Personal Energy Administration Kiosk application:
An ICT-ecosystem for Energy Savings
Through Behavioral Change, Flexible Tariffs and Fun
Grant Agreement No 695945

Deliverable D.6.3

Business model development

Document control information			
Title	D 6.3 Business Model Development		
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Dissemination Level	☐ **CO** Confidential, only for members of the consortium (including the Commission Services)		
	☐ **RE** Restricted to a group specified by the consortium (including the Commission Services)		
	☐ **PP** Restricted to other programme participants (including the Commission Services)		
	☒ **PU** Public		
Reviewers	☐ Baskent-Elek	☒ Ijsfontein	
	☐ DTU	☒ RTDS	
	☐ EI-JKU	☒ Tecnalia	
	☐ ELDER	☒ 220 Energia	
	☒ ENAMO	☐ All	
	☒ GreenPocket		
Status	☐ Draft		
	☐ WP Manager accepted		
	☒ Co-ordinator accepted		
Action requested	☐ to be revised / edited by Partners		
	☐ to be reviewed by applicable Partners		
	☐ for approval of the WP Manager (EB)		
	☒ for approval of the Project Coordinator		
Requested deadline for Action	31.10.2017		

1. INTRODUCTION

This deliverable aims to describe the methodology for the business model development in WP6 as well as the first outlook of the overall business model for the exploitation of project results. The development of the overall business model started in the first period and will continue under development during the second period. The business model might suffer changes considering the on-going field test (WP3) and the outcomes of the market uptake and privacy & regulatory framework (WP5). The conclusion of both WPs might affect not only PEAKapp Ecosystem but also the value propositions and the revenue streams planned in business model.

The overall business model of the PEAKapp ecosystem was sketched following the method for business model generation of Alexander Osterwalder (2010). However, this method has been adapted according to the specific situation of the PEAKapp project. This deliverable summarizes the inputs provided by the project partners during a workshop using the business model canvas at the consortium meeting in Amsterdam 3rd – 4th July 2017.

This deliverable also includes objectives and the activity plan for the second half of the project in terms of business opportunity development and exploitation planning. The second half of the project is the most important period in terms of exploitation planning considering the evaluation of the project technical resources generated in the project (PEAKapp ecosystem: PEAKapp, serious game, smart meters data).

2. BUSINESS MODEL DEVELOPMENT (EXPLOITATION STRATEGY)

One of the main objectives of WP6 is to *define and validate the PEAKapp business model in consideration of the full value chain and regulatory framework which will result in "Ready to sign" agreements between commercial beneficiaries.* However, the development of business models under the EU research and innovation collaboration might be different from those built for a single company.

In fact, the PEAKapp consortium is comprises partners with different profiles (e.g. SMEs, RTOs, universities, utilities and energy retailers) in order to enhance the innovation capacity in the project. Therefore, the individual exploitation interests of the partners will also vary among them.

The maximization of the project impact refers to the widespread roll-out of the project results through dissemination and exploitation activities post-project. However, the profile of each partner and their expansion capacity be limited to a particular customer segment, territory and pre-stablished commercialization agreements.

The overall business model gathers exploitation interests and capabilities in order to explore the strategies to facilitate the market uptake and to ensure the further use of the results (e.g. in research and innovation activities) after the project ends. This, taking also in consideration the need to comply with the obligation to exploit the results established in article 28.1 of the Grant Agreement.

28.1 Obligation to exploit the results

"Each beneficiary must — up to four years after the period set out in Article 3 — take measures aiming to ensure 'exploitation' of its results (either directly or indirectly, in particular through transfer or, licensing; see Article 30) by:

(a) Using them in further research activities (outside the action);

(b) Developing, creating or marketing a product or process;

(c) Creating and providing a service, or

(d) Using them in standardization activities".

