D8.2 – BEYOND Living Lab Activities Plan and Evaluation Report – b

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Executive Summary

We consider BEYOND Living Labs as an integral part of the project that spans across both technical and business and demonstration aspects with a view to engage in co-creation activities targeted stakeholders and integrate their feedback to facilitate the exploitation of the BEYOND platform.

Following the roadmap that was outlined in deliverable D8.1 several activities were carried out for the first year of the project. Mostly related to the validation of results achieved with regards to the BEYOND Use Cases activities related to the BEYOND architecture design, use Cases, user and business requirements, barriers and business models that can potentially create difficulties in the implementation of the BEYOND vision. This validation and feedback acquisition took place with collaboration of internal and external stakeholders using online tools, interviews, workshops, and questionnaires. Along the realization of those activities this document also serves as an assessment of our methodology and procedures followed revealing difficulties with recruiting of stakeholders. BEYOND acknowledging these issues, we propose mitigation measures and we set the roadmap of Living labs for the next twelve months as an extension of the Deliverable 8.1.

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1. Introduction

Purpose and scope

The primary purpose of this deliverable is to provide an overview of the progress made with regards to the Living Labs, compare the results with goals set, evaluate them, and draft a plan for next months. In addition to the above, a significant part of this document is addressing issues and shortcomings that can affect the productiveness of the Living labs. In this document we summarize the planned and completed activities from the first year as they have been documented in the D8.1. These included very important parts of the project focusing on the actual needs of end-users along with the requirements of the business environment, the architecture design as well as on activities for the introduction of new business models for the building data value chain stakeholders. The later part is equally important as we plan for the Living Lab activities for the second year that is expected to be more technical oriented towards the BEYOND Framework prototyping and in the mid-term to the demonstration phase of the project so as to acquire feedback from all involved actors around buildings and energy value chain and realize major improvements.

Structure of the document

In the first chapter we remind the methodology, and the objectives underpinning the Living Labs. The next chapter provides a detailed report on the progress and achievements of the internal and external Living Labs as well as the engagement between the project and the targeted stakeholders during the first year of the project. By juxtaposing the above with initially planned activities, we used this opportunity to identify barriers for running the BEYOND Living Labs so as to ameliorate the procedures. Last but not least, in the last section we list the actions foreseen for the second year.

Relation to D8.1

As can be seen from the above, this document acts complementarily to the D8.1 since beyond reporting all related activities targets to set our vision for the next period building upon our first year Living Lab experiences with a view to reap the maximum benefits from BEYOND advancements.

2. BEYOND Living Labs objectives & methodology

The Living Lab concept adopted by BEYOND project considers the user as a valuable actor in an open multi-stakeholder landscape and as a co-creator of value. As it is easily comprehensible this is a concept that is user-centered which facilitates an open-innovation environment integrating parallel research and innovation processes within consortium- end user interactions. As it was outlined in the D8.1 BEYOND Living Lab activities are integrated through the co-creation and evaluation of novel concepts, scenarios, related technologies, and business models in real life use cases.

BEYOND Living labs involve user communities, not only as passive observers but also as main source of information that shape the outcome of the project. We involved early in the project's life (i) stakeholders that their operations are affected by building data and the applications that will be released and demonstrated during BEYOND (both involved or not in the project), (ii) stakeholders who are engaged in the background for the implementation of likewise solutions and need to be consulted for the future exploitation of the project (e.g. professional associations) and finally (iii) stakeholders with similar roles to the internal stakeholder groups, but not participating in the consortium..

As we consider the aforementioned groups as key potential players of the BEYOND platform and services, we aimed to involve stakeholders around the building and energy value chain at all stages of the project life cycle, to encourage them to contribute to development of a unique ecosystem around building data. In addition to project validation and results, these interactions between stakeholders, end users and project partners will be exploited to close the gap between expectations and outcomes, as well as to reach a marketable product.

Objectives of Living Labs

BEYOND designed and carries out the Living Lab activities to achieve the following objectives:

- Get feedback from targeted stakeholders throughout project duration to optimize our developments and to address the critical needs of involved, affected, or affecting the project actors

- Disseminate and communicate the project outcomes towards several audience to initiate involvement in the various project activities and relay its value proposition
- Lay the ground for the future exploitation and adoption of the project results.

3. Living lab completed and ongoing activities

BEYOND living labs during the last twelve months were realized through remote sessions in which members of the consortium presented to invited contacts an overview of the BEYOND platform and our developments with regards to the BEYOND use cases, barriers for the adopting of such solutions, and respective business models from a specific stakeholder perspective. The objective was to acquire feedback on these issues so as to reflect in our platform the real business needs and the overall environment of the actual stakeholders in the energy landscape. To incentivize their involvement, we underlined the following benefits:

- Opportunity for synergies with some of the top players in the EU energy market and scientific community in shaping the future of big data management around buildings and sharing across the value chain.
- Chance to test a trial version of BEYOND platform within their organization.
- In case of the commercialization of the platform they could use it with favorable terms.
- Gain more visibility through our/BEYOND partners' network and the various activities that will take place.

