



Ludwig Karg, B.A.U.M. Consult

Erik Laes, VITO

Pieter Valkering, VITO

Matthijs Uyterlinde, ECN

Marina Lombardi, Enel S.p.A.

Marco Bakker, ECN

**S3C**

**THE S3C PROJECT PANEL**

SMART **CONSUMER**

SMART **CUSTOMER**

SMART **CITIZEN**



Ludwig Karg, B.A.U.M. Consult GmbH  
Senior Project Manager

**S3C**

**THE S3C VISION**

SMART **CONSUMER**

SMART **CUSTOMER**

SMART **CITIZEN**

# It is about people!



Smart Meters are only  
as smart as the  
consumers using them.

Robert F. Powelson, Chairman,  
Pennsylvania Public Utility Commission



# The Smart Consumer?



Using  
renewable  
energies...

Switching retailer  
on the internet ...

Being rewarded for  
my flexibility ...

Generating energy  
at home ...

Saving energy ...

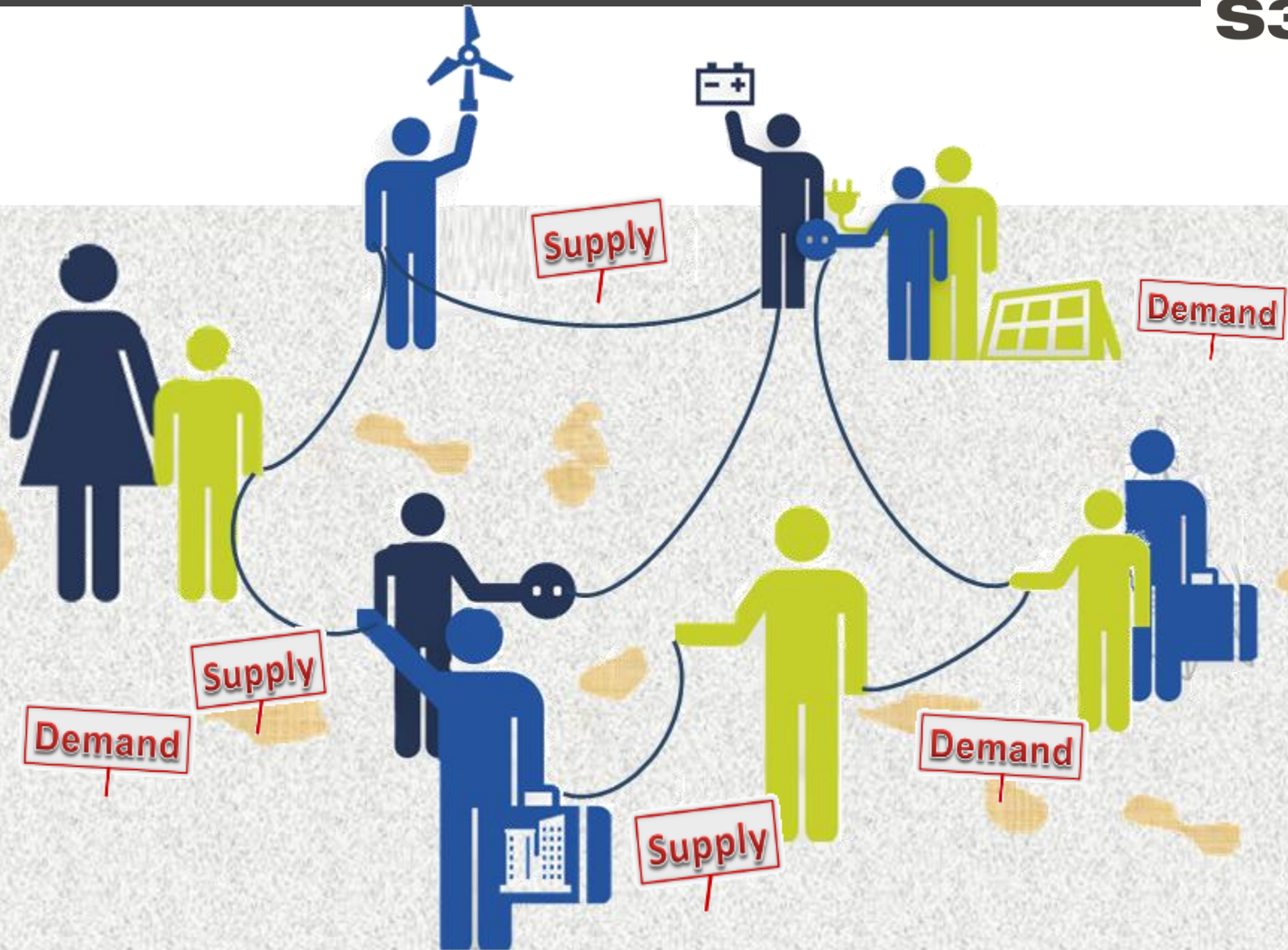




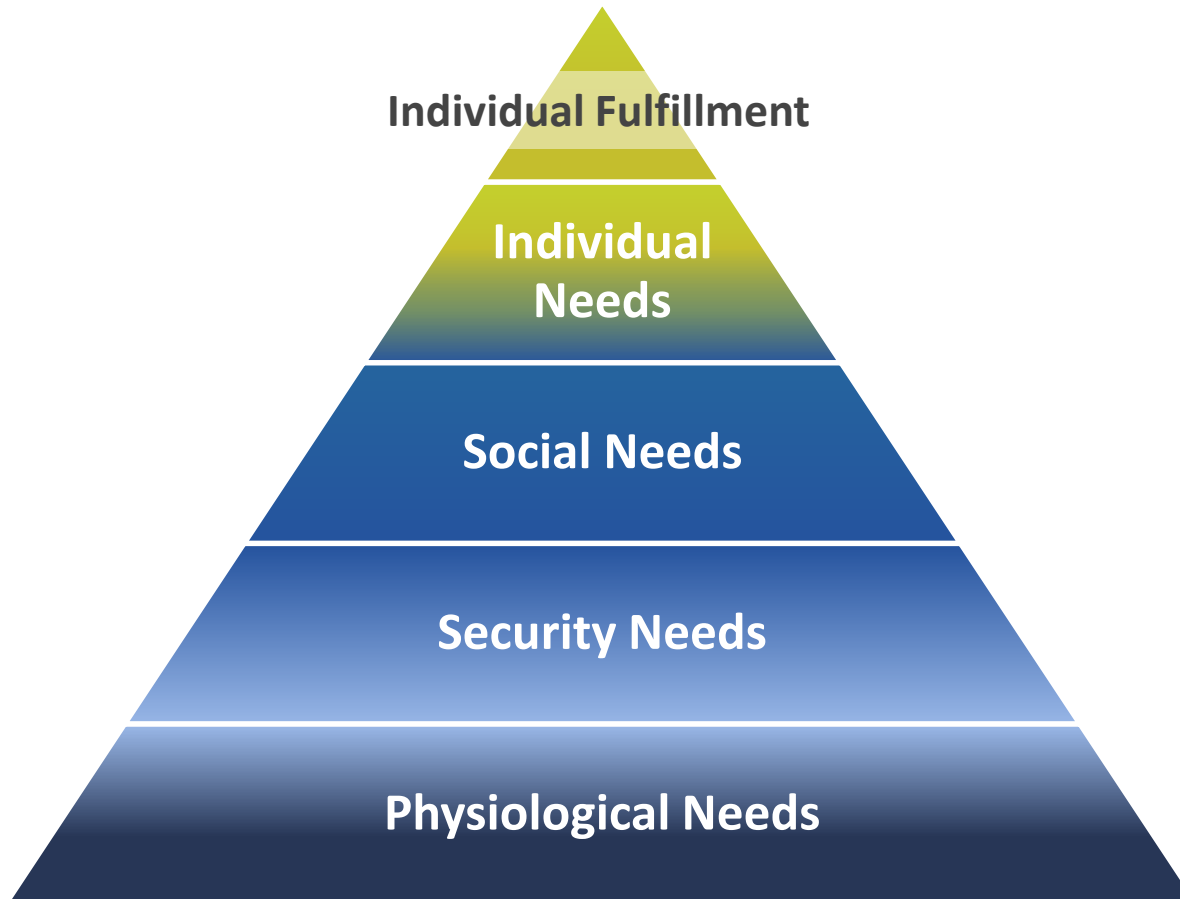
# From 'The Wall'...



# ... To 'The Network'



# Levels of Personal Needs



**Individual Fulfillment**

**Creativity, transcendence**

**Individual  
Needs**

**Success, spontaneity**

**Social Needs**

**Closeness, love,  
mobility**

**Security Needs**

**Housing, work,  
security**

**Physiological Needs**

**Air, food, water,  
light, warmth**



# What Customers want ...



kWh

kW

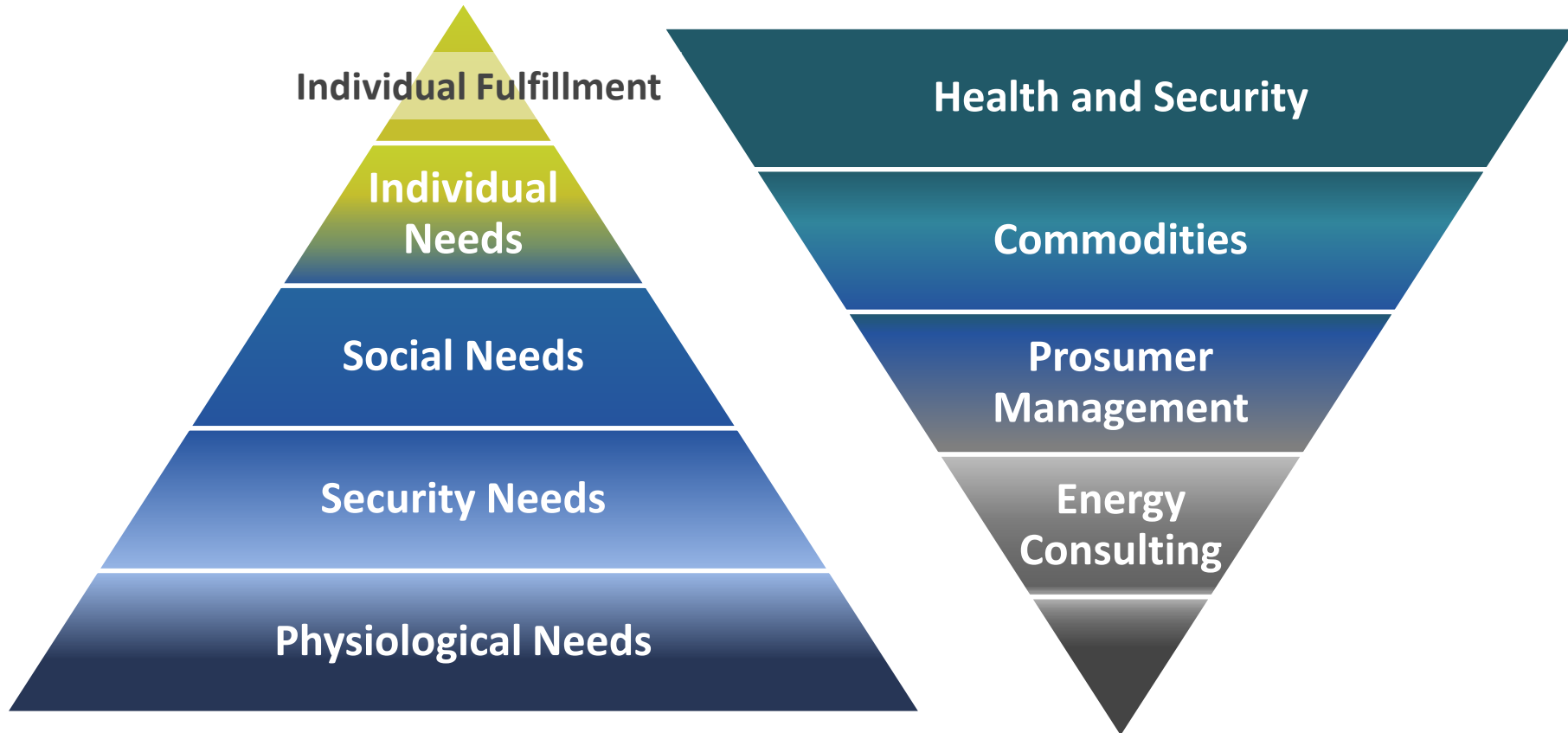
m<sup>3</sup>

°C

l<sub>m</sub>

km

# Developing People-Centred Products







Erik Laes, VITO

Pieter Valkering, VITO

Matthijs Uyterlinde, ECN

**S3C**

**INTERMEDIATE RESULTS**

SMART **CONSUMER**

SMART **CUSTOMER**

SMART **CITIZEN**



# The utility of the future cooperates with ...



- **SC1 - smart consumers**, who want to
  - reduce energy consumption and costs
  - change lifestyle routines to a limited extent
- **SC2 - smart customers**, who want to get services to become
  - a prosumer, i. e. produce as well as consume energy
  - a market partner providing consumption flexibility or energy services
- **SC3 - smart citizens**, who want to
  - become part of a ‘smart energy community’
  - help ensure quality of supply and environment preservation

*‘How can active (or ‘smart’) energy-related behaviour be fostered by active end user engagement strategies in smart grid projects?’*

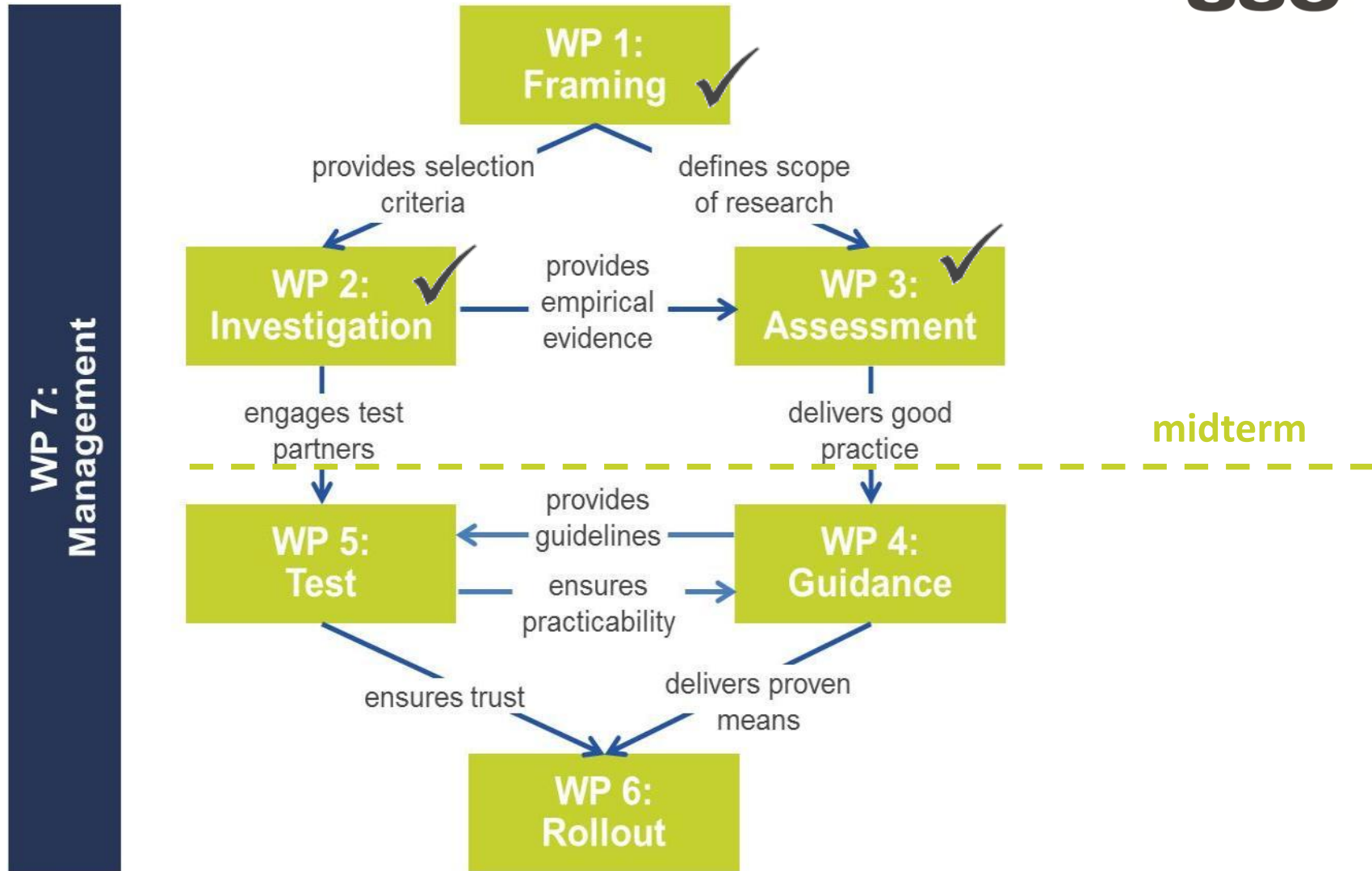
- S3C – “Smart consumer, smart customer, smart citizen”
- FP7 – Energy.2012.7.1.3 “Empowering smart customers to participate in active demand and energy system efficiency”
- Duration: 1 November 2012 – 31 October 2015 (3 years)

