



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

nSHIELD Network Layer Architecture



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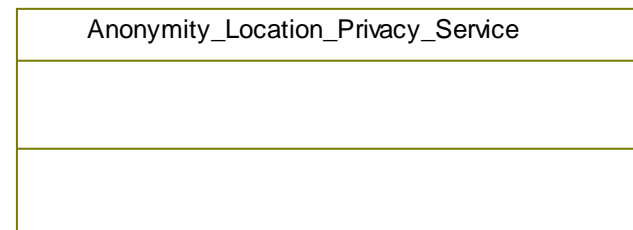
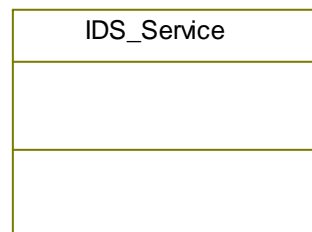
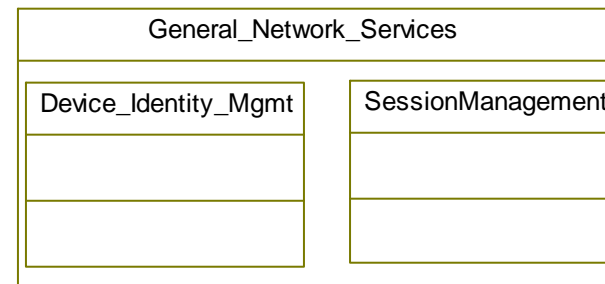
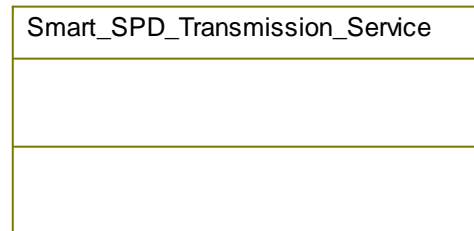
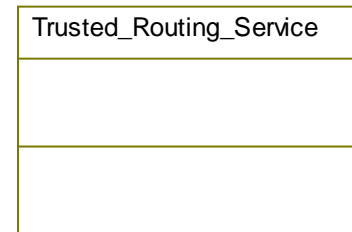
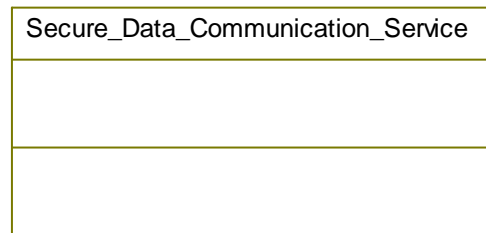


- Status quite good:
 - Logical layer OK
 - Development view OK
 - Deployment view exist for most services
 - **Process view** to be addressed later on
- Need decision regarding whether certain services need to be included in this layer
- **Information flows** (interfaces) at various levels not fully developed but some work has been done

