nSHIELD

PROJECT PERIODIC REPORT

JU Grant Agreement number: 269317

Project acronym: nSHIELD

Project title: new embedded Systems arcHItecturE for multi-Layer Dependable solutions

Date of latest version of Annex I against which the assessment will be made:

Periodic report: **1st** ■   **2nd** ☐   **3rd** ☐   **4th** ☐

Period covered: from   **01.09.2011**   to   **29.02.2012**

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[1] Usually the contact person of the coordinator as specified in Art. 8.1. of the grant agreement

[2] The home page of the website should contain the generic European Emblem and the Joint Undertaking's logo which are available in electronic format at the Europa website (logo of the European flag: http://europa.eu/abc/symbols/emblem/index_en.htm ; logo of the Joint Undertaking: ARTEMIS :). The area of activity of the project should also be mentioned.

Declaration by the scientific representative of the project coordinator[1]

I, as scientific representative of the coordinator[1] of this project and in line with the obligations as stated in Article II.2.3 of the JU Grant Agreement declare that:

- The attached periodic report represents an accurate description of the work carried out in this project for this reporting period;

- The project (tick as appropriate):

  ☐ has fully achieved its objectives and technical goals for the period;

  ■ has achieved most of its objectives and technical goals for the period with relatively minor deviations[3];

  ☐ has failed to achieve critical objectives and/or is not at all on schedule[4].

- The public website is up to date, if applicable.

- All beneficiaries, in particular non-profit public bodies, secondary and higher education establishments, research organisations and SMEs, have declared to have verified their legal status. Any changes have been reported under section 5 (Project Management) in accordance with Article III.2.f and IV.1.f of the JU Grant Agreement.

Name of scientific representative of the Coordinator[1]: ....

Date: ..../ ..../ ....

Signature of scientific representative of the Coordinator[1]: ....

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[3] If either of these boxes is ticked, the report should reflect these and any remedial actions taken.

[4] If either of these boxes is ticked, the report should reflect these and any remedial actions taken.

Project no: 269317

nSHIELD

new embedded Systems arcHItecturE for multi-Layer Dependable solutions

Instrument type: Collaborative Project, JTI-CP-ARTEMIS

Priority name: Embedded Systems

D1.4: Periodic Management Report 1

Due date of deliverable: M6 –2012.02.29

Actual submission date: M13 -2012.09.28

Start date of project: 01/09/2011   Duration: 36 months

Organization name of lead contractor for this deliverable:

Selex Galileo, SG

Revision [-]

Project co-funded by the European Commission within the Seventh Framework Programme (2007-2012)		
Dissemination Level		
PU	Public	
PP	Restricted to other programme participants (including the Commission Services)	X
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

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Modification History

Issue	Date	Description
Draft A	2012-02-29	First issue for comments.
	2012-09-28	Final
Final		

Contents

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Tables

Glossary

Please refer to the Glossary document, which is common for all the deliverables in nSHIELD.

nSHIELD

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1   Publishable summary

The nSHIELD project is, at the same time, a *complement* and significant technology breakthrough of "pSHIELD", a pilot project funded in ARTEMIS Call 2009 as the first investigation towards the realization of the **SHIELD Architectural Framework** *for Security, Privacy and Dependability (SPD)*. The roadmap, already started in the pilot project, will bring to address SPD in the context of Embedded Systems (ESs) as "built-in" rather than as "add-on" functionalities, proposing and perceiving with this strategy the first step toward SPD certification for future ES.

pSHIELD has covered the definition phase of this roadmap: nSHIELD will be in charge of the development and implementation phases. The SHIELD General Framework consists of four layered system architecture and Application Layer in which four scenarios are considered: 1) Railway, 2) Voice/Facial Recognition, 3) Dependable Avionic Systems and 4) Social Mobility and Networking.

The leading concept is to **demonstrate composability** of SPD technologies. Starting from current SPD solutions in ESs, the project will develop **new technologies** and consolidate the ones already explored in pSHIELD in a solid basement that will become the reference milestone for a new generation of "SPD-ready" ESs. nSHIELD will approach SPD at 4 different levels: node, network, middleware and overlay. For each level, the state of the art in SPD of individual technologies and solutions will be improved and integrated (hardware and communication technologies, cryptography, middleware, smart SPD applications, etc.). The SPD technologies will be then enhanced with the "composability" functionality that is being studied and designed in pSHIELD, in order to fit in the SHIELD architectural framework.

The composability of this architectural framework will have great impact on the system design costs and time to market of new SPD solutions in ESs. At the same time, the integrated use of SPD metrics in the framework will have impact on the development cycles of SPD in ESs because the qualification, (re-) certification and (re-)validation process of a SHIELD framework instance will be faster, easier and widely accepted.

The use of an overlay approach to SPD and the introduction of semantic technologies address the complexity associated with the design, development and deployment of built-in SPD in ESs. Using semantics, the available technologies can be automatically composed to match the needed, application specific SPD levels, resulting also in an effort reduction during all the design, operational and maintaining phases. The nSHIELD approach, as explored in the pilot project, is based on **modularity and expandability**, and can be adopted to bring built-in SPD solutions in all the strategic sector of ARTEMIS, such as transportation, communication, and urban environment.

To achieve these challenging goals the project aims at creating an **innovative, modular, composable, expandable and high-dependable architectural framework**, concrete tools and common SPD **metrics** capable of improving the overall SPD level in any specific application domain, with minimum engineering effort. The whole ESs lifecycle will be supported to provide the highest cross-layer and cross-domain levels of SPD and guaranteeing their maintenance and evolution in time.

In order to verify these important achievements, the project will validate the nSHIELD integrated system by means of relevant scenarios:

- Railways Security

- Voice/facial recognition

- Dependable avionic systems

- Social Mobility and Networking

The project will have a great impact on the SPD market of the ESs. By addressing the reusability of previous designed solutions, the interoperability of advanced SPD technologies and the standardized SDP certificability, it is possible to estimate an overall 30% cost reduction for a full nSHIELD oriented design methodology. Additionally, for social mobility and networking scenario the expected market in few years will be 15% of 5 billion mobile users. Finally, this project by taking in consideration the current

Directive 2009/125/EC and the future one motivate by conclusions of the Competitiveness Council of 28 May 2009 that pointed out "it is of particular interest to maintain strong R&D investments in high-tech industries in Europe, especially in manufacturing sectors with indispensable technologies," great social and economic impacts for European economy will be achieved.

***nSHIELD* project will be focused on:**

1. **Demonstrate composability**: Composability of SPD functionality at different layers among different technologies will be refined and developed, taking into account performances and dynamic composability of any kind of technologies.

2. **New technologies**: A wide set of technologies will be used to realize SPD composability and design guidelines will be provided to make any "nSHIELD compliant technology" composable with the others.

3. **Innovative, modular, composable, expandable and high-dependable architectural framework**: nSHIELD will refine and develop the framework in a complex scenario

4. **Metrics:** A complete exhaustive set of metrics for SPD description will be refined and consolidated in the nSHIELD project and used to validate the whole functionalities of the framework

5. **Validate the nSHIELD integrated system in one application scenario**: the new project will validate the architectural framework by means of four (complex) scenarios relevant in an industrial perspective.

6. **Certification Aspects**: nSHIELD will be the first step towards SPD certification for future ES.

2   Project objectives for the period (1/9/2011-29/2/2012)

Within the first reporting period of the nSHIELD project (01.09.2011-29.02.2012) some intermediate objectives for the project were planned as described within the Technical Annex. Here below we are listing objectives and achievements for the related period.

WP2 Objectives and Achievements: "SPD Metric, requirements and system design" is the topic of this work package. The definition of the SPD requirements and specifications of each layer, as well as of the overall system is based from the four application scenarios.

Deliverables: D2.1, D2.2

The WP2 objectives are:

- The definition of the SPD requirements and specifications of each layer, as well as of the overall system on the basis of the four application scenarios;

- The definition of proper SPD metrics to assess the achieved SPD level of each layer, as well as of the overall system;

- The definition of nSHIELD system architecture. Identification of the SPD layers functionalities, their intra and inter layer interfaces and relationships.

The period September 2011 thought February 2012 covers the first objective and the relevant results have been reported in D2.1 (Preliminary System Requirements) and D2.2 (Preliminary System Requirements and Specifications). The Deliverable D2.2 is under finalization and will be available by June 2012. In summary, for the nSHIELD system preliminary requirements are delivered in the period. D2.2 is a continuation of D2.1. A first version of this deliverable was completed on Feb 2012, however some partners expressed the need of changing the ToC and some contents. This deliverable will be fully finalized by June 2012.

Clearly significant and tangible results are:

- Top-level requirements specification for the application scenario

- High-level nSHIELD system requirements specification

- High-level SPD requirements specification for Node, Network, Middleware and Overlay Functional Layer

WP3 Objectives and Achievements: "SPD Node" is the topic of this work package. Scope: the definition of SPD intrinsic capabilities at node layer through the creation of an Intelligent ES HW/SW Platform consisting of three different kinds of intelligent ES Nodes: SDR/Cognitive Enabled node, nano and micro node.

Deliverable: D3.1

The WP3 objectives are:

- improve SPD technologies at Node level;

- develop appropriate composability mechanisms at such level;

- deliver a SPD node prototype.

The period September 2011 thought February 2012 covers the first objective and the relevant results have been reported in D3.1 (SPD node technologies assessment). All the results of the technology are

described in the deliverable D3.1 "SPD node technologies assessment". This deliverable is under finalisation and it will be ready by April 2012.

Clearly significant and tangible results are:

- Activities are focused on technology assessment at node level and on D3.1 preparation. Every partner contributed, each for its area of expertise and involvement, to the technology assessment process and partially to the preparation of the deliverable

WP4 Objectives and Achievements: "SPD Network" is the topic of this work package. This WP follows an approach similar to the WP3, focusing on the transmission (communication) level. Improve SPD technologies at Network level.

Deliverable: D4.1

The WP4 objectives are:

- Improve SPD technologies at Network level;

- Develop a prototype to be integrated in the demonstrators.

The period September 2011 thought February 2012 covers the first objective and the relevant results have been reported in D4.1 (SPD network technologies assessment). This deliverable is under finalisation and it will be ready by April 2012.

Clearly significant and tangible results are:

- WP4 contribution in requirement definition

- Part of Deliverable 4.1: SPD Network technologies assessment

WP5 Objectives and Achievements: "SPD Middleware & Overlay" is the topic of this work package. This WP defines a common semantic to describe the SPD interfaces and functionalities; Improve SPD middleware technologies;

Deliverable: D5.1

The WP5 objectives are:

- Define a common semantic to describe the SPD interfaces and functionalities;

- Improve SPD middleware technologies;

- Provide support to legacy SPD systems;

- Introduce the Overlay concepts and functionalities;

- Develop a prototype to be integrated in the demonstrators.

The period September 2011 thought February 2012 is focused on the SPD middleware and overlay technologies assessment. The relevant results have been reported in D5.1 which is under finalisation and it will be ready by June 2012.

Clearly significant and tangible results are:

- assessment of the pSHIELD Middleware technologies has been done, starting from the analysis of the pilot results in WP5.

- preliminary identification of the new promising Middleware technologies for SHIELD has been started

- WP5 has been optimized by coupling tasks 5.2 and 5.4 in order to save management overhead

- middleware functionalities study is now in progress (with the purpose of refinement and enrichment in comparison with pSHIELD middleware functionalities).

- Another major discussion in progress is about middleware requirements (this activity is required for WP2 progress) and regards the real possibility of their realization and validation.

  In particular the following points are in discussion:

  o the possibility to insert SPD requirements in the Middleware functional requirements

  o the redefinition of general requirements to avoid misunderstanding in their realization

  o specific requirements definition for different scenarios.

- mailing lists have been set up for information sharing and an internal document repository has been setup to ease the work sharing for WP5 participants.

WP6 Objectives and Achievements: **"**Platform integration, validation & demonstration". No activity is planned for this period.

WP7 Objectives and Achievements: "SPD Applications". No activity is planned for this period.

WP8 Objectives and Achievements: "Knowledge exchange and industrial validation" is the topic of this work package. This WP defines the strategy for dissemination and standardization which are essential part of the project. Moreover activities as website stand up and maintenance and repository tool are needed for communication between partners and the external world.

Deliverables: D8.1, D8.2, D8.3.

The WP8 objectives are:

- Website

- Document exchange repository

- Industrial Dissemination Plan,

- Industrial Standardization Plan of innovative solutions.

The period September 2011 thought February 2012 is focused on the development of the nSHIELD website, the wiki page (used as exchanging repository document tool). In this period a proper dissemination plan and a proper standardization have to be formalized.

Clearly significant and tangible results are:

The results of the first objective have been reported in D8.1 (Web Site), D8.2 (Dissemination Plan). The D8.3 (Standardization Plan) is under finalization and will be delivered by June 2012.

The efforts during this period were mainly dedicated to elaborate the deliverable "D8.2 Dissemination Plan" that can be found in the Wiki:

http://nshield.unik.no/wiki/File:D8.2_DisseminationPlan_Issue3_v008.pdf

Regarding standardization plan, during the kick-off meeting several ways to face the issue of standardization were discussed and no specific approach was decided. Therefore, the standardization plan has suffered a delay and is now due by the end of June 2012.

Finally, the other major milestone for this period was the project website that can be found at: http://www.newshield.eu. The description of the website and other online dissemination strategies are described in the above-mentioned deliverable D8.2.

Deliverables expected in the period:

Public: D8.1 Web Site (M2)

Internal: D8.2 Dissemination Plan (M6), D8.3 Standardization Plan (M6)

D8.1 and D8.2 have already been delivered while D8.3 has been delayed to end of June 2012.

Dissemination Channels

In order to disseminate the nSHIELD project and the project results, the following channels have been identified. Some of these channels target a broad audience, for instance, the public web site, while others are specifically tailored to one of the targeted groups.

- Media Channels

    o Logo

    o Project Web sites

    o Press-releases

    o Brochures

    o Flyers

    o Posters

    o Newsletter

    o Mailing lists

    o Teleconferences

    o Wiki

- Presentations at scientific and industrial-oriented conferences

- Articles in scientific and professional journals, and magazines having the scope addressing a wider interested community and public

- Organization of seminars and workshops

- Master and doctoral thesis

- Invited talks and lectures

- Visits

- Tutorials

- Education & Training (E&T) activities

- Cooperation with other projects

Interaction with/membership in national and international standardization groups and committees

Mailing lists

Mailing lists have already been created to ease the exchange of information internally within the project consortium. Currently, one mailing list per WP has been created as well as one for all the WPs, one for WP leaders, one for TCM members and finally one for administrative contacts. The following list shows the addresses:

- WP1@newshield.eu

- WP2@newshield.eu

- WP3@newshield.eu

- WP4@newshield.eu

- WP5@newshield.eu

- WP6@newshield.eu

- WP7@newshield.eu

- WP8@newshield.eu

- WP-ALL@newshield.eu

- TMC@newshield.eu

- WP-leaders@newshield.eu

- Administrative@newshield.eu

For external communication, various mailing lists of partners will be used by them for distribution of newsletters or related material.

nSHIELD Wiki

Apart from project meetings, teleconferences and emails, the consortium has deployed a Wiki to better share information and documents.

Figure 1: nSHIELD Wiki

The nSHIELD logo.

The nSHIELD project "new embedded Systems arcHItecturE for multi-Layer Dependable solutions" is the continuation of the pilot project named pSHIELD. Both, the new and the pilot projects logos take advantage of the word and image of a "**shield**" representing the security concept (Shield: protection, guard, defence, cover, screen, security, shelter, safeguard, protector).

Figure 2: nSHIELD Logo

3   Work progress and achievements during the period

3.1   WP2

WP 2 - Leader THYIA
Period: 1 September 2011- 29 February 2012

1	*A summary progress towards objectives, supported by measurable indicators and details for each task and each partner*
	Task 2.1 Multi-technology requirements & specification *(Task Leader: THYIA - Partners: SG, ASTS, SE, ETH, HAI, S-LAB, SICS, T2D, THYIA, TUC):* D2.1 is successfully finalized. All contributing partners provided their contributions (see individual partner reports). Two approaches are adopted. First, <u>top-down</u> approach is related to the description of the nSHIELD system and its components as it is described in TA, and in accordance with the previous experiences achieved in the pilot project pSHIELD since the both projects are based on the same system concepts presented in Figure 2-1 and Figure 2-2 in TA. Second, <u>bottom-up</u> approach is related to the R&D activities and deliverables in other WPs (WP3, WP4, and WP5) that provide inputs for D2.2 (formerly 2.1.2) document as it is evident from the figure below, i.e., deliverables D3.1, D4.1 and D5.1.

Based on the R&D activities performed in the first period appear that complexity of the nSHIELD system is increased comparing to the pSHIELD The main reason is that nSHIELD has four new application scenarios instead one in pSHIELD. There was the second call for contributions for D2.1 after the first realised issued on 6.12.2011. The second realise was delivered on 30.12.2011, and third one (final) on 29.2.2011 that become the first version of D2.2. <u>On 1st February 2012 TMC took a decision level to finalise D2.2 based on D2.1 by M7</u>. To increase quality of the D2.2 with respect to D2.1 a review process was implemented in which participated all contributing partners.

Task 2.2 Multi-technology SPD metrics *(Task Leader: TECNALIA - Partners: SG, ASTS,*

ATHENA, SE, HAI, S-LAB, THYIA, TUC)

The R&D activities in this task were performed by the contributing partners independently as they reported in their individual reports. ToC and first version for D2.5 was issued for acceptance on 02.02.2012. The partners agreed on the proposed ToC with minor modification of the partner efforts and contributions (see main conclusions from Telco in table below).

Task 2.3 Multi-technology architectural design *(Task Leader: HAI - Partners: AT, ATHENA, SE, SICS, T2D, THYIA, TUC)*

The R&D activities in this task were performed by the contributing partners independently as they reported in their individual reports. On task level there was not performed any activity.

Table of WP2 meetings:

Title	Date and Place	Main conclusions
Telco WP2 meeting	30.11.2011	**Task 2.1** On the consortium KoM in Brussels on 19 October 2012 was explained the reasons for changes and it was proposed by WP Leader to change delivery dates for the following deliverables D2.1: M3 -> M6, D2.2: M6 -> M9, D2.6: M18 -> M24, D2.7: M18 -> M26. This still remain open issue and should be discussed on a TMC level. ToC for D2.1 should be closed by 30.11.2011. Contributions should be sent for D2.1 by 16.12.2011, the first draft of D2.1 to be issued by 31.12.2011, and a confirmation should be sent for the planned resources (PMs) for each partner and for each deliverable. **Task 2.2** no conclusions **Task 2.3** no conclusions Participants: THYIA, SG, TECNALIA, T2D, TUC, ASTS, S-LAB, SICS
Telco WP2 meeting	12.01.2012	**Task 2.1** The first draft version of the document D2.1 was distributed on 30.12.2011. Partners that have contributed are: SICS, S-LAB, TUC, SG, ASTS, T2D, THYIA. It was agreed that the document D2.1.should be finalized until 31st of January 2012. D2.2 will be continuation from the document D2.1, taking into account initial work on D2.3 and D2.5, and deliverables D3.1, D4.1, and D5.1. Send e-mail to partners that not contributed yet. THYIA will sent excel sheet for review process by 31.1.2012. SG should soon organise a TMC telco. **Task 2.2** TECNALIA is working on first draft of the document D2.2 – ToC. The document should be sent to the partners in maximum two weeks, i.e., 20.1.2012. **Task 2.3** No conclusions Partners confirmed assignment of the resources given in the presentation from the previous Telco KoM for WP2. Participants: THYIA, SG, TECNALIA, T2D, TUC, ASTS, S-LAB, SICS
Telco T2.2 meeting	02.02.2012	There will be three important deadlines for D2.5: 1st iteration of work: Deadline 30th March 2012. 2nd iteration of work. Deadline 31st May 2012. Final deadline: 31st August 2012 (M12). ToC is closed for changes. Some partners proposed

			only minor modification where they will contribute. All contributions should be sent by 30.3.2012. Participants: ATHENA, ASTS, HAI, S-LAB, TECNALIA, THYIA, TUC
	Consortium meeting	16.2.2012	During the consortium meeting partners agreed to adopt nSHIELD General Framework for the system requirements and specifications.
	Telco THYIA & SE	27.02.212	It was agreed that SE will provide explanation for the new proposal. Participants: THYIA and SE

	Highlight clearly significant and tangible results
2	Contributing partners in WP2 have achieved the following tangible results. Internal D2.1 Preliminary System Requirements (M3) – delivered by M6 as agreed on task and TMC level D2.5 Preliminary SPD Metrics specifications (M12) - ToC agreed and first contribution available Public D2.2 Preliminary System Requirements and Specifications (M6) - reviewed by M6 In summary, for the nSHIELD system preliminary requirements are delivered in the period. D2.2 is a continuation of D2.1 and it remains as preliminary requirements and specification document for other WPs until its completion planned for M7.
	If applicable, explain the reasons for deviations from Annex I and their impact on other tasks as well as on available resources and planning
3	There was in parallel lot of work for pSHIELD in third period and final review, i.e., ~2/3 of nSHIELD partners contributed also in pSHIELD in the same period! The partners that were not involved in pSHIELD got access to the public documents after the pSHIELD project was closed in February 2012. There are two deviations from the plan, D2.1 was finalized in M6 instead M3 (the reasons were discussed in October 2011 during the KoM), and D2.2 will be finalized in M7 instead of M6 (based on a TMC decision) as explained above. On February 24, 2012 SE (SelexElsag) proposed a new ToC for D2.2. This concept was based on their experience and results from bottom-up approach. This new concept and ToC requires a significant reorganisation (re-working of all requirements) of the work performed in the first 6 months. This proposal arrived too late for its adoption by the partners. It will be discussed further in the next deliverables.
	If applicable, explain the reasons for failing to achieve critical objectives and/or not being on schedule and explain the impact on other tasks as well as on available resources and planning (the explanations should be coherent with the declaration by the project coordinator)
4	Critical objectives related to the deliverables D2.1 are achieved, and with a month delay also for D2.2. Based on top-down and bottom-up approach described above in 1, interdependences are explained how WP2 deliverables impact WP3, WP4, and WP5 and vice-versa.
	a statement on the use of resources, in particular highlighting and explaining deviations between actual and planned person-months per work package and per beneficiary in Annx 1 (Description of Work)
5	It is evident from table below that for T2.1 ~43%, T2.2 ~31%, and T.2.3 ~12% of the resources are spent in for each task in the first period.

