Decision Support Systems for Energy Efficiency

Rui Neves-Silva

UNINOVA, Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa

Energy Efficiency in Physics

▸ The term Efficiency (not to be confounded with effectiveness) is only to be applied to the expected output i.e. the utility.

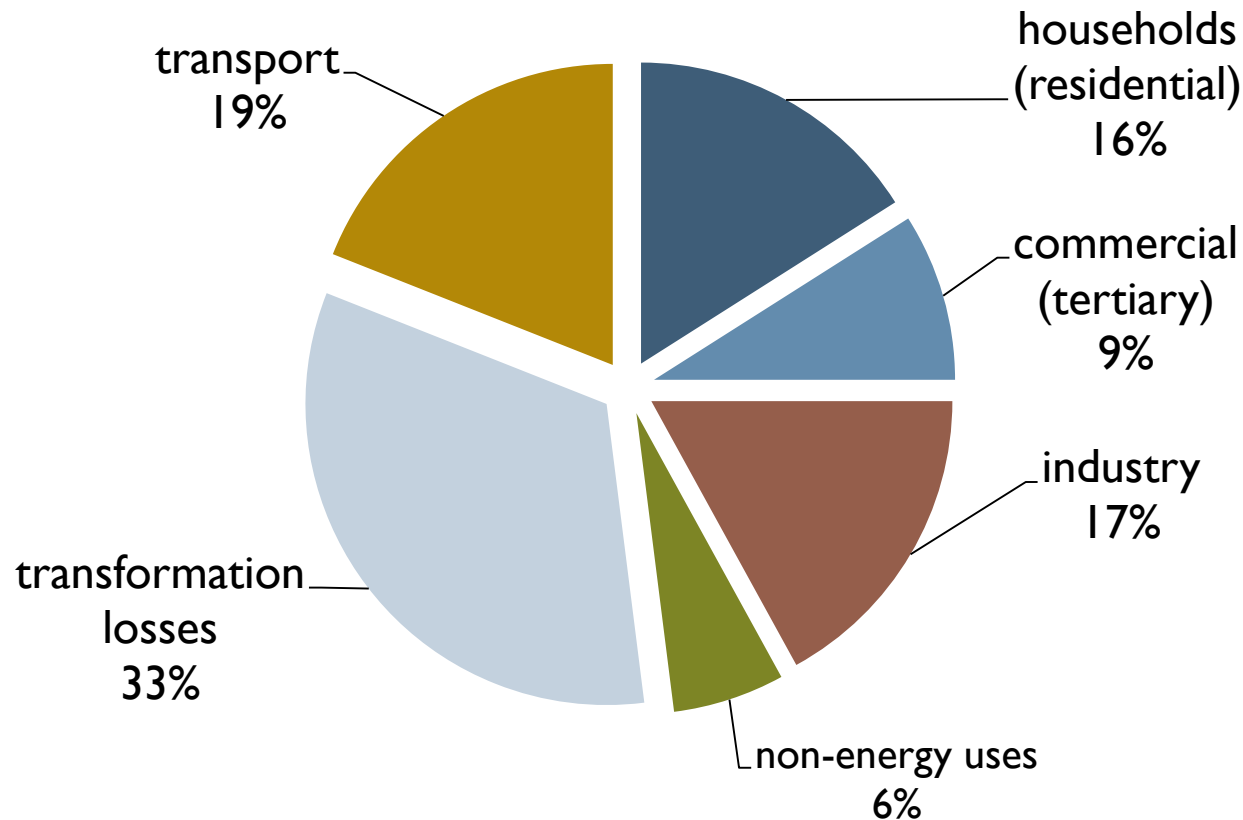▸ An incandescent light bulb is 98% efficient in heating a room, but it's not that efficient in lighting it.
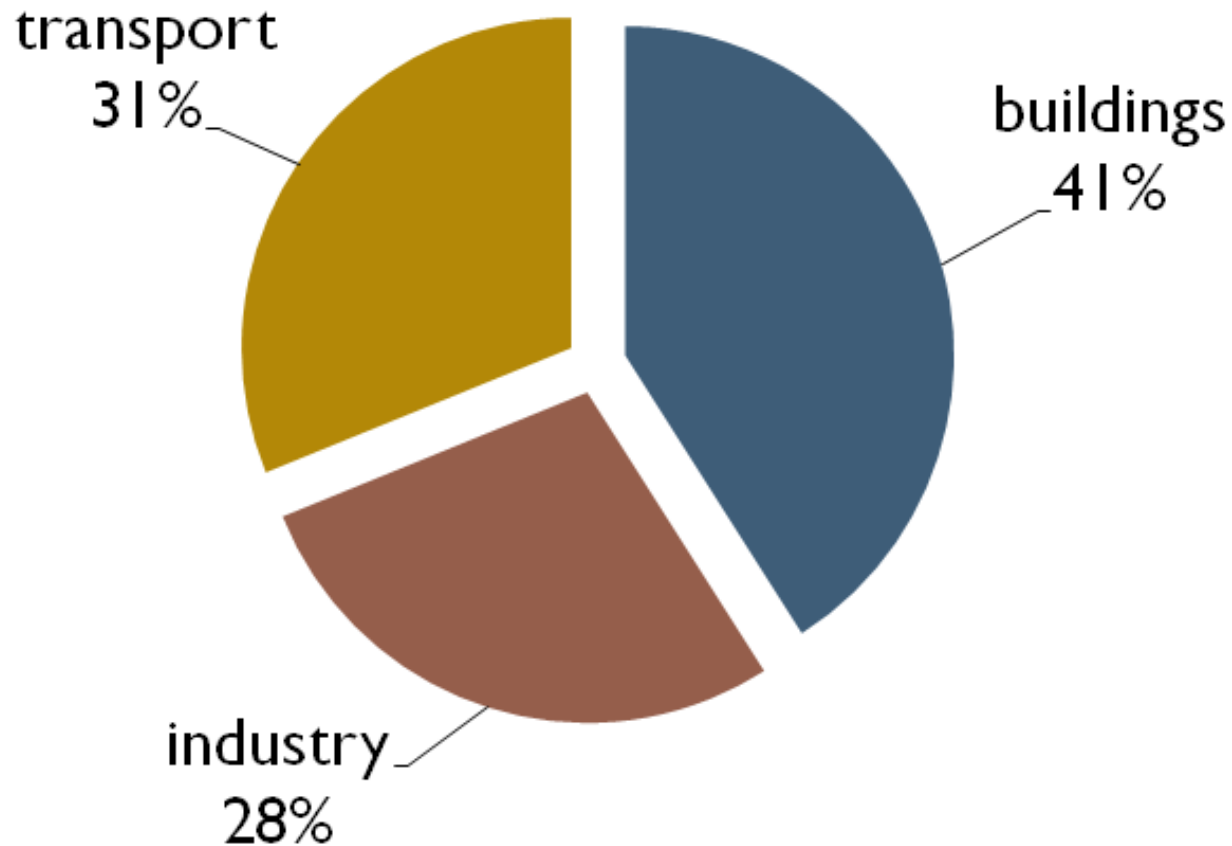
Energy Efficiency in our Society