In this sense, the content of the exploitation workshops planned in the DEC plan (T6.1 Set up and update DEC Plan) has been progressively structured according to the results of other work packages. In order to stimulate the discussions for the development of exploitation strategies. The discussions address topics such as the maturity of the technological results, ownership clarification, IP protection strategy, access rights for dissemination and further research, roll-out/market uptake and regulatory conditions. The preparatory work to address each of the aforementioned topics is developed in WP5 and WP6.

As expected, the conclusion of activities and discussions held under WP5 (T5.3) and WP6 (T6.4) will contribute to elaborate the exploitation agreement (Ready-to-sign) between the commercial partners. The terms and condition of such agreements should be also taken into consideration in post-project negotiations with external stakeholders.

Considering the competitive advantage of the PEAKapp ecosystem and its commercialization potential, the exploitation strategy has been sketched (preliminarily) in a business model canvas during the exploitation workshop presented at the last consortium meeting in Amsterdam the 4th July 2017. The business model generation procedure (Osterwalder & Pigneur 2010) has been adapted according to the project implementation of the project tasks.

Therefore, the aforementioned canvas for the overall business model still under development and its conclusions might be subject to modifications as a working document until the end of the project. The final business model will be described in the Deliverable D6.6 Ready-to-sign agreements and business/market launch plans due in M36.

The ready-to-sign agreements shall be based on a clear understanding of the potential business opportunities and the detailed market and regulatory conditions for each project result. The business model will delineate the path to enhance the value of each project result. There are several stages of the business model development:

a) **Business model canvas** as a preliminary step to identify the requirements of a profitable business and to merge the exploitation interests from all the members of the consortium under a common strategy.
b) **Business case development** in order to assess the viability of the business model with the calculation of cost and revenues as well as the estimation of profitable potential based on financial scenarios.
c) **Field-test** in order to investigate the customer acceptance and feasibility of the value propositions, channels, pricing mechanism (PEAKapp tool kit).

IP Intelligence

Understanding of the potential business opportunities also entails the permanent update of the innovation scenarios and competing technologies. Currently, there are around 1 billion smartphones from which people download around 179 billion of apps per year[1]. There are also at least 20 apps dedicated to energy cost calculators and energy management apps.[2] Therefore, The developers of such products might also improve and innovate their systems in order to reduce the investment and installation cost at the consumer side, undermining the competitive advantage of the PEAKapp ecosystem.

Furthermore, in the last years energy management apps, related products and services have been released by utility companies, energy retailers and other industries in the energy sectors as a customer retention tool considering the increment in the number of new energy retailers caused by the de-regulation of the European

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[1] https://www.appfutura.com/blog/7-trends-that-define-the-future-of-mobile-app-development/

[2] https://smallbiztrends.com/2017/08/mobile-apps-to-help-you-reduce-energy-costs.html

energy market. However, for this reason retailing companies are actively looking for opportunities to increase their competitiveness through offering new services to their customers.

IP intelligence is a WP6 cluster of activities that comprises the monitoring of competing products and services, intellectual property rights such as patents and trademark registrations as well as market and research trends in order to identify innovation requirements, industry players, stakeholders and key competing products and services. The IP intelligence activities will be more active in the second period of the project requiring the participation of all the consortium members.

IP intelligence activities began during the proposal stage by checking the state-of-the-art technology and the required background from the partners. The Deliverable D1.1. (Report on findings of the multidisciplinary meta study of success indicators), *collects the experience and knowledge of tools/products which influence energy consumption behavior as well as lifestyle choices and products outside of the "energy world"*. The D1.2 contains the list of functionalities that might contribute to a better acceptance of the PEAKapp ecosystem taking into consideration the findings described in D1.1.

IP Intelligence activities will contribute to identify use cases across advanced analytics, intelligent processes and new user experiences, as one of aspect to be discussed for the development of the business model and to support the evaluation of potential uses of project in further research and innovation initiatives.

