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ACROPOLIS: Advanced coexistence technologies for radio optimisation in licensed and unlicensed spectrum

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Introduction

- Cognitive radio and cognitive wireless networks are intensively studied as potential solution for the spectrum scarcity and under-utilization problems

- Proliferation of different wireless technologies has led to explosion of the number of research results, but also significant fragmentation of the field

- ACROPOLIS is specifically designed to address the lack of general picture of the field and to enhance research work on cooperation and coexistence problems

Main Objectives

- ACROPOLIS will integrate and synchronize European research and developments efforts on advanced coexistence and cognitive technologies for radio optimization
- The NoE will identify technological issues in the field that are lacking investigation in Europe
- The project will provide united European voice and roadmapping capability for European researchers and educate them on advanced coexistence and cooperation technologies (summer/winter schools, tutorials, ...)

Project Approaches

- The outcomes of the NoE will be disseminated in conferences and journals, but also through selected proposal in the regulatory and standardization realms

- The industry will be involved through a focused Industry Partnership Program to increase the later commercial impact

- The project will enhance cooperation level among the key research groups. It aims also to valorize European research through joint Joint Programme of Activities (JPA), publications, workshops, ...

Key Issues

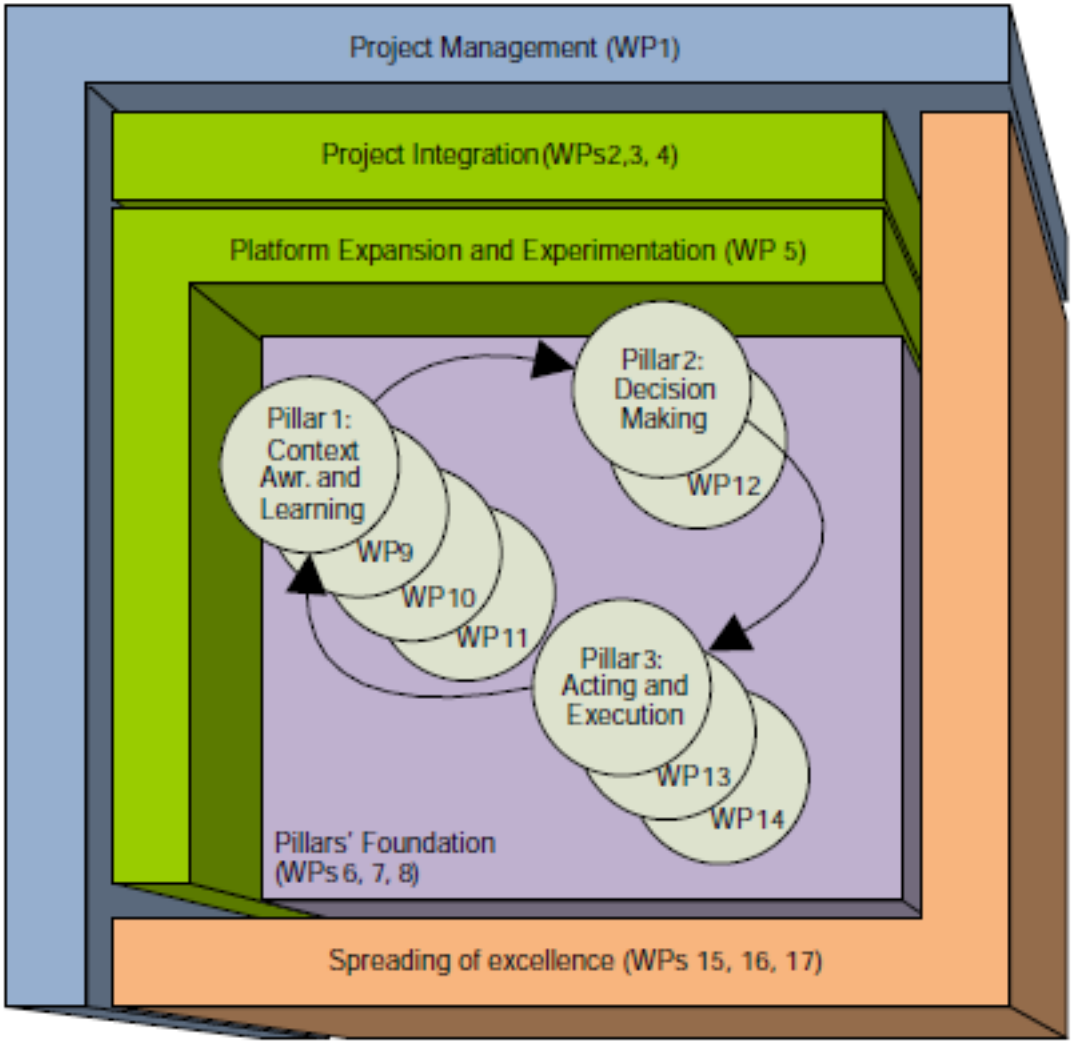
- ACROPOLIS targets three classes of applications:
  - Cognitive Radio Systems and other spectrum sharing paradigms
  - Self-organized Networks
  - Legacy Network Optimization based on novel approaches