▸ Energy Efficiency is frequently ignored in the search for new sustainable power sources.

▸ One unit of energy that is not consumed avoids finding an additional power source to produce it.

▸ Energy Efficiency represents a potential of around 20 to 40% of all consumed energy.

EU's Primary energy consumption (2005)

- households (residential) 16%
- commercial (tertiary) 9%
- industry 17%
- non-energy uses 6%
- transformation losses 33%
- transport 19%

EU's Primary energy use (2005)
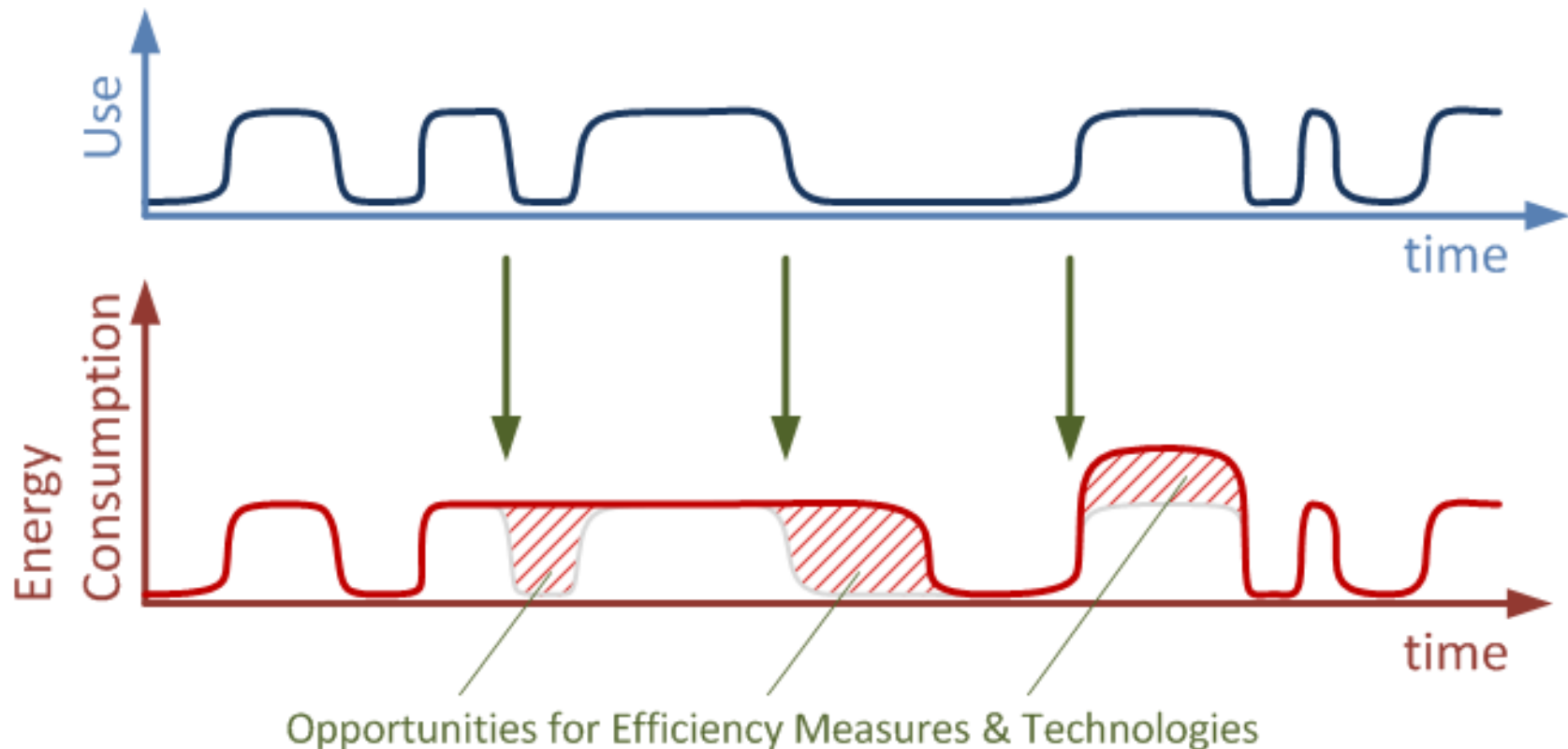
Proposed approach

Intelligent Decision Support Systems

...to help decision-makers finding and selecting...

Energy-Efficient
Measures & Technologies

...with demonstrated impact on the efficiency of...

Energy Usage

Identification of Energy Efficient Opportunities from Measured Data

Opportunities for Efficiency Measures & Technologies

Intelligent Decision Support Systems

▸ An Intelligent Decision Support System is a software platform that helps people making decisions in complex environments with several sources of uncertainty.

▸ An Intelligent Decision Support System makes use of Computational Intelligence methods to enhance the decision making capabilities of the human being.

Two FP7 projects in Energy Efficiency

- ▸ **EnPROVE project**
  - ▸ Development of a platform to support a potential investor in making decisions on building retrofitting with energy efficiency in mind.
  - ▸ The focus is on the return of the investment.

