GUIDELINE CO-CREATION - COLLABORATING TO DEVELOP SMART ENERGY SOLUTIONS

Abstract

Smart energy products and services are more likely to succeed when they are directly based on user preferences and fulfilling a clear function in the everyday life of consumers. Through co-creation (future) users can be involved in the development of products and services. Integrating their creativity, their needs and expectations not only contributes to a better product, it can also pave the way for successful implementation. This guideline is based on research and practice in several S3C pilots. If you – as an energy utility or service provider – intend to involve private customers or SMEs in the development of smart energy products or services, this guideline helps you determine whether co-creation fits your needs, and supports you in preparing such a process.

What is it?

Co-creation is a way to tailor the design of smart energy products or service concepts to the needs and expectations of customers – thereby aiming to enhance the chance of achieving acceptance and adoption of these products or services[1]. Co-creation takes place in interactive workshops, focus group meetings or other events, aimed at unleashing individual creativity and sharing ideas and experiences. It requires active involvement of consumers, project managers, developers and other relevant stakeholders. By giving centre stage to future users in the design and implementation practice, you will get valuable information on how the users experience your product or service. Active participation also tends to enhance feelings of attachment and identification to a project or product, usually leading to a stronger sense of engagement. Thus, products and services that stem from a co-creation approach are more likely to succeed because their added value is more evident to the user.

---

[1] Although terms as 'co-creation', 'co-design', 'user-centered innovation' and 'citizen driven innovation' are often used without specified definitions, they all hint at the same concept, with slightly different connotations. Co-design usually emphasizes a joint effort in designing products or services, while co-creation has a broader scope, addressing stakeholder interaction in all phases in the development process. For the sake of clarity, this guideline refers to co-creation as an overarching concept.

Co-creating a community energy feedback device (Hus14: OfficeWise, SE)

SP Technical Research Institute of Sweden – one of the S3C consortium partners – established the project OfficeWise in 2010 when a new floor was planned in an existing office building. The new offices offered detailed measurements of energy use, both on individual and collective basis. As people tend to show less interest in energy at work than at home, SP wanted to develop an energy feedback system targeting office workers. First a workshop on visualization concepts was held with employees, focusing on how the employer should encourage energy efficient behaviour and what data would be interesting to display. Next, employees worked out various features for a visualization screen in a design workshop, using drawing, cutting, pasting and describing their ideas. The outcome was used to improve the feedback interface. Furthermore, an inauguration event was organized to install the ambient visualization (SuperGraph), where all office workers were invited to contribute to the chandelier by adding a personal avatar to the structure. This creative approach was highly appreciated by participants and led them to be more engaged with the project.

More information: see Boork et al., 2015.

When to use?

Co-creation can be applied in any phase of a project and/or the development of products or services: it can be used to explore and assess the needs of targeted users and to develop ideas, aspects and prototypes of user-oriented products or services in collaboration with the designated target group. Furthermore, it can be applied as a method to bring together enterprises in order to develop conceptual ideas for joint development of smart energy products or services.

If you are interested in learning more about your target group, see the guideline on Learning about target groups. In several S3C pilot projects co-creation has been

successfully applied to collect feedback from future users about products and services that are under development (see examples below). However, it is vital to continue interacting with the users throughout the whole process, in order to keep them committed.

A gaming approach to co-create energy propositions (PowerMatching City, NL)

In the PowerMatching City project, a card game was used to research opinions and attitudes of participants. The aim was to learn about users' needs and priorities and to co-develop propositions for future energy services. The framework of a game offered a safe, playful environment in which people felt free to speak honestly about their drivers and motivations. First, a workshop was organized to explore and imagine the future energy supply. Metaphors (e.g. peak hour rates at trains) were used to grasp new concepts of matching supply and demand. Working with metaphors was useful, both for the more and less technology minded participants. For each metaphor, participants were asked to reflect upon hopes, worries and solutions concerning the future energy supply. The results were narrowed down to five key drivers. Next, a card game was initiated in which the players had to choose a set of possible options for the future energy system (e.g. build a wind mill for energy production or add insulation to houses for consumption reduction) with a matching demand and supply while being constrained by a limited budget. This led to the identification of two prototypical energy services that were later implemented in this smart grid pilot: 'Together Sustainable' and 'Smart Cost Reduction'.