3.1 Validation of Use Cases (UCs) and Business Requirements (BRs) stemming from BEYOND's Business Scenarios.

Scope of validation: In this activity we presented to each of the interested stakeholders an overview of the relevant UCs (those addressing the needs of the specific stakeholder type) as well as the peculiarities of their application, in order to provide feedback on their usefulness, willingness and existence of a legal framework for sharing or obtaining data, expediency of the technical or business requirements, the operational need to adopt use cases and business scenarios or any other social barrier that could impede its implementation.

Work package &Tasks involved: WP2, T2.1

Timeline: M8-11

Areas of interest:

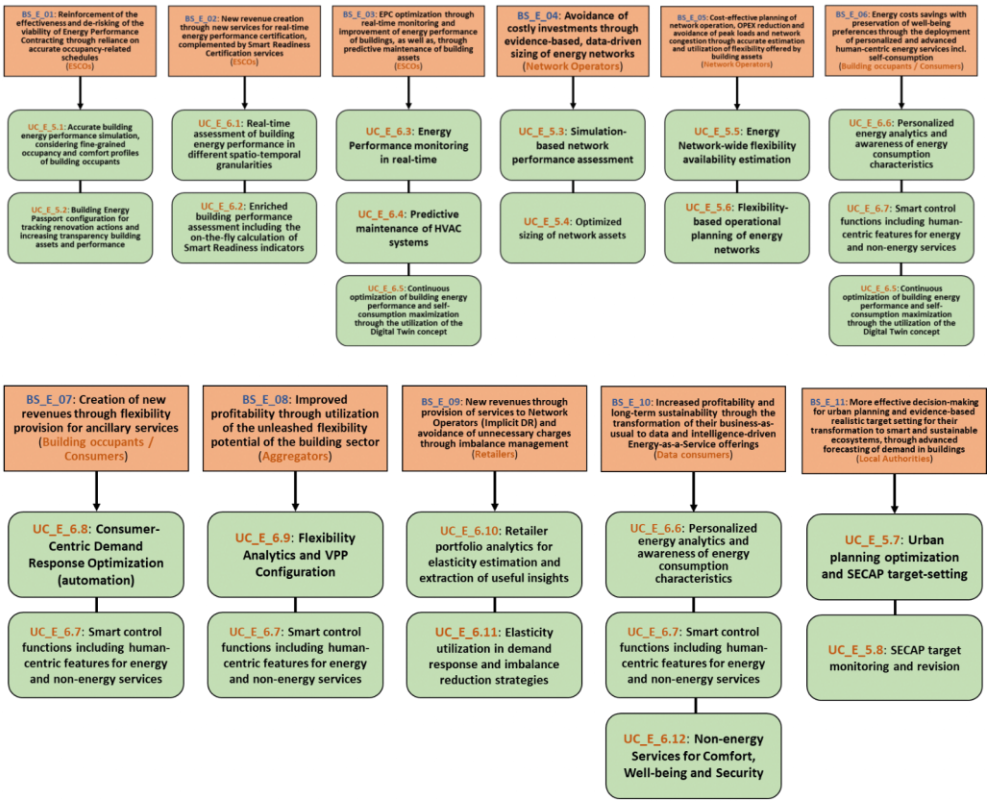


FIGURE 1 BEYOND BUSINESS AND USE CASE SCENARIOS

3.2 Investigation of socio-economic and regulatory analysis of obstacles to BEYOND innovations

Description: In this perspective, we sought feedback on the analysis of the regulatory, organizational, cultural, and socio-economic aspects that influence BEYOND's intended business scenarios arising from the analysis of relevant issues at European level, the in-depth literature review and interview sessions and questionnaires with experts and qualified stakeholders. We also paid close attention to obtaining feedback on the social and economic barriers associated with the development and use of artificial intelligence and digital big data platforms such as BEYOND's. Our activities were aimed at business stakeholders as data users and the range of business stakeholders has been correlated with the Use Cases previously identified in T2.1.

Work package &Tasks involved: WP2, T2.2

Timeline: M3-12

3.4 Validation of architecture

Description: As far the BEYOND architecture, we sought feedback on the basic functionalities of the BEYOND platform and its overall architecture, as well as on the applications' workflows. We also sought feedback on the applications' functional and non-functional requirements. The internal living labs activities were specifically aimed at business stakeholders as data users and the range of business stakeholders according to the Use Cases identified in T2.1.

