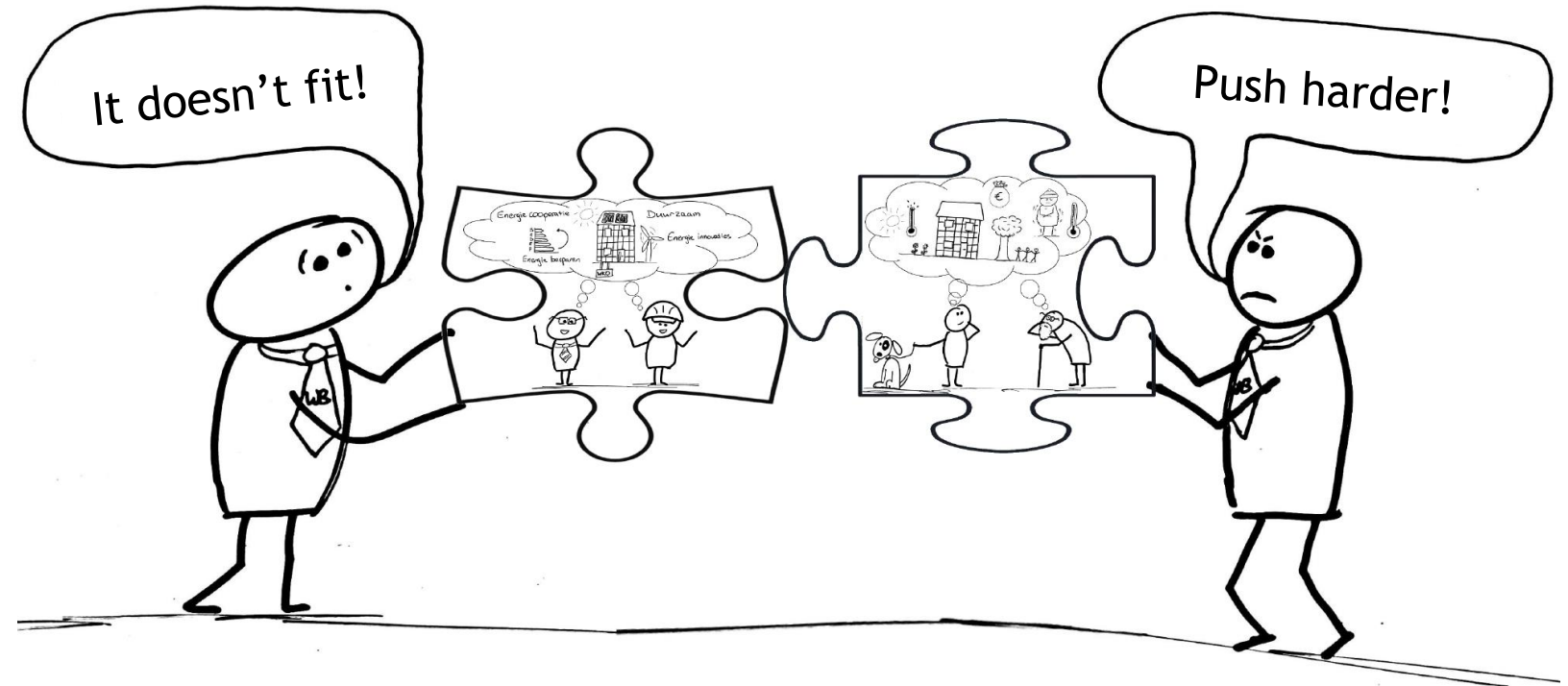


Demand Response in Blocks-Of-Buildings: DR BOB



DR-BOB





About the DR BoB Project (March 2016-Feb 2019):

Aim: integrate existing technologies to create a scalable solution that enables DR operations in blocks-of-buildings

Why: support the deployment of RES on the energy network, by mitigating capacity issues on the distribution network and by enabling maximum self-consumption at the local level.

Why BoBs: offer more flexibility in the timing of energy use, local energy generation and energy storage than single buildings....

