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

ARTEMIS

SHIELD
PILOT

WP 2

pSHIELD WP2 STATUS

System Requirements and Specification

ARTEMIS Call 2009 – SP6100204

WP2 – Tasks status

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- Task 2.1 Multi-technology requirements and specification
  - D2.1.1 System Requirements and specification
  - D2.1.2 System Requirements and specification
- Task 2.2 Multi-technology SPD metrics
  - D2.2.1 Preliminary SPD metrics specification
  - D2.2.1 SPD metrics specification
- Task 2.3 Multi-technology architectural design
  - D2.3.1 Preliminary system architecture design
  - D2.3.2 System architecture design

WP2 – 2.1 Multi-technology requirements and specification

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- The role of the task is to identify the requirements and to provide inputs for the specification of the overall pSHIELD system on the base of the real-world SPD requirements
- The document also provides the reference SPD taxonomy used in pSHIELD and the requirements divided into layers (node, network, middleware, overlay, system, application scenario)
- Deliverable D2.1.2 (System Requirements and Specification – Next Realize) has been revised and now it is in an ‘almost ultimate’ state
- Requirements and specifications could be possibly further refined to assure the consistency of the Task 2.1 within the whole project, in particular with SPD metrics (Task 2.2), architectural design (Task 2.3) as well as on the basis of the results of the validation phase and of the detailed description of the application scenarios developed in Task 6.4

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Measurament of Security, Privacy and Dependability (SPD) functions

SPD Function *: a software, hardware or firmware component of the pSHIELD that must be relied upon for the correct enforcement of the pSHIELD security, privacy and dependability policy.*

To obtain → *SPD level : a quantification of SPD function expressing the protection which can provide against Faults (FUA, NFUA and NHMF)*

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With our calculation method we obtained the SPD level:

- ***Gathered following an international standard: ISO 15408***
- ***Consistently measured, without subjective criteria***
- ***Expressed as a cardinal number***
- ***Contextually specific, relevant enough to make decisions***

SPD level is not expressed using at least one unit of measure, such as "defects", "hours" or "dollars"

WP2 – 2.2 SPD Metrics specification: SPD functions for reducing FUA metric construction method (1/4)

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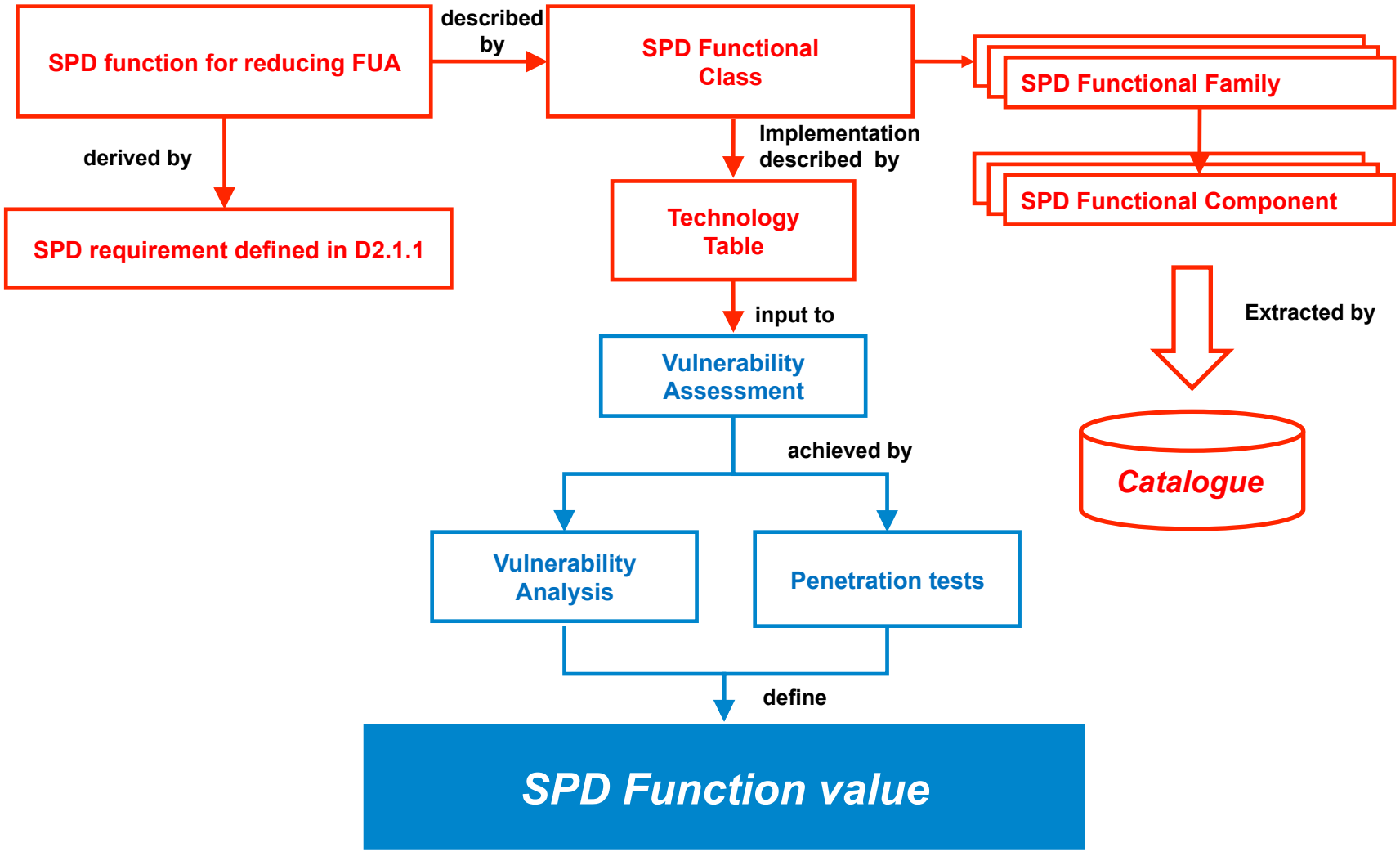