Partner	Total PM	T2.1		T2.2		T2.3	
		Plan	Spent	Plan	Spenz	Plan	Spent
SG	10	3	3	1.15	1.15	-	-
ASTS	9	5	0.6	4	0.59	-	-
AT	8	-	-	-	-	8	1.5
ATHENA	6	-	-	3		3	
SE	13	3	1	3	1.5	7	0.5
TECNALIA	12	-	-	12	6.5		
ETH	2	1	0.5	-	-	1	0.5
HAI	22	5	1	5	0.5	12	1.5
S-LAB	10	5	3	5			
SICS	6	3	2	-	-	3	
T2D	10	5	1.6			5	
THYIA	20	10	4	5	2	5	0.5
TUC	10	3	3	4	1	3	
UNIUD	3	3	1		1		1
Total	**141**	**46**	**20.7**	**46**	**14.24**	**47**	**5.5**
% on total 141		**34.04%**		**32.62%**		**33.33%**	
% on total task sum			**43.13%**		**30.96%**		**11.70%**

6	*a statement on the information flow between the Project and other related Project(s) part-financed under the ARTEMIS JU, the Community Frame Work Programme, and/or National Research Programmes)*	
	The relation between pSHIELD and nSHIELD is obvious. The original SPD concept (SPD functionalities, SPD metrics, SPD core services, etc. for a four layers system) proposed in both projects is an original one, which is not addressed by other JU Artemis projects, and/or national research programmes.	
7	*a statement on the dissemination activities and exploitation perspectives including an updated positioning with respect to the competitive situation in the field addressed by the Project and to other Projects (inside and outside ARTEMIS JU)*	
	No dissemination activities were planned and have been performed during the reporting period.	
8	*If applicable, propose corrective actions*	
	n.a.	

Table 1: WP2 Management Report

3.2   WP3

<table>
<tr><td colspan="3" align="center">***WP 3 - Leader ETH***</td></tr>
<tr><td colspan="3" align="center">***Period: 1 September 2011- 29 February 2012***</td></tr>
<tr>
<td rowspan="2">*1*</td>
<td colspan="2">*A summary progress towards objectives, supported by measurable indicators and details for each task and each partner*</td>
</tr>
<tr>
<td colspan="2">The objective of the first semester is the assessment of SPD technologies at node level. The partners have been working on this objective since the beginning of the project and, although there has been a delay of two months, the objective has been achieved. The causes of the delay have no relations with WP3 topics/activities and did not influenced WP3, except in terms of scheduling. All the results of the technology are described in the deliverable D3.1 "SPD node technologies assessment", that has been submitted has planned (after the rescheduling of two month). This deliverable represents the starting point for all the research activities that will be performed at node level in the first part of the project. It will be extended and finalized in the second part of the project.</td>
</tr>
<tr>
<td rowspan="2">*2*</td>
<td colspan="2">*Highlight clearly significant and tangible results*</td>
</tr>
<tr>
<td colspan="2">Activities are focused on technology assessment at node level and on D3.1 preparation. Every partner contributed, each for its area of expertise and involvement, to the technology assessment process and partially to the preparation of the deliverable.</td>
</tr>
<tr>
<td rowspan="2">*3*</td>
<td colspan="2">*If applicable, explain the reasons for deviations from Annex I and their impact on other tasks as well as on available resources and planning*</td>
</tr>
<tr>
<td colspan="2">The activities have been generally delayed in all the workpackage and have been started, with an exponential trend, concentrating at the end of the first semester and normalizing at the beginning of the second, as planned. This delay is due to the overlapping with pSHIELD and to status of contract signature. During the last four month of 2011, for several partners the same team have been involved both in pSHIELD and nSHIELD. This overlapping caused a slowdown of activities and, in certain cases, the impossibility to carry on them.</td>
</tr>
<tr>
<td rowspan="2">*4*</td>
<td colspan="2">*If applicable, explain the reasons for failing to achieve critical objectives and/or not being on schedule and explain the impact on other tasks as well as on available resources and planning (the explanations should be coherent with the declaration by the project coordinator)*</td>
</tr>
<tr>
<td colspan="2">The absence of critical objectives in the first reporting period reduces the impact of the delays experienced in the first semester. The most important objective of the semester is D3.1 deliverable, which has been delayed for two months, due mainly to the overlapping of nSHIELD with pSHIELD project and to the absence of several nSHIELD national agreements. Most of the activities and the related effort will be recovered in the second semester.</td>
</tr>
<tr>
<td rowspan="2">*5*</td>
<td colspan="2">*a statement on the use of resources, in particular highlighting and explaining deviations between actual and planned person-months per work package and per beneficiary in Annex 1 (Description of Work)*</td>
</tr>
<tr>
<td colspan="2">The use of resources is partially aligned with the initial plan and partially misaligned. Some partners started the activities at M1 and performed the activities as planned. Other partners started the activities with a delay the varies from 2MM to 6MM due mainly to the following reasons:

- absence of National Agreement signed,
- overlapping of pSHIELD and nSHIELD that, when the same team is involved in both projects, doesn't allow to participate actively to both projects.

The first issue has been solved at the time of this report. The second issue was due to the</td>
</tr>
</table>

extension of pSHIELD project (not planned at the beginning of the project) and is solved.

The misalignment in the use of resources caused a delay in project activities that has been partially recovered and can be measured in 2 month. The delay caused the rescheduling of D3.1 that has been provided in time for the new deadline. The partners that still have a misalignment in resources will recover in the second semester.

The following table summarizes the use of resources for every partner in the first semester:

WP3 Involvement and effort I Sem 2011-2012											
Partner	**MM**	**T3.1**		**T3.2**		**T3.3**		**T3.4**		**T3.5**	
		Plan.	**Eff.**	**Plan.**	**Eff.**	**Plan.**	**Eff.**	**Plan.**	**Eff.**	**Plan.**	**Eff.**
AT	22			0,9	0,6	0,9	0,6			1,04	0,6
ATHENA	8										
SE	8										
TECNALIA	6							1	1,5	1	1,5
ETH	25			6	6						
HAI	4										
ISD	58					6	0				
SG	16	0,6	0,6	0,7	0,6	0,8	0,8				
S-Lab	12										
SESM	15					0	0				
SICS	20	1	1	1	3						
T2D	26										
TELC	6			1	0,2						
THYA	30										
TUC	30	2,1	2,1	2,1	2,1			2,1	2,1	4,9	4,9
UNIGE	30							2	2	2,5	2,5
UNIUD	12	2	2								

6   *a statement on the information flow between the Project and other related Project(s) part-financed under the ARTEMIS JU, the Community Frame Work Programme, and/or National Research Programmes)*

The most important activity during the reporting period is the technology assessment. This phase requires a deep analysis of the state of art at the node level and starts from the achievements of

	pSHIELD project. The analysis of the state of the art translates, from a practical point of view, in the study of other research projects in the area of SPD and on the use and inspiration on their results. The relation with pSHIELD is an "historical" relation and is entirely focused on the heritage that pSHIELD brings to nSHIELD.
7	*a statement on the dissemination activities and exploitation perspectives including an updated positioning with respect to the competitive situation in the field addressed by the Project and to other Projects (inside and outside ARTEMIS JU)*
	No dissemination activities were planned and have been performed during the reporting period.
8	*If applicable, propose corrective actions*
	n.a.

Table 2: WP3 Management Report

3.3   WP4

WP4 - Leader Selex Elsag
Period: 1 September 2011- 29 February 2012

<table>
<tr>
<td rowspan="2">1</td>
<td>A summary progress towards objectives, supported by measurable indicators and details for each task and each partner</td>
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<td>

During the first months of work for this task, an assessment of the nSHIELD SPD network technologies has been done, starting from the analysis of the results in terms of technologies identified in the pilot project pSHIELD.

The outcome of this activity has been used as input for Deliverable 4.1 "SPD Network Technology Assessment".

A preliminary identification of the new promising SPD Network technologies for SHIELD has been started, mainly basing on the know-how of the WP4 participants and on the open issues raised by the pSHIELD assessment.

The outcome of this activity will be included in D4.1 as well and will be used as baseline to organize the future work in WP4.

Thanks to these assessments, WP4 has been optimized in order to save management overhead and a precise allocation of WP4 partners has been done on the different activities in order to clearly identify the working groups.

The SPD Network functionalities study is now in progress, with the purpose of refinement and enrichment in comparison with pSHIELD middleware functionalities.

Another major discussion in progress is about SPD Networks requirements (this activity is required for WP4 progress) and regards the real possibility of their realization and validation.

In particular the following points are in discussion:

- the possibility to insert SPD requirements in the functional requirement of the wireless network based on nodes that are embedded systems

- the redefinition of general requirements to avoid misunderstanding in their realization

- specific requirements definition for different scenarios.

Since in nSHIELD there are some new partners, not previously involved in pSHIELD, in this phase there was a big information flow to permit new partners to be involved from the very beginning and very effectively in this project.

With this respect, mailing lists have been set up for information sharing and an internal document repository has been set-up to ease the work sharing for WP4 participants.

</td>
</tr>
<tr>
<td rowspan="2">2</td>
<td>Highlight clearly significant and tangible results</td>
</tr>
<tr>
<td>

WP4 contribution in requirement definition

Part of Deliverable 4.1: SPD Network technologies assessment.

</td>
</tr>
<tr>
<td>3</td>
<td>If applicable, explain the reasons for deviations from Annex I and their impact on other tasks as</td>
</tr>
</table>

	well as on available resources and planning
	The activity of SPD Networks requirements redefinition was necessary to avoid difficulties met during pSHIELD project development (WP6 development impact).
4	*If applicable, explain the reasons for failing to achieve critical objectives and/or not being on schedule and explain the impact on other tasks as well as on available resources and planning (the explanations should be coherent with the declaration by the project coordinator)*
	…
5	*a statement on the use of resources, in particular highlighting and explaining deviations between actual and planned person-months per work package and per beneficiary in Annex 1 (Description of Work)*
	…
6	*a statement on the information flow between the Project and other related Project(s) part-financed under the ARTEMIS JU, the Community Frame Work Programme, and/or National Research Programmes)*
	The SPD Networks cognitive solutions developed in pSHIELD has been considered to be the basis of the ARTEMIS-JU project nSHIELD WP4.
7	*a statement on the dissemination activities and exploitation perspectives including an updated positioning with respect to the competitive situation in the field addressed by the Project and to other Projects (inside and outside ARTEMIS JU)*
	The major exploitation perspective for technologies developed in WP4 is to push for the standardization of the SPD Network technologies to obtain a platform that can be used in different context to offer SPD services (or at least the possibility to compose SPD services).
	Moreover the adoption of cognitive algorithms should be enforced to increase the validity of the platform and other solutions should be taken into account too to extend its applicability.
	This opens the interactions with projects belonging to the cognitive elaboration area.
8	*If applicable, propose corrective actions*
	…

Table 3: WP4 Management Report

3.4   WP5

	WP5 - Leader Selex Elsag
	Period: 1 September 2011- 29 February 2012
1	*A summary progress towards objectives, supported by measurable indicators and details for each task and each partner* During the first two months of work for this task, an assessment of the pSHIELD Middleware technologies has been done, starting from the analysis of the pilot results in WP5. The outcome of this activity has been used as input for Deliverable 5.1 on Middleware Technologies assessment. Secondly, a preliminary identification of the new promising Middleware technologies for SHIELD has been started, mainly basing on the know-how of the WP5 participants and on the open issues raised by the pSHIELD assessment. The outcome of this activity will be included in D5.1 as well and will be used as baseline to organize the future work n WP5. Last, but not least, thanks to these assessment: i) WP5 has been optimized by coupling tasks 5.2 and 5.4 in order to save management overhead and ii) a precise allocation of WP5 partners has been done on the different activities in order to clearly identify the working groups. The middleware functionalities study is now in progress (with the purpose of refinement and enrichment in comparison with pSHIELD middleware functionalities). Another major discussion in progress is about middleware requirements (this activity is required for WP2 progress) and regards the real possibility of their realization and validation. In particular the following points are in discussion: • the possibility to insert SPD requirements in the Middleware functional requirements • the redefinition of general requirements to avoid misunderstanding in their realization • specific requirements definition for different scenarios. Since in nSHIELD there are some new partners, not previously involved in pSHIELD, in this phase there was a big information flow to permit new partners to be involved from the very beginning and very effectively in this project. With this respect, mailing lists have been set up for information sharing and an internal document repository has been set-up to ease the work sharing for WP5 participants.
2	*Highlight clearly significant and tangible results* WP2 contribution in requirement definition Deliverable 5.1 (SPD middleware and overlay technologies assessment)
3	*If applicable, explain the reasons for deviations from Annex I and their impact on other tasks as well as on available resources and planning* The activity of middleware and overlay requirements redefinition was necessary to avoid difficulties met during pSHIELD project development (WP6 development impact).
4	*If applicable, explain the reasons for failing to achieve critical objectives and/or not being on schedule and explain the impact on other tasks as well as on available resources and planning*

	(the explanations should be coherent with the declaration by the project coordinator)
	…
5	*a statement on the use of resources, in particular highlighting and explaining deviations between actual and planned person-months per work package and per beneficiary in Annex 1 (Description of Work)*
	…
6	*a statement on the information flow between the Project and other related Project(s) part-financed under the ARTEMIS JU, the Community Frame Work Programme, and/or National Research Programmes)*
	The Middleware developed in pSHIELD has been considered to be the basis of the ARTEMIS-JU project nSHIELD WP5.
7	*a statement on the dissemination activities and exploitation perspectives including an updated positioning with respect to the competitive situation in the field addressed by the Project and to other Projects (inside and outside ARTEMIS JU)*
	The major exploitation perspective for technologies developed in WP5 is to push for the standardization of the SPD Middleware to obtain a platform that can be used in different context to offer SPD services (or at least the possibility to compose SPD services). Moreover the adoption of the standard Common Criteria should be enforced to increase the validity of the platform and other Security standard should be taken into account too to extend its applicability.
8	*If applicable, propose corrective actions*
	…

Table 4: WP5 Management Report

3.5   WP6

This work package is not started yet; it will start on October the 1st 2012 as planned in the Technical Annex.

3.6   WP7

This work package is not started yet; it will start on March the 1st 2013 as planned in the Technical Annex.

3.7   WP8

WP 8 - Leader MGEP
Period: 1 September 2011- 29 February 2012

1	*A summary progress towards objectives, supported by measurable indicators and details for each task and each partner*
	The objectives of WP8 are: • Industrial Dissemination • Industrial Standardization of innovative solutions; • Industrial Exploitation of results. For the first 6 months, proper dissemination and standardization plans to be internally delivered were scheduled. The efforts during this period were mainly dedicated to elaborate the deliverable "D8.2 Dissemination Plan" that can be found in the Wiki: http://nshield.unik.no/wiki/File:D8.2_DisseminationPlan_Issue3_v008.pdf Regarding standardisation plan, during the kick-off meeting several ways to face the issue of standardisation were discussed and no specific approach was decided. Therefore, the standardisation plan has suffered a delay and is now due by June 2012. Finally, the other major milestone for this period was the project website that can be found at: http://www.newshield.eu. The description of the website and other online dissemination strategies are described in the above-mentioned deliverable D8.2.
2	*Highlight clearly significant and tangible results*
	Deliverables expected in the period Public D8.1 Web Site (M2) Internal D8.2 Dissemination Plan (M6) D8.3 Standardization Plan (M6) D8.1 and D8.2 have been finalized while D8.3 has been delayed to end of June.
3	*If applicable, explain the reasons for deviations from Annex I and their impact on other tasks as well as on available resources and planning*
	The main deviation in this WP is the decision to postpone the delivery of D8.3. This has no impact on any technical task of the project. The delivery of the D8.3 Standardisation Plan has been rescheduled by the end of June and no other corrective actions are necessary as this is not a critical document for the technical development of the project.
4	*If applicable, explain the reasons for failing to achieve critical objectives and/or not being on schedule and explain the impact on other tasks as well as on available resources and planning*

	(the explanations should be coherent with the declaration by the project coordinator)	
	The only deviation has already explained in the previous point.	
5	*A statement on the use of resources, in particular highlighting and explaining deviations between actual and planned person-months per work package and per beneficiary in Annex 1 (Description of Work)*	
	N/A	
6	*A statement on the information flow between the Project and other related Project(s) part-financed under the ARTEMIS JU, the Community Frame Work Programme, and/or National Research Programmes)*	
	No actions in this sense were taken so far.	
7	*A statement on the dissemination activities and exploitation perspectives including an updated positioning with respect to the competitive situation in the field addressed by the Project and to other Projects (inside and outside ARTEMIS JU)*	
	This are the major dissemination activities carried out during this period: • nSHIELD public website (http://www.newshield.eu).	
8	*If applicable, propose corrective actions*	
	No corrective actions apart from the rescheduling of D8.3 Standardisation Plan are planned.	

Table 5: WP8 Management Report

4   Project Beneficiary (Grouped by Country)

4.1   Italy

4.1.1   Ansaldo

Beneficiary:	ASTS
Work Package(s)	WP2- SPD metrics, requirements and system design
Task(s)	Task 2.1 Multi-technology requirements & specification Task 2.2 Multi-technology SPD metrics
Period:	1st Sept 2011 – 29st February 2012
Effort planned in this period:	Task 2.1 Multi-technology requirements & specification **PM=0,60** Task 2.2 Multi-technology SPD metrics **PM= 0,59**
Effort actual or spent in this period:	Task 2.1 Multi-technology requirements & specification **PM=0,60** Task 2.2 Multi-technology SPD metrics **PM=0,59**
% of work completed at the end of the period (indicative):	Task 2.1 Multi-technology requirements & specification 12**%** Task 2.2 Multi-technology SPD metrics 14.75**%**

Description of the activities carried out during the period to reach specific objectives within the task/WP:

Task 2.1

> ➢ Preliminary analysis of system requirements regarding the ASTS application scenario;
>
> ➢ Drafting of the section in charge of ASTS.

Task 2.2

> ➢ Preliminary analysis of document and SPD metrics;
>
> ➢ Drafting of the section in charge of ASTS.