<http://www.s3c-project.eu/>

- Partners:



# Work packages





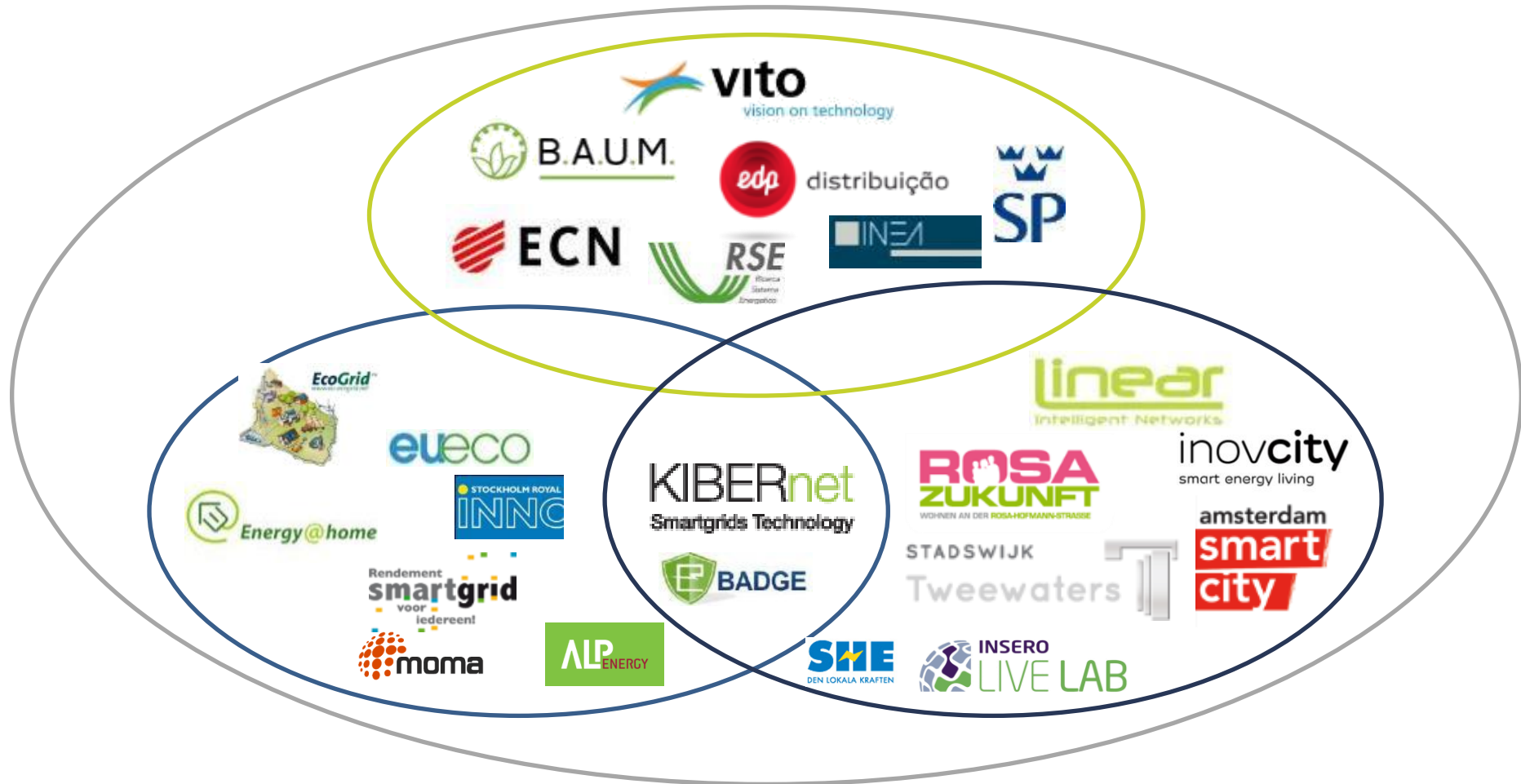


- **Guidelines** contain descriptive *information to explain* a particular topic and to address issues or questions that should be taken into account. In addition, a guideline makes clear and how it relates to other topics in the toolkit.



- **Tools** are ready-to-use instruments, processes or step-by-step descriptions that aim to facilitate the interaction between end-users and the smart energy project (e.g. the project management, the electricity grid, and the energy market).

# The S3C Family of Projects



# 4 out of 5 European projects on the shortlist for the ISGAN award are in S3C



**EcoGrid: Consumer Engagement** Østkraft Holding A/S (Denmark) – 2nd place

**PowerMatching City**, DNV GL (The Netherlands)

**Inovgrid**, EDP Distribuicao Energia S.A. (Portugal)

**LINEAR - Local Intelligent Networks for Energy Active Regions**, VITO (Belgium)

**Borrego Springs Microgrid Demonstration**, San Diego Gas and Electric (USA)

**NICE Grid the French Demonstrator of GRID4EU**, Electricité Réseau Distribution France (ERDF) (France)

**Pacific Gas & Electric's Green Button**, Pacific Gas and Electric (USA)

**Share!**, Kitakyushu Smart Community Council (Japan)

**Advanced Building-Scale Smart Grid Demonstration at Mesa del Sol**, SNL (USA)



Source: [www.iea-iskan.org](http://www.iea-iskan.org)

## Guiding questions:

- ***What drives end-user behaviour?***
  - Enablers & barriers
- ***How to engage with end-users?***
  - Success factors / do's and don't's
- ***Where do we need to know more about?***
  - Challenges / don't knows



## Theory

- Social-psychology, economics, sociology, practice theory, innovation
- Segmentation
- Communication & (social) marketing

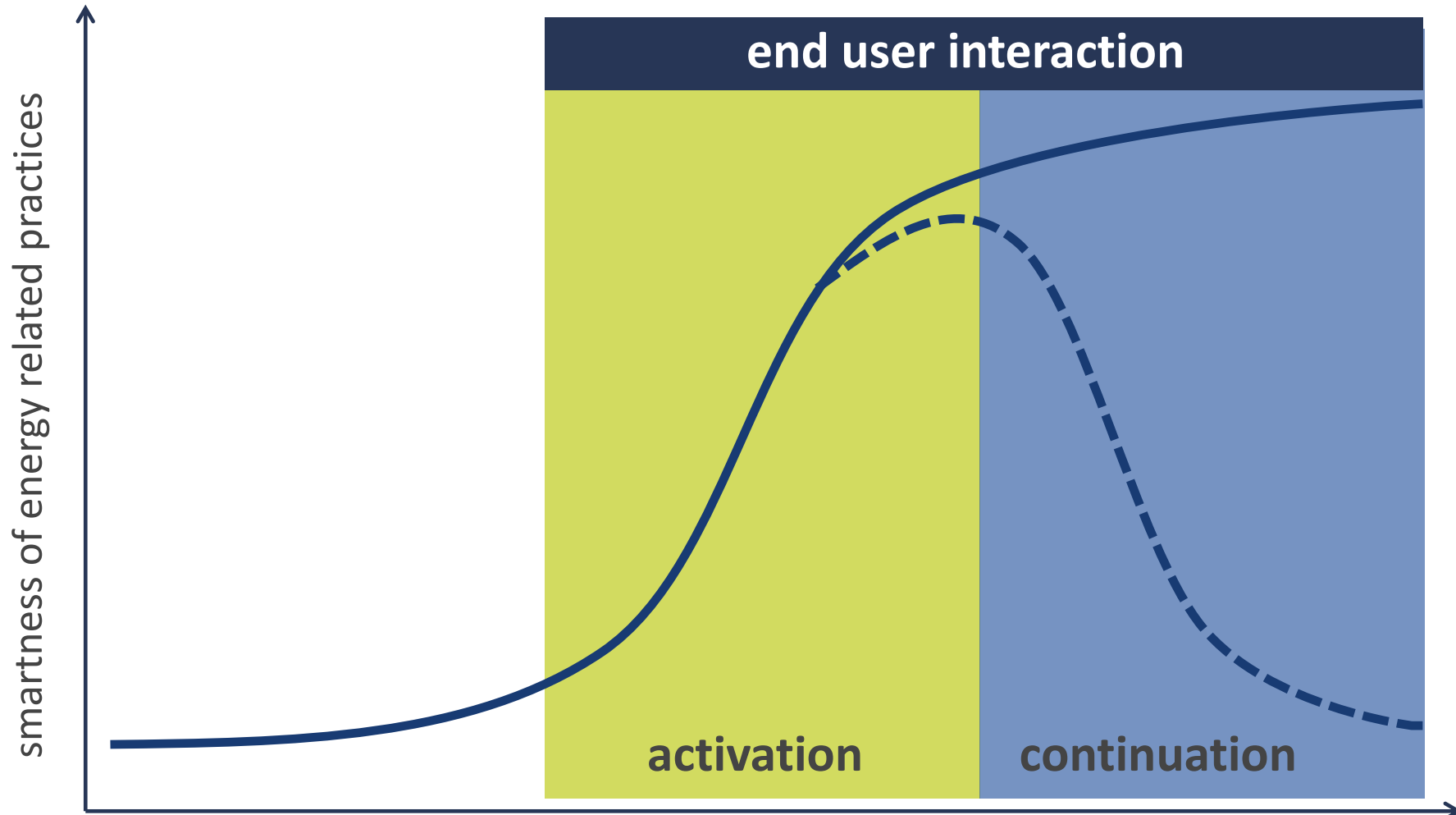
## Empirical research

- Feedback, pricing, communication
- Privacy & security
- New market structures & aggregation
- Experiences from mobile phone / ICT

## Synthesis

- Enablers and barriers
- Success factors
- Challenges for further research

# Framing the process



# Enablers and barriers



Category	Enablers	Barriers
<b>Comfort</b>	<ul style="list-style-type: none"> <li>• Comfort (gain)</li> </ul>	<ul style="list-style-type: none"> <li>• Comfort (loss)</li> </ul>
<b>Control</b>	<ul style="list-style-type: none"> <li>• Additional control options</li> </ul>	<ul style="list-style-type: none"> <li>• Loss of control over appliances</li> </ul>
<b>Environment</b>	<ul style="list-style-type: none"> <li>• Environmental benefits</li> </ul>	
<b>Finances</b>	<ul style="list-style-type: none"> <li>• Financial incentives</li> <li>• Lower energy bill</li> </ul>	<ul style="list-style-type: none"> <li>• Investment costs</li> <li>• Increased energy bill</li> </ul>
<b>Knowledge &amp; Information</b>	<ul style="list-style-type: none"> <li>• Transparent and frequent billing</li> <li>• Insight in electricity use</li> </ul>	<ul style="list-style-type: none"> <li>• Information provision</li> <li>• Competences</li> <li>• Awareness</li> </ul>
<b>Security</b>	<ul style="list-style-type: none"> <li>• Reliability</li> </ul>	<ul style="list-style-type: none"> <li>• Privacy and security</li> </ul>
<b>Social process</b>	<ul style="list-style-type: none"> <li>• Role models</li> <li>• Customer testimonials</li> <li>• Competition</li> <li>• Fun</li> <li>• Community feelings</li> </ul>	<ul style="list-style-type: none"> <li>• Free rider effects</li> <li>• Job losses</li> </ul>

# 9 challenges for 'transitioning' towards smart grids



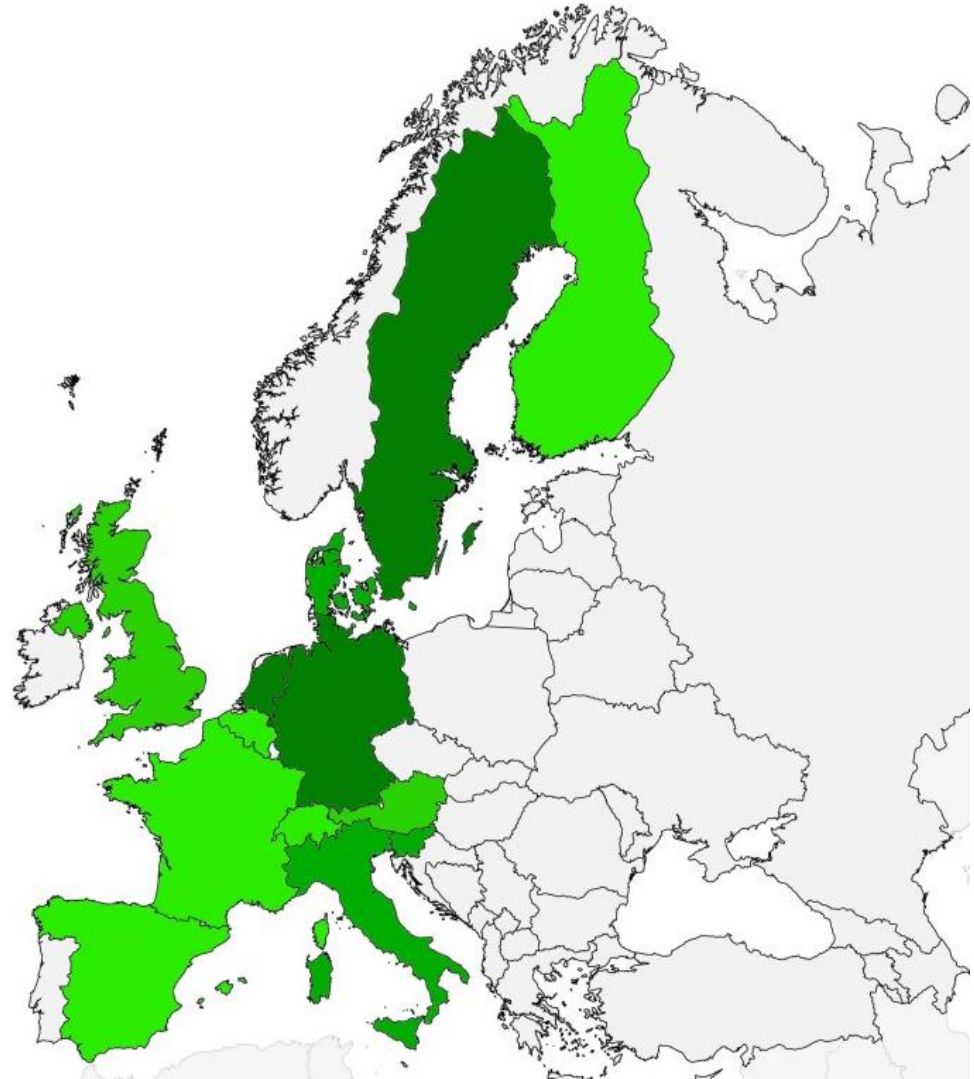
1. Which instruments or approaches contribute to achieving better understanding of the *needs and desires of target groups*?
2. What innovative *products and services* contribute to fostering smart energy behaviour?
3. Which *incentives and pricing schemes* contribute to fostering smart energy behaviour?
4. What *feedback information and which feedback channels* contribute to fostering smart energy behaviour?
5. Which *communication channels, information and marketing techniques* contribute to recruitment and engagement of end users in smart energy projects?
6. Does *involvement of non-energy stakeholders* contribute to end user engagement and smart energy behaviour?
7. Which instruments or approaches contribute to the development and support of *smart energy communities*?
8. Which features of the interaction between end-users and *energy market structures* contribute to end user engagement and smart energy behaviour?
9. Which issues hamper / facilitate *up scaling or replication* of smart energy projects?

