WP6: Platform integration, validation and demonstration

Review September 2011

Josef Noll (Movation) & Nikos Pappas (HAI) contributions from HAI, ASTS, ATHENA, CS, CWIN, ISD, SE, SESM, THYIA

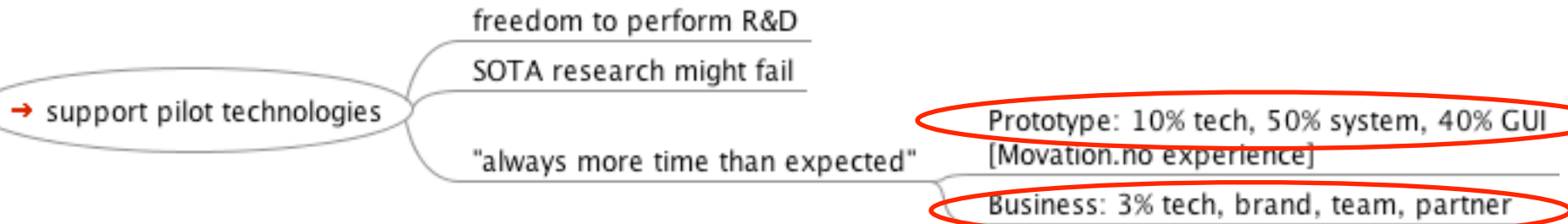**ARTEMIS Call 2009 – SP6100204**

Objective of WP6

- Integration of software components;

- Validation of implemented solution through an iterative and incremental process.

- Demonstration of the proposed architecture with a pilot demonstrator

Deliverables in WP6

	Title	Due month	Lead partner	Dissemination level
D6.1.1	Platform integration report	M17	HAI	Restricted
D6.2.1	Platform validation and verification	M18	SE	Restricted
D6.3.1	Lifecycle and SPD Support Report	M17	ATHENA	Public
D6.4.1	pSHIELD demonstrator	M19	ASTS	Public

- **Plan** versus **Reality** of a Pilot Project

WP6 scope

WP6 emphasizes demonstration of industrial application

freedom to perform R&D

SOTA research might fail

→ support pilot technologies

"always more time than expected"

Prototype: 10% tech, 50% system, 40% GUI [Movation.no experience]

