An inclusive & participatory engagement process for developing a DR platform-

insights from Hestia, a H2020 project

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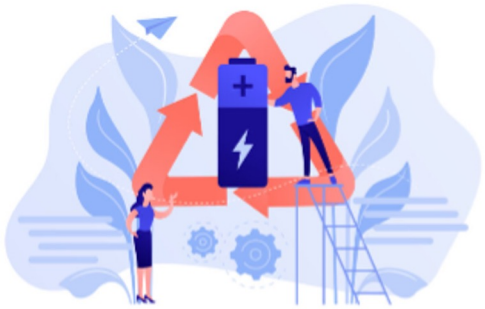
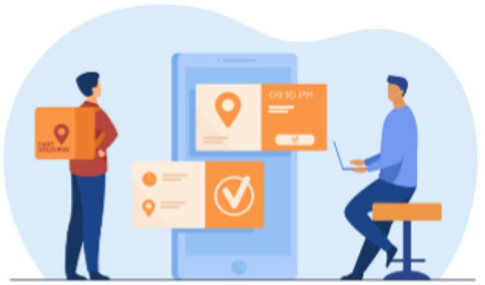
Hestia A quick introduction

Hestia is a Horizon 2020 project, which is currently developing a technological, social and business solution **to demonstrate the potential of DR services leveraging on social engagement** and user experience effectiveness .



By integrating state-of-the-art and emerging ICT tools to enable **the next generation of Demand Response services for residential communities**

By piloting the HESTIA solution on **three residential demo setups** with different infrastructural, climatic and market contexts (IT, FR and NL)



By developing **efficient business models**, understanding current adoption barriers and defining viable plans for the large-scale replication of the HESTIA solution

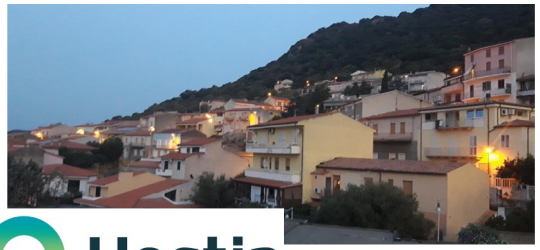
Pilot sites

Voorhout, The Netherlands

33 homes involved; large majority of participants are pensioners. Most of them moved into the senior homes because of the characteristics of the homes and surroundings (not because of the SG).

Solar PVs; home batteries; heat pumps; (EV & charging poles; collective battery)

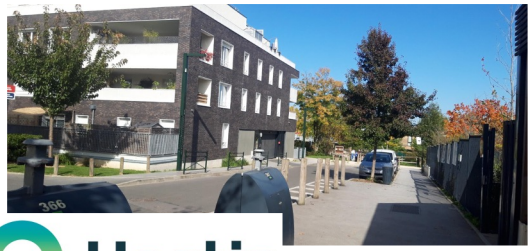
Berchidda, Sardinia, Italy



30 homes involved ; many intergenerational homes, with one or more members staying at home all day. Newly created energy community, with residents not familiar with living with smart technologies.

20 homes with solar PVs & home batteries; smart meters & sensors

Camille Claudel, France



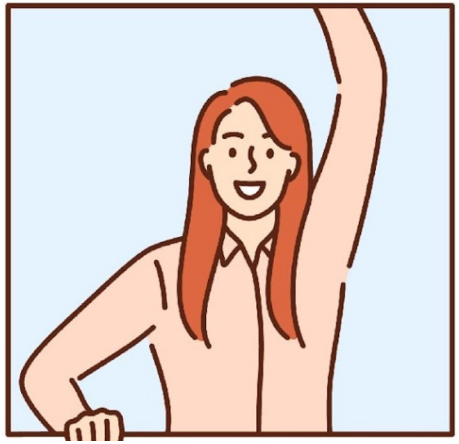
14* homes involved; an eco-responsible development. Social and student housing are also part of the district. Hestia participants are young families with children and senior citizens. Half of our participants are retirees.

homes without pre-existing smart energy installations

*Recruitment is not yet finalised in this pilot

Some starting points....