Description of criticalities met during the period:

Corrective actions:

Meetings performed during the period:

> ➢ 2 February 2012: phone call
> ➢ Internal review meeting on 15 February 2012 in Brussels

Deviations between actual and planned person-months:

Dissemination activities and exploitation perspectives:

Table 6: Beneficiary Report ASTS

4.1.2 SELEX Elsag SE

Beneficiary[5]:	SELEX Elsag
Work Package(s)	WP1 – Project Management WP2 – SPD metrics, requirements and system design WP3 – SPD Node WP4 – SPD Network WP5 – SPD Middleware and Overlay WP6 – Platform integration, validation & demonstration WP7 – SPD Applications WP8 – Knowledge exchange and industrial validation
Task(s)	Task 1.1 – Project management Task 1.2 - Liaisons Task 2.1 - Multi-technology requirements & specification Task 2.2 - Multi-technology SPD metrics Task 2.3 - Multi-technology architectural design Task 3.1 - SDR/Cognitive Enabled node Task 3.2 - Micro node Task 3.3 - Power node Task 3.4 - Dependable self-x Technologies Task 4.1 - Smart SPD driven transmission Task 4.2 - Distributed self-x models Task 4.3 - Reputation-based resource management technologies Task 4.4 - Trusted and dependable Connectivity Task 5.1 – SPD driven Semantics Task 5.2 – Core SPD services Task 5.3 – Policy-based management Task 5.4 – Adaptation of legacy systems Task 6.1 – Multi-Technology System Integration

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[5] This report is per Beneficiary, and has to be provided for each WP in which it is involved each Beneficiary

	Task 6.2 – Multi-Technology Validation & Verification
	Task 7.1 – Railways security
	Task 7.3 – Dependable Avionic Systems
	Task 7.4 – Social Mobility
	Task 8.1 – Dissemination
Period:	1st Sept 2011 – 29st February 2012
Effort planned in this period:	Task 1.1 – Project management 2,0 PM
	Task 1.2 – Liaisons 1,0 PM
	Task 2.1 – Multi-technology requirements & specification – 2.0 PM
	Task 2.2 – Multi-technology SPD metrics – 3.0 PM
	Task 2.3 – Multi-technology architectural design – 1.0 PM
	Task 3.1 – SDR/Cognitive Enabled node 0,5 PM
	Task 3.2 – Micro node 0,5 PM
	Task 3.3 – Power node 0,0 PM
	Task 3.4 – Dependable self-x Technologies 0,0 PM
	Task 4.1 - Smart SPD driven transmission 4,0 PM
	Task 4.2 - Distributed self-x models 2,0 PM
	Task 4.3 - Reputation-based resource management technologies 0,0 PM
	Task 4.4 - Trusted and dependable Connectivity 0,0 PM
	Task 5.1 - SPD driven Semantics 1,0 PM
	Task 5.2 - Core SPD services 0,5 PM
	Task 5.3 - Policy-based management 2,0 PM
	Task 5.4 - Adaptation of legacy systems 0,0 PM
	Task 6.1 - Multi-Technology System Integration 0,0 PM
	Task 6.2 - Multi-Technology Validation & Verification 0,0 PM
	Task 7.1 - Railways security 0,0 PM
	Task 7.3 - Dependable Avionic Systems 0,0 PM
	Task 7.4 - Social Mobility 0,0 PM
	Task 8.1 – Dissemination 0,0 PM

Effort actual or spent in this period:	Task 1.1 – Project management 2,0 PM
	Task 1.2 – Liaisons 1,0 PM
	Task 2.1 - Multi-technology requirements & specification – 1 PM
	Task 2.2 - Multi-technology SPD metrics – 1 PM
	Task 2.3 - Multi-technology architectural design – 0.5 PM
	Task 3.1 - SDR/Cognitive Enabled node 0,5 PM
	Task 3.2 - Micro node 0,5 PM
	Task 3.3 - Power node 0,0 PM
	Task 3.4 - Dependable self-x Technologies 0,0 PM
	Task 4.1 - Smart SPD driven transmission 3,0 PM
	Task 4.2 - Distributed self-x models 1,0 PM
	Task 4.3 - Reputation-based resource management tech. 0,0 PM
	Task 4.4 - Trusted and dependable Connectivity 0,0 PM
	Task 5.1 - SPD driven Semantics 0,5 PM
	Task 5.2 - Core SPD services 0,5 PM
	Task 5.3 - Policy-based management 0,0 PM
	Task 5.4 - Adaptation of legacy systems 0,0 PM
	Task 6.1 - Multi-Technology System Integration 0,0 PM
	Task 6.2 - Multi-Technology Validation & Verification 0,0 PM
	Task 7.1 - Railways security 0,0 PM
	Task 7.3 - Dependable Avionic Systems 0.0 PM
	Task 7.4 - Social Mobility 0,0 PM
	Task 8.1 – Dissemination 0,0 PM
% of work completed at the end of the period (indicative):	Task 1.1 – Project management - 11,8%
	Task 1.2 – Liaisons - 16,7%
	Task 2.1 - Multi-technology requirements & specification – 25%
	Task 2.2 - Multi-technology SPD metrics – 16.7%
	Task 2.3 - Multi-technology architectural design – 16.7%
	Task 3.1 - SDR/Cognitive Enabled node – 25,0%
	Task 3.2 - Micro node – 25,0%

	Task 3.3 - Power node – 0,0%
	Task 3.4 - Dependable self-x Technologies - 0,0%
	Task 4.1 - Smart SPD driven transmission - 6,0%
	Task 4.2 - Distributed self-x models - 3,3%
	Task 4.3 - Reputation-based resource management technologies – 0,0%
	Task 4.4 - Trusted and dependable Connectivity – 0,0%
	Task 5.1 - SPD driven Semantics – 5,0%
	Task 5.2 - Core SPD services – 10%
	Task 5.3 - Policy-based management - 0,0%
	Task 5.4 - Adaptation of legacy systems – 0,0%
	Task 6.1 - Multi-Technology System Integration - 0,0%
	Task 6.2 - Multi-Technology Validation & Verification – 0,0%
	Task 7.1 - Railways security - 0,0%
	Task 7.3 - Dependable Avionic Systems – 0,0%
	Task 7.4 - Social Mobility – 0,0%
	Task 8.1 – Dissemination - 0,0%

Description of the activities carried out during the period to reach specific objectives within the task/WP:

- Task 2.1

  ➢ Analysis of SPD requirements on Middleware and Overlay layers;

  ➢ Analysis of standard methodologies on SPD requirements definition;

  ➢ Contribution to the D2.1.1 "System Requirements and Specification" defining the requirements of Middleware and Overlay functionalities;

  ➢ Contribution to the internal review of D2.1.1 (contribution derived from pSHIELD results).

Objectives: defining the requirement of the nSHIELD framework driven by the use case

Results: inputs to the D2.1.1 deliverables and proposition of a standard methodology

- **Task 2.2**

  ➢ Study of metrics for SPD multilayer approach and analysis of methodologies for metrics gathering;

  ➢ Analysis of the state of the art of the existing metrics on SPD to merge with pSHIELD results;

  ➢ Analysis and study in depth of Common Criteria standard;

  ➢ Analysis of SoA of existing composability approach (new proposals);

  ➢ Analysis and proposal of Quantitative Measurement of Metrics ;

> ➢ Contribution to the D2.2.1 "Preliminary SPD Metrics Specification" (contribution derived from pSHIELD results).

Objectives: defining the SPD metrics of the nSHIELD framework

Results: inputs to the D2.2.1 deliverables and proposition of a conceptual model approach on metrics

- **Task 2.3**

  ➢ Analysis of the SoA of Middleware architecture;

  ➢ Proposition of a Service Oriented architecture to address the seamless approach and interoperability requirements;

  ➢ Contribution to the D2.3.1 "Preliminary System Architecture Design" (contribution derived from pSHIELD results).

Objectives: defining the nSHIELD framework architecture

Results: inputs to the D2.3.1 deliverables on overall high level and middleware/overlay architecture

- **Task 3.1**

  ➢ Preliminary analysis of the SDR/Cognitive Enabled node architecture and requirements

  ➢ Contribution to the technical assessment

Objectives: defining the nSHIELD Cognitive Enabled node architecture

Results: inputs to the D3.1 deliverable "Technical Assessment"

- **Task 3.2**

  ➢ Preliminary analysis of the Micro node requirements and architecture

  ➢ Contribution to the technical assessment

Objectives: defining the nSHIELD Micro node node architecture

Results: inputs to the D3.1 deliverable "Technical Assessment"

- **Task 4.1**

  ➢ Preliminary analysis of the Smart SPD transmission

  ➢ Technical assessment on Smart SPD transmission technology

Objectives: defining the nSHIELD Smart SPD transmission architecture

Results: inputs to the D4.1 deliverable "Technical Assessment"

- **Task 4.2**

  ➢ Preliminary analysis of the distributed self-x models

  ➢ Technical assessment on the distributed self-x models

Objectives: defining the nSHIELD distributed self-x models node architecture

Results: inputs to the D4.1 deliverable "Technical Assessment"

- **Task 4.2**

  ➤ Preliminary analysis of the distributed self-x models

  ➤ Technical assessment on the distributed self-x models

Objectives: defining the nSHIELD distributed self-x models node architecture

Results: inputs to the D4.1 deliverable "Technical Assessment"

- **Task 5.1**

  ➤ Preliminary analysis of the

  ➤ Technical assessment on the SPD driven Semantics

Objectives: defining the nSHIELD SPD driven Semantics paradigm

Results: inputs to the D5.1 deliverable "Technical Assessment"

- **Task 5.2**

  ➤ Preliminary analysis of the Core SPD services

  ➤ Technical assessment on the Core SPD services

Objectives: defining the nSHIELD Core SPD services

Results: inputs to the D5.1 deliverable "Technical Assessment"

- **Task 5.3**

  ➤ Preliminary analysis of the Policy-based management

Technical assessment on the Policy-based management

Objectives: defining the nSHIELD Policy-based management paradigm

Results: inputs to the D5.1 deliverable "Technical Assessment"

Description of criticalities met during the period:

➤ Verification of feasibility of defined requirements

➤ Applicability of SPD metric new definitions on pSHIELD metrics core

Corrective actions:

➤ Make every partner (in particular new partners [no pSHIELD partners]) aware of known problems met during pSHIELD developments

Meetings performed during the period:

➤ 12th January 2012: phone call

➤ 15th February 2012: Review meeting in Brussels

Deviations between actual and planned person-months:
➢   …
Dissemination activities and exploitation perspectives:
➢   ….

Table 7: Beneficiary Report SE

4.1.3   I.P.S Sistemi Programmabili - Eurotech Security ETH

Beneficiary:	ETH
Work Package(s)	WP1 – Project Management WP2 – SPD Metric, requirements and system design WP3 – SPD Node
Task(s)	Task 1.1 Project management Task 2.2 Multi-technology requirements & specification Task 2.3 Multi-technology architectural design Task 3.2 Micro/Personal node Task 8.1 Dissemination
Period:	1st Sept 2011 – 29st February 2012
Effort planned in this period:	Task 1.1 Project management: 0,1 MM Task 2.1 Multi-technology requirements & specification: 0,5 MM Task 2.3 Multi-technology architectural design: 0,5 MM Task 3.2 Micro/Personal node: 6 MM Task 8.1 Dissemination: 0,1 MM
Effort actual or spent in this period:	Task 1.1 Project management: 0,1 MM Task 2.1 Multi-technology requirements & specification: 0,5 MM Task 2.3 Multi-technology architectural design: 0,5 MM Task 3.2 Micro/Personal node: 6 MM Task 8.1 Dissemination: 0,1 MM
% of work completed at the end of the period (indicative):	Task 1.1 Project management: 10 % Task 2.1 Multi-technology requirements & specification: 50 % Task 2.3 Multi-technology architectural design: 50 % Task 3.2 Micro/Personal node: 24 % Task 8.1 Dissemination: 10 %

Description of the activities carried out during the period to reach specific objectives within the task/WP:

During the first semester the activities have been focused on three main topics:
- definition of requirements and specifications,
- technology assessment,
- dissemination plan definition.

The description of the activities performed in the related tasks is provided in the following list:

- ➢ Task 1.1

  - o Management activities required by the project: financial and technical planning, management of research activities, internal review meeting preparation.

- ➢ Task 2.1

  - o Definition of requirements and specification of the aspects related to the "Face and Voice recognition" scenario. Contribution to the definition of requirements and specification of the overall nSHIELD platform.

- ➢ Task 2.3

  - o The design of the architecture of the "Face and Voice recognition" scenario has been started.

- ➢ Task 3.2

  - o During the first three months, the activities have been focused on a preliminary analysis of the "Face and Voice recognition scenario" in order to perform a technology assessment on this topic and to plan future research and implementation activities. This activity provided also a first outline of the architecture of the scenario (in conjunction with T2.3).

  - o Preliminary design of the architecture of the face recognition software.

  - o Preliminary design of the architecture of the voice verification software.

  - o Preliminary design of the architecture of the SPD application that will provide the functionalities of face recognition and voice verification.

  - o Responsible for deliverable D3.1 – "SPD node technologies assessment".

- ➢ Task 8.1

  - o Contribution to the definition of the dissemination plan and to redaction of the deliverable D8.2 "Dissemination Plan".

Description of criticalities met during the period:

- ➢ No deviations from plan for ETH during the period.

- ➢ D3.1 has a delay due to the following reasons: several partners were still working on pSHIELD activities and for them the technology assessment depends on pSHIELD; some partners started their activities later because of a delay in the signature of national contracts; D2.1 has been delayed and this influences also D3.1.

Corrective actions:

- ➢ As agreed by the consortium D3.1 has been delayed of one month. The delay doesn't influence the normal progress and the results of the project.

Meetings performed during the period:

- ➢ nSHIELD kick-off face-to-face meeting in Brussels, October 19, 2011. Participants from ETH: Paolo Azzoni

- ➢ nSHIELD Internal review meeting, Brussels, February 15. Participants from ETH: Paolo Azzoni

- ➢ Phone calls on project management and WP2. Participants from ETH: Paolo Azzoni

Deviations between actual and planned person-months:

➢ There are no deviations between actual and planned efforts in WP3 during the period.

Dissemination activities and exploitation perspectives:
➢ No dissemination activities was planned or performed during the period.

Table 8: Beneficiary Report ETH

4.1.4   Selex Galileo SG

Beneficiary:	SG
Work Package(s)	WP1 – Project Management WP2 – SPD Metric, requirements and system design WP3 – SPD Node WP4 – SPD Network WP5 – SPD Middleware & Overlay WP8 – Knowledge exchange and industrial validation
Task(s)	Task 1.1 Project management Task 1.2 Liaisons Task 2.1 Multi-technology requirements & specification Task 2.2 Multi-technology SPD metrics Task 3.1 SDR/Cognitive Enabled node Task 3.2 Micro/Personal node Task 3.3 Power node Task 4.1 Smart SPD driven transmission Task 4.4 Trusted and dependable Connectivity Task 5.1 SPD driven Semantics Task 5.2 Core SPD services Task 8.1 Dissemination Task 8.2 Standardization
Period:	1st Sept 2011 – 29st February 2012
Effort planned in this period:	Task 1.1 Project management – 5 MM Task 1.2 Liaisons – 1.25 MM Task 2.1 Multi-technology requirements & specification – 3 MM Task 2.2 Multi-technology SPD metrics – 1.15 MM Task 3.1 SDR/Cognitive Enabled node – 0.6 MM Task 3.2 Micro/Personal node – 0.6 MM Task 3.3 Power node – 0.7 MM Task 4.1 Smart SPD driven transmission – 0.4 MM

	Task 4.4 Trusted and dependable Connectivity – 0.4 MM
	Task 5.1 SPD driven Semantics – 0.2 MM
	Task 5.2 Core SPD services – 0.2 MM
	Task 8.1 Dissemination – 0.7 MM
	Task 8.2 Standardization – 0.4 MM
Effort actual or spent in this period:	Task 1.1 Project management – 5 MM
	Task 1.2 Liaisons – 1.25 MM
	Task 2.1 Multi-technology requirements & specification – 3 MM
	Task 2.2 Multi-technology SPD metrics – 1.15 MM
	Task 3.1 SDR/Cognitive Enabled node – 0.6MM
	Task 3.2 Micro/Personal node – 0.6 MM
	Task 3.3 Power node – 0.7 MM
	Task 4.1 Smart SPD driven transmission – 0.4 MM
	Task 4.4 Trusted and dependable Connectivity – 0.4 MM
	Task 5.1 SPD driven Semantics – 0.2 MM
	Task 5.2 Core SPD services – 0.2 MM
	Task 8.1 Dissemination – 0.7 MM
	Task 8.2 Standardization – 0.4 MM
% of work completed at the end of the period (indicative):	Task 1.1 Project management – 16%
	Task 1.2 Liaisons – 12.5%
	Task 2.1 Multi-technology requirements & specification – 60%
	Task 2.2 Multi-technology SPD metrics - 23%
	Task 3.1 SDR/Cognitive Enabled node – 12%
	Task 3.2 Micro/Personal node – 12%
	Task 3.3 Power node – 11.6%
	Task 4.1 Smart SPD driven transmission – 8%
	Task 4.4 Trusted and dependable Connectivity – 8%
	Task 5.1 SPD driven Semantics – 4%
	Task 5.2 Core SPD services – 4%
	Task 8.1 Dissemination – 14%

	Task 8.2 Standardization – 8%

Description of the activities carried out during the period to reach specific objectives within the task/WP:

The description of the activities performed in the related tasks is provided in the following list:

- ➢ WP1 (Task 1.1, Task 1.2)

    - o Management activities required by the project: financial and technical planning, management of research activities, internal review meeting preparation.

    - o Leading the definition of the "Quality Control Guidelines" deliverable (D1.2) which is approved from the consortium and ready to upload on wiki.

    - o Leading Liaisons activities of this task. Leading and contributing to the redaction of "Liaisons Plan" (D1.3) which is not finalized yet cause the heavily involvement of most partners in pSHIELD. This deliverable is postponed to the end of June. This delay has no impact on the project.

- ➢ WP2 (Task 2.1, Task 2.2)

    - o Definition of requirements and specification of the aspects related to the "Integrated Modular Avionics" scenario. Contribution to the definition of SPD requirements and specification of nSHIELD layers, in particular focusing on the middleware layer. Contributing on deliverable D2.1 and D2.2.

    - o Preliminary analysis of metrics and SPD standard for the SG scenario. The study is focused on dependability functionalities. Results of this analysis will be input to the D2.5.

- ➢ WP3 (Task 3.1, Task 3.2, Task 3.3)

    - o Analysis of Integrated Modular Avionics Nodes and defining requirements, focusing on the dependability and real time. Results of this activity will be the contribution to the D3.1.

- ➢ WP4 (Task 4.1, Task 4.4)

    - o Analysis of data transmission between Integrated Modular Avionics nodes. Integrity and confidentiality of data study for SG scenario has been started. Results of this activity will be contribution to the D4.1.

- ➢ WP5 (Task 5.1, Task 5.2)

    - o Analysis of semantics technology and interoperability between different SPD functionalities has been started. Results of this activity will be contribution to the D5.1

- ➢ WP8 (Task 8.1, Task 8.2)

    - o Contribution on providing information for the nSHIELD website.

    - o Contribution on providing information on nSHIELD Wiki.

    - o Contribution to the definition of the dissemination plan and to redaction of the deliverable D8.2 "Dissemination Plan".

    - o Leading the definition of the standardization plan. Several discussions were held on how to define the relevant deliverable. Studied different approaches on how to best meet a well-defined plan. However no specific solution were found at M6 and the finalization of this deliverable is postponed to June 2012. This delay is not impacting other activities.

Description of criticalities met during the period:

➢ No deviations from plan for SG during the period.

➢ Some deliverables have a delay due to the following reasons: several partners were still working on pSHIELD activities and for them the technology assessment depends on pSHIELD; some partners started their activities later because of a delay in the signature of national contracts

Corrective actions:

➢ The delay of some deliverable does not impact the upcoming deliverables. However a recovery plan has been established and the project will be on track on month 12.

➢ Amendments to the project have been approved in order to have better results.

Meetings performed during the period:

➢ nSHIELD kick-off face-to-face meeting in Brussels, October 19, 2011.

➢ nSHIELD Internal review meeting, Brussels, February 15. Participants from ETH: Paolo Azzoni

➢ Phone calls on project management, WPs management and TMC.

Deviations between actual and planned person-months:

➢ N/A

Dissemination activities and exploitation perspectives:

➢ The project has been added within the R&D projects portfolio and presented to the SG Management.