- ▸ **LifeSaver project**
  - ▸ Development of a platform to support decision making in industry to find energy efficiency opportunities in operations.
  - ▸ Additionally, the platform will support companies in their participation in the new CO2 emissions market.
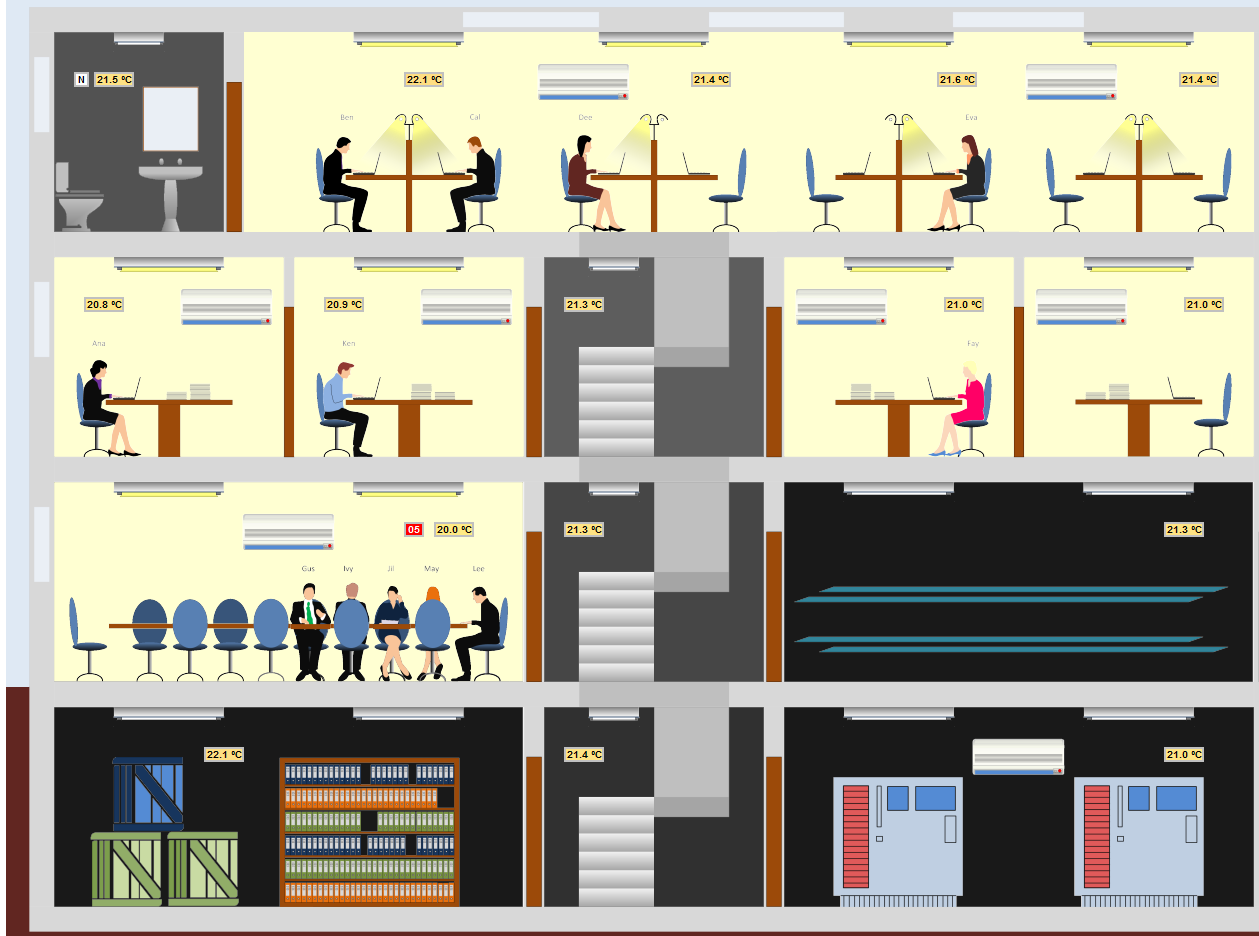
