List of changes in pSHIELD Technical Annex after 2nd Review, ver.2011.10.15
Changes applied to TA version from 2011.04.14

List of updates:
- **Merge of Selex Comm and Elsag Datamat into SE as of 23. May 2011**
- **Withdrawal of ISD as of 15. April 2011**
- **Transfer of rights and obligations from ESI to TECNALIA (as of 01. Jan 2011) - dated 7. Feb 2011**
- **Changes in WP2 description**
- **Changes in WP3 description**
- **Changes in WP4 description**
- **Changes in WP5 description**
- **Changes in WP6 description**
- **General edits of TA**

Merge of Selex Comm and Elsag Datamat

Two pSHIELD project partners Selex Communications and Elsag Datamat have merged into one company called SELEX Elsag. This is a fact.

Page 1:
Change in List of Beneficiaries
remove in table following rows:
7, Elsag Datamat, ED, IT, month 1, month 19
15, Selex Communications, SCOM, IT, month 1, month 19
input into table following row:
24, SELEX Elsag, SE, IT, month 1, month 19

Page 7:
In Costs and funding table
remove in table following rows:
7, ED, IT, 591.207,50; 98.731,65; 161.427,36
15, SCOM, IT, 576.343,75; 96.249,41; 164.464,61
input into table following row (recalculated):
24, SE, IT, 591.207,50+576.343,75=; 98.731,65+96.249,41=; 161.427,36+164.464,61=

Page 45:
In work breakdown structure table (task leader column)
replace SCOM and ED with SE:
WP4, SPD Network, SCOM -> SE
Task 4.1, Smart SPD driven transmission, SCOM -> SE
WP5, SPD Middleware & Overlay, ED -> SE
Task 5.3, Policy-based management, ED -> SE

Task 5.4, Overlay monitoring and reacting system by security agents, ED -> SE

Task 6.2, Multi-Technology Validation & Verification, ED -> SE

corrected mistake in task number, was 5.5, is 5.4

corrected mistake in task 6.4 description, was Tecnology, is Technology

corrected mistake in task number, was 7.7, is 7.2

Page 48:

In Work package list/overview table

replace SCOM and ED with SE:

WP4, SPD Network, 15->24, SCOM -> SE, 61, 1, 16

WP5, SPD Middleware & Overlay, 7->24, ED->SE, 116, 1, 16

Pages 51, 54, 57, 63, 66, 70, 73:

In WP description table

remove ED and SCOM cells, with corresponding PM values:

7, ED

15, SCOM

input SE cells with sum of ED and SCOM PM values

24, SE

Pages 51, 52, 54, 55, 57, 63, 66, 67, 68, 70, 73:

In descriptions of WPs, in lists of WP Leaders, Task Leaders and Partners: replace ED and SCOM with SE.

Page 75:

In table 3.6 - Efforts for the full duration of the project

remove in table following rows:

7, ED, 3, 8, 0, 0, 37, 13, 2, 63

15, SCOM, 4, 1, 0, 18, 0, 1, 1, 25

input into table following row, with sum of ED and SCOM PMs

24, SE, 3+4, 8+1, 0, 0+18, 37+0, 13+1, 2+1, 63+25

Page 81:

In table 3.7 – List of milestones and planning of reviews

In M5 row D3.1 -> D3.2

Page 83, 84:

In chapter 4.1.1 Contribution to the expected impacts listed in the work programme under the relevant sub-programme

Replace Selex Communication->SELEX Elsag

Replace ED and SCOM with SE, several modifications:

Italy: ED->SE has strict contacts with the Organismo di Certificazione della Sicurezza Informatica (OCSI - http://www.ocsi.isticom.it/);

Pages 95,97:
In chapter 4.2.2.1 - Sample individual industrial exploitation plans
Remove ED and SCOM descriptions.
Input of new description for SE, new text contain reviewed and updated content.

Page 116 and following:
In chapter 5.2 - Individual participants, describing projects partners
Remove ED and SE sections
Input new section for SE, contains reviewed and updated text.
Input of description for SELEX Elsag
Remove CV of: Massimiliano Taglieri, Giuseppe Martufi, Enrico Angori.
Input CV of: Andrea Morgagni, Renato Baldelli, Elisabetta Campaiola, Dr. Marco Cesena.