Work package &Tasks involved: WP2, T2.5

Timeline: M10-12

Areas of Interest:

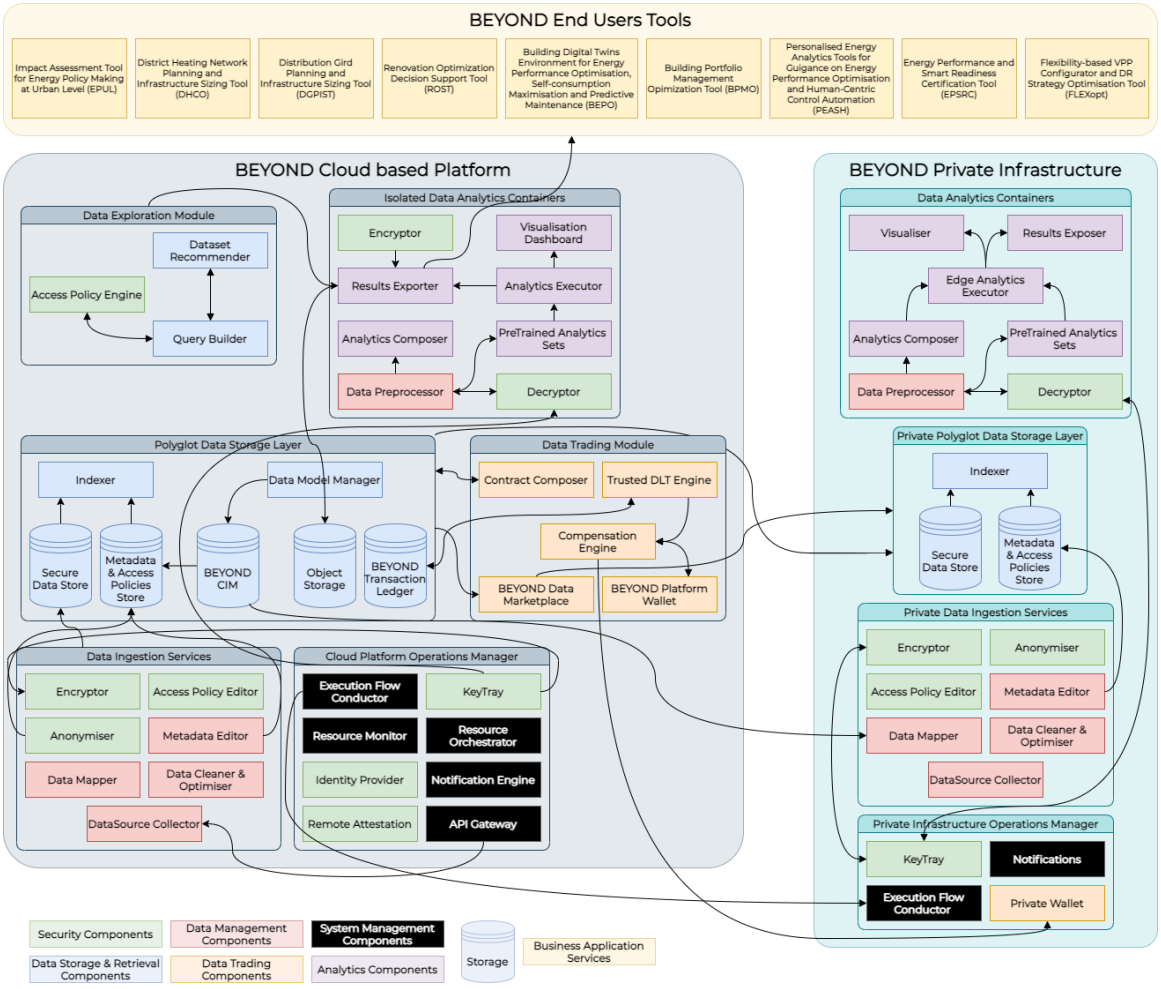


FIGURE 2 BEYOND CONCEPTUAL ARCHITECTURE

3.5 Validation of novel data-sharing based business models

Description: In this part of the living labs activities, we looked for input from energy market stakeholders to understand the economies around energy data services to be created and get insights towards the transition to a data-driven smart building and smart energy system era, resulting to more effective business processes and operations for all the actors that will be part of this change. In all internal and external sessions, a detailed overview of the business models was given starting with the presentation of the methodology selected for the analysis of the business models. Each business model (a) Residential Demand Response, (b) Energy-as-a-Service for Retailers, (c) De-risked and highly efficient data (intelligence)-driven Energy Performance Contracting, (d) Urban data brokering, and finally (e) Data-enabled differentiation for network operators.) was presented in detail alongside with the respective data, service, and monetary flows, and most importantly the value proposition for the main beneficiaries. Each presentation was followed by a discussion session for feedback provision and elaboration on selected business model aspects.

Tasks: involved: WP8, T8.3

Timeline: M5-12

Areas of Interest:

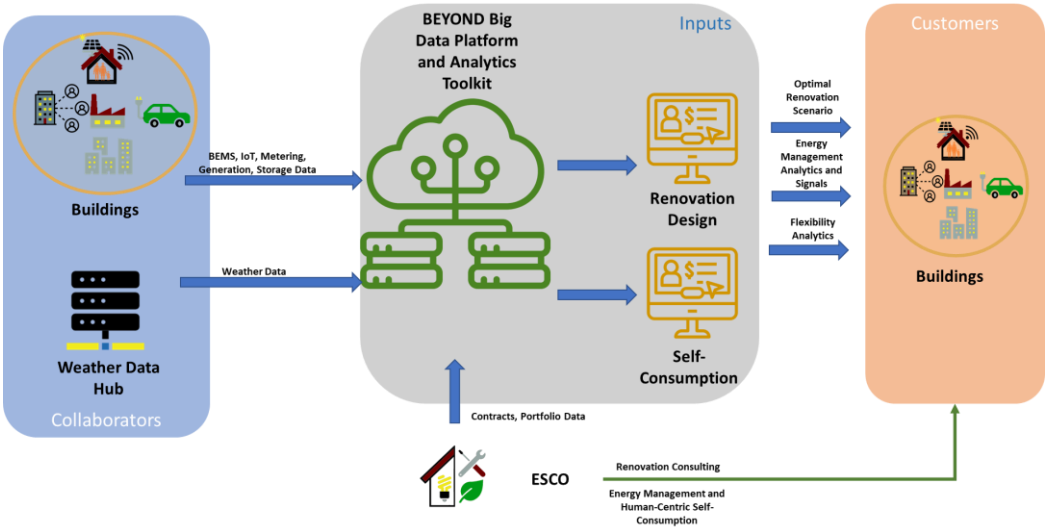


FIGURE 3 DE-RISKED EPC – BUSINESS MODEL MONETARY FLOWS

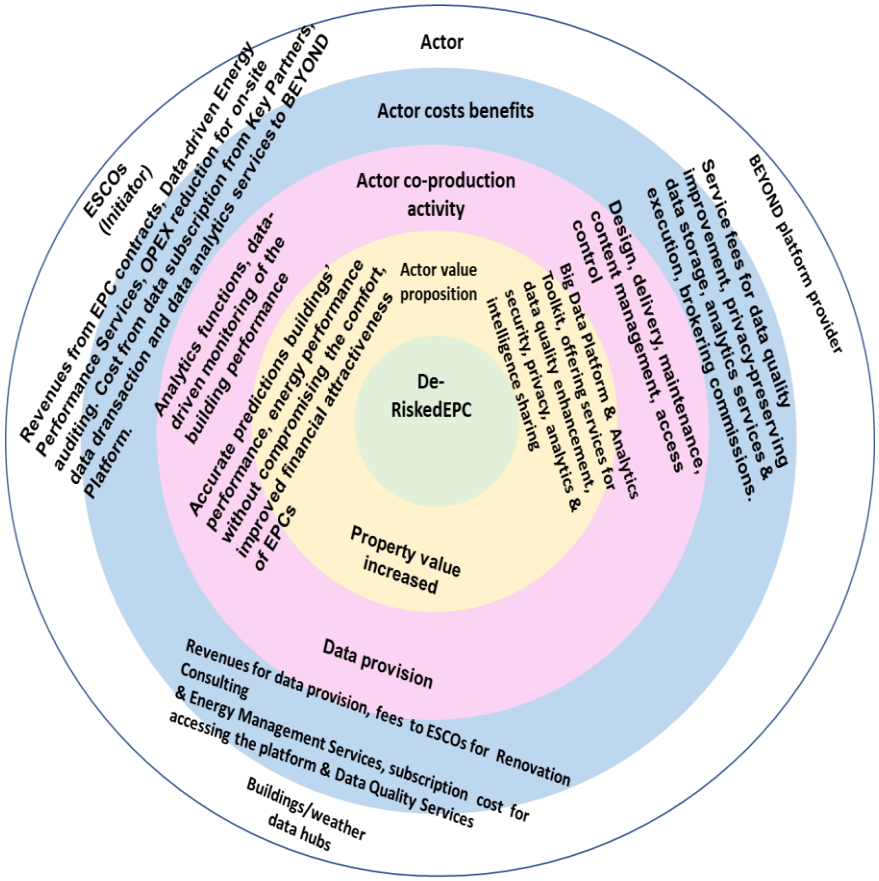


FIGURE 4 DE-RISKED EPC SERVICES - DOMINANT BUSINESS MODEL RADAR

3.6 Internal Living Labs activities

Targeted Profiles: Operations, planning, strategy, and regulatory personnel

Local authorities: FVH

ESCOs: IGM (Greece), Mytilineos (Greece), URBENER (Spain)

Building and facility Management: FVH (Finland), IGM (Greece)

Retailer: Mytilineos (Greece), CUERVA (Spain), BEOELEK (Spain)

Aggregator: URBENER (Spain)

Network Operators: CUERVA, (Spain), BEOELEK (Serbia)

Results:

Requirements, scenarios' identification, and architecture design definition: Validation took place between May-November 2021, in several workshops initially focusing on the internal validation of use cases and requirements, and progressively touching on architecture design issues and aspects. BEYOND's and business and technical partners contributed both with the extraction and feedback of the business scenarios and requirements as well as of conceptual framework of each Use Case. This was performed through several internal online workshops took place among them as well as through collaborative online tools available in the BEYOND online shared workspace.

