



ARTEMIS JOINT UNDERTAKING
The public private partnership for R&D in the field of Artemis



WP2 – SPD metrics, requirements and system design

pSHIELD Final Review Meeting
Brussels, 14 February 2012

ARTEMIS Call 2009 – SP6100204



WP2 Overview



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- + Overall summary for WP2
- + WP2 achievements and tangible results
- + Task 2.1: Multi-technology requirements & specification
- + Task 2.2: Multi-technology SPD metrics
- + Task 2.3: Multi-technology architectural design
- + Conclusions



WP2: Achievements and tangible results

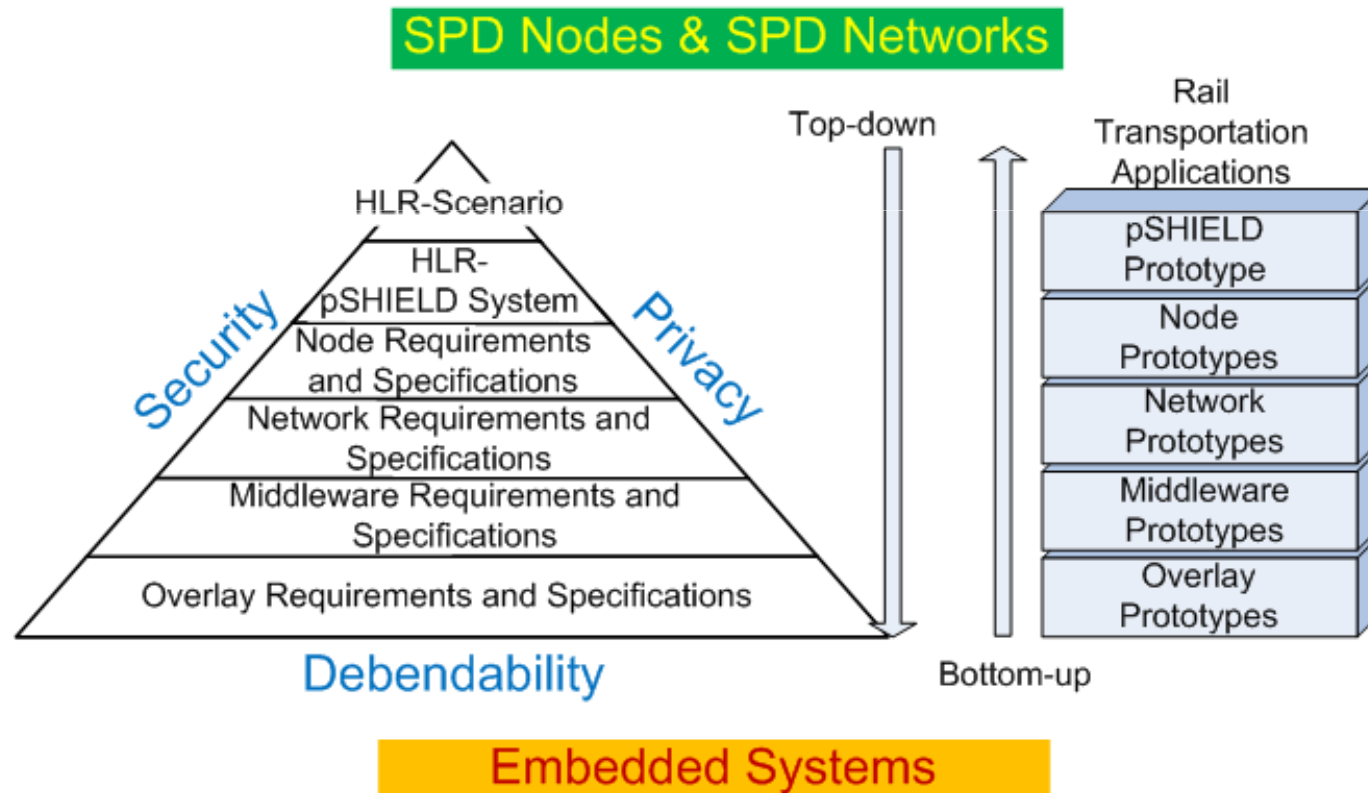


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- Targeted objectives for D2.1.2 are achieved 100%

