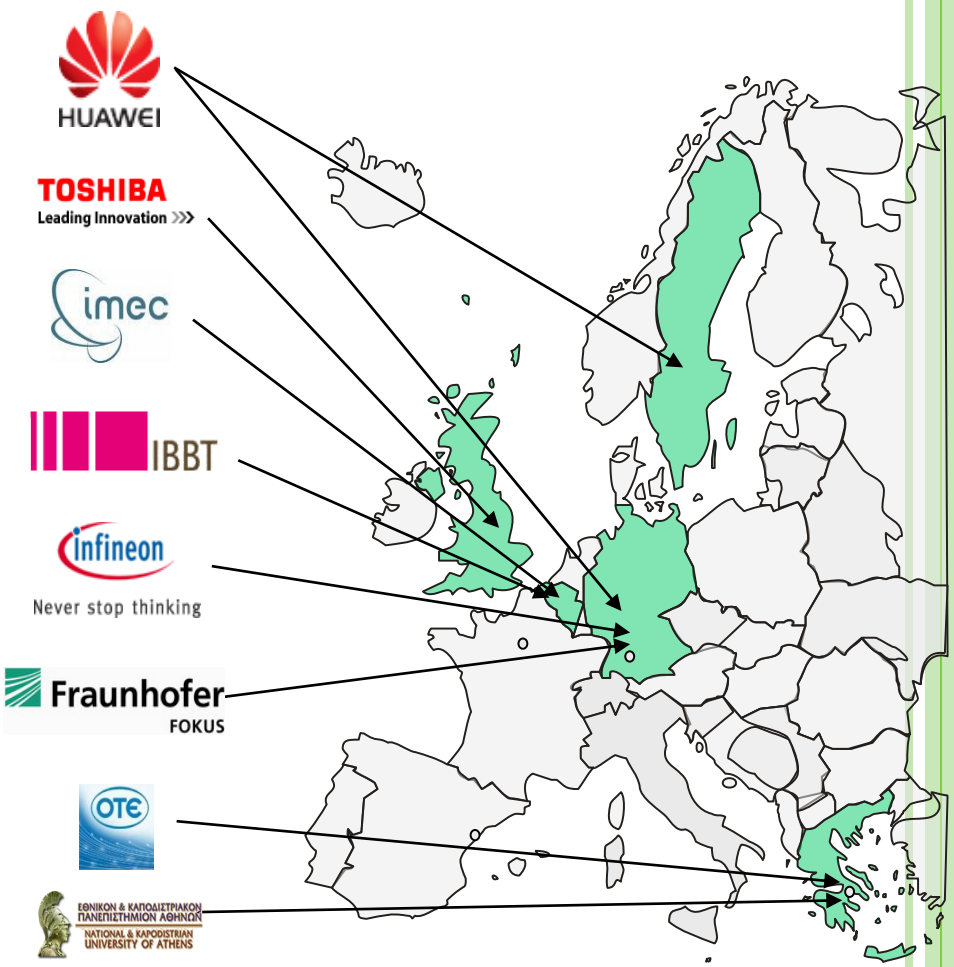
CO-N-SERN

COoperative aNd Self growing Energy awaRe Networks

Never stop thinking

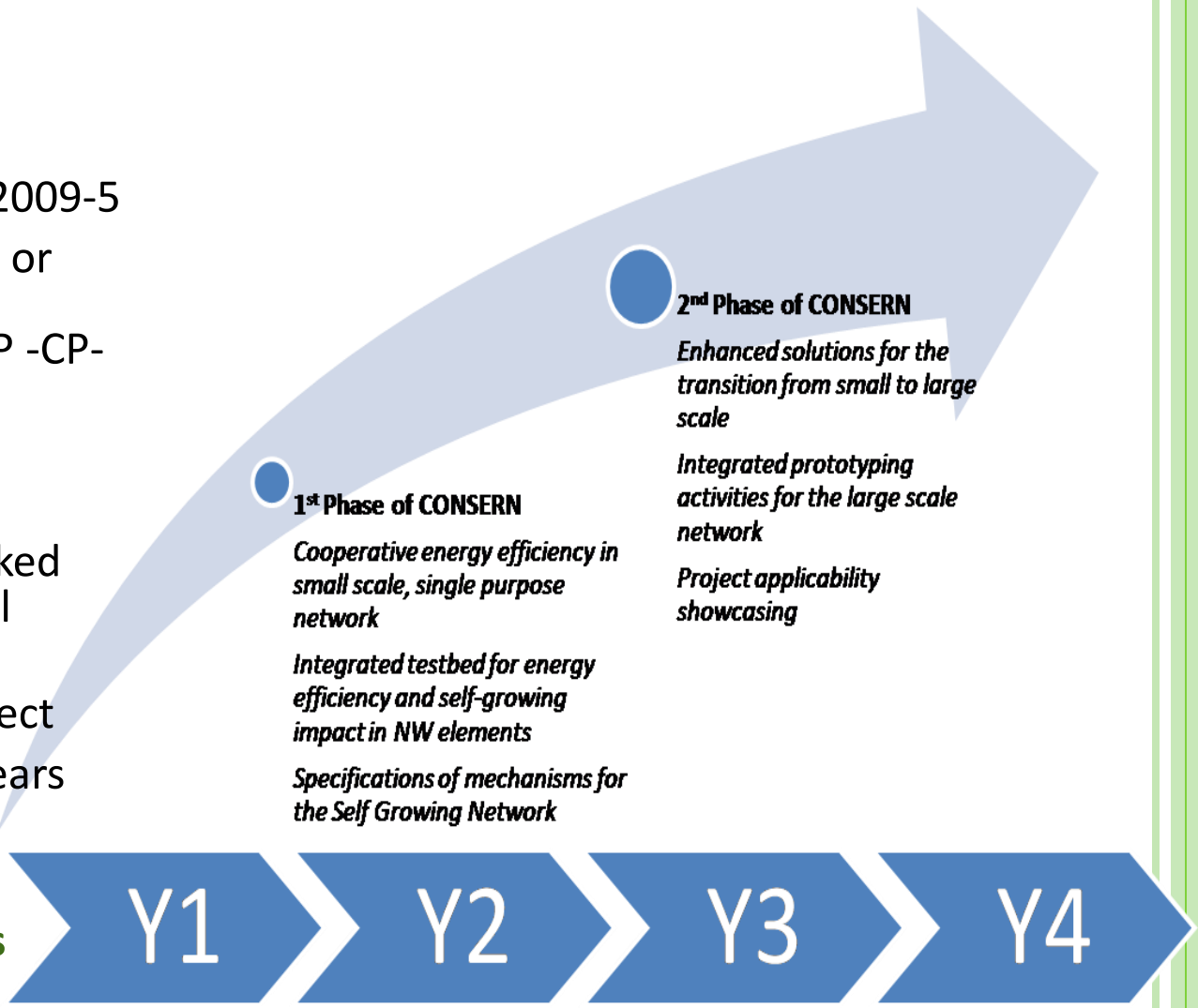
CONSERN Consortium

- The consortium combines academic and industrial research, with the common goal of improving actual research activities towards ICT spectrum and energy efficiency using multi-band cognitive radio techniques,
- The CONSERN consortium is composed of nine (9) partners from five (5) EU countries.
  - Large semiconductor and telecommunication manufacturers (HWSE/HWDU, IFX, TREL,),
  - Network Operators (OTE),
  - Academic partners (NKUA), and ,
  - World-leading research institutes (IMEC, Fraunhofer, IBBT)
- The consortium intends to achieve significant and concrete results, including a proof-of-concept, with associated exploitation plans.



Project Overview

- Proposal: 257542
- Acronym: CONSERN
- Program Call: FP7-ICT-2009-5
- Funding scheme: Small or medium-scale focused research project -STREP -CP-FP-INFSO
- Duration: 24 months
- Activity: ICT-5-3.5 - Engineering of Networked Monitoring and Control Systems
- Plan: A two-phase project
- 1st Phase duration: 2 years (June 10 – May 12)
- EU Budget: **2100 KE**
- Resources: **274.23 PMs**



Project Rationale

- Future distributed systems –requirements and opportunities
  - Robust, predictable and self-adaptive behaviour for large-scale networked systems,
  - Efficient cooperation of heterogeneous elements in order to provide advanced problem solving capabilities and improved services,
  - Innovations for low energy for sustainable economic growth,
  - Increased systems complexity (wrt to scale and functionality, reliability and dependability),
  - Coping with evolution of a wireless network often demands for infrastructure and terminal replacement and costly reconfigurations,
  - Low energy solutions create an attractive business case.

