



SmartSPIN

Analysis of an enhanced Energy Efficiency-as-a-Service model for the European commercial rented sector

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Outline



- SmartSPIN objectives, concept and work plan
- Definitions of Smart Energy Services (SES)
- The split-incentive issue
- ESCO Business Models to deliver SES to Commercial Rented Sector
- Interviews of Work Package 2
- The SmartSPIN Energy Efficiency as a Service Model
- The SmartSPIN Energy Savings Model
- Recommendations for SmartSPIN Service Definition
- Published deliverables



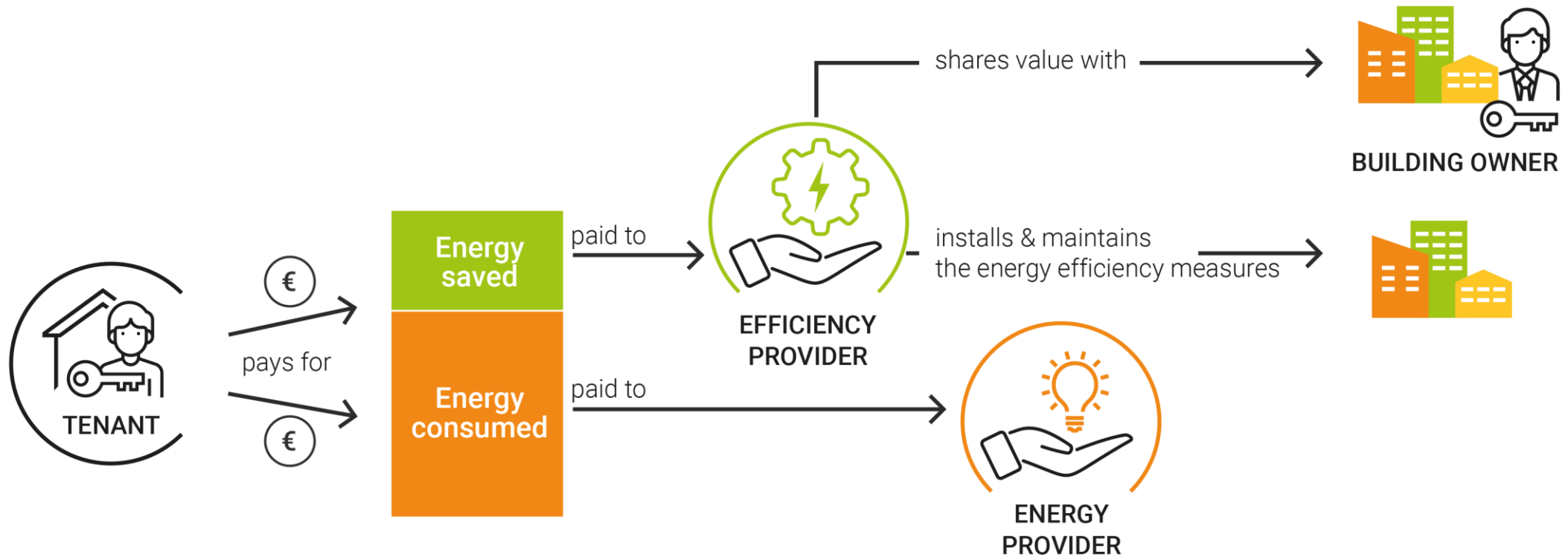
SmartSPIN Objectives



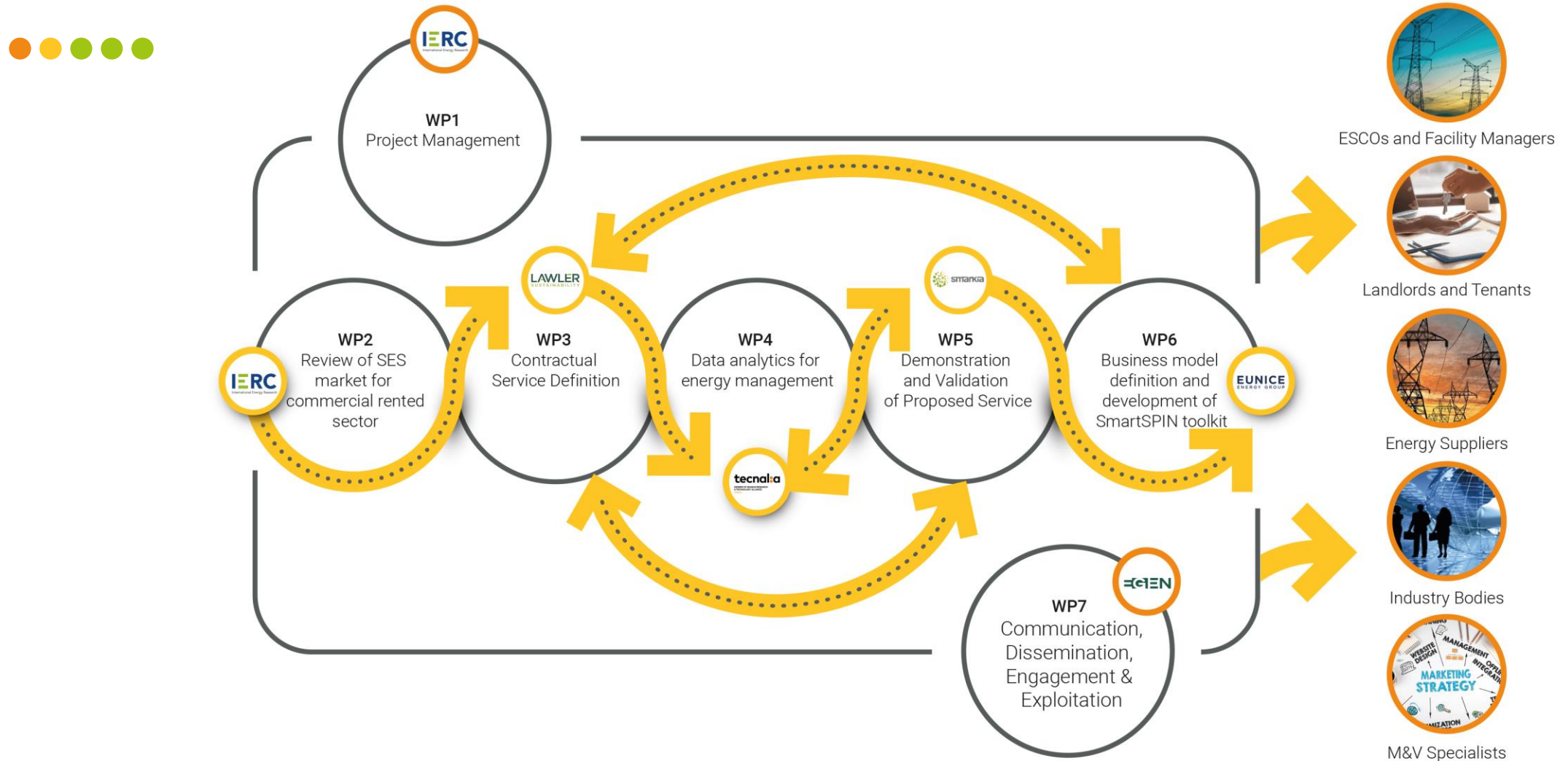
- Demonstrating the feasibility, effectiveness and advantages of the **SmartSPIN innovative business model** that combines both energy and non-energy benefits in a smart energy services offering for the commercial rented sector.
- **Addressing the barriers** that prevent the commercial rented sector from engaging in energy services, energy efficiency projects and performance-based contracting.
- Showcasing how **big data generated from smart equipment can be used to better control energy consumption** in buildings and more accurately measure and verify energy savings and flexible energy consumption.
- Developing an innovative business model and **new contractual templates** that allow the proposed Smart Energy Services to be deployed in the commercial rented sector.
- **Engaging and training key market stakeholders** (ESCOs, landlords, tenants, industry bodies, measurement and verification practitioners, smart technology manufacturers) in the deployment of the SmartSPIN business model.