Finally, the conclusion of the IP intelligence will support the commercial partners with corresponding IPR clearance (Freedom to operate) and opportunity searches in order to evaluate the protection of the commercial or industrial application of the project results according to the business model.

3. BUSINESS MODEL CANVAS – OVERALL PEAKAPP ECOSYSTEM BUSINESS MODEL

At the consortium meeting held 3rd and 4th of July in Amsterdam, all members of the consortium sketched the overall business model for PEAKapp. At this meeting, RTDS explained the key aspects of the business model generation and the instructions to fill the business model canvas using examples of successful ICT based business (e.g. Google and Facebook). The results of the three hour session resulted in following the business canvas.
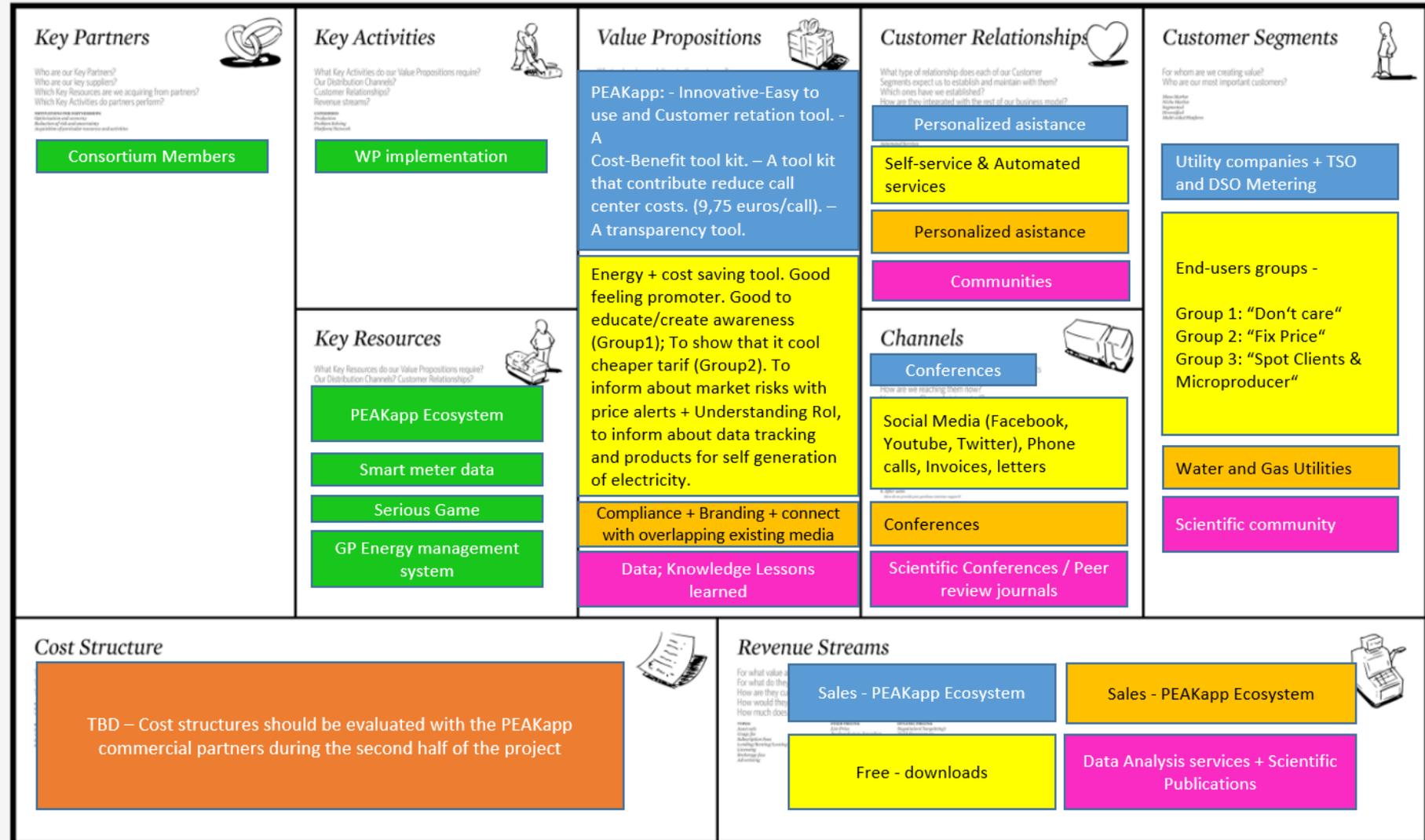
The Business Model Canvas

