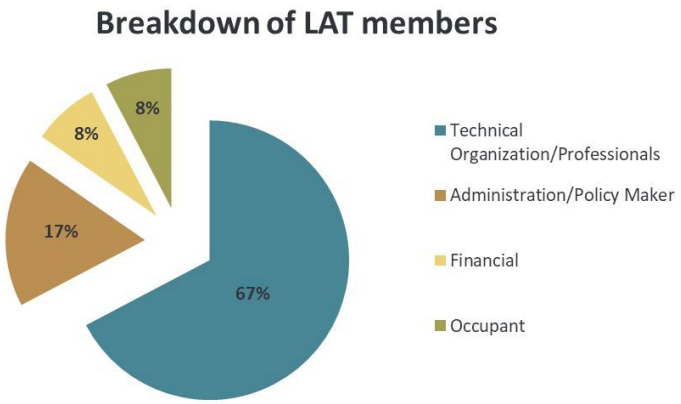


Figure 19: Current LAT memebers breakdown by profile

4.1 Finland report

At the beginning of the meeting, users have been reminded what is NewTREND project all about, with the quick overview. After the overview of the project, videos regarding NewTREND platform tools have been presented to the participants and they were given questionnaires, which they filled.

Comments regarding presented tool were:

- The possibilities of managing user rights in CDP, which were explained in video;
- Hoping that final version will be easy to use;
- There were questions of what happens to the platform after NewTREND ends;
- Too much technical features in the tool compared to the features for end users and occupants.

After the questionnaire, discussion has moved to general pilot retrofit discussion. Where city architect explain what had been decided so far and what is still in the process. We have heard more about their design process so far, who was involved and how do stakeholders collaborate. Interesting was to hear how design team is currently thing about involving solar panels and about retrofit of inner windows. This measures were presented in building performance simulations done for previous LAT meeting and have caught their interest. Also the City of Seinäjoki is interested into more detailed simulations for the chosen final 3-4 retrofit variants. When asked about financing and support, they said all the costs are going to be paid from City's budget. Furthermore, principal of Adult Education Centre has expressed a wish to place a short story about the NewTREND on the web-site which was made for this retrofit.

https://www.seinajoenkansalaiskampus.fi/.

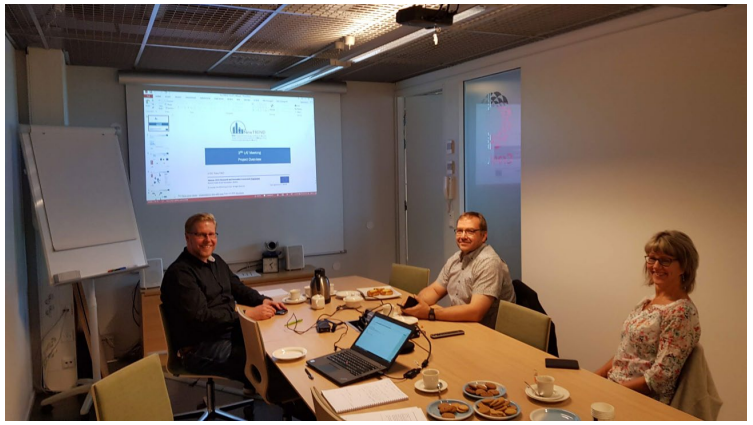


Figure 20: Participants to the Finnish 3rd LAT meeting

4.2 Germany report

Ahmed Khoja was welcoming the participants and gave a quick introduction to the project. The meeting participants introduced themselves accompanied with short presentation about meeting's agenda and the goals of the workshop. After introduction the Platform videos were shown to the users, allowing also questions between each video and during the videos. Each of the four modules was discussed after each video and a discussion on the design, functionalities, usability and results took place. After the coffee break a general discussion on the operation of the platform was initiated by Paul Mittermeier. Here each participant gave his impression and feedback on the different platform modules. Finally the detailed surveys were presented to the participants by Ahmed Khoja and the questionnaires were sent to them according to their profession / stakeholders' role. Each participant filled the survey and sent it back to the organizers. Finally, a summarizing round table was held to receive final feedback and recommendations and to present the 4th LAT content and training.

Figure 21: 3rd German LAT meeting

Figure 22: 3rd German LAT meeting

Introductory session and progress of the project:

Ahmed Khoja presented the general objectives of the project, the progress so far and the currently running case studies. Moreover, he gave a quick summary of the NewTREND Methodology and modes approach.

After the introduction Ahmed Khoja presented the videos for the different modules of the NewTREND Platform in the following sequence:

- Collaborative Design Platform
- Data Manager and Simulation Design Hub
- DIM Server
- Acoustic Data Collection

For each Video it was presented the background of the module and how it is used in practice also in parallel with the NewTREND Methodology.

The participants watched each of the four videos and raised some questions on the CDP. Ahmed answered the questions and used the replay function to go more detailed in the specific functionalities of each module.

A fruitful discussion concerning the impressions on the operation of the platform took place. The participants started a discussion on the NewTREND platform, which was moderated by Ahmed Khoja and Paul Mittermeier. The participants raised some points which are related to the functionality of the toolset:

- It was discussed how the tool can be introduced into real working cases e.g. real projects and how the effort for this will be. It could be summarized that this question cannot be answered so far and an assessment of the case study results need to be done before an answer could be given here.
- In general it was mentioned, that the BIM usage in Germany is still not very popular among planners and the cost for software are much to high (e.g. 25.000 € for software license per seat). It was discussed that NewTREND will require additional cost to be used as it cannot fully replace a 3D CAD or BIM workplace in a planning company. So it would recommended to offer the NewTREND platform for free or for a very low price to make it interesting for customers in the future.
- For the CDP it was mentioned, that the inclusion of different kind of surveys and polls from external services (e.g. doodle, surveymonkey, etc.) in the platform is useful. This may be a very valuable function as it offers great flexibility and uses already existing tools on the market.
- In general it was discussed how the operation of the platform in practice can work in a proper way. Especially data privacy issues were mentioned, which need to be solved by the platform. Also Roland Gräbel mentioned, that the cloud approach provides risks, as e.g. hackers may connect to the cloud and steal data or can even blackmail building owners (this happened for a German company when hackers threat the CEO of shutting down the building management system, if he would not have paid a certain amount of bitcoins to the hacker).
- Finally, the data accuracy of the simulation results was discussed. It was mentioned, that the different modes are a very good approach to lower the data requirements and to start the energy design as early as possible in the planning process.

