NewTREND
NEW Integrated Methodology and Tools for Retrofit Design Towards a Next Generation of ENergy Efficient and Sustainable Buildings and Districts

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NEW INTEGRATED METHODOLOGY AND TOOLS FOR RETROFIT DESIGN TOWARDS A NEXT GENERATION OF ENERGY EFFICIENT AND SUSTAINABLE BUILDINGS AND DISTRICTS

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ABBREVIATIONS AND ACRONYMS

ACRONYM	DEFINITION
CDP	Collaboration and Design Platform
DM	Data Manager
EeB	Energy-efficient buildings
GA	Grant Agreement
IA	Innovation Action
LAT	Local Advisory Team
NewTREND	NEW integrated methodology and Tools for Retrofit design towards a next generation of ENergy efficient and sustainable buildings and Districts
TL	Technology Library
WP	Work Package

EXECUTIVE SUMMARY

The present deliverable documents the activities of the Local Advisory Teams (LATs).

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 groups, such as:

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

LAT meetings are held at key moments of the project life. This report is a living document collecting all information on LATs, such as the participants, the dates of the meetings, and the key outcomes.

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.

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.

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

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 MEETINGS

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.

1.4. 3RD AND 4TH LATS MEETINGS

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, have participated and have been involved in these training 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 has 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.

2. 3RD LAT MEETING

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 agenda of the 3rd LAT meeting is provided in **Annex A**.

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 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 understandable 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, during 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, the 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

TABLE 1: 3RD LAT MEETING DATES

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.

3. LOCAL ADVISORY TEAMS MEMBERS

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

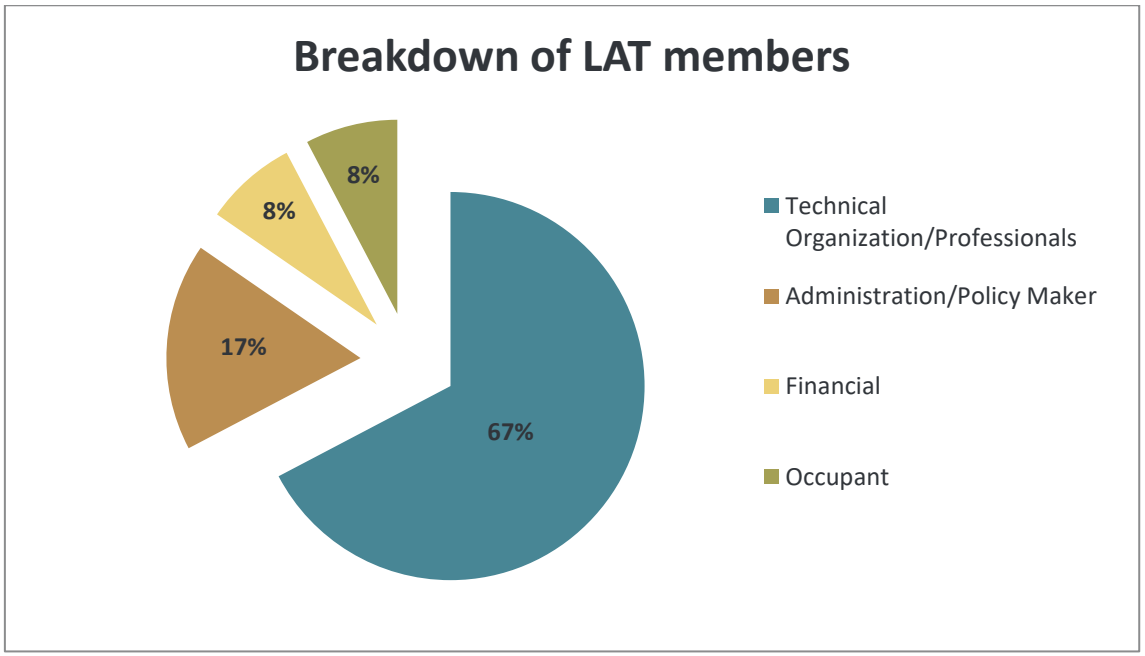
- Technical organizations and professionals;
- Administration and policy makers;
- Financial organizations;
- Occupants.

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 1: CURRENT LAT MEMBERS BREAKDOWN BY PROFILE

3.1. FINLAND

The Finnish Local Advisory Team is managed by Granlund, and includes participants from the Finnish Demo Site.

NAME	ORGANISATION
MAIJA-LIISA GRÖHN	Seinäjoki adult education center
JAAKKO PELTONEN	Seinäjoki city
ANTTI ÅLANDER	Granlund Pohjanmaa Oy
DAVOR STJELJA	Granlund Oy

TABLE 2: FINNISH 3RD LAT MEMBERS

3.2. GERMANY

The German Local Advisory Team is managed by MUAS.

NAME	ORGANISATION
PROF. DR. NATALIE EßIG	MUAS
PAUL MITTERMEIER	MUAS
AHMED KHOJA	MUAS
SIMONE MAGDOLEN	City of Munich
ROLAND GRÄBEL	Bauzentrum München
OLIVER ZADOW	Landeshauptstadt München
ANNETTE V. HAGEL	PKS-Kommunikations- und Strategieberatung GmbH
PHILLIP HOLLBERG	CAALA
JAKOB PRZYBYLO	DTBAU
MATTHIAS HEINRICH	ENB-TUM
HANNES HARTER	ENB-TUM
SEBASTIAN EBERL	Ing | Se

TABLE 3: GERMAN 3RD LAT MEMBERS

3.3. HUNGARY

The Hungarian Local Advisory Team is managed by ABUD, and includes participants from the Hungarian Demo Site.

