System Architecture
from pSHIELD to nSHIELD

Brussels, 15 February 2012

Internal Meeting

ARTEMIS Call 2010 – ASP6, No: 269317

# T2.3 – Multi-Technology Architectural Design

- Objectives

  - ➢ To explore interdependencies between applications and architectures
  - ➢ To include critical elements and cover SPD application requirements
  - ➢ To develop the 4 layers, composed from HW and SW modules
  - ➢ To take into account reconfigurability, tailoring overall system needs
  - ➢ To define interfaces, interconnecting different SPD modules
  - ➢ To connect layers, ensure secure routing of information
  - ➢ To produce a composable architecture, that meets the requirements of desirable SPD levels

- Three different types of Embedded System Devices (ESDs)

  - ***Legacy Embedded System Device*** (L-ESD)
    - ✓ Physical Embedded System device characterized by three subsets of Functionalities and three types of Interfaces
    - ✓ Functionalities: Node layer (processors, memory, battery), Network layer (communication, protocol stacks), Middleware (services, functionalities)
    - ✓ Interfaces: legacy Node Capabilities (NC), legacy Network Services (NS), legacy Middleware Services (MS)

  - ***pSHIELD Embedded System Device*** (pS-ESD)
    - ✓ a L-ESD equipped at least with a minimal set of pSHIELD functionalities at Middleware Layer