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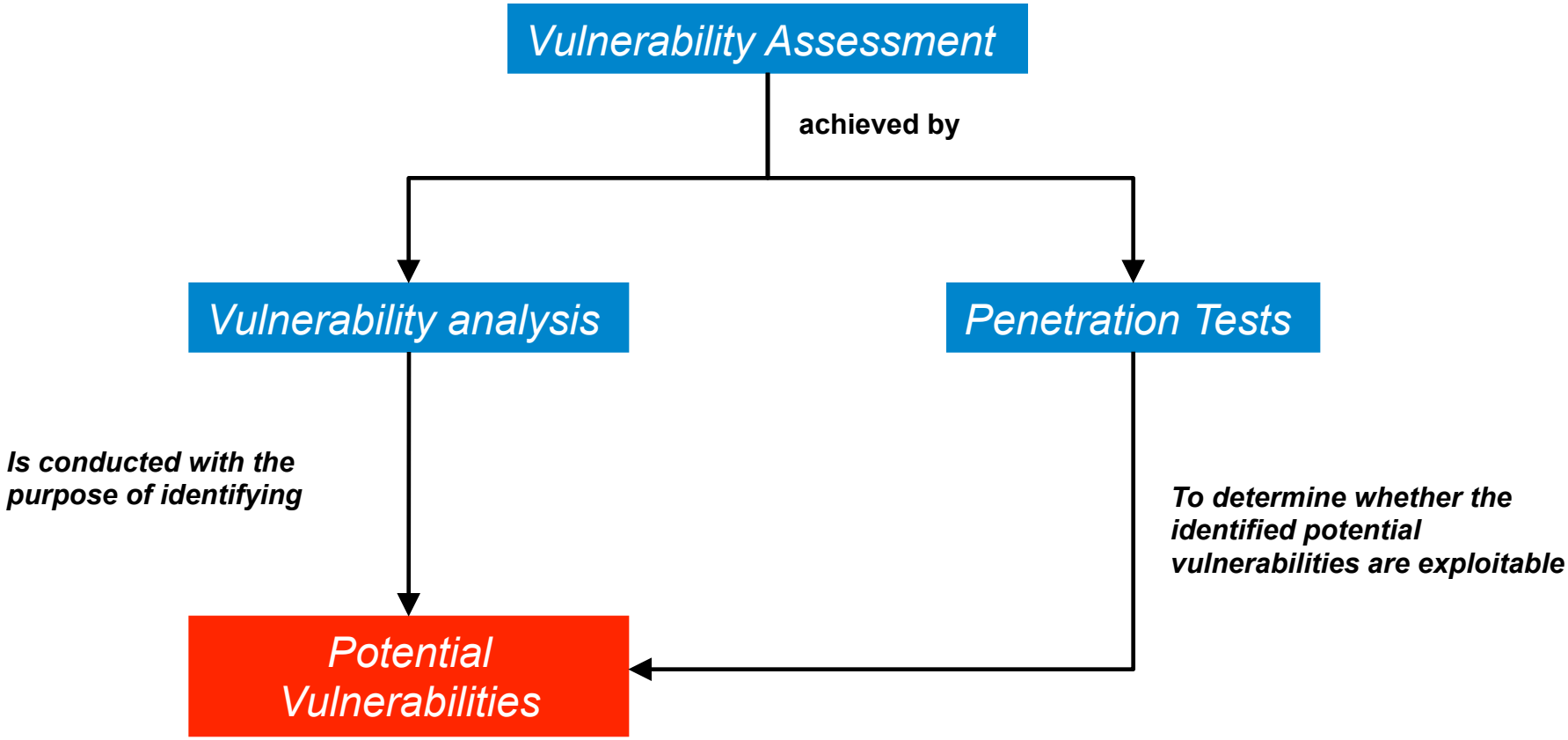