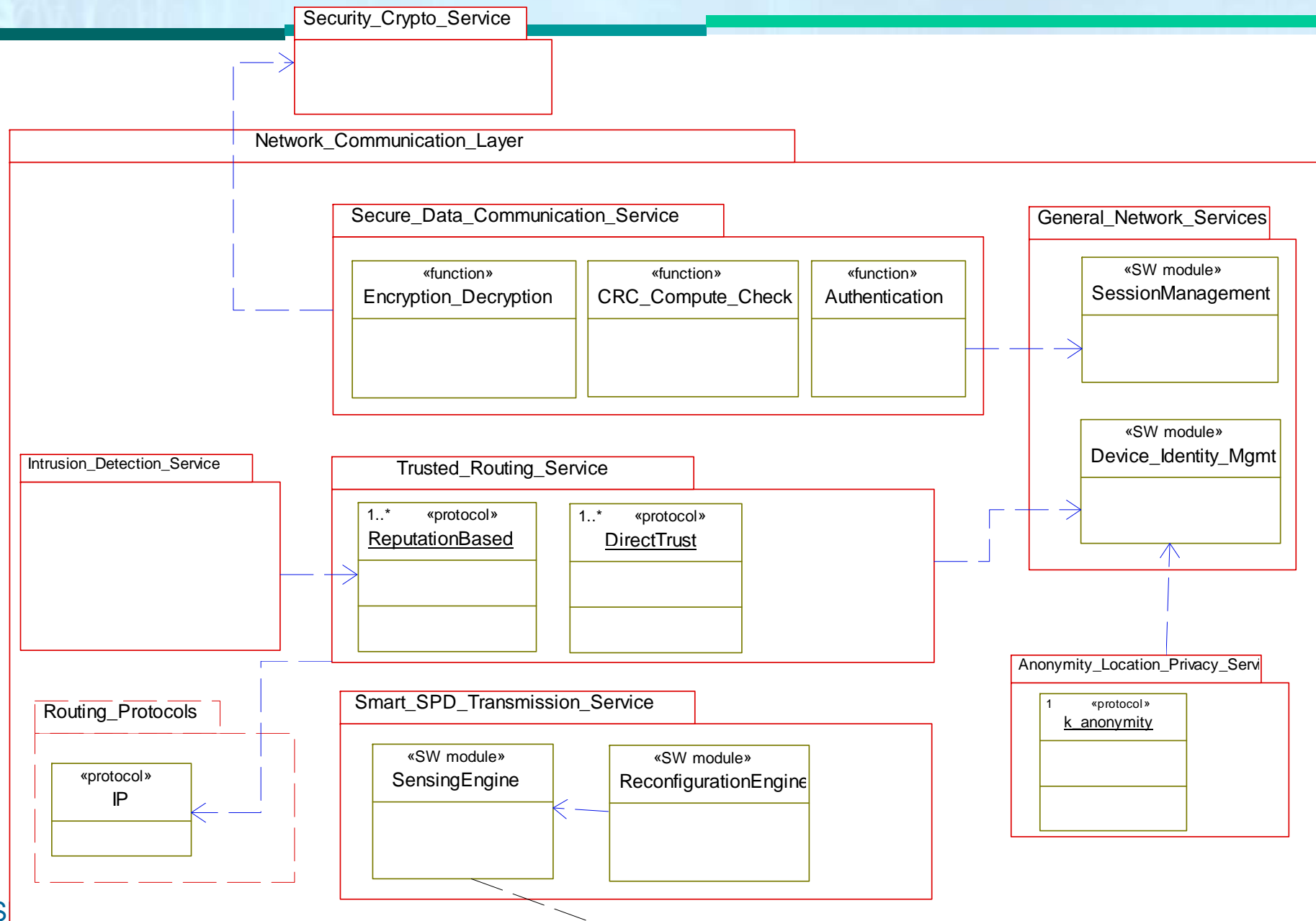
Network-Communication Layer Services



- Network Layer of nSHIELD addresses not only the network as defined in the OSI model but capabilities that relate also to physical layer transmission, security and integrity of transmitted data



