



**S3C**

SMART **CONSUMER**

SMART **CUSTOMER**

SMART **CITIZEN**

# INNOVATION WITH & FOR CONSUMERS & CITIZENS

Joint S3C / ISGAN Annex-7 Webinar

# It's about people!



... with the core idea...



To support the energy utility of the future to effectively cooperate with:



**The smart customer**

“I want to become a prosumer – consume as well as produce energy or provide services to the energy market”



**The smart consumer**

“I want to reduce my energy consumption to save money”



**The smart citizen**

“I want to contribute to the quality of supply and support environmental preservation”

- ✓ **Case study** analysis from **32** European smart energy projects
- ✓ **Tested and validated** by **15** partner projects, including **5 utilities**
- ✓ **Evaluated** by **15 members** of the S3C Advisory Board
- ✓ More than **50 tools and guidelines** for end user engagement available

## Literature review (2013):

- Do's and don'ts
- Don't knows

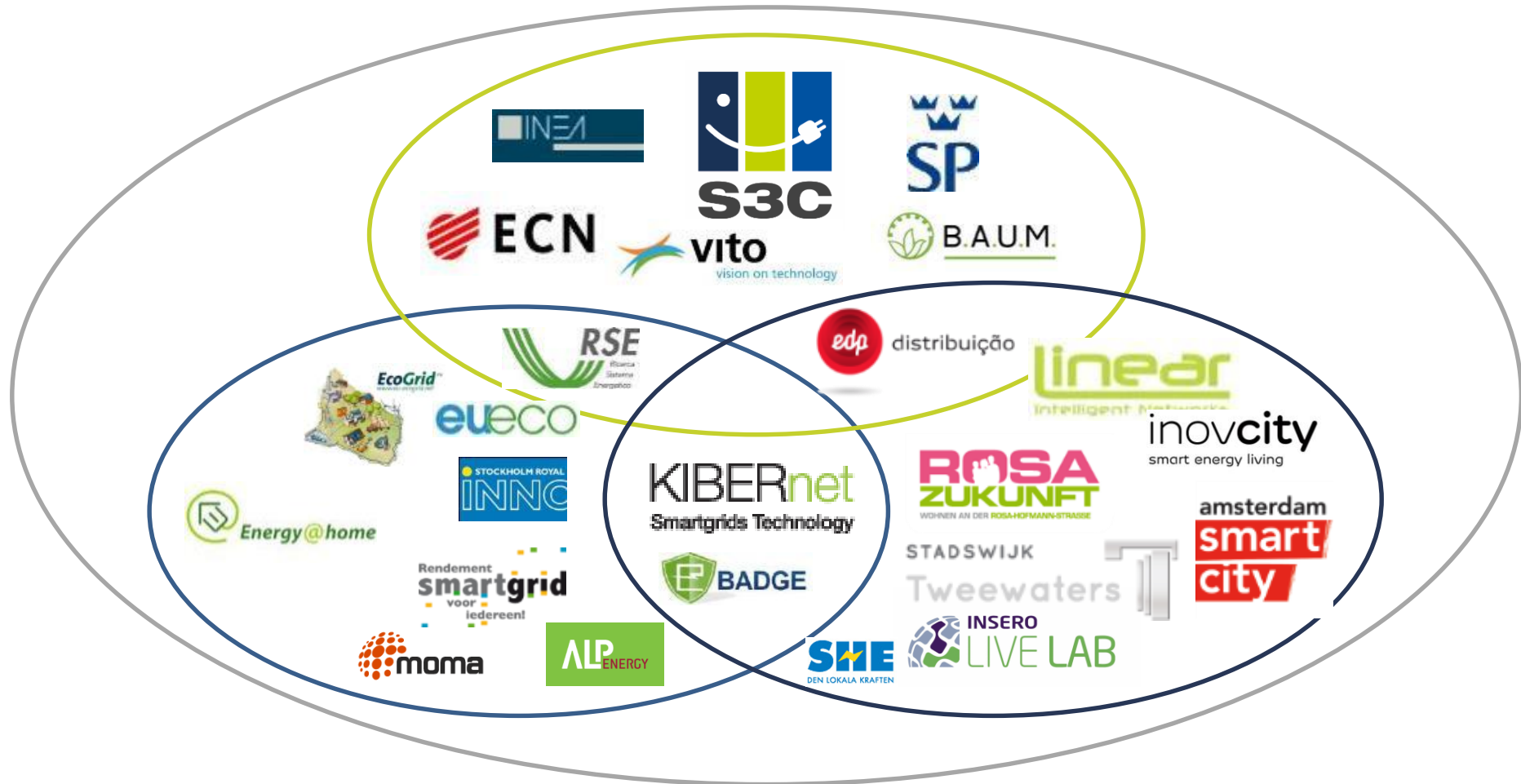
## Case study analysis (2013-2014):