WP2 – 2.2 SPD Metrics specification :SPD functions for reducing FUA metric construction method (3/4)

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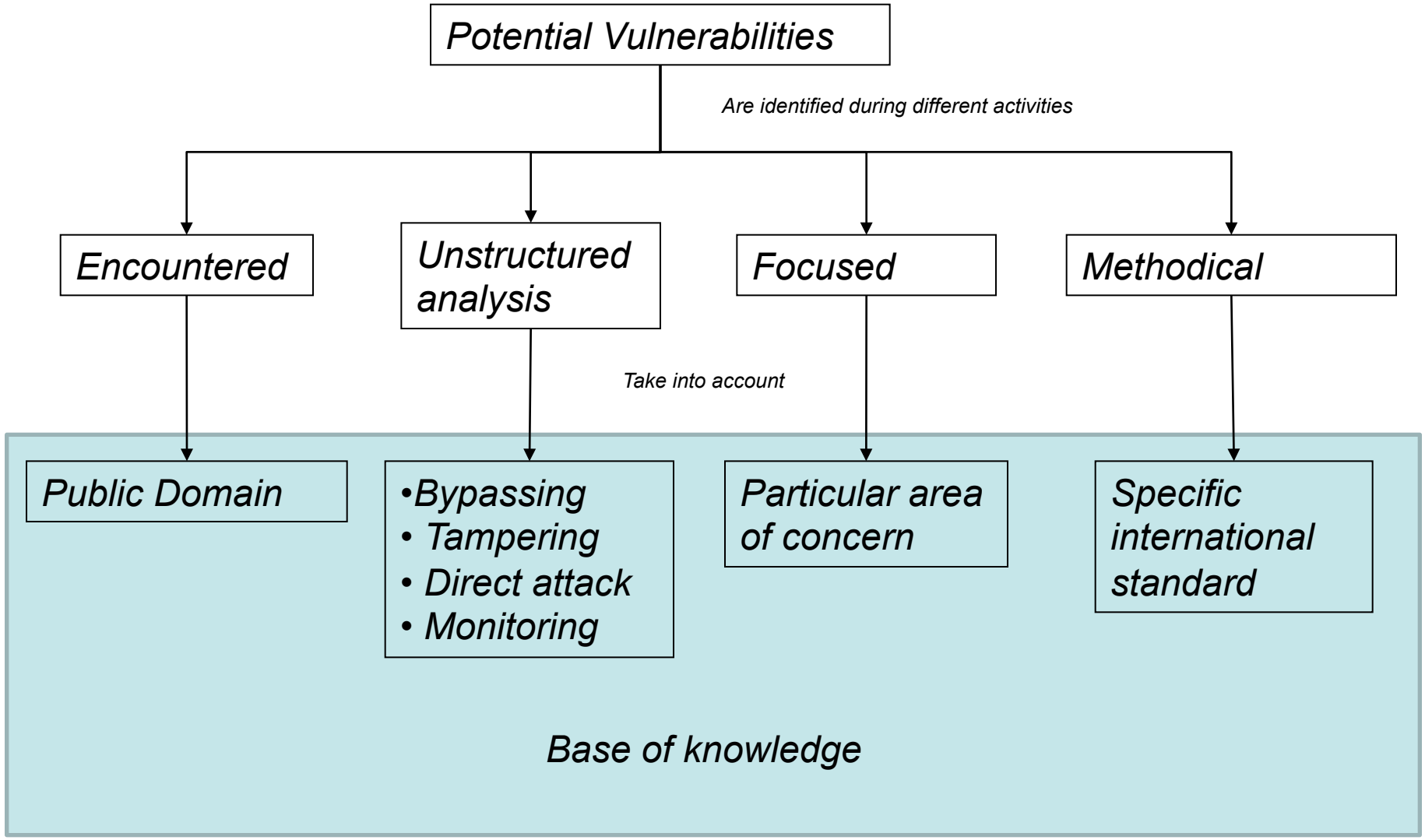