More information: www.powermatchingcity.nl

Dos and don'ts

- **Realize that co-creation is a means, not an end.** A collaborative design process is often fun and inspiring for all participants, but it is not the only key to a successful project. Before embarking upon a co-creation adventure, define for yourself in what way this effort should contribute to a better product or to successful implementation.
- **Arrange an experienced facilitator.** To guide participants through the process of creating, developing and testing ideas, to moderate discussion and to collect and process all input, an experienced facilitator is recommended. As for enterprises, often "time is money", the facilitator needs to be able to understand participants' needs and their working processes.
- **Allow ample room for interaction.** All participants should be able to share their views and ideas, and interactions between users, the project management and other stakeholders should be lively. This can perhaps reveal diverging goals or conflicting interests; it is up to the moderator to keep everyone committed, and to ensure that initial goals stay within reach.
- **Make it meaningful.** Potential participants often live a busy life and for many of them, energy is a low interest topic – this can be particularly true if

enterpreneurs take part. Thus, they need an incentive to participate – not necessarily a gift or financial remuneration; one can also underscore the sense of community or the fun, excitement and educational value of the process.

- **Create a safe and creative environment.** Co-creation requires a workshop setting that provides a safe haven in which participants are triggered to be open, honest and creative. As it can be difficult for people to voice their ideas, it is recommended to apply dedicated and proof-tested methods for brainstorming, prototyping, etc. To foster creativity, it can be beneficial to start off with presenting some concrete, inspiring ideas to the group.
- **Maintain engagement.** If users were involved in the development of products and projects, it is important to keep them committed: inform them how their insights will be used. People must not feel left out after the design process, their interest should be maintained to alleviate fatigue effects.
- **Never inquire with (future) users without processing their input.** Involving users but at the same time implement a plan that was initially made is more likely to result in scepticism and disengagement, than in flawless implementation.
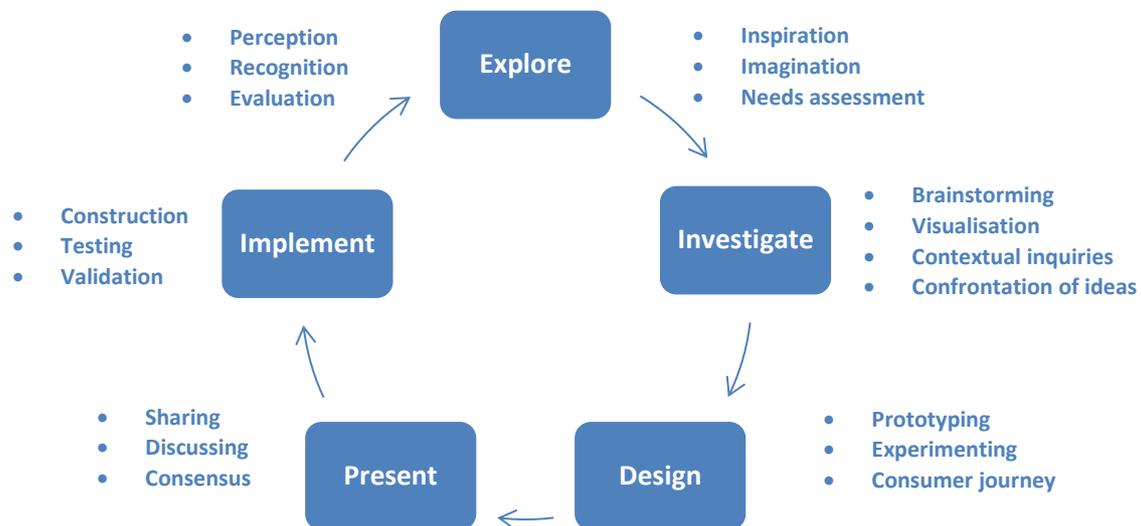
Introducing a generic co-creation model

Many different models and approaches can be applied to organise a co-creation process. However, they generally come down to (more or less) the same line of activities. Since a creative process cannot be mapped out beforehand and the content and style of a co-creation process is largely depending on the topic, the objectives and participants to be involved, this guideline presents a flexible, generic model consisting of five steps – the bullets next to each step describe possible activities that can be applied.[2]

This generic process model can be tailored towards your specific objectives and activities. As a general rule, it is recommended to organize (at least) one workshop for each step when working with private customers. For enterprises, one workshop for exploration and investigation plus one workshop for presentation of the utility's proposal and kicking off implementation seems reasonable.