- Best practices
- Success factors

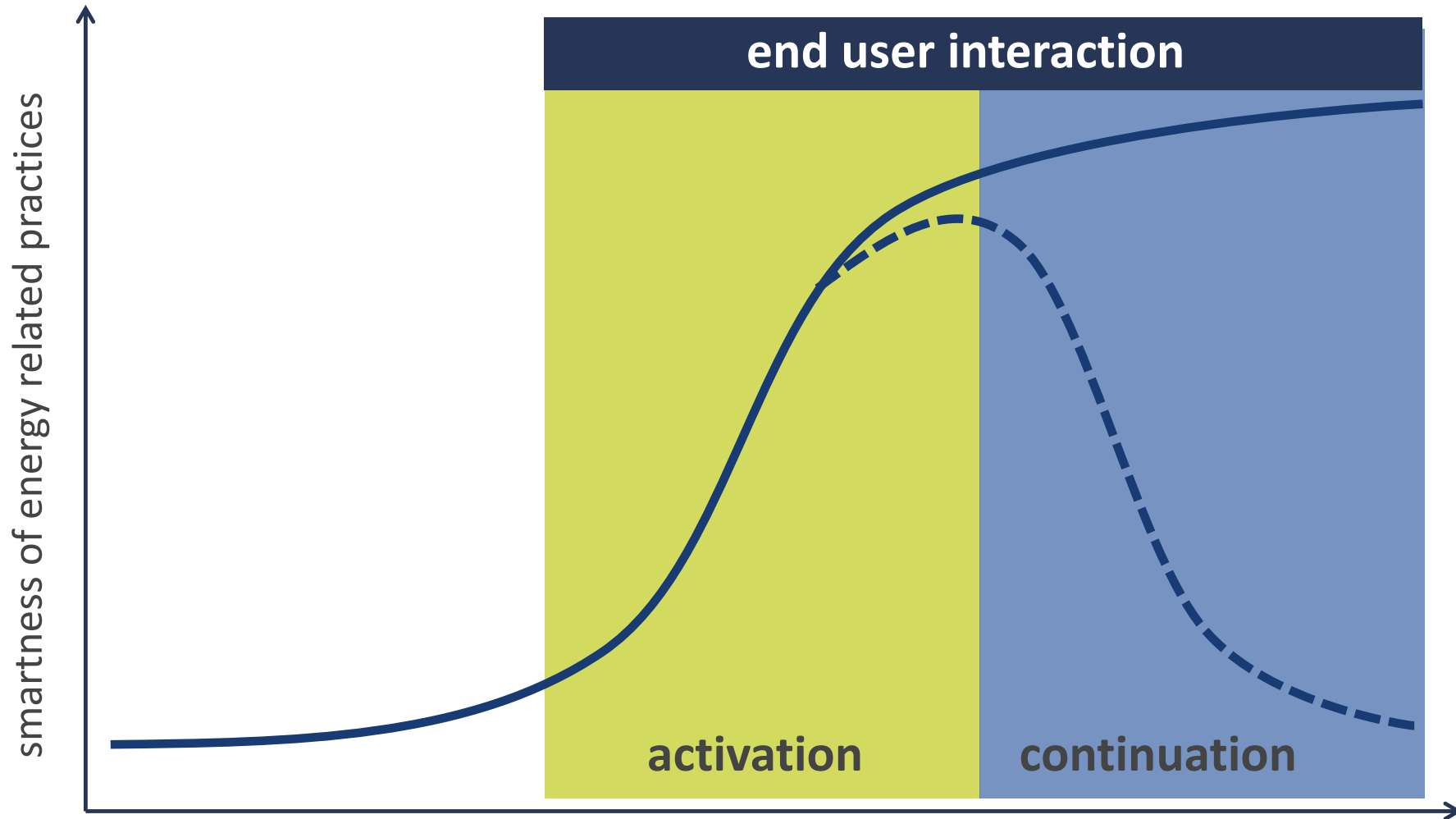
## Testing and validation of guidelines and tools (2014-2015)



# The S3C Family of Projects



# Framing the process



# Behavioural change: enablers and barriers



Category	<i>Enablers</i>	<i>Barriers</i>
<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>



## Understand your customers

- Use segmentation methods
- Looking at
  - Social and demographic factors (income, education)
  - Lifestyle (e.g. presence in the building)
  - Energy practices (laundry, washing dishes, etc.)

## Provide added value

- Applying attractive financial incentives
- Ensuring comfort gains
- Providing new information services
- Offering new forms of end-user control (at least offering override options)

## Build up capacities

- Communicate in the language of your customers (e.g. kWh can be meaningless to them)
- Show and explain options for saving energy or shifting energy use
- Providing training to installers of new equipment

## Create commitment and appeal

- Do not only stress the financial aspect of energy saving/shifting energy use
- Use trusted partners
- Apply social dynamics (e.g. neighbourhood approaches)
- Creating new ‘lifestyles’ around products

## Use effective feedback, pricing and communication

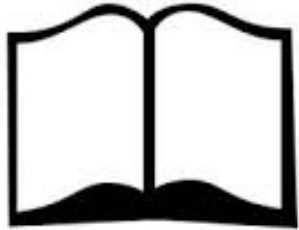
- Adapt feedback to type of customer
- Use direct, real-time feedback (enabling practical experiments)
- Give appliance or space-specific feedback
- Use graphic and positive communication
- Give historical information and goal setting
- Give ‘tips & tricks’ for constant improvement

## Promote easy to use, 'plug-and-play' solutions

- Importance of intuitive designs
- Give feedback on accessible devices (e.g smart phones, tablets)
- For fixed devices, use central locations in the house
- Coupling of energy consumption feedback to other types of information (e.g. weather forecast)

## Stimulate social comparison

- Compare energy behavior to 'peers' (households in the same situation/same customer segment)
- Watch out for 'fallback' behavior of frugal households



**S3C Guidelines** provide an overview of what you need to take into account: they show the directions of your journey without tracing each step into detail.



**S3C tools** offer a detailed, actionable step-by-step account of how to engage people in your smart grid.

[Link](#) to S3C Toolkit

# The S3C toolkit website



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

<http://www.smartgrid-engagement-toolkit.eu/>

<http://www.smartgrid-engagement-toolkit.com/>

A screenshot of the S3C toolkit website homepage. The page has a dark grey background with a wind turbine image. At the top, there is a navigation bar with links for HOME, ABOUT, CONTACT, and DISCLAIMER. Below this, the main content area is divided into several sections. On the left, there is a 'SMART CUSTOMER' section with the S3C logo, a search bar, and a LinkedIn icon. In the center, there are three main content blocks: 'LEARNING' (dark blue background) with the text 'TRAIN ME HOW TO SUCCESSFULLY ENGAGE WITH CUSTOMERS', 'DEVELOPING' (yellow-green background) with 'HELP ME DEVELOP NEW SMART GRID PROJECTS AND SERVICES', and 'EXPLORING' (blue background) with 'I'M LOOKING FOR MORE INFORMATION ON A SPECIFIC TOPIC'. At the bottom, there is a white box with the text 'ENGAGING PEOPLE IN SMART GRIDS' and 'Toolkit for practitioners offering: 35 Guidelines' and '15 Tools'. The background of the page features a large image of a wind turbine.

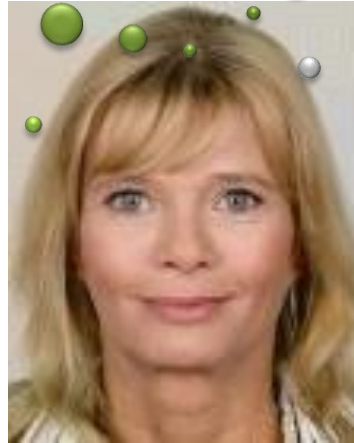


# What people actively do ....

I am tired. I sit  
down on this chair.

