

Context-Active Resilience in Cyber Physical Systems (CAR)

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About CAR project

What is CAR?

CAR stands for Context-Active Resilience in Cyber Physical Systems. It is a European Union's Horizon 2020 project funded under the Marie Skłodowska-Curie Action programme.

What does CAR do?

The CAR project will benefit the researcher by giving and enhancing the knowledge and skills for a future generation of CPSs which enjoy the unique feature of context-active resilience. With such new capability and training, the fellow is expected to realise his potential and gain his leading role at international level in CPS research community.

The project will simultaneously advance the theoretic approach and art of practice of this emerging topic, improve the competency of the fellow, enhance the host's research profile and infrastructure, and benefit the society, living, economy and related research communities significantly.

Who are we?

Dr. Qi Liu works as a Senior Research Fellow in the School of Computing, Edinburgh Napier University. He is also a professor of Computer Science and Technology in the School of Computer and Software, Nanjing University of Information Science and Technology. His research interests include Internet of Things, Home Energy Management Systems, Distributed Computing and Wireless Sensor Networks.

Dr. Xiaodong Liu is a Reader and is currently leading the Software Systems research group in the IID, Edinburgh Napier University. He was the director of Centre for Information & Software Systems. He is an active researcher in Software Engineering with internationally excellent reputation and leading expertise in Context-aware Adaptive Services, Service Evolution, Mobile Clouds, Pervasive Computing, Software Reuse, and Green Software Engineering.

Project Description

Aim and Objectives

Due to the wide and critical roles of CPS in industry and society, Context-Active Resilience (CAR) is proposed as a novel concept of CPS resilience in this project, which emphasises active and even proactive response to the dynamic state of CPS and its users in real-time. CAR Patterns aim to be identified via the empirical analysis of practical CPS systems, and specified with the developed Meta-Intelligence and populated into a semantic repository.

Work Package

WP1: Proj. Management

- 1.1. Establishment and maintenance;
- 1.2. Administrative management;
- 1.3. Quality assurance and risk management;
- 1.4. Intellectual Property management.

WP2: CAR Mechanism

- 2.1. Development of Context Model;
- 2.2. Development of the adaptation mechanism;
- 2.3. Development of the proactive services.

WP3: CAR Patterns

- 3.1. Identification of CAR patterns;
- 3.2. Creation of a Meta-Intelligence model;
- 3.3. Development of a CAR pattern repository;
- 3.4. Development of enabling components.

