

**Interreg**

CENTRAL EUROPE



European Union  
European Regional  
Development Fund

**TOGETHER**

TAKING  
**COOPERATION**  
FORWARD



International Workshop about Energy Consumer Behaviour, Consumption Practices and Rebound Effect

Maribor, 10 April 2018



**Climbing TOGETHER towards Energy Efficiency**



Antonio Zonta - Provincia di Treviso

Project Partners

Introductory  
Question

TOGETHER key  
concepts -  
The CLIMB

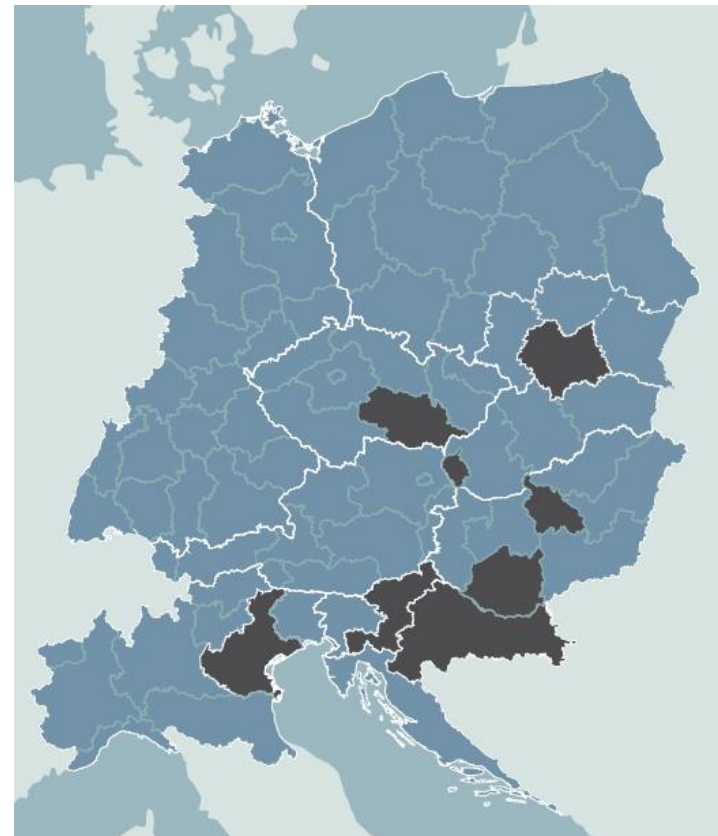
The new Energy  
Management  
System - The  
PEAK of the  
mountain



# PROJECT PARTNERS



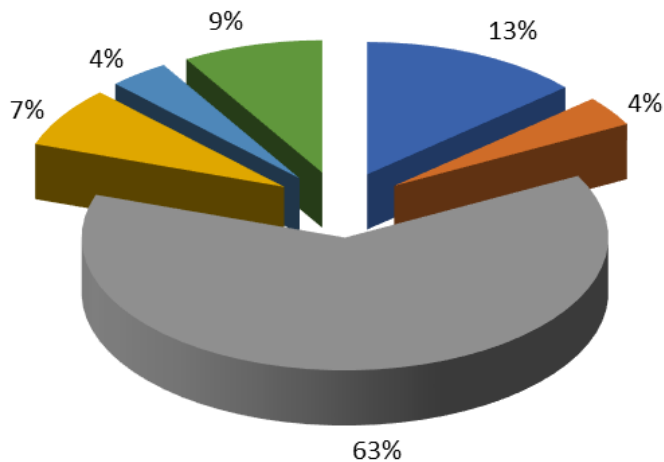
**PAKS**  
*az együttműködés városa*



# THE PILOT BUILDINGS CLUSTERS

## Where are the partners looking for Energy Efficiency?

- 8 project partners
- 8 pilot building clusters
- 85 buildings
  - 47 belonging to PPs,
  - 38 belonging to 15 APs



- Administrative building
- Building for health services
- Building for education services
- Building for culture
- Building for sport activities
- Another type of building - accommodation



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## WHAT IS A BUILDING?