- FoP consists of **‘smart energy projects’**:
  - *Smart grid projects* implementing smart grid infrastructure
  - *Smart energy behaviour projects* that focus on engaging end users without implementing smart grid technology
- Projects in the FoP display a **potential for learning** with respect to end user interaction (S3C selection criteria)
- **Qualitative case study data** extracted from:
  - Project documentation (desk research)
  - Face-to-face interviews with project managers/representatives
  - (and in some cases interviews with end users or other stakeholders)
- **Cross-case analysis**: best practices, cross-cutting success factors & pitfalls

# 32 smart energy cases in 15 EU countries

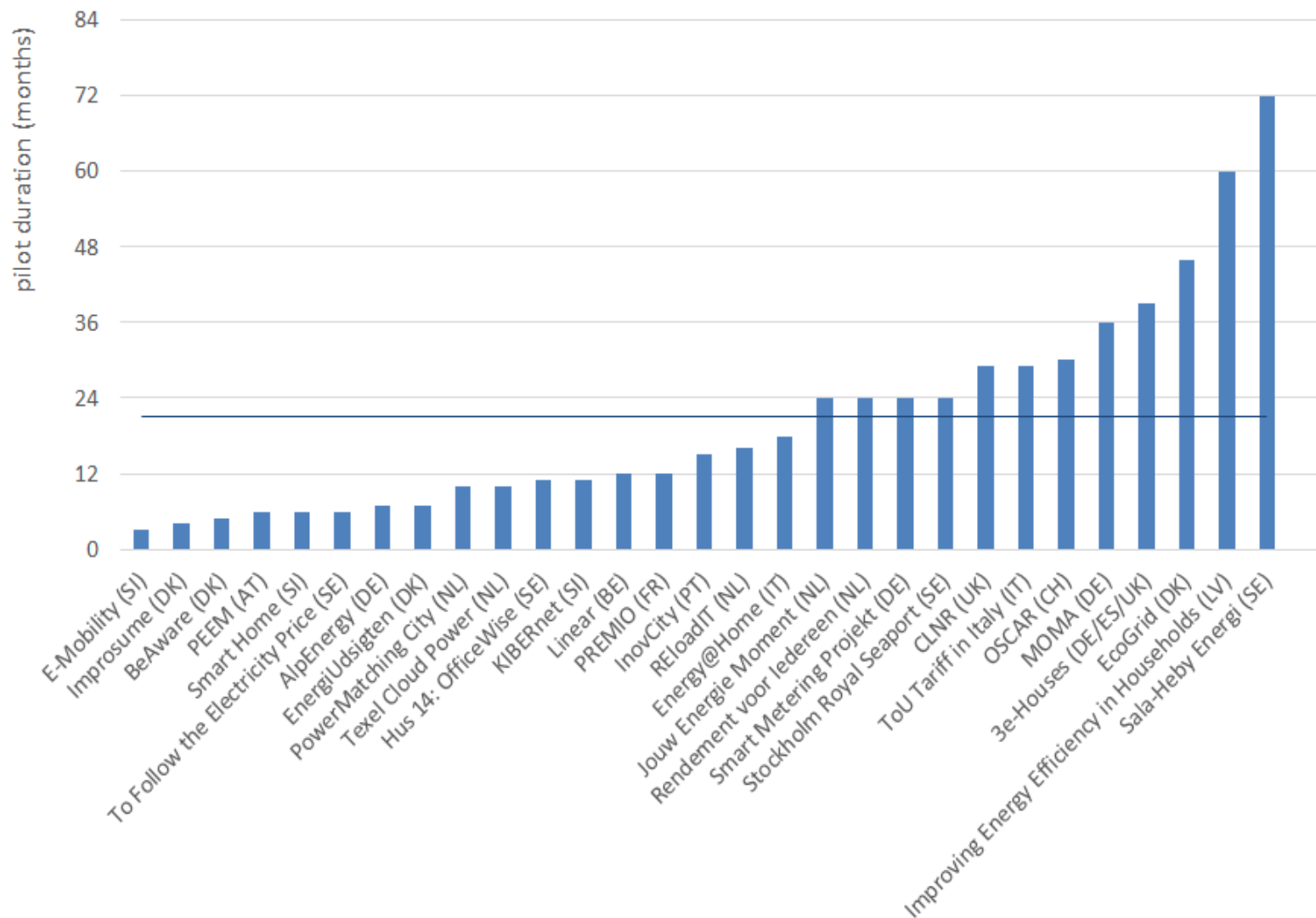


ID	Country	Frequency
1	Sweden	6
2	Germany	5
3	The Netherlands	5
4	Denmark	3
5	Italy	3
6	Slovenia	3
7	Austria	2
8	UK	2
9	Belgium	1
10	France	1
11	Finland	1
12	Latvia	1
13	Portugal	1
14	Spain	1
15	Switzerland	1





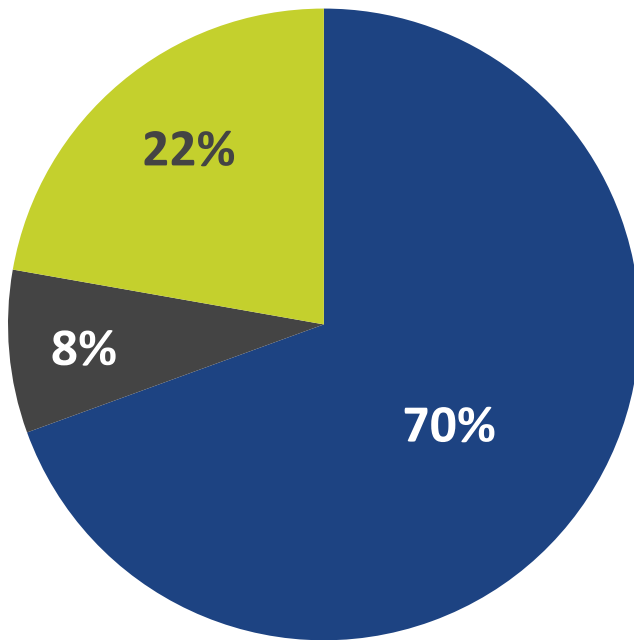
# ...ranging from 3 months to 6 years



# ...involving residential end users and SMEs

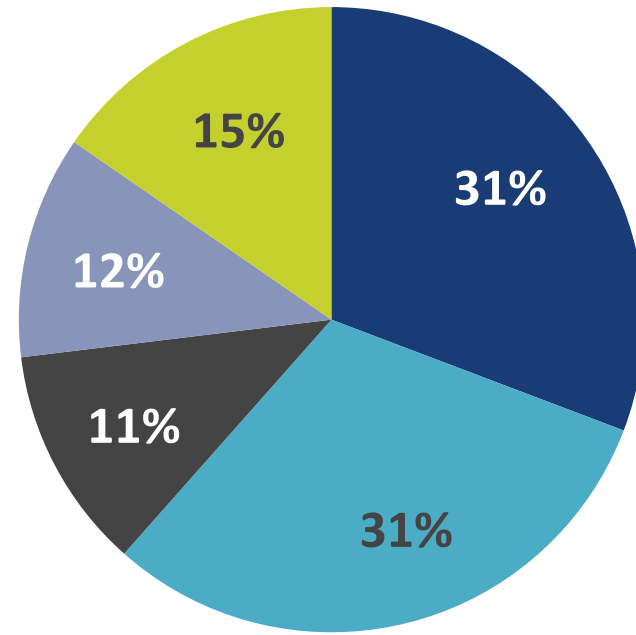


Types of Users Involved



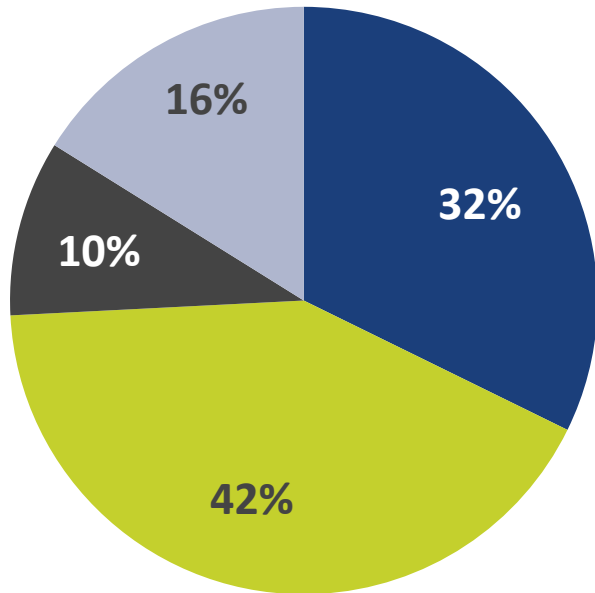
- Residential end users
- Residential end users & SMEs
- SMEs

Number of Users Involved



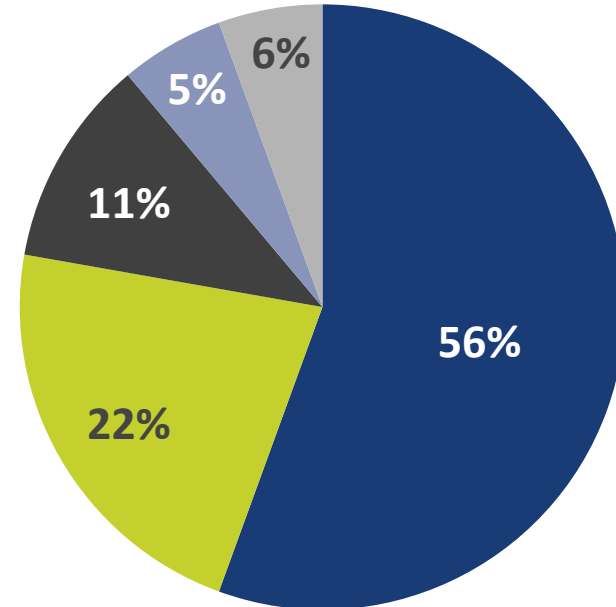
- less than 50 residential end users
- 50 - 500 residential end users
- 500 - 1,000 residential end users
- 1,000 - 10,000 residential end users
- more than 10,000 residential end users

Type of Tariff Implementation



- Projects with full manual control
- Projects with combined automated and manual control
- Projects with automated control
- Smart energy behaviour projects

Types of Tariffs Applied



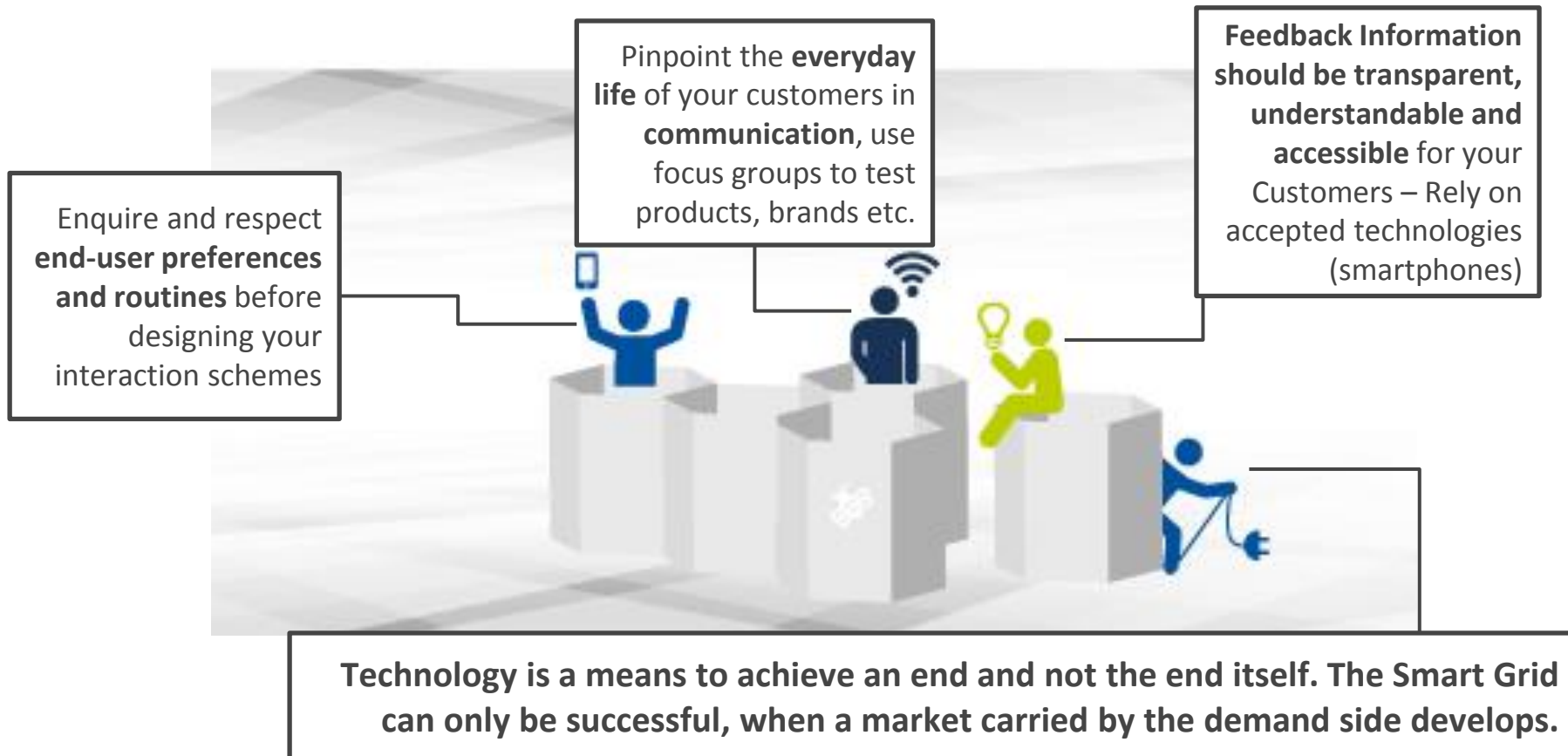
- Time of Use (ToU)
- Real Time Pricing (RTP)
- Consumption Based Pricing (CBP)
- Critical Peak Pricing (CPP)
- Other