I need some good talks.  
I'll go visit my friend.

I'm hungry. I will  
prepare a meal.



I am ....  
I will use  
some energy!



# What customers want



kWh

kW

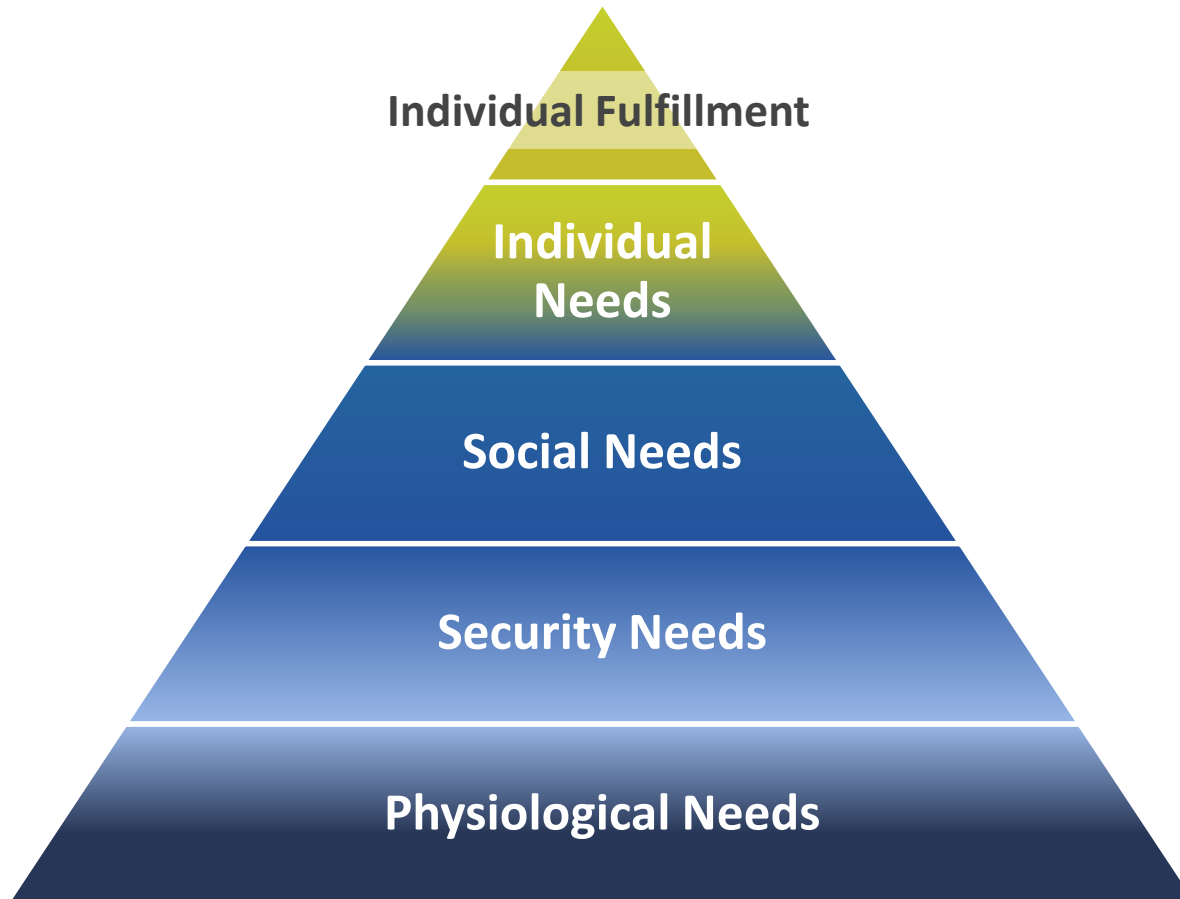
m<sup>3</sup>

°C

l

km

# Levels of personal needs (Maslow)



creativity, transcendence

success, spontaneity

closeness, love,  
mobility

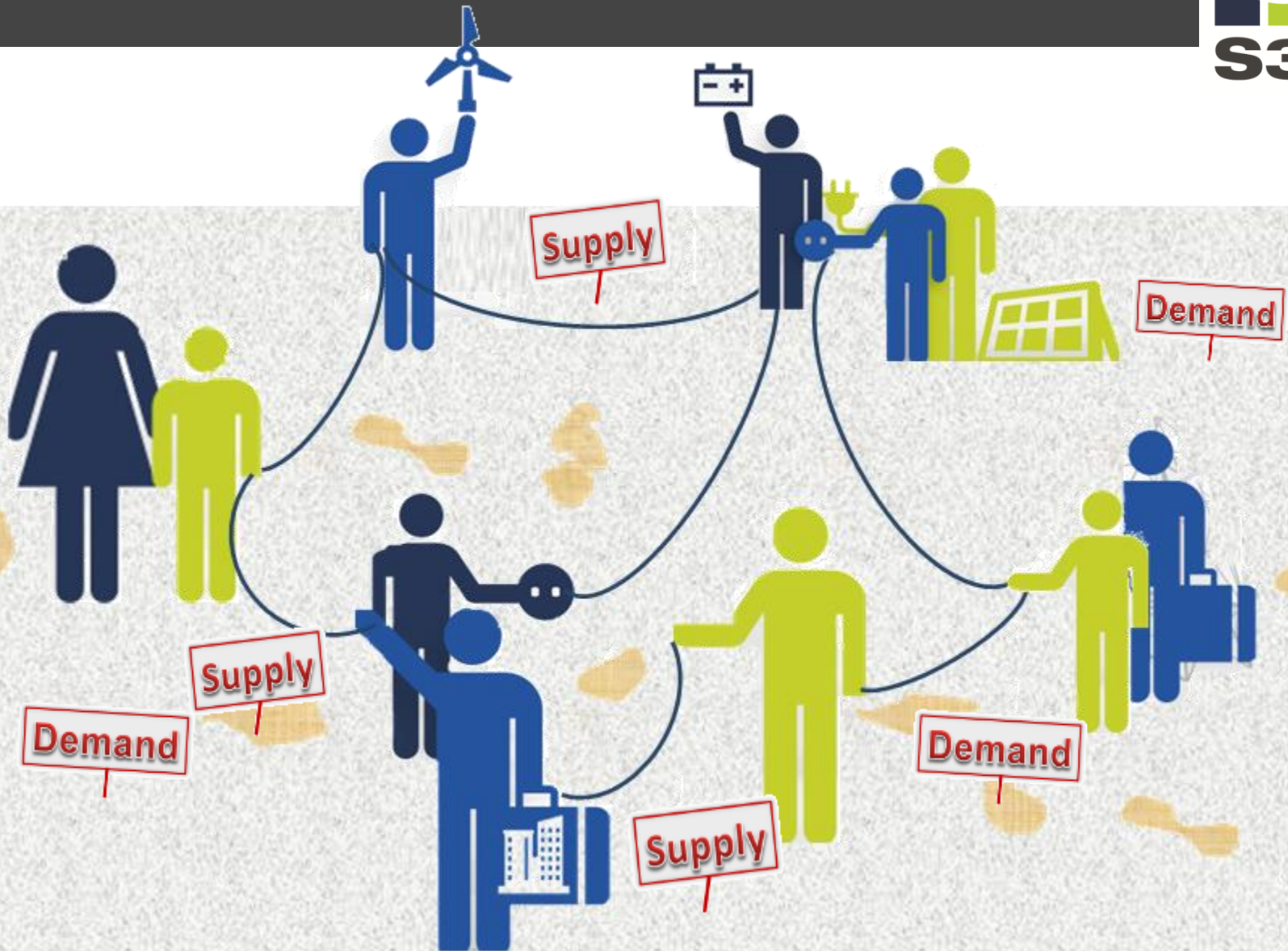
housing, work,  
security

air, food, water,  
light, warmth

# The Wall?



# The Network!

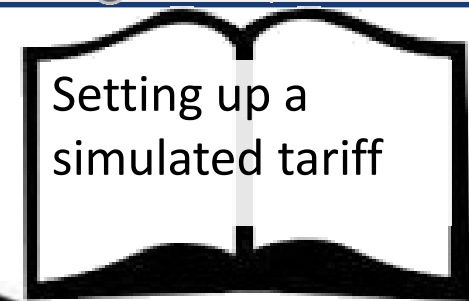


## monetary

- cash award
- dynamic tariff
- gifts