Concerning the explanation and drawing up of the Detailed Surveys (3rd LAT questionnaire), Ahmed Khoja explained the different kinds of surveys to the participants. As only two kind of stakeholder role where attending the occupants and financial organizations survey was not explained in detail. After the explanation the questionnaires were send by email to the participants, which used their laptops for filling the questionnaires.

As feedback to the questionnaires it was raised, that some questions are not clear like the question “Within your working field, are there the conditions for being able to use the platform? If not, what you should provide in order to be able to use it? It should be better clarified what answers are expected here.

Conclusion and 4th LAT contents and training activity.

At the end of the discussion the organizers held a final round table with

all participants to receive their final feedback. The main outcome was, that the approach of the NewTREND tool is quite positive and shows the right direction. Even if in practice some things may not work properly during the demo phase and exploitation, mainly the things which worked well should highlighted. Especially as the BIM based planning process and all related software tools in general are quite newly-advanced, and still are under development, it must be accepted by all users to have some issues and bugs concerning the use of such kind of tools.

Finally the 4th LAT meeting contents and training were presented. All participants were invited to join one of the training sessions and the 4th LAT meeting. Due to the holiday time in Germany unfortunately none of the participants will be able to attend the upcoming training events.

Figure 23: 3rd German LAT meeting

Figure 24: 3rd German LAT meeting

4.3 Hungary report

After a brief overview of the entire project, the meeting comprised of Szabina Várnagy presenting the videos of the NewTREND tool followed by presentations by Melinda Orova of the demo sites, with a focus on Bókay School. Segments of discussion were injected for each subtopic of the agenda. The goal of the meeting was to receive feedback on the applicability of NewTREND tool to retrofitting praxis of Hungary and to present the result of the demo site activities to the main stakeholders.

Many feedback have arisen from the stakeholders involved in the debate. All participants were from the 18th district municipality, partially from the city manager office partially from the chief architect office. The city manager office is responsible for proposing and financing projects. The chief architect office is responsible for the technical supervision of projects. The participants were the main decision makers for the refurbishment project (deciding on the funding application and scope of the refurbishment).

The city manager has raised the issue of the method of later application of the tool. The main deciding factors according to them are:

- the pricing of the tool;
- the language of the tool.

Concerning the acoustic module, it would be beneficial to investigate the internal noise loads in the same tool as well.

In relation to the application of the tool, it would be beneficial to KLIK (the Central School Management Agency dealing with operation of buildings in their use) who could establish a nationwide building information management database and maintenance / refurbishment optimization. Or other programs that target a building type can use the tool (e.g.: prefabricated housing refurbishment programs).

Talking about Data Manager, there is a huge need for uniformized data management of municipality buildings, but it would be beneficial if it could be customized to the specific need of the organization and not just used for support of the simulations. Basic mode use could be a cost effective and highly rewarding option for municipalities as no BIM model is needed. It would be ideal if Hungarian default data would be precisely defined and the local policies standards are taken into account.

Turning now to the constraints of the NewTREND's software, the main barrier for using the platform is the lack of data about the building stock in the hands of the municipality. Also BIM modeling is not a widespread task for building refurbishments.

Some feedback on the demo site activities:

- BIM model will be useful for the operators of the building and for the next refurbishment phases as well. The collected parameters for the rooms, structures can nicel supplement the model.
- It is worthwhile to look into setting up monitoring systems in other municipality owned buildings, especially the CO2 monitoring.
- It would be great to know the cost of monitoring systems and BIM model building as well.

4.4 Italy report

This 3th Italian LAT meeting had, more markedly than the previous ones, an approach very focused to the operational aspects regarding the use of the NewTREND toolset. Most of the participants had already attended the two previous LAT and new stakeholders were included in this 3th LAT meeting to have a more exhaustive feedback including social housing organizations, public bodies (Piedmont Region) and representatives of the occupants. Three officers of a real estate financial operator (Beni Stabili S.p.A) had originally confirmed their participation in the meeting, but due to an unexpected problem, they could not be present.

The outcome of this LAT can definitely be defined as positive. All the participants, even those who attended the LAT meeting for the first time, showed great interest in the potential of the NewTREND tools and methodology. All participants highly appreciated the approach used for this 3rd LAT, more focused on the presentation of the operational aspects of the tools and many participants expressed their interest in joining the operational training session scheduled in late July 2018.

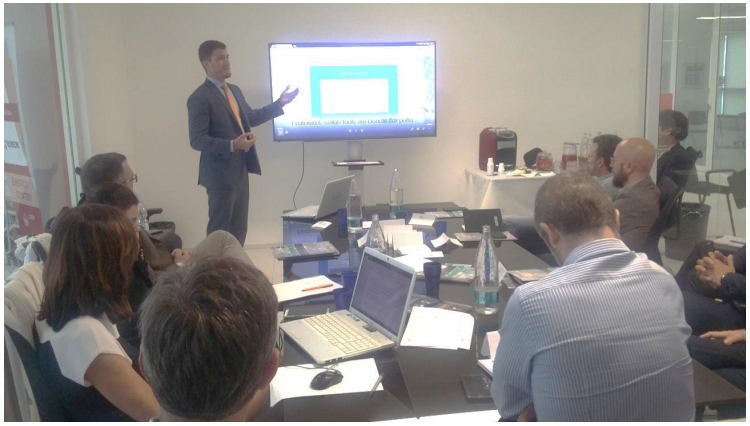


Figure 25: 3rd Italian LAT meeting

After a brief introductory session and a presentation of the progress of the project the videos presenting demo of the main tools of the NewTREND platform is shown and commented step by step by Marco Barbagelata (STAM), one of software developer of NewTREND project.