Barriers' identification: In the context of the barriers identification that could prevent or slow down the BEYOND innovations for energy services, policies, and business models we ran targeted interviews with the five demo project partners with participation in the task, with representatives from each business actor role. The interviews with all the participants took place in last days of March 2021 with the objective to analyze regulatory, organizational, cultural, and socioeconomic aspects affecting BEYOND's intended business scenarios according to the usage partner institutions make of the data and the role/s played in the building and energy value chains. The details and the specifics of this activity can be found in the D2.3.

Business models: During the internal workshop took place on May 14 2021, a detailed overview of the business models was given starting with the presentation of the methodology selected for the analysis of the business models. Following a discussion on the reasons that the Value Network Analysis methodology was selected, each business model was presented in detail alongside with the respective data, service, and monetary flows, and most importantly the value proposition for the main beneficiaries. Each presentation was followed by a discussion session for feedback provision on several aspects of the business model. The key finding can be found on D8.14.

3.7 External Living Labs activities

Targeted Profiles: Operations, planning, strategy, and regulatory personnel

3.7.1 ZEB (ESCO in Greece)

This first session took place on July 7th, 2021, by using on an online meeting platform. During the presentation of, relevant to ESCOs, Use Cases, Requirements, Architecture artefacts, Barriers and Business Models an open discussion took place.

The ESCO highlighted the importance of data collection from a variety of building data sources and through different methods, as well the value that data analytics can bring into their business. Subsequently, they stressed the need for effective data management, underlining that BEYOND seems to fit well their expectations. Moreover, they highlighted that data sharing could be something interesting for them, though at the moment it seems that it could be difficult to realize relevant monetary benefits within the industry.

Finally, they brought forward the need for tools for de-risking investments in ESCO projects (renovation, etc.) and solutions for real-time energy performance optimization (as back-end intelligence service), while positioning SRI certification services at a less priority, due to the lack of a mature business framework around it.

Some additional points derived from the discussion are presented below. This feedback was also fed to the respective WPs and Tasks.

- According to EU guidelines, a typical ESCO enters a project, implements the renovation plan, and ensures the project's cash flow. In addition, it has full ownership of the risks and must undertake the complete management of the project life cycle.
- No significant data privacy barriers are met in the projects the company is involved. Energy data are not considered personal data and do not fall within the scope of the GDPR. Data ownership exists in the person who produces it. In the case of a company that produces data (and employs several people), that data is an asset owned by the company. The company should discuss/agree with employees on how this data can be handled or utilized.
- An ESCO is highly interested in receiving and analyzing data related to the building space. There is a risk that the expected goals will not be met if the customer of an ESCO cuts relevant data. In this sense, data contracts may safeguard the completeness of data required for the execution of advanced analytics and services.
- To date, there are no ESCOs residential projects globally. They may exist in the near future at a city, urban or municipal level. The market focuses on tertiary and industry sectors. However, there is a trend for residential ESCO projects at a research level, which in terms of energy consumption is similar to the above sectors.
- Smart readiness is an interesting factor, in the context of an ESCO, but needs further elaboration to standardize and mainstream its calculation routines and certification schemes.

- For ESCOs, there are different types of data (for example monthly, energy pricing data, average voltage, gas data, metering data measuring different parameters, BMS data). Different methods need to be utilized in order to be able to collect these data either as static ones or as real-time streams.
- Is not possible to share our solutions or tools with an intermediary (unless there is a contract). However, it is possible to share data or information generated through the analysis of this data.
- Measuring and verifying on a platform can bring both negative and positive aspects to an energy performance contract. It can build trust in the customer, but on the other hand, there is the question of whether it can be reproduced.
- We (ZEB) use deep learning algorithms for faults detection. However, fault detection is a different thing from increasing profits, instantly checking what changes in the building, and having a formula in a contract to follow the international guidelines to estimate what our energy savings will be. The basic guidelines are three (ISO, IPMVP, and ASHRAE-14). Inevitably, the contract and the energy savings result from these baseline KPIs. Beyond this, if we could have tools to check the real-time performance would be useful, even though it can't (at the moment) affect the performance of ESCO contracts.
- ESCO contracts -according to the baselines- refer to time intervals where if they are operationally used for energy savings there is a risk of losing those savings if something goes wrong during that period. ESCOs need alarms of various kinds (both deep learning and static) to control what happens during a day. So, if there is such a product it would be useful.
- We (ZEB) are not negative to trade our insights resulted from the data analysis, as derivative data. This can happen if we are compensated, and we are contractually compatible.
- Such a platform with the services (data aggregation/management in general) provided in shorter periods of time could be very important and useful from a market point of view, as it can reduce costs.
- De-risking is very important for an ESCO but at the same time is characterized by relativity and requires a lot of treatment. ESCOs own all the risks on the final contract for the moment they sign it. As a result, such a platform solves problems and reduces costs to the extent that it expresses some operational parameters.

3.7.2 GEODE (DSO European association)

This interview took place on September 14th, 2021, in the form of a virtual meeting. During and after the presentation of relevant to above project results an open discussion took place. Some of the key points derived from the discussion are presented below. In summary, GEODE's reaction to the BEYOND developments were really positive, since the need for Big Data Platforms and Analytics tool is emerging for DSOs that are in need of detailed data across all edges of the energy system to ensure system resilience and effective operation. The interoperability provisions of BEYOND were, also, really welcome, since they address and long-standing barrier of the energy system with the existence of various standards and no real harmonization framework between them. This feedback was also fed to the respective WPs and Tasks.