Understanding energy demand at home *implies an appreciation of the* ***underlying rhythms and dynamics of everyday life at home***



The ***technical understanding of energy****, developed from building professionals through means such as measuring electricity consumption in buildings,* ***is considerably different from that of consumers, such as householders*** *(Shove 2000).*

The sharing of expertise *and the* ***understanding of the expectations of both users and technical experts*** *is therefore* ***an important consideration*** *in regard to engagement, pointing to a* ***need to consider equally both sides: users and experts.***

Methods & approaches to engagement

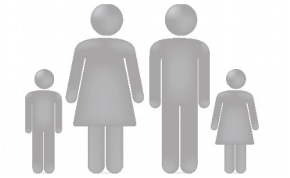
Participatory & inclusive guidelines and methods for engagement

Activities performed:

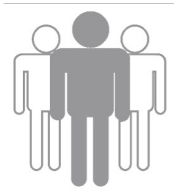
- **Participatory workshops** in all three pilots
- **Virtual** household **interactions** (interviews & home tours)
- **Face-to-face** household **interactions** (interviews & home tours)
- **Guidelines** (booklet) of the different kinds of user interactions
- **Visual and interactive methods for user-engagement**
- **Design, coordination and analysis of** content and **findings** of workshops and household interactions
- **Design & facilitation of co-creation workshops** for the Hestia **consortium**

We put together some recommendations

Recommendations on household typologies

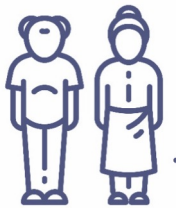


Families with children



Adults living together/ no kids

Intergenerational households



Retirees

Recommendations for the design and technical development of the Hestia platform

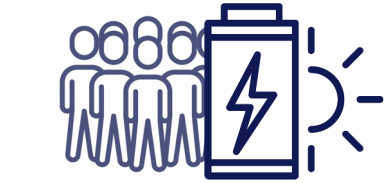
Design of devices & interfaces

Frequency & content of interaction

Digital literacy & accessibility

Recommendations for community engagement

Collective vs individual incentives



Generation & strengthening of energy communities

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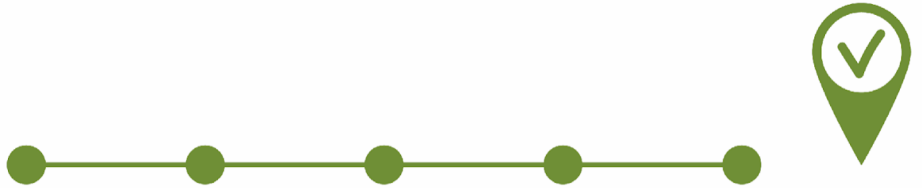
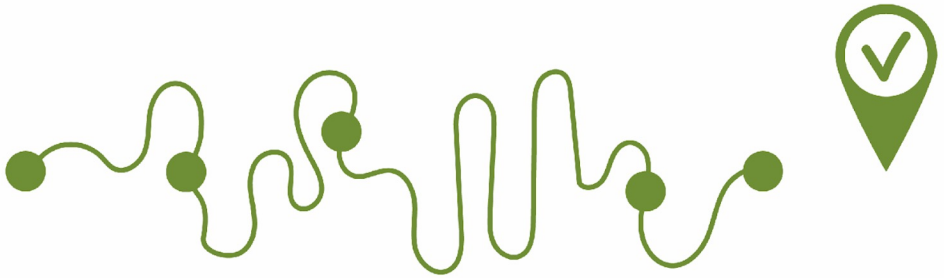
We also observed that…

Smart technology scenario



Lived experience of users



Well, this is more like it…

What we have done so far…

Participatory & inclusive guidelines for recruitment & engagement

Through research activities & participatory interactions we:

- Have developed an **inclusive and appropriate strategy to engage the diverse range of participants** (paying attention to issues of ***age, gender, digital literacy, socio-cultural background and social norms*** in each pilot community)
- Determine the **level of engagement for pilot users** in the development of the platform
- Contribute to the **acceptance of the** (technological & social) **DR solutions of pilot users**