Page 135:
Update logos in figure containing Europe map
Remove ED, SCOM, ESI logos
Input SE and Tecnalia logos

Page 135:
Change in chapter 5.3 - Consortium as a whole
Remove ED and SCOM references
Input SE:
...4 manufacturers and system integrators (ASTS, ETH, HAI, SE)

Page 135:
In Responsibilities of SHIELD beneficiaries - Table 5.1
Change Elsag Datamat and Selex Communication to SELEX Elsag
Change ED and SCOM to SE:
Technical Manager   SELEX Elsag (SE)
WP 4 – Leader   SELEX Elsag (SE)
WP 5 – Leader   SELEX Elsag (SE)

Page 136:
5.3.1 - SHIELD Consortium analysis
Change ED and SCOM to SE in text

Page 139:
In chapter 5.3.3 Complementarities
replace SCOM with SE

Page 142, 143:
In Table 5.6 - Resources to be committed for the SHIELD project
remove ED and SCOM
input SE with reviewed

Page 144:
Change in Summary of Effort and Costs – Table 5a
remove:
7, ED, ...
15, SCOM, ...
input:
24, SE, ...

Page 149, 152, 154:
Change in Funding calculation forms table – Annex A
Remove Funding calculation forms tables for:
Partner 7, ED and
Partner 15, SCOM
Input Funding calculation forms tables for:
Partner 24, SE

Changes in WP2 description

Page 58:
Task 2.2 chapter
Small text updates in task 2.2 description.
The rest of WP2 text stays unchanged.

Changes in WP3 description

There is several changes in TA WP3 description, that partners would like to introduce. Changes are of different nature: from editorial, through modifications due limited time and efforts in pilot project, and addressing of topics in nSHIELD project, ending with partners will to focus on and enhance their actions on particular problematic recognized as important during project researches.

Pages 58, 59:
Task 3.1:
Intrinsically secure ES firmware paragraph.
In Intrinsically secure ES firmware paragraph last sentence was removed due to pilot limitations in design and verification possibilities.
remove: "Secure firmware upgrade mechanisms will also be designed and verified;"

Task 3.1:
Power supply paragraph.
Power supply paragraph was reedited to better cover problematic of that topic.

Task 3.1:

SICS partners paragraph should be removed, since SICS is not anymore pilot project consortium partner.

remove: ...SICS will work with the design of trusted boot and software upgrade...

Page 59, 60:

Task 3.2:

Second paragraph (redundancy through FPGA usage description)

Editorial correction: should be T3.2, was T.4.

Task 3.2:

introduced new paragraph Power Sources in Power Nodes

New paragraph, describing Power Sources in Power Nodes, introduced by AS to better balance Power Supply works through different kinds of nodes, and to enhance focus areas.

Task 3.2:

removed paragraph Embedded Camera Array auto-calibration

Paragraph describing Embedded Camera Array auto-calibration was removed, since in pilot project there is no partner covering that topic.

Task 3.2:

remove paragraph on low power ES

In cut down for pilot project consortium there is no partner covering that topic.

Task 3.2:

remove paragraph on ETH Lab.

It is editorial correction.

Paragraph is irrelevant in that context. It was supposed to be placed in another part of the original document.

Pages 60, 61:

Task 3.3:

remove text on providing SPD technologies to other tasks.

The technologies in this pilot project were not adopted in the other tasks due to the fact that it is only a one-year pilot.

Task 3.3:

Enhance paragraph on Automatic access control.

To better focus on the topic, the text of paragraph was significantly updated.

Task 3.3:

Edits of "Self-reconfigurability..." paragraph

remove text: ", to make a node more secure against side-channel attacks through measurement of EM radiation"

Text to be removed. There is no partner in pilot, that make tests with EM radiation.
remove text: "through reallocation of functional blocks that will replace and mark faulty resources,"
Text to be removed. In pilot project it is not possible to implement reallocation.

Page 61:
Task 3.3:
Edits in Asymmetric Cryptographic paradigm paragraph
Some text modifications to adjust to current state of researches.

Page 31,32:
removed entire sub-chapter "Embedded Camera Array auto-calibration and auto configuration techniques"
Sub-chapter describing Embedded Camera Array auto-calibration was removed, since in pilot project there is no partner covering that topic.

Changes in WP4 description
Text for WP4 is OK.

Changes in WP5 description
This section contains list of changes in Work Package description. They are result of limited time and consortium possibilities in pilot project, but also enhancements due to partners will of focusing research on particular problems.

