

2<sup>nd</sup> Annual review  
Florence 15 November 2013



WP5 – SPD Middleware & Overlay

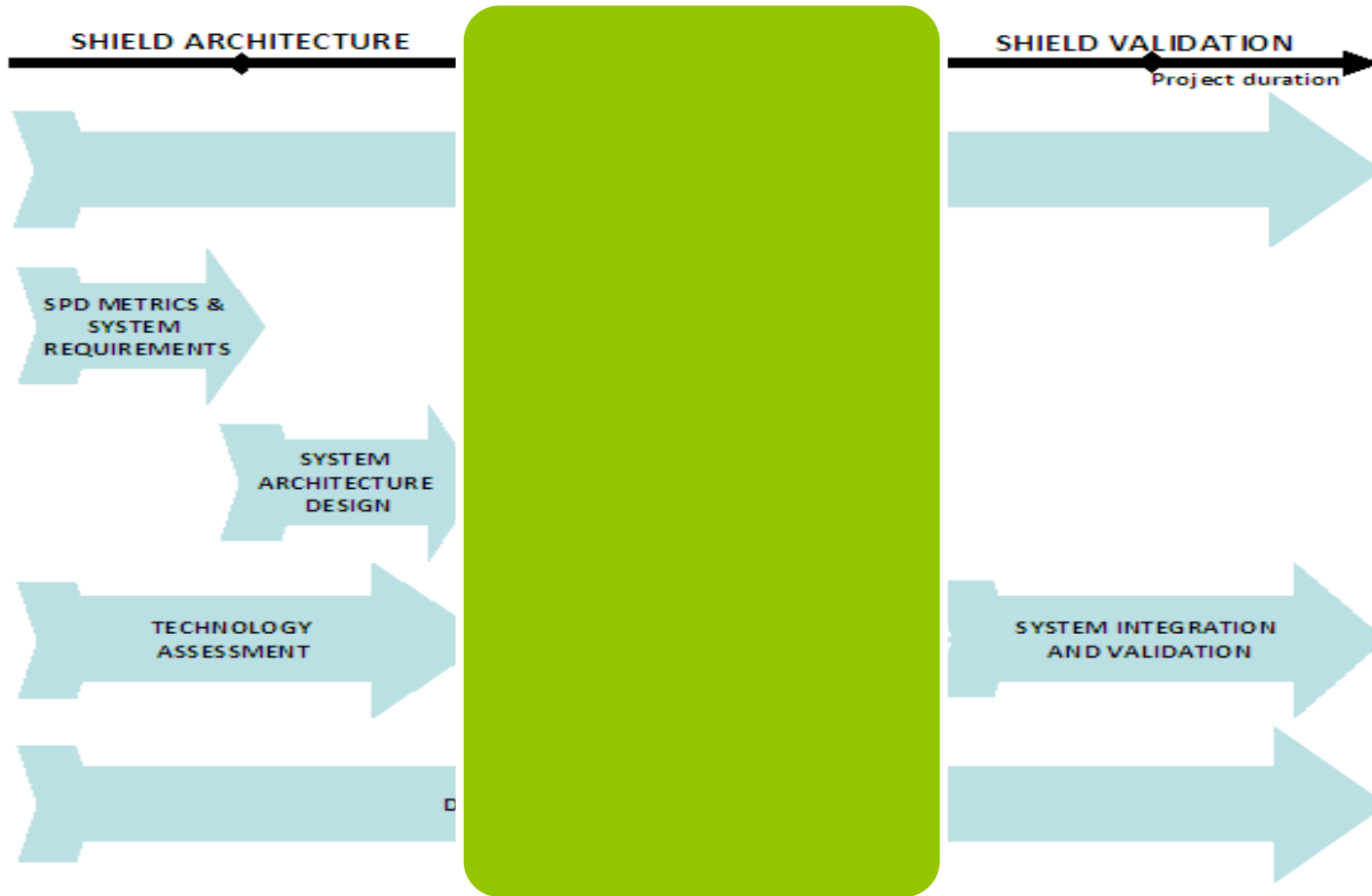
*Leader: Andrea Morgagni – Selex ES*

*Presenter: Andrea Fiaschetti – Univ. “La Sapienza”*

# Introduction: WP5 - SPD Middleware & Overlay





- **WP5 aims at**
  - ✓ Providing innovative SPD functionalities to the SHIELD Middleware
  - ✓ Defining the SHIELD semantic models
  - ✓ Designing and developing the nSHIELD overlay (for SPD composability)
  - ✓ Defining the SHIELD Policy Management
- **The WP is driven by scenarios and is responsible for the:**
  - ✓ SPD technology assessment,
  - ✓ Research and development