A technician from a design studio asks a question about the interoperability and exchangeability of data with BIM libraries. Marco Barbagelata explains that in the NewTREND Platform users have the possibility to select the more consistent “use mode” basing on the available data: in “basic mode” data are taken from CityGML files. In “advanced” mode and “premium mode” data are taken from BIM files.

The official representing the Piemonte Region points out some interesting considerations regarding strengths and weaknesses in the use of NewTREND tools in the public administration: certainly there is a “skills gap” compared to the current level of technical skills of employees of public bodies. For example, substantial upgrading of skills on BIM systems would be essential in order to use in a consistent way the NewTREND toolset. She also highlights the criticality, at present, regarding the availability and accessibility of the data that would be needed to effectively use the NewTREND platform.

However, she believes that the NewTREND tools could have a great potential for the use in the public administration to support decision-making processes through the simulation of different scenarios and their evaluation. Many participants express concerns about the time needed to enter data into the NewTREND platform, especially when using basic mode. Marco Barbagelata replies that software developers are aware of this weakness and that they will work to make at least possible the duplication of identical data that are repeated on several parts of the building.

The Social Housing Private Organization representatives underlines the importance of involving the occupants both in the design phase and in the "in use" phase through monitoring and analysis of the occupants' feedback.

NewTREND project representatives confirms that the involvement of the occupants is a key component in the NewTREND methodology and it is supported by the software tools. Monitoring during the "in use" phase is carried out both through the collection and analysis of objective data (temperature, humidity, etc.) and through the collection of questionnaires with the subjective feedbacks of the occupants.

The Constructors Association representatives asks a question about the server used to storage data. Does it guarantee the privacy and security of data even over a long period of time?

Marco Barbagelata explains that during the setup of a new project, a DIM server is created and district and building information will be added to it. The server is engineered for security and reliability. It is extensible to allow new techniques and approaches to reuse the info.

Figure 26: 3rd Italian LAT meeting

The Detailed Surveys (3rd LAT questionnaire), different in relation to the different types of target groups attending the meeting, were distributed to the participants. The purpose of this investigation was briefly explained by Elena Bazzan (iiSBE Italia). The participants completed the questionnaires during the final session of the meeting and the completed questionnaires were returned and investigated.

Figure 27: 3rd Italian LAT meeting

The contents of the 4th LAT meeting and the implementation methods envisaged for, are presented to the participants. All of them express great interest in the possibility of operating autonomously on the NewTREND platform through the use of personal access credentials.

Some participants would be really interested in using data related to buildings on which they are currently working to develop renovations. NewTREND project representatives specify that the application case studies that will be proposed for the training are those buildings/district whose data have already been uploaded on the NewTREND platform. The loading process "from scratch" of all data of a building might take too long for the training purposes. In the coming weeks, participants will receive more detailed information on the type of exercises that will be carried out during the training.

4.5 Spain report

After a brief overview of the entire project by Pau Asens, an introductory session and progress of the project the meeting comprised a presentation of the main tools of the NewTREND platform. The meeting continued with a critical suggestion about the exploitation and the future application of the NewTREND's Tools by the stakeholders.

Figure 28: 3rd Spanish LAT meeting

The goal of the meeting was to receive stakeholders feedback concerning NewTREND tools. In this sense, Detailed Surveys (3rd LAT questionnaire) were hand out to different stakeholders targets.

The session ended with a brief preview of 4th LAT contents (Training) and modalities. Spanish stakeholders provide lot of suggestions concerning the NewTREND tools, they are listed below.

Vector water: Energy and water are often linked and are limited resources. In the simulation tools presented the vector water is missing. It would be interesting to introduce it in the future. The next step of the software would be to incorporate the water vector.

Solution library update (subject commented on 2nd and 3rd LAT): concern is expressed among some of the attendees in the way and the procedure to update / modify / extend the different constructive solutions and facilities of the library (procedure and permits). It would be interesting to look like a wikipedia.

Facilitate user access to new tools: promote several training activities and results tracking.

Educational component of energy rehabilitation: take advantage of the future tools so that the students of schools and institutes can make simulations in the buildings where they are users, etc. Raise awareness from the classrooms. Teaching side of energy rehabilitation. Ex: NewTREND explanation of Pins Science Week.

Figure 29: 3rd Spanish LAT meeting

4.6 UK/Ireland report

This event was a mini-LAT not related to any of the three case-study demo-sites, to a small neutral audience. The event covered a basic overview of the NewTREND project, and an introduction to the NewTREND platform based on the presentation and video format created for the 3rd LATS is the series of four LATs held in each of the demo-site countries; Spain, Hungary and Finland.

The event began at approximately 2pm (Irish time) in the offices of IES in Dublin. Four of the six participants who has signed up for the event were in attendance. Several others had expressed an interest in attending however, but had other commitments on that particular day, and were unable to attend.

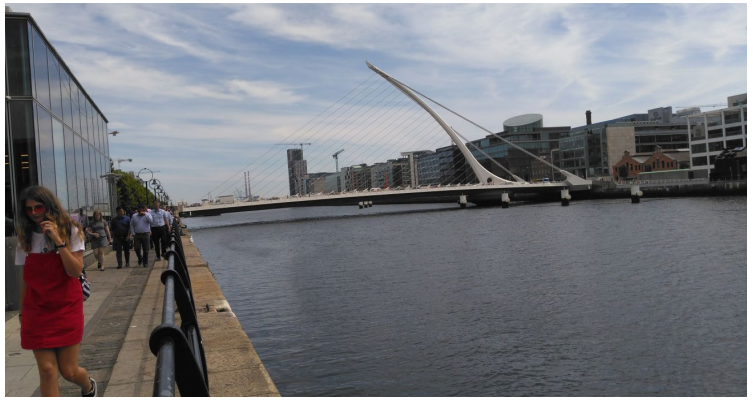


Figure 30: 3rd UK/Ireland LAT meeting

The meeting began with introductions, and each person stating their name, and their role in the construction industry. All four were from the designer (architectural) category of stakeholders, with most having extensive experience in BIM, and two of the participants also having experience with academic research. UCC began the main part of the event by introducing the NewTREND project utilising the presentation slides issued by iiSBE. This covered a brief discussion on each of three case study sites, and the general aspects of the project.