➢ nSHIELD was presented at the ARTEMIS & ITEA Co-summit 2011 on 25-26 October 2011 in Helsinki, Finland.

➢ Further activities will be carried out as project execution is more advanced.

Table 9: Beneficiary Report SG

4.1.5   SESM scarl SESM

Beneficiary:	SESM
Work Package(s)	WP3 – SPD Node WP7 – SPD Applications
Task(s)	Task 3.3 Power node Task 7.3 Dependable Avionic
Period:	1st Sept 2011 – 29st February 2012
Effort planned in this period:	Task 3.3 Power node: 0 PM Task 7.3 Dependable Avionic: 0 PM
Effort actual or spent in this period:	Task 3.3 Power node: 0 PM Task 7.3 Dependable Avionic: 0 PM
% of work completed at the end of the period (indicative):	Task 3.3 Power node: 0% Task 7.3 Dependable Avionic: 0%

Description of the activities carried out during the period to reach specific objectives within the task/WP: ➤ SESM's effort within the first reporting period has been limited to the participation to Kick-Off and first periodic plenary meeting.
Description of criticalities met during the period: ➤ Nothing to report.
Corrective actions: ➤ Nothing to report.
Meetings performed during the period: ➤ KO Meeting in Brussels – 19/10/2011 ➤ First Periodic Meeting in Brussels – 16/02/2012
Deviations between actual and planned person-months: ➤ Nothing to report.
Dissemination activities and exploitation perspectives: ➤ Nothing to report for the moment.

Table 10: Beneficiary Report SESM

4.1.6   Università degli Studi di Genova UNIGE

Beneficiary:	UNIGE
Work Package(s)	WP3 - SPD Node WP4 - SPD Network
Task(s)	Task 3.4 Dependable self-x technologies Task 3.5 Cryptographic technologies Task 4.1 Smart SPD driven transmission Task 4.2 Distributed self-x models
Period:	1st Sept 2011 – 29th February 2012
Effort planned in this period:	Task 3.4 Dependable self-x technologies: 2PM Task 3.5 Cryptographic technologies: 2.5PM Task 4.1 Smart SPD driven transmission 1.5PM Task 4.2 Distributed self-x models 1PM
Effort actual or spent in this period:	Task 3.4 Dependable self-x technologies: 2PM Task 3.5 Cryptographic technologies: 2.5PM Task 4.1 Smart SPD driven transmission 1.5PM Task 4.2 Distributed self-x models 1PM
% of work completed at the end of the period (indicative):	Task 3.4 Dependable self-x technologies: 13% Task 3.5 Cryptographic technologies: 16% Task 4.1 Smart SPD driven transmission 7.5% Task 4.2 Distributed self-x models 20%

Description of the activities carried out during the period to reach specific objectives within the task/WP:

- Task 3.4

  ➢ Preliminary analysis and evaluation of state-of-the-art on automatic access control, denial-of-services (DoS), self-configuration and self-recovery.

  ➢ Analysis of cross-dependencies with other architectural levels.

- Task 3.5

  ➢ Goal: Technology assessment: cryptographic solutions for low- energy, low-processing devices

  ➢ Completed activities:

    o Analysis of the state of the art

- o Preliminary analysis and evaluation of state-of-the- art cryptographic technologies

- o Preliminary design of a cryptographic framework based on Elliptic Curve Cryptography (ECC)

- o Contribution to Deliverable D3.1

- Task 4.1

  ➢ Final goal: Design and development of SPD-based transmissions methodologies among nSHIELD node levels

  ➢ Activities and results

  - o Preliminary analysis of the state of the art of SPD-based transmissions methodologies

  - o Contribution to Deliverable D4.1

- Task 4.2

  - o Final goal: Design of distributed self-management and self-coordination schemes for unmanaged and hybrid managed/unmanaged networks

  ➢ Completed activities:

  - o Preliminary analysis and evaluation of state-of-the-art distributed self-management and self-coordination schemes

  - o Contribution to Deliverable D4.1

Description of criticalities met during the period:

➢ Transition of the WP3 Leadership from Eurotech Security (ETH) to Integrated Systems Development (ISD)

➢ In order to be able to complete the technology assessment input from WP2 about technical and practical specifications and guidelines in terms of communications and of defense against network attacks is urgently needed

Corrective actions:

➢ A stronger coordination from the WP3 leader is needed

➢ Receiving WP2 input

Meetings performed during the period:

➢ Kick-off meeting 19-10-2011

➢ Phone conference 17-11-2011

➢ Project meeting 15-02-2012

Deviations between actual and planned person-months:

Dissemination activities and exploitation perspectives:

➢ No dissemination activities were carried out during this first period

Table 11: Beneficiary Report UNIGE

4.1.7   Università degli Studi di Udine UNIUD

Beneficiary:	UNIUD	
Work Package(s)	WP2 – SPD metrics, requirements and system design	
Task(s)	Task 2.1 – Multi-technology requirements & specifications Task 2.2 – Multi-technology SPD metrics Task 2.3 – Multi-technology architectural design	
Period:	1st Sept 2011 – 29st February 2012	
Effort planned in this period:	Task 2.1 – Multi-technology requirements & specifications:	1 PM
	Task 2.2 – Multi-technology SPD metrics:	1 PM
	Task 2.3 – Multi-technology architectural design:	1 PM
Effort actual or spent in this period:	Task 2.1 – Multi-technology requirements & specifications:	1 PM
	Task 2.2 – Multi-technology SPD metrics:	1 PM
	Task 2.3 – Multi-technology architectural design:	1 PM
% of work completed at the end of the period (indicative):	Task 2.1 – Multi-technology requirements & specifications:	100 %
	Task 2.2 – Multi-technology SPD metrics:	100 %
	Task 2.3 – Multi-technology architectural design:	100 %

Description of the activities carried out during the period to reach specific objectives within the task/WP:

➢ The activity has focused on the definition of a general SPD node/system requirements needed to provide a control over power consumption along the different levels of self-x re-configurability. In particular, the node, OS and middleware levels have been analyzed. Strategies of power control/optimization have been analyzed and architectural- and network-level optimizations have been identified to fulfill the requirements of the different SPD scenarios. The partitioning of some level of the memory hierarchy and the adoption of novel cache architectures - i.e. with a reduced tag comparison or with sequential querying of the tag and the data arrays, have been identified as viable options at the node level. System partitioning, indeed, has been identified as a still effective way for both redundancy (for dependability purposes) and power control, together with clock frequency control, both well-established strategies still very easy to implement and very effective. OS/Middleware specifications on how to reach and propagate the power-awareness at the network level have been identified. In addition, autonomic strategies based on epidemic dissemination/relaying of information have been defined to enforce collective behaviors of self-healing/self-execution for the distributed application at the network level, again in presence as to maintain limited, but even more, controlled the power budgets required for execution.

• Task 2.1

    ➢ Analysis of the state-of-the art in the field of power control at the node and system levels.

    ➢ Results: specifications on the detailed implementation for power control in the framework of network SPD distributed systems.

• Task 2.2

➢ Identification of power consumption metrics
➢ Results: detailed specifications on the methods that will be implemented at the different (node, OS, middleware, network) levels.
• Task 2.3
➢ Analysis of the state-of-the art with a cross-disciplinary scope.
➢ Results: specification on the autonomic, cellular-automata based architectural solution for self-x execution and optimization in the SPD framework.
Description of criticalities met during the period:
➢ NONE
Corrective actions:
➢ NONE
Meetings performed during the period:
➢ 18/10/2011: Kick-off meeting in Brussels; 16/11/2011: Meeting in Selex Galileo (Nerviano) for Italian negotiation; 17/11/2011: Conference Call; 30/11/2011: Conference Call; 3/2/2012: Conference Call.
Deviations between actual and planned person-months:
➢ NONE
Dissemination activities and exploitation perspectives:
➢ NONE

Table 12: Beneficiary Report UNIUD

4.1.8   Università degli studi di Roma "La Sapienza" UNIROMA1

Beneficiary:	UNIROMA1
Work Package(s)	WP1 - Project Management WP5 - SPD Middleware and Overlay
Task(s)	Task 1.1 Project Management Task 5.1 SPD driven Semantics Task 5.2 Core SPD services Adaptation of legacy systems (ex T5.2+T5.4) Task 5.4 Overlay monitoring and reacting system by security agents (ex T5.5)
Period:	1st Sept 2011 – 29st February 2012
Effort planned in this period:	Task 1.1: 0.5 PM Task 5.1: 0.9 PM Task 5.2 : 1.4 PM Task 5.4 : 1.9 PM
Effort actual or spent in this period:	Task 1.1: 0.4 PM Task 5.1: 0.7 PM Task 5.2 : 1.1 PM Task 5.4 : 1.4 PM
% of work completed at the end of the period (indicative):	Task 1.1 :13.3% Task 5.1: 7.8% Task 5.2: 7.9% Task 5.4 :7.8%

Description of the activities carried out during the period to reach specific objectives within the WP1:

In the first project period, since UNIROMA1 is member of the Technical Management Committee, it has contributed to management activities by supporting the coordinator in the negotiation procedure and Kick-off meeting preparation as well as in the planning and organization of consortium work.

Moreover UNIROMA1, as Task Leader in WP5, has performed additional management activities to set-up and manage WP5 participants.

Description of the activities carried out during the period to reach specific objectives within the WP5:

Task 5.1 SPD driven Semantics

- ➢ Starting from the analysis of the outcome of the pilot project, a preliminary assessment of Semantic technologies has been done in terms of "achievements" and "challenges".

- ➢ With respect to the identified challenges, and taking into account the inputs from the pSHIELD final review, additional studies have been started to define the State-of-the-Art in Formal Modelling and Systems representation.

➢ New candidate technologies have been identified as potential enrichment of the SHIELD models (e.g. UML, SysML …).

➢ Advanced research on methodologies suitable for supporting the above-mentioned work.

Measurable Outcome: The above mentioned results will be used as inputs for Deliverable 5.1 on Middleware Technologies assessment.

Task 5.2 Core SPD services Adaptation of legacy systems (ex T5.2+T5.4)

➢ Starting from the analysis of the outcome of the pilot project, a preliminary assessment of Core SPD Services at Middleware level has been done in terms of "achievements" and "challenges".

➢ With respect to the identified challenges, additional investigations in the State-of-the-Art have been done to find new Middleware technologies suitable for SHIELD needs.

➢ Preliminary candidate technologies have been identified as potential enrichment of the SHIELD Middleware (e.g. Secure Discovery and Trusted Composition).

➢ Advanced research on methodologies suitable for supporting the above-mentioned work.

Measurable Outcome: The above mentioned results will be used as inputs for Deliverable 5.1 on Middleware Technologies assessment.

Task 5.4 Overlay monitoring and reacting system by security agents (ex T5.5)

➢ Starting from the analysis of the outcome of the pilot project, a preliminary assessment of Overlay Technologies has been done in terms of "achievements" and "challenges".

➢ With respect to the identified challenges, additional investigations in the State-of-the-Art have been started to find i) new (innovative) methods and algorithms for SHIELD overlay and ii) enriched functionalities to enable the interaction between several security agents and the harmonization with policy-based management. .

➢ Preliminary candidate technologies have been identified to potentially replace (and/or enrich) the Hybrid Automata Approach (e.g. Discrete Event Systems modelling).

➢ Advanced research on methodologies suitable for supporting the above-mentioned work.

Measurable Outcome: The above mentioned results will be used as inputs for Deliverable 5.1 on Middleware Technologies assessment.

Transversal WP activities and remarks:

➢ Support to WP5 coordination activities has been provided by UNIROMA1 (which, in particular, is T5.4 leader).

➢ Set up of a repository server to improve WP5 participants awareness and collaborative work.

The outcomes of the above mentioned activities, performed in the scope of WP5, will be used as inputs by WP2 with respect to requirement and architecture, thus resulting in additional contributions to WP2 documents

Description of criticalities met during the period:

➢ Since UNIROMA1 has been deeply involved in the closing of pSHIELD activities in January and February, there is a small delay in the delivery of D5.1 (about 1-2 months delay).

Corrective actions:

➢ No corrective actions are needed since: i) the underlying work is already advanced, ii) D5.1 is not linked to

any milestone and iii) the contents of D5.1 serve as inputs only for WP5 itself: so, the WP5 partners, while working to the deliverable, automatically share the relevant know-how, even if the deliverable is not closed yet.
Meetings performed during the period: ➤ 19th October, 2011 – Kick-Off meeting – Brussels (ARTEMIS JU) ➤ 16th November, 2011 – Italian Negotiation Meeting – Nerviano (SG) ➤ 17th November, 2011 – Project Assembly – Phone Call (SG) ➤ 3rd February, 2012 – TMC Phone Call (SG) ➤ 15th February, 2012 – nSHIELD Internal Meeting – Brussels (ARTEMIS JU)
Deviations between actual and planned person-months: N/A
Dissemination activities and exploitation perspectives: N/A

Table 13: Beneficiary Report UNIROMA

4.2   Spain

4.2.1   Acorde Technologies AT

Beneficiary:	AT – Acorde Technologies
Work Package(s)	WP1 – Project management WP2 – Scenarios, requirements and system design WP3 – SPD node WP6 – Platform Integration, validation & demonstration WP7 – SDP Applications WP8 - Knowledge exchange and industrial validation
Task(s)	Task 1.1 Project management Task 2.3 Multi-technology architectural design Task 3.2 Micro Node Task 3.3 Power Node Task 3.5 Cryptographic technologies Task 6.1 Multi-technology System Integration Task 6.2 Multi-technology Validation & Verification Task 7.1 Railways security Task 8.1 Dissemination Task 8.2 Standardization
Period:	1st Sept 2011 – 29st February 2012
Effort planned in this period:	Task 1.1 Project management – 1.5 PM Task 2.3 Multi-technology architectural design – 1.85 PM Task 3.2 Micro Node – 0.9 PM Task 3.3 Power Node – 0.9 PM Task 3.5 Cryptographic technologies – 1.04 PM Task 6.1 Multi-technology System Integration – 0 PM Task 6.2 Multi-technology Validation & Verification – 0 PM Task 7.1 Railways security – 0 PM Task 8.1 Dissemination – 0.3 PM Task 8.2 Standardization – 0.2 PM

Effort actual or spent in this period:	Task 1.1 Project management – 1.5 PM
	Task 2.3 Multi-technology architectural design – 1.5 PM
	Task 3.2 Micro Node – 0.6 PM
	Task 3.3 Power Node – 0.6 PM
	Task 3.5 Cryptographic technologies – 0.6 PM
	Task 6.1 Multi-technology System Integration – PM: 0
	Task 6.2 Multi-technology Validation & Verification - PM: 0
	Task 7.1 Railways security – PM: 0
	Task 8.1 Dissemination – 0.4 PM
	Task 8.2 Standardization – 0.2 PM
% of work completed at the end of the period (indicative):	Task 1.1 Project management 16.7%
	Task 2.3 Multi-technology architectural design 18.75%
	Task 3.2 Micro Node 8.57%
	Task 3.3 Power Node 8.57%
	Task 3.5 Cryptographic technologies 7.5%
	Task 6.1 Multi-technology System Integration – 0%
	Task 6.2 Multi-technology Validation & Verification – 0%
	Task 7.1 Railways security – 0%
	Task 8.1 Dissemination 20%
	Task 8.2 Standardization 10%

Description of the activities carried out during the period to reach specific objectives within the task/WP:

- Task 2.3 Multi-technology architectural design

  ➢ In this workpackage ACORDE will be focused in the architecture design taking into account our integrator profile. During this reporting time, preliminary requirements and specifications for the whole system has been exposed and our work has been oriented to the internal analysis of the requirements of the rest of the partners in order to have a better idea of the preliminary architecture design.

- WP3 (Task 3.2, task 3.3, task 3.5)

  ➢ Two main topics have started to be studied in the framework of this WP. The power supply protections of SDR/Cognitive enabled nodes and the anti-tamper modules. In the first case, some techniques to combine countermeasures in case of failure, together with protection circuits of the power supply units, are been analysed. Regarding anti-tamper modules, currently a preliminary study of the state of the art is being performed. These preliminary studies will be summarized in the internal deliverable D3.1.

  ➢ Results: These preliminary studies will be summarized in the internal deliverable D3.1

Description of criticalities met during the period:

➢ Modification of some PM in WP3 in order to align Acorde activities with TA (move from T3.3 to T3.1)
➢ Task 2.3 delay due the fact that D2.1 is not finalize in time and Task 2.3 beginning depends on the system requirement definition
Corrective actions:
➢ Not required.
Meetings performed during the period:
➢ Kick-off meeting, 19 October 2011 Brussels, JU, White Atrium   Project Meeting.
➢ Phone conference, 2011-11-17, 12:00:00
Deviations between actual and planned person-months:
➢ There is no deviation planed with respect to the total planned effort. The deviations within this semester will be compensated in the next ones.
Dissemination activities and exploitation perspectives:
➢ References to the project have been added to be presentations of the company, and included within the R&D projects portfolio. Further activities will be carried out as project execution is more advanced.

Table 14: Beneficiary Report ACORDE

PP

4.2.2   Fundacíon Tecnalia Research & Innovation TECNALIA

Beneficiary:	Tecnalia
Work Package(s)	WP1 - Management WP2 – SPD Metrics, Requirements and System Design WP3 – SPD Node WP8 – Support Activities
Task(s)	Task 1.1 Project management Task1.2 Liaisons Task 2.1 Multi-technology requirements & specification Task 2.2 Multi-technology SPD metrics Task 2.3 Multi-technology architectural design Task 3.1 Nano node Task 3.2 MicroPersonal Node Task 3.3 Power node Task3.4 Dependable self-x technologies Task 3.5 Cryptographic technologies Task 8.1 Dissemination Task 8.2 Standardization Task 8.3 Exploitation
Period:	1st Sept 2011 – 29th February 2012
Effort planned in this period:	Task 1.1 Project management: 1 PM Task 2.2 Multi-technology SPD metrics: 4PM Task3.4 Dependable self-x technologies: 1PM Task 3.5 Cryptographic technologies: 1PM Task 8.1 Dissemination: 0.5 PM
Effort actual or spent in this period:	Task 1.1 Project management: 1 PM Task 2.2 Multi-technology SPD metrics: 6.5 PM Task3.4 Dependable self-x technologies: 1.5 PM Task 3.5 Cryptographic technologies: 1.5 PM Task 8.1 Dissemination: 0.5 PM

% of work completed at the end of the period (indicative):	Task 1.1 Project management: 20 % Task 2.2 Multi-technology SPD metrics: 54.17 % Task3.4 Dependable self-x technologies: : 50 % Task 3.5 Cryptographic technologies: 50 % Task 8.1 Dissemination: 25 %

Description of the activities carried out during the period to reach specific objectives within the task/WP:

WP1:

Tecnalia has participated in WP1 successful progress providing the contributions requested by the leader.

- Task 1.1

  ➢ Tecnalia is involved in Task 1.1 "Project management" of WP1. Tecnalia has contributed to TA Amendment reviewing and giving the corresponding feedback as well as to the nSHIELD management report.

  ➢ Results:

     o Tecnalia contributions for TA Amendment (Review and feedback)

     o Tecnalia's management report

WP2:

The objective of Tecnalia in WP2 is to continue with the work already done in pSHIELD, defining quantitatively-oriented SPD metrics through nSHIELD's different layers as well as defining the proper SPD metrics of the overall system, and defining the correct procedures to evaluate them according to the nSHIELD multi-layer approach.

Tecnalia participated in WP2 regular meetings organized by the WP2 leader (THYIA). As Task 2.2 leader, Tecnalia contributed to the meetings providing Task2.2 progress and status information.

Despite Tecnalia is not being involved in Task 2.1 "Multi-technology requirements & specification", Tecnalia is reviewing the current version of the resultant deliverable from Task2.1 in order to check if the defined multi-technology requirements are aligned with the work in progress in the tasks where Tecnalia is involved.