- Energy and data digitization is something that is daily discussed by the DSOs as is it something of high importance for them. The clean energy package sets new rules for DSOs to become more active in the energy sector and as such undertake a bunch of roles to fulfill. Thus, digitization is considered a key enabler for these new roles among them.
- DSOs need more granular and detailed data from their networks. In this sense, big data platforms and access to data coming from buildings (non-reachable yet) are of high relevance and importance.
- One of the key challenges for European DSOs is their diversity as there are more than 2500 of them. A big part of these organizations is small DSOs with discrepancies between small and big companies.
- The barriers presented are highly relevant to what they hear from their members. However, difficulties differ from one DSO to another. The lack of human capacity and the complexity of data sharing, and interoperability is definitely something real and makes sense that primarily impedes smaller DSOs than large ones. This also applies with regards to cultural barriers as the perception differs between DSOs as well as the different European Member States.
- Another barrier that could slow down, but not ultimately prevent, digitization is data format and interoperability between organizations and companies
- GDPR is not the only regulation that can dictate the management of energy-related data privacy-wise. Other EU regulations and legislation must be taken into consideration too so as to enable the smoother transition to digitization.

3.7.3 City of Helsinki (City authority in Finland)

This third session took place on October 4th, 2021 in the form of a virtual meeting. In summary, the discussion revealed the need of city authorities for effective and effortless big data management, through the ability to collect and process different types of data for optimizing coming from buildings and other city-wide assets. Data sharing was also pinpointed as a very interesting aspect for urban planning optimization, towards opening up data silos under novel business models and remuneration (tax relief schemes) presented by BEYOND. Below are presented the main key points resulted from that session and were fed to the respective WPs and Task.

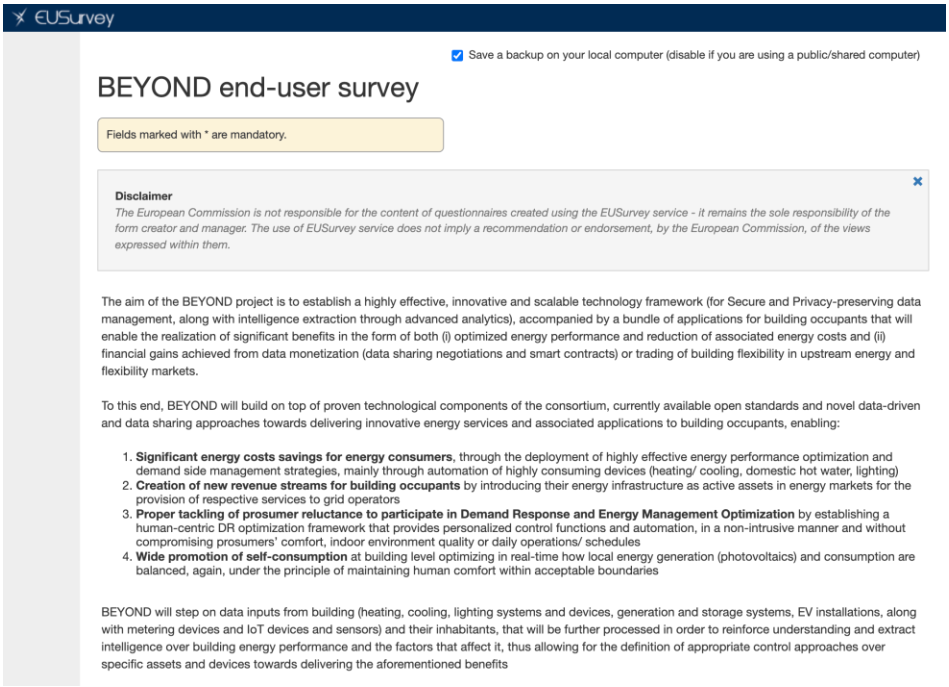
- Urban development is as such a big and complex topic. Barriers preventing the adoption of new use cases are important and should be looked after.
- Public buildings producing open energy consumption data. City authorities are facing difficulties acquiring data from buildings due to having such a big stock. Besides, there are also data silos where several actors are involved. Overall, city authorities differentiate for companies in the sense that there is no reluctance in sharing their data with others.
- There are discussions with ESCOs of what building related data they need in order to offer their services. Cities they have their own plans in relation to SECAP and how to achieve climate neutrality and the monitoring the implementation of the interventions.
- Another inconveniency that city authorities are facing when deciding for energy sustainability projects is how to set the right targets for buildings. It's problematic to say for example that the heating consumption should be 10% less in five years due to the fact that every building is unique and has different parameters that should be taken into account. The goal for each building should be set based on what its energy potential is. In the same context, City of Helsinki doesn't receive a lot of data form older building. Newer ones provide a lot of data while a large portion of the building stock they don't send data nor have a centralized system.
- City authorities could be further motivated to share (or even enrich their data) if there is some kind of compensation.
- In order to use such a platform as well as the tools provided a city authority would need a detailed analysis of what they are getting and buying. Public procurement has its own rules and procedures while urban planning is complicated and has many interrelated aspects. In that sense, a city authority is expected to require a Cost Benefit Analysis

so as to be convinced to use a platform and tool like the one of BEYOND and get enough value for the cost.