NAME	ORGANISATION
ISTVÁN HUNYADI	Municipality of the 18th district
ZSÓFIA MOLNÁR	Municipality of the 18th district
TÍMEA BAKSA	Municipality of the 18th district
ANNA LIGETI	Municipality of the 18th district
MELINDA HARTUNG	Municipality of the 18th district
SZABINA VÁRNAGY	ABUD
ZSÓFIA MOLNÁR	Municipality of the 18th district
SZABINA VÁRNAGY	ABUD
MELINDA OROVA	ABUD

TABLE 4: HUNGARIAN 3RD LAT MEMBERS

3.4. ITALY

The Italian Local Advisory Team is managed by iiSBE Italia R&D.

NAME	ORGANISATION
SILVIA BONAPERSONA	Regione Piemonte – Energy Department
MARCO DUTTO	Cooperativa Edilizia Flavia – Social Housing Private Organization
MONICA GIROTTO	CASA ATC Servizi – Technical company working for ATC (Social Housing Agency)
CRISTIANO GASTALDI	iiSBE Italia
ANDREA PALEARI	"Studio Liveriero" Professional Organisation
MAURIZIO LANCINI	"Studio Valzelli" International Engineering Company
MATTEO TRAVERSO	"R&P Engineering S.R.L." Engineering Company
PAOLO SACCO	"RS Studio ing. Raina e Sacco" Engineering Company
ANDREA BONDI	"Collegio Costruttori Edili- ANCE Torino"
MARCO BARBAGELATA	STAM
GIOVANNI GINEPRO	"M3PR Studio" Design Studio
PAOLA BORGARO	iiSBE Italia
CLAUDIO CAPITANIO	iiSBE Italia
ANDREA MORO	iiSBE Italia
ELENA BAZZAN	iiSBE Italia

TABLE 5: ITALIAN 3RD LAT MEMBERS

3.5. SPAIN

The Spanish Local Advisory Team is managed by Sant Cugat, and includes participants from the Spanish Demo Site.

NAME	ORGANISATION
VICTOR MARTINEZ	Ajuntament de SantCugat
LOLA LOZANO	AFA Pins del Vallès (school families association)
IRMA MUÑOZ	AFA Pins del Vallès (school families association)
BERNAT COLOMÉ	Arqbag. Cooperativa d'Arquitectura
FABIÁN REYNOLDS	PROMUSA
GERARD RIBA	Ajuntament de SantCugat
PAU ASENS	Ajuntament de SantCugat

TABLE 6: SPANISH 3RD LAT MEMBERS

3.6. UK / IRELAND

The UK/Ireland Local Advisory Team is managed by IES/UCC.

NAME	ORGANISATION
ROSEMARIE MAC SWEENEY	University College Cork
BREFFNI LENNON	University College Cork
DIMITRIOS NTIMOS	IES
EMMA HAYES	Digital Built Consultants
CAROLINE ENGEL PURCELL	Carrig Conservation International Ltd
DAVITT LAMON	C+W O'Brien Architects
PRANASH RAMANUNDH	Royal Institute of Architects of Ireland (RIAI)

TABLE 7: UK/IRISH 3RD LAT MEMBERS

4. 3RD LAT MEETING REPORTS

4.1. FINLAND REPORT

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

Comments regarding presented tools 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/.

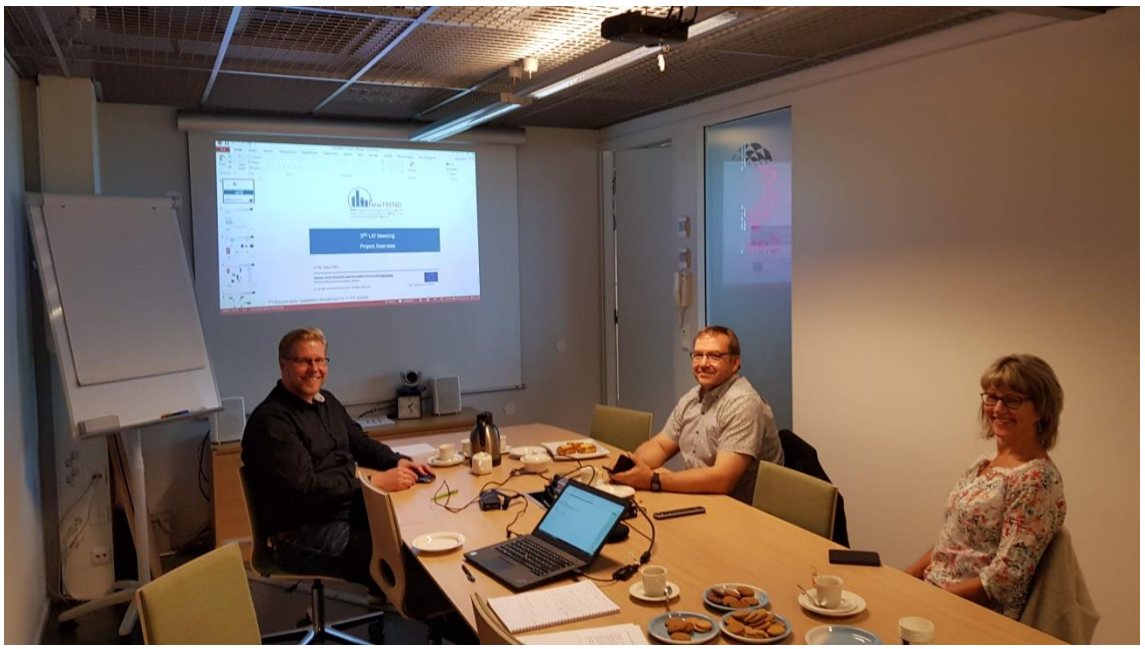


FIGURE 2 – PARTICIPANTS TO THE FINNISH 3RD LAT MEETING

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 3 – 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 4 – 3RD GERMAN LAT MEETING

4.3. HUNGARY REPORT

The Agenda of the Hungarian 3rd LAT meeting is structured a slightly different from the official one, as follows:

- **Presentation of NewTREND tool**
  - Video of the CDP
  - Video of the Data manager
  - Video of the acoustic tool
  - Video of the SDH
- **Presentation of the Budapest demo activities**
  - Overview of the activities on the 3 demo sites
  - Summary of the Budapest data collection activities
  - Summary of the Budapest data processing and analysis activities
  - Summary of the stakeholder engagement activities
- **Summary, final discussion.**

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.