The SmartSPIN Concept



SmartSPIN Work Plan



Energy Services Definitions

●●●●● Some definitions relevant with SmartSPIN

- Energy services are the benefits that energy carriers produce for human well-being (Modi et al, 2005)
- An energy service is a measure of the service actually provided to ultimate consumers by their own use of energy, quantified, for example, using units of work or of heat at various temperatures (Devine Jr., 1979)
- Energy services refer to the services that are generated from consuming energy combined with appliances (Fouquet, 2016)
- People do not use energy but obtain benefits from the services provided by energy. The term energy services is used to describe these benefits, such as illumination or cooked meals (Pachauri and Spreng, 2003)
- An energy service is the useful work obtained by energy consuming (Sorrell, 2009)
- Energy services are provided through a combination of capital equipment, labour, materials and energy. An essential feature of an energy service is the useful work obtained which may be measured by a variety of way (Sorrell, 2007)

The Split-Incentive Issue



A split incentive **occurs where the benefits of a transaction do not primarily accrue to the person who pays for it.**

The Energy Efficiency Directive (Directive 2012/27/EU) includes a provision in its Article 19(1)(a) recognising the importance of addressing the barrier of split incentives in the building sector.

“Member States shall evaluate and if necessary take appropriate measures to remove regulatory and non-regulatory barriers to energy efficiency, without prejudice to the basic principles of the property and tenancy law of the Member States, in particular as regards: (a) the split of incentives between the owner and the tenant of a building or among owners, with a view to ensuring that these parties are not deterred from making efficiency- improving investments that they would otherwise have made by the fact that they will not individually obtain the full benefits or by the absence of rules for dividing the costs and benefits between them, including national rules and measures regulating decision- making processes in multi- owner properties”



ESCO Business models addressing the split incentive



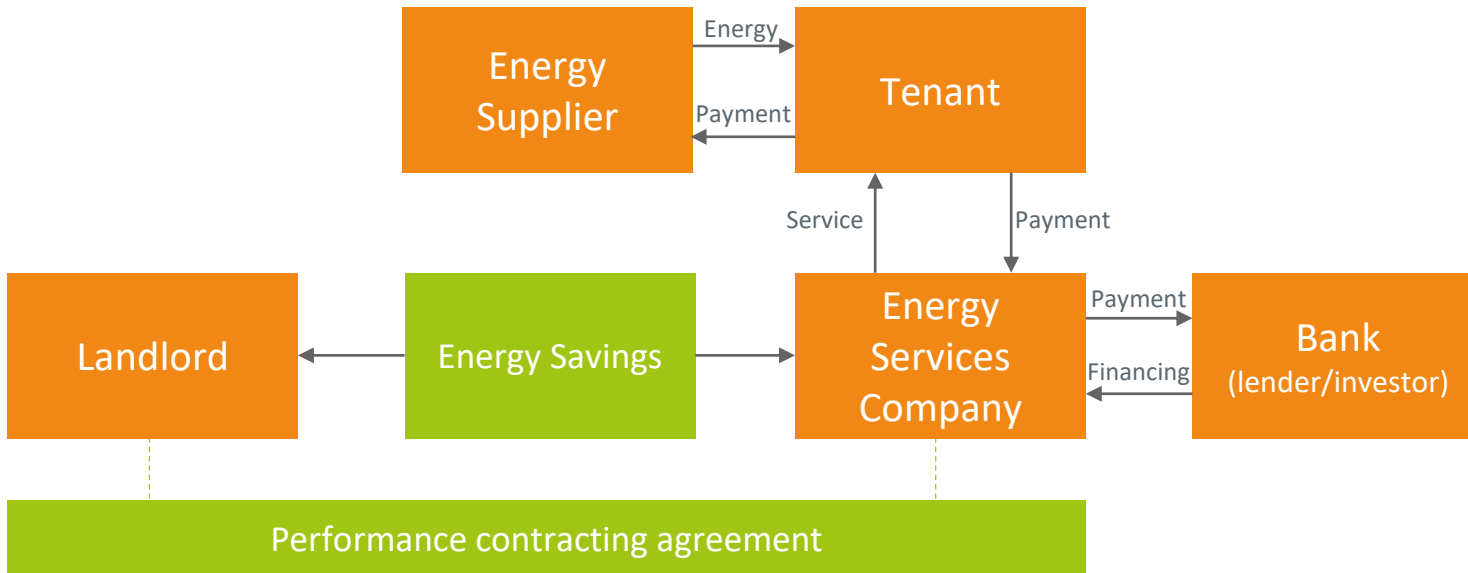
- Review of Business Models (D2.1)
- Three Business Models for ESCO have been reformulated from the literature (Shang et al, 2017) to deal with the split-incentive issue (D2.2).
- Shang, T., Zhang, K., Liu, P., & Chen, Z. (2017). A review of energy performance contracting business models: Status and recommendation. *Sustainable cities and society*, 34, 203-210.
- Most promising business models investigated in SmartSPIN are:
 1. **Shared savings business model** addressing the split-incentive issue
 2. **Guaranteed savings business model** addressing the split-incentive issue
 3. **Chaffee business model** addressing the split-incentive issue
 4. **Energy Efficiency as a Service** addressing the split-incentive issue