The EnPROVE Concept
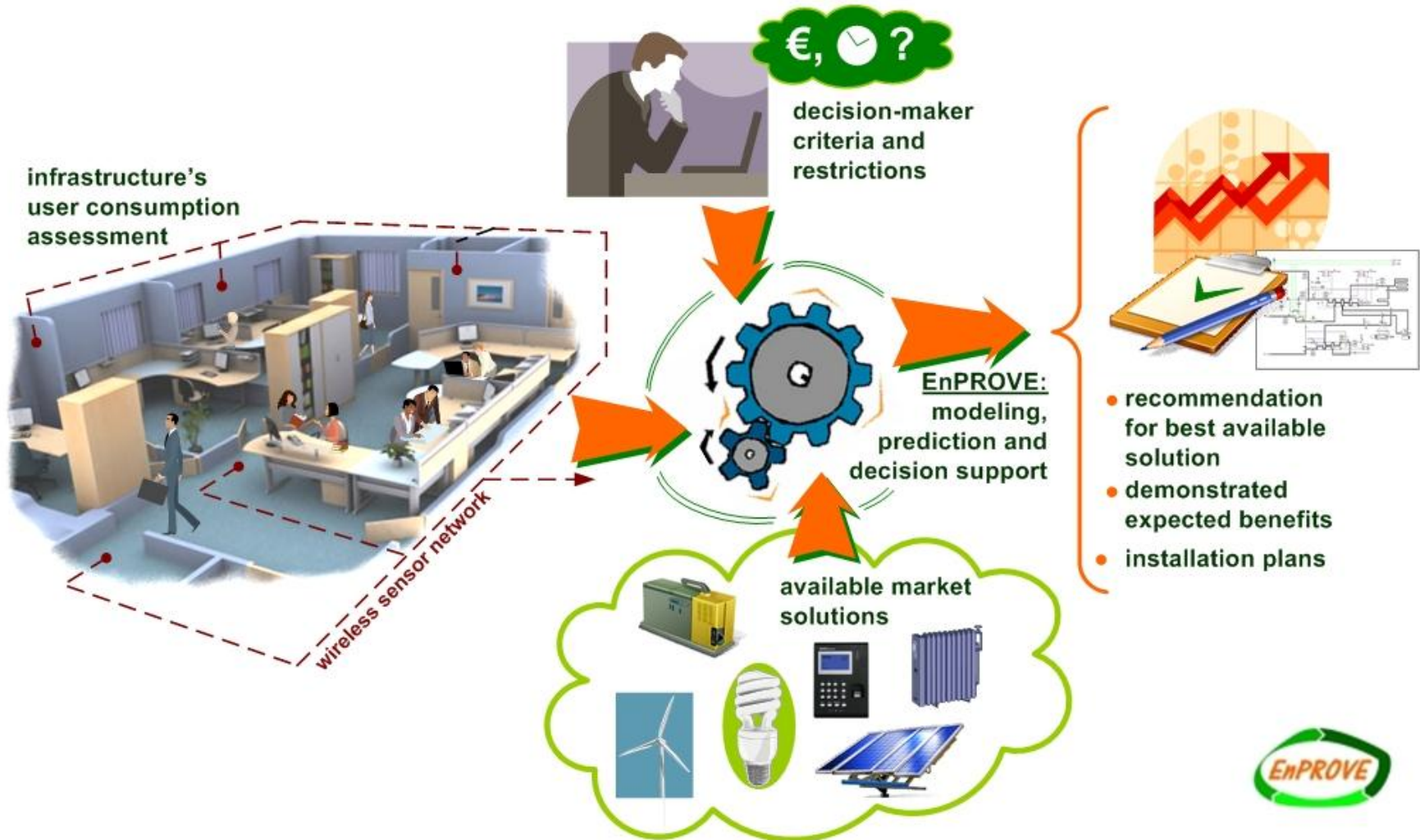
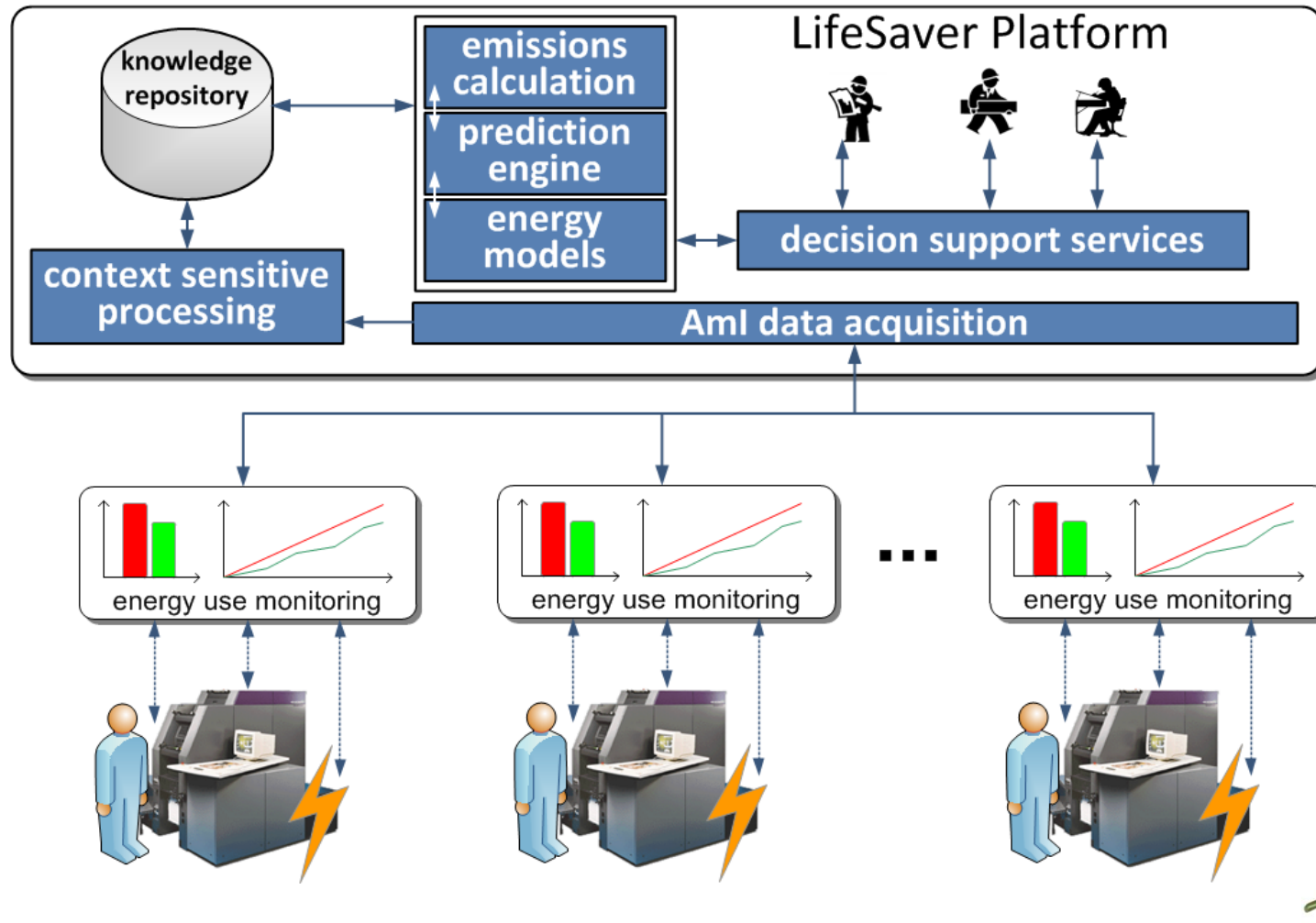# EnPROVE – Automated measurements of the building usage