- In addition to use of analytical and simulation tools, project has strong focus on experimentation
  - However, first the collective knowledge is needed to compare the existing hardware and software platforms
  - The NoE aims to provide guidance on which platforms to work, and to develop common benchmarks

Project Structure and Work Items

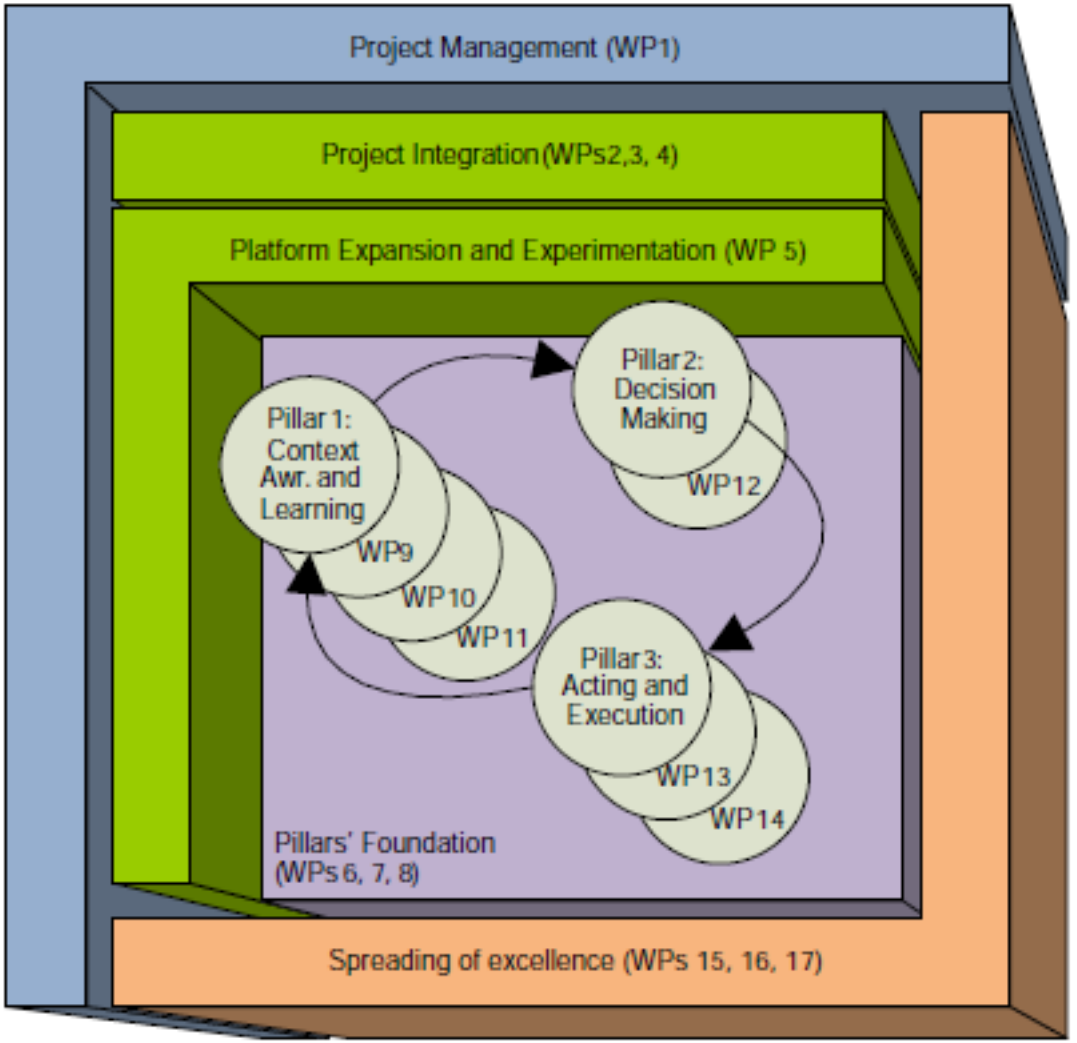
- Project has seventeen workpackages (WPs) combined into *Foundation* and three *Pillars*

- **Foundations** (*Knowledge Toolbox, Technical Enablers, and Business Aspects and Regulation WPs*) provide knowledge base and integration of fundamental aspects.



Project Structure and Work Items

- **Pillar 1** is composed of the Spectrum Awareness, Neighborhood and Network Awareness, and Learning Mechanisms and Knowledge Managements WPs
- **Pillar 2** addresses the decision making engine, and introduces the concept of a global optimization
- **Pillar 3** handles decision execution process including monitoring and control of misbehaviors, and conformity assessment and security
- The NoE also encompasses further dedicated WPs for prototyping and spreading of excellence activities



Project Consortium

- In total 16 partners from 10 countries work in the project
- All the participating academic research groups have strong Ph.D. Programmes, that guarantee significant student interaction and mobility
- The partners also have strong contacts to standardization groups

Expected Impact

- ACROPOLIS will mobilize and integrate top European researchers to produce a more sustainable technological and scientific basis for European competitiveness

- Project aims to accelerate research towards the realization of advanced coexistence technologies for radio optimization in licensed and unlicensed spectrum

- The NoE will enhance visibility of European research in international fora, such as workshops, conferences, and journals

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