ESCO Business models addressing split incentive – 1



Shared savings business model addressing the split-incentive

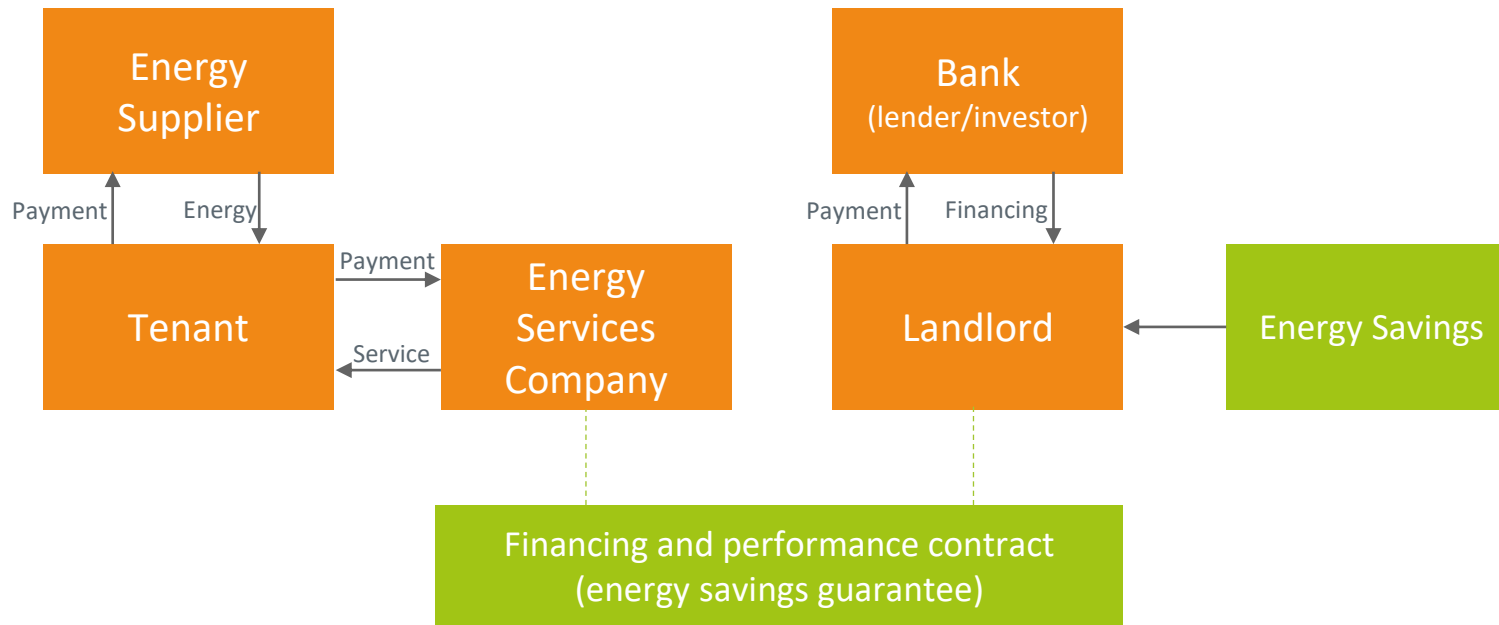


- The ESCO is responsible for designing, financing and implementing the project
- The ESCO is responsible to verify the savings during the contract period
- The ESCO gets a fixed portion of the saving over a fixed period *and shares the savings with the landlord*
- The tenant pays the fees for the energy service to the ESCO
- Low risk model for the client