DR BoB develops and demonstrates suitable solutions for this (combining technologies and integrating them with existing building management systems)

<https://vimeo.com/176786849>

<http://www.dr-bob.eu/>





Introduction

The DR-BOB project

<http://www.dr-bob.eu/>
<https://vimeo.com/176786849>

- Partners: Teesside University; Nobatek; R2M; CSTB; Gridpocket; Poliambulanza; Technical University of Cluj Napoca; Servelect, DuneWorks.
- Feb 2018 – Dec 2018: demonstration of DR solutions at 4 sites
- DuneWorks: attention to various end-user issues in DR; qualitative evaluation of the demonstration; support in the development of business models





The pilots:

Teesside University -
Middlesbrough (UK)



Poliambulanza Hospital -
Brescia (IT)



Montaury District -
Anglet (FR)



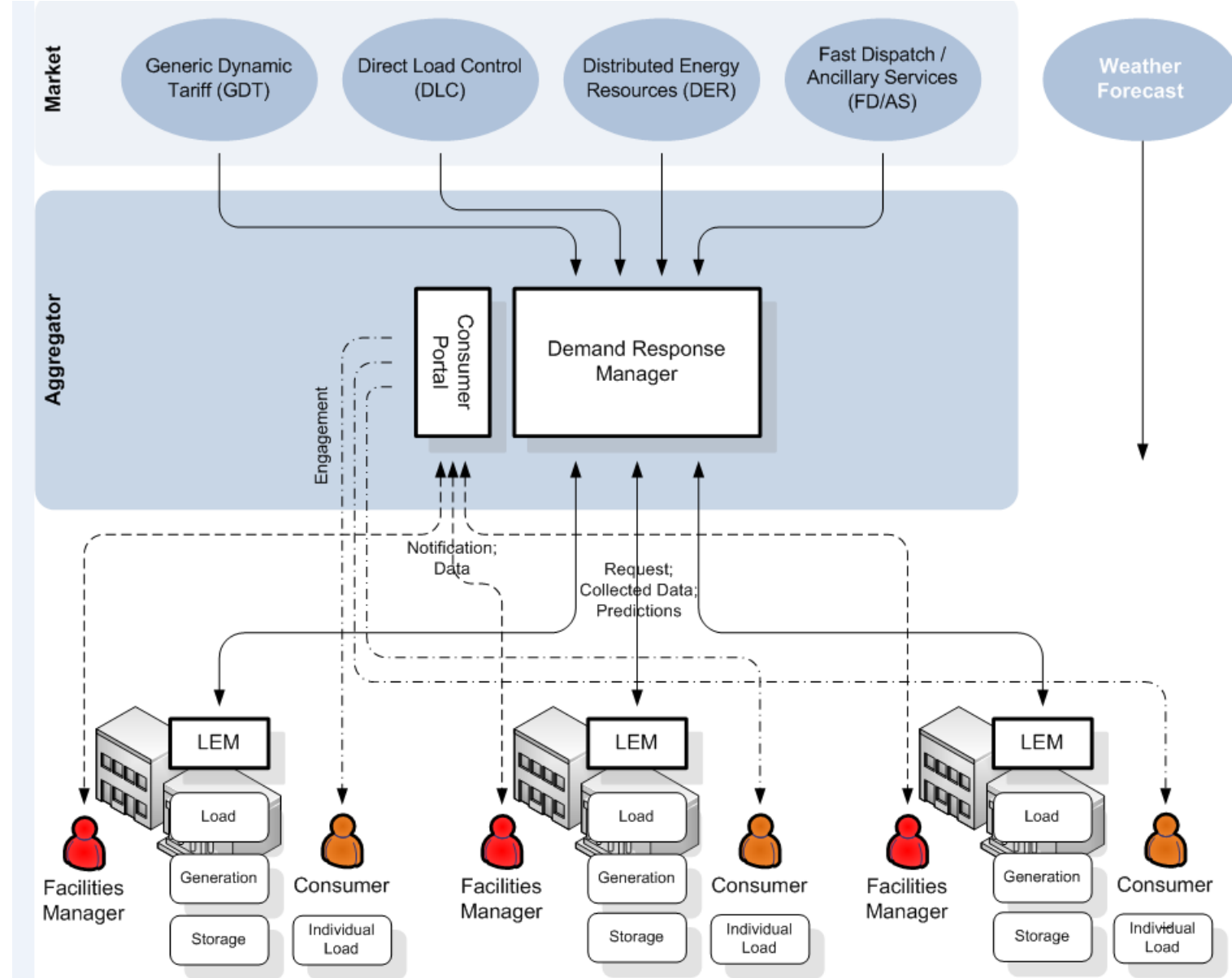
Technical University di
Cluj Napoca - Romania



The DR BoB Solution, the Designers' Perspective:

- A Demand Response Manager (DRM) provided by Siemens DEMS®
- A Local Energy Manager (LEM)
- A Consumer Portal

Together these tools provide an innovative scalable cloud based central energy management system for single and multiple blocks of buildings, which interacts with a buildings pre-existing systems and appliances, such as Building Management Systems (BMS), Heating, Ventilation, Air Conditioning (HVAC) systems, laboratory and office equipment, laptops, and lightning etc..