  - ✓ Prototyping and demonstrating  
required by nSHIELD scenarios at middleware level.
- **Outcomes:**
  - ✓ Five deliverables on three main topics: technology assessment, technology design, prototypes development, and two milestones (at M18 and M30).
  - ✓ Deliverable D5.1, "SPD middleware and overlay technologies assessment", submitted at M10.
  - ✓ Deliverable D5.2-D5.3 "SPD middleware & overlay technologies prototypes/report" submitted at M22
  - ✓ 9 Prototypes (Simulations/Software code/Models) delivered for the 2nd erview

# WP5: Progress

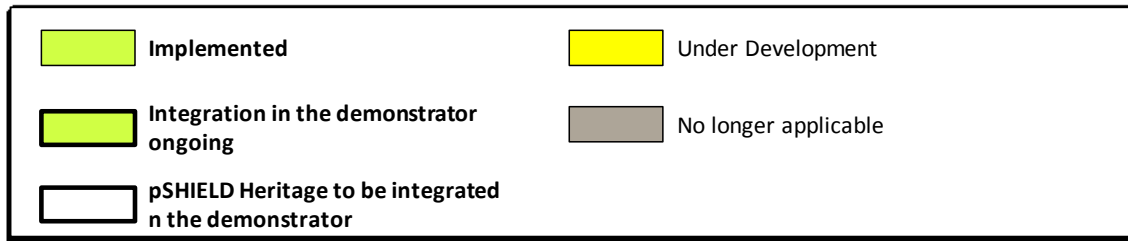
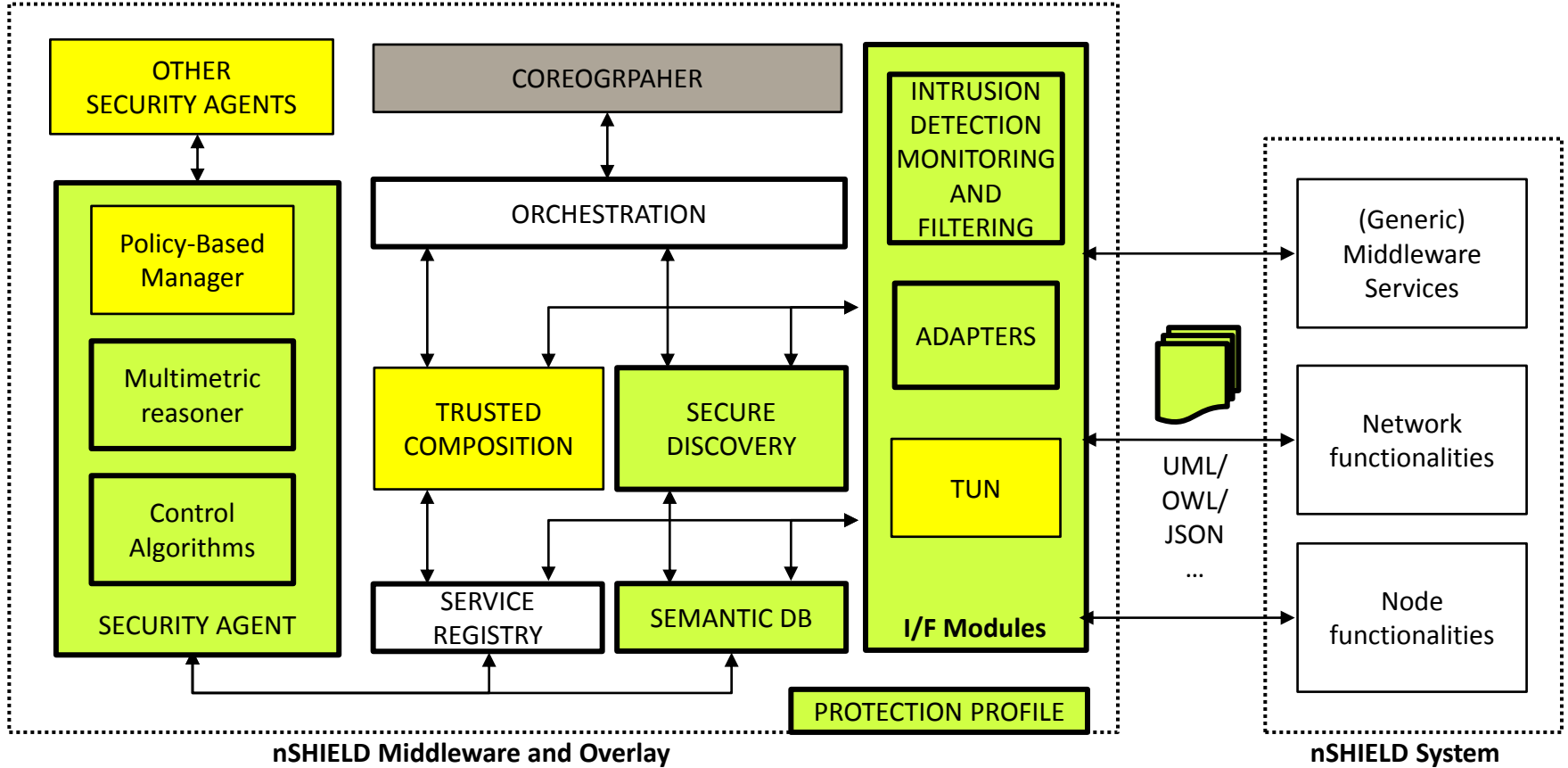