ESCO Business models addressing split incentive – 2



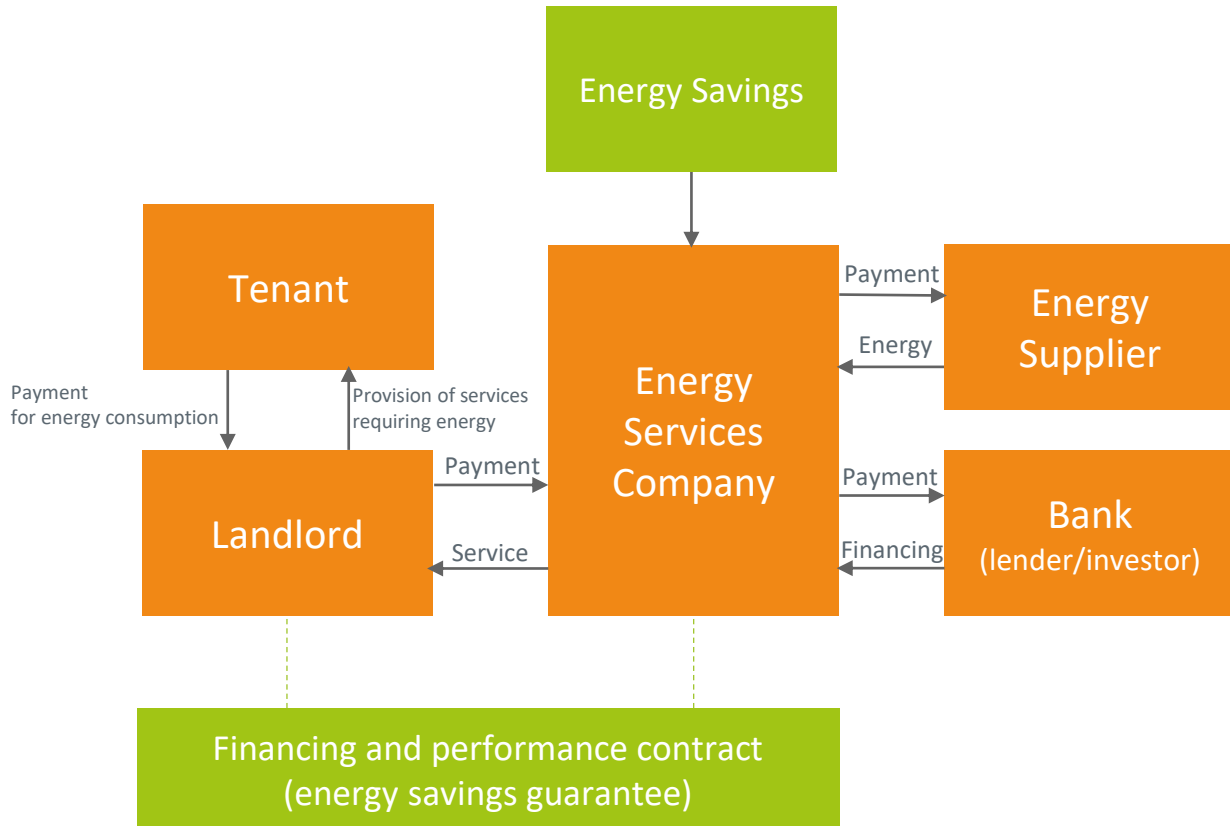
Guaranteed savings business model addressing the split-incentive issue



- The ESCO is responsible for designing and implementing the project but it is not responsible for financing it
- The ESCO guarantees that the savings will be sufficient to pay for the service fees