Crosbie, T., Short, M., Charlesworth, R., Broderick, J., and Dawood, M. (forthcoming) DEMAND RESPONSE TECHNOLOGY READINESS LEVELS FOR BLOCKS OF BUILDINGS, Sustainable Places 2017, June 27th -29th Teesside University, Middlesbrough UK



The challenge....

“DR BoB programme allows to change the use of energy so as to contribute to:

- Financial savings
- Environmental goals
- Grid stability”

But how does this fit with:

- 1) Developing value to the end-users/successfully engage the building occupants
- 2) Developing value to the envisaged customer segments





Question:

How to arrive at value propositions for DR at the level of BoBs that meet the needs of both the envisaged customers and the end-users (building occupants)?

Start with:

- Who are these customers and end-users?
- What are their needs?





Who are the end-users?

Direct users/building occupants

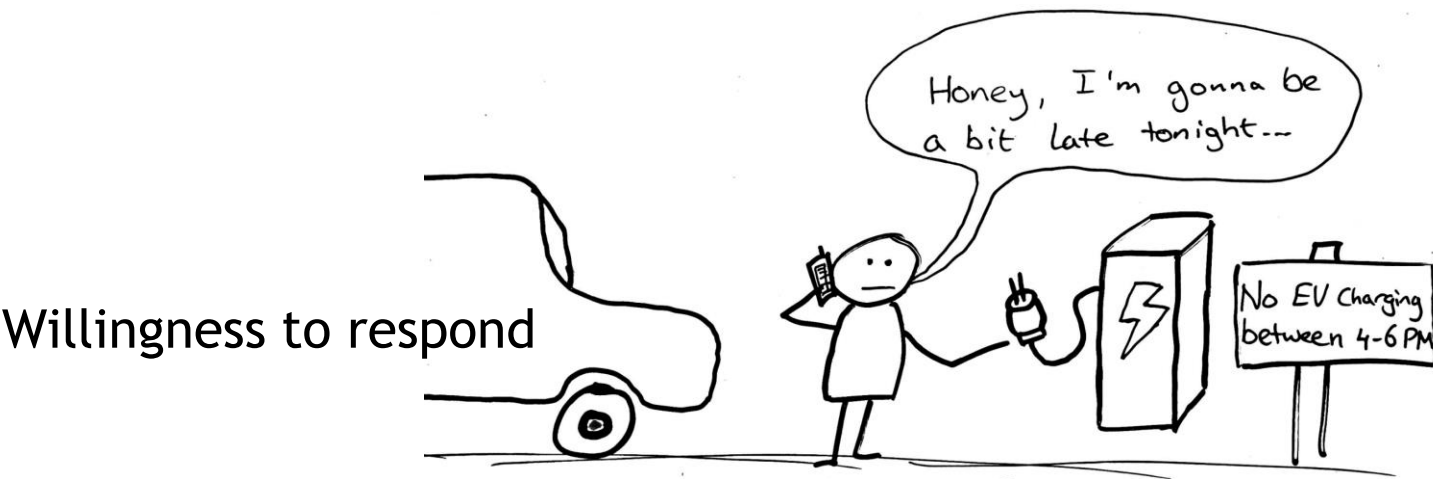
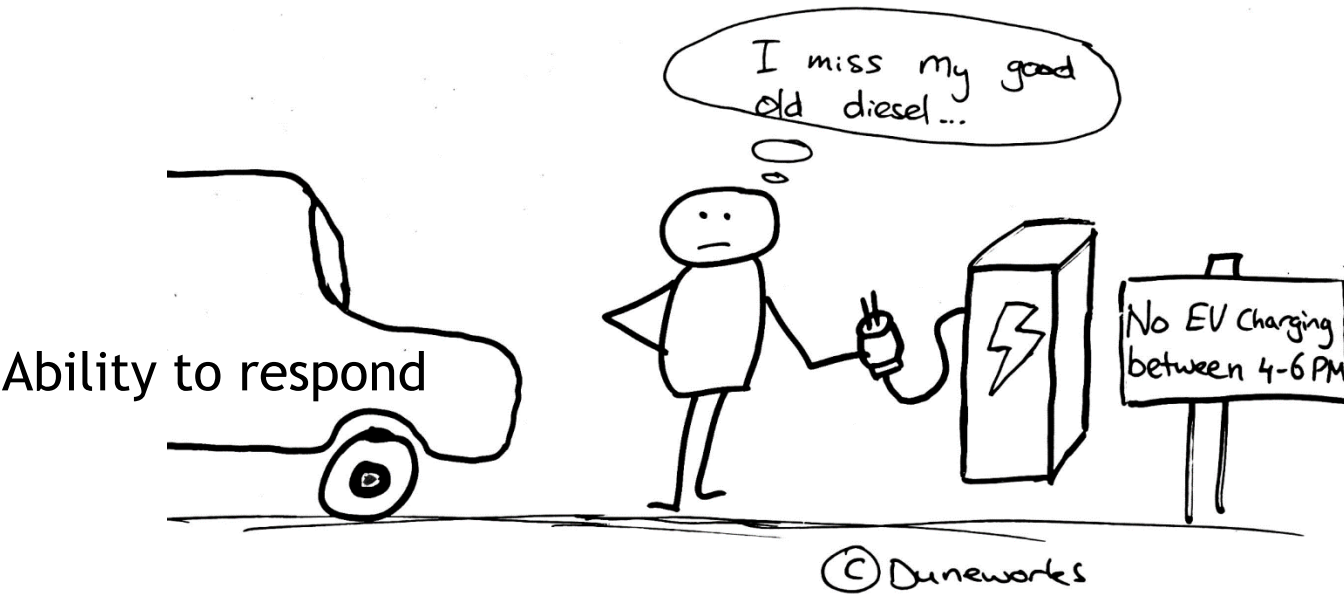
- Building/facility/energy managers: direct users of the DR technology