- 1. Address end users as human beings instead of as points of electricity demand**
- 2. Obtain a thorough understanding of target groups**
- 3. Give personal attention and build trust over time**
- 4. Emphasize sense of place: underscoring the local character of a smart energy project**
- 5. Draw upon community dynamics**
- 6. Motivate end users with fun and good news**
- 7. Test before the roll-out**

# Cross-cutting Success Factor 1



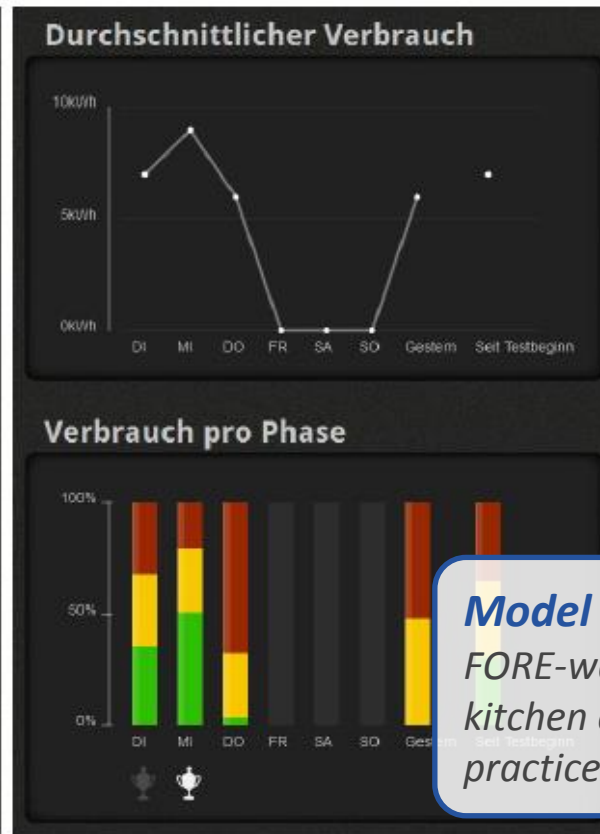
- Address End Users as Human Beings Instead of As Points of Electricity Demands!



# Cross-cutting Success Factor 1



- Address End Users as Human Beings Instead of As Points of Electricity Demands!



**Model region Salzburg – PEEM (AT)**  
FORE-watch in-house display designed as a kitchen clock to suit everyday social practices.



# Cross-cutting Success Factor 1

- Address End Users as Human Beings Instead of As Points of Electricity Demands!

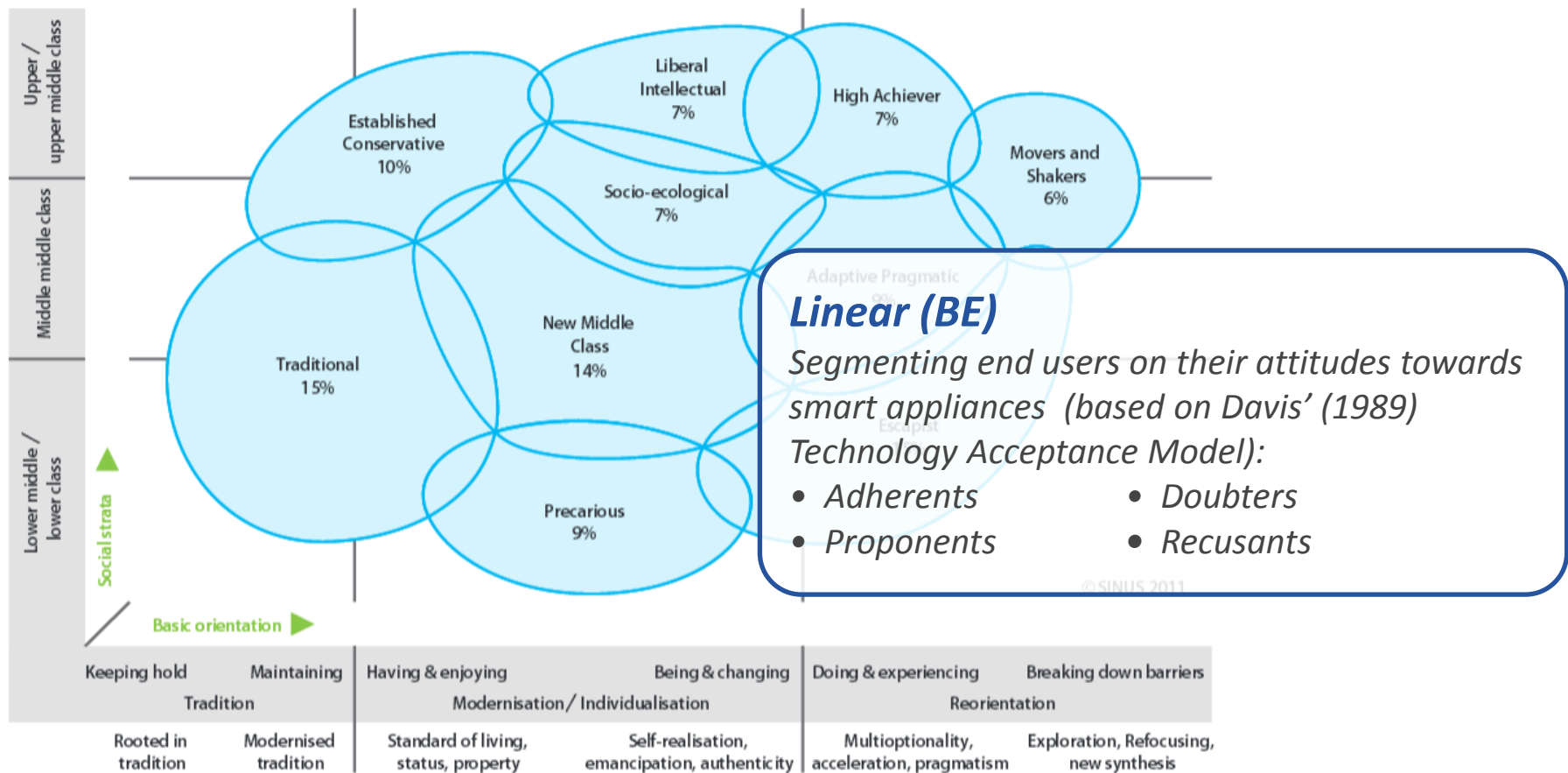


## ***Sala-Heby Energi (SE)***

*Stepwise implementation of ToU-tariff:  
consulting local end users to tailor the tariff  
structure to their needs and adjusting terms  
and conditions along the way.*

# Cross-cutting Success Factor 2

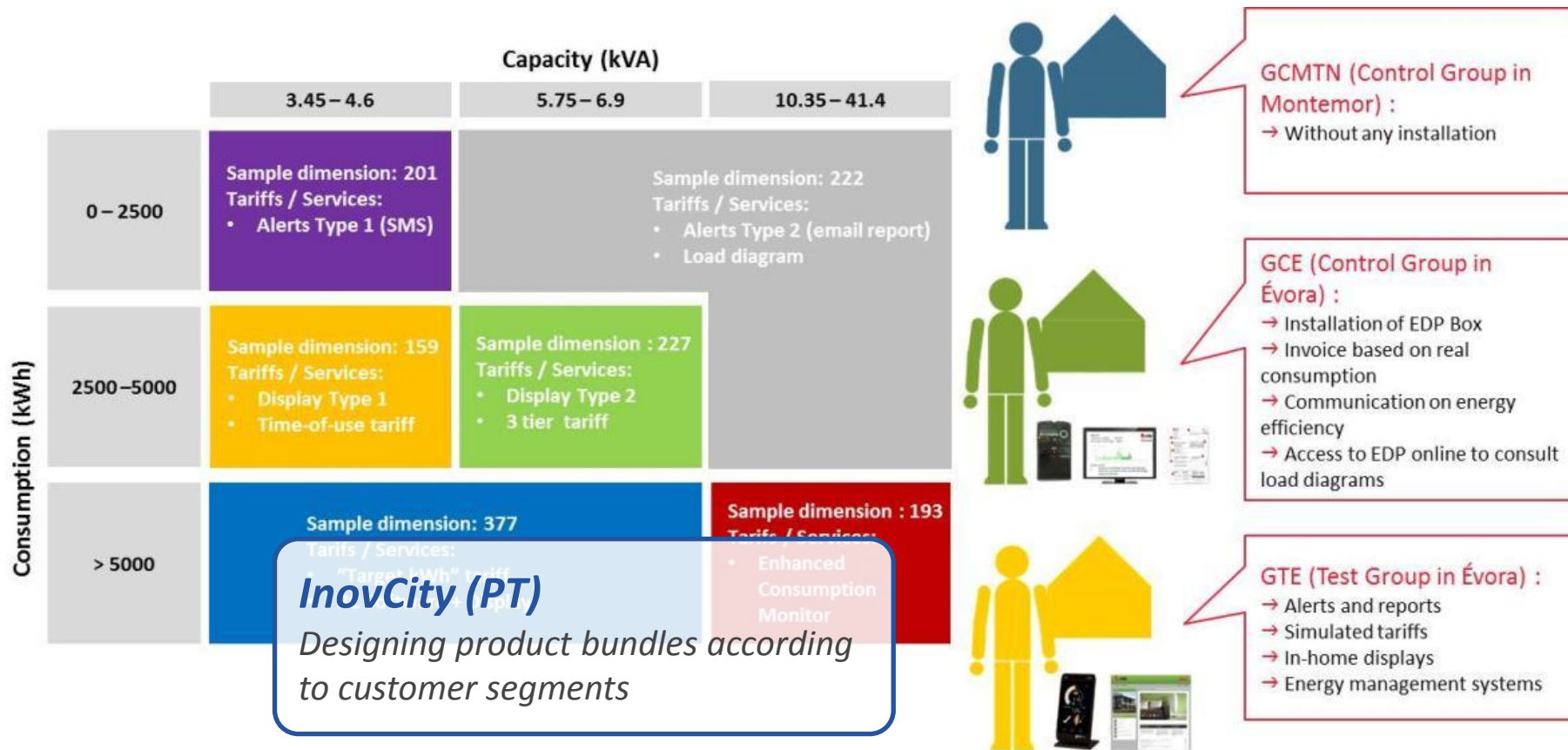
## Obtain a Thorough Understanding of Your Target Group!



# Cross-cutting Success Factor 2



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# Cross-cutting Success Factor 2



## Obtain a Thorough Understanding of Your Target Group!



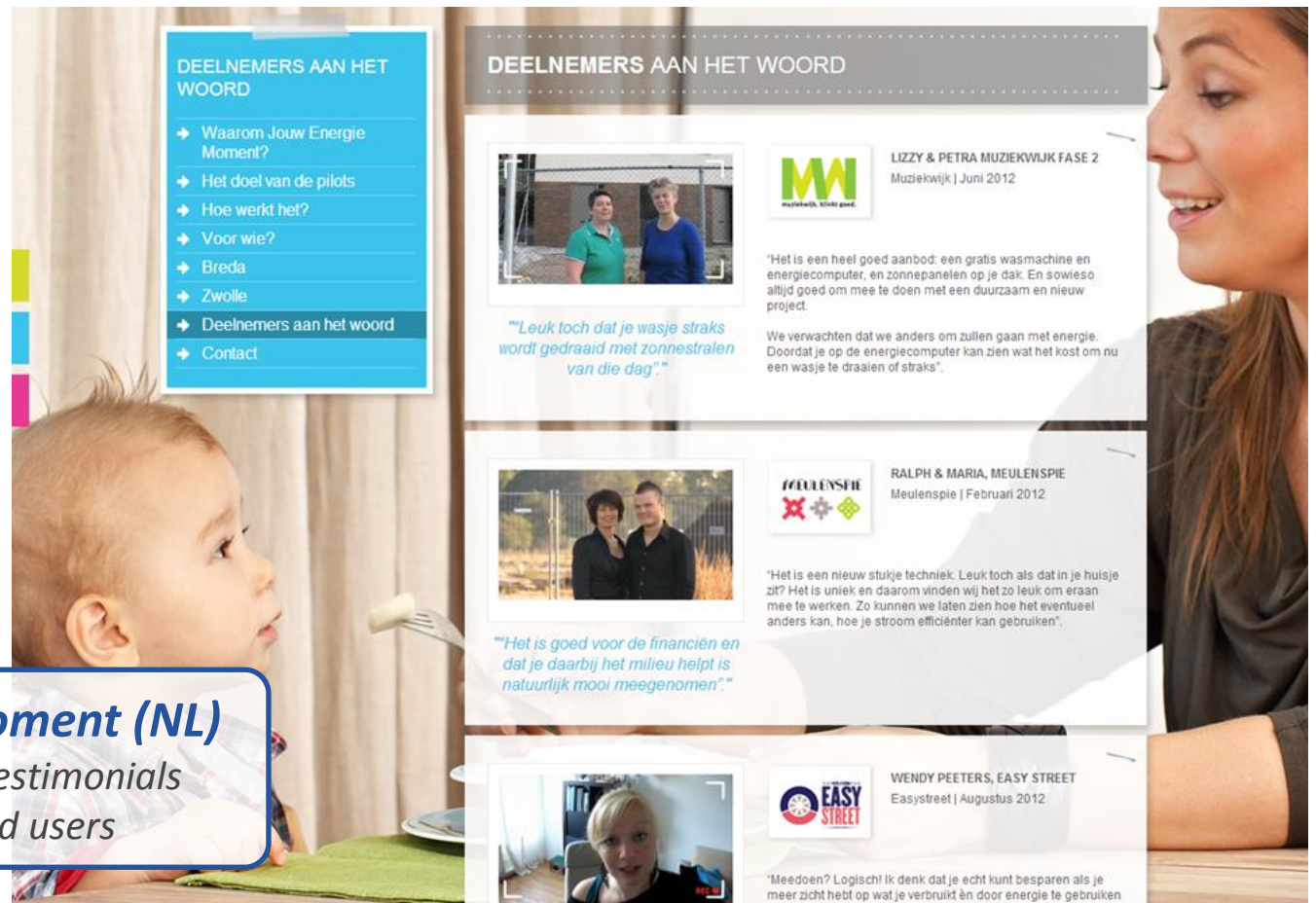
### ***Hus 14: OfficeWise (SE)***

*Co-Creation and Focus Groups in the Project Design Phase*



# Cross-cutting Success Factor 3

## Give personal attention and build trust over time!



**DEELNEMERS AAN HET WOORD**

- ➔ Waarom Jouw Energie Moment?
- ➔ Het doel van de pilots
- ➔ Hoe werkt het?
- ➔ Voor wie?
- ➔ Breda
- ➔ Zwolle
- ➔ Deelnemers aan het woord
- ➔ Contact

**DEELNEMERS AAN HET WOORD**

**LIZZY & PETRA MUZIEKWJK FASE 2**  
Muziekwijk | Juni 2012

"Het is een heel goed aanbod: een gratis wasmachine en energiecomputer, en zonnepanelen op je dak. En sowieso altijd goed om mee te doen met een duurzaam en nieuw project.