Pages 66-67:
Changes in Description of work Task 5.1
- developed → investigated
  (clarification)
- the SPD modules capabilities and interfaces, to describe the metrics and the relevant information exchanged between the node, network, middleware and overlay layer → the system, the SPD components, the metrics and the relevant information exchanged between the node, network, middleware and overlay layer
  (a more detailed description about what semantic ontology describes)
- developed → exploited
  (clarification)
- ~~and an OWL-like semantic language~~
  (deletion because OWL was the chosen language)
- a lightweight common semantic languages derived by standard ones (i.e. OWL) in order to be easily processed in the embedded system world where the processing unit are limited in power

and resources → a prototype of a formal model (ontology) and a prototype of the semantic based inference of SPD composition and interoperability

(clarification about task outcome)

Page 67:
Changes in Description of work Task 5.2
- This task will design and develop the core SPD services provides by the SHIELD middleware → This task will design and develop in a preliminary prototype the core SPD services provided by the pSHIELD middleware

  (task purpose clarification)
- (i.e. SPD and semantic composition)

  (context awareness features clarification)
- The SPD-middleware will use data received by ES nodes → The SPD-middleware will be oriented to receive data by ES nodes

  (clarification)
- complete → preliminary

  (it cannot be complete in a pilot project)
- ~~(e.g. profiles and policies)~~

  (deletion because it can mislead)
- wide → limited

  (it cannot be wide in a pilot project)
- ~~and for securely accessing the resources~~

  (deletion because the pilot investigations cannot address this issue)
- SPD modules → modules

  (deletion because it can mislead)
- ~~This task will also define and implement specific interfaces (based on the design results of task 2.3) for accessing middleware capabilities from outside systems~~

  (deletion because the scope of the pilot is reduced and the interaction between the middleware and other middleware or external world is not considered)

Pages 67-68:
Changes in Description of work Task 5.3
- designing and developing → investigating

  (task purpose clarification)
- In order to build specific management functionalities → In order to verify the feasibility of policy-based functionalities

  (clarification)
- The main ones are:
  - Use of policies. Policies permit the declarative specification of security strategies separately from the implementation code of ES nodes. The use of interpreted policies allows to change the security behavior of a node without recoding or shutting down the node;
  - Design and development of an authorization based PAP (Policy Administration Point) for the Policy Enforcement Point and Policy Decision Point.
  - Design and development of a configuration module for lowering policies to devices level.

- Design and development of algorithms and tools to enrich the smart capabilities of the middleware and increase its autonomy;
- The outcome of task 5.3 will be integrated in the WP5 prototypes.
→

The main ones are:

- Use of policies. Policies permit the declarative specification of security strategies separately from the implementation code;
- Tipical policy based management architecture;
- Policy specification languages and major protocols;

A specific architecture will be investigated for the pSHIELD context based on PAP (Policy Administration Point) for the Policy Enforcement Point and Policy Decision Point. Some performance considerations will be carried out to justify the use of PBM for the pSHIELD purposes.

These investigations will be the outcome of task 5.3.

(clarification and focus on the investigation aspects motivated by the fact that most of the partners involved in this activities in the original SHIELD idea couldn't join the pilot project. The only representatives had in charge the investigation tasks)

Page 68:
Changes in Description of work Task 5.4

- This task aims to design and implement an overlay layer based on a system of reacting security agents. The outcome of this task will be a software implementation of a security agent prototype ready to be integrated and interwork with the rest of SHIELD architecture.

  → This task aims to design and implement an overlay layer based on a system of reacting security agents. The role of the overlay is to act so that the desired SPD level is properly met by adequately composing the underlying SPD technologies (at node, network and middleware level). At this aim, the semantic technologies and metrics derived in Task 5.1 and WP2 respectively will be used. The main outcome of this task will be the logical architecture of the pSHIELD Overlay as well as some preliminary analysis on its behavior.

  (Task aim clarification)

- These agents will use also context information to feed proper control algorithms that drive the choice of the underlying configuration that satisfy the desired SPD level in an "intelligent" (i.e. context-aware) way. In this perspective, a set of closed-loop control algorithms will be investigated and designed as well, at least limited to simulation (i.e. proof of concept) level.
  (Addition to give a clarification about agents)
- The security agent will be designed and developed to build autonomously an overlay network →
  The security agent will be set to build an overlay network
  (Clarification)

- Each security agent will interprets the information shared in the SPD system in order to discover imminent threats and mounting attacks. All security events of interest will be correlated with the underlying criticality rating the targeted asset. This will results in accurate prioritization and enables fast response to the threats, targeting most critical assets.