Business: 3% tech, brand, team, partner

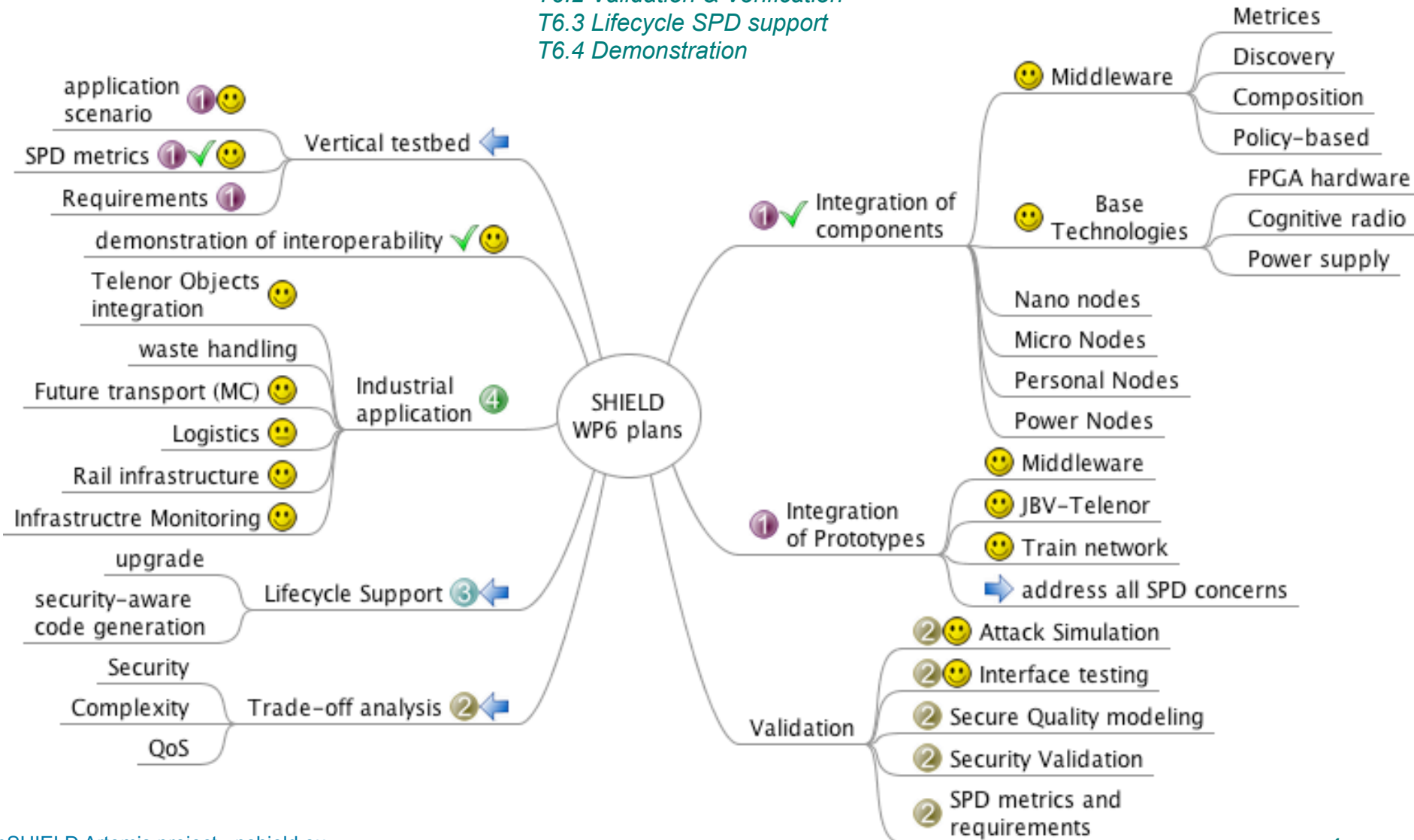- from technology to impact

Plan versus Reality of a Pilot project

T6.1 System integration
T6.2 Validation & Verification
T6.3 Lifecycle SPD support
T6.4 Demonstration

The scope of the integration is the demonstration and validation of selected SPD technologies

WP6 emphasizes industrial application

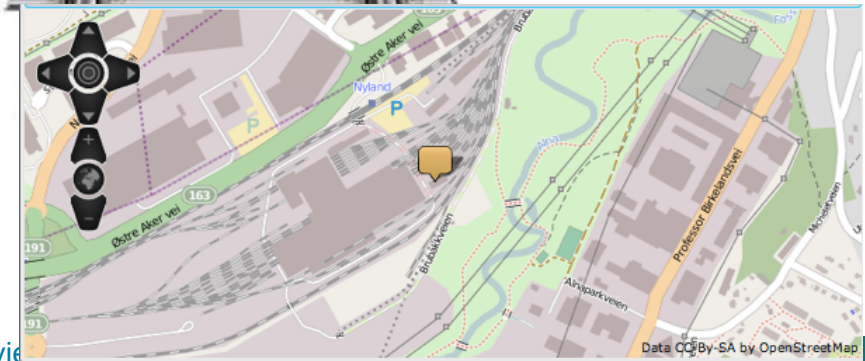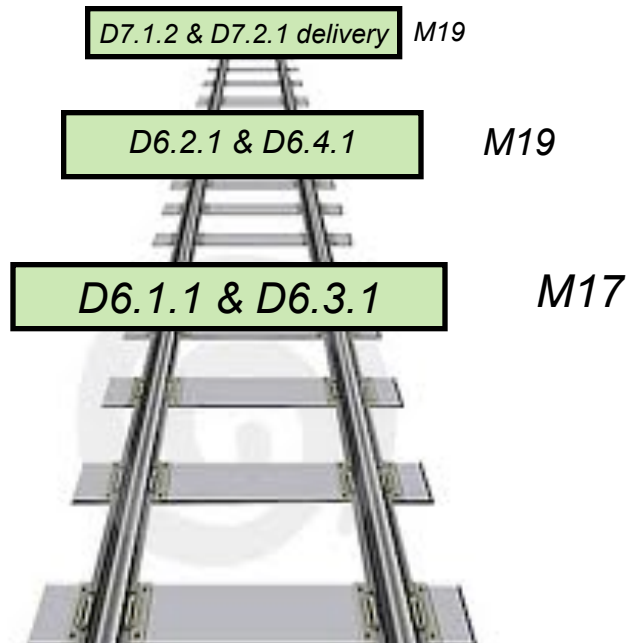Achieved integration of