---

[2] This model is loosely based on the co-design model applied in the S3C pilot project Mooi Wildeman (NL). It also draws upon the user centered innovation program from the S3C pilot InovCity (PT).
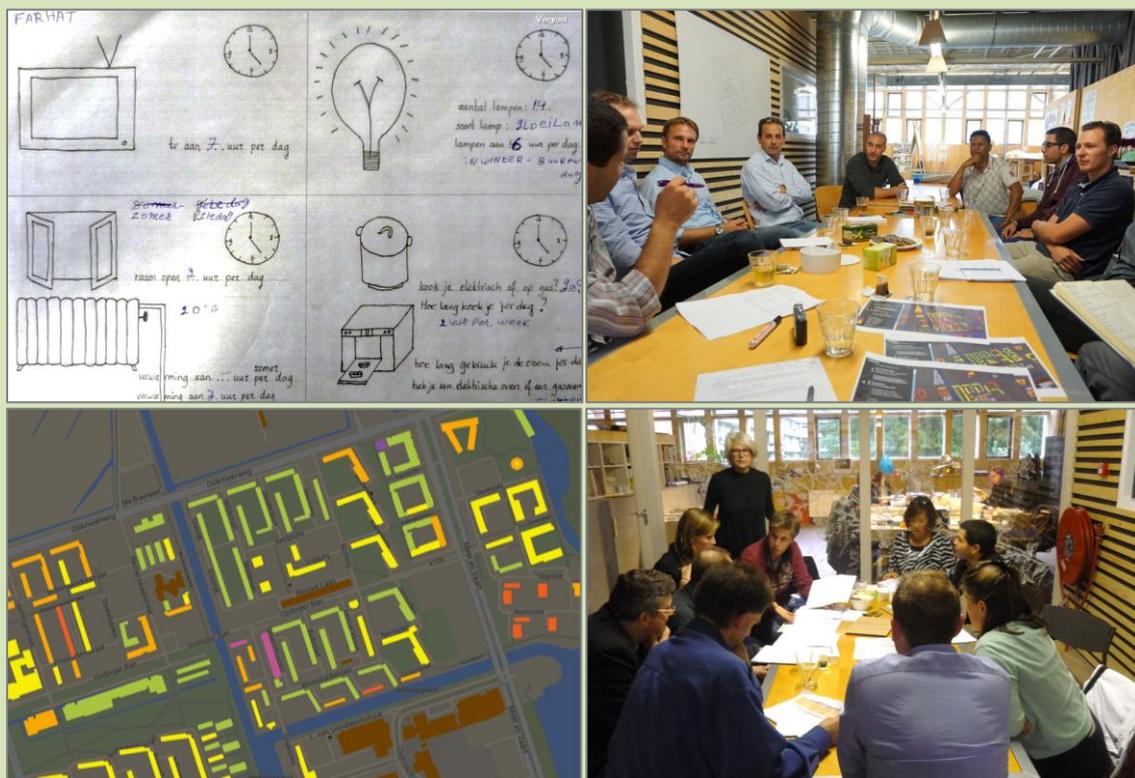
Explore

- Perception
- Recognition
- Evaluation

- Inspiration
- Imagination
- Needs assessment

Implement

- Construction
- Testing
- Validation

Investigate

- Brainstorming
- Visualisation
- Contextual inquiries
- Confrontation of ideas

Present

- Sharing
- Discussing
- Consensus

Design

- Prototyping
- Experimenting
- Consumer journey

Co-creating a pretty, smart and sustainable neighbourhood (Mooi Wildeman, NL)