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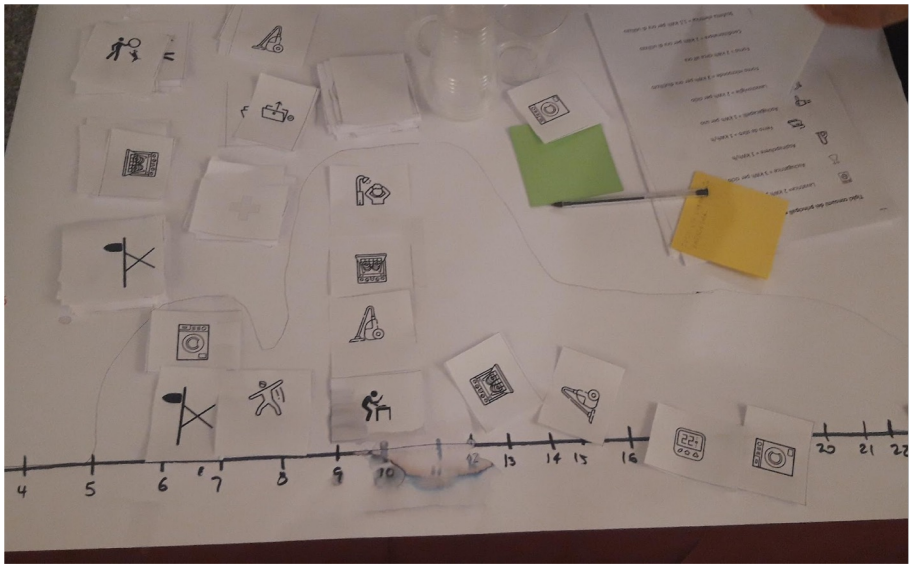
For example...in Berchidda



Participants were given a practical group activity which involved the mapping their everyday energy consumption, allocating actions in a 24hr clock and then drawing their energy curve

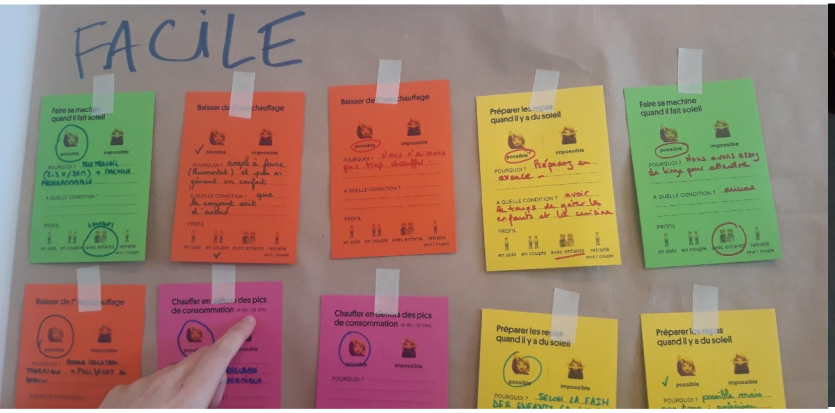
For example…in Voorhout

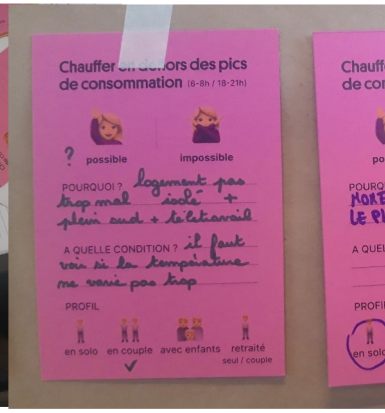
Participants were Split in two groups. The first reviewed the technological interfaces (current App used and proposed one by Aug-e).

Participants the second group played a game about generating their preferred energy community