As major objective in these task:

The definition of the SPD requirements and specifications of each layer, as well as of the overall system on the basis of the application scenario



WP2: Achievements and tangible results



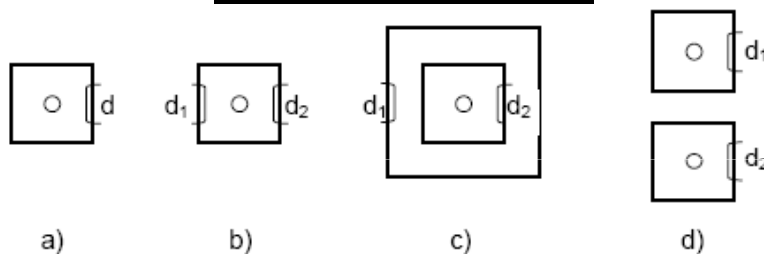
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• Targeted objective for D2.2.2 are achieved 100%.

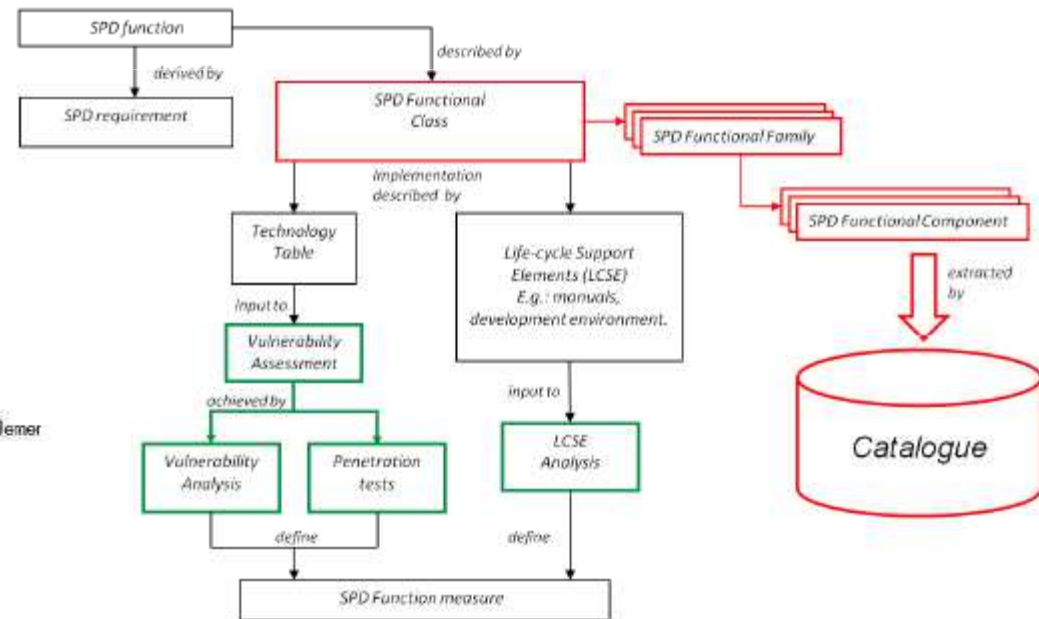
As major objective in these task:

The definition of proper SPD metrics to assess the achieved SPD level of each layer (node, network, middleware and overlay), as well as of the overall system, SPD composition/decomposition

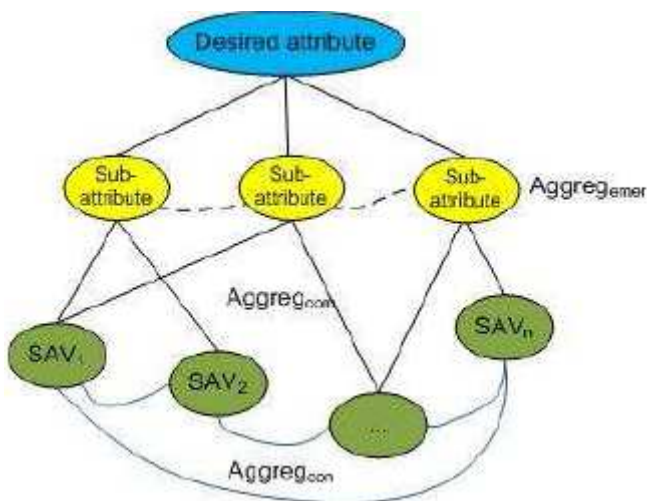
Medieval Castle



Common Criteria



Security Assurance



SPD metrics

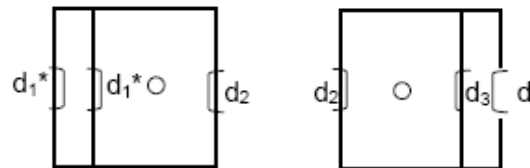


Figure 24

where:

d_1^* = SPD measure of sensor anti-tampering strength in a redundant configuration

d_2 = SPD measure of cipher strength

d_3 = SPD measure of access control strength

d_4 = SPD measure of identification and authentication strength

The correspondent system tree representation of the application scenario is:

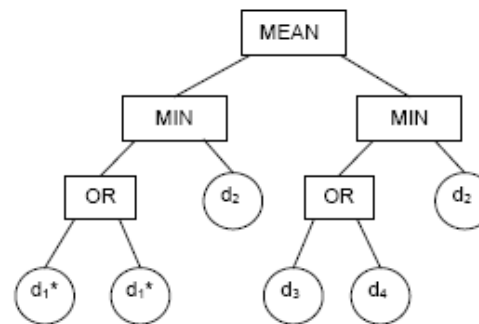


Figure 25

The mathematical expression for the SPD measure of this application scenario system can be defined as follows:

$$d_{TOT} = \text{MEAN}(\text{MIN}(\text{OR}_2(d_1^*, d_2), \text{MIN}(\text{OR}(d_3, d_4), d_2))) * d_{LC}$$

where d_{LC} = SPD measure of life-cycle documentation

WP2: Achievements and tangible results



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Targeted objectives for D2.3.2 are achieved 100%.

As major objective in these task:

The definition of pSHIELD reference system architecture, definition of the SPD layers functionalities, design constrains for SPD devices, SPD networks, SPD core services, their intra and inter layer interfaces and relationships