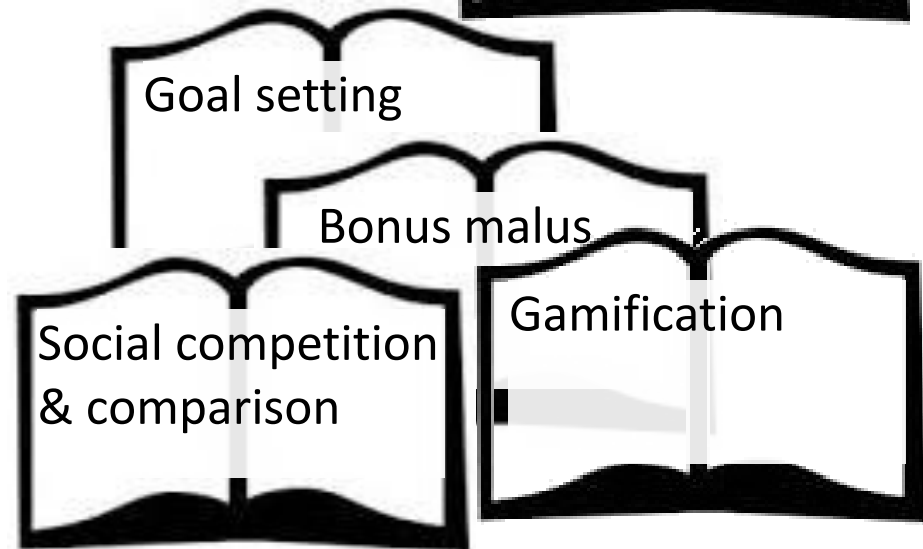


Strategy finder  
tariffs and incentives



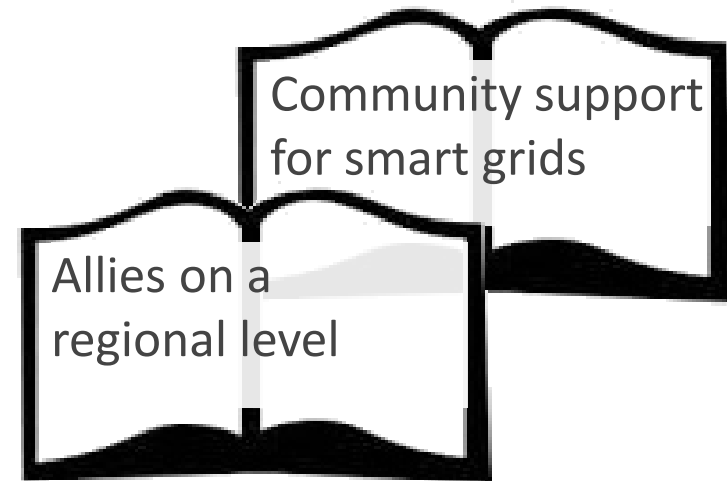
## non-monetary

- positive self image
- sense of achievement
- social prestige
- community dynamics
- fun



# Target oriented involvement

- Learn about the specific target group of your incentive scheme!
- Decide on the budget for your incentive programme!
- Find internal and external partners!
- Develop a plan for scaling up and replicating your incentive program!
- Keep in mind the phases of the project or the rollout of a new product or service.