- City of Helsinki has some costs for energy related data, but these are constrained to infrastructure cost and more specifically costs related to hosting and maintenance of building automation data. However, there are costs for data transactions.

3.8 End-User survey:

A very important part of the value co-creation was the definition of the end-user requirements. Through this activity we requested special feedback which was acquired through a questionnaire circulated to a contact list from partners clientele. The questionnaire included various questions concerning personal anonymous information that helped to shape the profile of the audience and questions focusing on the end-users' demand for monitoring energy consumption and KPIs, their preference on the most suitable way to approach and interact with the project proposed services. The analysis of the survey results (overall 83 end-users participated in the survey) provided useful feedback for the end-user requirements, but also for the socio-economic analysis performed. As a tangible result of this questionnaire, a list of 38 user requirements was extracted. A detailed report on the survey's results is presented in the D2.1.


EUSurvey

Save a backup on your local computer (disable if you are using a public/shared computer)

BEYOND end-user survey

Fields marked with * are mandatory.

Disclaimer

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The aim of the BEYOND project is to establish a highly effective, innovative and scalable technology framework (for Secure and Privacy-preserving data management, along with intelligence extraction through advanced analytics), accompanied by a bundle of applications for building occupants that will enable the realization of significant benefits in the form of both (i) optimized energy performance and reduction of associated energy costs and (ii) financial gains achieved from data monetization (data sharing negotiations and smart contracts) or trading of building flexibility in upstream energy and flexibility markets.

To this end, BEYOND will build on top of proven technological components of the consortium, currently available open standards and novel data-driven and data sharing approaches towards delivering innovative energy services and associated applications to building occupants, enabling:

1. **Significant energy costs savings for energy consumers**, through the deployment of highly effective energy performance optimization and demand side management strategies, mainly through automation of highly consuming devices (heating/ cooling, domestic hot water, lighting)
2. **Creation of new revenue streams for building occupants** by introducing their energy infrastructure as active assets in energy markets for the provision of respective services to grid operators
3. **Proper tackling of prosumer reluctance to participate in Demand Response and Energy Management Optimization** by establishing a human-centric DR optimization framework that provides personalized control functions and automation, in a non-intrusive manner and without compromising prosumers' comfort, indoor environment quality or daily operations/ schedules
4. **Wide promotion of self-consumption** at building level optimizing in real-time how local energy generation (photovoltaics) and consumption are balanced, again, under the principle of maintaining human comfort within acceptable boundaries

BEYOND will step on data inputs from building (heating, cooling, lighting systems and devices, generation and storage systems, EV installations, along with metering devices and IoT devices and sensors) and their inhabitants, that will be further processed in order to reinforce understanding and extract intelligence over building energy performance and the factors that affect it, thus allowing for the definition of appropriate control approaches over specific assets and devices towards delivering the aforementioned benefits

FIGURE 5 BEYOND END-USERS' REQUIREMENTS QUESTIONNAIRE

4. Limitations and activities' evaluation

4.1 Limitations

During these first 12 months of BEYOND Living Labs there were some delays in relation to the initial scheduling. This was due to factors related to external and internal factors.

In terms of the internal challenges that have influenced the progress of Living Labs the COVID pandemic has created barriers to optimal contact, meeting, and collaboration with external stakeholders. External to the project, we recorded lower interactions than expected. This can be explained based on difficulties we have to address on recruiting in external stakeholders and experts notwithstanding the number of BEYOND partners and their leading positions in the European energy market. This risk was identified early in the project life, and we tried to address it by targeted actions such as the redaction of an invitation and circulation to BEYOND community and other promotional material so as to make the how's and why's of both the project and the living labs more comprehensible. Some side reason for this deficiency were the following:

- Availability barriers (especially during the summer period)
- Difficulty to find certain types (e.g., aggregators) or functions (data, ethics, or technology experts) of targeted stakeholders
- COVID pandemic

At this point we have identified several categories of interest to the BEYOND project as they were identified in the stakeholders' list in the D8.1. In total we identified 96 individuals that have participated or are willing to participate to BEYOND living lab activities. Accordingly, we report the following categories:

TABLE 1 BEYOND LIVING LAB EXTERNAL PARTICIPANTS

Type	Role
ESCO	Mechanical Engineer, Energy Auditor (1)
Building Energy Services Provider	Project Manager (2)
Technology Providers	Project Manager (3)
Network Providers	Policy and Strategy Expert (1)

City authority	Leading energy expert, Development engineer, Technical facility manager, Project Director (4)
Retailer	Project Manager (2)
End-users	Building tenants (83)

Based on the table provided above, it's obvious that we need more groups in our current list of contacts. To close this gap among the current number of groups involved and our goal that was set in D8.1, BEYOND partnership adopted the following corrective actions:

- Attract stakeholders through our presence on events like conferences and workshop
- Attract stakeholders through a communication campaign using various tools such as social media, newsletters etc.
- Capitalize on synergies established with other EU projects that could benefit from an exchange of expertise and lessons learnt
- Further search for willing to participate experts from partners' contacts within their own networks.
- Promotion of benefits that can be realized through the participation in BEYOND's community.