IES followed this with an introduction to the NewTREND platform, after which we watched the videos of the Collaborative Design Platform, of the Data Manager and Simulation Design Hub, of the DIM Server and of Acoustic Data Collection.

There was a short coffee break before an open discussion, and filling out of the survey. The main points and comments of the discussion were as follows:

- Cloud based is good in terms of hardware requirements, however, not ideal where broadband access is not widely available (this would be the case in many rural areas in Ireland).
- Participants' wanted to more about the technology library, and if it would be maintained and updated and if so, how often, and by whom.
- Particpants' wanted to know more about how districts could be defined, and how scalable is it – could entire cities be included?
- How are local costs/prices calculated, and again, how up-to-date would the information be, who would update and maintain it?
- What weather data is being used, and for what areas, is it just for the three case study locations?
- Is it possible to get access to the tools to try them out?
- Will it be free, will it be on subscription, will the basic mode be free, and the advanced and premium modes be pay-per-project, pay-per-duration e.g. monthly like Surveymonkey?
- Would it be possible to create training webinars to train people in Ireland to use the tool as they would obviously not be able to attend training events in Spain, Hungary & Finland.
- What is the likelihood of this coming to market, and in what format?
- How exactly is the comfort analysis calculated – is it possible to have another video on this element?

Overall the NewTREND platform appears to have been well received, and the participants reacted very positively. According to the participants, design practices in Ireland are about 80% SME, and very small SME, less than 10 people. Many have not moved from basic 2D AutoCAD yet due to the cost of training and hardware. The RIAI are working with software resellers to provide incentives and discounts to move over to BIM, and CITA (the Construction IT Alliance) and others are very active in the promotion of BIM. While the construction industry in Dublin is booming again it has only been picking up in smaller urban centres and rurally, therefore the price of the tools, and ease with which users could be trained would be a major factor in market uptake for the tools.

4.7 Feedback and results

This chapter aims to sum up the keys elements arisen from the analysis of the Detailed Surveys filled in by participants during the 3rd LAT meeting in each of the country involved in this activity.

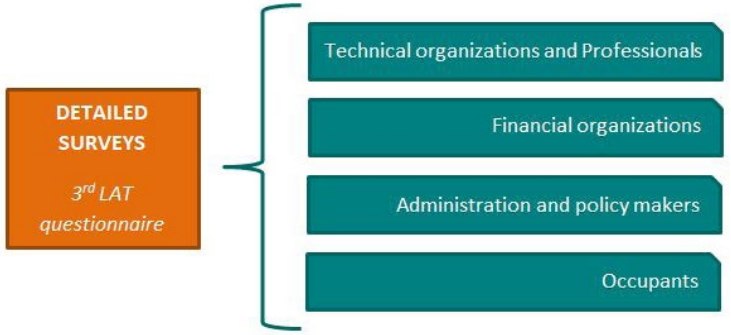


Figure 31: Target groups of the 3rd LAT questionnaire

Concerning **occupant's perspectives**, it's important to underline that an occupant doesn't have a touch/experience with technical things.

Talking about the benefits of the NewTREND platform for a more integrated approach to design, participants underline the importance to take into consideration also the history of the building and its historical value. In general, occupants strongly agree to have a greater involvement of end users such as building occupants in this process especially early and in design phase, which is important for matching space planning with space needs. One of the most important benefit provided by the involvement of the end users is the possibility to understand their habits and consequently getting savings on consumption. An active involvement of the end users in the monitoring phase is fundamental to get consumption and handle them.

Concerning **professional's perspectives**, for many of them, like for example energy specialists, consultants, BIM expert, architects, engineers and so on, even if the platform is still in demo phase, it looks simple and easy to use. The simulation and result visualization with comparison between scenarios are the components of the platform considered the most useful for the purposes of the professional activity. Another component that the stakeholders found very valuable is the DIM server, as it works as central hub in the cloud and allows to couple further data sources and services. The Data Manager too, would be a very useful module, it should be used for collecting the data of building owners in an efficient way and this would support to provide consultancy services.

From the point of view of the involved professionals, end users always should be involved in construction and renovation projects, most stages are important, but the design phases and post-retrofitting stage are considered by many of the participants, the most relevant for the involvement of the end users.

Concerning **financial organization's perspectives**, the tool appears interesting because of the capacity to compare different scenarios with different level of detail. The platform of NewTREND could be a thinking basis for a first financial evaluation but it is necessary to integrate it with other economic information to be specifically used by a possible investor. Therefore, from the perspectives of the stakeholders involved in the financial category, at the moment it's not so easy to evaluate the effectiveness of financial investments linked to energy efficiency and refurbishment with NewTREND tool. They found very interesting the basic mode of the tool because it is easy to use, easily understandable and very intuitive also by not technical people.

A suggestion concerns the possibility of setting up a "national version" of the tool to overcome the problem of the language and to ensure a large dissemination of the platform.

Concerning **policy maker's perspectives**, the general overall impression about the operations of the components of NewTREND platform is that is a nice tool for design process and project management which can be applied, within the different administrations, mostly in construction process and in financing of construction because it is able to evaluate different solutions and conditions, analysing the KPIs performance. Accordingly to the perspective of some participants, anyway the tool is not so easy to use and it requires training activities to learn how to use it, especially within a public administration. It's necessary to make able people working in the administration field to use it because it's an interesting instrument for urban planning and environmental refurbishment.