Designed for:	Designed by:	On:
PEAKapp	**PEAKapp Consortium**	Iteration:

Key Partners
Who are our Key Partners?
Who are our key suppliers?
Which Key Resources are we acquiring from partners?
Which Key Activities do partners perform?

- Consortium Members

Key Activities
What Key Activities do our Value Propositions require?
Our Distribution Channels?
Customer Relationships?
Revenue streams?

- WP implementation

Key Resources
What Key Resources do our Value Propositions require?
Our Distribution Channels? Customer Relationships?

- PEAKapp Ecosystem
- Smart meter data
- Serious Game
- GP Energy management system

Value Propositions
- PEAKapp: - Innovative-Easy to use and Customer retation tool. - A Cost-Benefit tool kit. – A tool kit that contribute reduce call center costs. (9,75 euros/call). – A transparency tool.
- Energy + cost saving tool. Good feeling promoter. Good to educate/create awareness (Group1); To show that it cool cheaper tarif (Group2). To inform about market risks with price alerts + Understanding RoI, to inform about data tracking and products for self generation of electricity.
- Compliance + Branding + connect with overlapping existing media
- Data; Knowledge Lessons learned

Customer Relationships
What type of relationship does each of our Customer Segments expect us to establish and maintain with them?
Which ones have we established?
How are they integrated with the rest of our business model?

- Personalized asistance
- Self-service & Automated services
- Personalized asistance
- Communities

Channels
- Conferences
- Social Media (Facebook, Youtube, Twitter), Phone calls, Invoices, letters
- Conferences
- Scientific Conferences / Peer review journals

Customer Segments
For whom are we creating value?
Who are our most important customers?

- Utility companies + TSO and DSO Metering
- End-users groups -

  Group 1: "Don't care"
  Group 2: "Fix Price"
  Group 3: "Spot Clients & Microproducer"
- Water and Gas Utilities
- Scientific community

Cost Structure
- TBD – Cost structures should be evaluated with the PEAKapp commercial partners during the second half of the project

Revenue Streams
- Sales - PEAKapp Ecosystem
- Sales - PEAKapp Ecosystem
- Free - downloads
- Data Analysis services + Scientific Publications

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4. KEY PARTNERSHIPS

This section of the canvas refers to the basic requirements of the overall business model. This has already been defined in advance as part of the organizational structure of the PEAKapp project. The key partners were described in the proposal stage and legally bonded under the Consortium Agreement. According to the Consortium Agreement, post-project exploitation agreement should be based on fair and reasonable conditions.

9.4 Access Rights for Exploitation

9.4.1 Access Rights to Results if needed for Exploitation of a Party's own Results shall be granted on Fair and Reasonable conditions.

Access Rights to Results for internal research activities shall be granted on a royalty-free basis.

9.4.2 Access Rights to Background if Needed for Exploitation of a Party's own Results, including for research on behalf of a third party, shall be granted on Fair and Reasonable conditions.

9.4.3 A request for Access Rights may be made up to twelve months after the end of the Project or, in the case of Section 9.7.2.1.2, after the termination of the requesting Party's participation in the Project.