- Task 2.2

  ➢ Tecnalia is involved in Task 2.2 "Multi-technology SPD metrics" of WP2 as the task leader. As task leader, Tecnalia has defined the following work methodology in order to accomplish the objectives of Task 2.2 in the planned period:

     o Firstly Tecnalia has generated a first version of the ToC (Table of Contents) and the technical approach for D2.5 "Preliminary SPD Metrics specification" deliverable and has delivered then to all partners involved in the task.

     o Once the first version of ToC is produced, Tecnalia has organized a T2.2 phone conference call in order to collect the feedback about the proposed ToC of D2.5 from all partners involved as well as to ask partners about their interests in the deliverable and the planned work they are going to do. As a result, a final version of ToC of D2.5 is produced, the technical approach is agreed and the distribution of work is performed.

     o Tecnalia has defined an iteration-based work plan to achieve a continuous improvement. The work plan is summarized in the following three milestones:

        1. 1st iteration of work: Deadline 30th March 2012. Objective: To collect all input/contributions from the partners and to generate the first intermediate version

of the D2.5.

2. 2nd iteration of work. Deadline 31st May 2012. Objectives: Once all contributions from the partners are collected, to improve D2.5 and to converge/align D2.5 to the outputs from the other tasks of WP2 (T2.1 Multi-technology requirements & specification and T2.3 Multi-technology architectural design.)

3. Final milestone: 31st August 2012 (M12).

➢ Results:

   o D2.5 ToC and technical approach defined.

   o Task 2.2 planning defined and in progress.

WP3:

The objective of Tecnalia in WP3 is to contribute analyzing the state of the art in the area of security in node level, specifically in mobile area and new secure elements (Cryptographic SD cards, Ad-hoc secure elements and Secured SIM). Tecnalia will also contribute, in summary, studying the possibility of inserting digital certificates for M2M in order to preserve privacy putting PKI infrastructure serving M2M (node to node).

- Task 3.4

   ➢ Tecnalia is involved in Task 3.4 "Dependable self-x technologies" of WP3. Tecnalia has started working in Task 3.4. Tecnalia is working in the analysis of inserting digital certificates for M2M in order to preserve privacy putting PKI infrastructure serving M2M (node to node).

- Task 3.5

   ➢ Tecnalia is involved in Task 3.5 "Cryptographic technologies" of WP3. Tecnalia has started working in Task 3.5 and has participated in WP3 successful progress contributing to WP3 leader requests as well as Task 3.5 leader requests, providing the contributions requested.

   ➢ Results:

      o Tecnalia contributions for D3.1

WP8:

Tecnalia has participated in WP8 successful progress providing the contributions requested by the leader.

- Task 8.1

   ➢ Tecnalia is involved in Task 8.1 "Dissemination" of WP8. Tecnalia has contributed to the deliverable D8.2 "Dissemination plan" reviewing the first version of the proposed document and giving feedback on it. Tecnalia has also identified the dissemination activities in which Tecnalia has planned to participate during the project.

   ➢ Results:

      o Tecnalia contributions for D8.2. Review, feedback and Tecnalia's dissemination activities.

Meetings performed during the period:

➢ 30th November 2011: WP2 phone conference call (organized by THYIA, Tecnalia participated in it)

➢ 12th January 2012: WP2 phone conference call (organized by THYIA, Tecnalia participated in it)

➢ 2nd February 2012: T2.2 phone conference call (organized by Tecnalia)

➢ 15th February 2012: nSHIELD Review meeting
nSHIELD Pleanry Meetings
nSHIELD Kick-off meeting (19th October 2011)
Tecnalia has participated in the kick-off meeting on 19th October 2011 in Brussels. Tecnalia has contributed providing a description of the organization, a description of its interests in the project and sharing its vision of the project.
nSHIELD Review meeting (15th February 2012)
Tecnalia has participated in the review meeting on 15th February 2012 in Brussels.
➢
Deviations between actual and planned person-months:
WP2:
➢ The deviations between actual and planned person months is because of the fact that the personnel cost rate used to calculate the planned project budget was done by researcher with higher cost rate, and the current personnel cost rate of the people involved in the project is lower than the planned one, but we have included more researchers to cope that gap. Therefore the calculated % work completed at the end of the period reported is not the actual one, in fact the actual %work completed at the end of this period is the planned one.
WP3:
➢ The deviations between actual and planned person months is because of the fact that the personnel cost rate used to calculate the planned project budget was done by researcher with higher cost rate, and the current personnel cost rate of the people involved in the project is lower than the planned one, but we have included more researchers to cope that gap. Therefore the calculated % work completed at the end of the period reported is not the actual one, in fact the actual %work completed at the end of this period is the planned one.
Dissemination activities and exploitation perspectives:
WP2:
➢ We are planning an internal dissemination plan that includes topics such as including nSHIELD progress/results in Tecnalia's website and analysing the conferences and journals that could fit with Tecnalia's work results during the nSHIELD project.
WP3:
➢ We are planning an internal dissemination plan that includes topics such as including nSHIELD progress/results in Tecnalia's website and analysing the conferences and journals that could fit with Tecnalia's work results during the nSHIELD project.

Table 15: Beneficiary Report Tecnalia

4.2.3   Mondragon Goi Eskola Politeknikoa MGEP

Beneficiary:	MGEP – Mondragon Goi Eskola Politeknikoa

Work Package(s)	WP1 - Project Management WP4 - SPD Network WP5 - SPD Middleware & Overlay WP6 - Platform integration, validation & demonstration WP8 - Knowledge exchange and industrial validation
Task(s)	Task 1.1 Project management Task 4.3 Reputation-based resource management technologies Task 4.4 Trusted and dependable Connectivity Task 5.1 SPD driven Semantics Task 6.1 Multi-Technology System Integration Task 8.1 Dissemination
Period:	1st Sept 2011 – 29st February 2012
Effort planned in this period:	Task 1.1 Project management - PM: 0.5 Task 4.3 Reputation-based resource management technologies - PM: 1 Task 4.4 Trusted and dependable Connectivity - PM: 0.8 Task 5.1 SPD driven Semantics - PM: 0 Task 6.1 Multi-Technology System Integration - PM: 0 Task 8.1 Dissemination - PM: 1.5
Effort actual or spent in this period:	Task 1.1 Project management PM: 0.5 Task 4.3 Reputation-based resource management technologies - PM: 1 Task 4.4 Trusted and dependable Connectivity - PM: 0.8 Task 5.1 SPD driven Semantics - PM: 0 Task 6.1 Multi-Technology System Integration - PM: 0 Task 8.1 Dissemination - PM: 1.5
% of work completed at the end of the period (indicative):	Task 1.1 Project management - 16% Task 4.3 Reputation-based resource management technologies – 8.33% Task 4.4 Trusted and dependable Connectivity - 10% Task 5.1 SPD driven Semantics - 0% Task 6.1 Multi-Technology System Integration - 0% Task 8.1 Dissemination - 13%

- **Task 1.1 Project management**

Reporting of progress and resource expenditure, production of deliverables, attendance of kick-off meeting (19th October, Brussels) and Technical meeting (15th February, Brussels).

- **Task 4.3 Reputation-based resource management technologies**

MGEP will contribute to define proper schemes aiming at identifying malicious users by developing suitable intrusion detection systems. During these first months, MGEP is researching in a new reputation-based distributed IDS for embedded systems. This approach differs from that one in pSHIELD, which was based on a centralised scheme.

Due to the difference between MANETs and standard networks, the developed IDS will be a reputation-based distributed anomaly detection system. In a MANET environment where the attacks may happen locally and not be visible for the whole MANET, or where even the nodes of the MANET can be subverted and become the origin of attacks, a distributed architecture offers several advantages compared to a centralised one. If IDS is centralised, an attacker can separate central agent from nodes, becoming all nodes of the network vulnerable. For this reason a decentralized architecture becomes almost indispensable. Our proposed IDS architecture focuses on the entire network and is fully independent from a central agent. Each node will have an IDS agent that will maintain its own integrity, and through collaboration between different agents the entire network will be monitored against attacks. Another aspect to have into account is the type of detection implemented by the IDS. Due to the vast amount of possible attacks against MANETs (many of which can even be unknown beforehand) and because is not easy to update a local knowledge base, we found anomaly and specification-based detection absolutely necessary.

Anomaly detection requires the capability to detect attacks based on the previously defined normal behaviour of the systems (including network traffic, application data…). The normal behaviour of a system will be characterised according to a training process where all activities are normal by definition. After this, each activity will be flagged as normal or anomalous.

The proposed IDS is a distributed anomaly detection system where each node will have an IDS agent that will monitor local activities. If the local agent cannot determine the nature of certain activity, this agent will contact other agents near him to determine if that activity is malicious or not. When anomalous activities are flagged locally, this information is distributed to the rest of the MANET and corrective measured may be adopted.

➢ Results: New distributed reputation based architecture has been proposed and it will be tested in the following months.

- **Task 4.4 Trusted and dependable connectivity**

One of the main concerns is the requirements definition for lightweight link-layer secure communication in wireless sensor network scenarios. This is taken into account in the architecture proposed and described in the previous paragraph (Task 4.3) as the agent based detection system minimises the communication needs.

➢ Results: New distributed reputation based architecture to be tested in the following months

- **Task 6.1 Multi-Technology System Integration**

This task has not started yet. Start date is Month 19.

- **Task 8.1 Dissemination**

During the first six months, MGEP, as leader of WP8 and Task 8.1, has coordinated the elaboration of D8.2 Dissemination Plan, which proper dissemination plans have been internally delivered. The nSHIELD project public website has also been deployed by MGEP and can be found at http://www.newshield.eu.

➢ Results: D8.1 Website and D8.2 Dissemination Plan.

Description of criticalities met during the period:
➢ The main efforts of the research group during the beginning of the project were devoted to redesigning and improving the IDS architecture in order to better suit to the nSHIELD requirements. On the other hand, setting up the project website, coordinating the deliverables due in Month 6 also needed relevant effort and time.
Corrective actions:
➢ No corrective actions are needed. The activities were carried out according to the technical annex.
Meetings performed during the period:
➢ Project Meeting, 15 February 2012, Brussels, JU, White Atrium   Project Meeting.
➢ Kick-off meeting, 19 October 2011 Brussels, JU, White Atrium   Project Meeting.
➢ Phone conference, 2012-02-01, 15:00:00
➢ Phone conference, 2011-11-17, 12:00:00
Deviations between actual and planned person-months:
➢ No major deviations need to be mentioned. The resources have been distributed according the schedule in the appendix.
Dissemination activities and exploitation perspectives:
➢ MGEP has contributed to the dissemination plan deliverable and deployed the nSHIELD public website (http://www.newshield.eu).

Table 16: Beneficiary Report MGEP

4.2.4   Indra Software Labs (ISL)

Beneficiary:	Indra Software Labs (ISL)
Work Package(s)	WP1 - Project Management WP4 - SPD Network WP5 - SPD Middleware & Overlay WP8 - Knowledge exchange and industrial validation
Task(s)	Task 1.1 Project Management Task 4.3 Reputation-based resource management technologies Task 4.4 Trusted and dependable connectivity Task 5.3 Policy-based management Task 8.1 Dissemination Task 8.2 Standardization: 0,6 PM
Period:	1st Sept 2011 – 29st February 2012
Effort planned in this period:	Task 1.1 1,2 Person Month Task 4.3 Reputation-based resource management technologies: 1,5 PM Task 4.4 Trusted and dependable connectivity : 1,5 PM Task 5.3 Policy-based management: 1 PM Task 8.1 Dissemination: 0,2 PM Task 8.2 Standardization: 0,6 PM
Effort actual or spent in this period:	Task 1.1 1,2 Person Month Task 4.3 Reputation-based resource management technologies: 1,5 PM Task 4.4 Trusted and dependable connectivity: 1,5 PM Task 5.3 Policy-based management: 1 PM Task 8.1 Dissemination: 0,2 PM Task 8.2 Standardization: 0,6 PM
% of work completed at the end of the period (indicative):	Task 1.1 12% Task 4.3 Reputation-based resource management technologies: 12,5% Task 4.4 Trusted and dependable connectivity: 6,82% Task 5.3 Policy-based management: 5,56% Task 8.1 Dissemination: 4%

	Task 8.2 Standardization: 15%

Description of the activities carried out during the period to reach specific objectives within the task/WP:

➢ **Task 1.1 Project Management, 12% of work completed at the end of the period for the following specific tasks:**

  ➢ Overall financial and technical planning;

  ➢ Controlling project scheduling and achievements;

  ➢ Reporting of progress and resource expenditure;

  ➢ Attendance to meetings of the PA, TMC, plenary, and review meetings;

  ➢ Liaison with other projects

  ➢ Handling the cost claim procedures and maintaining the financial budget status of the project

  ➢ Contributing to the technical description of the work and the Consortium Agreement;

  ➢ Contributing to visible outputs, such as deliverables, presentation material, papers, etc., thus adding a level of quality assurance to the project;

  ➢ Contributing to the website and administrative documentation;

  ➢ Administrative tasks to manage the national funding with the National Contact Point

  ➢ Attendance to internal meetings organized by the National Coordinator

➢ **Task 4.3 Reputation-based resource management technologies, 12,5% of work is completed in order to achieve the goals of the project.**

  • We have been analyzing the related work in reputation-based resource management technologies; we are also facing the first design steps of this task.

  • More in details, related to the reputation-based resource management technologies, we have studied the proposals applied in centralized and decentralized architectures, taking into account that one of the key issues of this task is "*the capability of authenticate resources and component without a central certification authority but basing on individual certification*".

➢ **Task 4.4 Trusted and dependable connectivity, 6,82% of work is completed in order to achieve the goals of the task.**

We have been analyzing the related work in trusted and dependable connectivity systems. More in details, we have reviewed secure communication network protocols in order to study in further steps their application in the nSHIELD. Also we are laying the groundwork on the nSHIELD framework at network level, given that it will guarantee secure and dependable transmissions/communications while the user privacy is respected.

➢ **Task 5.3 Policy-based management, 5,56% of work is completed in order to achieve goals of the project.**

We are studying how to design and implement policies in order to separate the security strategies from the implementation code of ES nodes. Moreover, we are analyzing how to change the security behavior of a node on live, i.e. without recoding or shutting down the node. Finally we are facing the autonomy issue in order to enrich the smart capabilities of the middleware using specific algorithms and tools

➢ **Task 8.1 Dissemination, 4% of work is completed in order to achieve the dissemination goals of the project.** We are laying the groundwork of the future dissemination plans of nSHIELD project. We also contributed to the nSHIELD dissemination, writing the internal document plan of nSHIELD, providing information for the official web page and completing the wiki of the project. We have contributed to the Deliverable D8.1.2 Dissemination Plan as well. ➢ **Task 8.2 Standardization, 5% of work is completed in order to achieve the standardization goals of the project.** We are developing a standardization plan which contains the following steps: verification, testing and validation of nSHIELD, in order to apply this project to many scenarios.
Description of criticalities met during the period: ➢
Corrective actions: ➢
Meetings performed during the period: ➢ First meeting of the project 19th October 2011. Due to an unexpected problem, Indra Software Labs did not attend the kick-off meeting, but prepared all the information requested in advance about the company and its responsibilities in the project and sent it to the Project coordinator in time. Also ISL had an internal meeting with the National coordinator before and after the meeting to get the certainty that ISL was well represented at the meeting and to have a direct feedback about the meeting results
Deviations between actual and planned person-months: ➢
Dissemination activities and exploitation perspectives: ISL has contributed to the preparation of NSHIELD website and also to the Dissemination plan and will be in charge of defining the Preliminary and the Final exploitation Plan

Table 17: Beneficiary Report ISL

4.3   Slovenia

4.3.1   THYIA   Tehnologije

Beneficiary:	THYIA
Work Package(s)	WP1 – Project Management WP2 - SPD metrics, requirements and system design WP3 – SPD Node WP4 – SPD network WP5 – SPD Middleware & Overlay
Task(s)	Task 1.1 Project Management Task 2.1 Multi-technology requirements & specification Task 2.2 Multi-technology SPD metrics Task 2.3 Multi-technology architectural design Task 3.1 SDR/Cognitive Enabled Node Task 3.2 Micro Node Task 3.5 Cryptographic Technologies Task 4.1 Smart SPD driven Transmission Task 4.3 Trusted and dependable Connectivity Task 5.1 SPD driven Semantics Task 5.2. Core SPD Services
Period:	1st Sept 2011 – 29st February 2012
Effort planned in this period:	Task 1.1 Project Management 1PM Task 2.1 Multi-technology requirements & specification 4PMs Task 2.2 Multi-technology SPD metrics 2PMs Task 2.3 Multi-technology architectural design 0.5PMs Task 3.1 SDR/Cognitive Enabled Node 1.2PMs Task 3.2 Micro Node 0.3 PMs Task 3.5 Cryptographic Technologies 1 PM Task 4.1 Smart SPD driven Transmission 0.75 PM Task 4.2 Distributed self-x models 0.25 Task 4.4 Trusted and dependable Connectivity 0.25 PM

	Task 5.1 SPD driven Semantics 0.75 PM
	Task 5.2. Core SPD Services 0.25 PM
Effort actual or spent in this period:	Task 1.1 Project Management 1PM
	Task 2.1 Multi-technology requirements & specification 4PMs
	Task 2.2 Multi-technology SPD metrics 2PMs
	Task 2.3 Multi-technology architectural design 0.5PMs
	Task 3.1 SDR/Cognitive Enabled Node 1.2PMs
	Task 3.2 Micro Node 0.3 PMs
	Task 3.5 Cryptographic Technologies 1PM
	Task 4.1 Smart SPD driven Transmission 0.75 PM
	Task 4.2 Distributed self-x models 0.25
	Task 4.4 Trusted and dependable Connectivity 0.25 PM
	Task 5.1 SPD driven Semantics 0.75 PM
	Task 5.2. Core SPD Services 0.25 PM
% of work completed at the end of the period (indicative):	Task 1.1 Project Management 100%
	Task 2.1 Multi-technology requirements & specification 100%
	Task 2.2 Multi-technology SPD metrics 100%
	Task 2.3 Multi-technology architectural design 100%
	Task 3.1 SDR/Cognitive Enabled Node 100%
	Task 3.2 Micro Node 100%
	Task 3.5 Cryptographic Technologies 100%
	Task 4.1 Smart SPD driven Transmission 100%
	Task 4.2 Distributed self-x models 100%
	Task 4.4 Trusted and dependable Connectivity 100%
	Task 5.1 SPD driven Semantics 100%
	Task 5.2. Core SPD Services 100%

Description of the activities carried out during the period to reach specific objectives within the task/WP:

- **Task 1.1**

As WP2 leader and member of TMC contributed in kick-off meeting (19th October, Brussels) and Technical meeting (15th February, Brussels), TMC activities, preparation of deliverables.

- **Task 2.1 - Task Leader**

The <u>main objective</u> is the definition of the SPD requirements and specifications for each layer (Node, Network, Middleware and Overlay), as well as for the overall nSHIELD system composed of SPD and Legacy ES Nodes, SPD Networks and Legacy ES Networks that allows implementation of four application scenarios: Railroad Security, Voice/facial Recognition, Dependable avionic systems, Social Mobility and Networking. With respect to this the following R&D activities are performed:

  ➢ Based on the description in TA for the nSHIELD, system, i.e., functional architecture overview and nSHIELD architectural view as in Figure 2-1 and Figure 2-2, deliverable D2.1 and D2.2 are developed. Document D2.1 is providing Preliminary System Requirements, which means jointly with D2.3 <u>Preliminary</u> SPD Metrics Specifications and D2.3 <u>Preliminary</u> System Architecture Design they are <u>preliminary documents</u> for the requirements, metrics and system architecture. So, in these documents are captured the initial R&D work carried out by WP2 contributors in the first period.

  ➢ D2.2 is based on D2.1 with a significant effort made by contributors to raise the quality of this document to a PU level. Since most of the requirements are preliminary ones, and because one of the contributors propose a new concept for its acceptance and challenging in March 2012, there a decision was made to change dissemination level of D2.2 from PU to CO (i.e., D2.2 will be an internal deliverable).

➢ Management of T2.1 work

➢ Contributions to D2.1 and D2.2

➢ Completion of D2.1 and D2.2

➢ Carry out a high quality review process for D2.2

- **Task 2.2**

The <u>main objective</u> is the definition of proper SPD metrics to assess the achieved SPD level of each layer, as well as of the overall nSHIELD system. With respect to this the following R&D activities are performed for deliverable D2.5:

  ➢ In chapter 5 THYIA is contributing to a background for system interoperation on all levels (node, network and middleware). THYIA's work is addressed on the SPD metrics for Node Layer and Network Layer considering the requirements specification from deliverable D2.2 and attributes which partners are interested in to achieve a desired SPD level. Static and dynamic SPD metrics driven by the requirements coming from the SMN scenario, at each of the considered layers, as well as for the overall system. Then the embedded system desired SPD level will be identified at each layer and for the overall system with respect to these metrics.