From the perspective of one of the German participant, the tool could be applied to many potential sectors, starting from building renovation, but also working as electronic commodity registry for the German buildings stock (e.g. coupling the GIS models with materials databases) to assess the urban mining potential of the buildings. Further applications in broader fields are also possible, which may take advantage from the DIM server which can hold various types of data (e.g. fire departments). They consider the NewTREND's platform quite interoperable and could be applicable for many further working fields related to buildings not only in terms of energy efficiency and renovation. The dynamic simulation approach followed by NewTREND, is very useful because it provides additional information for planning of smart grids and renewables.

A concern arose during the meetings is strictly connected with a practical aspect, which is the work of data import into the platform of NewTREND. There was considerable debate concerning who should carry out this operation within the administration. This perplexity arises also from the fact that, in general, the use of BIM model is not very familiar and this may interfere with the application of the tool within the administrative field.

One of the most important benefit provided by the use of the platform is to support a digitalization of the European building stock and the implementation and roll-out of BIM across Europe. Currently not enough digital data are available for European building stock and the NewTREND Platform could improve the situation.

5. 4th LAT meeting

The fourth LAT meeting was the latest of the series and as mentioned before, it coincided with the training activity in the countries with pilot projects (Spain, Hungary, Finland), coordinated by STAM. Thanks to the availability of STAM, also in Italy was organized a short training session linked with the 4th LAT activity, hosted by iiSBE in mid-August. The users involved in this meetings belong to two categories: technicians and decision makers and two different agendas have been produced.

To carry out the training activity, some Power Points presentation have been produced by the teachers from JER, MUAS, STAM and IES, concerning the methodology and phases of a retrofitting project and about the NewTREND toolset, user roles and project management functionalities.

In relation to the material necessary to perform the 4th LAT meeting, iiSBE, with the help of the others partners, has produced the "4th LAT Questionnaire – Detailed Surveys" and a short version of the Collaborative Design Platform Testing Feedback Template (CDP TFT), to be completed by participants.

As mentioned above, the content of the interviews differs according to the role played by the interviewed stakeholder; in fact, the obtainable feedback are calibrated on their skills and goals.

Figure 32: Target groups of the 4th LAT questionnaire

The LAT session opened showing to the stakeholders involved the Final Video of the project, produced by iiSBE and uploaded online[2] . The Video summarises all the outputs of the project and tries to explain, in an easy to understand way, the operating of the tools of the NewTREND's platform. As described in Deliverable D7.6 – Dissemination activity report_Year 3, on the project website it was created a space precisely for the contents of the training sessions, in order to make possible even for people that weren't able to attend to exploit the content.

[2] https://youtu.be/OcIOux8GSto

Coming back to the Detailed Surveys of the 4th LAT, questions are more specific than the ones contained into the 3rd LAT questionnaire because during the 4th LAT meeting, participants had the possibility to get the credentials access to the platform and they were able to test each of its functions, its potential, investigating each of his characteristic. Through the drawing up of the CDP TFTs and of the Detailed Surveys, stakeholders involved were able to provide useful considerations for the upgrade of the tool.

Courses were organized with different specific content for two audience types:

- Decision Makers → use of the NewTREND toolset and methodology to develop retrofit scenarios at building and urban scale;
- Technicians→ use of the toolset and simulation of a small urban area.

The goals of this activity are basically three:

- To facilitate the adoption of the toolset developed in NewTREND;
- Showcase project results to potential Stakeholders;
- Collect a more direct feedback from users that will test the toolset on field.

The half a day of training "in person" was followed by a period of web-based activity for a limited time (it lasted about two weeks) in which the stakeholders had the possibility to get users credentials to investigate the NewTREND platform.

The 4th LAT meeting was held between the end of July and August 2018; below the dates are showed.

Country	Venue	Date
Spain	Ajuntament de Sant Cugat	20/07/2018
Italy	Energy Center, Torino	26/07/2018
Hungary	Contemporary Architecture Center, Budapest	02/08/2018
Finland	Granlund Head Office, Helsinki, Finland	21/08/2018

MEMBERS

Pie chart below describes the current breakdown of the LAT members by profile, in their specific membership area and organization, at the moment of writing. as mentioned in the introductory paragraph, users involved in this meetings belong to two categories: technicians and decision makers. The total number of the participants was 50.

The distribution in terms of "number of people for category to which they belong", it is so distributed:

- 41 members in Technical Organization/Professionals;
- 9 members in Administration/Decision Maker.

Pie chart below describes the distribution percentage.

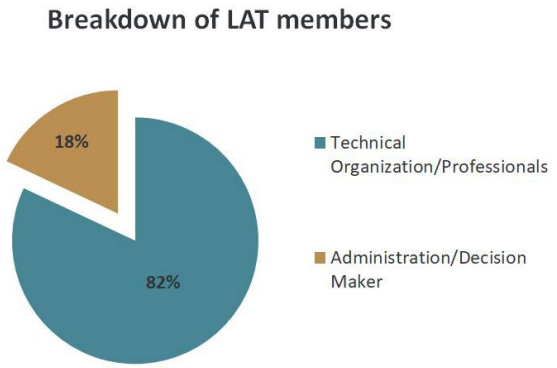


Figure 33: Current LAT members breakdown by profile

5.1 Spain report

On the 20 of July 2018 the consortium held the first NewTREND training session in Sant Cugat, Spain. The event was organized at Ajuntament de Sant Cugat, one of the project Demo Cases, which also supported and co-organized the event together with STAM.

Figure 34: Participants of the 4th LAT meeting in Sant Cugat

Figure 35: Participants of the 4th LAT meeting in Sant Cugat

The training session was attended by a dozen trainees, giving it an extremely interactive twist.

The new paper-version of the User Manual for The NewTREND Collaborative Design Platform (CDP) (downloadable in soft-copy on our website) was shared with them and they had the possibility to see it first-hand and provide us useful tips on how to improve it.