We verwachten dat we anders om zullen gaan met energie. Doordat je op de energiecomputer kan zien wat het kost om nu een wasje te draaien of straks".

**RALPH & MARIA, MEULENSPIE**  
Meulenspie | Februari 2012

"Het is een nieuw stukje techniek. Leuk toch als dat in je huisje zit? Het is uniek en daarom vinden wij het zo leuk om eraan mee te werken. Zo kunnen we laten zien hoe het eventueel anders kan, hoe je stroom efficiënter kan gebruiken".

**WENDY PEETERS, EASY STREET**  
Easystreet | Augustus 2012

"Meedoen? Logisch! Ik denk dat je echt kunt besparen als je meer zicht hebt op wat je verbruikt en door energie te gebruiken

**Jouw Energie Moment (NL)**  
Publishing personal testimonials from participating end users

# Cross-cutting Success Factor 3



Give personal attention and build trust over time!



## ***3e-Houses (DE/ES/UK)***

*Home visits to create interactions with vulnerable target groups (e.g. elderly, social housing residents)*





## Give personal attention and build trust over time!



### ***InovCity (PT)***

*Online forum with a Dr. Energia figure to humanise the relationship between supplier and consumer*

# Cross-cutting Success Factor 4

Emphasize a ‘sense of place’ by underscoring the local character of a smart energy project

## *EcoGrid (DK)*

*community event with a locally well known comedian and a band to inform participants and recruiting community members .*



# Cross-cutting Success Factor 4

Emphasize a ‘sense of place’ by underscoring the local character of a smart energy project



## ***Texel Cloud Power (NL)***

*Regionalised the project's name to frame it into the local habitus, taking into account regional attitudes and identities: 'Texel smart self-sufficient'*

# Cross-cutting Success Factor 4



Emphasize a ‘sense of place’ by underscoring the local character of a smart energy project



## ***Sala-Heby Energi (SE)***

*Organize field trips and events at the utility, renewable energy plants etc.*



# Cross-cutting Success Factor 5

## Draw Upon Community Dynamics!

### *Rendement voor Iedereen (NL)*

*Community coach to shape and support the community of end users and organize a board of 'project ambassadors'.*



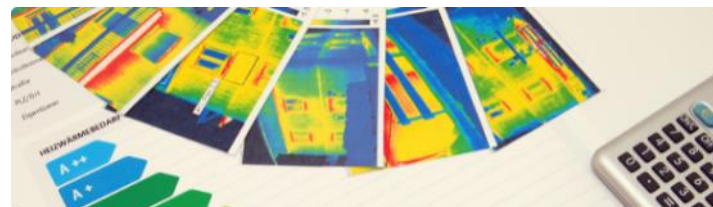
# Cross-cutting Success Factor 5

## Draw Upon Community Dynamics!



### ***Eueco (DE)***

*Standardizing community processes for local energy cooperations with a reliable IT support system.*





# Crosscutting Success Factor 6

## Motivate End Users with Fun and Good News!

Start

**Ich bin Oscar!**  
Ich bin der Energie-Spezialist der BKW. Ich sehe zwar aus wie ein normaler Bär, kann aber weit mehr als ein Durchschnittsbär. Ich helfe Ihnen, Strom zu sparen. Und Strom sparen ist gleich Geld sparen. [mehr...](#)

146 Punkte von Philipp Reiß

Freunde einladen

Zählerstand eingeben

Erinnerung setzen

Meine Energie Smart Aufgaben Spartipps Quiz Gewinnspiel Forum

Impressum Nutzungsbedingungen BKW Energieeffizienz-Portal FAQ Onlineshop



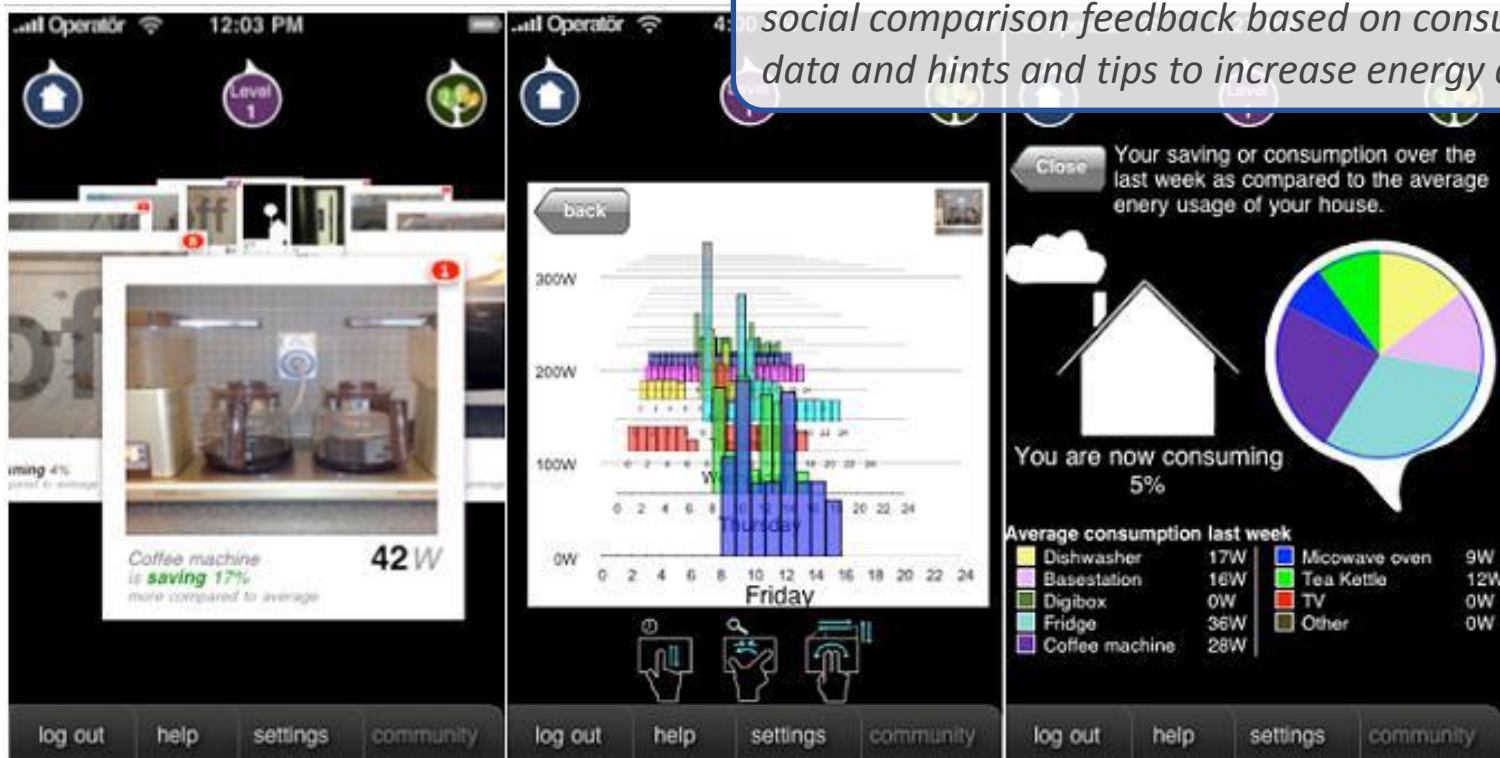
### OSCAR (CH)

*Gamification approach to foster energy awareness, provide hints and tips and to collect end user data.*

## Motivate End Users with Fun and Good News!

### *BeAware (FI/IT/SE)*

*EnergyLife game (smart phone app) provides playful social comparison feedback based on consumption data and hints and tips to increase energy awareness.*



# Crosscutting Success Factor 7



## Test Before Roll-out: Ensure Functioning!

### Technological Development

Design Phase

Adjustment phase

Implementation Phase

Include **'consumer'-experts** such as **social scientists**, but also trained **installers or customer service**

Plan a **friendly user trial** and qualitative interactions to detect malfunctions or flaws in the overall design.

**Rollout functioning equipment and be prepared for questions and concerns** of field test customers: Smooth processes are a prerequisite to acceptance

*MOMA (DE) - Energy@home (IT) - Smart Metering Projekt (DE) – Linear (BE)*

- 1. Reinforce the end user perspective in the product design**
- 2. Develop viable business models**
- 3. Co-creation & gamification**
- 4. Roll out smart grids towards the general public**
- 5. Develop novel stakeholder coalitions**
- 6. Connect smart grids to smart cities, smart living and sustainable lifestyles**
- 7. Develop an overarching storyline to achieve a sense of urgency about smart grids**

# Thank you for your attention



Deliverables available for download at:

**[www.s3c-project.eu](http://www.s3c-project.eu)**



# ADVANCED

Active Demand Value ANd  
Consumers Experience Discovery



# ADVANCED: the identity card

EC FP7 research project

**empowering smart consumers to participate in active demand and electricity supply system efficiency**

Dec 2012 → Dec 2014

Budget: 4M€

EC Funding: 2,7M€



ADVANCED



# Our definition for Active Demand

**Providing electricity consumers with information on their consumption and the ability to respond to time-based prices (either manually or automatically) as well as with other types of incentives, thus motivating them to actively manage their consumption by altering usage in line with the network conditions, such that modifications in consumer demand become a viable option for addressing challenges of electricity systems such as the increase of efficiency and reliability, infrastructure planning and investments deferral**



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ADVANCED

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ADVANCED

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ADVANCED

# The need

- Several AD experiences in EU
- Different solutions, approaches, consumers

## **A COMMON GOAL**

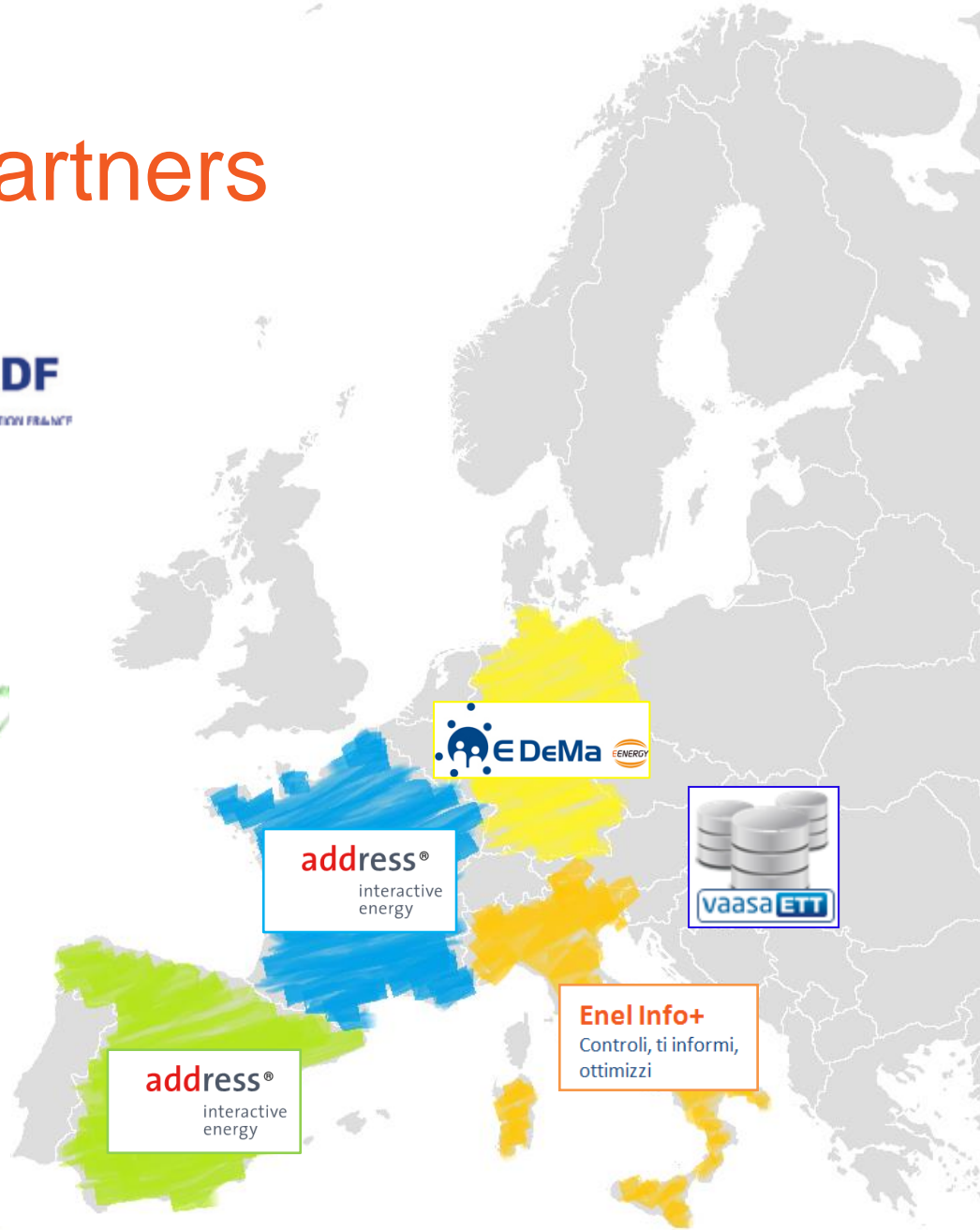
Empower consumers and create value for the system and its stakeholders

## **A NEED**

Share the experiences, scientifically assess the outcomes to know what works the most



# Demo sites and partners



address®  
interactive energy



Enel Info+  
Controlli, ti informi,  
ottimizzi

address®  
interactive energy



ADVANCED

# Demo sites: Enel Info+



Some small towns involved

- Part of the Isernia Project
- Duration: Dec 2012 - Dec 2014
- About 4000 participants
- Smart info, IHD, PC SW, App





# Demo sites: ADDRESS (Spain)



Located in the city of Castellon de la Plana

- Duration: Jul 2012 - Jul 2013
- About 300 participants
- EBoxes, sets of smart plugs, wall units
- 14 air conditioning management systems
- 25 Smart washing machines



ADVANCED

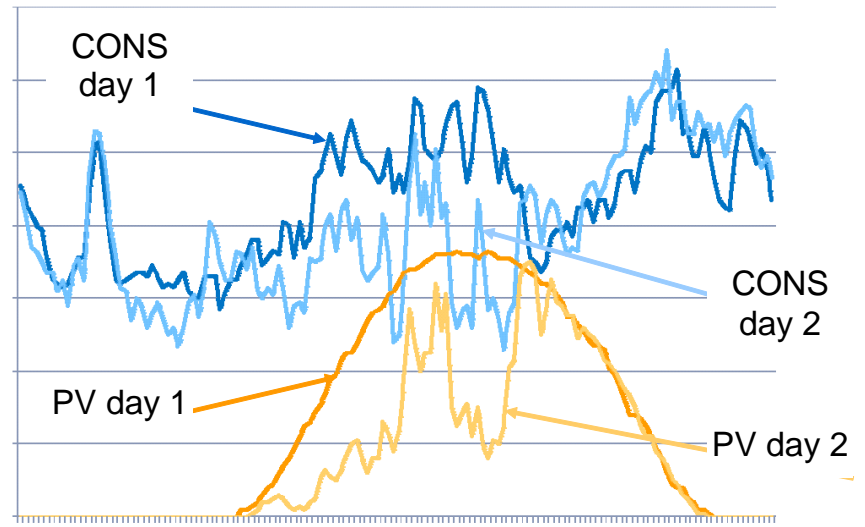
# Demo sites: ADDRESS (France)