Why do we need CONSERN?

- Energy efficient and dependable operation at the level of cooperating wireless elements, network compartments and networks as a whole is becoming an increasingly difficult objective
- Existing solutions are optimised for:
  - Reducing cost and enabling flexibility
  - Self-evolving systems which would allow the emergence of hybrid solutions with limited effort
- **CONSERN aims at developing and validating a novel paradigm for dedicated, purpose-driven small scale wireless networks characterized by a service-centric evolutionary approach introduced here as an energy-aware self-growing network.**

Project main idea and concepts (1/3)

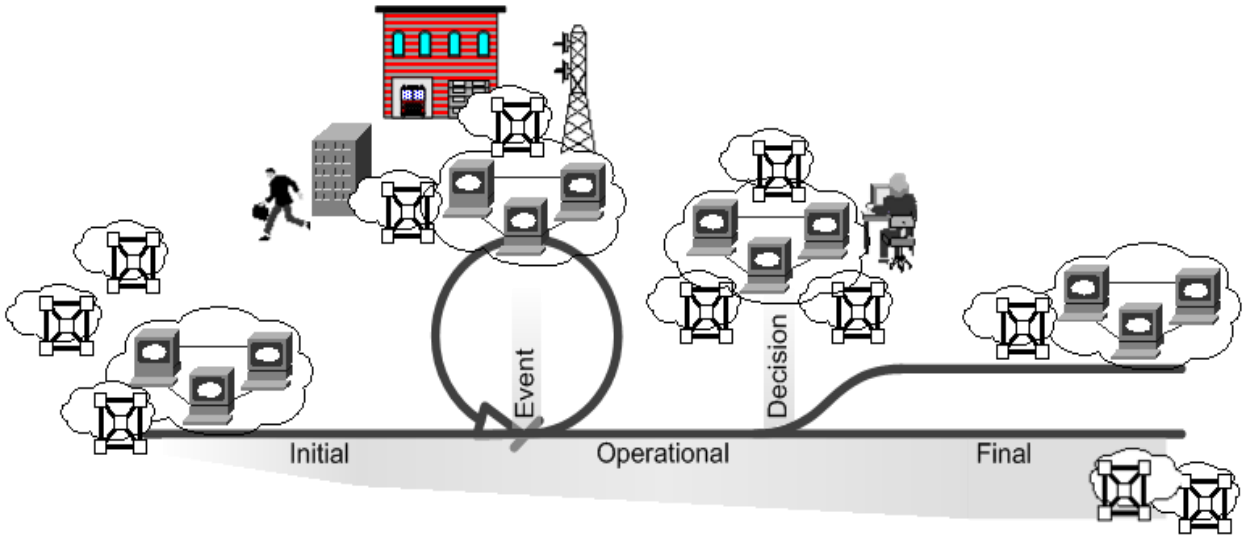
- CONSERN is based on **two (2) main research directions**:
  - Solutions for optimised energy and power consumption in a small scale, purpose-driven network through balancing autonomic and cooperative approaches,
  - Mechanisms for the self-evolvement of the network towards a large-scale, multi-purpose network.
- CONSERN pursues an approach to increase **dependability, cost** and **energy efficiency**, and also **flexibility**, **resilience**, and **robustness** of a heterogeneous wireless network by utilizing reconfigurable wireless communication nodes and distributed cooperative control functions.

Project main idea and concepts (2/3)

- CONSERN will work on
  - The key mechanisms for communication optimisation, as well as,
  - The mechanisms for dynamic and gradual evolvement of the CONSERN network features deployment in larger infrastructures. These include the development of novel abstractions and scalable methods for sensing, control and decision-making.
- The Self-growing network paradigm considers
  - Mechanisms for energy efficient interaction of the wireless network elements, and,
  - Mechanisms for the reliable and efficient evolvement towards later lifecycle phases.