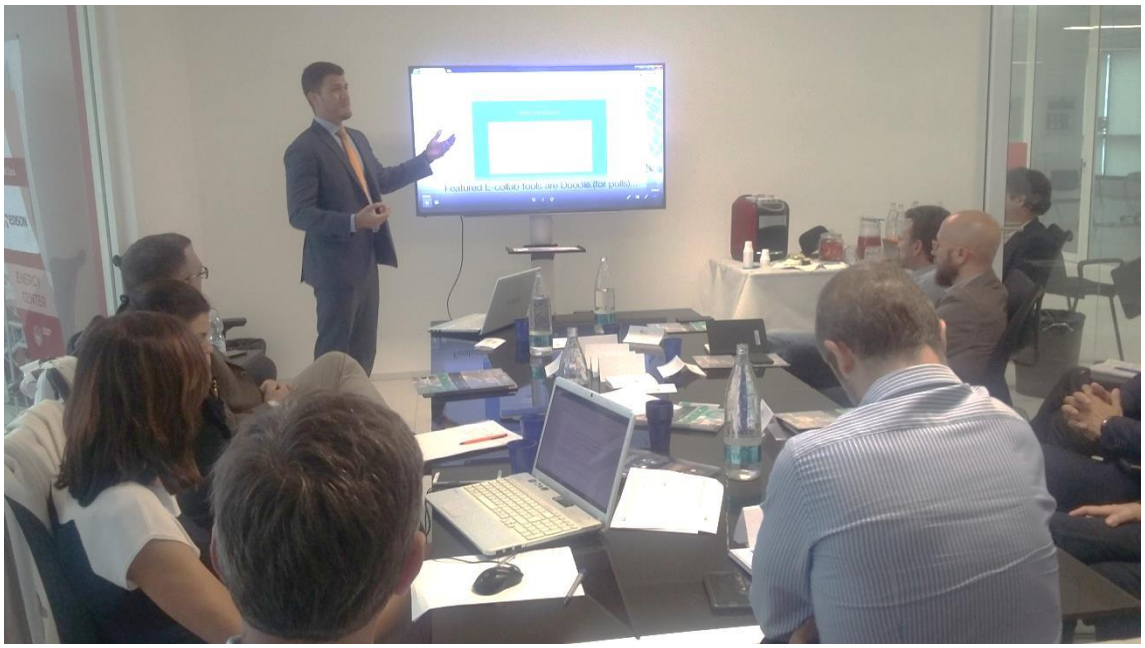


FIGURE 5 – 3RD ITALIAN LAT MEETING

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 6 – 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 7 – 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 8 – 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 9 – 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.

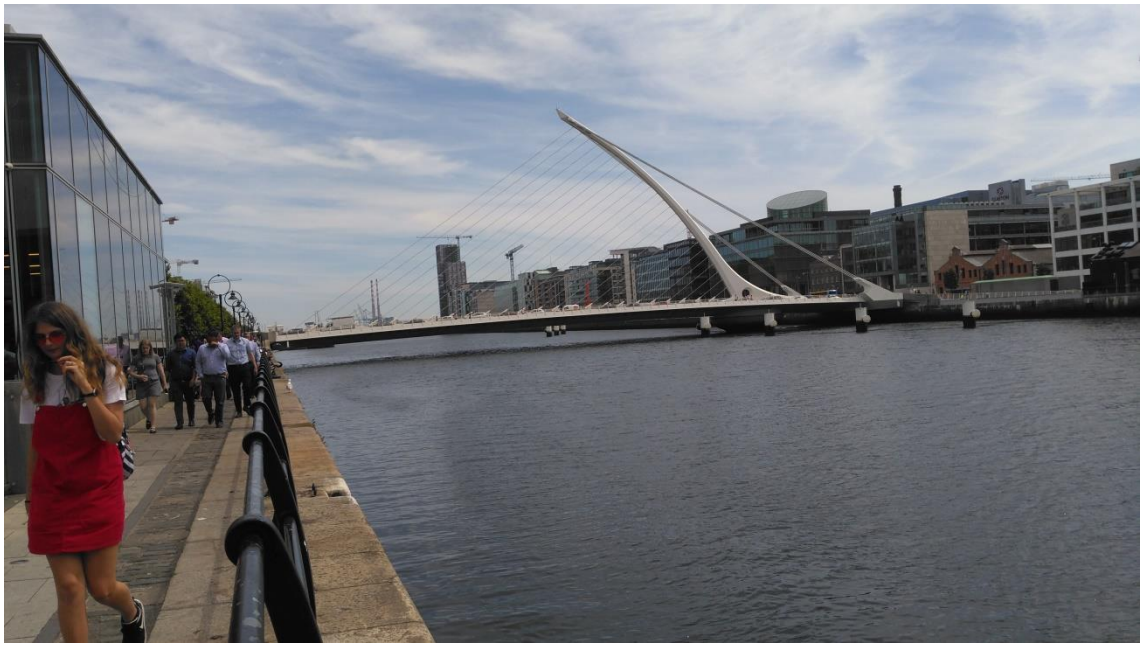


FIGURE 10 – 3RD UK/IRELAND LAT MEETING

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.