Mooi Wildeman is a community project to foster energy awareness and smart energy behaviour in the Wildemanbuurt, a multi-ethnic low-income neighbourhood in Amsterdam. A series of workshops with residents was arranged, aiming to investigate public awareness of sustainability in the neighbourhood. Based on the generic co-creation model depicted in this guideline, the workshops were facilitated by consultants from DSO Alliander and The Beach Sustainist Design, in collaboration with S3C. During the workshops, participants were challenged to come up with ideas to make their neighbourhood prettier, smarter and more sustainable. The first workshops exposed a widely shared question about energy literacy: how can we lower energy use and reduce our energy bills? Several residents kept an energy diary and stakeholders were invited to provide insight in the resident's energy use and potential savings. During the next workshop, focus shifted towards opportunities for local renewable energy generation through solar PV. This led to exploring scenarios to organize PV-generation on the roofs of social housing blocks. Although no actual technologies were tested or implemented in the project, the objective to realize a shift in awareness, attitudes and behaviour concerning energy use in the Wildemanbuurt was achieved. Based on the generic co-creation model depicted in this guideline, eight workshops were organized:

1. *Explore:* **Energy expedition** – Exploring the neighbourhood by using maps that show energy use per housing block together with making walks to map the energy use of the neighbourhood.
2. *Explore*: **Mapping energy use and energy behaviour** – Depicting daily practices of domestic energy through photos and personal diaries.
3. *Investigate #1:* **How can the neighbourhood Wildeman save energy? –** Residents investigating ideas on how to collectively save energy in their own neighbourhood.
4. *Investigate #2:* **Ideas for energy saving and local energy production** –Brainstorming about ideas on how to individually and/or collectively save energy in their own neighbourhood and explore opportunities to generate renewable energy.

5. *Investigate #3:* **Ideas for energy saving and local energy production** – sequel to the previous workshop.
6. *Design #1:* **From design to creating a prototype (first session) –** Developing concepts and prototypes and mapping relevant stakeholders for implementation.
7. *Design #2:* **From design to creating a prototype** – sequel to the previous workshop.
8. *Present:* **presentation of the prototypes** – Public event with neighbourhood residents, local policy makers and other stakeholders in which the ideas that emerged from the co-creation process were presented and discussed.

More information: http://www.thebeach.nu/?lang=en

What do you need to do?

It is of key importance that co-creation workshops are well prepared. Setting up a workshop-based co-creation process can include the following practical steps (please note that not all steps might be applicable to your specific context):

1. **Define the goal(s).** The purpose of co-creation is to involve users by collecting their thoughts and ideas. The aim is to create new products and services that add value both to you and your customers, while also establishing commitment from the users. To plan the co-creation process you need to consider what the

desired outputs and/or results are and how you want to use them. Furthermore, it is important to get confirmation within your company or project group to start the co-creation process, as it is a conscious choice to make the output of a project dependent on the co-creation process.

2. **Choose a co-creation method.** Select a model or method – such as the generic model described above – and adapt it to the respective project goal(s) and local circumstances (target group characteristics, desired results). Decide how many workshops will be organized. For concrete ideas on how to organise and moderate interactive please refer to dedicated S3C guidelines and tools on this topic, i.e. [Monitoring and evaluation through stories – Most Significant Change](#), [Postcard from the future workshop method](#), and [Exchanging know-how in a multi-stakeholder workshop](#).

3. **Select participants**. Identify potential users (customers, clients, citizens) to be involved, as well as other relevant stakeholders to participate in the process. Depending on your context and preferences, you can use the same group of users for several workshops, or recruit new groups for each occasion. In any case, a diverse group of users is preferable. At this stage, it should be clear why certain target groups are expected to deliver valid input and what their incentives would be to participate.

4. **Write a storyboard.** Depending on the co-creation model selected in step 2, a storyboard describes the agenda, desired input or contribution by participants and expected results for each workshop. Due to the interactive nature of a co-creation process, it is recommended to create some leeway in the storyboard, in order to make optimal use of the input and creativity of participants.

5. **Organize a kick-off meeting.** Project/consortium partners and other relevant stakeholders for the organisation of the workshops can be invited to a kick-off meeting, preceding the first workshop. The aim of this meeting is to manage expectations and to align all stakeholders involved. To this end, the objectives of the co-creation process, the conceptual idea behind the selected method and the storyboard for the first workshop(s) can be discussed. Furthermore, it can be discussed what role or input is expected from each participant or stakeholder.

6. **Organize logistics.** Set the workshop dates and timeframe, select a location (venue), organize catering, additional resources or infrastructure, reporting etc.