  ➢ In chapter 6 THYIA is contributing on the solutions for nSHIELD SPD metrics composition proposing one or more methods for metrics aggregation. We are contributing on is the proposed method for Security Assurance (SA), which is based on security assurance measurements. Security assurance (SA) is the objective confidence that an entity meets its security requirements. SA approach will be used as an approach to measure security assurances in the intelligent complex systems. This aggregation method constitutes an appropriate approach to combine all the operational security assurance values of relevant system entities. The interactions between entities are abstracted as relations between their representing attributes. The effects of the emergent relations are taken into account in the calculation of the security assurance value of an attribute in the context of a system. An optional approach to determine the security level of a system in terms of detected vulnerabilities and relations between them is the attack graphs approach. This approach focuses only on the static vision, the description of the system under study as implemented, and do not take into account system dynamic behaviour. THYIA will consider this method with attack graphs, which allow considering potential attacks and giving a clear picture about what attacks might happen in a network and about their consequences.

> ➢ THYIA is preparing contributions in chapter 2 – Introduction and chapter 3 – Terms and definitions depending on other chapters.

> ➢ For the next deliverable D2.8 THYIA is preparing inputs also in chapter 7 - nSHIELD Metrics System deployment in relation with the use case.

> ➢ Contributions in D2.2

> ➢ Participated in PhCs

- **Task 2.3**

The <u>main objective</u> is the definition of nSHIELD system architecture, identification of the SPD layers functionalities, their intra and inter layer interfaces and relationships. With respect to this the following R&D activities are performed:

> ➢ Study of the nSHIELD system and network infrastructure with emphasis on the four application scenarios

> ➢ Study and design of SDR/Cognitive Enabled Node, as well as other nodes

> ➢ Selection of the requirements specification developed in D2.1 and D2.2 that are relevant for this task and D2.3

- **Task 3.1 – Task Leader**

The <u>main objective</u> in this task is development of SDR/Cognitive Enabled node. With respect to this the following R&D activities are performed:

> ➢ Study of pervasive systems and small ES devices with limited resources both in terms of hardware and software
> ➢ Study of SDR/Cognitive properties and functionalities and possibility to integrated SPD functionalities at node level
> ➢ Study of Wireless Sensor Network as one representative of nSHIELD SPD network
> ➢ Contributions to D3.1

- **Task 3.2**

The <u>main objective</u> in this task is development of an extension of SDR/Cognitive Enabled node with additional capabilities (sensing, network, mobility, ..) which has more capable SW and HW resources and performance. With respect to this the following R&D activities are performed:

> ➢ Studies on:
> - SPD and Trusted ESs based on TPM and MTM solutions
> - SPD Node Protocols
> - Cryptographic technologies

- **Task 3.5**

The <u>main objective</u> in this task is development of SPD technologies that will be adopted in task 3.1 and 3.2 at different level depending on the complexity of the node and considering its HW/SW capabilities, its requirements and its use. With respect to this the following R&D activities are performed:

> ➢ Studies on:
> - Cryptographic technologies
> - ECC technologies for SDR/Cognitive and micro nodes

- **Task 4.1**

The <u>main objective</u> in this task is design and development of SPD-based transmissions methodologies among nSHIELD node levels, exploiting the SPD built-in features of nodes developed in Task 3.1 and 3.2. With respect to this the following R&D activities are performed:

➢ Studies on:
- Architectural, technical and practical specifications and guidelines developed in D2.1, D2.2, D2.3, and D2.5 in terms of communications and of defence against network attacks
- SDR/Cognitive and SPD functionalities at network level

- **Task 4.4**

The <u>main objective</u> in this task is implementation of the requirements for lightweight link-layer secure communication in wireless sensor networks used for proves of concept of the nSHILED scenarios. With respect to this the following R&D activities are performed:
➢ Studies on:
- CIAA concept for smart driven transmission and trusted connectivity

- **Task 5.1**

The <u>main objective</u> in this task is development of semantic technologies that will be developed to address the interoperability among different SPD technologies for exchanging SPD information between the node, network, middleware and overlay layer. With respect to this the following R&D activities are performed:
➢ Studies on:
- common semantic languages derived by standard ones (OWL) in order to be easily processed in the embedded system world where the processing unit are limited in power and resources.

- **Task 5.2**

The <u>main objective</u> in this task is development of the core SPD services provides by the nSHIELD middleware. With respect to this the following R&D activities are performed:
➢ Studies on:
- SPD services (main features) for SMN scenario, service composition

Description of criticalities met during the period:

See WP2 explanation

Corrective actions:

➢ A join work of WPs leader and scenario leaders at TMC level should be performed regularly as it is planned or needed to overcome any criticality when it appear.

Meetings performed during the period:

➢ Project meetings mentioned in WP1

➢ PnCs mentioned in WP2, WP3, WP4 and WP5

Deviations between actual and planned person-months:

➢ N.A.

Dissemination activities and exploitation perspectives:

➢ N.A.

Table 18: Beneficiary Report THYIA

4.4 Norway

4.4.1 Movation AS MAS

Beneficiary:	Movation
Work Package(s)	WP5 - Platform integration, validation & demonstration WP6 – SPD Applications WP7 – Support Activities
Task(s)	Task 5.1 – Multi-technology System Integration Task 5.2 – Multi-Technology Validation & Verification Task 6.1 – Railroad Security Task 6.3 – Dependable Avionic Systems Task 6.4 – Social Mobility Task 7.1 – Dissemination Task 7.2 – Standardization Task 7.3 - Exploitation
Period:	1st Sept 2011 – 29st February 2012
Effort planned in this period:	Task 5.1 – Multi-technology System Integration - 0 PM Task 5.2 – Multi-Technology Validation & Verification - 0 PM Task 6.1 – Railroad Security - 0 PM Task 6.3 – Dependable Avionic Systems - 0 PM Task 6.4 – Social Mobility - 0 PM Task 7.1 – Dissemination - 0,5 PM Task 7.2 – Standardization - 0,5 PM Task 7.3 – Exploitation - 0 PM
Effort actual or spent in this period:	Task 5.1 – Multi-technology System Integration - 0 PM Task 5.2 – Multi-Technology Validation & Verification- 0 PM Task 6.1 – Railroad Security- 0 PM Task 6.3 – Dependable Avionic Systems - 0 PM Task 6.4 – Social Mobility- 1 PM Task 7.1 – Dissemination- 0 PM

	Task 7.2 – Standardization- 0 PM Task 7.3 - Exploitation- 0 PM
% of work completed at the end of the period (indicative):	Task 5.1 – Multi-technology System Integration - 0 % Task 5.2 – Multi-Technology Validation & Verification - 0 % Task 6.1 – Railroad Security - 0 % Task 6.3 – Dependable Avionic Systems- 0 % Task 6.4 – Social Mobility - 0 % Task 7.1 – Dissemination - 0 % Task 7.2 – Standardization - 0 % Task 7.3 – Exploitation - 0 %
The main discussions were internal discussions on how to provide impact. For detailed results please see the reporting foreseen in the yearly report covering 2011/2012	

Table 19: Beneficiary Report Movation AS MAS

4.4.2   ESIS Norge ESIS

Beneficiary:	**ESIS**
Work Package(s)	WP5 - Platform integration, validation & demonstration WP6 – SPD Applications WP7 – Support Activities
Task(s)	Task 5.1 – Multi-technology System Integration Task 6.4 – Social Mobility Task 7.3 - Exploitation
Period:	1st Sept 2011 – 29st February 2012
Effort planned in this period:	Task 5.1 – Multi-technology System Integration - 0 PM Task 6.4 – Social Mobility - 0 PM Task 7.3 – Exploitation - 0 PM
Effort actual or spent in this period:	Task 5.1 – Multi-technology System Integration - 0 PM Task 6.4 – Social Mobility- 0 PM Task 7.3 - Exploitation- 0 PM
% of work completed at the end of the period (indicative):	Task 5.1 – Multi-technology System Integration - 0 % Task 6.4 – Social Mobility - 0 % Task 7.3 – Exploitation - 0 %

Table 20: Beneficiary Report ESIS

4.4.3   Noom AS – Scandinavian Mobile Technology NOOM

Beneficiary:	**NOOM**
Work Package(s)	WP6 – SPD Applications
Task(s)	Task 6.4 – Social Mobility
Period:	1st Sept 2011 – 29st February 2012
Effort planned in this period:	Task 6.4 – Social Mobility - 1 PM
Effort actual or spent in this period:	Task 6.4 – Social Mobility- 1 PM
% of work completed at the end of the period (indicative):	Task 6.4 – Social Mobility - 5 %

Table 21: Beneficiary Report NOOM

4.5   Sweden

4.5.1   Swedish Institute of Computer Science SICS

Beneficiary:	SICS
Work Package(s)	WP2 - SPD metrics, requirements and system design WP3 - SPD Node
Task(s)	Task 2.1 Multi-technology requirements & specification Task 3.1 Nano node Task 3.2 Micro/Personal node
Period:	1st Sept 2011 – 29st February 2012
Effort planned in this period:	Task 2.1 Multi-technology requirements & specification: 2MM Task 3.1 Nano node 1MM Task 3.2 Micro/Personal node 1MM
Effort actual or spent in this period:	Task 2.1 Multi-technology requirements & specification: 2MM Task 3.1 Nano node 1MM Task 3.2 Micro/Personal node 3MM
% of work completed at the end of the period (indicative):	Task 2.1 Multi-technology requirements & specification: 66% Task 3.1 Nano node 20% Task 3.2 Micro/Personal node 60%

Description of the activities carried out during the period to reach specific objectives within the task/WP:

➢ Detailed analysis of nano and micro nodes security requirements with special focus on providing a basis for the prototype platform to be used. Co-ordination of the efforts from the Swedish cluster. Input documented in the System Requirements and Specification, deliverables D2.1.1 (internal) and D2.1.2 (external).

➢ Requirements on architecture node and secure execution environment analysed and documented. Micro node target prototype platform for Swedish cluster selected based on the requirements analysis.

- **Task 2.1**
  ➢ During the first phase of the project we have analysed the security requirements for the nSHIELD nodes with special focus on the nano and micro nodes. One important input source has been the nSHIELD use case description.
  ➢ We have given input to and reviewed the internal deliverable D2.1.1.
  ➢ We have given input to and reviewed the external deliverable D2.1.2 (slightly delayed to lack of input from other partners).
  ➢ In order to pave the ground for the nano and micro nodes prototype development in WP3, we have put special focus on the node requirements and in particular giving input to the WP3 work with respect to prototype platform selection. Several different hardware platform options have been analysed and technical specifications have been retrieved and analysed.

- ➢ A target prototype platform for the nSHIELD Micro/Personal node was selected based on input from WP2.

- ➢ First results for creating secure execution on nano node obtained using the SICS hypervisor. The hypervisor will form the basis for secure isolation and protected execution according to the nSHIELD requirements.

- ➢ SICS in house developed hypervisor successfully ported to a TI OMAP3 hardware platform.

- **Task 3.1**
  - ➢ We continued to work on a previously developed (in house SICS) hypervisor that run on simulated hardware only using the OVP (http://www.ovpworld.org/) simulation environment. This hypervisor was successfully ported from ARM v5 to ARM v7 on simulated hardware. This will allow us to adapt the software to ARM based nano node in the future nSHIELD work.

  - ➢ We analysed and made calculated benchmarks for the hypervisor running on simulated ARM v5 and v7 hardware. The plan is to report the results, both the design, security analysis and the performance figures as part of scientific submission paper.

- **Task 3.2**
  - ➢ Different target platform candidates for the Micro/Personal node prototyping were analysed based in input from WP2. After evaluating cost, performance, support and security features against each other, finally, the Beagbone (http://beagleboard.org/bone) platform was selected as target system.

  - ➢ The in-house developed SICS hypervisor was successfully ported to a Beaglboard (will not be the final nSHIELD prototype target though) hardware and first performance figures were obtained.

The SICS hypervisor internal software structure was analysed and we started the work with restructuring the software to make it more portable to different hardware platforms in the future. As a result we are now working with a two layered approach were the core hypervisor functionality runs in its own layer and interface most platform depended hardware functions through well-defined internal API (specified in the project).

Description of criticalities met during the period:

- ➢ The requirements work has almost proceeded according to plan.

- ➢ The analysis/review of D2.1.1 and D2.1.2 has been slightly delayed due missing timely input from some nSHIELD partners.

- ➢ WP3: No deviations from plan during the period.

Corrective actions:

- ➢ Document review has been speeded up as soon as the draft requirements specifications have been released internally. This means that we have been able to reduce the delay and the work has proceeded *almost* according to the original plan.

- ➢ We are currently ahead schedule in WP3 with respect to the original plan.

Meetings performed during the period:

- ➢ nSHIELD kick-off face-to-face meeting in Brussels, October 19, 2011. Participants from SICS: Christian Gehrmann and Viktor Do

- ➢ nSHIELD WP2 phone conference, November 17, 12.00-13.00. Participants from SICS: Christian Gehrmann

- ➢ nSHIELD WP2 phone conference, November 30, 10.00-10.30. Participants from SICS: Christian Gehrmann

- ➢ nSHIELD WP2 phone conference, January 12, 10.00-10.30. Participants from SICS: Christian Gehrmann

- ➢ nSHIELD Swedish node co-ordination face- to-face meeting, Kista (Stockholm). February 7. Participants from SICS: Christian Gehrmann

- ➢ nSHIELD face-to-face meeting, Brussels, February 15. Participants from SICS: Christian Gehrmann

- ➢ nSHIELD kick-off face-to-face meeting in Brussels, October 19, 2011. Participants from SICS: Christian

Gehrmann and Viktor Do
➢ nSHIELD Swedish node co-ordination face- to-face meeting, Kista (Stockholm). February 7. Participants from SICS: Christian Gehrmann
➢ nSHIELD face-to-face meeting, Brussels, February 15. Participants from SICS: Christian Gehrmann
Deviations between actual and planned person-months:
➢ We had no deviations between actual and planned efforts in WP2 during the period.
➢ We had no deviations between actual and planned efforts in WP3 during the period.
Dissemination activities and exploitation perspectives:
➢ No dissemination activities was planned or performed during the period.

Table 22: Beneficiary Report SICS

4.5.2   T2 Data AB T2D

Beneficiary:	T2Data
Work Package(s)	WP2
Task(s)	Task 2.1
Period:	1st Sept 2011 – 29st February 2012
Effort planned in this period:	Task 2.1 - 1.25 MM (200 hours)
Effort actual or spent in this period:	Task 2.1 - 1.6 MM (250 hours)
% of work completed at the end of the period (indicative):	Task 2.1 - 31.2 %

Description of the activities carried out during the period to reach specific objectives within the task/WP:
    ➢ Coordination of prototype platform with SICS , contributed to System requirements (D2.1.1 and D2.1.2)
 	
• Task 2.1
 	
    ➢ Analyse of requirements and use cases
 	
    ➢ Selection of common prototype platform for Swedish Cluster
 	
    ➢ Preparation for production platform

Description of criticalities met during the period: ➢ Requirements carried out according to plan
Corrective actions: ➢ None

Meetings performed during the period:
    ➢ Kick-off meeting in Brussels October 19 2011 (Hans Thorsen)
 	
    ➢ Phone conference January 12 2012 (Hans Thorsen)
 	
    ➢ Cluster meeting February 7 at SICS (Hans Thorsen)

Deviations between actual and planned person-months: None
Dissemination activities and exploitation perspectives: None

Table 23: Beneficiary Report T2D

4.5.3   Telcred TELC

Beneficiary:	TELC
Work Package(s)	WP3 - SPD Node
Task(s)	Task 3.2 Micro/Personal node Task 3.5 Cryptographic technologies
Period:	1st Sept 2011 – 29st February 2012
Effort planned in this period:	Task 3.2 Micro/Personal node 1 PM Task 3.5 0 PM
Effort actual or spent in this period:	Task 3.2 Micro/Personal node 0.2 PM Task 3.5 0 PM
% of work completed at the end of the period (indicative):	Task 3.2 - 6.7% Task 3.5 N/A

Description of the activities carried out during the period to reach specific objectives within the task/WP:
➢ Up until now, TELCs activities have mainly consisted of coordination with the other Swedish partners, SICS and T2D.
 	
• Task 3.2
 	
   ➢ As part of this Task, TELC will develop a model for delegated authorization, suitable for implementation on SPD nodes. As of 2012-02-07, this work has just started.
 	
• Task 3.5
 	
   ➢ Work has not started on this task.

Description of criticalities met during the period: ➢ Work is progressing according to plan.
Corrective actions: ➢ N/A
Meetings performed during the period: ➢ 19th October 2011: Project meeting in Brussels ➢ 14th November 2011: Phone meeting with Josef Noll ➢ 7th February 2012: Meeting with SICS and T2D in Stockholm
Deviations between actual and planned person-months: ➢ The plan was to start our work on Task 3.2 early Jan 2012, but it had to be postponed approx. 1 month due to availability of a key resource.

Dissemination activities and exploitation perspectives:
➢ None so far

Table 24: Beneficiary Report TELC

4.6   Hungary

4.6.1   Security Evaluation Analysis and Research Lab. S-LAB

Beneficiary:	S-LAB
Work Package(s)	WP2,WP8 (with future contributions to WP3,WP5,WP6,WP7)
Task(s)	T2.1 - Multi-technology requirements & specification T2.2 - Multi-technology SPD metrics
Period:	1st Sept 2011 – 29st February 2012
Effort planned in this period:	T2.1 - Multi-technology requirements & specification: 3MM T2.2 - Multi-technology SPD metrics: 1MM
Effort actual or spent in this period:	T2.1 - Multi-technology requirements & specification: 3MM T2.2 - Multi-technology SPD metrics: 0MM
% of work completed at the end of the period (indicative):	T2.1 - Multi-technology requirements & specification Z=60% T2.2 - Multi-technology SPD metrics Z=0%

Description of the activities carried out during the period to reach specific objectives within the task/WP:
  ➤   S-LAB has taken part in work activities within WP2
 	
  ➤   We contributed to T2.1.1 (D2.1) Preliminary System Requirements
 	
  ➤   Contribution to T2.2 under discussion, will start in 02/2012

Description of criticalities met during the period: ➤   Slow ramp-up of project activities (S-LAB is waiting for activities to start in WP3, WP5)
Corrective actions: ➤   Being an SME, we plan to report and account for budget proportional to time as much as possible for next periods

Meetings performed during the period:
  ➤   2012.10.16 Project kick-off meeting, Brussels
 	
  ➤   2011.11.30 phone conference for WP2 (D2.1.1)
 	
  ➤   2012.01.12 phone conference for WP2 (D2.1.1)
 	
  ➤   2012.02.02 phone conference for WP2 (D2.5)
 	
  ➤   2012.02.15 Project meeting, Brussels

Deviations between actual and planned person-months: ➤   The ramp-up of actual work started later than expected, thus S-LAB's contribution to the project is lower than it was anticipated.