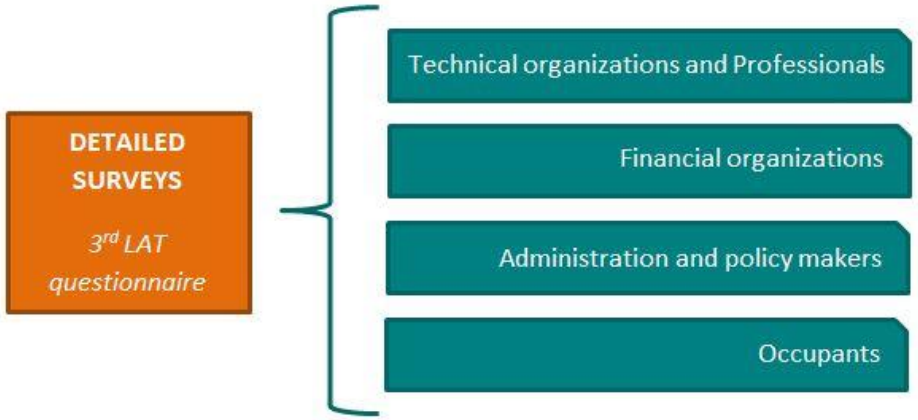


FIGURE 11 – TARGET GROUPS OF THE 3RD LAT QUESTIONNAIRE

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. Two different agendas have been produced:

- The agenda for the training in pilot sites, provided in **Annex C**;
- The agenda for the short training activity in Italy, provided in **Annex D**.

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, both provided respectively in **Annex E** and **F**.

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 12 – 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.

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,

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

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

TABLE 8: 4TH LAT MEETING DATES

In the following pages there are more information about the participants to the 4th LAT meeting and the meeting reports collected so far from the NewTREND LATs.

6. LOCAL ADVISORY TEAMS 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.

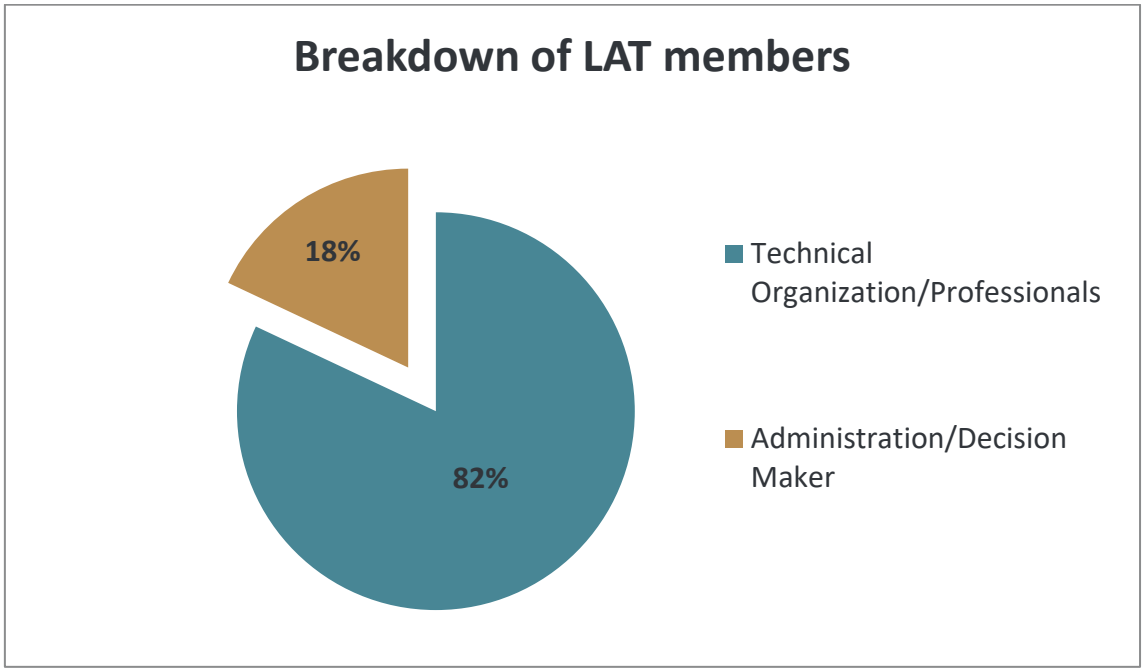


FIGURE 23: CURRENT LAT MEMBERS BREAKDOWN BY PROFILE

6.1. SPAIN

The Spanish Local Advisory Team is managed by Sant Cugat, and includes participants from the Spanish Demo Site.

NAME	ORGANISATION
VÍCTOR MARTÍNEZ	Urban Quality Director. Ajuntament de Sant Cugat
GERARD RIBA	Head of Urban Maintenance Section. Ajuntament de Sant Cugat.
CARME FERRER	Head of municipal buildings maintenance. Ajuntament de Sant Cugat
JORDI VILLALONGA	Municipal buildings maintenance technician. Ajuntament de Sant Cugat
PAU ASENS	Municipal buildings maintenance technician. Ajuntament de Sant Cugat
ISAAC VILLA	Districts technician. Ajuntament de Sant Cugat
ELIA LOPEZ	Logistics Technician. Ajuntament de Sant Cugat.
FABIAN REYNOLDS	Responsible of Building Maintenance. Promusa (social housing company)
BERNAT COLOMÉ	Architect. Arqbag (Architecture cooperative).
MARCO BARBAGELATA	STAM
GIULIA BARBAGELATA	STAM
ULI JAKOB	Dr Jakob Energy Research.
FALKO KIEDAISCH	Dr Jakob Energy Research.

TABLE 9: SPANISH 4TH LAT MEMBERS

6.2. ITALY

The Italian Local Advisory Team is managed by iiSBE Italia R&D.