Located in Houat and Hoëdic



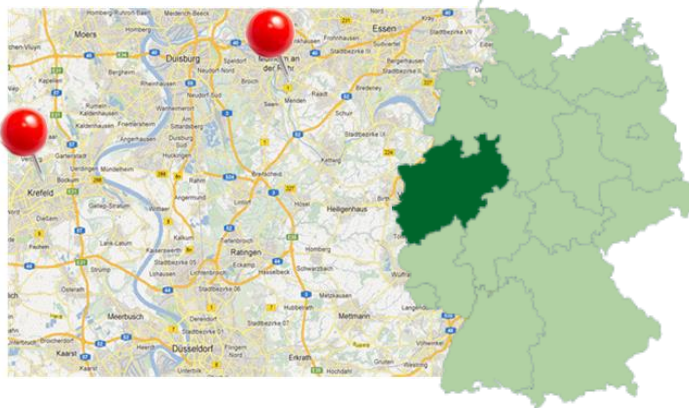
- Duration: Nov 2012- May 2013
- About 30 participants
- More than 7% active consumers
- Eboxes/PC, sets of smart plugs, wall units
- 7 Smart washing machines



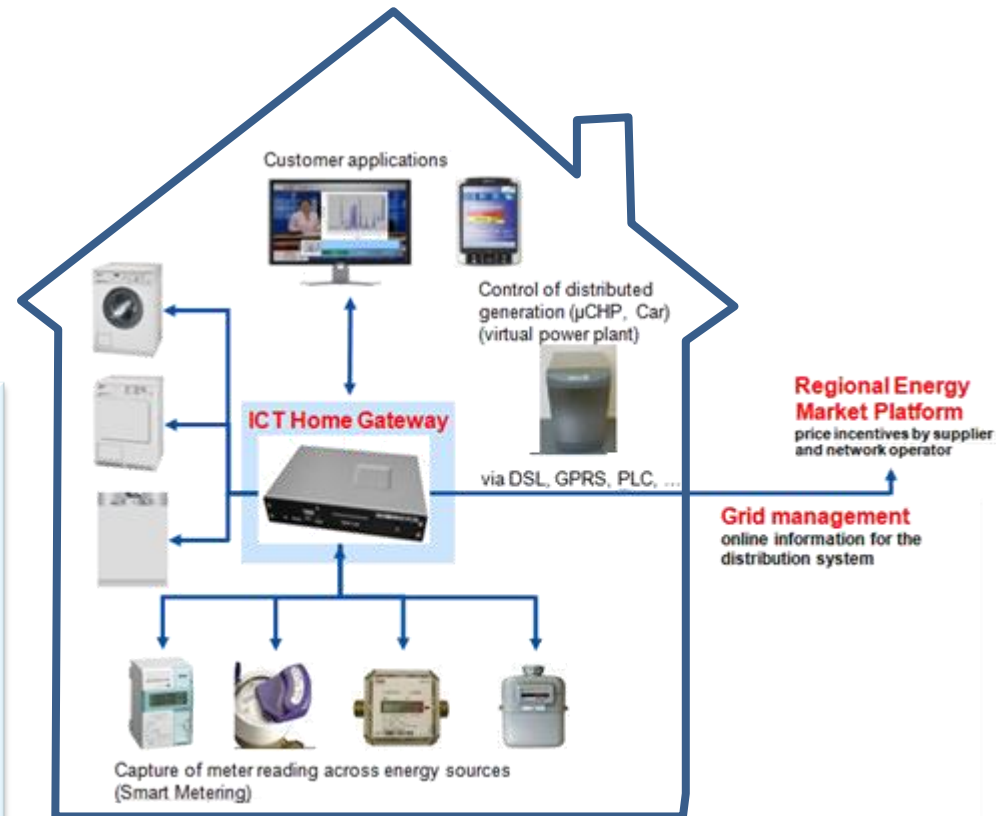
# Demo sites – E-DeMa



Located in Mülheim and Krefeld



- Part of the E-Energy programme
- Duration: Mar 2012 – Nov 2012
- About 700 participants
- Type I consumers: energy display to control energy usage
- Type II consumers: automated control
- Time-of-use and load dependent contracts

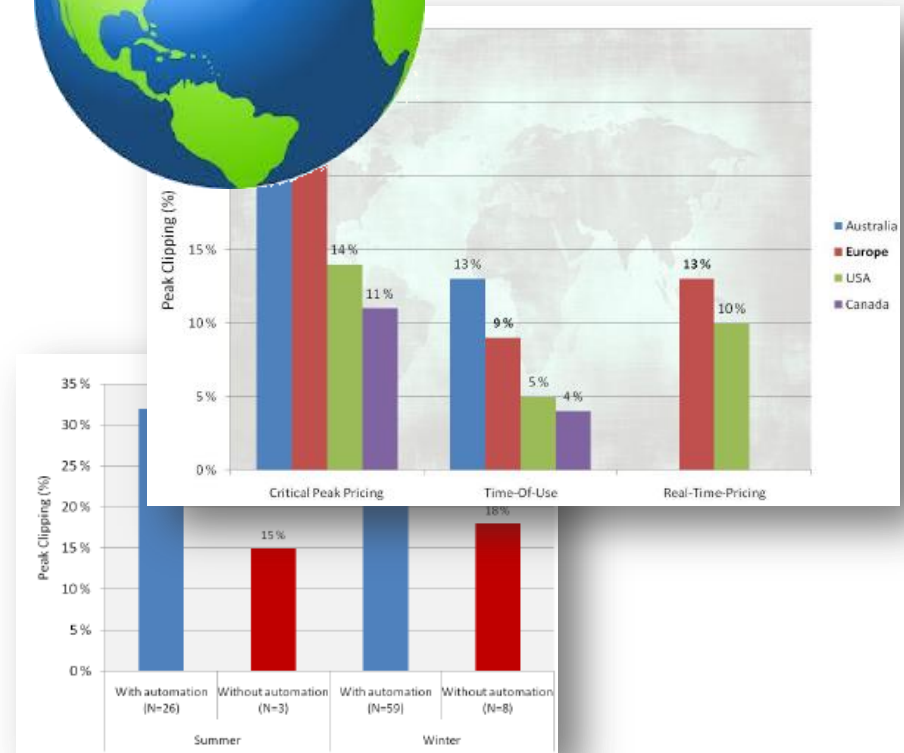


ADVANCED

# Vaasaett Database



- Over 110 feedback and dynamic pricing pilot programs from around the world, over 450,000 residential consumers
- 22 different variables:
  - internal and structural pilot variable
  - external market factors.
- Impacts on pilot participants estimated:
  - Energy conservation (in %).
  - Peak clipping (in %).
  - Bill reduction (in %).



ADVANCED

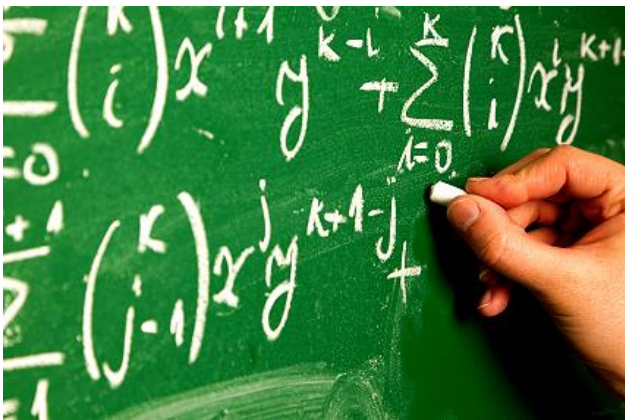


# What do we aim for?

- Compare different AD programs
- Identify success of different strategies



## Unique conceptual model



Energy Efficiency



Demand Response



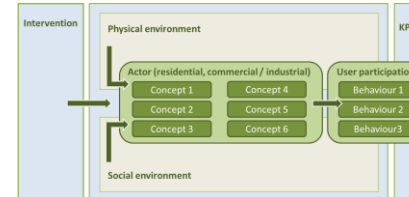
KPIs

Flexibility



# 1. Creating methodology

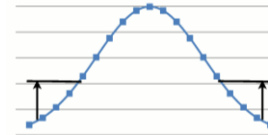
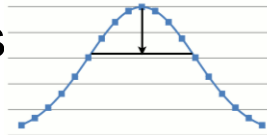
- Conceptual model of active consumer participation in AD



- Building the “target matrix”



- Defining a set of KPIs



- Elaborating macro-economic scenarios



- Mapping the risks related to privacy and data protection

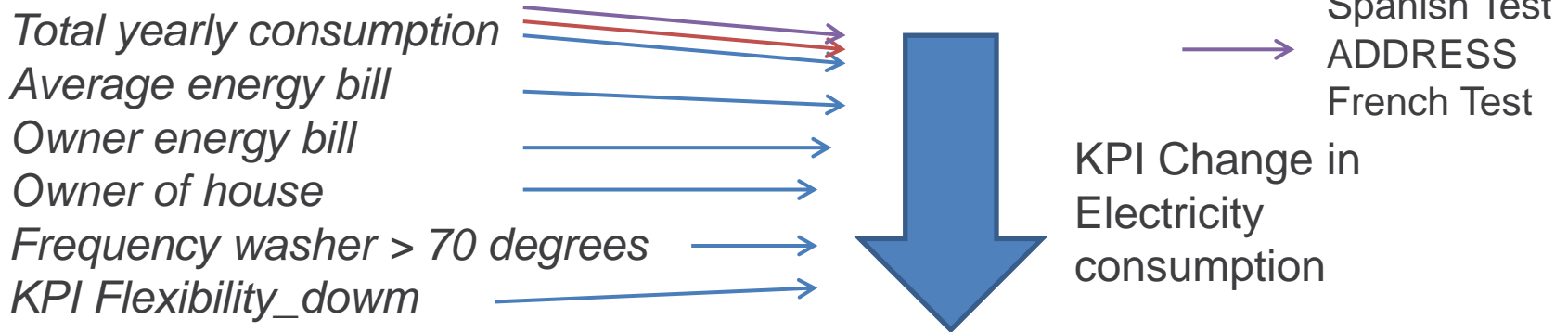




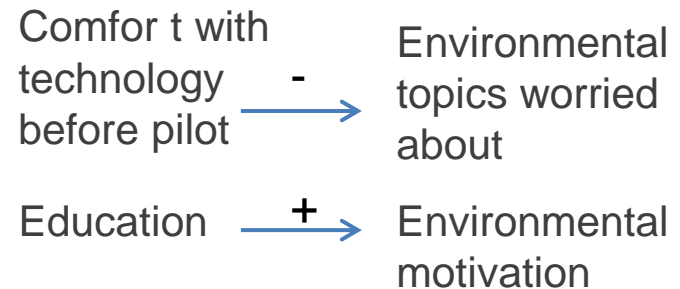
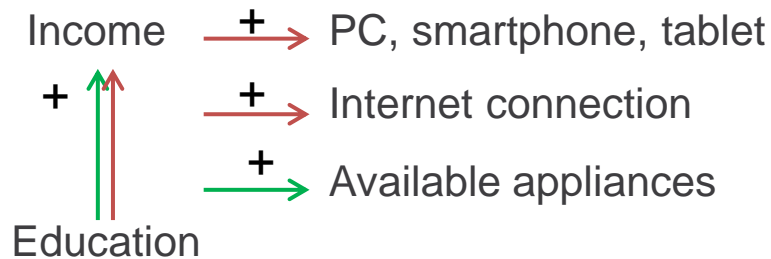


## 2. Data collection and analysis (1/3)

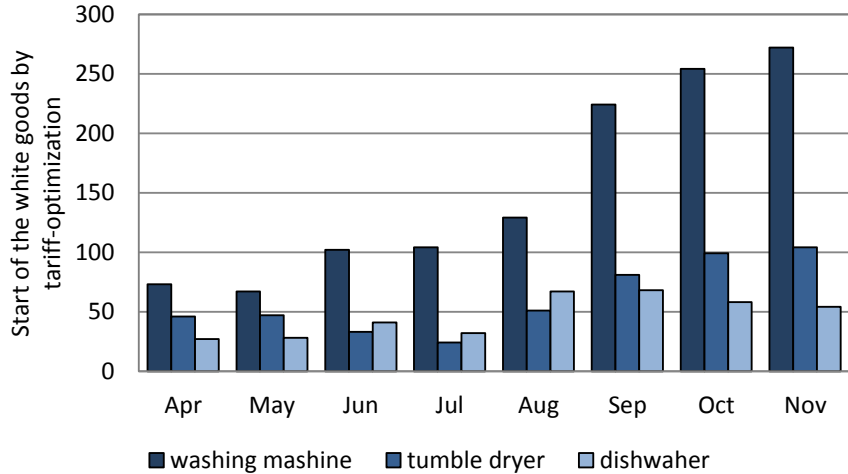
- Direct relations with KPI **Change in Electricity Consumption**



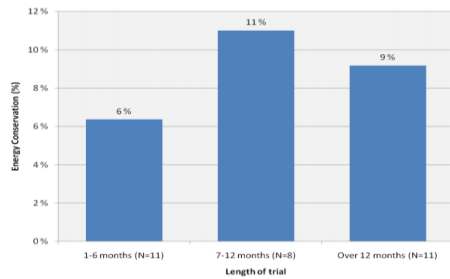
- **Peculiar results**



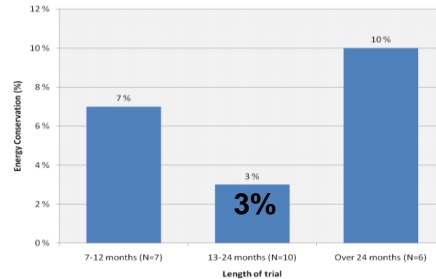
# 2. Data collection and analysis (2/3)



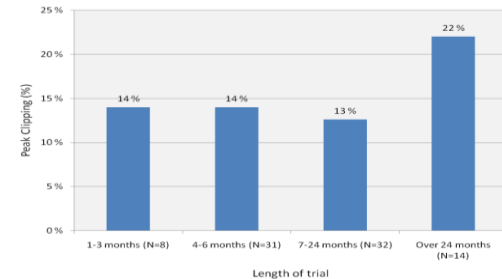
Number of automated washes increased over time, supporting the assumption that some time is needed to change people's habits and to see the potential within AD



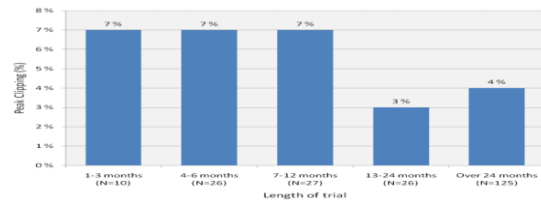
(1-6M) (6-12M) (>12M)  
IHD pilots



(1-12M) (13-24M) (>24M)  
Informative bill pilots



(1-3M) (4-6M) (7-24M) (>24M)  
Critical peak pricing & Critical peak rebate pilots