Taking into consideration the existing partnerships, activities and resources in the project

At the kick-off meeting, GreenPocket and Ijsfontein discussed the need of co-development of the serious game system. This discussion also raised the need to clarify the terms about allocation of ownership rights according to article 8.2 of the Consortium Agreement (Joint ownership):

Two or more beneficiaries own results jointly if:

- they have jointly generated them and

- it is not possible to:

establish the respective contribution of each beneficiary, or

separate them for the purpose of applying for, obtaining or maintaining their protection

The joint owners must agree (in writing) on the allocation and terms of exercise of their joint ownership ('joint ownership agreement'), to ensure compliance with their obligations under this Agreement.

The arrangement regarding the allocation of ownership rights is explained later in this document.

Other post-project key partnerships for exploitation plans will depend on the results of the discussions on business model development planned for the second half of the project. This, taking into account the development of the technical developments regarding the PEAKapp Ecosystem and the full value chain and regulatory framework. It is expected that the achieved partnerships to wide spread the project results which will conclude in "Ready to sign" agreements between commercial beneficiaries.

Co-development agreement between Ijsfontein and GreenPocket

The development of software solutions in collaborative projects might rises the several issues concerning ownership and exploitation rights. During the first project period, GreenPocket and Ijfontein agreed on the need to joint efforts on the following terms:

- Ijsfontein and GreenPocket will work together on the concept of the serious game.
- Target of the concept phase is to create a serious game which is fully integrated into the PEAKapp developed by GreenPocket (not a separate, self-sufficient module).
- Ijsfontein and GreenPocket will develop the serious game together, i.e. the software developers of both companies will define the interaction and integration concept including the software architecture, interfaces, especially the programming language etc. and will create the source code together.

This kind of cooperation will result in a joint ownership of the serious game. Hence, GreenPocket and Ijsfontein will both receive the final concept and the source code at the end of the PEAKapp development. Consequently, both companies will have the right to modify, enhance or use the serious game in any commercial way without a mutual commitment or claims for license costs.

The clarification of ownership rights is significantly important in order to ensure the post-project use of the PEAKapp ecosystem considering the risks of internal disputes on misappropriation of IP rights. Both companies are committed to work together and it is expected that both companies formalize the aforementioned arrangement during the second half of the project. Particularly, during the following discussions on business model development. (E.g. IP protection and market uptake strategies).

5. KEY ACTIVITIES AND KEY RESOURCES

The key activities and key resources are described in the work package descriptions. Particularly, WP2 IT-Ecosystem and software development. There are four main results in WP2 contributing to the overall business model. The backend processing unit, the customized GreenPocket front-end, the customized E220 front-end and the Ijsfontein serious game which will be integrated to the GreenPocket front-end but it could be also commercially exploited separately. Additionally, the knowledge and data collected from the field tests will contribute to the overall business model since they could be use not only in dissemination and communication activities but also to enrich the commercial offer to exploit PEAKapp ecosystem.

New activities and resources could be included in the business model during the second half of the project depending on the evolution of project results and the business opportunities foreseen by the project partners. For instance, new activities might be related to branding and communication campaigns which can also generate commercial assets such trademark (intangible assets that can be licensed).

Periodic assessments of project results will take place during the second half of the project to update the foreground list and their corresponding maturity status (Technology Readiness Level) in order to discuss their integration in the overall business model.

6. CUSTOMER SEGMENTS

The evaluation of the potential customer segments at the consortium meeting contributed to identify the following groups of stakeholders:

1. Utility (Electricity) and TSO / DSO metering companies: this is the main customer segment regarding commercial exploitation. Such companies might be interested in the use of PEAKapp in order to improve their commercial offer of the products and services for their customers. Particularly, through a) the

integration of other energy carriers and water into the ICT-to-Human ecosystem as a new service b) acquiring social housing building blocks as promising future bulk customers, and c) by having a platform for promoting their other services such as individualized energy audits or contracting for efficient appliances.