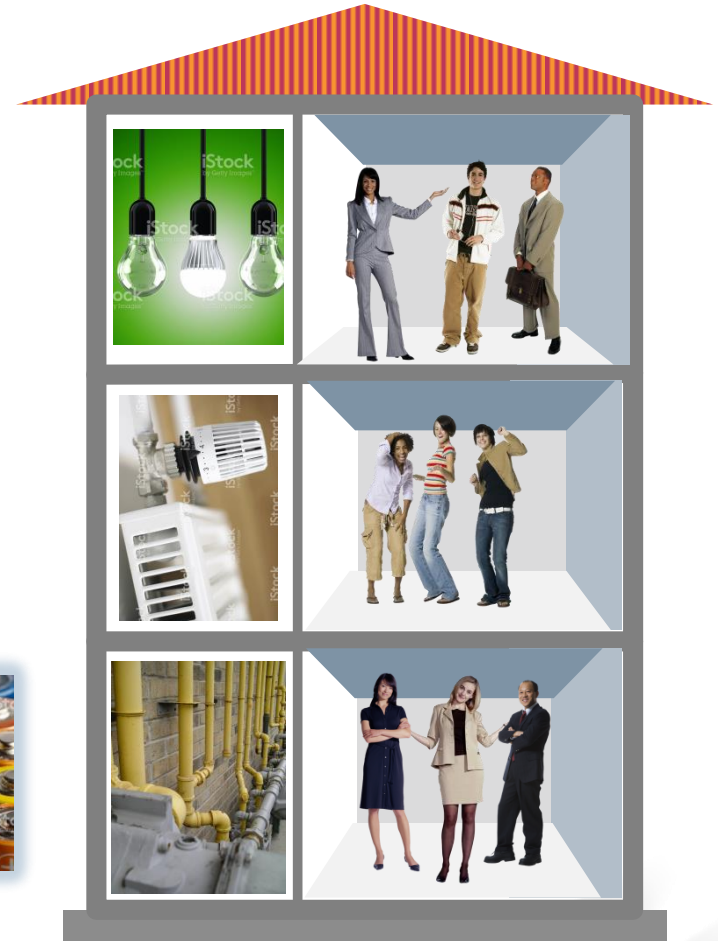
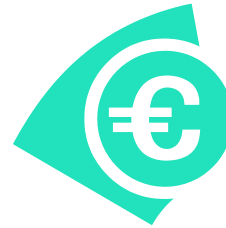
Although it might seem strange to start the presentation of a project with such a question, it is probably the search for an appropriate answer that brought 8 partners from 7 European countries to work together to achieve or to improve Energy Efficiency in public buildings, sharing their previous experiences in:

- Technology for energy efficiency
- Energy (smart) metering
- Human participation in public real estate management



# WHAT IS A BUILDING?

A building is not only a shell  
It also contains technologies  
And, unlike many engineers  
think, it's made of spaces  
And - last but not least - of  
people  
Its operation requires a  
daily amount of **energy**  
and of **maintenance**  
**activities**,  
which are not independent  
from how the building is  
used, and are worth money



