PARTNERS

Fundación CARTIF
Spain
www.cartif.com

Fundación TECNALIA
Spain
www.tecnalia.com

NOBATEK
France
www.nobatek.com

Fundació Privada Universitat i Tecnologia
Spain
www.salleurl.edu/arc

Technical University of Crete
Greece
www.tuc.gr

ACCIONA Infraestructuras
Spain
www.acciona.com

United Technologies Research Centre
Ireland
www.utrc.utc.com

Expert System
Italy
www.expertsystem.com

ARGEDOR Bilişim Teknolojileri Ltd
Turkey
www.argedor.com

Distretto tecnologico trentino per l'energia e l'ambiente
Italy
www.habitech.it

Fomento San Sebastián
Spain
www.fomentosansebastian.eus

Lunds Kommun
Sweden
www.lund.se

Steinbeis-Europa-Zentrum
Germany
www.steinbeis-europa.de

PROJECT ID

Duration:
42 months (September 2015 – February 2019)

Partners:
13 partners from 8 countries
(*France, Germany, Greece, Ireland, Italy, Spain, Sweden, Turkey*),
coordinated by Fundación CARTIF

Funding:
OptEEmAL receives funding from the European Union's Horizon 2020 research and innovation programme.

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Topic: EeB-05-2015 Innovative design tools for refurbishment at building and district level

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OptEEmAL

OPTIMISED ENERGY EFFICIENT DESIGN PLATFORM FOR REFURBISHMENT AT DISTRICT LEVEL

This project has received funding from the ***European Union's Horizon 2020 research and innovation programme*** under grant agreement No 680676.

PROJECT

OptEEmAL, a project funded under the European Union's Horizon 2020 research and innovation programme, will develop an **Optimised Energy Efficient Design Platform** able to provide a set of solutions that are based on different energy conservation measures to improve the energy behaviour of a district. The tool will reduce time delivery and uncertainties and result in improved solutions when compared to business-as-usual practices. Under the coordination of Fundación CARTIF, 13 partners from 8 countries are working on delivering an optimised, integrated and systemic design based on an Integrated Project Delivery approach for building and district retrofitting projects.

This main objective will be achieved through a mix of development and testing activities, including:

1. Developing a holistic and effective **services platform** for District Energy Efficient Retrofitting Design, which integrates interoperable modules and tools that are able to provide services for diagnosis and generate and optimise scenarios (according to stakeholders priorities) on criteria such as energy, cost, environment or social evaluation for data export.

2. Reinforcing the c**ommitment of all involved stakeholders** through an Integrated Project Delivery approach that allows them to articulate their needs through a collaborative and value-based process to deliver high-quality outcomes.

3. Creating an integrated ontology-based **District Data Model** that will contain key information in the fields of energy, comfort, environment, economic, social wellbeing and urban morphology.

4. Cataloguing Energy Conservation Measures including technical, operational, maintenance and cost information providing valuable and consistent outputs to the design and district operation and maintenance stages.

5. Developing a **bio-inspired optimisation** module based on evolutionary computing with the aim of automating the decision making process to obtain the optimal design for an energy efficient retrofitting plan at district level.

6. Externally connecting the **OptEEmAL** Platform to relevant entities (i.e. existing tools enabling the calculation of indicators to generate and optimise the retrofitting scenarios).

7. Strategic dissemination, training, exploitation and market deployment of the project's developments and results.

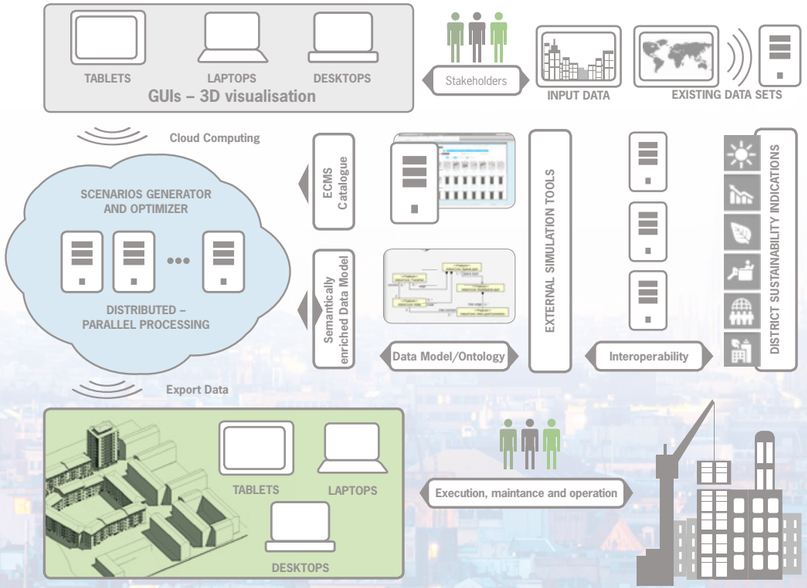
IMPACT

The Optimised Energy Efficient Design Platform will create the possibility for stakeholders to receive an optimised, integrated and systemic design for their retrofitting projects of buildings or entire districts.

This leads to impacts on different levels:

- **Economic impact** through the reduction of costs during the design phase by 19% compared to business-as-usual. The costs of the operational phase are reduced by 25% by promoting holistic solutions, leading to a higher Return on Investment.

- **Increase of market competitiveness** through the utilisation of energy efficient solutions in a holistic integration and the improvement of the contractual processes.



- **Growth of the European construction sector** through the creation of new jobs and strengthening SMEs in the sector.

- **Social impacts** by the involvement of inhabitants in the decision making process. This ensures that their expectations are met, increases user acceptance of the activities carried out and will finally lead to an improvement of social wellbeing.

- **Fostering the dissemination of the new knowledge at professional level** through specific information channels and actions targeting the relevant stakeholder groups.

DEMONSTRATION SITES

In order to validate the **OptEEmAL** platform, two steps are required:

1. **Deployment of the platform prototype** by existing innovative EU-wide initiatives at district level. A wide spectrum of cases will be selected, ensuring performance is tested under different conditions including climate aspects, boundary conditions, uses, building typologies, levels of intervention, conservation conditions, existence of specific barriers, consideration of historical buildings, etc.

Six case studies have been pre-selected so far in four different countries with others expected to join:

- **Sweden**
- **Turkey**
- **United Kingdom**
- **Spain (three different case studies with different uses, typologies and climatic conditions).**

2. In an ambitious final stage for the validation procedure, **OptEEmAL** will carry out several demo cases. Three different stakeholders in charge of designing retrofitting projects at district level are essential to become testbeds for validation: A municipality, a private consortium of technical offices and a municipal company. Each will head the demonstration of the performance, usefulness and user-friendliness of the tool for developing Integrated District Energy Efficient Retrofitting Plans in real environments.

The final stage for the validation procedure will be carried out in several demo cases:

- **San Bartolameo, Trento (Italy)**
- **Txomin Enea, San Sebastián (Spain)**
- **Polhem Area, Lund (Sweden)**

The results of the demonstration will focus on the generation of intervention plans, however the real implementation and execution will not take place in the scope of the **OptEEmAL** project.