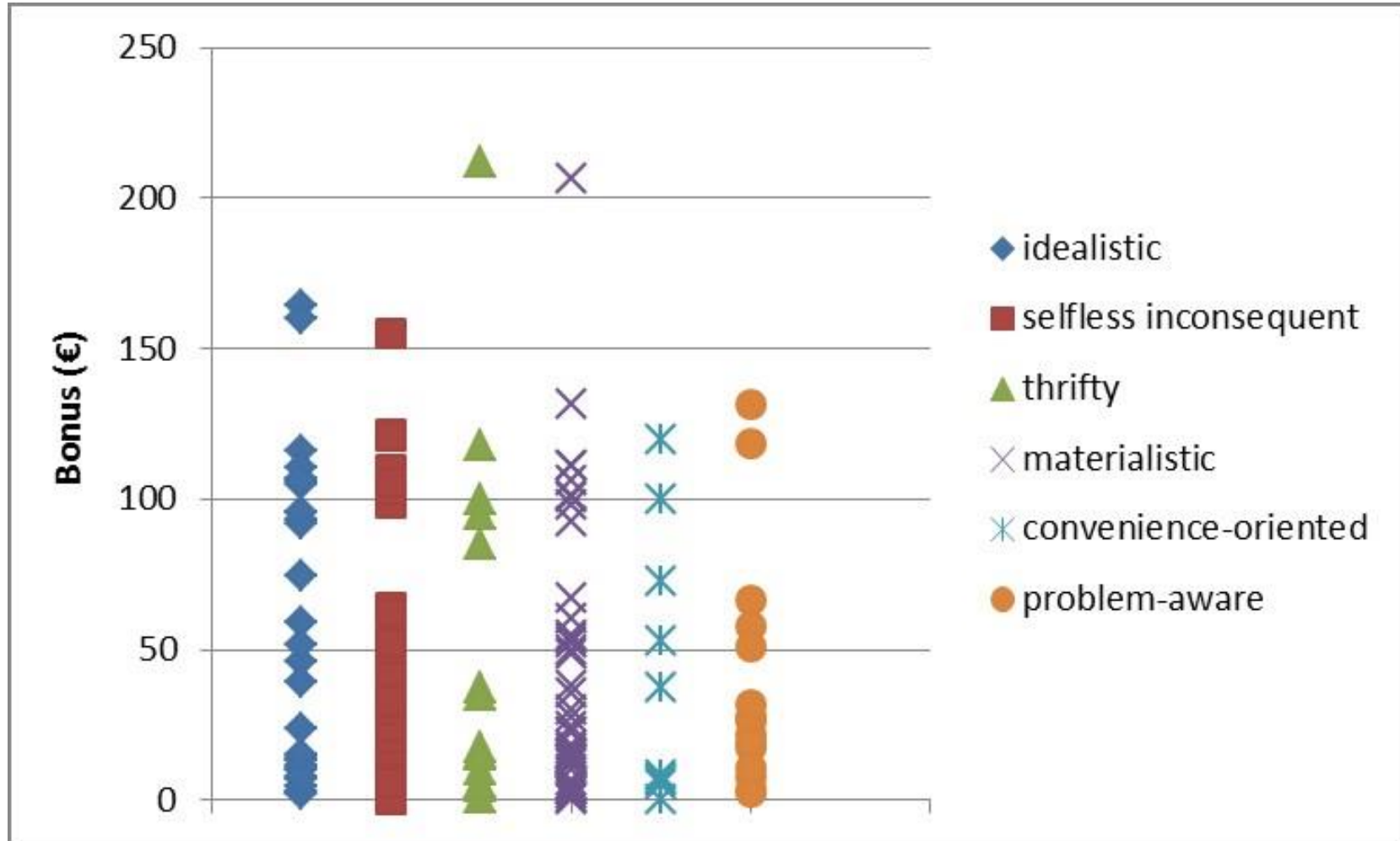
# End user segmentation - LINEAR



	A	B	C
1	<b>Topic</b>	<b>Questions</b>	<b>Score</b>
2			
3	<b>Energy saving in the house</b>	Please indicate how frequently you show the following behaviors. The scale ranges from 1 (never) to 6 (always).	
4		Fill washing machine to capacity.	
5		Defrost freezer/chest freezer/freezing compartment.	
6		Wash laundry at lower temperatures (for example hot wash at 60°C, lightly soiled laundry at 30°C).	
7		Turn off standby on appliances.	
8		Ventilate only briefly, but thoroughly during winter.	
9		Adjust room temperature according to room's usage, for example turn down temperature in unused rooms.	
10		Turning off the light when leaving a room.	
11			
12	<b>Energy saving and travel</b>	Please indicate how frequently you show the following behaviors. The scale ranges from 1 (never) to 6 (always).	
13		Go on holidays by train.	
14		Avoid flights over short distances (for instance to neighboring countries) for private purposes by using alternative means of travel.	
15		Carpool if a distance is covered by car.	
16			
17	<b>Energy and food</b>	Please indicate how frequently you show the following behaviors. The scale ranges from 1 (never) to 6 (always).	
18		Buy regional foods.	
19		Buy seasonal fruits and vegetables.	
20		Avoid buying foods from distant countries.	
21			

Segmentation to better target user groups

# End user segmentation - LINEAR





- Don't restrict yourself to just one incentive model!
- Keep your incentive schemes transparent!
- Connect the incentive model to other decisions you want to make!
- Create a narrative!
- Publicize your results and get in contact with other researchers and practitioners in the area!
- Don't underestimate the relevance of monetary incentives, but also don't overestimate it!

# Co-Creation and effective feedback

## Example: Hus 14 - OfficeWise (Sweden)



Making energy visible through feedback

Collaborating to develop smart energy solutions



# Telling stories - Insero Live Lab





# Social Competition



**THE HILLS COLLECTIVE IMPACT**

First the good news: The Hills are now part of the Australian Government's Solar Cities program - a unique trial project aimed at changing the way we all think about and use energy. Now the great news: as a resident of the area, you can enjoy significant discounts on a host of energy-saving solutions - including solar PV systems, solar hot water systems, heat pumps, smart meters and more. So a win, The Hills. Let's all take action and make a collective impact together. To find out more, including participating councils, call 1300 995 266 or visit [collectiveimpact.com.au](http://collectiveimpact.com.au)

- Save on electricity bills
- Save on water bills
- Save on gas bills
- Save on heating bills
- Save on cooling bills
- Save on hot water bills
- Save on transport bills
- Save on waste bills

**CITY OF BELMONT COLLECTIVE IMPACT**

First the good news: the City of Belmont is now part of the Australian Government's Solar Cities program - a unique trial project aimed at changing the way we all think about and use energy. Now the great news: as a resident of the area, you can enjoy significant discounts on a host of energy-saving solutions - including solar PV systems, solar hot water systems, heat pumps, smart meters and more. So a win, City of Belmont. Let's all take action and make a collective impact together. To find out more, including participating councils, call 1300 995 266 or visit [collectiveimpact.com.au](http://collectiveimpact.com.au)

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**THE HILLS COLLECTIVE IMPACT**