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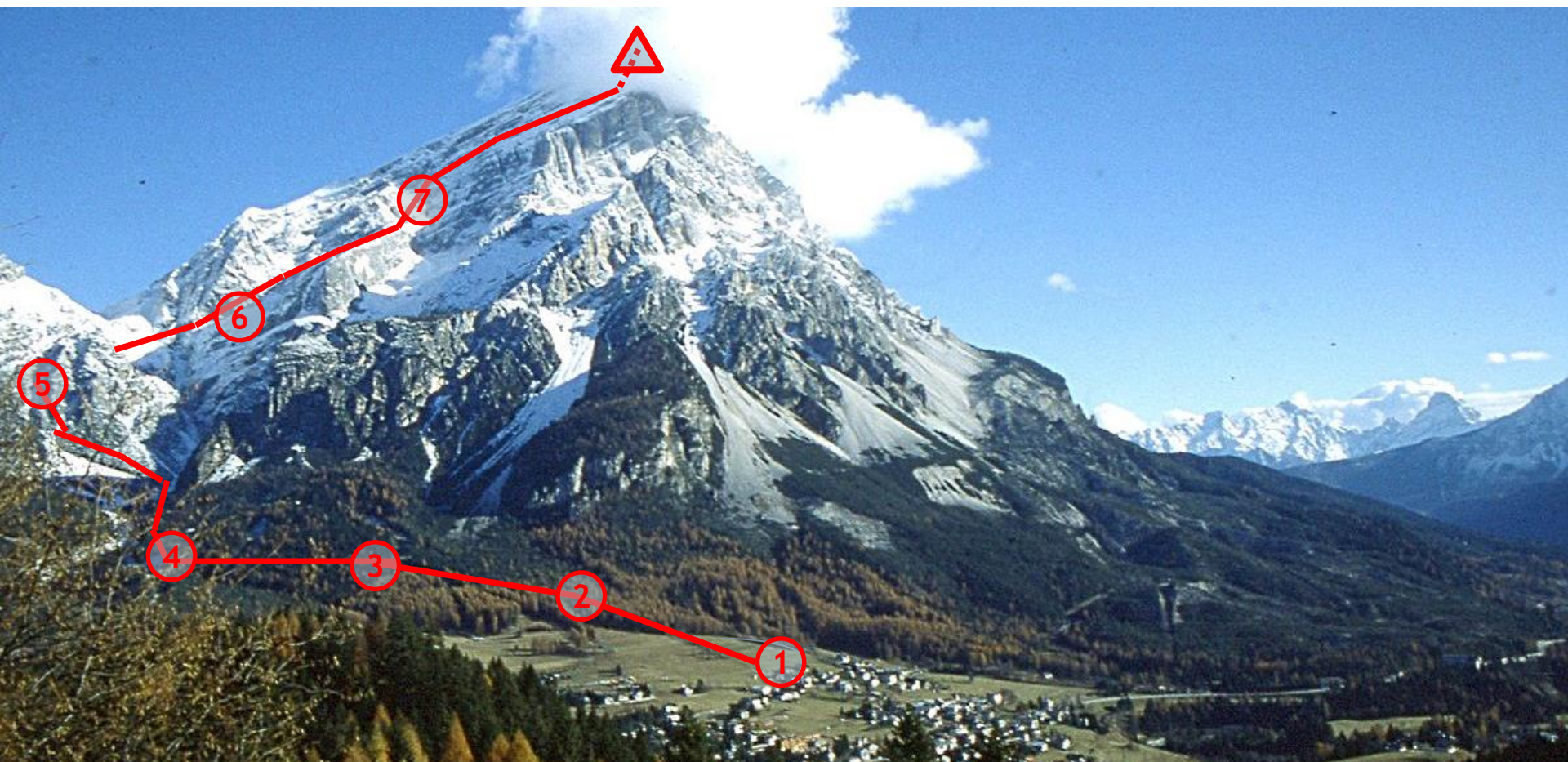
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# THE CLIMB



# TOGETHER KEY-CONCEPT 1

1. **Holistic vision of the building**
2. Behavioural & Analytical DSM
3. High-resolution, real-time energy metering (Smart Metering)
4. Energy Audit (Technological & Social)
5. Re-thinking the role of public officers/public buildings owners
6. Users involvement for specific goals / Building Alliance / Living Lab / Gamification
7. Financial & Contractual tools: EPC, EPIC

|                             |            | Building   |       |                          |
|-----------------------------|------------|------------|-------|--------------------------|
|                             |            | Technology | Space | Relations/<br>behaviours |
| Roles of people<br>involved | Owner      |            |       |                          |
|                             | Manager    |            |       |                          |
|                             | Final user |            |       |                          |

**A building is Energy Efficient when all its components are Energy Efficient and well interlinked**



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- Experience shows that even if the potential to reduce the use of energy is **obvious and high**, the reduction will not **happen by itself**. It is not only an issue of combining the best technologies, but even more so an issue of the **behaviour of parties and individuals** involved.
- The performance of the energy system has a great impact on environment and even if the impact of individual actions is small **the sum may be of huge importance**.
- The **opportunities to improve energy efficiency** must be harnessed in a systematic way. This will require management skill:
- ➔ **Demand Side Management (DSM) skill.**



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**Behavioural DSM** refers to management of the individual energy behaviour of direct consumers,

**Analytical DSM** focuses on the actions people take to alter energy use as a result of data analysis and equipment monitoring.

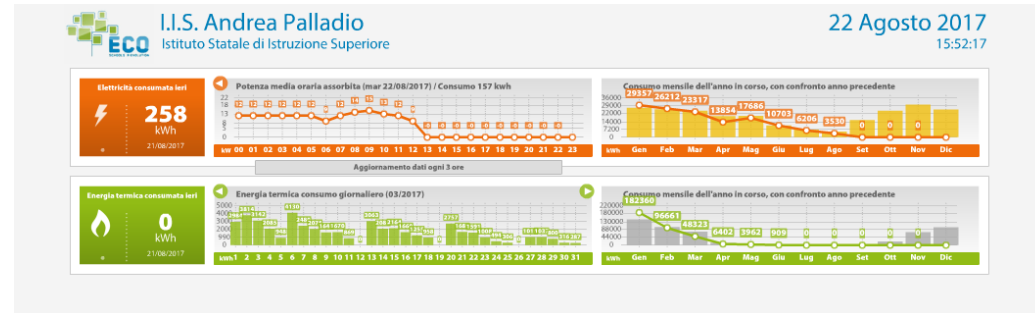
More generally speaking, the acronym **DSM** can be referred to Energy Efficiency achieved through non-technological measures