- 12 Months of work performed since the last review

# WP5: Management status

- WP5 Managed by Selex-ES
- Duration: M5-M30.
- Effort: 232 MM.
- Status: ongoing
  - 3 of 5 deliverables submitted
  - 150 of 232 MM, 65% of total planned activities
- Tasks Status:
  - T5.1 – 65% 
  - T5.2 – 65% 
  - T5.3 – 65% 
  - T5.4 – 65% 
- Effective and efficient harmonization with new partners: acceleration to project outcome
- Successful development basing on common framework and common understanding
- Preliminary analysis of integration between Middleware technologies (no criticalities envisaged)

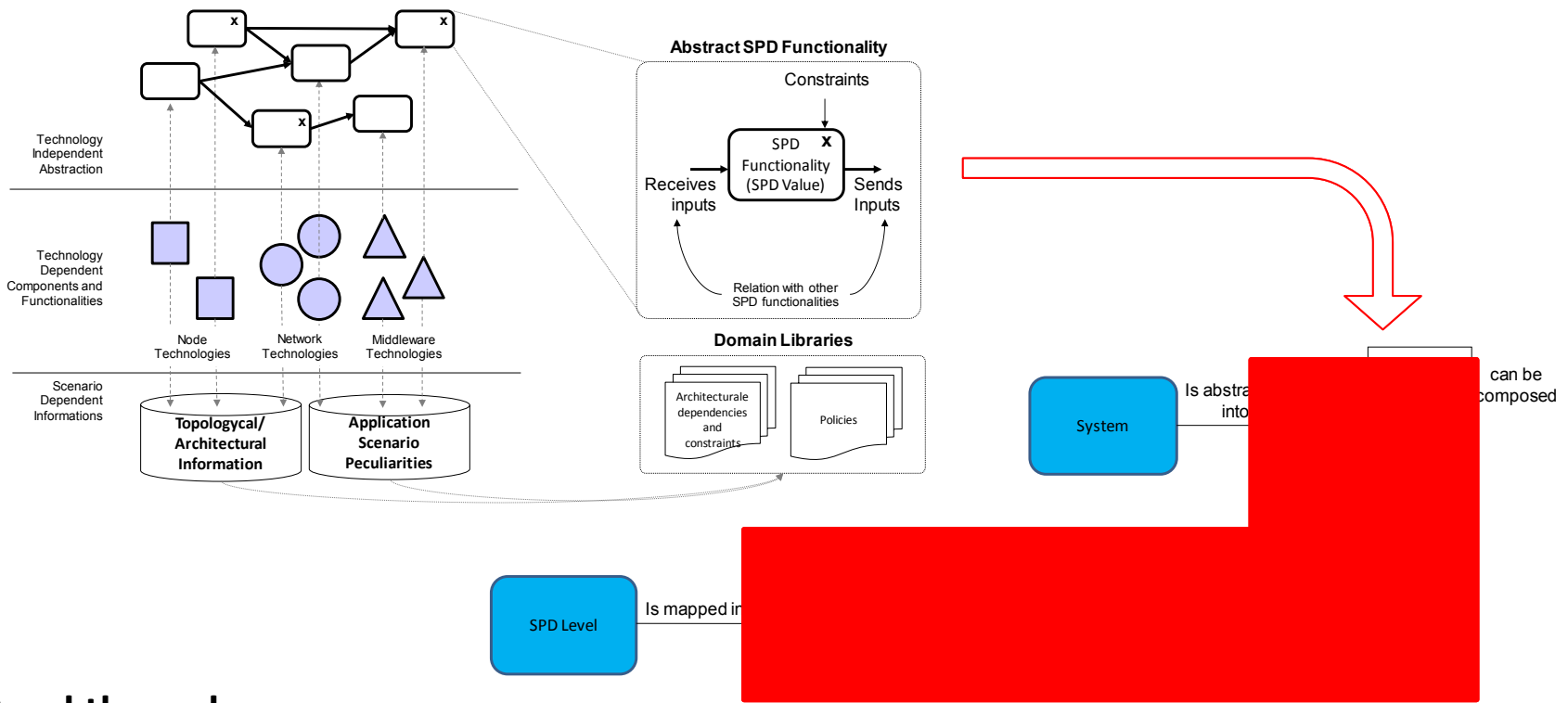
# WP5 Progress in Nutshell



# Task 5.1 Main achievements and breakthrough

- **Achievements**

- New semantic approach 100% compliant with metrics and control
- Machine readable and executable

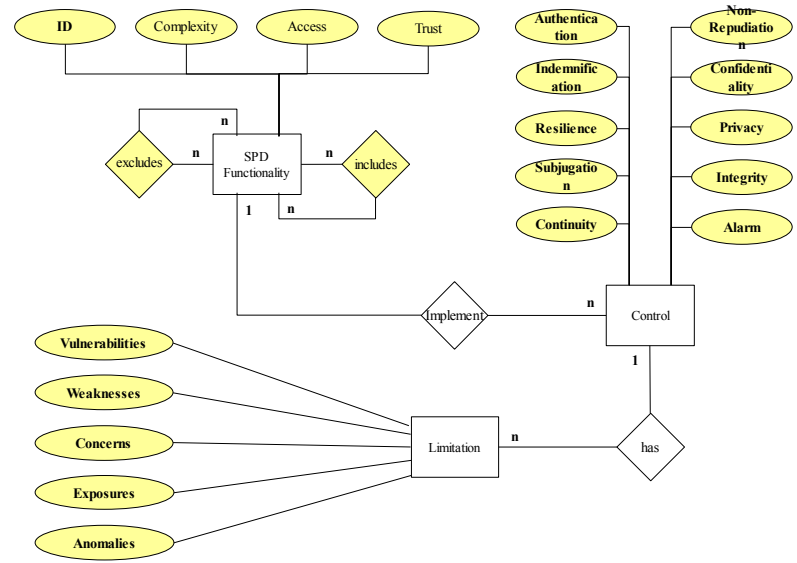


- **Breakthrough**

- Highest level of abstraction and integration

# Task 5.1 Prototypes

- owl:Thing
  - Ontology1300273978:Control
    - Ontology1300273978:Class\_A
      - Ontology1300273978:\_Authentication
      - Ontology1300273978:\_Continuity
      - Ontology1300273978:\_Indemnification
      - Ontology1300273978:\_Resilience
      - Ontology1300273978:\_Subjugation
    - Ontology1300273978:Class\_B
      - Ontology1300273978:\_Alarm
      - Ontology1300273978:\_Confidentiality
      - Ontology1300273978:\_Integrity
      - Ontology1300273978:\_Non-Repudiation
      - Ontology1300273978:\_Privacy
  - Ontology1300273978:Limitations
    - Ontology1300273978:Anomalies
    - Ontology1300273978:Concerns
    - Ontology1300273978:Exposures
    - Ontology1300273978:Vulnerabilities
    - Ontology1300273978:Weaknesses
  - Ontology1300273978:SPDFunctionality
    - Ontology1300273978:AtomicSPDFunctionality
      - Ontology1300273978:\_Access
      - Ontology1300273978:\_Complexity
      - Ontology1300273978:\_Trust
  - Ontology1300273978:System
    - Ontology1300273978:Access
    - Ontology1300273978:Complexity
    - Ontology1300273978:Trust
- owl:AllDisjointClasses
- owl:Datatype