7. **Recruit and invite attendees.** According to the selection in step 3, potential users need to be recruited. Especially when working with households or individuals who are supposed to participate voluntarily, it is highly recommended to invest in a thorough recruitment process to ensure their participation during the whole process. In practice offering some kind of (non-monetary) incentive, can motivate them to get engaged, more information on non-monetary incentives and how to implement them can be found in the

guidelines Choosing and combining monetary and non-monetary incentives and Choosing from different types of non-monetary incentives.

8. **Start the workshop process.** Implement the co-creation workshops by following the storyboard developed in step 4. Be flexible to anticipate on any unexpected interactions, innovative insights or unplanned external developments. To this end, it is recommended to organize a short evaluation meeting after each workshop, allowing revision or adjustment of the storyboard and the project schedule whenever applicable.

9. **Organize follow-up to maintain engagement.** Co-creation shouldn't stop once the workshops are done. Continuous communication and follow-up events will most likely improve the chance of successful implementation and roll-out.

Co-creating cooperation of enterprises and utilities (St. Gallen, CH)

In Switzerland, enterprises in the three 'energy cities' Gossau, St. Gallen and Gaiserwald formed the business cooperation Energienetze GSG. A key objective of the network is to contribute to the municipal energy concepts and to foster cooperation of companies and utilities in the GSG business district. Invited by St. Gallener Stadtwerke and the coordinator of the Energienetze GSG, an S3C collaboration workshop was implemented following the generic co-creation model described in this guideline. Bearing in mind the high expectations and limited time resources of the participants, a professional facilitator and business consultant prepared and led the workshop. The intention was to cover phases "explore" and "investigate" in a half day workshop and provide the utilities with a sound input to prepare the "design" phase. The workshop plan comprised four well-prepared steps, adopting elements of the "canvas method" business modelling (as described in Van Dijk & Kresin, *et al.,* 2013)*:*

1. *Impetus:* In a 20 minute speech the moderator presented potential areas of cooperation, showing future trends and innovative means to prepare for a changing energy world. Best practices presented comprised joint implementation of a big Combined Heat and Power (CHP) system – which could guarantee supply for critical processes in emergency cases – and big battery systems using second life batteries from electric vehicles. Examples were given on intelligent financing institutions for energy efficiency (jointly operated by municipalities, enterprises, banks and citizens) and new mobility patterns in a business district.

2. *Introduction:* All participants presented their roles and expectations to the workshop displaying the "pains" that they are confronted with and the "gains" they would expect from a closer cooperation with the utility. Typical pains of enterprises were anxiety of non-supply and increasing energy prices. Typical expected gains were in the fields of remuneration of flexibility and potential to reduce energy cost by increased self-supply – while not taking full responsibility for operating the technical devices.

3. *Brainstorming:* A vivid discussion unveiled a lot of potential cooperation opportunities together with expectations for new services to be provided by the utility. The moderator depicted and clustered the inputs online to create the following picture:

4. ***Elaboration:*** For each of the cooperation clusters circled in red in the above picture, a small group of participants created a profile for the future cooperation project or expected product. Elements of the profile are:
   ● description of the activity or product
   ● relation to the "pains and gains" identified in step 2 (for enterprises as well as utilities)
   ● elements of cooperation of enterprises and utilities and with other partners
   ● key activities of enterprises and of utilities
   ● relevant framework conditions or need for legal or regulatory support.

Further reading

- Dijk, D. van, Kresin, F. et al. (2013). *Users as Designers. A hands-on approach to Creative Research*. Amsterdam: Waag Society.
- Eskelinen, J., Robles, A.G. et al. (2015). *Citizen-Driven Innovation. A guidebook for city mayors and public administrators.* Washington: International Bank for Reconstruction and Development / The World Bank / European Network of Living Labs (ENoLL).
- IDEAS(R)EVOLUTION: User Centered Innovation Program – Case Study Évora. Presentation at the S3C Midterm Conference.
- Schwarz, M. & D. Krabbendam (2013). *Sustainist Design Guide.* Amsterdam: BIS Publishers.
- Uyterlinde, M. et al. (2014). *S3C D3.4: Report on case analyses, success factors and best practices.*
- Boork, M., Gustafsson, A., Dijkhuis, S., Katzeff, C. (2015). OfficeWise: Energy feedback in office workplaces. In *Proceedings of ECEEE Summer Study 2015*, Toulon/Hyères, France, 1-6 June 2015.

SMART **CONSUMER**
SMART **CUSTOMER**
SMART **CITIZEN**