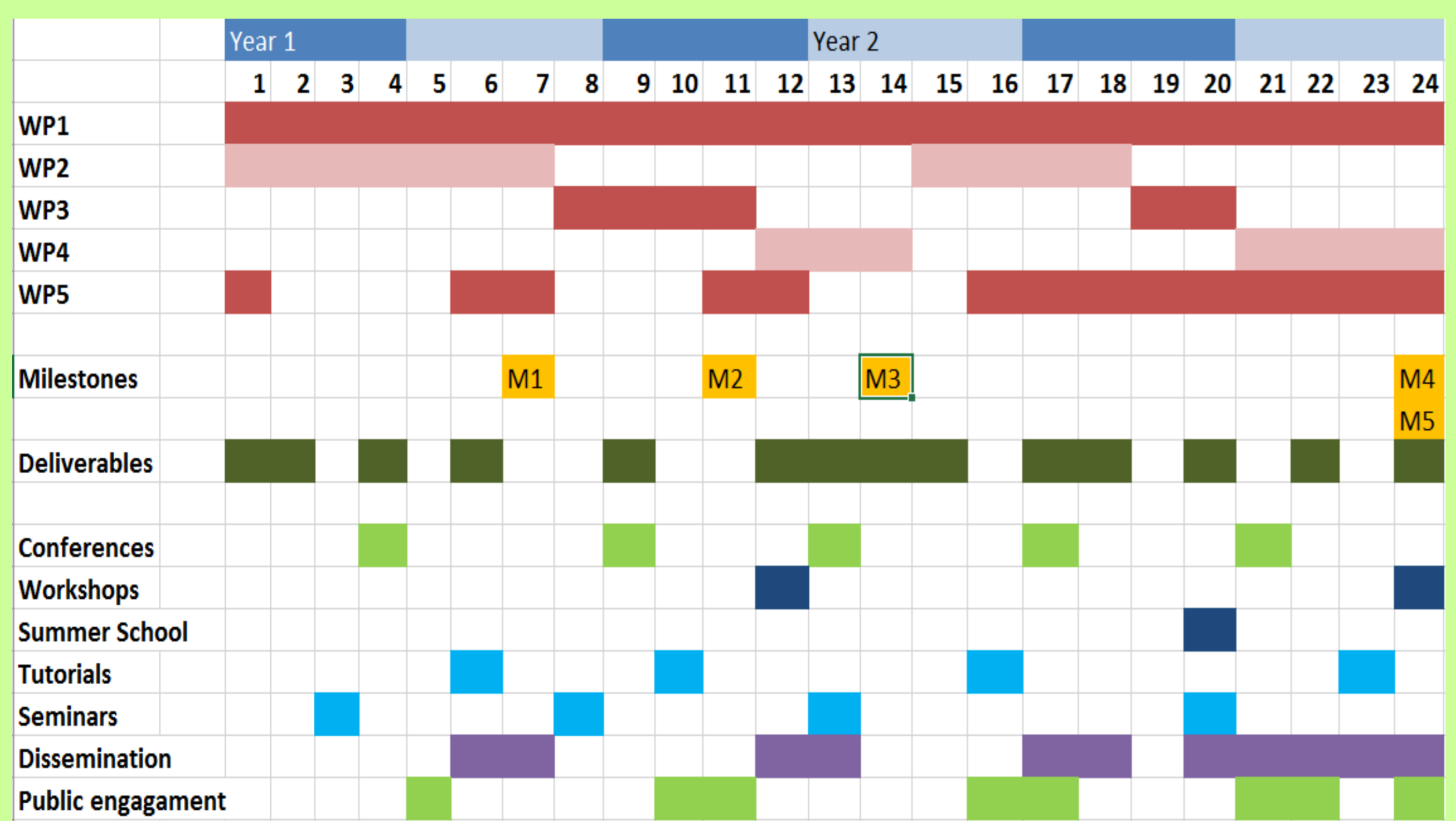
WP4: Use Case

- 4.1. System architecture;
- 4.2. Implementation of Prototype v1;
- 4.3. Design of a testing protocol;
- 4.4. Evaluation of the CAR mechanism;
- 4.5. Development of Prototype v2.

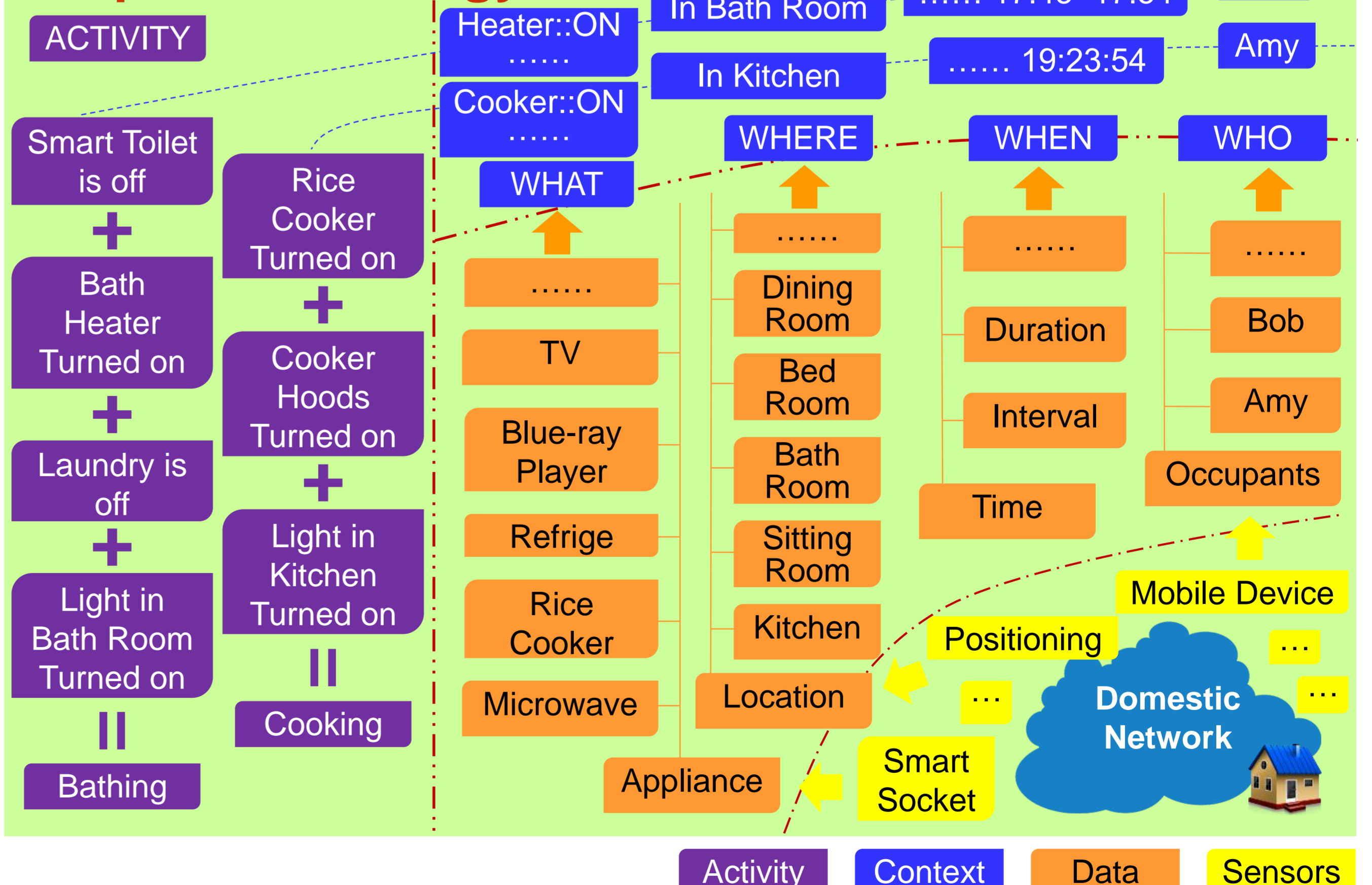
WP5: Dissemination

- 5.1. Dissemination via social media and web;
- 5.2. Dissemination of publications;
- 5.3. Dissemination of open-source tools;
- 5.4. Dissemination via workshops;
- 5.5. Dissemination via public engagement
- 5.6 Long-term Dissemination.

Project Arrangement



Proposed Ontology



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