- middleware
- pilots

Achieved demonstration of

- industrial applicability
  - rail wagon
  - first application on Shepherd
- SPD composability

Upcoming

- Validation
- reporting

D7.1.2 & D7.2.1 delivery   M19

D6.2.1 & D6.4.1   *M19*

D6.1.1 & D6.3.1   *M17*

Additional slides

WP6 – Platform Integration, Validation and Demonstration

- Objectives

  - ➢ To demonstrate separate pilot prototypes
  - ➢ To demonstrate the composability of SPD functionality
  - ➢ To present hardware prototypical implementations of specific layers
  - ➢ To present prototypes for "key" pSHIELD models (semantic model, policy based management, hybrid automata)
  - ➢ To validate the implemented solution through an iterative and incremental process
  - ➢ To connect layers, ensure secure routing of information
  - ➢ To provide service discovery and application abstraction methods

WP6 – Platform Integration, Validation and Demonstration

- ..and ultimately or ideally

  - To integrate the modules provided by technical development WPs and the developed software framework into a fully functional platform
  - To evaluate the overall performance of the system and identify further improvements
  - To guarantee the upgrade cycle installation and integrity of the outcome
  - Verify and perform tests that will prove efficiency against

    - Scenario (monitoring of freight train transporting hazardous material)
    - SPD metrics
    - pSHIELD focused issues: composability, modularity, expandability, innovation

WP6 – Platform Integration, Validation and Demonstration

- Tasks & Deliverables

    - pSHIELD started June 2010 (M1), September 2011 = M16 or M9 with the 7 month shift

    - Therefore, WP6 started at July 2011 with T6.4: development of prototypical demonstrators is the first action

    - D 6.1.1 Multi-Technology System Integration [M9 – M11]
        - ✓ **HAI**, ASTS, THYIA, CS, CWIN, MAS, SCOM, ATHENA

    - D 6.2.1 Multi-Technology Validation & Verification [M9 – M12]
        - ✓ **ED**, SESM, ASTS, ATHENA, CS, ISD, THYIA

    - D 6.3.1 Lifecycle SPD Support [M11 – M12]
        - ✓ **ATHENA**, SESM, ASTS, CS

    - D 6.4.1 Multi-Technology Demonstrator [M7 – M12]
        - ✓ **ASTS**, ATHENA, CS, CWIN, ETH, THYIA

WP6 – Work Plan (work flow and interactions)

- Define System Requirements and Specifications (D2.1.1)

- Define SPD Metrics (D2.2.1)

- Draw a conceptual Architectural design (D2.3.1)

- Develop software Components and Functionalities (D3.1, D4.1, D5.1, D5.2) that communicate through well-defined Interfaces (D2.3.1)

- Identify the Scenario and the Test-bed framework (T6.4) and provide feedback for the completion of Metrics, Architecture, Functionalities and Layers (D2.2.2, D2.3.2, D3.2, D3.3, D3.4, D4.2, D5.3, D5.4)

- Integrate Components (D6.1.1)

- Simulate Network Connectivity, Sensor Data flow and Tolerance against application scenario Attacks (D6.2.1)

- Prove Platform Survivability, Security and Integrity (D6.3.1)

- Demonstrate Platform Applicability (D6.4.1)

WP6 – Status, Technical and Administrative Issues

➢ Demonstrations

  ✓ SPD levels are achieved through specific configurations by the Overlay

  ✓ Composability Middleware prototype

  ✓ Monitoring trains with WSNs

  ✓ FPGA Power Node prototype

  ✓ Cognitive Radio Node prototype

➢ Criticalities

  ✓ Development of representative (to objectives) demonstrators

  ✓ Definition of interfaces between components

  ✓ Adequate proof of concept: (feasibility) study → architecture description → software simulation → hardware prototype

  ✓ Input, interactions and cooperation between WPs

        and

  ✓ **Heterogeneity of Integrated Components**