Figure 36: 4th LAT meeting in Sant Cugat

The outputs were positive, underlining the importance of what the project has achieved until now.

5.2 Italy report

The audience was technical and the presentation was a fruitful dialogue among the Italian partners (STAM and iiSBE) and the attendees. The NewTREND software tools and its functionalities were presented and the public seemed engaged and positive about the project results and had the possibility to test the software, supervised by project partners.

Figure 37: 4th Italian LAT meeting

Marco Barbagelata showed to the participants the operating of the tools of the NewTREND's platform going through the phases of the system, starting from the initiation phase until the creation of a new scenario within the project. He displayed the access to the platform, the possibility to create a new member and the assignment of the role, then in the preparation phase he described the creation of the model in cityGML file and some **perplexity concerning this format** arose from some technicians inside the room, they said that this format is not very common in their working field.

Another perplexity expressed concerns how to evaluate the **consumption of a building which has different uses**; probably in this specific case the solution is to do a weighted average of the total consumption of the building analyzed because is not possible to evaluate a single apartment.

Within the diagnosis phase it is possible to simulate an "as-is" simulation of the building, many of the participants were interested also to know the **duration of the simulation**, of course it is related to the dimension of the building or of the buildings in the district. One of the decision maker underlined the big added value of this system because it is possible to share the outputs of the simulation among different kind of people for different reasons, like for example with the owner of the building, or with the public administration or maybe with the inhabitants of the building. The platform allows a quick spread of the information about the buildings and at the same time it can **ensure a real monitoring of the state of art of the architectural heritage**, and it could be a huge benefit for public administration having a system able to give information about the buildings of an area.

Figure 38: Participants of the 4th Italian LAT meeting

Some concerns related to the quality of data of the Basic mode have arisen, because many participants have underlined the fact that the information required are very limited and they could mislead the reading of the data coming from the outputs of the simulation. They appreciate very much the visualization of the results related to the consumption during the year and proposed the possibility to visualize the outputs of different buildings in one graph in order to compare the results.

During the discussion other suggestions related to the visualization of the results were proposed and they are reported below:

- Within the pie chart showing the results, could be better to have subcategories of the categories already existing, like for example splitting up the category "energy" in its subcategories as electrical, lighting, etc. In this way the reading of the results could be easier and intuitive, allowing to understand how precisely take action for the improvement of the consumption of the building;
- Could be useful to have an aggregation of the results in relation to a priority established by the user, in order to understand rapidly the negative points and consequently how to take action to improve the

results. A smart software should be capable to prioritize the measures to take on the building in relation to the priorities established before the simulation and accordingly to the negative aspects of the building;

- The possibility to have hourly consumption could be a good opportunity to understand how to take action to improve the performances of the building.

Many suggestions related to the costs of the investment for the retrofitting of the buildings have been suggested. Showing the KPIs, all the participants agreed about the necessity to insert a KPI related to the "payback period of the investment"; evaluate the payback period of an investment it's fundamental because it may affect very much the choices that must be taken by the stakeholder. Be able to see the costs of the technologies used for retrofitting is fundamental, they could be "user input" or "from the list" but they are essential because the user decides how to act also in relation to the costs of the refurbishment. If is not possible to have a precise value of the investment, also an estimation is appreciated because it's fundamental to take decision concerning the choices related to the refurbishment. It is also recommended by professionals to differentiate the costs in relation to the intended use of the building because the cost of the same technology in a big retrofitting action could be very different in a small one.

One of the evident problem underlined by the stakeholders involved in the meeting concerns the inability to perform a district simulation in which there are different buildings having different level of input data, like for example a building performed in basic mode, another one in advanced mode and the last one in premium. It's necessary that all the buildings involved in the same simulation have the same level of detail of data.

Concerning the validation of the input data, to avoid major errors, it would be useful that the software would be able to recognize these major data entering errors. Identify the BIM's mistakes is not so simple, stakeholders would like that software might be able to do that. One clear example proposed by a professional concerns the possibility for the software to recognize if the model inserted is "closed" or if something is missing, if the lines are not correctly drawn up and maybe the ground does not appear in the model.

5.3 Hungary report

On the 2nd of August, it was held in Budapest, the Hungarian training session.

In the colourful environment of the Contemporary Architecture Center partners from ABUD; MUAS and STAM engaged the audience in a live demonstration of the Computer design platform applied to the Hungarian demo. All the participant was willing to participate with the testing activities and credentials to try and navigate the platform were shared with them.

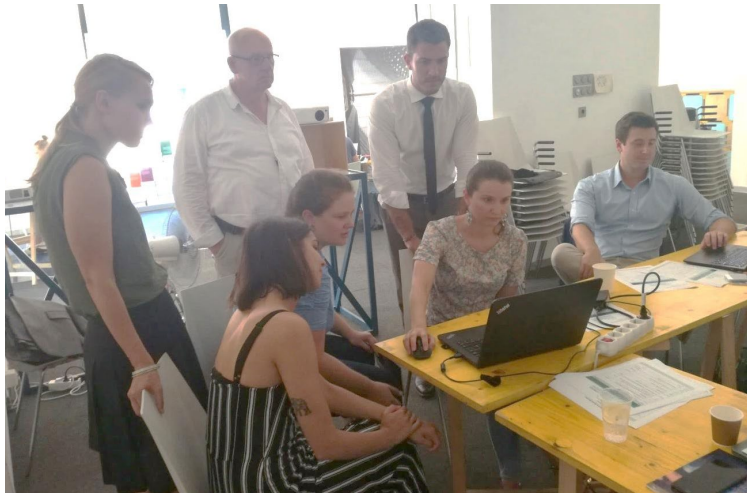


Figure 39: 4th Hungarian LAT meeting

The 4th LAT meeting and Training Session started with the Giulia Barbagelata's (STAM) presentation where the NewTREND project and its objectives were introduced shortly. The three demonstration sites have been introduced, as well.