The LifeSaver Concept

The LifeSaver Concept – zoom out
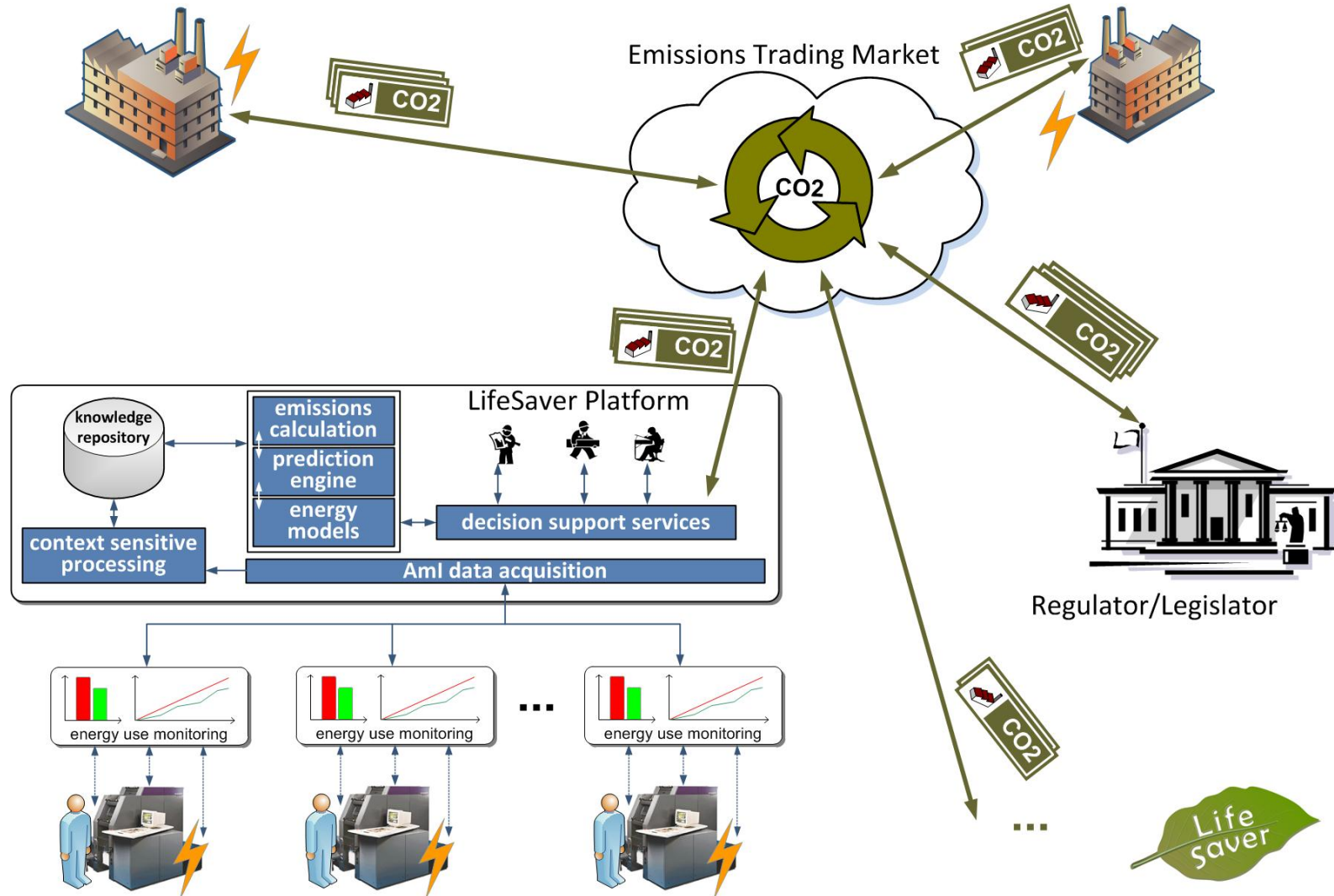
Main Conclusions

▸ Energy Efficiency is a problem of decision making in financial economics. The focus is on the return of the investment.

▸ The decision making process should be supported by the best knowledge on the impact of available measures and technologies on future energy consumption.

▸ The accurate prediction of energy consumption is one of the major challenges we have been facing in these projects.