NAME	ORGANISATION
ANDREA BONDI	Collegio Costruttori Torino
MARCO ROSSO	Collegio Costruttori Torino
MONICA GIROTTO	Casa ATC Servizi S.r.l.
GIOVANNI GINEPRO	M3PR Studio
GIULIA CRESPI	Grad student, Polytechnic University of Turin
MARA VIASSONE	Trainee, Polytechnic University of Turin
CRISTIANO GASTALDI	iiSBE ITALIA R&D
PAOLA BORGARO	iiSBE ITALIA R&D
ELENA BAZZAN	iiSBE ITALIA R&D
RICCARDO NOVO	Grad student, Polytechnic University of Turin
ALESSANDRO COLANGELO	Polytechnic University of Turin
FRANCESCO DEMETRIO MINUTO	Grad student, Polytechnic University of Turin
MARCO BARBAGELATA	STAM
MARCO RAVINA	Research student, Polytechnic University of Turin
DANIELE SALVATORE SCHIERA	Research student, Polytechnic University of Turin

TABLE 10: ITALIAN 4TH LAT MEMBERS

6.3. HUNGARY

The Hungarian Local Advisory Team is managed by ABUD, and includes participants from the Hungarian Demo Site.

NAME	ORGANISATION
DÓRA PLÁJER	Realiscon Kft.
GIULIA BARBAGELATA	STAM
IRISZ NAGY	ABUD
ISTVÁN HUNYADI	Municipality of the 18th district
LÁSZLÓ KURUCZ	Techno-Consulting Hungary
MARCO BARBAGELATA	STAM
MELINDA OROVA	ABUD
PAUL MITTERMEIER	MUAS
SZABINA VÁRNAGY	ABUD
VIKTOR MERKER	Municipality of Zugló
ZSOMBOR BARTA	Tomlin Kft.
ZSÓFIA SZULÁGYI	Paulinyi-Reith & Partners Zrt.

TABLE 11: HUNGARIAN 4TH LAT MEMBERS

6.4. FINLAND

The Finnish Local Advisory Team is managed by Granlund, and includes participants from Seinäjoki city and from Granlund Consulting.

NAME	ORGANISATION
DAVOR STJELJA	Granlund
TUOMAS LAINE	Granlund
FRANCISCO FORAIS-SANSÒ	Granlund
JAAKKO PELTONEN	Seinäjoki city
DIMITRIS NTIMOS	IES
ANTTI ÅLANDER	Granlund Pohjanmaa Oy
MARKUS NISULA	Granlund Consulting
PANN RANTID	Granlund Consulting
ULI JAKOB	JER
FALKO KIEDAISCH	JER

TABLE 12: FINNISH 4TH LAT MEMBERS

7. 4TH LAT MEETING REPORTS

7.1. 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 14 – 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 15– 4TH LAT MEETING IN SANT CUGAT

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

7.2. 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 16– 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 17– 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 categorie**s 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 t**o 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.

7.3. 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 18 – 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.

7.4. 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.

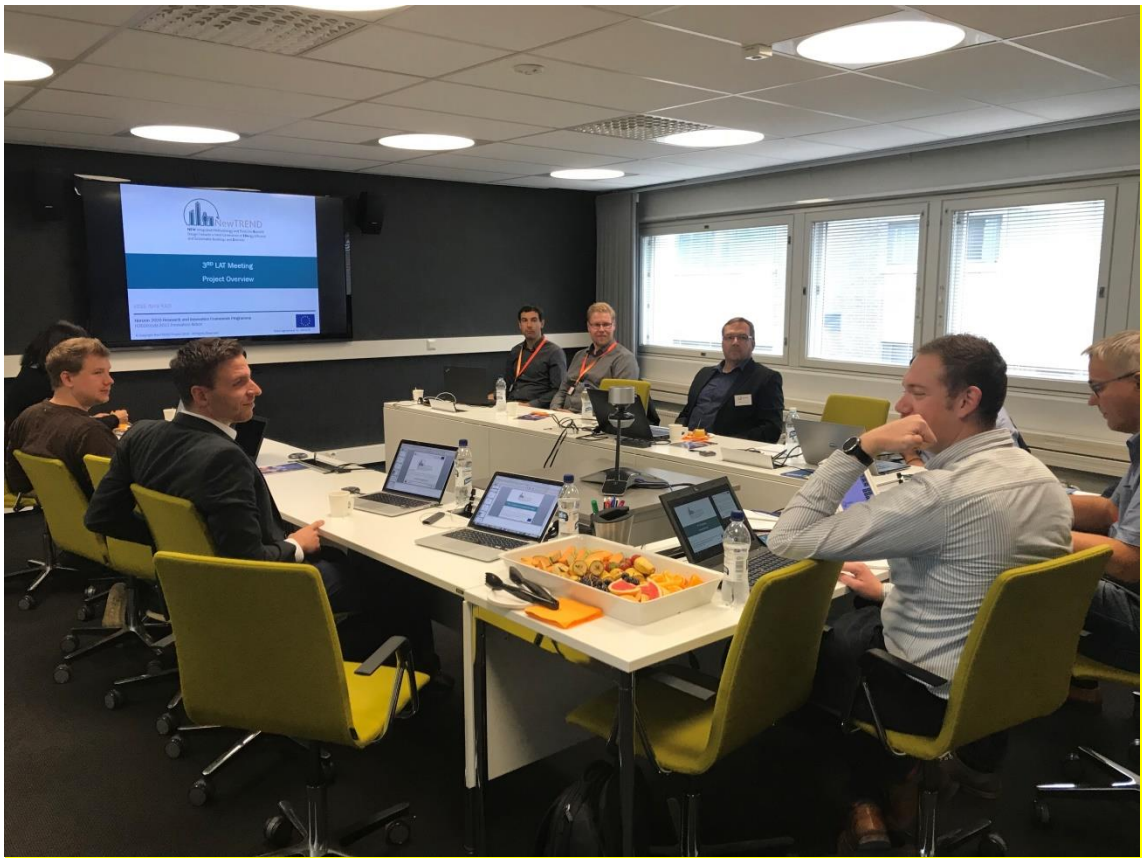


FIGURE 19 – 4TH FINNISH LAT MEETING

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 20– 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.