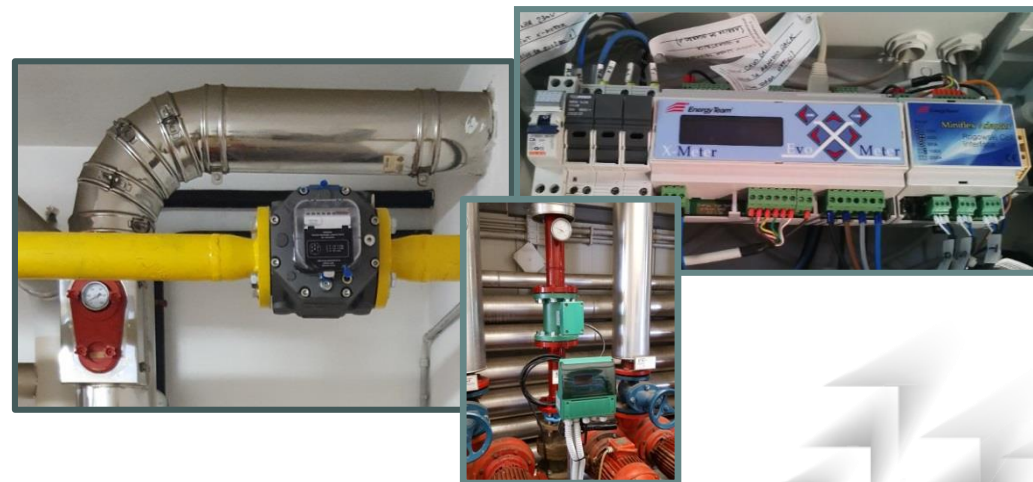
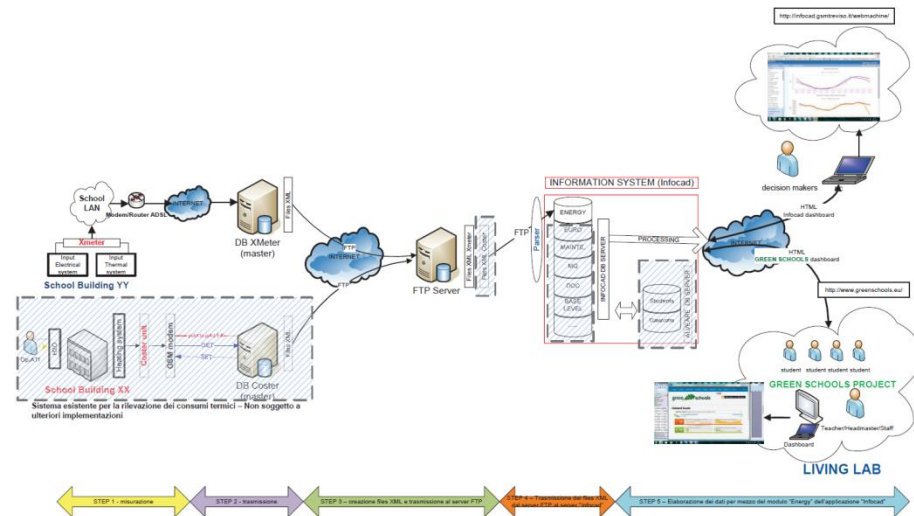
# TOGETHER KEY-CONCEPT 3