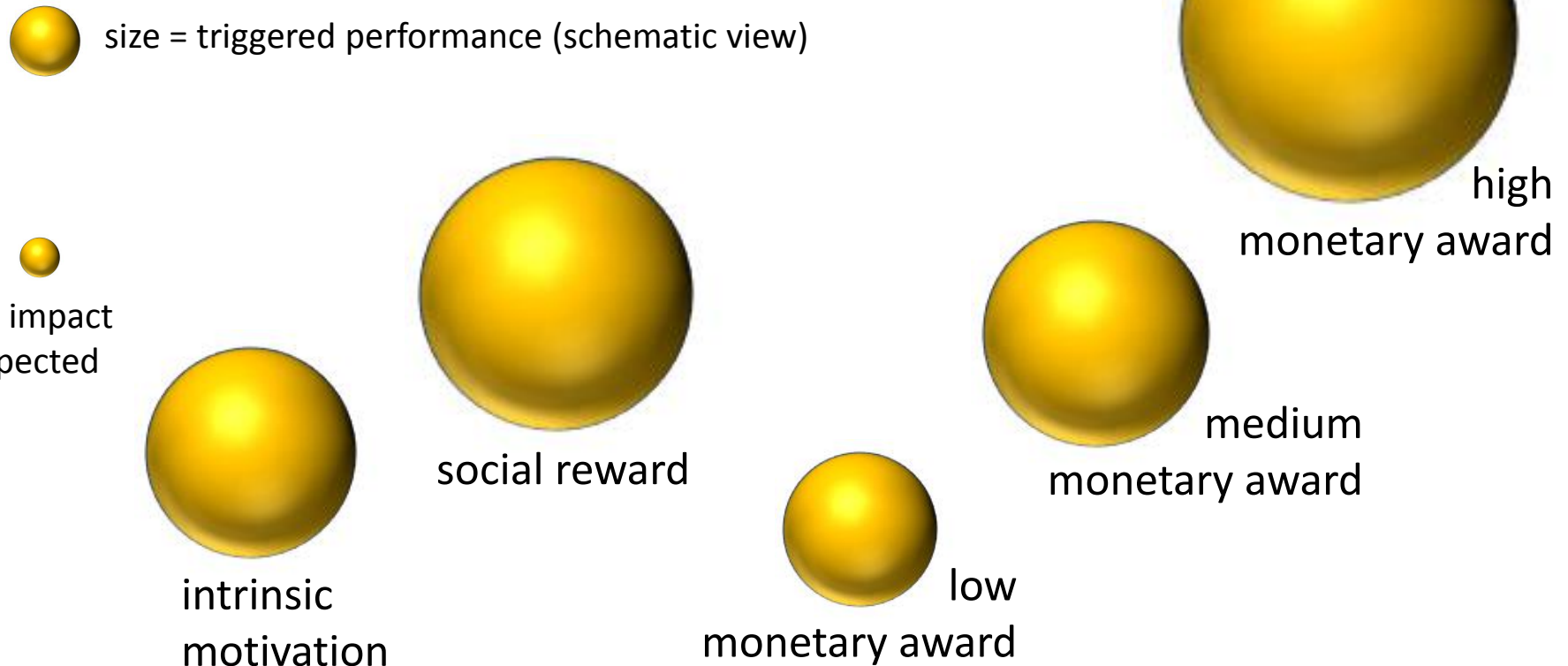
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# Don't overestimate monetary incentives!

„Pay enough or don't pay at all.“

(economists Uri Gneezi and Aldo Rustichini)



# From involvement to participation



## Allgäuer Überlandwerk GmbH

AÜW-Zukunfts-Strom-Partner

Inhaberschuldverschreibung

WKN A1KQ52

Seriennummer: B00021

von Euro 1.000

zu einem Zinssatz von 3,5 % p.a.

AÜW  
Strom

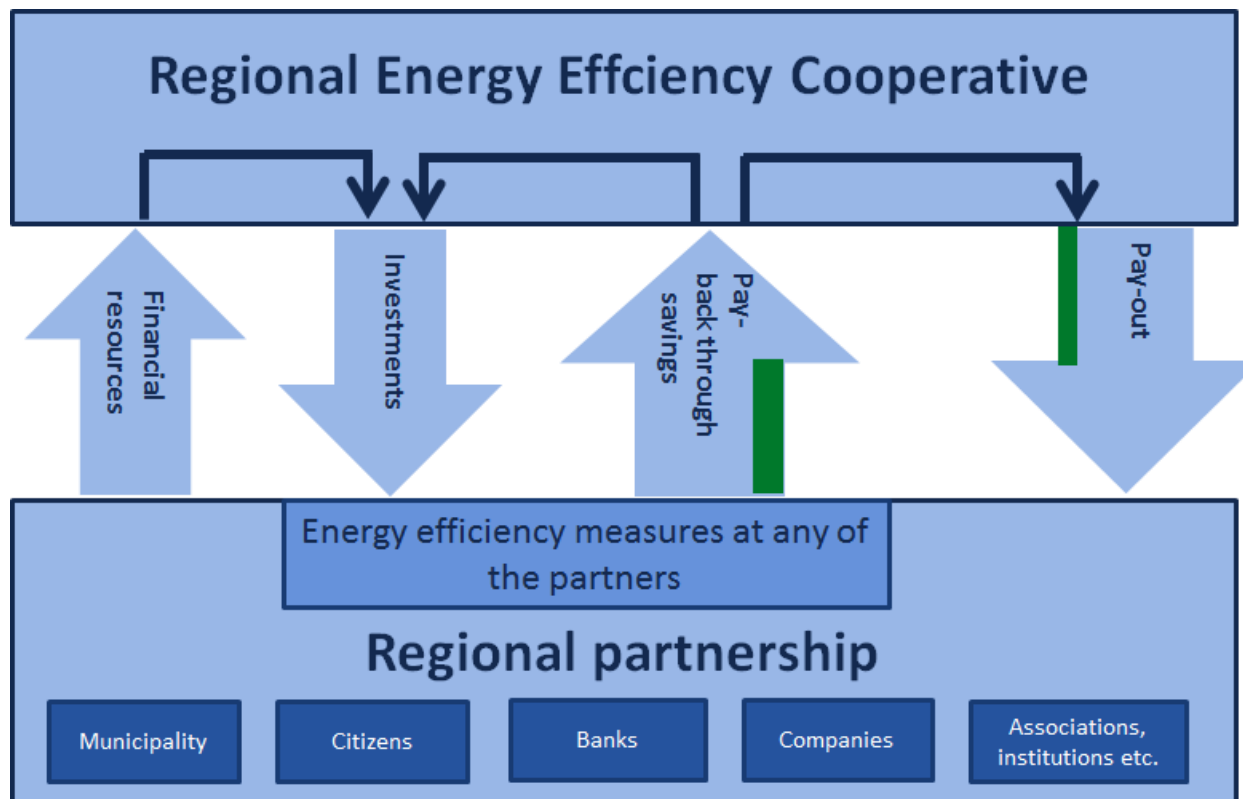
Die Allgäuer Überlandwerk GmbH anerkennt dem Inhaber dieser Urkunde

Strom

Euro 1.000 in Worten: eintausend Euro

zu schulden und verpflichtet sich diese Summe zu verzinsen und am  
Verfalltag ohne Kündigung gegen Rückgabe dieser Urkunde zurückzuzahlen.