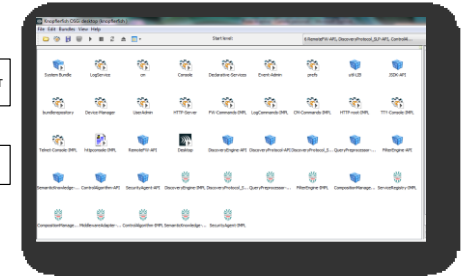
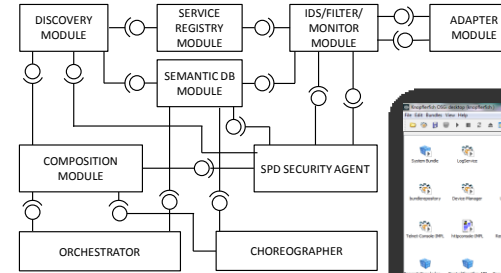
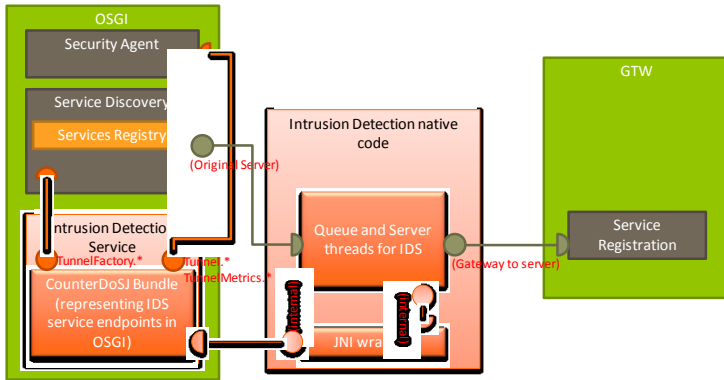
## Semantic (Knowledge) Models

# Task 5.2 Main achievements and breakthrough

- **Achievements**
  - SHIELD secure service discovery and delivery
  - SHIELD trusted service composition
  - SHIELD monitoring, filtering and intrusion detection service for interface protection
  - Adaptation of legacy systems
  - ~~SHIELD service orchestration and choreography~~
- **Breakthroughs**
  - SHIELD middleware protection profile definition & certification