ESCO Business models addressing split incentive – 3

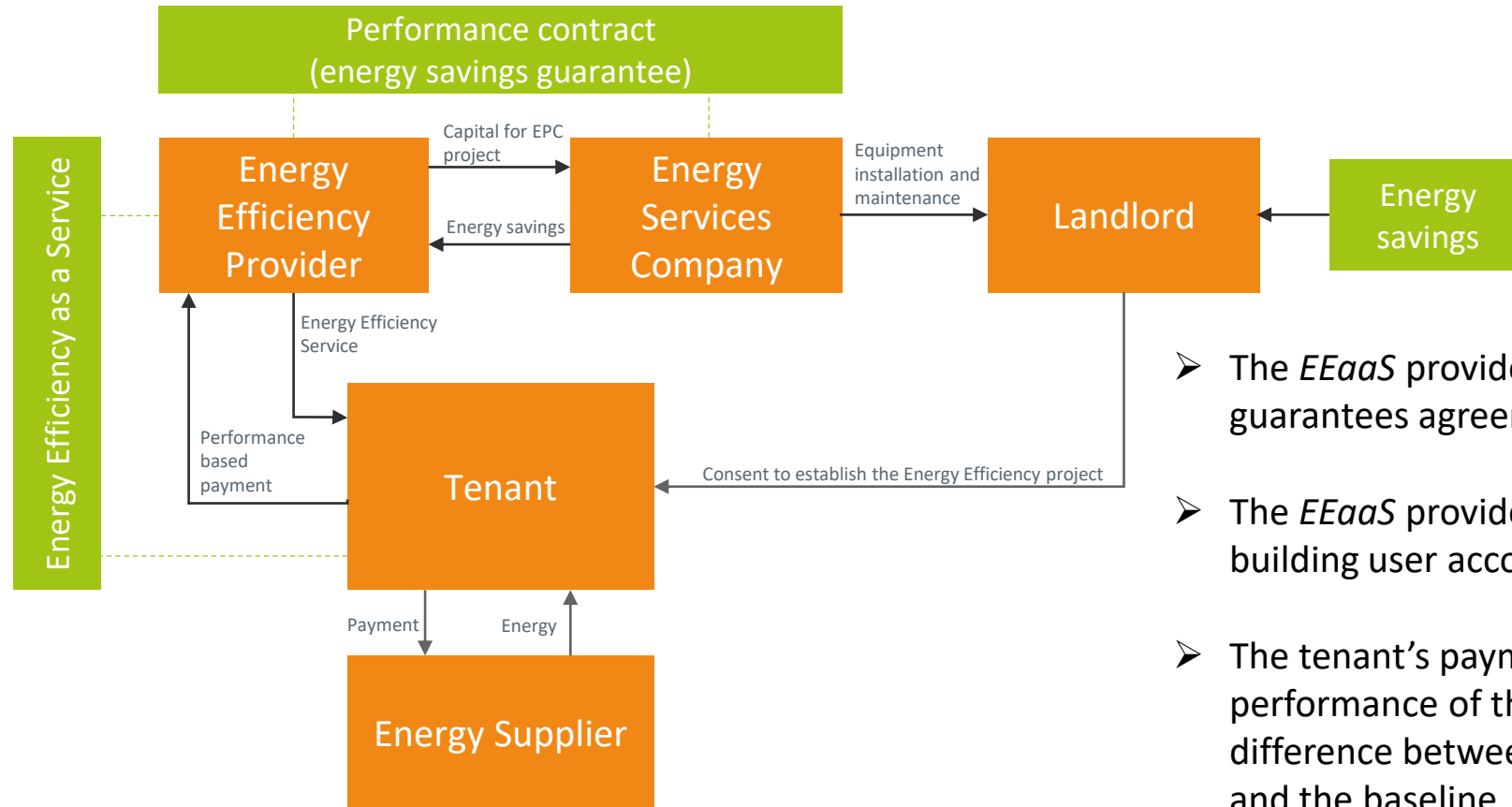
Chaffee business model addressing the split-incentive issue



- The ESCO is responsible for the operation and maintenance of the entire energy system
- The ESCO burdens the energy costs
- The ESCO manages and transforms the energy system to achieve the targets specified in the contract and self-finances the related projects
- The ESCO gets all the savings if targets are met, otherwise it pays a compensation corresponding to the energy shortage.
- The landlord has a contract with the ESCO and pays for the energy provision and the energy efficiency
- The landlord receives a payment from the tenant for the energy expenses due to the energy consumption of the tenant

ESCO Business models addressing split incentive – 4

●●●●● Energy Efficiency as a Service business model addressing the split-incentive issue



- The *EEaaS* provider has an EPC with performance guarantees agreement with an ESCO
- The *EEaaS* provider receives payments from the building user according to the achieved energy savings
- The tenant's payments depend on the overall performance of the service; quantified as the difference between the actual energy consumption and the baseline