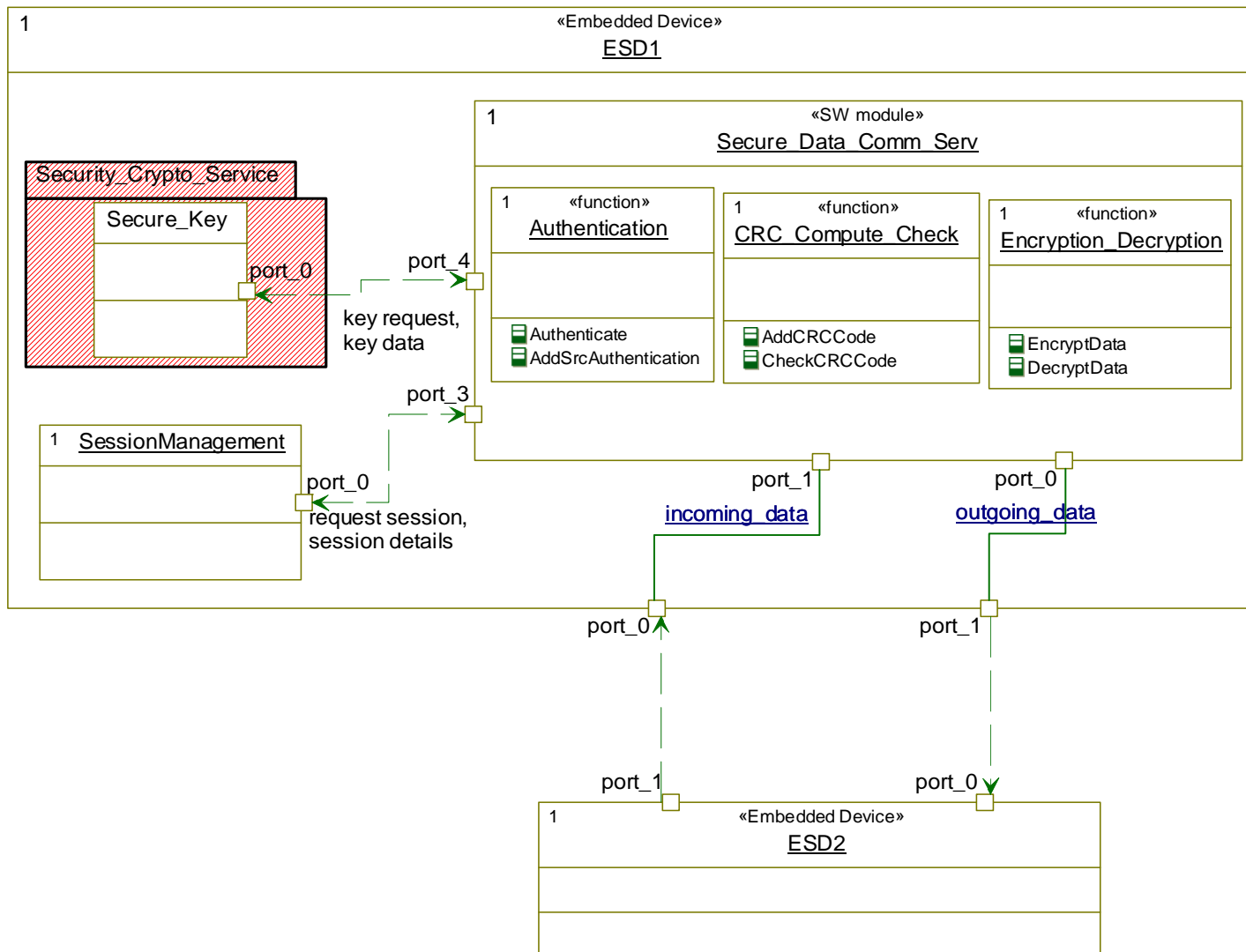
Network-Communication Layer Deployment View



Service: Secure Data Exchange/Communication



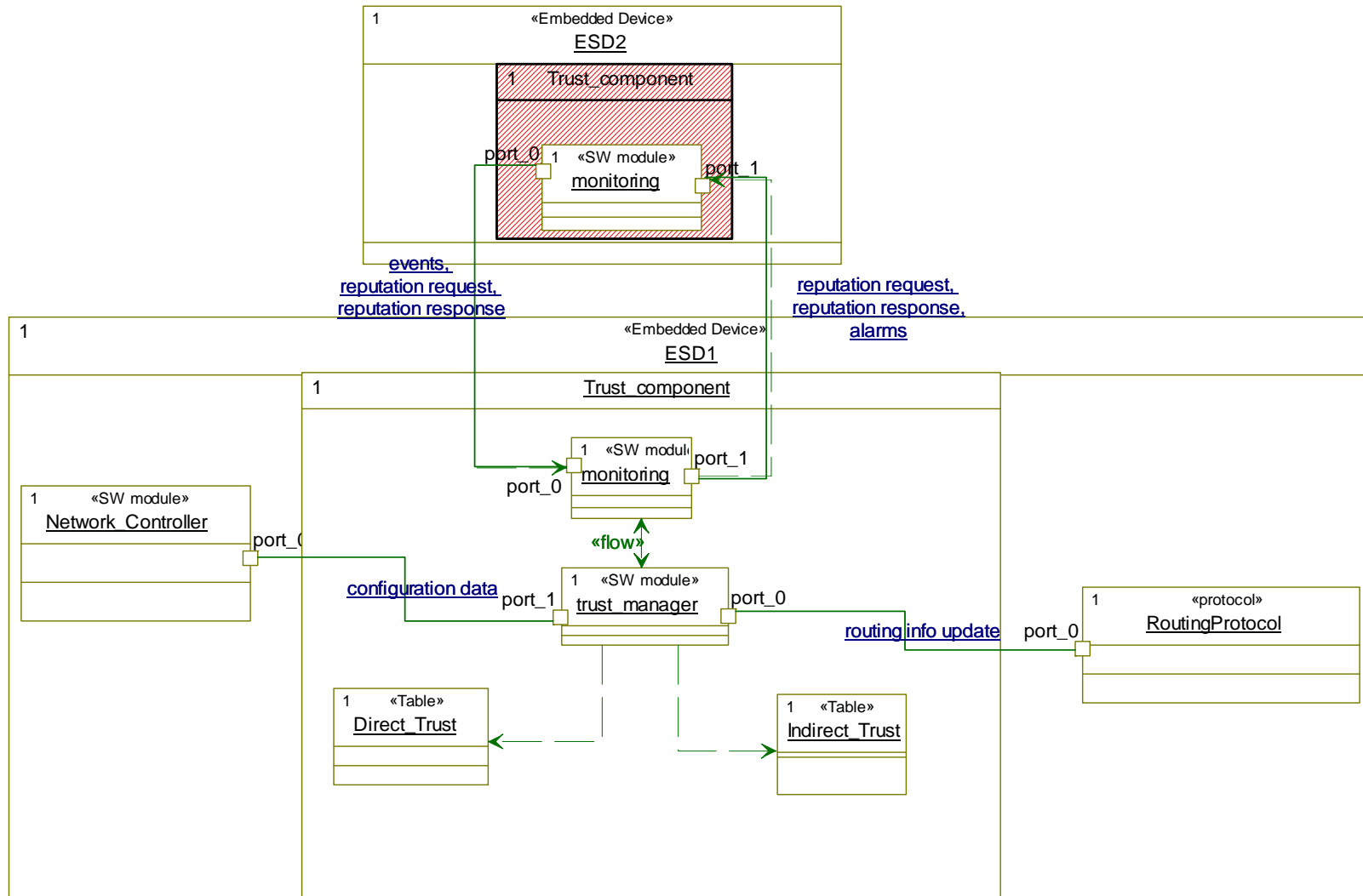
Simplified Deployment View depicting high level interface info