WP2 – 2.2 SPD Metrics specification: SPD functions for reducing FUA metric construction method (4/4)

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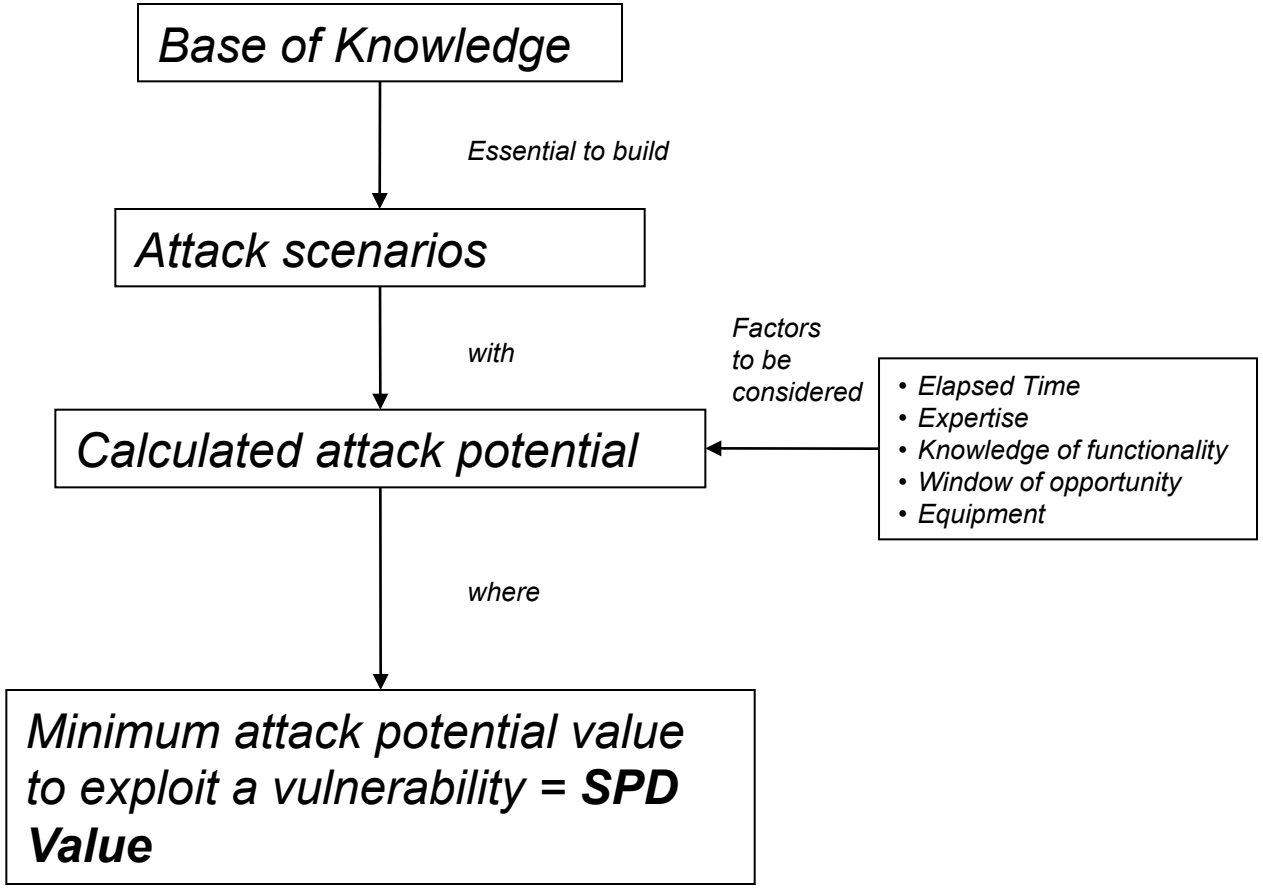

Factor	Value
Elapsed Time	
<= one day	0
<= one week	1
<= one month	4
<= two months	7
<= three months	10
<= four months	13
<= five months	15
<= six months	17
> six months	19
Expertise	
Layman	0
Proficient	3*(1)
Expert	6
Multiple experts	8
Knowledge of functionality	
Public	0
Restricted	3
Sensitive	7
Critical	11
Window of	
Unnecessary / unlimited access	0
Easy	1
Moderate	4
Difficult	10
Unfeasible	25**(2)
Equipment	
Standard	0
Specialised	4(3)
Bespoke	7
Multiple bespoke	9