Interviews in Work Package 2

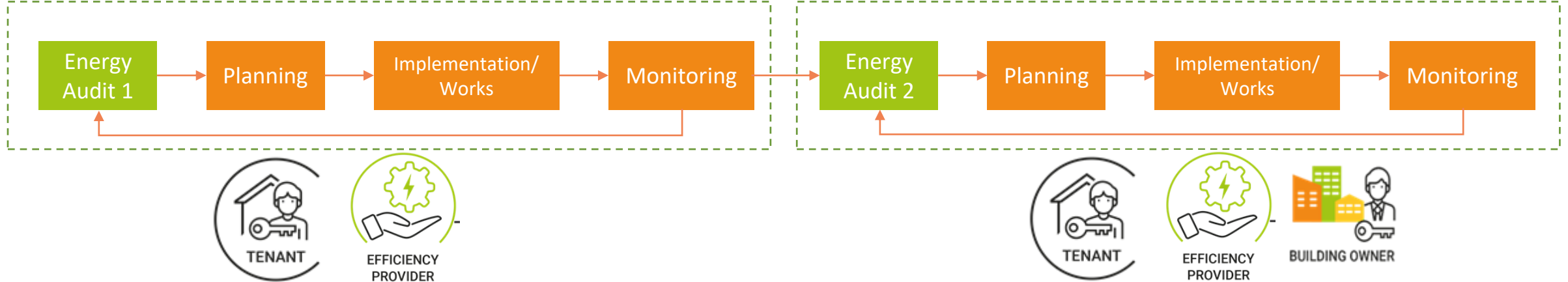
●●●●● Ten interviews with members of External Advisory Board

1. City of Dublin Energy Management Agency Limited (**CODEMA**) – CODEMA is Dublin's Energy Agency. It aims at accelerating Dublin's low-carbon transition to mitigate the effects of climate change and improve the lives of citizens.
2. FACTOR 4 BVBA (**FACTOR4**) – FACTOR4 is an ESCO and EPC facilitator specialized in realizing comfort, energy efficiency and renewable energy in existing non-residential buildings, industrial plants and apartment buildings.
3. Carbon Minded (**CARBON MINDED**) – CARBON MINDED is an energy and carbon consultancy working with both public and private sector organizations to deliver sustainable solutions.
4. ANESE. **ANESE** is the National Association of ESCOs in Spain and counts more than 120 members specialized in energy services, technologies and investments.
5. Klépierre S.A. (**KLEPIERRE**) – Klépierre is a real estate investment trust focusing on shopping centers assets, which are owned and managed by the company. The headquarters are in France and the company's activity is well established in 16 European countries (Belgium, France, Scandinavian countries, Germany, Netherlands, Poland, Greece, Portugal, and Spain).
6. MEETS Accelerator Coalition (**MEETS AC**) – MEETS AC is an organization that aims at promoting the MEETS model.
7. REGENERA LEVANTE SL (**REGENERA**) – REGENERA is an Energy Service Company established in 2007 that offers services for Engineering and Energy Assistance, Industrial work and installations, Maintenance, Energy Services, and R&D – Regenera Digital.
8. SERCO Limited (**SERCO**) – SERCO established in 1929 as Serco Group Plc's and became Serco Limited on 1987. SERCO provides essential service to the public sectors like defense, transport, justice, immigration, healthcare and other citizen services across their four operating regions UK & Europe, North America, Asia Pacific and Middle East.
9. Smart M Power – **Smart M Power** is a very specialized ESCO in Ireland. It specializes in managing and intelligently automate power-matching transactions on a local level.
10. An anonymous interviewee from the **European Commission**

The SmartSPIN Energy Efficiency as a Service Model

●●●●● Towards a Tripartite Energy Performance Contracting

Guarantee Period 1: optimized energy management & EEMs owned by tenant **Guarantee Period 2:** EEMs & upgrades to the building owned by building owner