Project main idea and concepts (3/3)

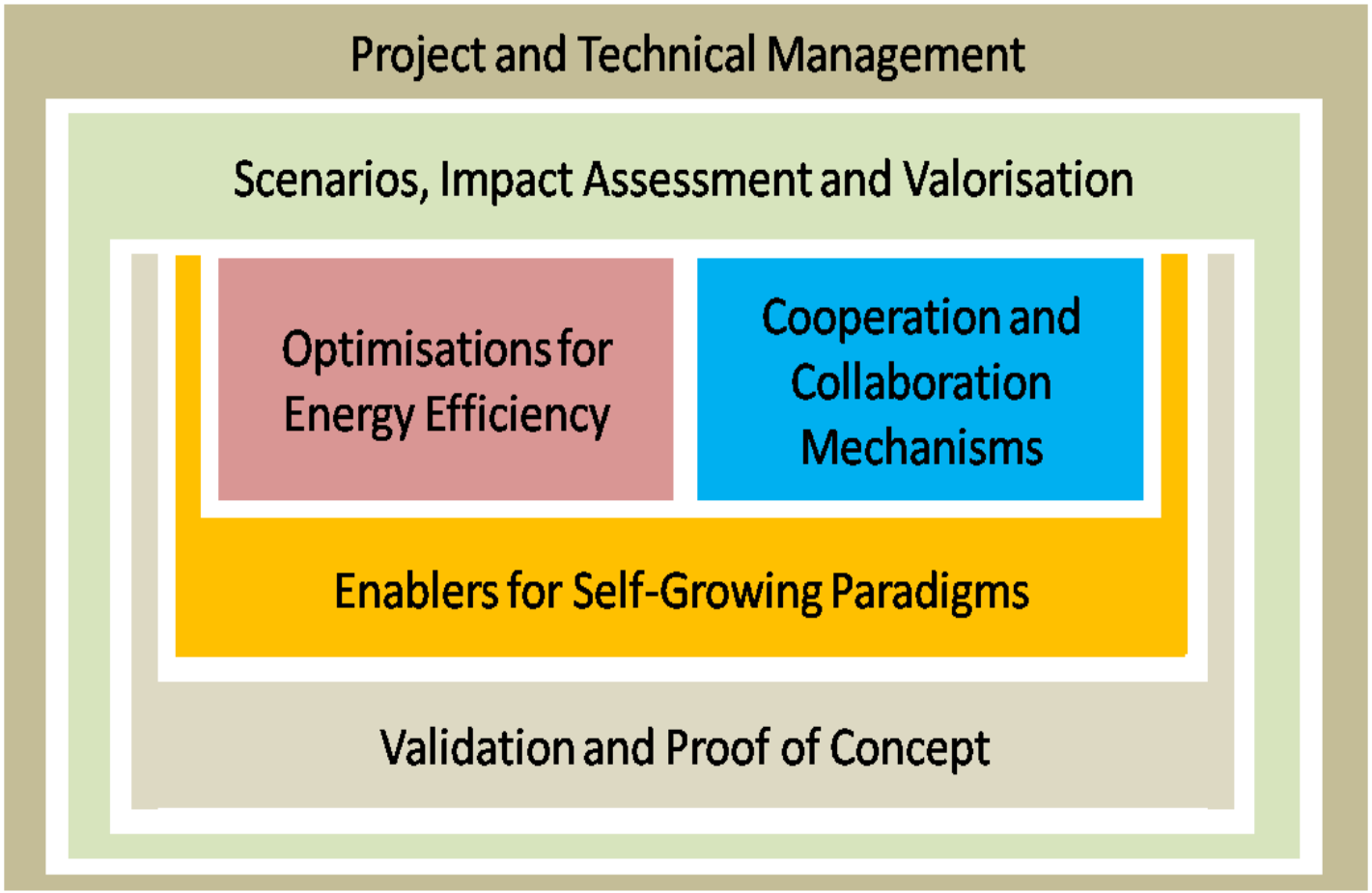
- Self-Growing network lifecycle phases
  - A **Self-Growing network** is set up on-demand, dedicated to a single purpose.
  - During its lifecycle, it can evolve to serve **several different objectives as needed**, such as providing general voice and data communications, integrating sensor networks in the vicinity or supporting safety of life applications under exceptional situations
  - Towards the end of its lifecycle, the self-growing network may still remain active and may serve as a **dedicated purpose (embedded) network** or as a failover for applications associated with other networks sharing the same area.