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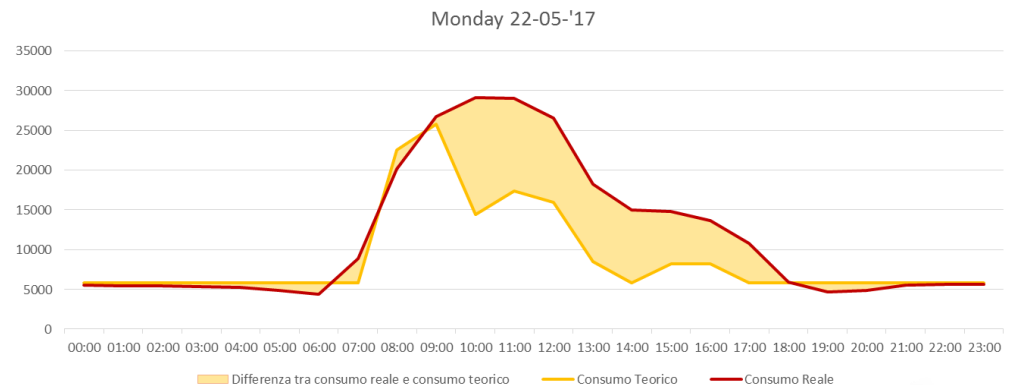


# TOGETHER KEY-CONCEPT 4

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| Location             | Device                       | Power Consumption (W) | Usage | Number of units | Daily Consumption (KWh/Day) |
|----------------------|------------------------------|-----------------------|-------|-----------------|-----------------------------|
| Special classrooms   | Apple TV                     | 1,5                   | 24\7  | 2               | 0,1                         |
|                      | Router Apple                 | 8                     | 24\7  | 2               | 0,4                         |
| Servers room         | Server + PC                  | 100                   | 24\7  | 9               | 21,6                        |
|                      | Switch HP                    | 795                   | 24\7  | 1               | 19,1                        |
|                      | Switch Tp-Link               | 11,2                  | 24\7  | 3               | 0,8                         |
|                      | Mac (Server)                 | 100                   | 24\7  | 2               | 4,8                         |
|                      | Condizionatore               | 860                   | 24\7  | 1               | 20,6                        |
| Vending Machines     | Necta Astra (caffè)          | 142                   | 24\7  | 1               | 3,4                         |
|                      | Necta Samba (bibite e snaks) | 630                   | 24\7  | 4               | 60,5                        |
|                      | Necta Canto (caffè)          | 175                   | 24\7  | 2               | 8,4                         |
| Chemistry Laboratory | Frigorifero INDESIT          | 14                    | 24\7  | 1               | 0,3                         |
| Infirmary            | Frigorifero IGNIS            | 25                    | 24\7  | 1               | 0,6                         |

## Theoretical load analysis



## Comparison between theoretical consumption and measured consumption



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- Capacity building program structured on a master Train of Trainers session and in Local Trainings adapted to each partner's particular needs to promote the new holistic vision and the DSM approach among public officers
- Political buy-in program for local public administrators





# TOGETHER KEY-CONCEPT 6

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- 6. Users involvement for specific goals / Building Alliance / Living Lab / Gamification**
7. Financial & Contractual tools: EPC, EPIC

- Starting also from previous experiences of some of the project partners such as the Euronet 50/50 project (PNEC and EAV) and the Green Schools competition (Treviso) a Building Alliance Tool is under development, to promote savings by sharing economic advantages between users and the public owner of the building
- Other participation tools include The Living Lab model
- and gamification (Greenplay Project, and again Euronet 50/50 and Green Schools)

European  
Network of  
Living Labs

green  schools

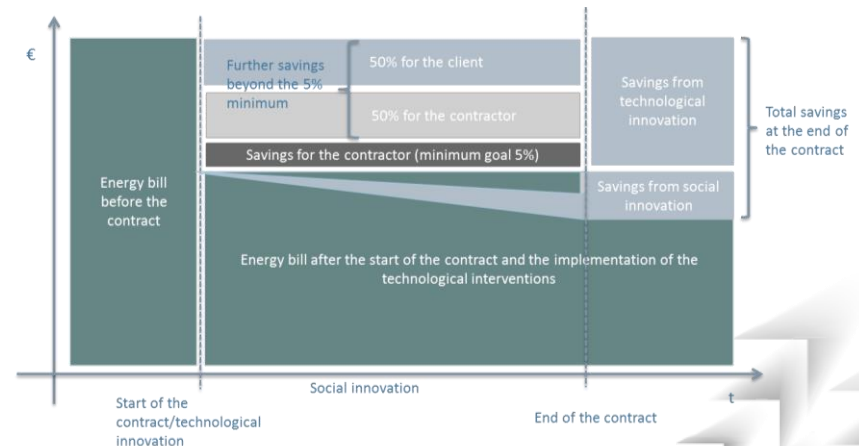
 **EURONET  
50/50  
max**

 **GREEN  
PLAY**



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7. **Financial & Contractual tools: EPC, EPIC**