For example…in Camille Claudel

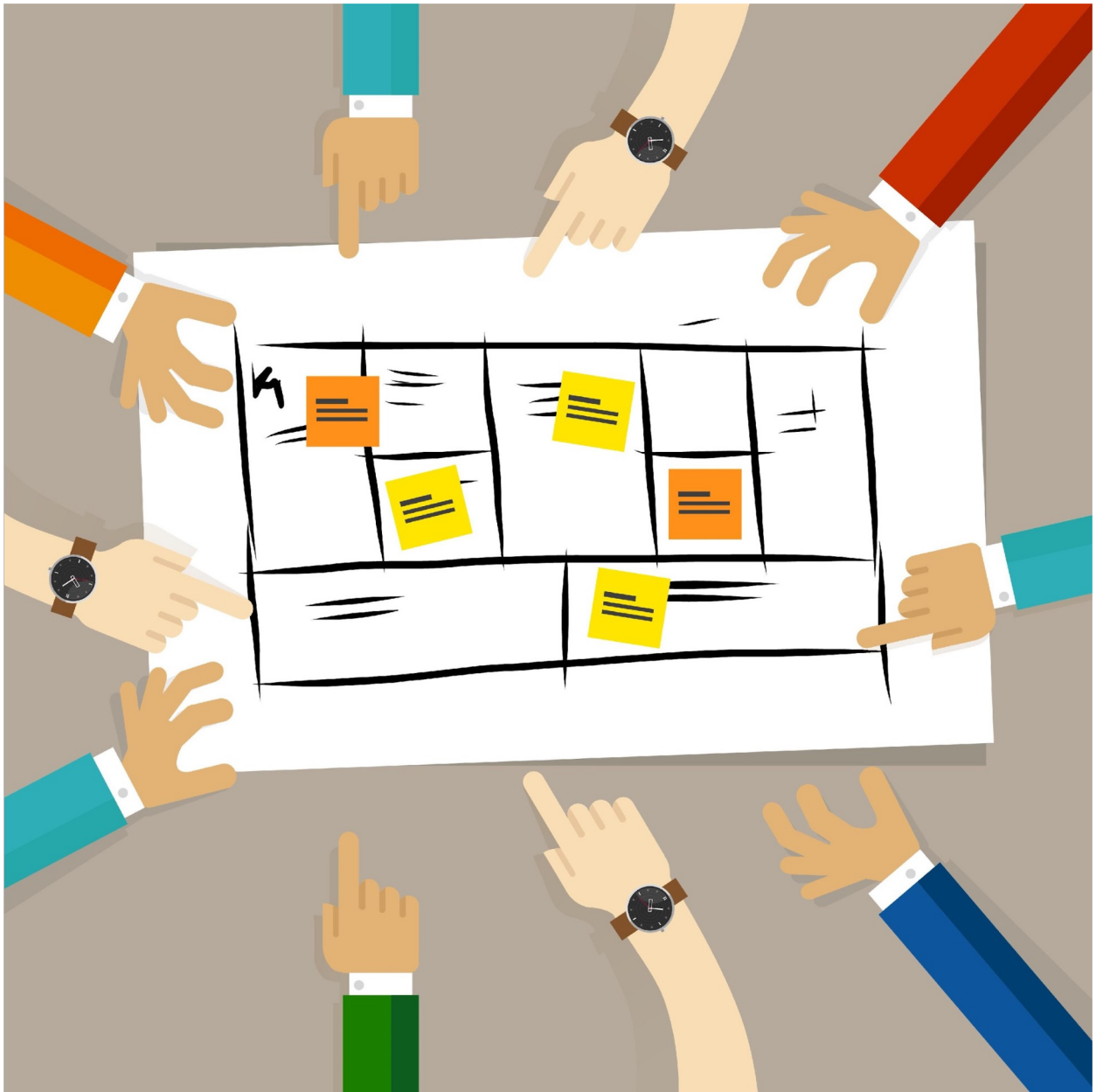
Participants played some ‘serious’ games to engage with the concepts of smart energy contracts





And they were also given some challenges for changing everyday practices, such as lowering their thermostats or changing their cooking patterns

Current results from pilots



Gender & DR

Gender as a shaping factor in the flexibility of households

As we investigated everyday practices at home, we came across several issues such as:

The **role that gender plays** in the **process of adopting new 'energy flexible' practices, for example:**

- Pilot specific **gendered household divisions and negotiations** of household labour
- **Gendered expertise** (men tend to control smart systems, women tend to coordinate the household labour overall)
- **Gendered experiences of control & trust**