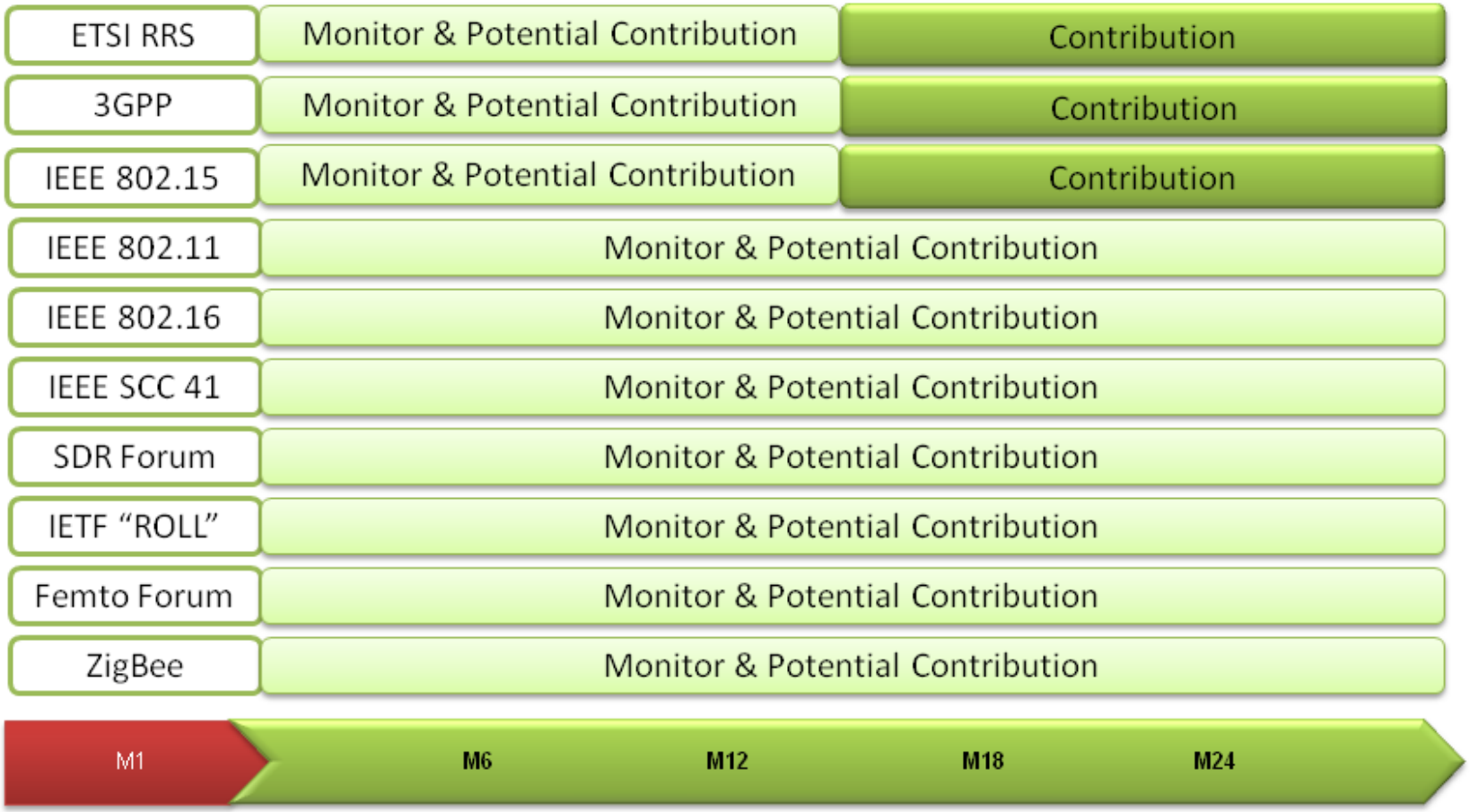
Scientific and Technical Objectives

- Development and optimisation of cooperative mechanisms for heterogeneous distributed elements in a small-scale, purpose-driven network,
- Underlying mechanisms for scalable energy efficient heterogeneous self-growing network paradigms and study the potential market impact of such paradigms,
- Development and presentation of an integrated demonstrator based on the selected scenarios.

CONSERN WP Breakdown



Standardisation Activities



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Thank You

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