(1-3M) (4-6M) (7-12M) (13-24) (>24M)  
ToU pilots

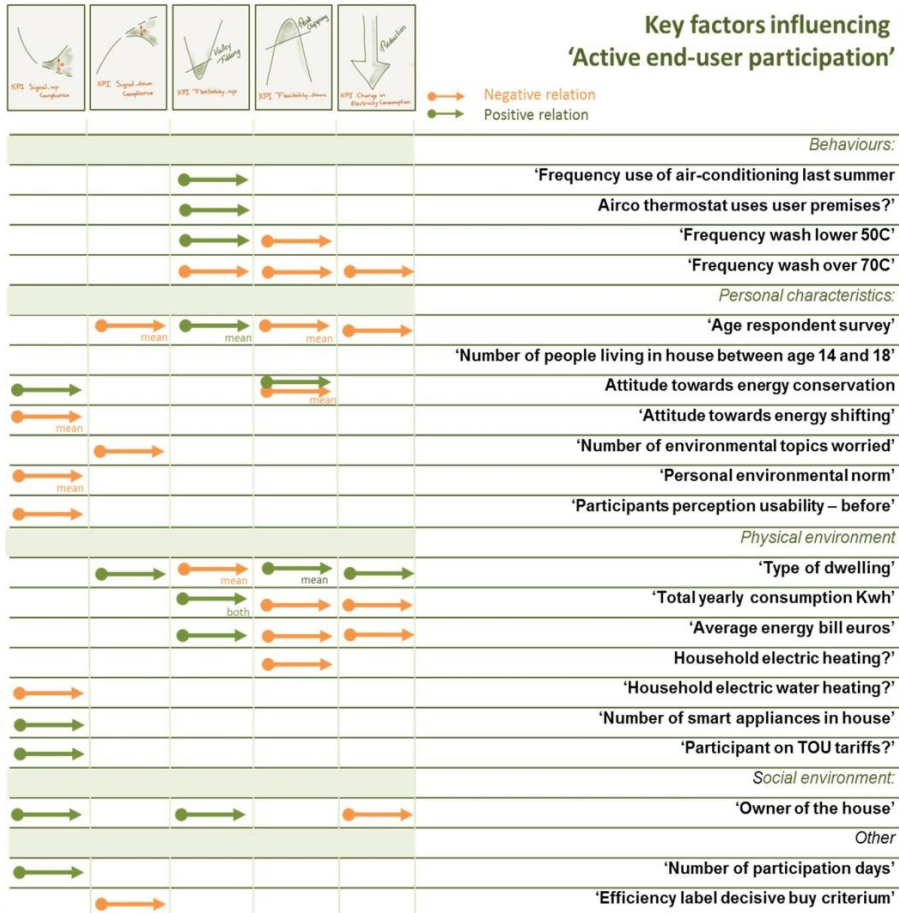
In all but TOU pilots, results were higher in pilots which lasted longer



# 2. Data collection and analysis (3/3)



ADVANCED has explored the factors influencing energy behaviour on a household level under different conditions



This work resulted in a methodology that combines smart meter data collection with behavioural change insights by means of a newly developed KPI. We demonstrate the applicability of the methodology and conclude that standardisation of methodology and instruments across AD pilots would greatly enhance the understanding of what facilitates Active Demand.

# 3. Customer interviews



- Energy consumption is **not easily understandable**: more transparency, more pedagogy is required
- A **tangible proof** of the individual benefit would be necessary (in this sense, a bill reduction does not only reflect a saving).
- **What change most easily behaviour**: data should show consumption in relation to individual devices/appliances, household zones and historical data. Easy access pricing data alongside usage levels/times
- Importance of limiting the inconvenience (preserving comfort)/ **assistance** when required
- Importance of the **user friendliness** of the material
- For part of the interviewees, to be part of an **innovative project** is not negligible (feel like pioneers)
- When consumers make required changes or alter consumption behaviour, **clear feedback should be provided** showing the impact of that on either individual household or collective goals, or both.



# 4. Survey around Europe



8000

**ATTITUDES TOWARDS ENERGY CONSUMPTION**

**BEHAVIOUR CHANGE**

**CURRENT BEHAVIOUR**

**AWARENESS OF ELECTRICITY CONSUMPTION**

**ATTITUDES TOWARDS ELECTRICITY PROVIDERS**

**READINESS TO ADOPT ACTIVE DEMAND**





# 4. AD impact assessment

- Quantitative impact of AD on system performance and stability with focus on MV and LV grids. Preliminary results:



country	sector	electrical power			electrical energy		
		baseline scenario	optimistic scenario	technical potential	baseline scenario	optimistic scenario	technical potential
		GW	GW	GW	GWh	GWh	GWh
Germany	households	0.06	0.46	6,49	3,898	9,220	11,557
Italy	households	0.83	1.32	5.20	216	2,516	7,189
France	households	1.22	1.70	13.80	12,039	13,456	15,315
Spain	households	0.20	0.75	5.27	672	923	7,510

- Assess the economic benefits of AD for the key stakeholders in different regulatory frameworks
- A framework data security and data protection





# 5. Best practice



- Identification of **Best Practice** AD
- **Validation** of conceptual model – which elements are most important for successful AD?
- Create an **Actionable Framework** for residential/C&I consumers
- Create a useable **Communication Umbrella** for residential/C&I consumers



# ADVANCED connection

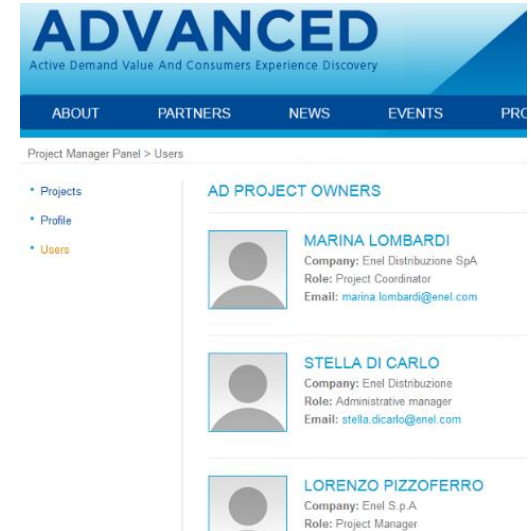
Visit our website from any Internet connected device

[www.advancedfp7.eu](http://www.advancedfp7.eu)



ADVANCED

# ADVANCED Community - JOIN US!



Register yourself as Project Manager and map your project directly to the homepage!



# Became a SAB members



Contact us and take part to our SAB meetings!

Next dates:

- Madrid  
“Discussion of the surveys’ results with focus on the interpretation of the behavioural aspects of consumer participation and privacy and security aspects”
- Rome  
“Actionable frameworks and communication umbrellas”

## Current members of the Stakeholder Advisory Board

### Technology Provider

	Thomas Weisshaupt
	Alicia Carrasco
	Adam McCarthy
	Dr. Maher Chebbo
	Olivier Sudan
	Jesper Uhlin
	Lars Andersson
	Marc Chebbo
	Exabier Bilbao Hernández
	Peter Nemcek
	Rodolphe de Beaufort (in signing procedure)
	E di Fabro (in signing procedure)

### Scientific Community

	Patricio Peral
	Seppo Hänninen
	Pierluigi Mancarella
	Pedro Linares
	Daan Six
	Serafin von Roon; Thomas Gobmaier
<i>individual</i>	Prof. Antonio Vicino

### Energy Utility R&D

	Sandra Scaliari
	Stefan Melin
	Regine Belhomme

### Consultancies

	Mike Gordon
	Jitske Burgers

### Regulators

	Marcella Pavan
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### Industry Representation

	Per-Olof Granström
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### Consumer Associations

	Paolo Landi
	Luisa Villa
	Holger Krawinkel

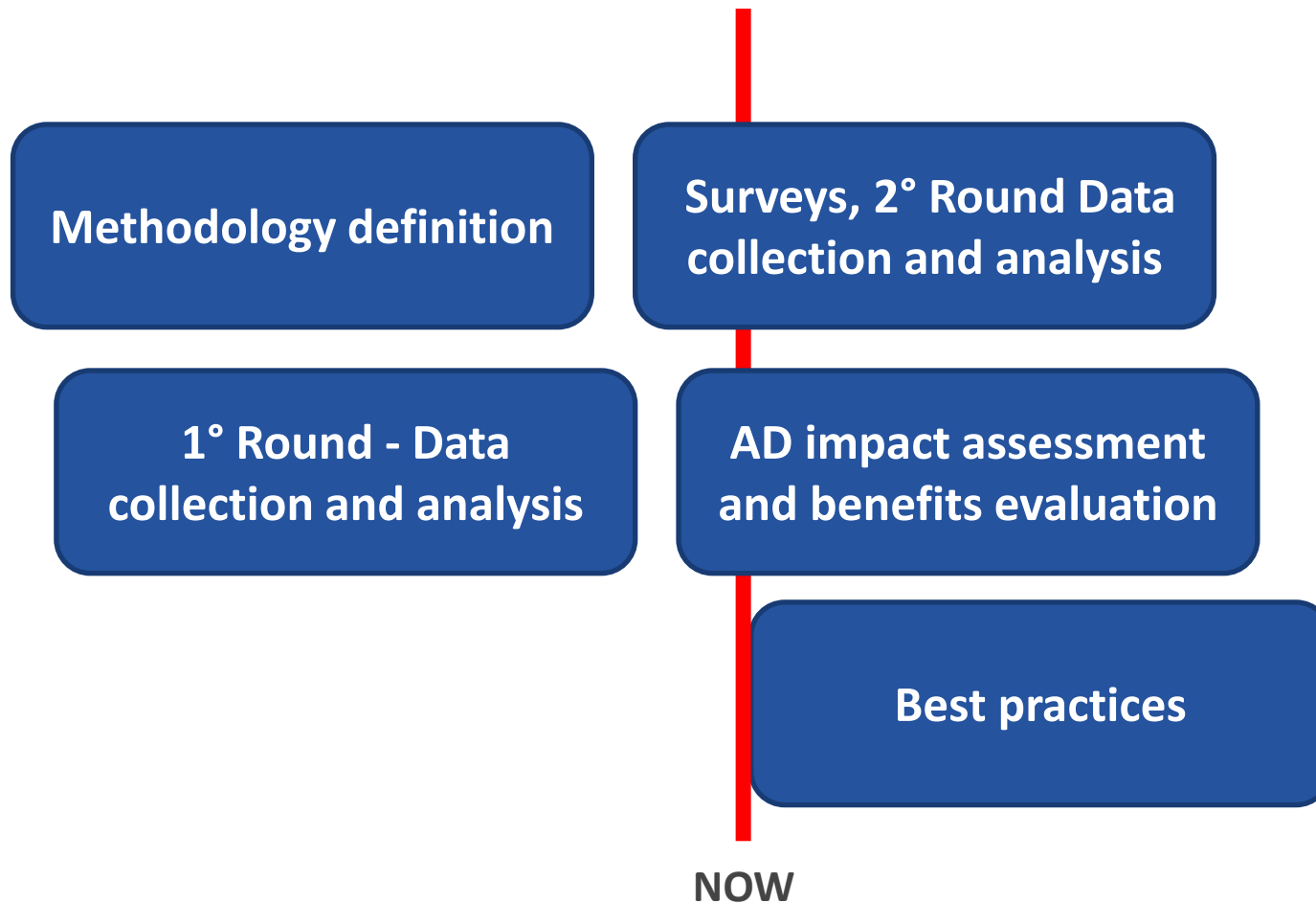


# Thank you!



ADVANCED

[advancedfp7.org](http://advancedfp7.org)