2. End users: This customer segment is divided in 3 main groups of end-users.
    a. "Don't care group": 80% of utility clients do not have any particular interest in changing their current energy service plan. However, awareness campaigns can educate this group of people in this category.
    b. "Fix price group": about 10% of utility clients have a fix price contract for energy supply. PEAKapp expected benefits could be a reason for them to switch to spot contract.
    c. "Spot clients, energy micro-producers & enthusiasts": this group comprises those clients aiming to save energy and to reduce it costs. PEAKapp will be an added value to improve the offer of the utility and retailers companies.

3. Water and gas utilities: this group might be also an interested in the PEAKapp ecosystem taking into consideration that water and gas utilities are also obliged to comply with the Europe 2020 strategy targets on climate change and energy. PEAKapp might contribute to create awareness regarding sustainability and renewal sources of energy.

4. Scientific community: Researchers can also benefit from the collected data which could be transformed into new research lines, new research collaboration opportunities and data analytics services.

7. VALUE PROPOSITIONS

At this stage of the project, the value proposition refers to the comparative analysis between the key resources developed in the projects and the expectations of potential customers/end users.

In this sense, during the business canvas exercise partners identified the following value proposition for each one of the aforementioned customer segments:

Utility and TSO - DSO metering companies: Partners considered that PEAKapp is an innovative, easy-to use and a cost-benefit toolkit that will help utility and TSO-DSO metering companies to retain customers, reduce call center costs and reinforce their SCR and PR strategies in more efficient and transparent billing processes. Utilities and metering companies will be able to offer their clients the first household ICT solution allowing to forward clean and low-priced electricity during times of high production from renewable sources, from the spot market to the household consumer in a catchy and fun way, without requiring costly in-home hardware instillations.

End users: Clients who do not care or do not understand climate change consequences and energy efficiency problems can benefit from education campaigns on such matters through PEAKapp communication channels.

Those clients that already have a "fix price" contract might found a more attractive offer with a spot contract supported by the PEAKapp ecosystem, which can represent a cheaper option in comparison to hefty margins of fixed tariff. Additionally, this end user group might also experience the feeling of doing something good by helping to fight climate change through a more efficient use of energy.

Those clients that already have a spot contract (e.g. enthusiasts and energy micro-producers), will also find in PEAKapp a source to be well informed with market insights, such as, market prices, trends, new products, and other news regarding efficient use of energy and other initiatives to fight climate change. Additionally, PEAKapp, will provide energy micro-producers with a better understanding regarding the return of the investment. (E.g.

subsidies, panel area); the possibility to trace data on radiation and news about the best solar products and other self-energy / Independent power generators.

Anyway, all these types of clients wil be able to improve their energy awareness thanks to the information provided by PEAKapp ecosystem, especially the serious game.

PEAKapp could also support <u>water and gas utilities</u> to comply with the EU 2020 targets to tackle climate change supporting awareness campaigns, involving other renewals energy providers associated to the PEAKapp ecosystem.

PEAKapp will be also able to provide <u>researchers</u> with valuable data and knowledge regarding energy consumption behavior that can be used to develop new research studies and peer review publications. Particularly, regarding the quantification of energy savings and controlling the impact of national and regional energy efficiency.

8. KEY CUSTOMER RELATIONSHIPS AND CHANNELS

The key customer relationship regarding in the commercialization of the PEAKapp ecosystem is a personal assistance. Which is basically focus on human interaction with the utility and infrastructure companies. Under this type of customer relationship, the customer would be able to communicate with a representative from GreenPocket to get help during the sales process or after the purchase is complete. This relationship will be developed through conferences, social media, call centers, via e-mail and any other means to attract and retain customers. Also, this relationship will continue through paper based channels, such as, invoices and letters.

The key customer relationship to engage with end-users will be focused on automated services (self-service), such as one stop shop. This strategy will be supported by a very dynamic activity in the social media, namely, Facebook, Twitter, YouTube and LinkedIn. The goal is to motivate and create awareness presenting a playful, committed and informative way to save energy cost and contribute to tackle climate change. This, will also help to create communities as another key customer relationship. In this sense, it is expected that utility companies, end-users and research organizations will get more involved into energy efficiency and climate change mitigation issues in order to facilitate connections between them by exchanging knowledge and help each other to solve problems on related issues.