  - ***pSHIELD SPD Embedded System Device*** (pS-SPD-ESD)
    - ✓ a pS-ESD equipped at least with a minimal set of pSHIELD Overlay functionalities
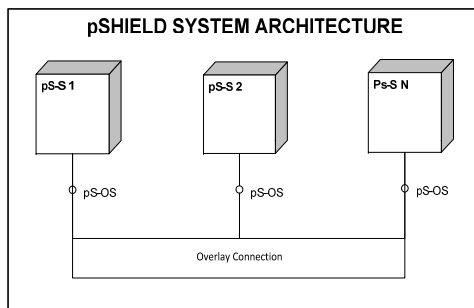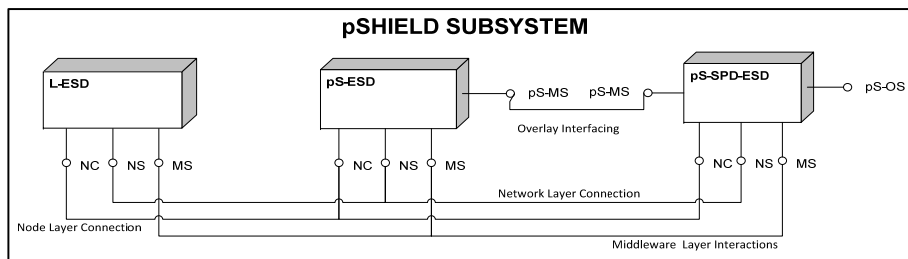
- Schematically
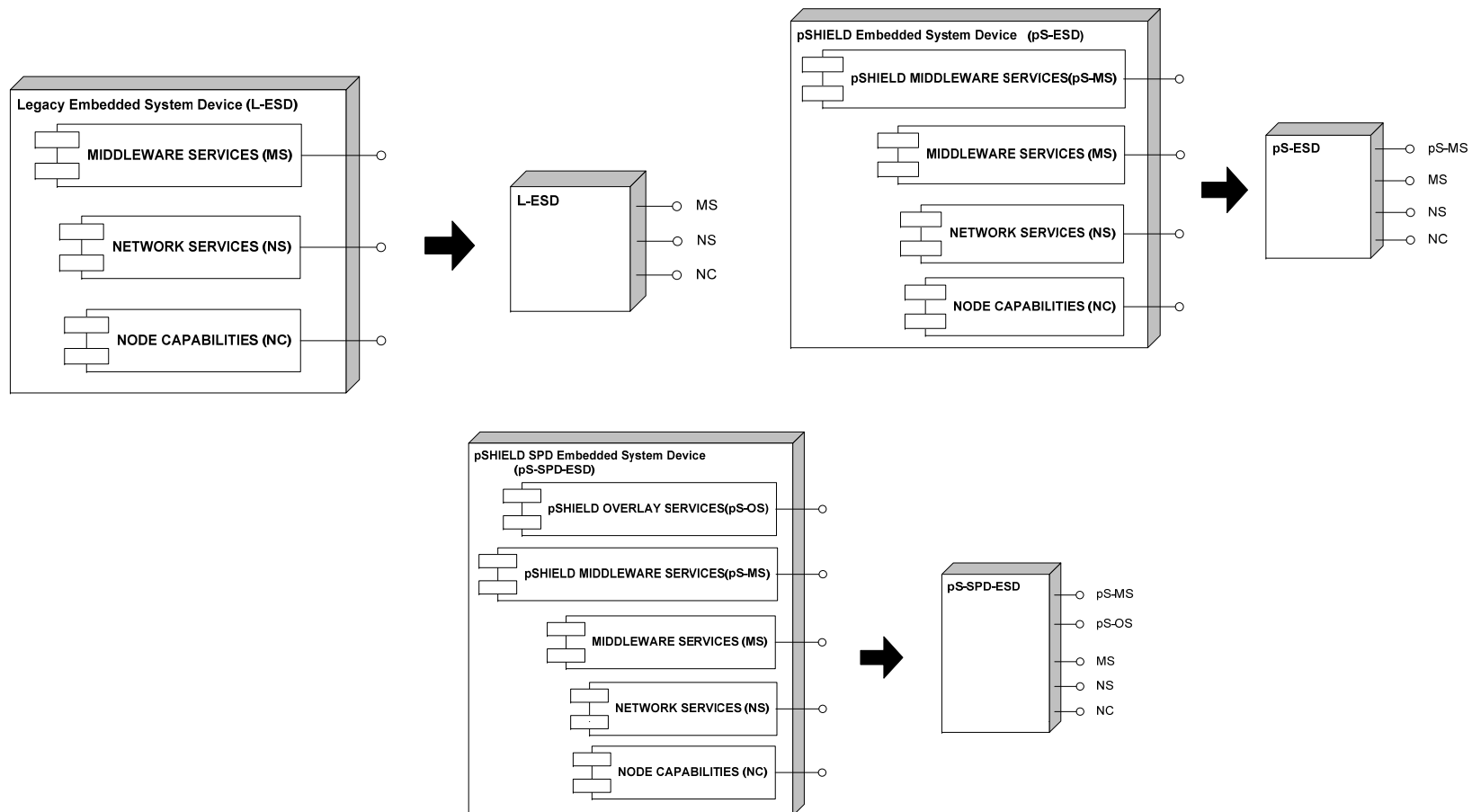
- pSHIELD Subsystem (pS-S)

  - ➤ A set of Embedded System Devices including several L-ESD, connected to several pS-ESD and <u>one and only one</u> pS-SPD-ESD
  - ➤ Connections of several pS-S provides a pSHIELD System Architecture
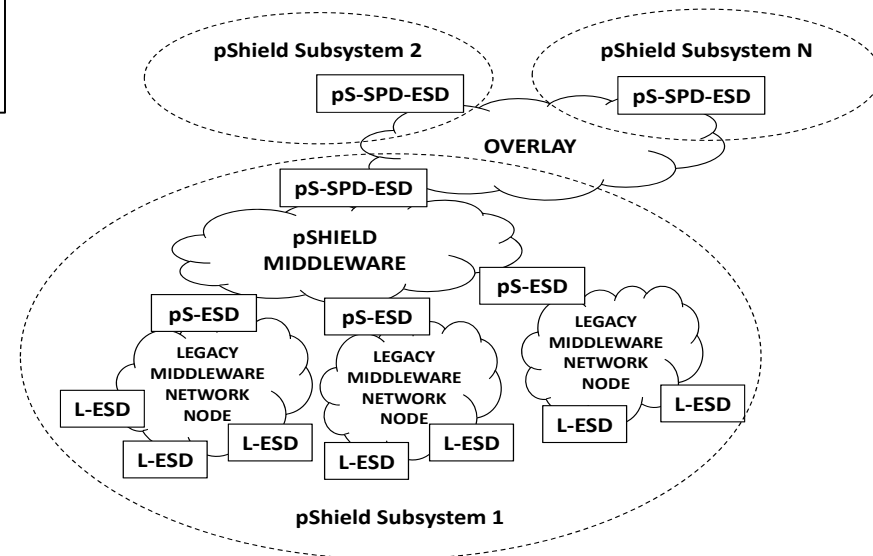
- pS-SPD-ESD Architecture