WP2 – 2.2 SPD Metrics specification: SPD functionalities for reducing NFUA and NHMF metric construction method

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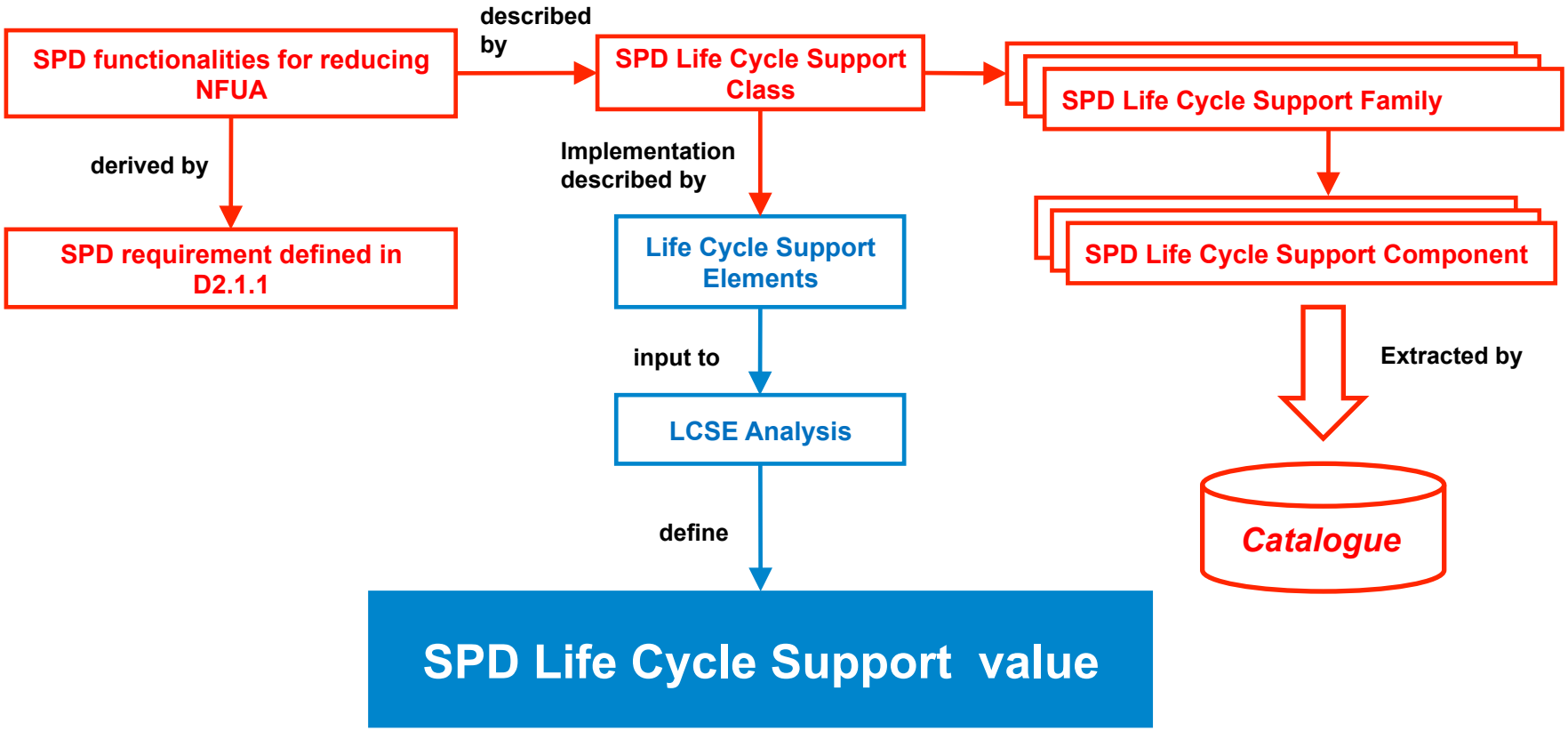

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We start from the point that the pSHIELD embedded system (ES) is designed to be predictably composable such that the properties of the resulting composite system are easily determined.