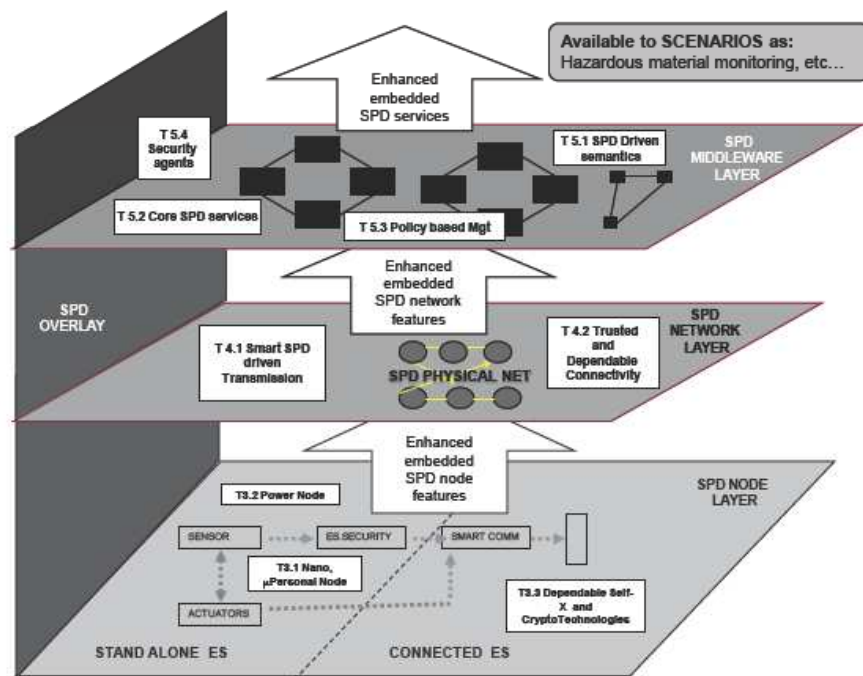
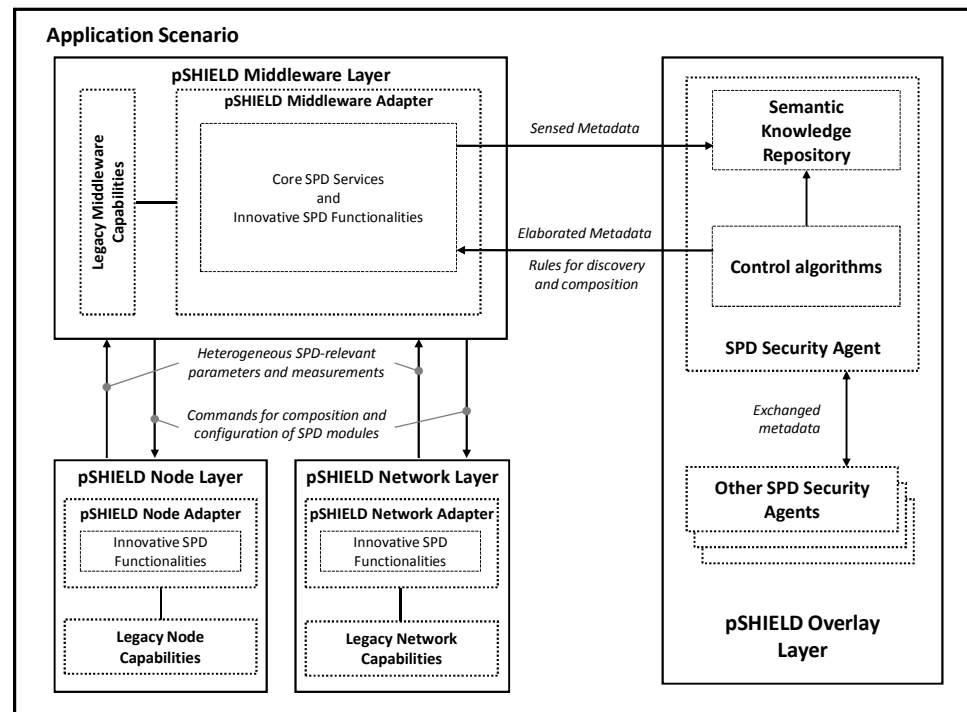


Figure 2.1 - SHIELD functional architecture overview

pSHIELD functional component architecture

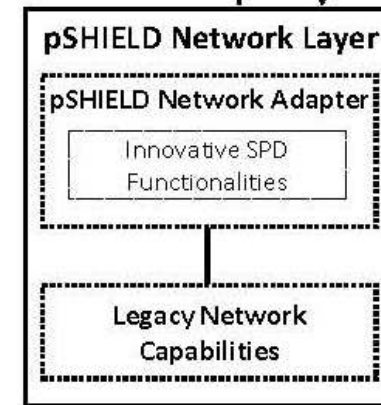
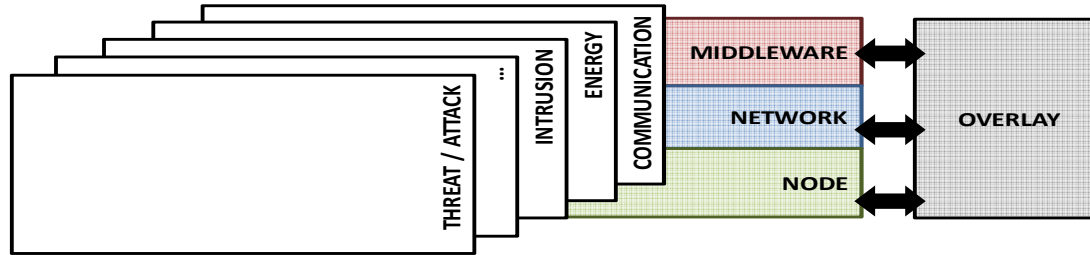