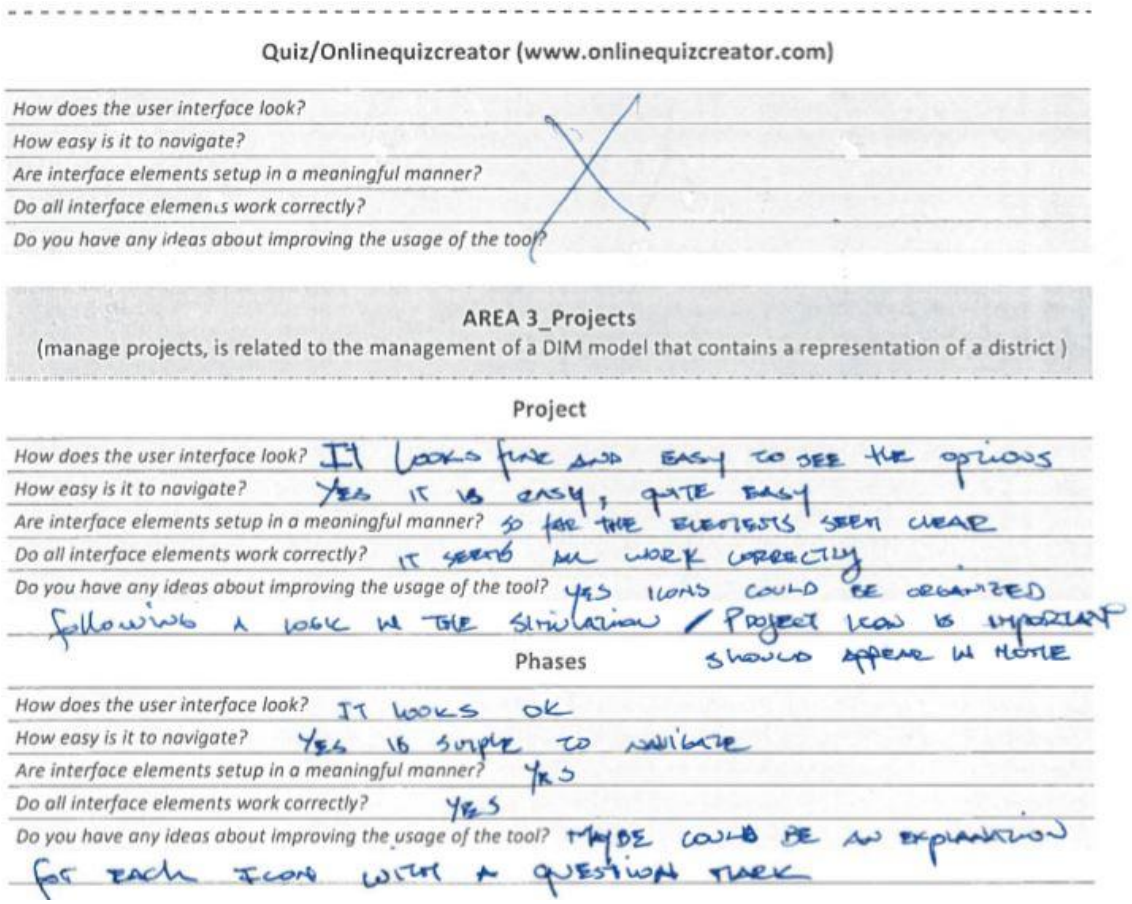
The interface of the "simulation section" appeared nice and easy to navigate, one suggestion concerns **graphs**, stakeholders proposed to make them **more interactive**.

8. 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 logic in the simulation / Project leader is important should appear in middle

Phases

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

FIGURE 21– 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.

ACKNOWLEDGEMENTS

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ANNEX A: 3RD LAT MEETING AGENDA

COUNTRY*:

ORGANIZER*:

DATE*:

VENUE*:

PARTICIPANTS:

Name*	Organization*	Profile	e-mail

TOPICS*:

- Light demo of the main tools of the NewTREND platform through **operational short and effective videos**
- **Perceptual feedback** concerning NewTREND tools through the **Detailed Surveys (3rd LAT questionnaire)**
- Critical suggestion about the **exploitation and the future application of the NewTREND's Tools**
- **4th LAT** contents (Training) and modalities preview

AGENDA [TOTAL TIME 3:00 HOURS]:

- **1:20 h: 1ST PART** - NewTREND workshop
  - 5 mins: Welcome, introduction (tour de table)
  - 15 mins: Introductory session and progress of the project
  - 60 mins: Video demo of the main tools of the NewTREND platform

- **1:40 h: 2ND PART** - NewTREND workshop
  - 30 mins: Discussion concerning the impressions on the operation of the platform
  - 60 mins: Explanation and drawing up of the Detailed Surveys (3rd LAT questionnaire)
  - 10 mins: Conclusion and 4th LAT contents and training activity

SUMMARY OF MEETING*:

SPECIFIC FEEDBACK

* All fields marked with an asterisk will be made public

ANNEX B: DETAILED SURVEYS (3RD LAT QUESTIONNAIRE)

Target: **TECHNICAL ORGANIZATIONS AND PROFESSIONALS**

- *What is your profession?*
- *What sort of work does your organization normally undertake?*
- *What is your involvement in this work?*
- *Overall impression from your professional perspective about the operations of the components of NewTREND platform.*
- *The tool can be useful from your professional perspective?*
  [strongly agree] [agree] [neither agree nor disagree] [disagree] [strongly disagree]
- *Which of the components of the platform do you consider most useful for the purposes of your professional activity?*
- *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?*
- *Would you consider it appropriate to have a greater involvement of end users such as building occupants in this process?*
  [strongly agree] [agree] [neither agree nor disagree] [disagree] [strongly disagree]

  If yes, how and in which stages?
  If no, please elaborate.