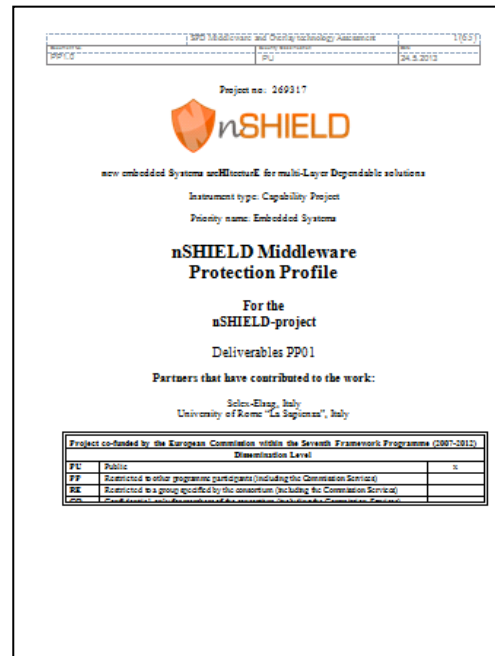


# Task 5.2 Prototypes



**Intrusion Detection System**

**Secure Discovery**



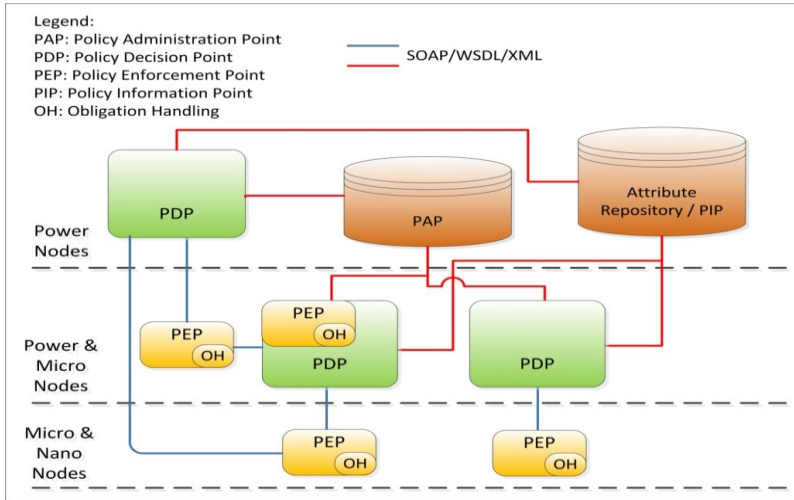
**Protection Profile**



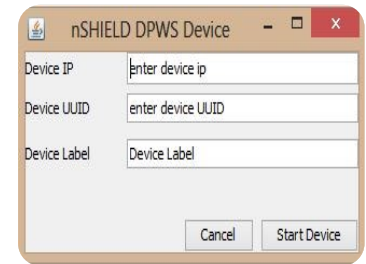
# Task 5.3 Main achievements and breakthrough

- **Achievements**
  - Deep analysis/implementation of PBM and decoupling between:
    - Policy Framework
    - Policy Framework for Intrusion Detection
    - Policy syntax
- **Breakthroughs**
  - Instantiation of the PBM architecture into the SHIELD nodes