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Dissemination activities and exploitation perspectives:

> ➢ Planning of dissemination initiatives at S-LAB

> > o   Planned contribution to T8.1 (D8.2) dissemination plan, 1MM

Table 25: Beneficiary Report SEARCH-LAB

4.7   Greece

4.7.1   ATHENA Research and Innovation Centre ATHENA

Beneficiary:	ATHENA RC / Industrial Systems Institute
Work Package(s)	WP1 – Project management WP2 – SPD metrics, requirements and system design WP3 - SPD Node
Task(s)	Task 1.1 Project management Task 2.2 Multi-technology SPD metrics Task 2.3 Multi-technology architectural design Task 3.4 : Dependable self-x Technologies Task 3.5 : Cryptographic technologies
Period:	1st Sept 2011 – 29st February 2012
Effort planned in this period:	Task 1.1 Project management : - Task 2.2 Multi-technology SPD metrics : 0,5PMs Task 2.3 Multi-technology architectural design Task 3.4 : Dependable self-x Technologies : 0,5PM Task 3.5 : Cryptographic technologies : 0,5PM
Effort actual or spent in this period:	Task 1.1 Project management : - Task 2.2 Multi-technology SPD metrics : - Task 2.3 Multi-technology architectural design Task 3.4 : Dependable self-x Technologies : 0,5PM Task 3.5 : Cryptographic technologies : 0,5PM
% of work completed at the end of the period (indicative):	Task 1.1 Project management : Task 2.2 Multi-technology SPD metrics : - Task 2.3 Multi-technology architectural design: - Task 3.4 : Dependable self-x Technologies : 16.7% Task 3.5 : Cryptographic technologies : 10%

Description of the activities carried out during the period to reach specific objectives within the task/WP:

The effort put, with respect to WP2 / T2.2 activities, ATHENA / Industrial Systems Institute in the first 3 months is as follows:

> T2.2

Preliminary SPD Metrics Specification for the network layer

Relative contribution will be provided to deliverable D2.5

With respect to WP3 activities, ATHENA / Industrial Systems Institute is intended to put effort on certain items as they are presented below per task:

> T3.4

Assessment of a number of defence mechanisms against DDoS attacks,

Ingress/Egress filtering, Packet Marking/Logging, Self reconfiguration and

sustainability, Deep packet inspection, Integration of the mechanisms inside

the SPD network architecture

Evaluation and redesign of the mechanisms with regard to the node classes

> T3.5

Novel cryptographic key exchange algorithm (Controlled Randomness)

Less frequent key exchanges

Lower control channel utilization

Higher security vs. Cryptanalysis

Multiple valid keys per time

Low (to zero) processing overhead

The effort put per task in the first 3 months is as follows:

> T3.4

Assessment of a number of defence mechanisms against DDoS attacks

> T3.5

Novel cryptographic key exchange algorithm (Controlled Randomness)

Relative contribution was provided to deliverable D3.1

Description of criticalities met during the period:

>

Corrective actions:

>

Meetings performed during the period:

> Brussels, Belgium: October 2011: Kick off meeting

> Brussels, Belgium: February 2012: Internal Review

>

Deviations between actual and planned person-months: ➤ …
Dissemination activities and exploitation perspectives: ➤ ….

Table 26: Beneficiary Report ATHENA

4.7.2   Hellenic Aerospace Industry

Beneficiary:	HAI
Work Package(s)	WP1 - Project Management WP2 - SPD Metrics, Requirements and System Design WP4 - SPD Network
Task(s)	Task 1.1 – Project Management Task 2.1 - Multi-technology requirements & specification Task 2.2 - Multi-technology SPD metrics Task 2.3 - Multi-Technology Architectural Design Task 4.3 - Reputation-based resource management technologies
Period:	1st Sept 2011 – 29th February 2012
Effort planned in this period:	Task 1.1 – Project Management, 1PM Task 2.1 - Multi-technology requirements & specification, 3 PM Task 2.2 - Multi-technology SPD metrics, 1 PM Task 2.3 - Multi-Technology Architectural Design, 3 PM Task 4.3 - Reputation-based resource management technologies, 1 PM
Effort actual or spent in this period:	Task 1.1 – Project Management, 0,5PM Task 2.1 - Multi-technology requirements & specification, 1 PM Task 2.2 - Multi-technology SPD metrics, 0,5 PM Task 2.3 - Multi-Technology Architectural Design, 1,5 PM Task 4.3 - Reputation-based resource management technologies, 0,5 PM
% of work completed at the end of the period (indicative):	Task 1.1 – Project Management, 50% PM (4% of total) Task 2.1 - Multi-technology requirements & specification, 33% PM (20% of total) Task 2.2 - Multi-technology SPD metrics, 50% PM (10% of total) Task 2.3 - Multi-Technology Architectural Design, 50% PM (12% of total) Task 4.3 - Reputation-based resource management technologies, 50% PM (4% of total)

Description of the activities carried out during the period to reach specific objectives within the task/WP:
- Task 1.1

➢ HAI dedicated the aforementioned effort in project administration activities and participation in meetings

- Task 2.1

  ➢ HAI contributed in this first stage of the definition of requirements and specifications for the overall nSHIELD system, in the following:

    ✓ Classification of Requirements

    ✓ Registration of Requirements in several categories, including Network Functional Requirements in the selected Scenarios and Network Systemic SPD Requirements

- Task 2.2

  ➢ HAI contributed in this first stage of the definition of SPD Metrics for the overall nSHIELD system, in the following:

    ✓ Assessment of pSHIELD SPD Metrics

    ✓ Review of first versions of D2.5

- Task 2.3

  ➢ HAI contributed in this first stage of the definition of an architectural framework for the overall nSHIELD system, in the following:

    ✓ Connection with pSHIELD outcomes on Architecture and communication of this framework to nSHIELD partners

    ✓ Initiation of discussion and T2.3 activities

    ✓ Preparation of the first D2.3 draft issues

- Task 4.3

  ➢ HAI conducted a first assessment on Reputation-based resource management technologies

Description of criticalities met during the period:

➢ The period concerned introductory work reflected in internal deliverables and therefore, no important criticalities were met, apart from the settlement of the framework for nSHIELD Requirements, Metrics and Architecture

Corrective actions:

➢ In the upcoming periods HAI will replenish the difference between planned and actual spent effort

Meetings performed during the period:

➢ Participation in nSHIELD technical meeting on 15th of February 2012 (WP2 topics and activities were discussed extensively)

➢ Participation in a teleconference held on 03 of February (WP2 being an agenda topic)

➢ Participation in nSHIELD kick-off meeting, that was held on 19 of October 2011 (WP2 work plan was analyzed)

Deviations between actual and planned person-months:

➢ Any deviations from the originally planned person-months were due to the overlapping with the

predecessor project of pSHIELD, concerning HAI and other involved partners
Dissemination activities and exploitation perspectives: ➤ HAI participated in annual exhibition: ExpoSec 2012 - Homeland & Corporate Security Conference, held in Athens on 28-29 of February

Table 27: Beneficiary Report HAI

4.7.3 Integrated Systems Development ISD

Beneficiary:	ISD
Work Package(s)	WP1 - Project Management WP3 - SPD Node WP6 - Platform integration, validation & demonstration WP7 - SPD Applications
Task(s)	Task 1.1 Project management Task 3.3 Power node Task 6.1 Multi-Technology System Integration Task 7.1 Railways security Task 7.2 Voice / facial recognition Task 7.4 Social mobility
Period:	1st Sept 2011 – 29st February 2012
Effort planned in this period:	Task 1.1 Project management - 0.25 PM Task 3.3 Power node - 6 PM Task 6.1 Multi-Technology System Integration – 0 PM Task 7.1 Railways security – 0 PM Task 7.2 Voice / facial recognition – 0 PM Task 7.4 Social mobility – 0 PM
Effort actual or spent in this period:	Task 1.1 Project management - 0 PM Task 3.3 Power node - 0 PM Task 6.1 Multi-Technology System Integration – 0 PM Task 7.1 Railways security – 0 PM Task 7.2 Voice / facial recognition – 0 PM Task 7.4 Social mobility – 0 PM
% of work completed at the end of the period (indicative):	Task 1.1 Project management - 0% Task 3.3 Power node - 0% Task 6.1 Multi-Technology System Integration – 0% Task 7.1 Railways security – 0% Task 7.2 Voice / facial recognition – 0%

	Task 7.4 Social mobility – 0%

Description of the activities carried out during the period to reach specific objectives within the task/WP:

➢ ISD has not started work on the project as our national grant agreement has not been signed yet.

Description of criticalities met during the period:

➢ N/A

Corrective actions:

➢ N/A

Meetings performed during the period:

➢ N/A

Deviations between actual and planned person-months:

➢ Task 3.3 initiation has been delayed due to the lack of a national grant agreement. This issue is expected to be resolved in the next 1 or 2 months, based on information we have from our national funding authority. In case the issue is indeed resolved in the next couple of months, no impact is foreseen on the project deliverables due date.

Dissemination activities and exploitation perspectives:

➢ N/A

Table 28: Beneficiary Report ISD

4.7.4   Technical University of Crete TUC

Beneficiary:	TUC
Work Package(s)	WP2 - SPD METRICS, REQUIREMENTS AND SYSTEM DESIGN WP3 - SPD Node WP5 - SPD MIDDLEWARE & OVERLAY
Task(s)	Task 2.1 Multi-technology requirements & specification Task 2.2 Multi-technology SPD metrics Task 3.5 Cryptographic technologies Task 5.2 Core SPD services Task 5.3 Policy-based management
Period:	1st Sept 2011 – 29st February 2012
Effort planned in this period:	Task 2.1 Multi-technology requirements & specification, 3 PM Task 2.2 Multi-technology SPD metrics, 1 PM Task 3.5 Cryptographic technologies, 1 PM Task 5.2 Core SPD services, 0.5 PM Task 5.3 Policy-based management, 0.5 PM
Effort actual or spent in this period:	Task 2.1 Multi-technology requirements & specification, 3 PM Task 2.2 Multi-technology SPD metrics, 1 PM Task 3.5 Cryptographic technologies, 1 PM Task 5.2 Core SPD services, 0.5 PM Task 5.3 Policy-based management, 0.5 PM
% of work completed at the end of the period (indicative):	Task 2.1 Multi-technology requirements & specification, 100% Task 2.2 Multi-technology SPD metrics, 25% Task 3.5 Cryptographic technologies, 6.7% Task 5.2 Core SPD services, 5% Task 5.3 Policy-based management, 6.25%

Description of the activities carried out during the period to reach specific objectives within the task/WP:

➤ 24 EU projects related to various aspects of the nSHIELD project were reviewed, so as to locate exploitable deliverables, as well as to familiarize with background work. Furthermore, some more effort will be put in the results of this review, in order to be sent for publication in related journals/conferences.

• Task 2.1

  ➤ Contribution to D2.1.1 in Sections 9-12, as requested. A total of 160 requirements were stated as part of

the preliminary identification of the system's requirements.

> Work is in progress towards D2.1.2, which will reuse the contribution made to D2.1.1.

- Task 2.2

  > Following the 2012-02-02 PhC, the ToC of D2.5 was agreed among partners and TUC will contribute to all subsections of Section 5 – "Metrics in nSHIELD multi layer scheme (Converge with Requirements)". Work is in progress towards this direction.

- Task 3.5

  > A preliminary state-of-the-art review has been performed on various SPDs, so as to get acquainted with the latest developments in the field.

- Task 5.2

  > Some comments were requested and sent to the WP5 leader, regarding the contribution of TUC to WP5 – T5.3.

- Task 5.3

  > Some comments were requested and sent to the WP5 leader, regarding the contribution of TUC to WP5 - T5.3.

Description of criticalities met during the period:

> All required contributions were sent in time and no deviations of the schedule defined by the respective WP/task leader have been observed.

Corrective actions:

> -

Meetings performed during the period:

> 2011-10-19: Kick off phone conference

> 2011-11-17: Project Assembly

> 2011-11-30: WP2 PhC

> 2011-12-09: Skype conference among TUC members

> 2012-01-12: WP2 PhC

> 2012-01-24: Skype conference among TUC members

> 2012-02-02: WP2 PhC, D2.5

Deviations between actual and planned person-months:

> No deviations.

Dissemination activities and exploitation perspectives:

> Some more effort will be put in the results of the two background reviews, in order to be sent for publication in related journals/conferences.

Table 29: Beneficiary Report TUC

5　Deliverables and milestones tables

5.1　Deliverables

TABLE 1. DELIVERABLES									
Del. no.	Deliverable name	WP no.	Lead beneficiary	Nature	Dissemination level	Delivery date from Annex I (proj month)	Delivered Yes/No	Actual / Forecast delivery date	Comments
D1.1	Collaborative tools and document repository	1	SG	O	PP	2	Yes	October 2011	
D8.1	Web Site	8	MGEP	O	PU	2	Yes	December 2011	
D1.2	Quality Control Guidelines	1	SG	R	PP	3	No	March 2012	
D1.3	Liaisons Plan	1	SG	R	PP	3	No	June 2012	
D2.1	Preliminary System Requirements	2	THYIA	R	CO	3	Yes	February 2012	
D3.1	SPD node technologies assessment	3	ETH	R	CO	4	No	April 2012	
D4.1	SPD network technologies assessment	4	SE	R	CO	5	No	April 2012	
D5.1	SPD middleware and overlay technologies assessment	5	SE	R	CO	6	No	June 2012	
D1.4	Periodic	1	SG	R	PP	6	Yes	March 2012	

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	Management Report 1							
D2.2	Preliminary System Requirements and Specifications	2	THYIA	R	PU	6	No	June 2012	A second version of this document might be needed. Discussion is in progress.
D8.2	Dissemination Plan	8	MGEP	R	PP	6	Yes	March 2012	
D8.3	Standardization Plan	8	SG	R	PP	6	No	June 2012	

Table 30: Deliverables

5.2   Milestones

TABLE 2. MILESTONES								
Milestone no.	**Milestone name**	**Work package no**	**Lead beneficiary**	**Delivery date from Annex I**	**Achieved Yes/No**	**Actual / Forecast achievement date**	**Comments**
M1	Preliminary System Requirements and Specification	WP2	THYIA	M6	No	June 2012	

Table 31: Milestones

6   Project management

6.1   Consortium management tasks and achievements

The management structure and tasks are defined in details in the Consortium Agreement. All partners are included within that agreement according to the management structure described in the Technical Annex. In particular financial and technical actions were planned, the meetings and phone conferences (described below) of appropriate level were scheduled, the technical description of the work and the Consortium Agreement were maintained, the electronic media were maintained including website, collaborative tools, document repository and e-mail list. Contact and exchange of information between partners was provided on daily basis by means of email, phone calls and mail. In frame of consortium management tasks the role of project coordinator who is a contact point with JU was maintained.

6.2   Encountered problems

Project Coordinator change

New project coordination has been decided in November 2011 in order to have the JUGA signed. Reason: Selex Galileo could not sign the JUGA because the Italian NGA was not in place. The administrative coordination was proposed to Movation (Norwegian Authorities at that time signed the NGA) during the Project Assembly held on 17/11/2011 via conference call. Movation accepted administrative part of the coordination including correspondence to internal agreement mentioned in the Annex I to the JU Artemis Grant Agreement, while Selex Galileo would continue taking care of the technical part of the coordination. Official acceptance of PC change has been communicated by Project Officer on November the 21st 2011. The JUGA was successfully signed on December 2011.

6.3   Changes in the consortium

Coordination from SG to MAS. All partners are still the same and no change in the consortium occurred.

6.4   Project meetings

- Project Assembly was held for Project Coordinator change (Phone Conference 17/11/2011).

- TMC meeting was held and a set of amendments was collected (Phone Conference 3/2/2011).

- Internal review meeting was held in Brussels at the White Atrium on 15/2/2012.

- Many meetings related to Work Package activities were held via Phone Conferences.

Minutes of Meetings as well as corresponding documents are stored at the project official repository and Collaborative Tool (http://nshield.unik.no).

Figure 3: Project meetings

6.5   Project planning and status

Some deliverable are going to be delivered slightly late. However this delay is not impacting the project. A recovery plan is established and it was shown at the internal meeting of the Feb 15th 2012. These deliverables will be submitted by the First Annual Review with no impact on the following deliverables. All the partners agreed with that and no objections were met. The dates of the deliverables from M7 to M12 are not impacted and remain the same.

The reason for this delay are:

- Project started on September the 1st 2011 and almost all the partners couldn't work on the project because their NGA was not signed from their National Authorities.

- the D2.1-D2.2-D3.1-D4.1 and D5.1 required more effort from partners. The GANTT in the TA, for this reason, shows dates not realistic for the first 6 months.

- The pSHIELD project extension delayed some input needed in nSHIELD.

6.6   Impact of deviations

As explained in Para 6.5, after six months just few deviations on the delivery of some documents, however there are no negative impacts on the project.

6.7   Changes to the legal status

SELEX Communications and ELSAG DATAMAT joined and changed their official name to SELEX ELSAG.

6.8   Project website

- nSHIELD project website is available at address: http://www.newshield.eu

It contains general project information, public deliverables, and is used for information, news and promotion of the project. The service is provided by Mondragon.

- Collaborative Tool and Document Repository are available at address: http://nshield.unik.no

The access to repository is limited only to authorized persons. Semantic Media Wiki service is used by consortium for collaboration and day-to-day work and for document repository. It allows on meetings and phone conferences planning and wiki style discussion on technical problems. The service is provided by MAS.

6.9 Dissemination and exploitation activities

nSHIELD dissemination and exploitation activities are reported in D8.2.

6.10 Co-ordination activities

Email and the nSHIELD wiki are the main tool to communicate between partners. Call Conference were used to manage WP Kick Off.

Here a screenshot about list of action taken from the wiki tool:

Figure 4: Co-ordination activities

6.11 Cooperation with other projects

The consortium is establishing – professional and dissemination – partnerships with similar projects and initiatives to work the project's way into relevant scientific circles. This includes both offline (scientific collaboration) and online projections (e.g. featuring project information on each other's website).

Collaboration is foreseen with other EU-funded projects: SEARCH-LAB plans to evaluate possible synergies with ANIKETOS [5] project, and to approach relevant project participants to initiate collaboration.

Participating at ARTEMIS and FP7 events, Selex Galileo is actively looking for EU projects which could be synergetic with nSHIELD. Also, Selex Galileo proposes nSHIELD as solution to internal projects which need to have SPD functionalities.

The cooperation above is just few examples of cooperation with other projects. The deliverable D1.3 reports the complete liaison activity in which all nSHIELD partners are involved.

7   Explanation of the use of the resources

Here below Person-Month Status and Cost tables are reported. Explanations on deviations in the use of resources are reported in Para.3 and Para 4.