DETAILED SURVEYS TO BE DISTRIBUTED DURING THE 3RD LAT

Target: **FINANCIAL ORGANIZATIONS**

- *What is your profession?*
- *What sort of work does your organization normally undertake?*
- *What is your involvement in this work?*
- *Overall impression from your professional perspective about the operations of the components of NewTREND platform.*
- *Can be the tool useful in evaluating the effectiveness of financial investments linked to energy efficiency and refurbishment?*
  [strongly agree] [agree] [neither agree nor disagree] [disagree] [strongly disagree]
- *From your professional perspective, are there any other benefits provided by the platform?*

DETAILED SURVEYS TO BE DISTRIBUTED DURING THE 3RD LAT

Target: **ADMINISTRATION AND POLICY MAKERS**

- *What is your profession?*
- *What sort of work does your organization normally undertake?*
- *What is your involvement in this work?*
- *Overall impression from your professional perspective about the operations of the components of NewTREND platform.*
- *How and in what sectors, this tool can be applied within the different administrations?*
- *What benefits can be provided by the use of this platform?*

DETAILED SURVEYS TO BE DISTRIBUTED DURING THE 3RD LAT

Target: **OCCUPANTS**

- *Overall impression from your perspective about the operations of the components of NewTREND platform.*

- *From your occupant point of view, what are the benefits of the NewTREND platform for a more integrated approach to design?*

- *Would you consider it appropriate to have a greater involvement of end users such as building occupants in this process?*
  [strongly agree] [agree] [neither agree nor disagree] [disagree] [strongly disagree]

  If yes, how and in which stages?
  If no, please elaborate.

ANNEX C: 4TH LAT MEETING AGENDA IN PILOT SITES

NEWTREND TRAINING SESSION, SANT CUGAT

July 20th, 2018, Sant Cugat, Spain

NewTREND
NEW Integrated Methodology and Tools for Retrofit Design Towards a Next Generation of ENergy Efficient and Sustainable Buildings and Districts

Location: Collserola Room, Sant Cugat Town Hall, Sant Cugat, Spain Date: Friday, July 20TH		
Time	**TOPIC**	**Speaker**
9-9.30	*Welcome & Participants Registration*	
9.30-10	*Introduction to the Training session*	
10-11	*NewTREND methodology and phases of a retrofitting project*	JER
11-11.15	**Coffee Break**	
11.15-12.15	*Introduction to the NewTREND toolset, user roles and project management functionalities (Credentials to access the toolset will be given to the participants)*	STAM
12.15-13	*NewTREND software use – project set up and simulation on a use case from Ajuntament de Sant Cugat del Vallès*	SantCugat
13-14	**Lunch Break**	
14.00-15.15	*Use of the NewTREND software*	Participants
15.15-15.45	*Fill in the Detailed Surveys and the DM-CDP TFTs*	Participants
15.45-16.00	*Feedback collection and final debate*	SantCugat and other partners
16.00-16.30	*Close*	All

NEWTREND TRAINING SESSION, BUDAPEST

August 2nd, 2018, Budapest, Hungary

NewTREND
NEW Integrated Methodology and Tools for Retrofit Design Towards a Next Generation of ENergy Efficient and Sustainable Buildings and Districts

Location: KÉK – Contemporary Architecture Center, Budapest, Hungary Date: Thursday, August 2nd		
Time	**TOPIC**	**Speaker**
9-9.30	*Welcome & Participants Registration*	
9.30-10	*Introduction to the Training session*	
10-11	*NewTREND methodology and phases of a retrofitting project*	MUAS
11-11.15	**Coffee Break**	
11.15-12.15	*Introduction to the NewTREND toolset, user roles and project management functionalities (Credentials to access the toolset will be given to the participants)*	STAM
12.15-13	*NewTREND software use – project set up and simulation on a use case from ABUD I Advanced Building and Urban Design*	ABUD
13-14	**Lunch Break**	
14.00-15.15	*Use of the NewTREND software*	Participants
15.15-15.45	*Fill in the Detailed Surveys and the DM-CDP TFTs*	Participants
15.45-16.00	*Feedback collection and final debate*	ABUS and other partners
16.00-16.30	*Close*	All

Location: Granlund head office, Meeting room VolttiMalminkaari 21, Helsinki, Finland Date: Tuesday, August 21st		
Time	**TOPIC**	**Speaker**
10-10.15	*Welcome & Participants Registration*	
10.15-10.30	*Introduction to the Training session*	
10.30-11.30	*NewTREND methodology and phases of a retrofitting project*	JER
11.30-11.45	**Coffee Break**	
11.45-12.30	*Introduction to the NewTREND toolset, user roles and project management functionalities (Credentials to access the toolset will be given to the participants)*	IES
12.30-13	*NewTREND software use – project set up and simulation on a use case from Granlund*	Granlund
13-14	**Lunch Break**	
14.00-15.15	*Use of the NewTREND software*	Participants
15.15-15.45	*Fill in the Detailed Surveys and theCDP TFTs*	Participants
15.45-16.00	*Feedback collection and final debate*	Granlund and other partners
16.00-16.30	*Close*	All

ANNEX D: 4TH LAT MEETING AGENDA IN ITALY

	TOPIC
14.00	Welcome and Registration
14.15	Meeting program and presentation of the objectives of the 4th LAT Access to the NewTREND's platform.
14.30	The exercises for the use the platform will be based on 3 application cases: **Case 1:** collective development, with the teacher's guide, of a district-level simulation, from which the general information is obtained and the weak points are identified
15.30	Coffee Break
15.45	**Case 2:** participants, possibly divided into groups, analyze one or more buildings with AS-IS simulations to verify the current problems "autonomously" on their PC, with the support of the teacher , if necessary
17.15	Final considerations and indications for autonomous use "at home" of the platform in the following two weeks by the interested participants. **Case 3:** on the assigned buildings, participants can create scenarios and launch simulations, analyzing the results to verify the real benefits of the software
17.30	Closure of the LAT