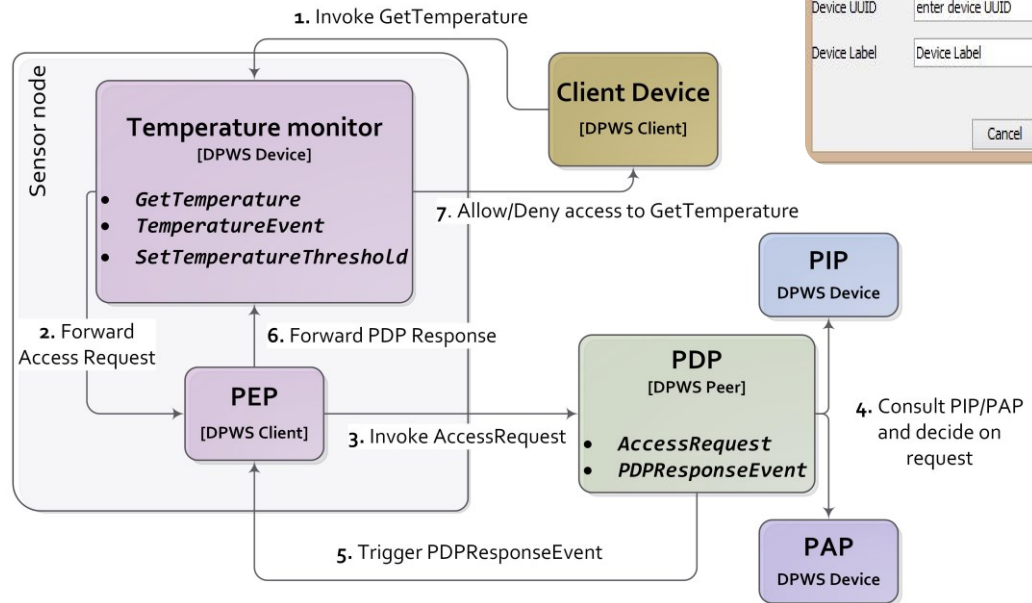
# Task 5.3 Prototypes



## PBM Access Control



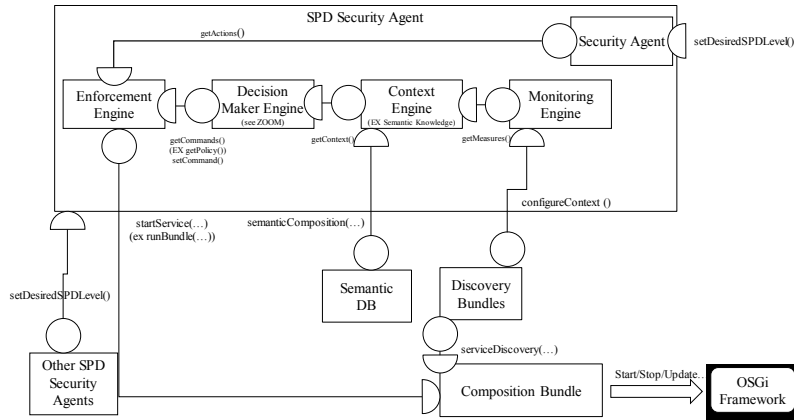
## PBM Framework



# Task 5.4 Main achievements and breakthrough

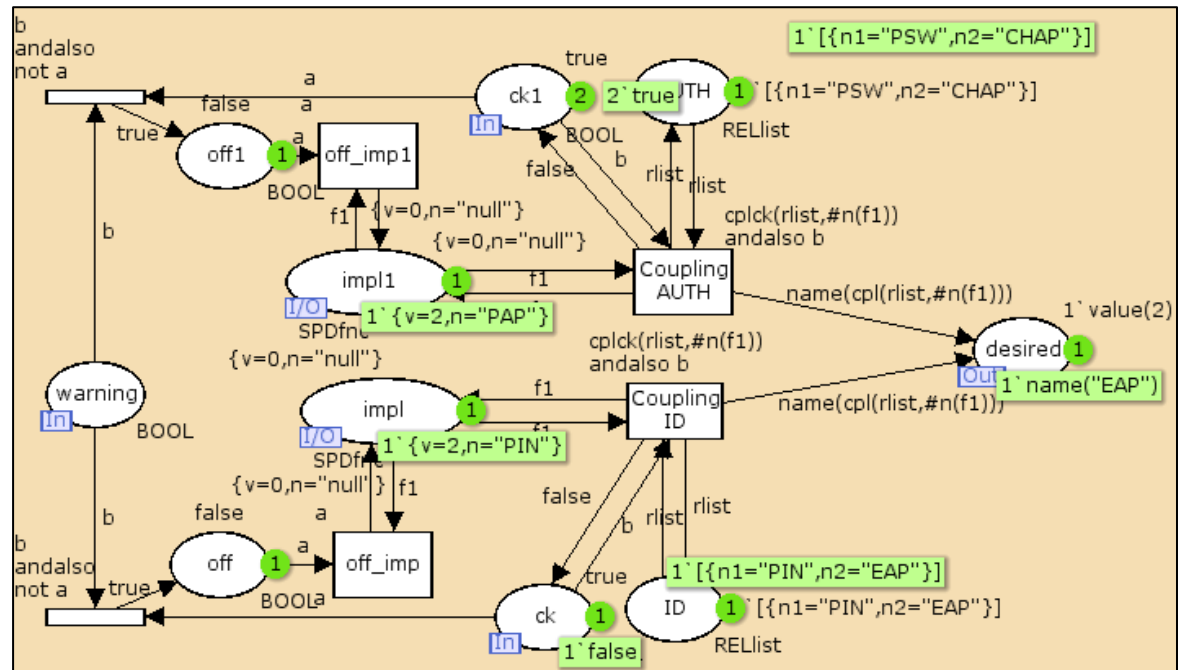
- **Achievements**
  - Security Agent Architecture implemented in the OSGI
  - Composition algorithms (CPN) fully based on abstract SPD functionalities
  - Relation between functionalities modelled through CPN as well
- **Breakthroughs**
  - Harmonization with the metrics approach
  - Implementability-oriented

# Task 5.4 Prototypes



## CPN Control Algorithms

### Security Agent Implementation



# Remark from WP5 leader

New challenging results achieved in year 2: they were possible thanks to the help of the enriched WP5 team that provided the consortium with many innovative ideas, experience and solutions, as well as the effort of the old ones

Many thanks to ALL WP5 participants for the work done so far.

Thanks for your attention



Any questions?

*Andrea Fiaschetti*