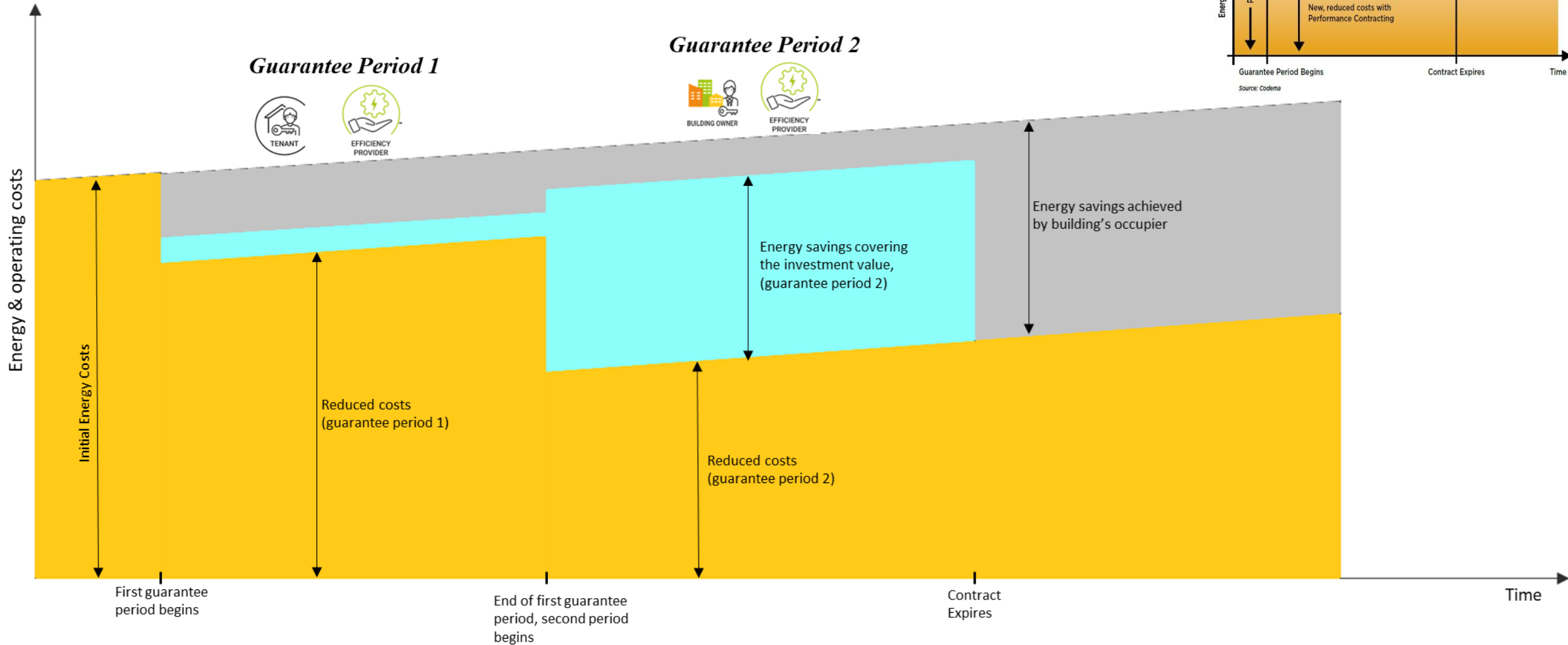
Guarantee period 1

- The service provides:
 - Optimized energy management and advice to reduce energy consumption.
 - Installation/replacement of energy efficient equipment owned by the tenant (agreed in Energy Audit 1).
- Start / end date of guarantee period 1
- Target energy savings in guarantee period 1
- Penalty for the ESCO if not achieving the target savings
- Service Level Agreement (users' satisfaction / thermal comfort)

Guarantee period 2

- List of approved energy efficiency measures which can be installed in Step 2 (agreed in Energy Audit 2).
- Start / end date of guarantee period 2
- Financing means other than energy savings accumulated in period 1
- End date of ESCO contract
- Target energy savings in period 2
- Penalty for the ESCO if not achieving the target savings
- Service Level Agreement

The SmartSPIN energy savings model



Recommendations for the SmartSPIN Service



- The **Energy as a Service** (EaaS) model should cover: Energy Management, Maintenance, Total Guarantee of Equipment, Improvement works, Improvement of energy efficiency
- The SmartSPIN service should comprise: energy management, changing the electricity supplier, equipment/RES installation (e.g. solar PV installations) or replacement and O&M services
- The **Measurement & Verification** process should be standardized, ensuring no measurement errors and trusted by stakeholders
- **Green leases** should be used to allow engagement of landlords and tenants for improvement of sustainability and energy efficiency in rented commercial buildings.
- Two cases should be considered for service definition: 1. the landlord owns space and equipment and 2. the landlord owns only the space.
- The engagement of both landlord and tenants with an ESCO should be achieved by means of a **tripartite Energy Performance Contract** which can deliver *performance guarantee* in the rented scenario (while circumventing the split incentive issue)
- Sub-metering is required for a fair billing of tenants' energy consumption
- The energy tariff for the electricity, gas consumption and water applied to the tenants should be independent of the season, fair and easy to understand.

Published deliverables



<https://www.smartspin.eu/results/>

- D2.1 Review of existing business models for Smart Energy Services
- D2.2 Report on market status and revenue stream mapping
- D2.3 Review of policies on SES
- D3.1 Review on legal aspects
- D3.2 Report on smart contract design
- D7.1 Dissemination and communication plans





Thank you.



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