Contract N. 269317 Acronym: nSHIELD Period: 01.09.2011 - 29.02.2012		MAS	ASTS	AT	ATHENA	SE	TECNALIA	ESÍS	ETH	HAI	ISL	ISD	SG	MGEP	NOOM	S-LAB	SESM	SICS	T2D	TELC	THYIA	TUC	UNIGE	UNIUD	UNIROMA1
Workpackage 1: Project Management	**Actual WP total:**	0,00	0,00	1,50	0,00	3,00	1,00	0,00	0,10	0,50	1,20	0,00	6,25	0,50	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,40
	Planned WP total:	0,00	2,00	9,00	3,00	23,00	5,00	0,00	1,00	15,00	10,00	2,00	40,00	3,00	0,00	0,00	0,00	0,00	0,00	0,00	13,00	4,00	0,00	3,00	3,00
	%	0	0	17%	0	13%	20%	0	10%	3%	12%	0	16%	17%	0	0	0	0	0	0	0	0	0	0	13%
Workpackage 2: SPD Metric, requirements and system design	**Actual WP total:**	0,00	1,19	1,50	0,00	6,00	6,50	0,00	1,00	3,00	0,00	0,00	4,15	0,00	0,00	3,00	0,00	2,00	1,56	0,00	0,00	4,00	0,00	3,00	0,00
	Planned WP total:	0,00	9,00	8,00	6,00	13,00	12,00	0,00	2,00	22,00	0,00	0,00	10,00	0,00	0,00	10,00	0,00	6,00	10,00	0,00	20,00	10,00	0,00	3,00	0,00
	%	0	13%	19%	0	46%	54%	0	50%	14%	0	0	42%	0	0	30%	0	33%	16%	0	0	40%	0	100%	0
Workpackage 3: SPD Node	**Actual WP total:**	0,00	0,00	1,80	1,00	1,00	3,00	0,00	6,00	0,00	0,00	0,00	1,90	0,00	0,00	0,00	0,00	4,00	0,00	0,20	0,00	1,00	4,50	0,00	0,00
	Planned WP total:	0,00	0,00	22,00	8,00	8,00	6,00	0,00	25,00	4,00	0,00	58,00	16,00	0,00	0,00	12,00	15,00	20,00	26,00	6,00	30,00	37,00	30,00	12,00	0,00
	%	0	0	8%	13%	13%	50%	0	24%	0	0	0	12%	0	0	0	0	20%	0	3%	0	3%	15%	0	0
Workpackage 4: SPD Network	**Actual WP total:**	0,00	0,00	0,00	0,00	6,00	0,00	0,00	0,00	0,50	3,00	0,00	0,80	1,80	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,50	0,00	0,00
	Planned WP total:	0,00	0,00	0,00	10,00	84,00	14,00	0,00	0,00	15,00	34,00	0,00	10,00	20,00	0,00	0,00	0,00	0,00	0,00	0,00	12,00	14,00	25,00	12,00	0,00
	%	0	0	0	0	7%	0	0	0	3%	9%	0	8%	9%	0	0	0	0	0	0	0	0	10%	0	0
Workpackage 5: SPD Middleware & Overlay	**Actual WP total:**	0,00	0,00	0,00	0,00	3,50	0,00	0,00	0,00	0,00	1,00	0,00	0,40	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	3,20
	Planned WP total:	0,00	0,00	0,00	14,00	43,00	20,00	0,00	0,00	27,00	18,00	0,00	10,00	8,00	0,00	14,00	0,00	0,00	0,00	0,00	19,00	18,00	0,00	0,00	41,00
	%	0	0	0	0	8%	0	0	0	0	6%	0	4%	0	0	0	0	0	0	0	0	6%	0	0	8%
Workpackage 6: Platform integration, validation & demonstration	**Actual WP total:**	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	Planned WP total:	7,00	6,00	19,00	21,00	26,00	15,00	4,00	3,00	32,00	24,00	6,00	10,00	3,00	1,00	29,00	0,00	0,00	0,00	0,00	12,00	0,00	0,00	6,00	4,00
	%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Workpackage 7: SPD Applications	**Actual WP total:**	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	Planned WP total:	8,00	16,00	2,00	0,00	10,00	8,00	8,00	18,00	23,00	0,00	6,00	30,00	0,00	5,00	24,00	16,00	0,00	0,00	3,00	32,00	9,00	5,00	0,00	0,00
	%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Workpackage 8: Knowledge exchange and industrial validation	**Actual WP total:**	0,00	0,00	0,60	0,00	0,00	0,50	0,00	0,10	0,00	0,80	0,00	1,10	1,50	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	Planned WP total:	3,00	3,00	4,00	4,00	3,00	8,00	1,00	1,00	6,00	14,00	0,00	10,00	11,00	0,00	5,00	0,00	0,00	0,00	0,00	5,00	5,00	0,00	0,00	0,00
	%	0	0	15%	0	0	6%	0	10%	0	6%	0	11%	14%	0	0	0	0	0	0	0	0	0	0	0
Total Project PM	**Actual total:**	0,00	1,19	5,40	1,00	19,50	11,00	0,00	7,20	4,00	6,00	0,00	14,60	3,80	0,00	3,00	0,00	6,00	1,56	0,20	0,00	6,00	7,00	3,00	3,60
	Planned total:	18,00	36,00	64,00	66,00	210,00	88,00	13,00	50,00	144,00	100,00	72,00	136,00	45,00	6,00	94,00	31,00	26,00	36,00	9,00	143,00	97,00	60,00	36,00	48,00
	%	0	3%	8%	2%	9%	13%	0	14%	3%	6%	0	11%	8%	0	3%	0	23%	4%	2%	0	6%	12%	8%	8%

Table 32: Person-Month Status

7.1   MAS

<table>
<tr>
<td colspan="6">Table 3.1 Personnel, subcontracting and other major Direct cost items for Beneficiary MAS for the period</td>
</tr>
<tr>
<td rowspan="2">Work Package</td>
<td rowspan="2">Item description</td>
<td colspan="4">Amounts</td>
<td rowspan="2">Explanations</td>
</tr>
<tr>
<td>Fundamental research</td>
<td>industrial research</td>
<td>Experimental development</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>Personnel costs[6]</td>
<td></td>
<td>7.000</td>
<td></td>
<td>16.000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Subcontracting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Travel</td>
<td></td>
<td>1.050</td>
<td></td>
<td>1.050</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Remaining direct costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td colspan="2">TOTAL DIRECT COSTS[2]</td>
<td></td>
<td>8.050</td>
<td></td>
<td>17.050</td>
<td></td>
</tr>
<tr>
<td colspan="2">TOTAL INDIRECT COSTS[2]</td>
<td></td>
<td>9.660</td>
<td></td>
<td>9.660</td>
<td></td>
</tr>
</table>

Table 33: MAS Cost

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[6] **All costs reported are indicative,** and subject to acceptance of the Research Council of Norway.

7.2   ASTS

Period: 1st Sept 2011 – 29st February 2012 Table 3.1 Personnel, subcontracting and other major Direct cost items for Beneficiary Ansaldo STS for the period						
Work Package	Item description	Amounts				Explanations
		Fundamental research	industrial research	Experimental development	Total	
	Personnel costs		13118		13118	
	Subcontracting				0	
	Major cost item 'X'				0	
	Major cost item 'Y' ………..				0	
	Remaining direct costs				0	
TOTAL DIRECT COSTS		0	13118	0	13118	
TOTAL INDIRECT COSTS		0	5015	0	5015	

NOTE: The personnel cost calculation and related indirect cost is only an estimation because it is based on average hourly rates. The individual ones will be used for the official cost statement.

Table 34: ASTS Cost

7.3   AT

TABLE 3.1 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY ACORDE FOR THE PERIOD

Work Package	Item description	Amounts				Explanations
		Fundamental research	industrial research	Experimental development	Total	
	Personnel costs	21600 €	2700 €		24300€	
	Subcontracting					
	Major cost item 'X'					
	Major cost item 'Y' ………..					
	Remaining direct costs					
TOTAL DIRECT COSTS		21600 €	2700 €		24300€	
TOTAL INDIRECT COSTS		4320 €	540 €		4860 €	

Table 35: AT Cost

7.4   ATHENA

TABLE 3.1 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY ATHENA FOR THE PERIOD

Work Package	Item description	Amounts				Explanations
		Fundamental research	industrial research	Experimental development	Total	
WP3	Personnel costs		3000			
	Subcontracting					
WP1	Major cost item 'X' ………..		2000			Travelling Expenses
	Major cost item 'Y' ………..					
	Remaining direct costs					
TOTAL DIRECT COSTS			5000			
TOTAL INDIRECT COSTS			1000			

Table 36: ATHENA Cost

7.5   SE

Work Package	Item description	Amounts				Explanations
		Fundamental research	industrial research	Experimental development	Total	
1, 2, 3, 4, 5	Personnel costs	145600				*Salaries of 1 engineer and 1 lab technician for 13 months total*
	Subcontracting					
	Major cost item 'X'					
	Major cost item 'Y' ………..					
	Remaining direct costs					
TOTAL DIRECT COSTS		72800				
TOTAL INDIRECT COSTS		72800				

TABLE 3.1 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY SELEX ELSAG FOR THE PERIOD

Table 37: SE Cost

7.6 TECNALIA

	TABLE 3.1 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY TECNALIA FOR THE PERIOD					
Work Package	Item description	Amounts				Explanations
		Fundamental research	industrial research	Experimental development	Total	
1,2,3,8	Personnel costs	46502.01			46502.01	Salaries of 8 researchers and 1 project leader with different effort intensity depending on the project needs.
	Remaining direct costs	1720.37€			1720.37€	Artemisia fee and Audit cost
TOTAL DIRECT COSTS		48222.38			48222.38	
TOTAL INDIRECT COSTS		9300.40			9300.40	*Overhead rate 20% of personnel costs*

Table 38: Tecnalia Cost

7.7   ESIS

Work Package	Item description	Amounts				Explanations
TABLE 3.1 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY **ESIS** FOR THE PERIOD						
		Fundamental research	industrial research	Experimental development	Total	
	Personnel costs[3]	0	0		0	
	Subcontracting					
	Remaining direct costs					
TOTAL DIRECT COSTS[3]		0	0		0	ESIS left the project in Q1.2012
TOTAL INDIRECT COSTS[3]		0	0		0	

Table 39: ESIS Cost

7.8   ETH

Work Package	Item description	Amounts				Explanations
TABLE 3.1 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY ETH FOR THE PERIOD						
		Fundamental research	industrial research	Experimental development	Total	
1,2,3	Personnel costs	0 €	28800 €	0 €	28800 €	Salary of personnel involved in research, design and development activities. Salary of personnel involved in management activities.
	Subcontracting	0 €	0 €	0 €	0 €	
	Consumable	0 €	0 €	0 €	0 €	
TOTAL DIRECT COSTS		0 €	28800 €	0 €	28800 €	
TOTAL INDIRECT COSTS		0 €	14400 €	0 €	14400 €	Overhead for personnel costs (rate 50%)

Table 40: ETH Cost

7.9   HAI

TABLE 3.1 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY HAI FOR THE PERIOD (WP1)						
Work Package	Item description	Amounts				Explanations
		Fundamental research	industrial research	Experimental development	Total	
WP1 WP2 WP4	Personnel costs		3272,03 € 19644,17 € 3274,03 €			Salaries for 0,5PM (WP1) Salaries for 3PMs (WP2) Salaries for 0,5PM (WP4)
	Subcontracting					
	Travel		968,27 €			Participation in KOM (WP1)
	Major cost item 'Y' ………..					
	Remaining direct costs					
TOTAL DIRECT COSTS			4242,30 €(WP1) 19644,17€(WP2) 3274,03 €(WP4)			
TOTAL INDIRECT COSTS			220,00(WP1) 1000 € (WP2) 180 €(WP4)			

Table 41: HAI Cost

7.10   ISL

TABLE 3.1 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY ISL FOR THE PERIOD

Work Package	Item description	Amounts				Explanations
		Fundamental research	industrial research	Experimental development	Total	
1,4,5,8	Personnel costs		35071 €		35071€	Salaries for one Director, 2 experts and 2 senior engineers for one month and a half as an average
	Subcontracting					
	Major cost item 'X'					
	Major cost item 'Y' ………..					
	Remaining direct costs					
TOTAL DIRECT COSTS			35071€		35071€	
TOTAL INDIRECT COSTS			7014,2		7014,2€	

Table 42: ISL Cost

7.11   ISD

Work Package	Item description	Amounts				Explanations
		TABLE 3.1 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY ISD FOR THE PERIOD				
		Fundamental research	industrial research	Experimental development	Total	
	Personnel costs					
	Subcontracting					
	Major cost item 'X'					
	Major cost item 'Y' ………..					
	Remaining direct costs					
TOTAL DIRECT COSTS		0	0	0	0	Project not initiated yet.
TOTAL INDIRECT COSTS		0	0	0	0	

Table 43: ISD Cost

7.12   SG

TABLE 3.1 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY SELEX GALILEO FOR THE PERIOD

Work Package	Item description	Amounts				Explanations
		Fundamental research	industrial research	Experimental development	Total	
1,2,3,4,5, 8	Personnel costs	0	161260€		161260€	Salaries for management personnel and research activities (indicative)
	Subcontracting					
	Major cost item 'X'					
	Major cost item 'Y' ………..					
	Remaining direct costs					
TOTAL DIRECT COSTS			161260€		161260€	161260€
TOTAL INDIRECT COSTS			80630€		80630€	80630€

Table 44: SG Cost

7.13   MGEP

<table>
<tr><td colspan="6">TABLE 3.1 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY MONDRAGON FOR THE PERIOD</td></tr>
<tr><td rowspan="2">Work Package</td><td rowspan="2">Item description</td><td colspan="4">Amounts</td><td rowspan="2">Explanations</td></tr>
<tr><td>Fundamental research</td><td>industrial research</td><td>Experimental development</td><td>Total</td></tr>
<tr><td></td><td>Personnel costs</td><td></td><td>19.091,43</td><td></td><td>19.091,43</td><td>Junior researcher and staff salaries</td></tr>
<tr><td></td><td>Subcontracting</td><td></td><td>0</td><td></td><td>0</td><td></td></tr>
<tr><td></td><td>Major cost item 'X'</td><td></td><td>0</td><td></td><td>0</td><td></td></tr>
<tr><td></td><td>Major cost item 'Y' ………..</td><td></td><td>0</td><td></td><td>0</td><td></td></tr>
<tr><td></td><td>Remaining direct costs</td><td></td><td>594,62</td><td></td><td>594,62</td><td>Consumables and supplementary costs (Artemisia fee)</td></tr>
<tr><td colspan="2">TOTAL DIRECT COSTS</td><td></td><td>19.686,05</td><td></td><td>19.686,05</td><td></td></tr>
<tr><td colspan="2">TOTAL INDIRECT COSTS</td><td></td><td>3.818,29</td><td></td><td>3.818,29</td><td></td></tr>
</table>

Table 45: MGEP Cost

7.14   NOOM

Work Package	Item description	Amounts				Explanations
TABLE 3.1 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY NOOM FOR THE PERIOD						
		Fundamental research	industrial research	Experimental development	Total	
	Personnel costs[7]		2.800		2.800	
	Subcontracting					
	Travel		700		700	
	Remaining direct costs					
TOTAL DIRECT COSTS[3]			3.500		3.500	
TOTAL INDIRECT COSTS[3]			4.200		4.200	

Table 46: NOOM Cost

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[7] **All costs reported are indicative,** and subject to acceptance of the Research Council of Norway.

7.15   SLAB

<table>
<tr><td colspan="6">TABLE 3.1 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY SLAB FOR THE PERIOD</td></tr>
<tr>
<td rowspan="2">Work Package</td>
<td rowspan="2">Item description</td>
<td colspan="4">Amounts</td>
<td rowspan="2">Explanations</td>
</tr>
<tr>
<td>fundamental research</td>
<td>industrial research</td>
<td>Experimental development</td>
<td>Total</td>
</tr>
<tr>
<td>WP2</td>
<td>Personnel costs</td>
<td></td>
<td>14 134,15 €</td>
<td></td>
<td>14 134,15 €</td>
<td>Cost of one person per this period</td>
</tr>
<tr>
<td></td>
<td>Subcontracting</td>
<td></td>
<td>0 €</td>
<td></td>
<td>0 €</td>
<td></td>
</tr>
<tr>
<td>all</td>
<td>Travel costs</td>
<td></td>
<td>2 376.86 €</td>
<td></td>
<td>2 376.86 €</td>
<td>Two project meetings in Brussels</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Remaining direct costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td colspan="2">TOTAL DIRECT COSTS</td>
<td></td>
<td>16 511,01 €</td>
<td></td>
<td>16 511,01 €</td>
<td></td>
</tr>
<tr>
<td colspan="2">TOTAL INDIRECT COSTS</td>
<td></td>
<td>1 651,10 €</td>
<td></td>
<td>1 651,10 €</td>
<td>*overhead rate 10% of direct costs*</td>
</tr>
</table>

Table 47: SLAB Cost

7.16   SESM

TABLE 3.1 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY SESM FOR THE PERIOD 01/09/2011 – 29/02/2012

Work Package	Item description	Amounts				Explanations
		Fundamental research	industrial research	Experimental development	Total	
	Personnel costs	0			0	Travel costs are not reimbursed according to national agreement.
	Subcontracting					
	Major cost item 'X'					
	Major cost item 'Y' ………..					
	Remaining direct costs					
TOTAL DIRECT COSTS						
TOTAL INDIRECT COSTS						

Table 48: SESM Cost

7.17   SICS

TABLE 3.1 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY SICS FOR THE PERIOD

Work Package	Item description	Amounts				Explanations
		Fundamental research	industrial research	Experimental development	Total	
WP2	Personnel costs	12000€			12000€	Design and requirements analyses. Target micro/personal node platform evaluations.
WP3	Subcontracting			18760€	18760€	SICS hypervisor development and hardware adaptations work.
TOTAL DIRECT COSTS		12000€		18760€	30760€	
TOTAL INDIRECT COSTS		6600€		10318€	16918€	55% overhead costs.

Table 49: SICS Cost

7.18   T2D

Work Package	Item description	Amounts				Explanations
TABLE 3.1 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY T2DATA FOR THE PERIOD						
		Fundamental research	industrial research	Experimental development	Total	
WP2	Personnel costs		6000 Euro			Requirements work
WP3	Personal cost			10000 Euro		Platform coordination withon cluster
TOTAL DIRECT COSTS					16000 Euro	
TOTAL INDIRECT COSTS					2000 Euro	Overhead

Table 50: T2D Cost

7.19   TELC

TABLE 3.1 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY TELC FOR THE PERIOD

Work Package	Item description	Amounts				Explanations
		Fundamental research	industrial research	Experimental development	Total	
	Personnel costs		1360			0.2 PM
	Subcontracting					
	Major cost item 'X'					
	Major cost item 'Y' ………..					
	Remaining direct costs					
TOTAL DIRECT COSTS			1360			
TOTAL INDIRECT COSTS			748			Overhead 55% of personnel costs. Includes travel.

Table 51: TELC Cost

7.20   THYIA

TABLE 3.1 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY THYIA FOR THE PERIOD 1.9.2011-29.2.2012

Work Package	Item description	Amounts				Explanations
		Fundamental research	industrial research	Experimental development	Total	
1,2,3,4,5	Personnel costs		59.902,50		59.902,50	One senior and 3 yang researchers
	Subcontracting					
	Other cost					
	Major cost item 'Y' ………..					
	Remaining direct costs					
TOTAL DIRECT COSTS			59.902,50		59.902,50	
TOTAL INDIRECT COSTS			11.980,50		11.980,50	According with NFA

Table 52: THYIA Cost

7.21   TUC

Work Package	Item description	Amounts				Explanations
		Fundamental research	industrial research	Experimental development	Total	
WP2, WP3, WP5	Personnel costs	23849 €			23849	Salaries of full-time and part-time personnel, plus 1 PhD student at Technical University of Crete.
	Subcontracting					
	Major cost item 'X'					
	Major cost item 'Y' ………..					
	Remaining direct costs					
TOTAL DIRECT COSTS						
TOTAL INDIRECT COSTS						

TABLE 3.1 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY TUC FOR THE PERIOD

Table 53: TUC Cost

7.22   UNIGE

TABLE 3.1 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY UNIGE FOR THE PERIOD

Work Package	Item description	Amounts				Explanations
		Fundamental research	industrial research	Experimental development	Total	
WP3, WP4	Personnel costs	26000 € (WP1) 14000 €(WP2)	0 €	0 €	26000 €(WP1) 14000 €(WP2)	WP3:Salary of PhD at University of Genoa, Salary of Assistant Professor (AP) and Full Professor (FP) at University of Genoa according to the following breakdown: 3 PM Assistant Professor 1.5 PM Full Professor WP4: Salary of PhD at University of Genoa, Salary of Assistant Professor (AP) and Full Professor (FP) at University of Genoa according to the following breakdown: 1 PM Full Professor 1 PM Assistant Professor
TOTAL DIRECT COSTS		26000 €(WP1) 14000 €(WP2)	0 €	0 €	26000 €(WP1) 14000 €(WP2)	
TOTAL INDIRECT COSTS		10140 €(WP1) 5460 €(WP2)	0 €	0 €	10140 €(WP1) 5460 €(WP2)	overhead rate 39% of personnel costs

Table 54: UNIGE Cost

7.23 UNIUD

TABLE 3.1 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY UNIUD FOR THE PERIOD

Work Package	Item description	Amounts				Explanations
		Fundamental research	industrial research	Experimental development	Total	
	Personnel costs	22,456.64 €	0	0	22,456.64 €	Salaries for 2 Full Professors (1 PM each) + 1 Associate Professor (0.5 PM) and 1 Assistant Professor (0.5 PM)
	Subcontracting	0	0	0	0	
	Major cost item	0	0	0	0	
	Major cost item	0	0	0	0	
	Remaining direct costs	441.56 €	0	0	441.56 €	Travel expenses for the kick-off meeting in Brussels and the Italian negotiation in Selex Galileo (Nerviano).
TOTAL DIRECT COSTS		22,898.20 €	0	0	22,898.20 €	
TOTAL INDIRECT COSTS		4,491.33 €	0	0	4,491.33 €	Overhead: 20% of personnel cost

Table 55: UNIUD Cost

7.24   UNIROMA1

TABLE 3.1 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY UNIROMA1 FOR THE PERIOD

Work Package	Item description	Amounts				Explanations
		Fundamental research	industrial research	Experimental development	Total	
1,5	Personnel costs		27.000 €		27.000 €	n. 3.6 PM
	Subcontracting					
	Major cost item 'X'					
	Major cost item 'Y' ………..					
	Remaining direct costs					
TOTAL DIRECT COSTS			27.000 €		27.000 €	
TOTAL INDIRECT COSTS			13.500 €		13.500 €	

Table 56: UNIROMA Cost

8   Beneficiaries without a corresponding National Grant Agreement. Financial statements – Form C and Summary financial report

Separate financial statement (Form C) from each beneficiary not having concluded a Grant Agreement with the respective National Authority will not be submitted in the frame of this periodic report.

9   Certificates

For this intermediate report no certificate is required, in accordance with Article IV.4.3 of the Grant Agreement.