- Regional, non-for-profit contracting
- investing in enterprises and public premises
- 3 model regions in Germany under the lead of B.A.U.M.

[Link](#) to REEG Website



# Co-Creation for commercial end users

Example: St. Gallen Utility & energienetz GSG initiative



## Co-creation workshop with 3 utilities and local SMEs

- Canvas method
- 8 concrete product ideas
- followup plans

Collaborating to develop smart energy solutions

Innovative product development



Product development checklist

# Co-Creation with residential end-users – Example

## Example: Amsterdam Smart City (Wildemanbuurt)



**8 co-creation workshops:  
Explore, Investigate,  
Design and Present**

- Shift in awareness
- Follow-up projects being discussed



Innovative  
product  
development

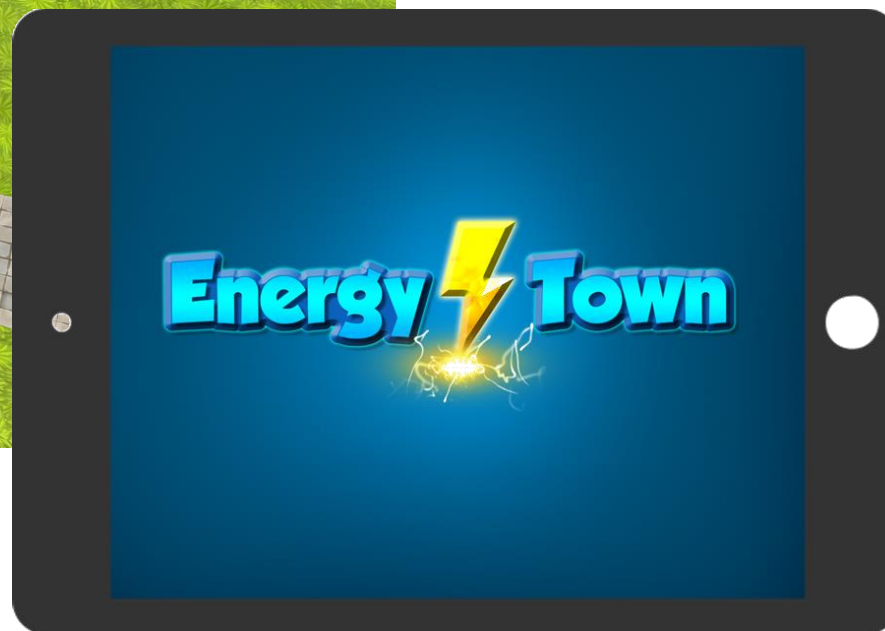
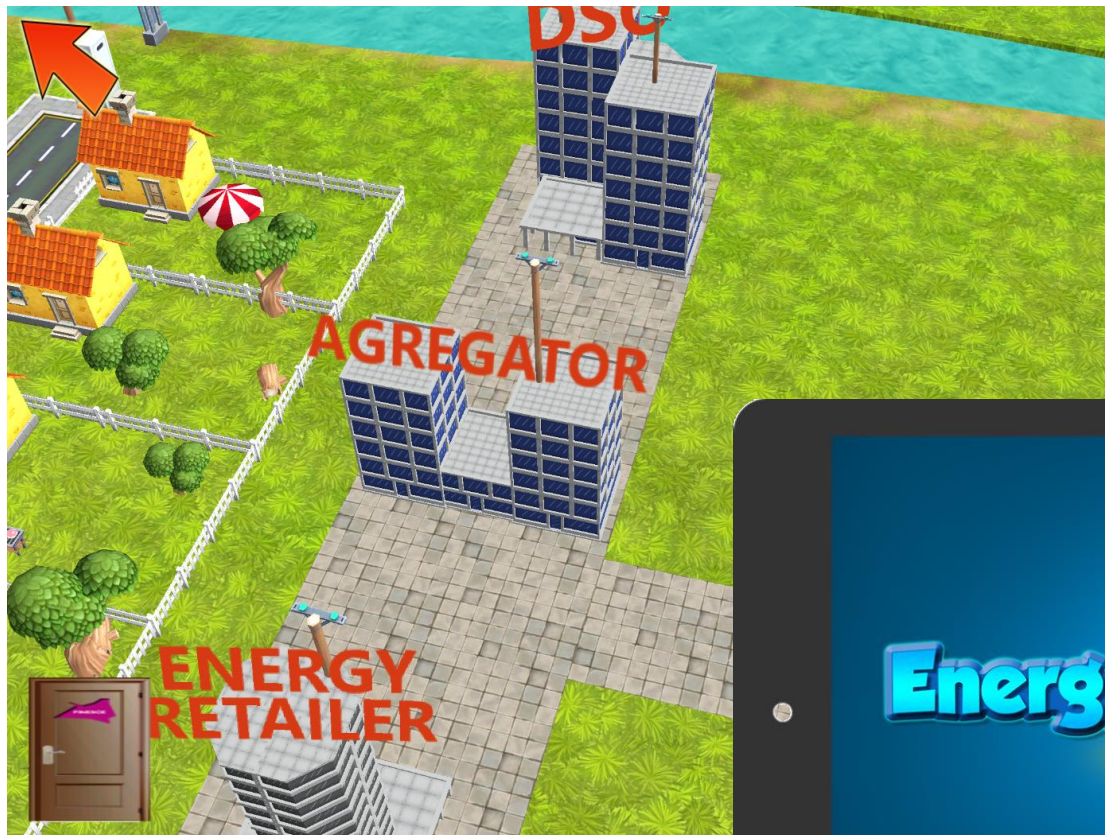
Collaborating to  
develop smart  
energy solutions