9. REVENUE STREAMS & COST STRUCTURE

The revenue streams are another building block of the business model canvas that categorizes the means by which a company or individual generates income. The means for generating income might refer to products/services sales, usage fees, subscription fees, lending/renting/leasing, licensing, brokerage fees, advertising and even donations. However, the earnings generated by such activities must be sufficient to cover the business costs. Hence, the revenue streams should be assessed along with the cost structure of the business model.

The cost structure as another building block of the business model canvas was not analyzed during the last consortium meeting, taking into consideration the on-going field test in WP3 (Particularly, the first conclusions on T3.4). However, the cost structure will be discussed in close collaboration with D5.4 Roll-out planning toolkit and separately with GreenPocket and energy retailers during the second half of the project. Furthermore, giving that pricing mechanisms are a sensitive issue in terms of commercial exploitation, the discussions on this topic and

their conclusions will remain confidential. Nevertheless, a publishable summary will be included in the Deliverable D6.5 Draft commercialization concepts for each of the demo retail markets.

Despite the aforesaid, the project partners anticipated some of the key revenue streams for the sketching of the overall PEAKapp business model. Basically, the revenue streams refer to the commercialization of the PEAKapp ecosystem, as well as, to ensure further use of the data and knowledge generated during the project implementation. In this sense, the exploitation plans will focus on licensing/transfer agreements with utilities, energy retailers and metering companies. The content and extension of the rights licensed or transferred under such agreements are subject to negotiation between GreenPocket and E220 (Baltic app system) and their customers. In addition, the exploitation plans might refers to the co-creation of new products and sales channels, as well as, cross-selling agreements based on the profile of and interests of the parties. This revenue stream will apply also for water and gas utilities.

10. ACTIVITY PLAN ON BUSINESS MODEL DEVELOPMENT.

Activity	Time frame / Objective	Partners involved
IPR monitoring.	M23 (01/18) – To update the list of exploitable results and the corresponding TRL should.	All – Particularly partners involved in WP2 and WP3.
DEC Plan update (D6.4).	M24 (02/18) - To update list of events and plans for the exploitation of the results taking into consideration the conclusions of the IPR monitoring.	RTDS with the help of all members of the consortium.
Business model discussion (Webinar).	M27 (05/18) - To contribute with the optimization of the business model development taking into consideration the report on technical performance of the PEAKapp ecosystem D3.3. This, may suppose the modification of the business model sketched in this document.	Commercial partners (GreenPockect, E220, ljsfontein & ENAMO).
Discussion on the definition of the commercialization concepts. (Meeting/Telecon)	M30 (07/18)– to contribute with the report on commercialization concepts (D6.5 – M30). The commercialization concepts established in D6.5 will be the basis of the ready-to-sign agreements for the commercialization of the PEAKapp ecosystem.	Commercial partners (GreenPockect, E220, ljsfontein & ENAMO), RTDS, TECNALIA and EI-JKU.
Negotiation rounds -	M30 – M34 – to contact stakeholders to present the PEAKapp ecosystem and facilitate its launch in the energy supply market. This activity should take into account the roll-out toolkit Deliverable D5.4 (M31)	Commercial partners (GreenPockect, E220, ljsfontein & ENAMO), RTDS, TECNALIA and EI-JKU.
Lauch event / Post-project exploitation planning	M36 (01/19) – To elaborate the guidelines and memorandum of understanding for the post-project exploitation of the project results. In particular, partners should make an effort to define the terms and conditions for access rights to project results	All.-

	(Data, know-how, copyrights/publications, use of the PEAKapp acronym, etc), considering the (potential) commercialization agreements	