4.2 Evaluation

The following table provides a summary of the completed and ongoing living lab activities that were planned for the first year of the project. Through this table is evident that for some of the engagements (for reasons explained earlier in the document) were not completely accomplished according to the timeframe and they are still ongoing. This has to do specifically with regards to the validation of results from the external stakeholders' side. To cover the lost ground, we already apply a plan to reinforce the contacts recruiting activities are, so as to carry them out during the next months of the project. The following subsection will first provide an explanation for these deviations and then provide strategies for improving the LL process.

TABLE 2 BEYOND LIVING LABS ACTIVITIES VALUATION - YEAR 1

Living Lab Activtiy	Timeframe	Stakeholders engagement	Internal validation	External validation

Validation of business scenarios, Use Cases, Requitrements & PMV	M3-M7	Ongoing	**Completed**	Ongoing
Investigation of barriers	M3-M7	Ongoing	**Completed**	Ongoing
Validation of architecture	M10-M12	Ongoing	**Completed**	Ongoing
Business model validation	M3-M7	Ongoing	**Completed**	Ongoing
B2C Labs	M10-M11	Ongoing	**Not yet started – to be commenced in the next period once engagement of pilot stakeholders has been completed**	Not yet started – To be commenced once the end-user apps (referring to building occupants) have reached a certain development maturity level
Pilot auditing	M08-M12	Ongoing	**Completed**	**n/a**

5. Second year planned activities

The following table presents an overview of the planned Living Lab activities to be implemented during the second third of the project, following a bottom-up analysis. These tasks will be performed by the technical and business partners involved in the implementation of the BEYOND project so as to obtain the feedback is needed at the most appropriate timeframe. However, based on the lessons learnt, on element that we want to import in Living labs is flexibility. The defined timeframe will be adjusted based on to project needs, progress and feedback received without lowering the KPIs that we set in the D8.1. In order to closer monitor the activities, the BEYOND project and the technical coordinator, as well as the Work Package and Task leaders will participate in monthly call organized by the LL leader to supervise all related activities.

TABLE 3 BEYOND LIVING LAB PLANNED ACTIVITIES - YEAR 2

WP & Task #	Scope of validation	Profile	Type of engagement	Timeframe
WP2, T2.1	Validation of End-user & Business requirements analysis ii	Operations Personnel, Data Management Personnel Data scientists, legal	Internal & external	M18-M22
WP2, T2.5	Validation of architecture II	Operations Personnel, Data Management Personnel Data scientists / analysts	Internal & external	M20-M24
WP3,	Validation of BEYOND Integrated platform & services I	Operations Personnel, Data Management Personnel Data scientists / analysts	Internal & external	M18-M24
WP4	Validation of data analytics, sharing & matchmaking services & validation of their compliance with business models	Data Management Personnel Data scientists / analysts	Internal & external	M16-M20

WP5, WP6	Validation of AI Analytics-based services and applications	Operations Personnel, Data Management Personnel Data scientists / analysts	Internal & external	M18 - M22
WP3, 4,5,6	Feedback on the features provided by the first release of the platform and UX.	Business development, Operations personnel	Internal	M20 - M24

6. Conclusions

BEYOND Living Lab's first-year activities included both internal and external stakeholder interactions that have resulted in practical feedback that has been incorporated into the BEYOND solution. A significant part of these interactions has provided insight for developing end-user and business requirements, socioeconomic and organizational obstacles, BEYOND Architectural design as well as the design of data-driven business models. As all Living Labs are unique, there isn't a formula for Living Lab success. By taking advantage of the inefficiencies observed we selected a bundle of actions refining the initially defined procedures that will allow us to achieve our goals. As a vehicle to attract a larger audience willing to engage in Living Labs, we will integrate the Living labs with dissemination activities aimed at building a vocal and active BEYOND community. As far the later version of this deliverable at M24 will provide a summary of activities focusing on the next phase (BEYOND big data platform, common information model, analytics, and data sharing mechanisms, as well as applications functionality and usability), put on account the status of BEYOND stakeholders' engagements, and assess both qualitative and quantitative the fulfillment of the Living Labs KPIs within the timeframe set in this document.

7. References

D2.1 – End-user & Business requirements analysis for big data-driven innovative energy services &ecosystems – A

D2.3 – Socio-economic and regulatory analysis of obstacles to innovation

D2.6 - BEYOND Framework Architecture including functional, technical and communication specifications – A

D8.1 - BEYOND Living Lab Activities Plan and Evaluation Report - A

D8.14 - Definition of novel data-driven Business Models for the Buildings and Energy domains