Indirect users/building occupants:

- People using the buildings: staff; students; researchers; visitors; patients; etc: they partially deliver flexibility
 - The promise of remote control and intelligent automation...
 - Current routines and (working) practices
 - Willingness and ability to respond and/or be actively engaged
-tend to fall out of sight:**
- do not bear the cost of energy
 - have no direct role in decision-making



The DR BoB Solution, an end-user perspective:



Risk: that the designed solutions for DR do not match with the daily practices and routines of the building occupants.

Resulting in:

- disappointing performance
- disappointed end users.



What are end-user needs?

Need to inquire into these needs:

- Interviews, surveys, observation in combination with energy consumption monitoring
 - Depending on the type of building occupant, his/her activities in the building and the building itself.
 - e.g. an attractive working environment (e.g. comfort, proximity of similar organisations, healthy, green, dynamic, affordable)
-
- Active engagement - feedback & rewards
 - Timing issues
 - Current comfort levels (before the DR intervention)
 - Role of intermediary/ambassadors
 - Organisational challenges (higher management)





Who are the envisaged customers?

Aggregators:

- (in markets that are open for various forms of Demand Response) - possibility to aggregate flexibility at the medium scale level

Owners of Blocks-of-Buildings:

- possibility to save money through DSM and DR and/or allows for more local self-consumption and CO2 reduction.





What are the needs of these customers:

BoB owners:

- Needs can vary enormously, but these needs are likely to be formulated in terms of being able to offer value to their clients which are the organisations and people working in their premises.
- So these needs may be formulated in terms of being able to offer: attractive, healthy, comfortable, affordable, safe working/studying/ research/recovery/ environments.

Aggregators (can be ESCOs or retailers interested to expand their business)

- needs may be formulated in terms of finding, collecting, bundling flexibility in order to sell this to the DSO/TSO. So they need availability of exploitable flexibility.





DR BoB needs to develop DR solutions that:

- 1). successfully engage the building occupants by offering value to them, so that they
 - Don't have to give up convenience & comfort
 - Are actively engaged in a positive manner
 - Are able and willing to participate→ DR solutions (or 'solutions') that fit with their perceived needs and ambitions

- 2). Offer value to BoB owners and aggregators.
 - for two very different groups, we need to further inquire what it is that they need, so that we can develop value propositions that fits with those needs.





Next steps DR BoB:

- Demonstration at 4 sites: monitoring and evaluation of both technical aspects as well as user engagement (willingness and ability to deliver flexibility).
- Drawing lessons, translated into guidelines
- Validation of initial assumptions with BoB owners and aggregators → updated versions of the DR BoB Business Models.

So: to be continued.

And we hope to learn from interactions with you all in the second workshop part!





THANK YOU!



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Tracey Crosbie (Teesside University)

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