The overall SPD level is calculated according to the "Medieval Castle" method which introduces the following arithmetic operator:

MIN, OR, ORn, MEAN, POWER MEAN

Which allow to obtain the SPD value "d"

This is a theoretical approach, which needs to be validated by experiments and assessment activities

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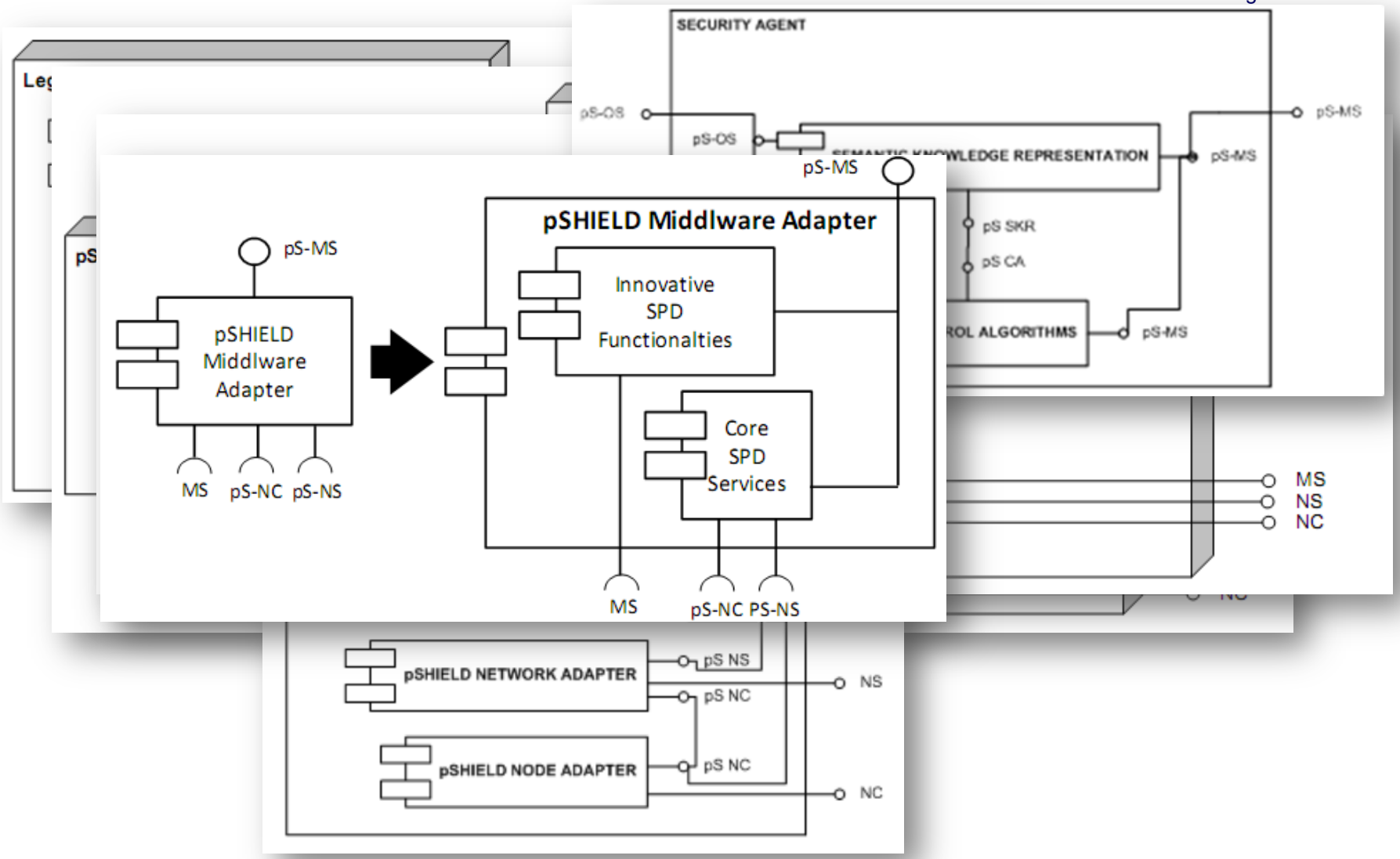
In order to take into account the life cycle element (operational manuals, installation guides, etc…) the d value of the SPD measure obtained by the "Medieval Castle" method, must be multiplied with d_{LC}. The total value is:

$$d_{TOT} = d * d_{LC}$$

Because the d_{LC} is comprised by 0 and 1, we are sure that well done life cycle elements cannot increase the total SPD metric value, but misunderstanding ones can decrease it.

WP2 – 2.3 Multi-Technology architectural design
Bottom-Up design

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