Service: Trusted Network Routing

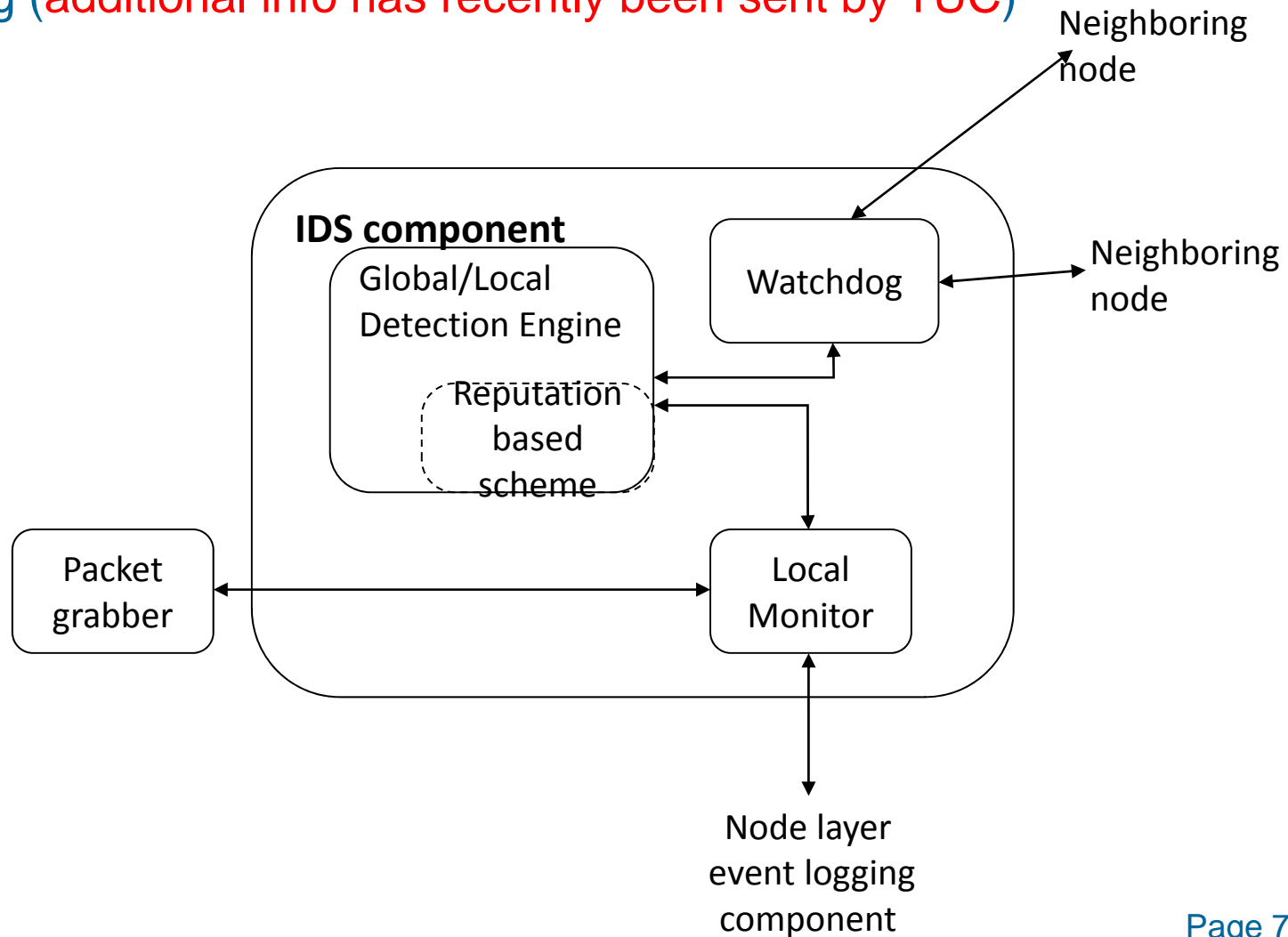


Simplified Deployment View depicting high level interface info.