Afterward, Paul Mittermeier from MUAS presented the Integrated Design Methodology (IDM), NewTREND phases and project roles in detail. Since most of the participants haven't heard from NewTREND previously, this step was essential to better understand the functionalities of the NewTREND toolset, and we were able to refer to this part during the training session.

Subsequently, Marco Barbagelata (STAM) presented the NewTREND toolset, namely the Data Manager, DIM server and the Collaborative Design Platform (CDP). The interactive presentation helped to gain a deeper understanding, how these tools support the Integrated Design Methodology. It was further highlighted, how the project management functionalities

address all phases of the refurbishment process, and how they foster collaboration among stakeholders, and help the involvement of the building users and inhabitants. Most of the participants were interested especially in the simulation function of the toolset, therefore we focused on this during the afternoon training session.

This was followed by the presentation of ABUD, where the NewTREND software use was shown through the Budapest demonstration sites Bókay Garden and Bókay School. Since there were many participants, who haven't been involved in the project, Melinda Orova presented shortly these two case studies. Afterward, Szabina Várnagy summarized the data collection processes. As a part of this, the technologies laser scanning and point clouds had been introduced, which was followed by the description of BIM and CityGML models. Since some of the participants did not have a technical background, the advantages and use of these have been explained deeper. After showing the data and results retrieved from the monitoring system, data requirements for the Data Manager and the simulation were described. The presentation continued with the Bókay School's simulations in the Collaborative Design platform. Here, the as-is and several what-if simulations have been shown. Through the case studies, the NewTREND toolset could be presented even more graphically.

The afternoon training session was the most anticipated part of the day. Throughout the day, the participants became familiar with the Bókay School, so it was reasonable to use this building as a basis for further testing. All of the participants could bring their own computer, however at the end all of them gathered behind one of the computers, which was a great representation, why there is such a high emphasis on the integrated design process. During the morning sessions, the biggest interest was about the variant making and simulation function, the coaching team focused on these parts of the CDP. Since the Bókay Shools as-is simulations have been run previously, we could continue with a mini-IDM session. The as-is simulations were analysed by the participants, thanks to the Key Performance Indicators (KPIs), even the non-technical users could have a deeper understanding of the results. Based on these results and findings, the team created a new variant, which they thought was the most reasonable and feasible with the best results in regard to energy efficiency and comfort. After the variant simulation has run, the team could compare that to the current state of the building. The participants have been positive about the speed of the simulations and structure of the IDM, and how it is represented in the NewTREND toolset.

The training concluded with the filling out of the Testing Feedback Templates, were the participants could give their feedback and share their comments. In general, they were positive about the IDM and the toolset, and they stated that they would like to use them for future projects.

5.4 Finland report

Training session in Helsinki started with brief introduction of NewTREND project and to the Finnish pilot site in Seinäjoki, which was held by Jaakko Peltonen, architect from City of Seinäjoki. Jaakko has presented history of the building and plans for the future, with schedule of the retrofit.

Uli and Falko from Dr. Jakob Energy Research have presented developed NewTREND Integrated Design Methodology and have thought the participants to use the interactive PDF via mobile devices.

Figure 40: 4th Finnish LAT meeting

Following was presentation of NewTREND toolset, where Dimitrios from IES showed possibilities of Collaboration & Design Platform, Data Manager and Technological Library.

After the presentations, participants had a chance to use the tools by themselves and simulate their own scenarios of building/district and analyse the results. After the testing, users have filled in questionnaire about the tool and gave good comments on the tool.

Figure 41: Participants of the 4th Finnish LAT meeting

From the analysis of the Detailed surveys filled in by participants, in most cases users considered the use of the platform very intuitive and easy to use, only in a few cases the software was considered complicated to be used. In relation to these comments, those participants proposed to simplify the interface of the platform and to make it more interactive, this would allow users to be more open to the use of the software. Another advice related to the simplification of the instrument concerns the possibility of having a "back button" for each section.

Concerning the "phases of the project", participants have suggested the introduction of a timeline view in order to facilitate the reading of the project in this section. Still in this section, icons could be organized following a logic in the simulation and there might be an explanation for each of them with a question mark and a Gantt chart would be very useful. With regard to the "task management", an idea suggested for the improvement of the usage of the tool concerns the possibility to have a library of tasks inside this section.

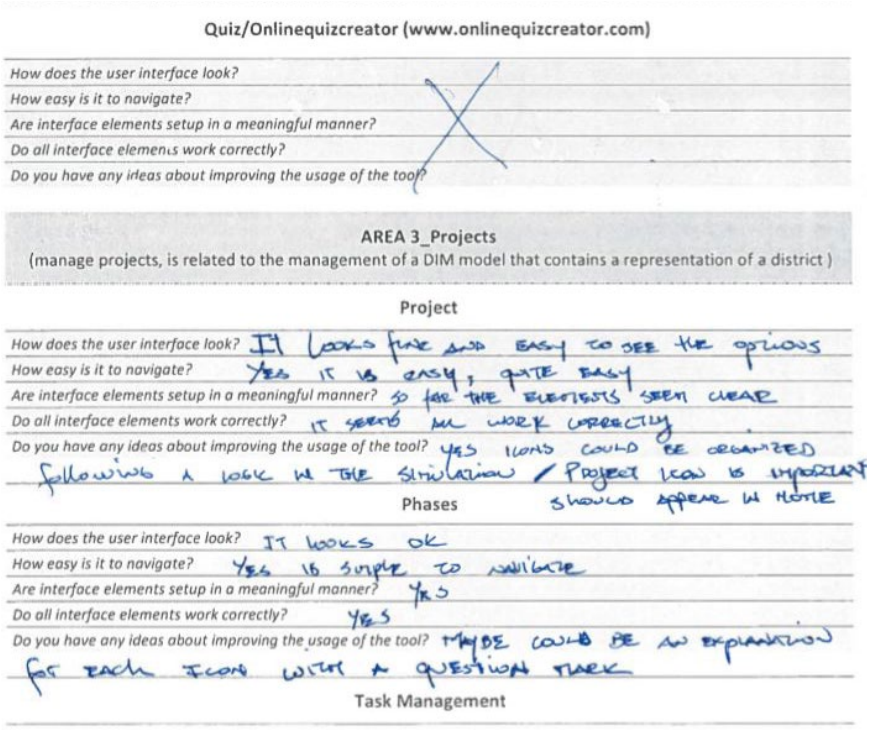
The interface of the "simulation section" appeared nice and easy to navigate, one suggestion concerns graphs, stakeholders proposed to make them more interactive.