WP2: Achievements and tangible results

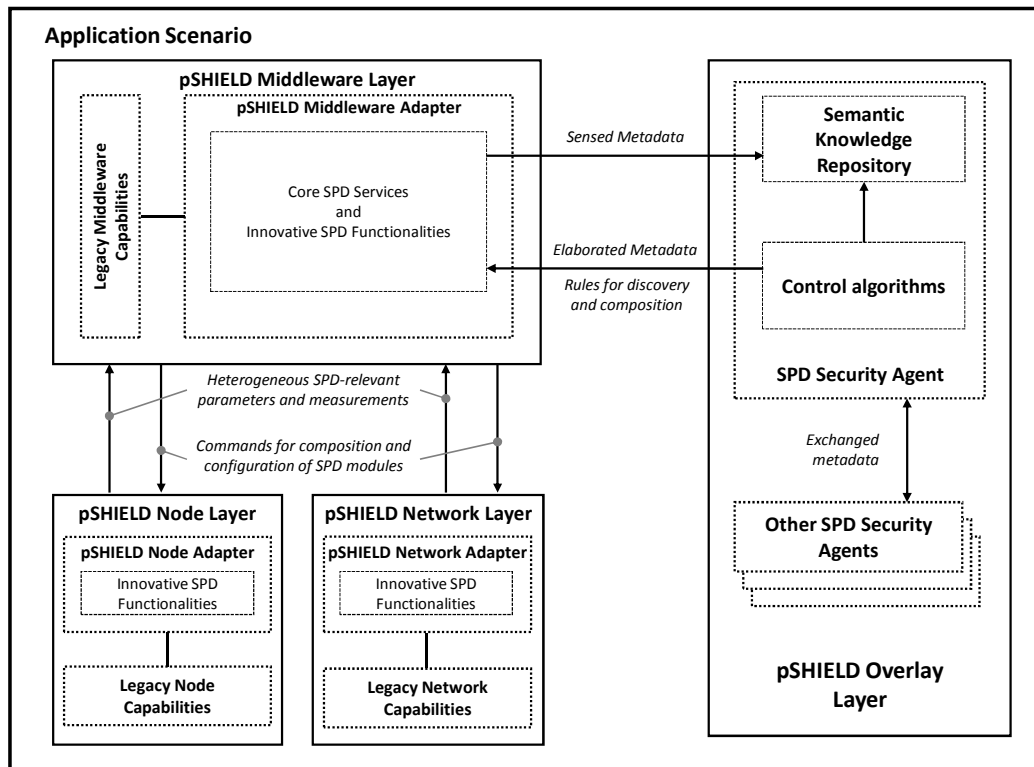


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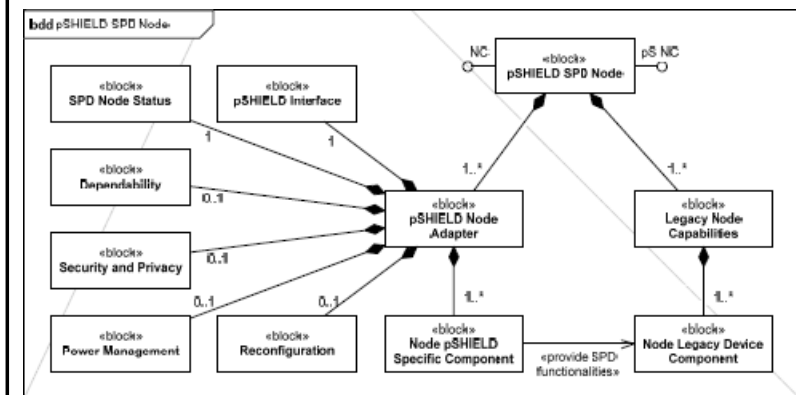
pSHIELD Overlay



pSHIELD Network Layer: Adapter and Legacy



pSHIELD Middleware layer



Formal conceptual model of pSHIELD SPD Node Layer.

- ✚ The WP2 main results and achievements are:
 - ◆ the pSHIELD system for rail transportation scenario is well defined,
 - ◆ one SPD metric method and two composition approaches are proposed for the pSHIELD system,
 - ◆ a demonstrable overall functional and pSHIELD system architecture is designed for different application scenarios.

- ✚ Based on the WP2 pSHIELD framework
 - A limited set of SPD metrics are demonstrated
 - Composability of networked “SPD nodes” is achieved with limited SPD functionalities
 - Prof of the concept for Middleware and Overlay/Cross-layer SPD functionalities as well as management capabilities are encouraging that the **overall pSHIELD system** is achievable and it is based on the pSHIELD objectives, requirements and specifications