Trust_component is the central element for reputation-based routing



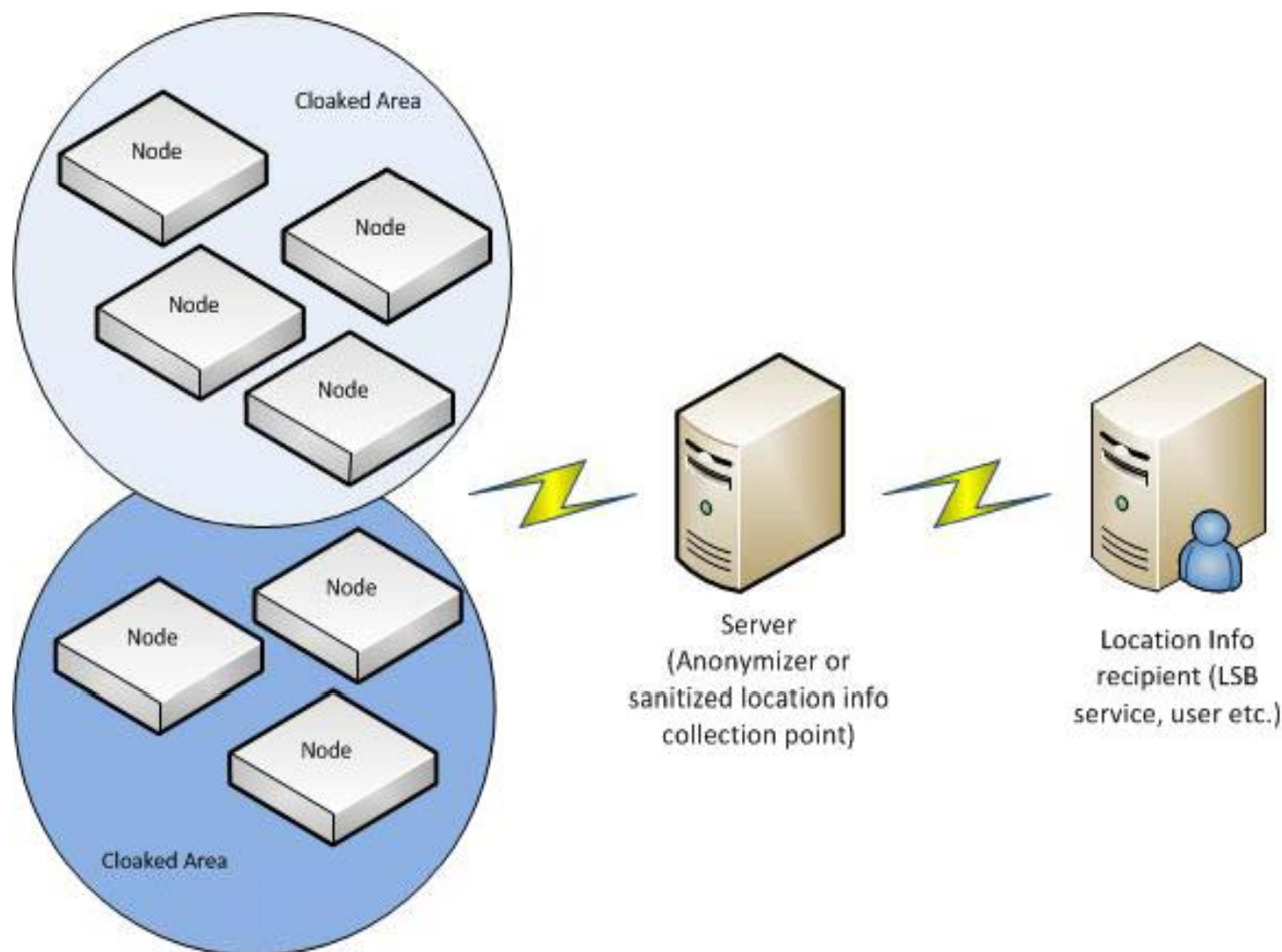
Service: Intrusion Detection (IDS)