The security agent reacting system will be a combination of network scanning, passive network monitoring, and integration with existing data provided by the layers. It allows the security agent to organize the network assets into categories. This feature will permit to assign ad-hoc security policies for monitoring each application or service component.

A multi-agent approach which combines intelligent, adaptive, autonomous and cooperative capabilities of the agents will be developed. Teams of security agents will cooperate to monitor over time the SPD level on the whole service chain. Therefore, in order to guarantee security and dependability in inter-agent communication, new semantically enriched communication protocols and distributed algorithms capable of dynamically identifying potential dangerous activities, will be defined and validated.

$\rightarrow$

However this feature will not be implemented in the pilot project, since the operating context is limited and doesn't require the interaction between two or more agents.

The benefits brought by semantic technologies developed in Task 5.1 will be also adopted to exploit the security agent capability to adapt to security needs and/or associated policies to possible unforeseen situations.

(clarification due to the facts that i) the pilot is reduced and the interaction between the middleware and other middleware or external world are not considered and ii) the dynamic aspects of composability are not addressed by the pilot itself)

- The main outcome of this task will be the development of a software prototype implementing monitoring features → The main outcome of this task will be the functional architecture of the overlay, of the security agents and their behavior; the formulation of potential control algorithms to drive the SPD composability performed by the overlay, supported by some simulations, will be included as Task 5.1 prototype as well.
  (Task 5.4 main outcome clarification)

Changes in WP6 description

This section contains list of changes in Work Package description. They are result of pSHIELD being a pilot project, thus adapting to the achievable results within the anticipated time frame.

Only minor adaptations for T6.1 and T6.2 were performed. The original task 6.3 on "lifetime support" did not address the pilot character of the project. Thus the task was referred to the SHIELD project. The original task T6.4 (demonstration) is now T6.3 demonstration. A new task T6.4 was introduced, focusing on industrial and real-life requirements. Thus the number of tasks and deliverables keeps unchanged, and the focus of the new tasks now represents the implementation, validation and experiences from the pilot demonstrations.

Pages 70 and following:
Objectives
- *The objectives were kept, the focus was adopted to represent the dedicated pilot demonstrators*

Description of Work

Task 6.1

- The task description focuses on the goal of demonstrating pilots of SPD functionality. Only minor wording updates were performed.

Task 6.2

- The task description represents the focus on piloting activities, thus having the focus on validation aspects of components. Only minor wording updates were performed

Task 6.3

- The original task 6.3. on "lifetime support" did not address the pilot character of the project. Thus the task was referred to the SHIELD project. The original task T6.4 (demonstration) is now T6.3 demonstration. This task now describes the pilot demonstrations. Adaptations of the text representing the monitoring through embedded system in the industrial context of machine-to-machine platforms.

Task 6.4

- A new task T6.4 was introduced, focusing on industrial and real-life requirements.

Deliverables

Deliverable names shortened: D6.1… D6.4, replaced old D6.3 by D6.4, and introduced a new D6.4

D6.1   Platform development report (M17)

D6.2   Platform component validation and verification (M18)

D6.3   pSHIELD pilot demonstrators (M18)

D6.4   Real world requirements for SPD-based systems (M19)

Milestones

M6   SPD prototypes and pSHIELD Platform Integrations (M17)

M7   pSHIELD platform validation and verification (M18)

M8   Final Demos (M19)

Pages 49, 50:
Deliverables list table
Change of WP6 deliverables names

Page 76:
Milestones list table
Change of WP6 deliverables numbers and WP6 milestones names

Page 84:
Removed reference to old task 6.3

Pages 55, 95, 125, 140:

References to lifecycle support in WP6 removed.

General edits of TA

This section contains list of minor general text improvements in TA. In general misspells and formatting corrections.

Page 154 and following:
Change in Funding calculation forms table

Page 129:
update of Tecnalia logo, after name change.

Page 1:
Change of date of TA to date of SCOM and ED merge
Date of preparation of Technical Annex (latest version): 1st June 2011

Page 6:
Change of project duration
12->19