Marco Bakker, ECN

**S3C**

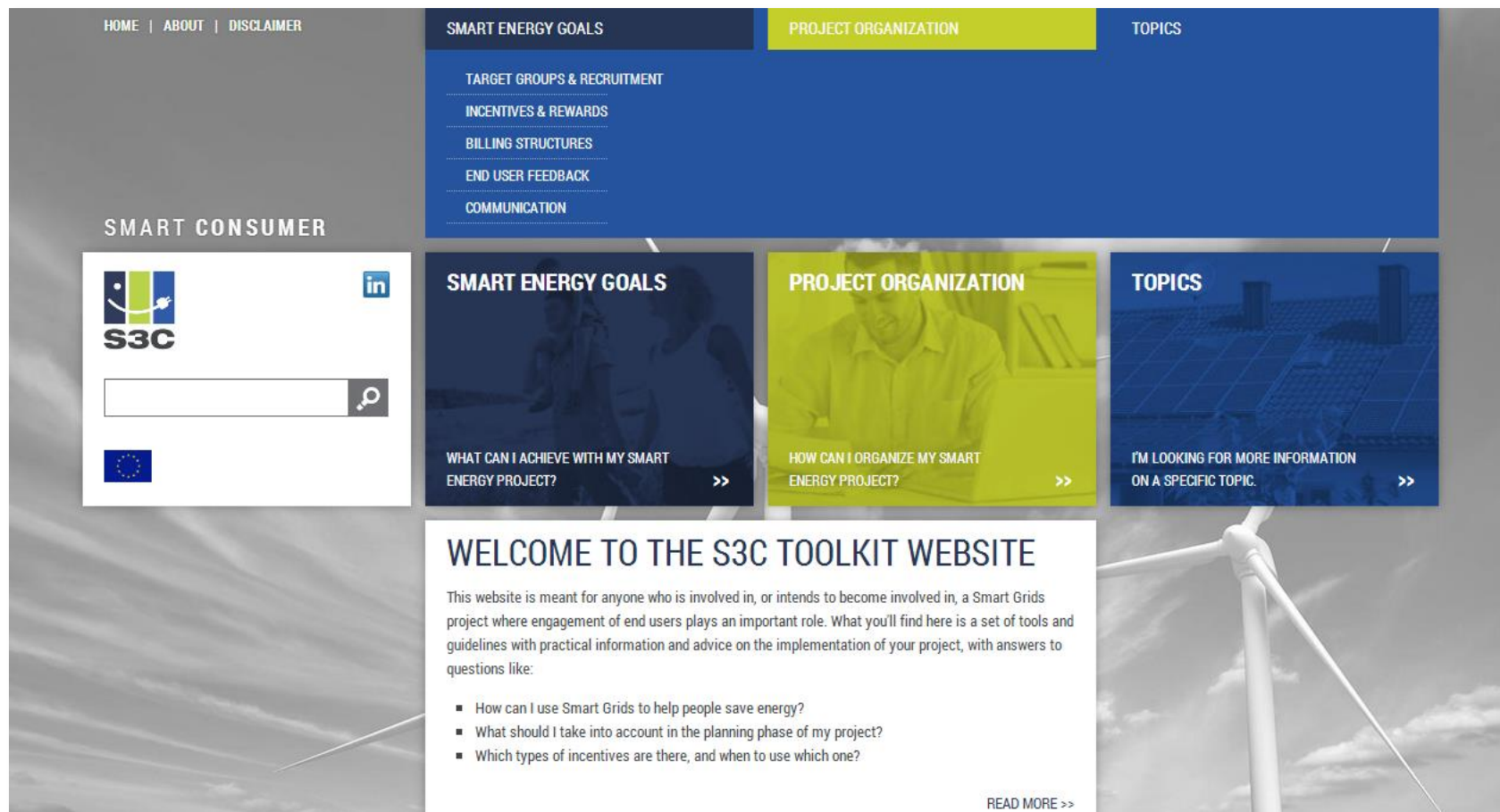
**TOOLS AND GUIDELINES**

SMART **CONSUMER**

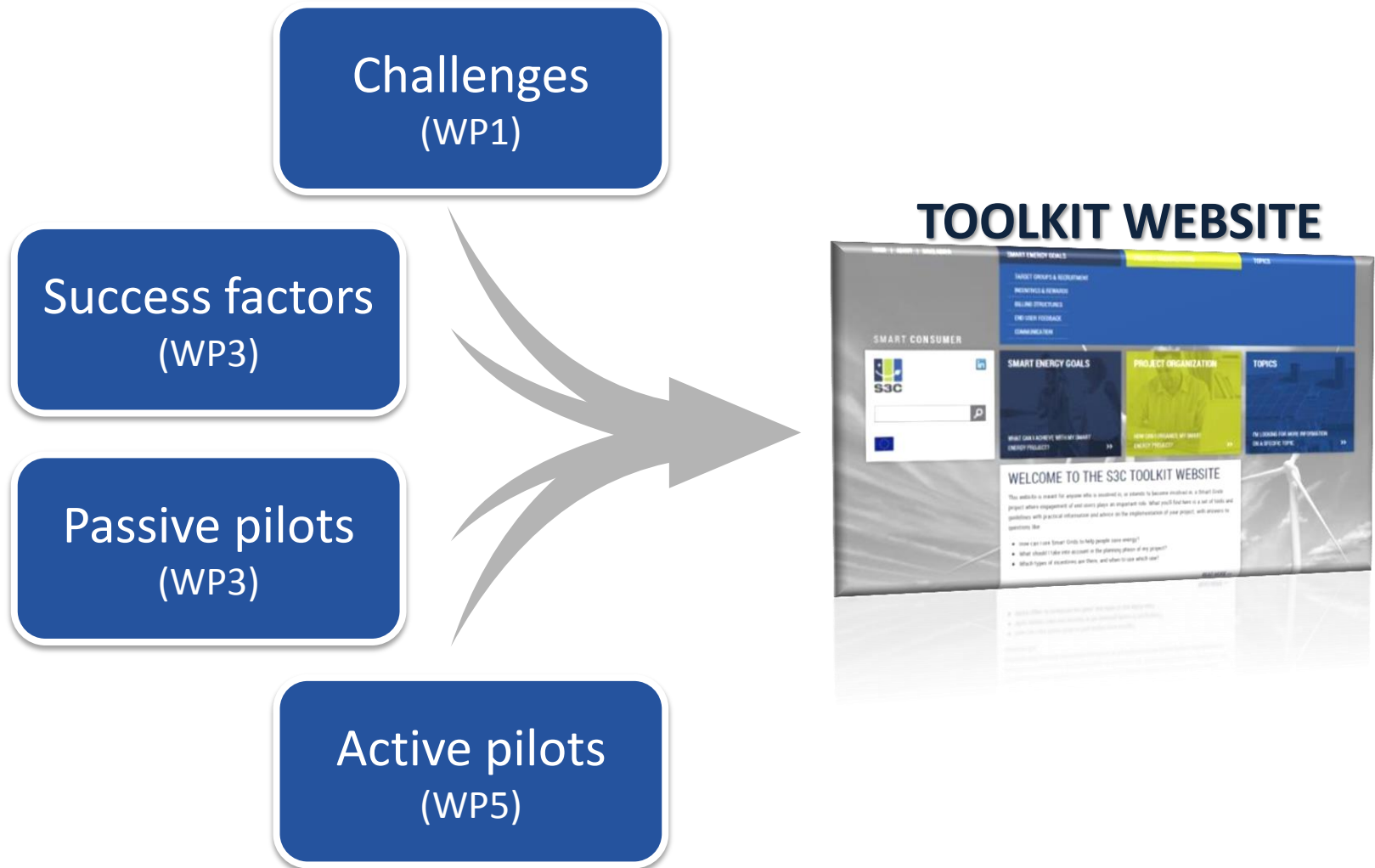
SMART **CUSTOMER**

SMART **CITIZEN**

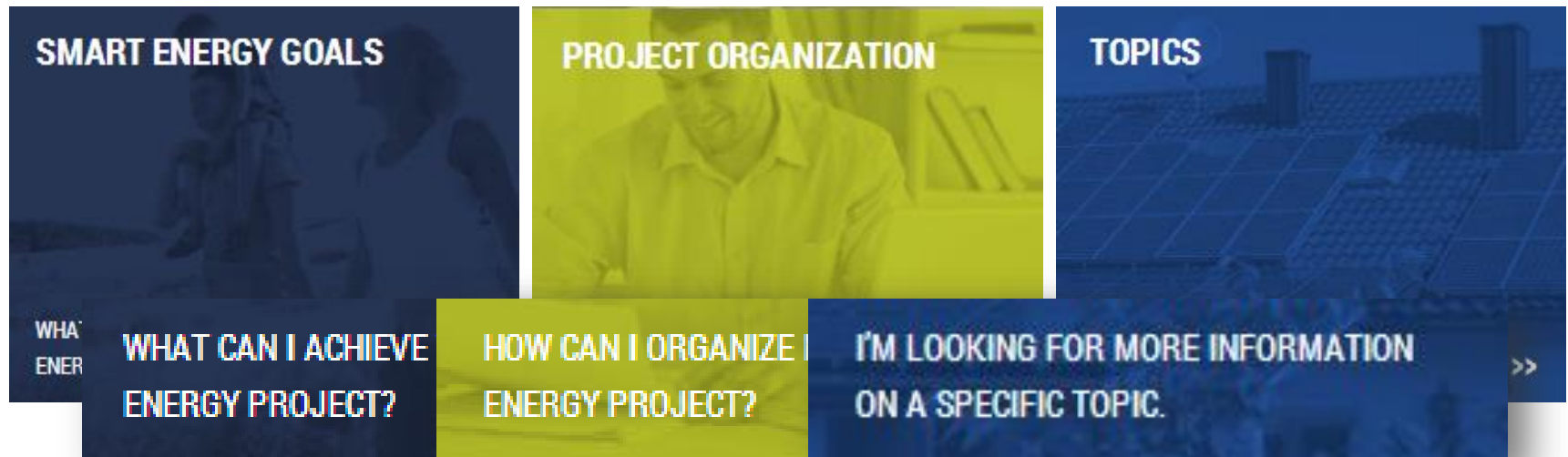
## www.smartgrid-engagement-toolkit.eu

A screenshot of the S3C toolkit website. The page has a dark blue header with navigation links: HOME | ABOUT | DISCLAIMER. The main navigation bar is split into three sections: SMART ENERGY GOALS, PROJECT ORGANIZATION (highlighted in light green), and TOPICS. Below this, there are three main content cards: SMART ENERGY GOALS, PROJECT ORGANIZATION, and TOPICS, each with a question and a right-pointing arrow. A search bar is located in the top left, and a European Union flag is in the bottom left. The main content area features a large white box with the heading 'WELCOME TO THE S3C TOOLKIT WEBSITE' and a list of three bullet points. A 'READ MORE >>' link is at the bottom right of this box. The background of the website is a grayscale image of a wind turbine.

# Where does the information come from?




Three gateways into the website, depending on what information you are looking for.

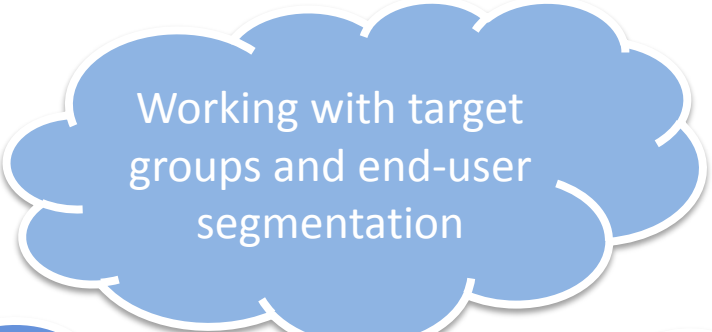


# On what topics can I find information?


- Understanding your target group
- Incentives and rewards
- Infrastructure and devices
- Communication




Project communication,  
customer service  
and support



Working with target  
groups and end-user  
segmentation



Using smart  
appliances and end-  
user feedback



Monetary and  
non-monetary  
incentives

# What can I find in a tool or guideline?



The screenshot shows a document page with the S3C logo and the European Union flag at the top. The main heading is 'GAMIFICATION'. Below it, there are sections for 'Keywords', 'What is it?', 'When does it work?', and 'Conditions'. The text describes gamification as a tool to change energy behavior through game mechanics like points and badges.

**GAMIFICATION**

**Keywords:**

- End user engagement
- Incentives
- Feedback

**What is it?**

The basic concept behind gamification in the energy sector is to use game technics and game mechanics to engage people to change their energy behaviour and to learn about energy savings etc. in a playful manner. Typical key elements are points, achievement badges, progress bars or virtual tokens.

Gamification triggers natural desires for competition, achievement, status, self-expression and learning with the result that participants change their behaviour on a voluntary basis. Furthermore, the "players" are motivated due to the rewards they gain for different energy related tasks. Depending on the specific goal of the game, participants receive points for desirable behaviour, correct answers in quizzes, frequent use of electric usage monitors and other activities. Participants can attain higher levels (e.g. indicated with badges) and can eventually win an award or prize.

To make the game even more effective, it can be combined with competitions or group competitions (peer pressure). Gamification is a very strong instrument to avoid fatigue effects and render the end-users a sense of achievement.

**When does it work?**

**Context**

Gamification can be strong instrument to change energy behaviour relating to reduction or shifting of energy consumption or it can be part of an energy education programme. Combines with a Smart Meter rollout, it is able demonstrate the advantages of this technology for customers in playful way.

**Conditions**

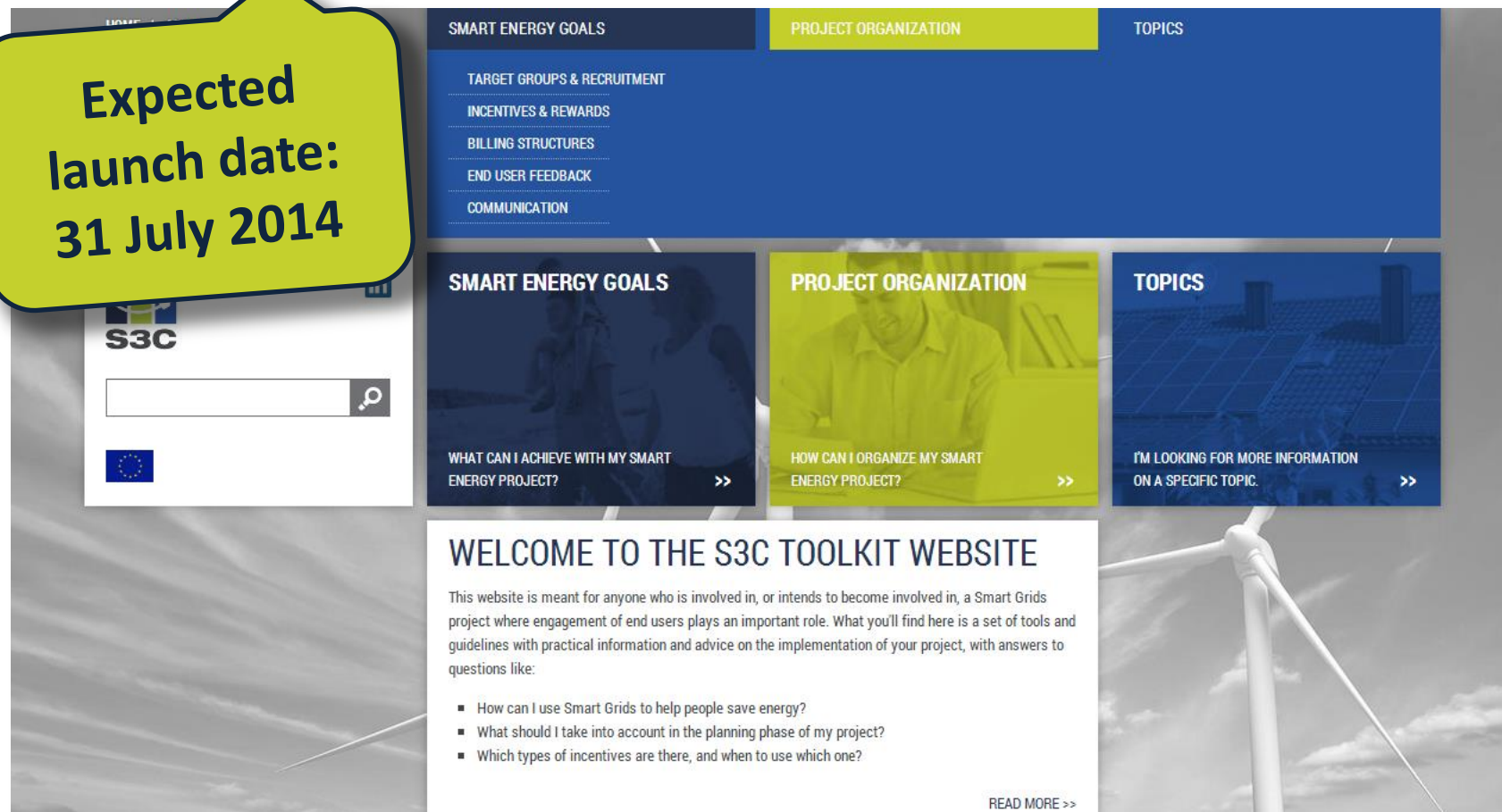
The participation should be voluntary. It is very important to structure the game in a way that allows for attaining milestones or intermediate goals on a regular basis. A system of points or tokens indicates the progress of the different players and their ranking. The gamification approach offers the participants a sense of achievement on a regular basis to maintain the motivation.

- What is the basic idea?
- When can I use it?
- What do I need to do?
- What do I need to take into account?
- Best practices and examples



## www.smartgrid-engagement-toolkit.eu

Expected  
launch date:  
31 July 2014

A screenshot of the S3C toolkit website. The page has a dark blue header with three main navigation tabs: 'SMART ENERGY GOALS', 'PROJECT ORGANIZATION' (highlighted in yellow), and 'TOPICS'. Below the header, there are three main content areas. The first, 'SMART ENERGY GOALS', lists sub-topics: 'TARGET GROUPS & RECRUITMENT', 'INCENTIVES & REWARDS', 'BILLING STRUCTURES', 'END USER FEEDBACK', and 'COMMUNICATION'. The second, 'PROJECT ORGANIZATION', features a yellow background with a photo of a man and the text 'HOW CAN I ORGANIZE MY SMART ENERGY PROJECT?'. The third, 'TOPICS', features a blue background with a photo of solar panels and the text 'I'M LOOKING FOR MORE INFORMATION ON A SPECIFIC TOPIC.'. A search bar is located in the top left, with the S3C logo and the European Union flag below it. A large white box at the bottom center contains the heading 'WELCOME TO THE S3C TOOLKIT WEBSITE' and a paragraph of introductory text, followed by a bulleted list of three questions and a 'READ MORE >>' link. The background of the website is a grayscale image of a wind turbine.



Ludwig Karg, B.A.U.M. Consult

Erik Laes, VITO

Pieter Valkering, VITO

Matthijs Uyterlinde, ECN

Marina Lombardi, Enel S.p.A.

Marco Bakker, ECN

# S3C

## THE S3C PROJECT PANEL

SMART **CONSUMER**

SMART **CUSTOMER**

SMART **CITIZEN**