5.5 Final considerations

The LAT meetings have been very useful to collect feedback from the future potential users of the software and they have ensured the opportunity to improve the functions and the interface of the NewTREND's platform. The active participation of the stakeholders has guaranteed the success of the Local Advisory Teams and this involvement of users has allowed to receive important feedback about the positive and critical aspects of the tools.

Another key aspect which has allowed the success and the productivity of the meetings was the inclusion of stakeholders with different background, different perspectives on management strategies and potential improvements. The necessity to include different voices and perspectives from various stakeholders is important for understanding potential strategies for project management. The debate and the cooperation among stakeholders is fundamental because they share their views to each other and they facing the future application of the software.

The short version of the Testing Feedback Template for the CDP and the Detailed Surveys of the 3rd and 4th LAT, both implemented to collect feedback from the four target groups involved, contained fixed response question and also non-structured or open question. Questions were very short trying to ensure to capture all of the information needed. Together with free debates during the meetings, the detailed surveys have been the most useful process indicators regarding the proper operation of the NewTREND's Tools.



Quiz/Onlinequizcreator (www.onlinequizcreator.com)

How does the user interface look?
How easy is it to navigate?
Are interface elements setup in a meaningful manner?
Do all interface elements work correctly?
Do you have any ideas about improving the usage of the tool?

AREA 3_Projects
(manage projects, is related to the management of a DIM model that contains a representation of a district)

Project

How does the user interface look? IT LOOKS FINE AND EASY TO SEE THE OPTIONS
How easy is it to navigate? YES IT IS EASY, QUITE EASY
Are interface elements setup in a meaningful manner? SO FAR THE ELEMENTS SEEM CLEAR
Do all interface elements work correctly? IT SEEMS ALL WORK CORRECTLY
Do you have any ideas about improving the usage of the tool? YES ICONS COULD BE ORGANIZED following a look in the simulation / Project Icon is important

Phases SHOULD APPEAR IN MIDDLE

How does the user interface look? IT LOOKS OK
How easy is it to navigate? YES IS SIMPLE TO NAVIGATE
Are interface elements setup in a meaningful manner? YES
Do all interface elements work correctly? YES
Do you have any ideas about improving the usage of the tool? MAYBE COULD BE AN EXPLANATION for each icon with a question mark

Task Management

Figure 42: CDP TFT filled in for the 4th LAT meeting

What is important to consider at the moment, are the negative comments received and the proposals for improving the software. Accordingly, leaving out all the positive comments, it's useful to sum up all the perplexities arisen during the LATs in the different countries.

The most significant suggestions and concerns, already described in the previous project partners reports, are summarised below:

- Concerning improvements to the interface of the software, participants proposed to simplify the interface of the platform and to make it more interactive, to insert a "back button" for each section;
- Concerning "phases of the project", participants have suggested the introduction of a timeline view in order to facilitate the reading of the project in this section and a different organization of the icons following the simulation, by adding an explanation for each of them and a Gantt chart;
- Concerning "task management", an idea suggested for the improvement of the usage of the tool concerns the possibility to have a library of tasks inside this section;
- Concerning the interface of the "simulation section", generally it appeared nice and easy to navigate but stakeholders proposed to make graphs more interactive;
- Concerning the use of the BIM model, some perplexity concerning this format arose from some technicians because they said that this format is not very common in their working field;
- Concerning pie chart showing the results, the proposal is to have categories broken down in their subcategories (ex. energy dived into electrical, lighting, etc.), the visualization of the results related to the hourly consumption and the consumption during the year and also the possibility to visualize the outputs of different buildings in one graph in order to compare the results;
- Concerning the validation of the input data, to avoid major errors, it would be useful that the software would be able to recognize these major data entering errors. Identify the BIM's mistakes is not so simple, stakeholders would like that software might be able to do that;
- Concerning the visualization of the results, could be useful to have an aggregation of the outputs in relation to a priority established by the user, in order to understand rapidly the negative points and consequently how to take action to improve the results. A smart software should be capable to prioritize the measures to take on the building in relation to the priorities established before the simulation and accordingly to the negative aspects of the building;
- Concerning the simulation outputs, it's really difficult to evaluate the consumption of a building which has different uses and some concerns related to the quality of data of the Basic mode have arisen. Many participants have underlined the fact that the information required are very limited and they could mislead the reading of the data coming from the outputs of the simulation;
- Concerning the simulation, one of the evident problem underlined by the concerns the inability to perform a district simulation in which there are different buildings having different level of input data. It's necessary that all the buildings involved in the same simulation have the same level of detail of data;

- Concerning the KPIs, all the participants agreed about the necessity to insert a KPI related to the “payback period of the investment”; evaluate the payback period of an investment it’s fundamental because it may affect very much the choices that must be taken by the stakeholder;
- Concerning the costs of the technologies proposed for the retrofitting of the project, be able to see these costs is fundamental, they could be “user input” or “from the list” but they are essential because the user decides how to act also in relation to the costs of the refurbishment. If is not possible to have a precise value of the investment, also an estimation is appreciated because it’s fundamental to take decision concerning the choices related to the refurbishment. It is also recommended by professionals to differentiate the costs in relation to the intended use of the building because the cost of the same technology in a big retrofitting action could be very different in a small one.

As it is possible to see from the results collected above, the heterogeneity of the participants has ensured different kinds of feedback and suggestions. These proposals are absolutely relevant and useful to improve the software and the functioning of the tools.

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