# We are all gamblers!



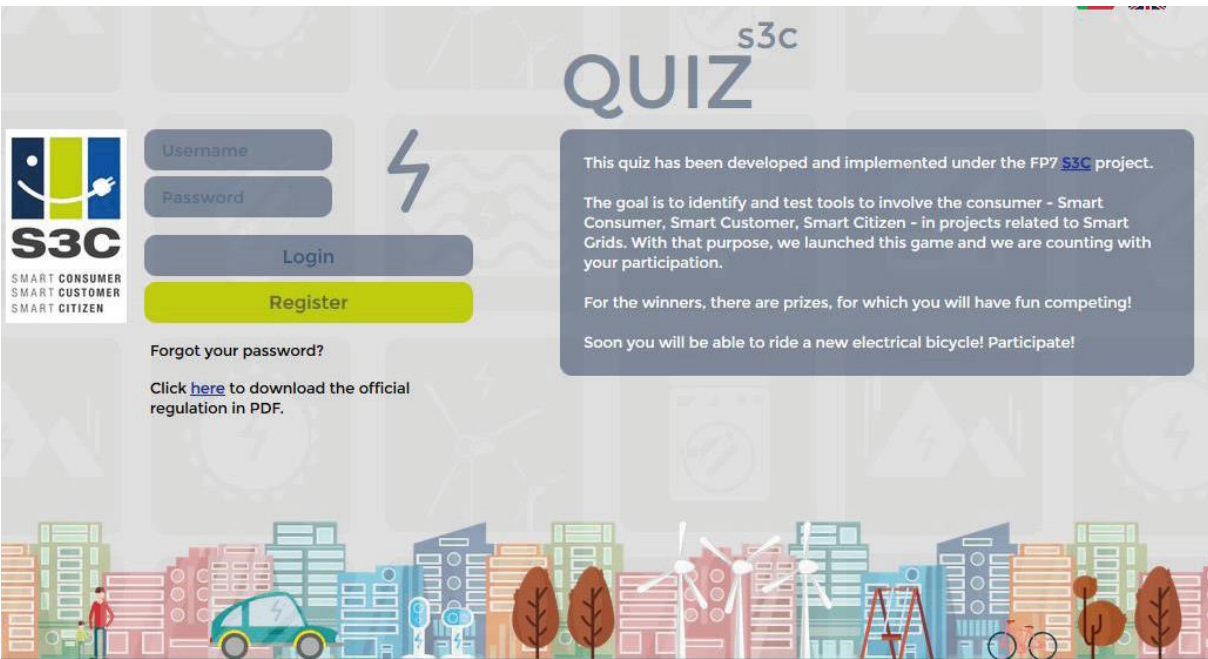
FUTURE  
INTERNET  
SMART  
UTILITY  
SERVICES

FINESCE

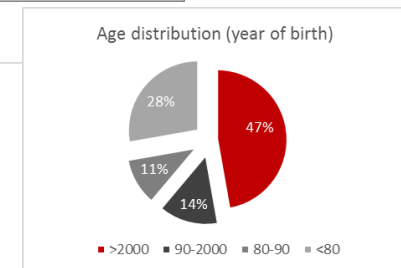
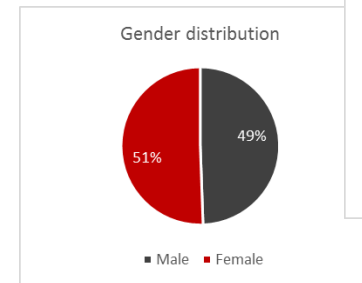
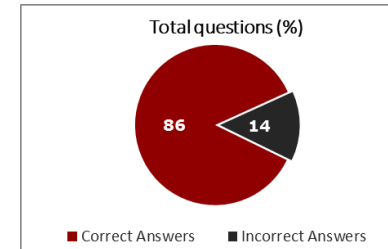


# Gamification to involve consumers

## Example: InovGrid & InovCity (EDP, Portugal)



Gamification platform launched at Alcochete Secondary School



Gamification -  
making energy  
fun!

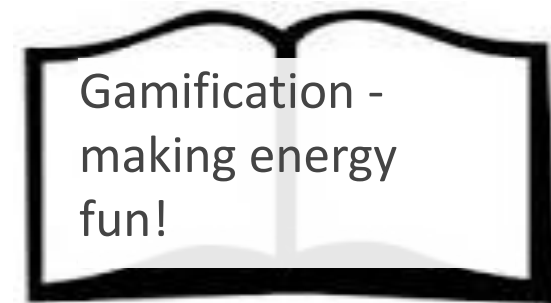
# A read-to-use tool: web-based energy quiz



- Embeddable quiz module via iFrame
- allowing collection and comparison of local users' energy behavior
- identification of individual users and their progress
- personal- and social comparative feedback after quiz set completion
- available in English, German, French and Italian



Before starting the quiz, quickly introduce yourself and get to know your competitors.



[Link](#) to guideline for downloading quiz

detailed recommendations (from S3C project team and Advisory Board) for

- EC legislation
- EC level research programmes
- national policy makers
- national funding authorities
- national regulatory bodies (and their European umbrella organisations)
- local authorities
- associations of energy industry
- associations of ICT industry
- national associations of and for consumers (and their European umbrella organisations)
- national and international standardisation bodies
- curriculum developers of educational institutions
- suppliers to energy industry

[Link](#) to Recommendation Study

# Selected recommendations



- Manage overall and specific customer expectations.
- Translate information on smart grid technologies and applications so a broad variety of citizens can understand it.
- Stress the non-monetary incentives to engage in the smart energy field.
- Establish an overall data infrastructure that allows for a wide set of consumer engagement means and at the same time does not create the anxiety of abusing personal data.
- Open up the energy market to new players and their innovative products.
- Broaden the scope of smart grid research to integrated smart solutions (smart cities, smart homes, smart living).
- Foster participation of social sciences in energy projects.
- Foster research on less motivated or involved end users, beyond a focus on 'early adaptors' or 'technology enthusiasts'.
- Allow for end-user engagement means to be accounted for as grid investments in the calculation of distribution grid fees.
- Implement means to convey learnings and tools of S3C (and other similar projects) to practitioners in utilities

[Link](#) to Recommendation Study



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