ANNEX E: DETAILED SURVEYS (4TH LAT QUESTIONNAIRE)

DETAILED SURVEYS TO BE DISTRIBUTED DURING THE 4TH LAT

Target: **DECISION MAKERS**

- *Compared to the expectations you had regarding this training session about the operation of the NewTREND platform, are you satisfied?*
  [strongly agree] [agree] [neither agree nor disagree] [disagree] [strongly disagree]

- *Is the NewTREND platform able to meet your business needs and facilitate them?*
  [strongly agree] [agree] [neither agree nor disagree] [disagree] [strongly disagree]

- *In your opinion, how and in what sectors, could this tool be applied?*

- *What benefits can be provided by the use of this platform?*

- *Would you consider it appropriate to have a greater involvement of end users such as building occupants in this process?*
  [strongly agree] [agree] [neither agree nor disagree] [disagree] [strongly disagree]

  If yes, how and in which stages?
  If no, please elaborate.

ANNEX F: CDP TESTING FEEDBACK TEMPLATES

FUNCTIONALITY ASPECTS
WP6 - T6.4_TESTING FEEDBACK TEMPLATE (Collaborative Design Platform)
NewTREND Collaborative Design Platform_ Button Functionality
OPTIONAL REMARKS
AREA 1 _Administration (manage workgroups and members)
Workgroups
Action 1: User enters, creates, edits and deletes a particular workgroup
Any problems encountered in Action 1? Insert your comments here
Expected Outcome of action:
Obtained Outcome:
Notes/Screenshots:
Members (physical person that has access to the various functionalities of CDP)
Action 2: User creates, edits and deletes a new Member
Any problems encountered in Action 2? Insert your comments here
Expected Outcome of action:
Obtained Outcome:
Notes/Screenshots:
AREA 2_E-collaboration (manage social tools to encourage the exchange of information between members and to conduct surveys)
Poll/Doodle is used to ask one simple question. (http://doodle.com/)
Action 3: User creates, edits and deletes a new poll
Any problems encountered in Action 3? Insert your comments here
Expected Outcome of action:
Obtained Outcome:
Notes/Screenshots:
Surveys/Surveymonkey used to ask a wide range of questions. (https://www.surveymonkey.com)
Action 4: User creates, edits and deletes a new survey
Any problems encountered in Action 4? Insert your comments here
Expected Outcome of action:
Obtained Outcome:
Notes/Screenshots:
Quiz/Onlinequizcreator (www.onlinequizcreator.com)
Action 5: User creates, edits and deletes a new quiz
Any problems encountered in Action 6? Insert your comments here
Expected Outcome of action:
Obtained Outcome:
Notes/Screenshots:

AREA 3_Projects (manage projects, is related to the management of a DIM model that contains a representation of a district)
Phases
Action 6: User creates, edits and deletes a new Phase in context of the Project
Any problems encountered in Action 6? Insert your comments here
Expected Outcome of action:
Obtained Outcome:
Notes/Screenshots:
Task Management
Action 7: User creates and edits a new Task in context of a Phase
Any problems encountered in Action 7? Insert your comments here
Expected Outcome of action:
Obtained Outcome:
Notes/Screenshots:
Action 8: User interacts with the Gantt Diagram
Any problems encountered in Action 8? Insert your comments here
Expected Outcome of action (Gantt is created automatically, based on task creation):
Obtained Outcome:
Notes/Screenshots:

MANDATORY REMARKS
Simulation
Action 9: User launches simulation AS-IS (Building Level)
Any problems encountered in Action 9? Insert your comments here
Expected Outcome of action:
Obtained Outcome:
Notes/Screenshots:
Action 10: User creates a scenario (Building Level)
Any problems encountered in Action 10? Insert your comments here
Expected Outcome of action:
Obtained Outcome:
Notes/Screenshots:
Action 11: User launches simulation WHAT-IF (Building Level)
Any problems encountered in Action 11? Insert your comments here
Expected Outcome of action:
Obtained Outcome:
Notes/Screenshots:
Action 12: User analyzes simulation results - Graphics and tables section (Building Level)
Any problems encountered in Action 12? Insert your comments here
Expected Outcome of action:
Obtained Outcome:
Notes/Screenshots:
Action 13: User launches simulation AS-IS (District Level)
Any problems encountered in Action 13? Insert your comments here
Expected Outcome of action:
Obtained Outcome:
Notes/Screenshots:
Action 14: User creates a scenario (District Level)
Any problems encountered in Action 14? Insert your comments here
Expected Outcome of action:
Obtained Outcome:
Notes/Screenshots:
Action 15: User launches simulation WHAT-IF (District Level)
Any problems encountered in Action 15? Insert your comments here
Expected Outcome of action:
Obtained Outcome:
Notes/Screenshots:
Action 16: User analyzes simulation results - Graphics and Tables section (District Level)
Any problems encountered in Action 16? Insert your comments here
Expected Outcome of action:
Obtained Outcome:
Notes/Screenshots:

USABILITY ASPECTS
WP6 - T6.4_TESTING FEEDBACK TEMPLATE (Collaborative Design Platform)
OPTIONAL REMARKS
User gets access and logs into the Collaborative Design Platform
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?
NewTREND Collaborative Design Platform_ Button Functionality
AREA 1 _Administration (manage workgroups and members)
Workgroups
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?
Members (physical person that has access to the various functionalities of CDP)
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 2_E-collaboration (manage social tools to encourage the exchange of information between members and to conduct surveys)
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?
Pool/Doodle is used to ask one simple question. (http://doodle.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?
Surveys/Surveymonkey used to ask a wide range of questions. (https://www.surveymonkey.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?
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)
Phases
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?
Task Management
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?
MANDATORY REMARKS
Simulation - Scenario creation
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?
Simulation - Simulation Launching and configuration
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?
Simulation - Results visualization
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?