Energy Performance Contracts (EPC) have proved to be effective tools to improve energy efficiency in public buildings. EPCs are traditionally based on technological investments. TOGETHER is working to enhance this contractual formula, integrating technology with behavioural and analytical DSM measures. This new contractual tool under development is the Energy Performance Integrated Contract (EPIC)



Project Partners

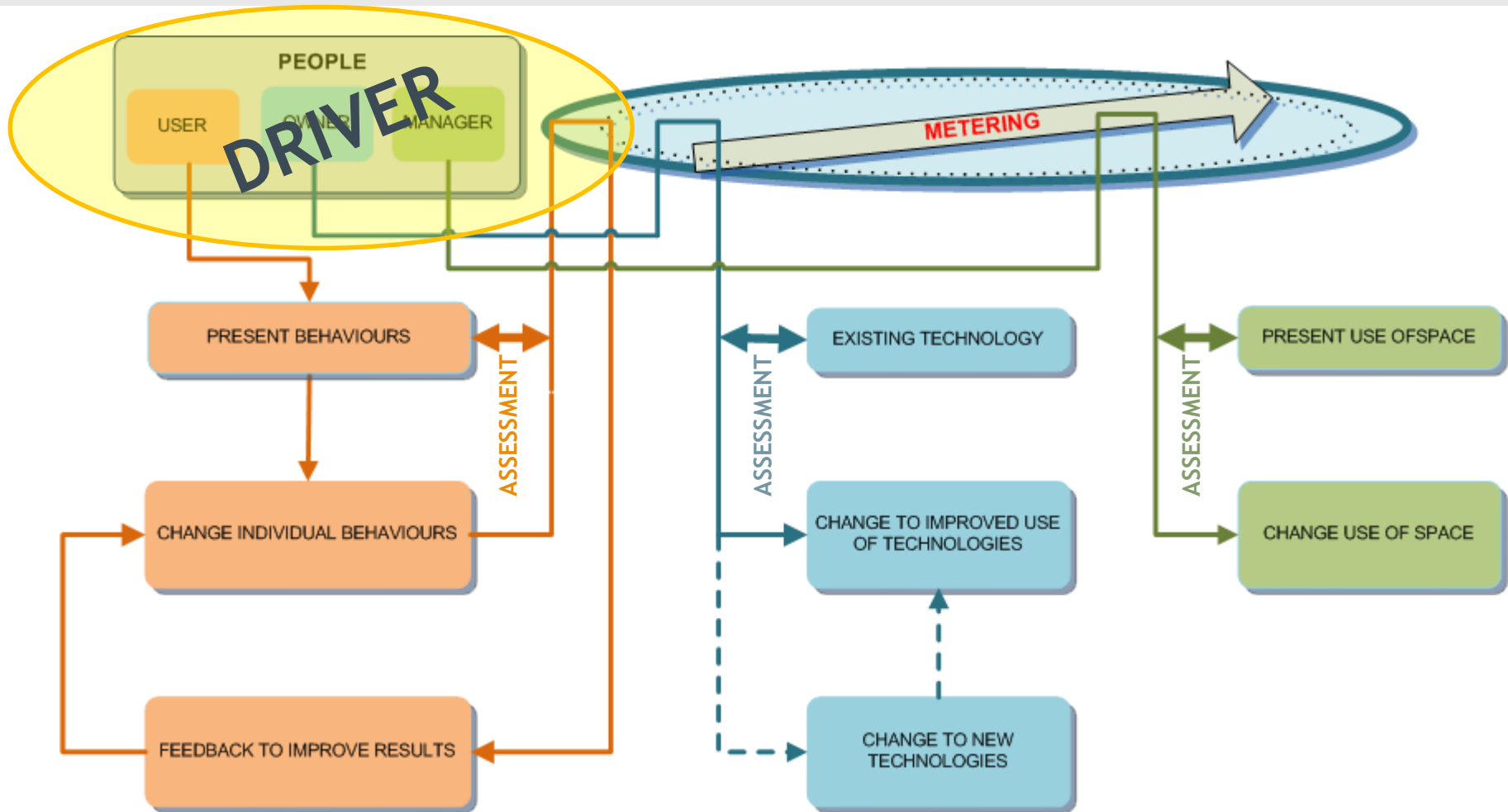
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# THE NEW ENERGY MANAGEMENT SYSTEM - THE PEAK OF THE MOUNTAIN





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TOGETHER



<http://www.interreg-central.eu/Content.Node/TOGETHER.html>



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