    ➢ **_pSHIELD Proxy_** (pS-P)
        ✓ A technology dependent component of a pS-SPD-ESD that, interacting with L-ESD (through NC, NS and MS interfaces), provides all the needed pSHIELD enhanced SPD functionalities (through pS-MS and pS-OS interfaces)
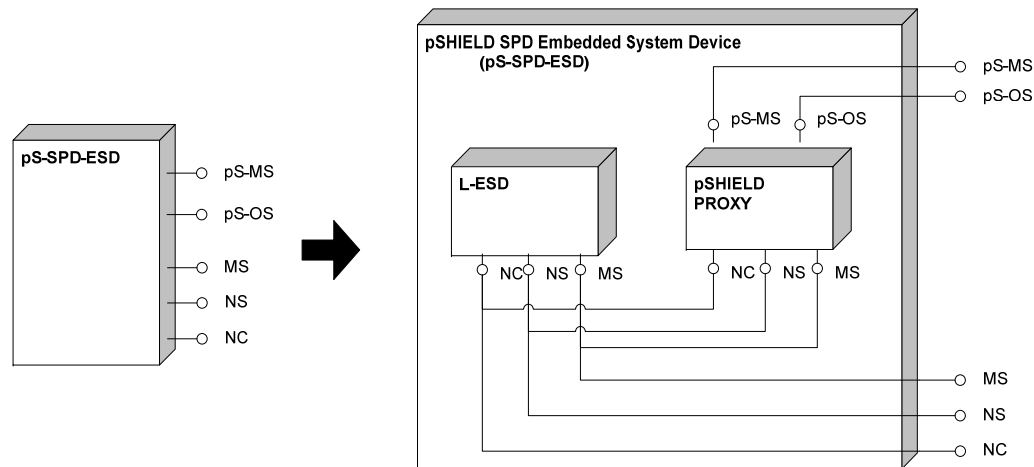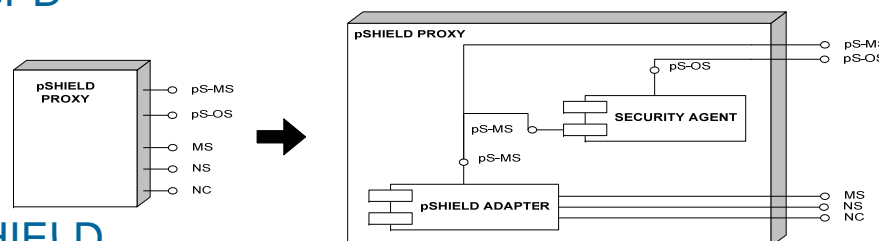
- pS-P Architecture

  - ➢ ***pSHIELD Adapter***
    - ✓ Enhances legacy functionalities in order to make them *pSHIELD-compliant,* i.e. they become SDP *legacy device components*, which can be composed by other SPD components, according to the SPD Composability approach

  - ➢ ***Security Agent***
    - ✓ Aggregates information from the pSHIELD Middleware Services provided by the pSHIELD Adapter or by other pSHIELD Proxies located in the same subsystem
    - ✓ Gathers information coming from other Security Agents connected on the same Overlay (through the pS-OS interface)
    - ✓ Includes Control Algorithms which take decisions enforced through the pS-MS and the pS--OS interfaces

- pSHIELD functional component architecture