European Partnership
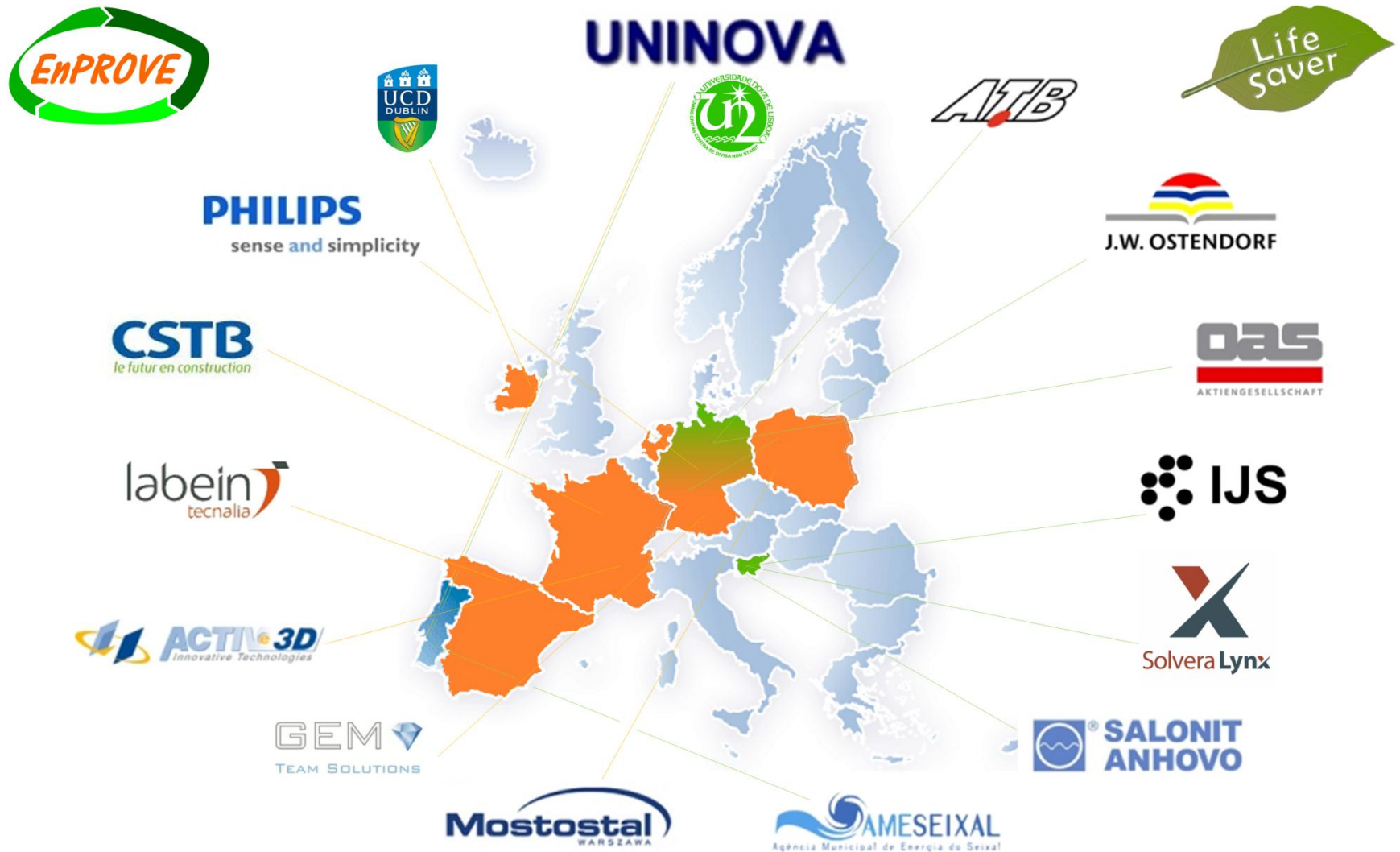
Acknowledgements

The EnPROVE and LifeSaver projects
are supported by funding under the Seventh Research
Framework Program of the European Union.

Contacts

▸ Projects' Coordination:

<div align="center">

Rui Neves-Silva

UNINOVA

FCT Campus,

Caparica - PORTUGAL

rns@fct.unl.pt

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www.EnPROVE.eu   **www. LifeSaver-fp7.eu**