A kind of Deployment View depicting high level interface info. For IDS Trust_component is also the central element for reputation-based routing (additional info has recently been sent by TUC)



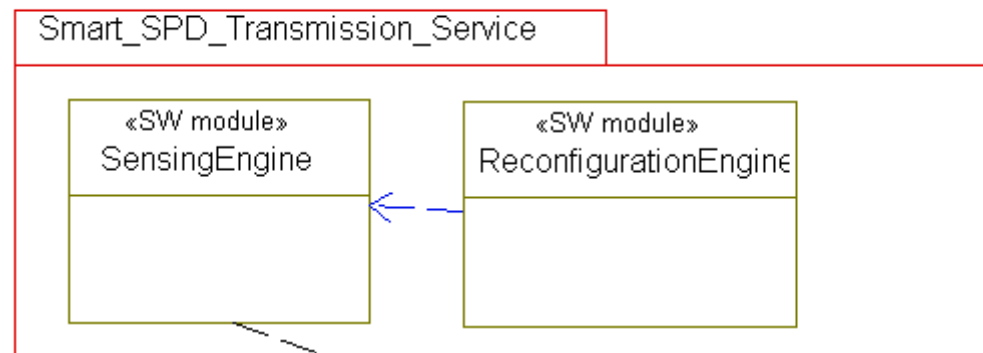
Service: Anonymity & Location Privacy

- Does this service belongs at network layer?
- If we include it then a deployment view is needed



Deployment view TBD in more details for D2.4

- Request has been sent to **THYIA** with the support of **ATHENA** to address this and work on a more detailed deployment view



involves:

- Spectrum data sensing: gather information to acquire radio awareness (i.e. a precise and concise representation of the radio environment)
- Node Layer data sensing: i.e. battery consumption at given transmission level

Internal ESD interfaces (between layers)



Provided interfaces	Node layer	Network layer	Middleware layer	Overlay layer
Node layer (→)	-	Measurements (on request or periodically): <ul style="list-style-type: none"> Metric values to be used by <i>trusted routing service</i> reputation based scheme (i.e. battery lifetime, RSSI) Radio environment data to be used by smart transmission service (i.e. available resources, number of active users etc.) Secure Keys from crypto key generator module to be used from secure data communication service	Measurements (On request or periodically to compute SPD metrics) TBD in more details	-
Network layer (→)	Commands <ul style="list-style-type: none"> To configure/ reconfigure transmission related parameters of the RF channel (smart transmission service) ... 	-	SPD metrics (available at network level) nSHIELD Device Unique Network Id TBD in more details	-
Middleware layer (→)	Commands (for composition or configuration of SPD modules) TBD in more details	Commands <ul style="list-style-type: none"> To control and configure (i.e. define the metrics used) the trusted routing schema used To configure parameters related to data encryption (i.e. type of algorithm to be used) ... Other TBD	-	Sensed (SPD) metadata TBD in more details
Overlay layer (→)	-	-	Rules for composition and discovery TBD in more details	-

External ESD interfaces (per layer)



- External EAD interfaces usually involve peer layers of different ESDs
- Only exception is Middleware and Overlay

Provided interfaces	Node layer	Network layer	Middleware layer	Overlay layer
Node layer (→)	-	-	-	-
Network layer (→)	-	Control packets needed from applied trusting routing protocol Other TBD	??	-
Middleware layer (→)	-	-	TBD	TBD
Overlay layer (→)	-	-	TBD	TBD

Component interfaces (Network layer)



- Should be extracted from Deployment diagrams or textual definitions