Gender & DR

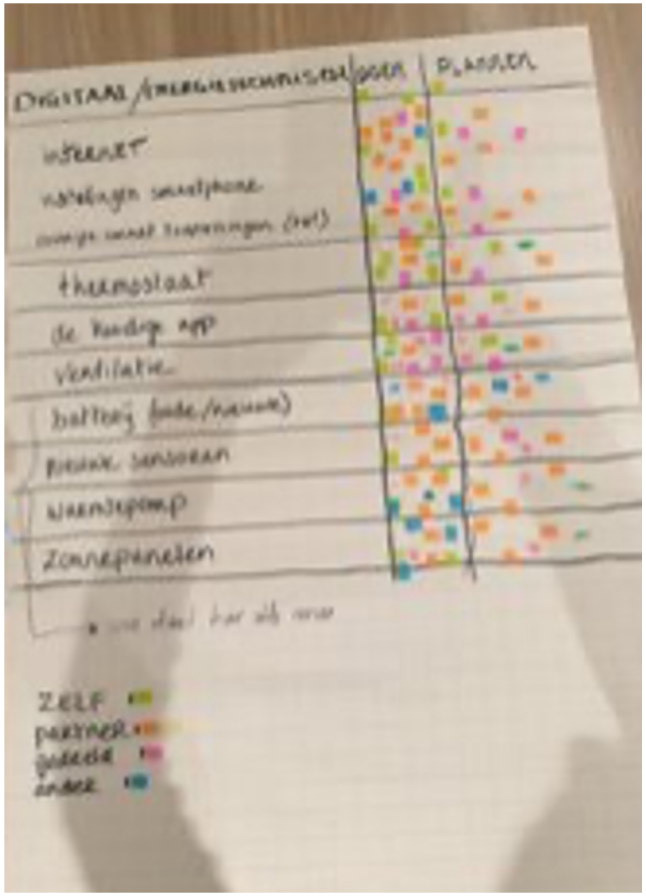
Women focus groups- Berchidda, Sardinia

- Wish to have **more than one person in the household who can control the technologies** and **share the learning**/ insights with the rest of the members
- **Women feel responsible for the success of the smart energy technologies** ('If it not successful then it is our fault')
- **Need for awareness** communications (in the community) **to keep them alert about issues**/action to be taken
- Need for regular **face-to-face communication with project intermediaries**

Gender & DR

Women focus groups- Voorhout, The Netherlands

- **Strong interest in learning**, but certain conditions tied to it (repetition; and adapted to their existing knowledge levels – not hijacked by the few techies)
- Wish to get **both digital and paper handbooks**
- A list with all relevant names & numbers (showing that these **women are very aware of the lack of clarity about who is going to be responsible for the well-functioning of the different parts and the EMS of the smart grid on the longer term** – and that this responsibility is not institutionalised)



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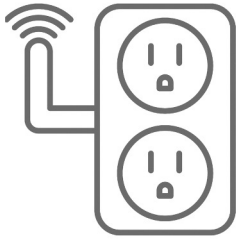
Key themes & insights from each pilot



	Berchidda	Camille Claudel	Voorhout
Household coordination & gender implications	**Co-ordination required between the digital housekeepers (mostly men) and the everyday housekeepers (mostly women)** to ensure they share/discuss notifications & actions	Need to **consider everyday life rhythms and committments** of users- Some households might need to 'catch up' with notifications	Women in the pilot expressed **concerns about the long-term maintenance** of the smart systems (knowing who/how to call when things don't work**.) Men mostly focused on the short-term** technical issues
Digital skills / literacy	**Digital literacy issues present-** need to understand the starting point of each household and consider appropriate needs & support. **Gendered expertise on digital housekeeping**-need for **support from intermediaries**	Need to **consider how some users are not 'locked out'** if they are not responsive for some time	Need to **get users familiar and confident with the platform** so they can utilise its full potential- needs to be **space for shared learning**
Frequency of interactions	Need to **be careful not to stress users with too many requests** (notifications). Important who get the message (digital or everyday housekeeper)	Important to **allow for freedom in the interactions** with the dashboard	Is there a risk of 'enthusiastic' users to get an avalance of notifications- **what brakes are built into the system?**
Motivation	Need to **consider how to maintain engagement in the long term**	**Maintain motivation during the experiments and in the long term**/ what is interesting to people?	We need to **understand better what is more appropriate for the community**

Technology interfaces' considerations

- **Personalisation**
  - 'One -size'-initiatives do not fit all
  - Personalisation of the interfaces is important & can lead to long-term engagement
  - The interaction with the dashboard should be customisable for households
  - The Hestia platform should be responsive to the material context of households

- **Feedback loop between users & platform**
  - Users need to gain trust that their feedback is incorporated into the system
  - Householders should be able to choose between different forms of feedback and how they would like to receive it.

- **Notifications**
  - Danger of overloading users with notifications-need to find out their preferences
  - Complex, technical jargon should be avoided
  - Using visual information (e.g icons and visualisations) can ease communication
  - Are/can notifications (be) self-deleting?

- **Digital literacy & overall support**
  - Support an inclusive design paying attention to different user profiles
  - Accessibility (and interoperability) of platform really important
  - Design user/age/gender/cultural background appropriate DR solutions
  - Opportunities for shared learning in the community

Emerging themes for consideration

- **Understanding DR** at home implies an **appreciation of the underlying rhythms and dynamics of everyday life (including issues of gender)**
- Important to **keep participants engaged and in continuous communication** with the project
- The **technical understanding** and definition **of energy** consumption **is usually different to that of users**, especially residential ones.
- Important to find **appropriate ways to interpret** the users' (gendered) know-how gained through these interactions into the technological applications for DR
- Important to **set participants' expectations**
- **Appropriate customisation of DR solutions** is required for each pilot site, in order **to consider local social norms (including gender roles & dynamics)** and **everyday life conventions**

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Aggeliki & Marta

on behalf of **Hestia**