



Project no: 100204

pSHIELD

pilot embedded Systems - arcHtectureE for multi-Layer
Dependable solutions

FINAL REVIEW REPORT

Review Period 1.09.2011 to 31.12.2011

Document History			
Version	Date	Author	Changes
0.1	10.02.2012	Frank J. Furrer	Preassessment before final review meeting
0.2	19.02.2012	Frank J. Furrer	Draft Review Report submitted to ARTEMIS-JU
0.3	26.03.2012	Antonio Vecchio	Remarks and Comments by Project officer
1.0	27.03.2012	Frank J. Furrer	Final Review Report submitted to ARTEMIS-JU
1.1	02.05.2012	Antonio Vecchio	Final review report to be submitted to NFA (includes additional information requested at review meeting and data on costs provided by the consortium on 2.05.2012)

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Administrative Details		
Project acronym:	pSHIELD	
Project full title:	pilot embedded Systems - arcHitecturE for multi-Layer Dependable solutions	
Contract No.:	Artemis JU 100204	
Contract start date:	June 01, 2010	
Contract end date:	December 31, 2011	Note: a 6-month extension has been granted to the project after 1 st review
Based on DoW, Annex 1:	January 28, 2010	
Project Officer:	VECCHIO, Antonio	antonio.vecchio@artemis-ju.eu
Reviewer:	FURRER, Frank J.	frank.j.furrer@bluewin.ch
Document dissemination level:	Restricted	ARTEMIS JU, NFA and consortium

Logistics:

This was final review covering the period from 01.09.2010 to 31.12.2011. The review was held at the JU-ARTEMIS premises (White Atrium) in Brussels. The review duration was one full day (14.02.2012).

For this report an extended ARTEMIS-JU template was used.

TECHNICAL REVIEW REPORT

1. OVERALL ASSESSMENT

a. Executive summary

Comments, in particular highlighting the scientific/technical achievements of the Project, its contribution to the State of the Art and its impact:

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pSHILED is a pilot project focusing on the full demonstration of only a subset of the technical objectives stated in the original proposal SHIELD, which unfortunately - after a positive evaluation - could not be fully funded because of lack of funding in some of the ARTEMIS Member State.

In its final configuration, the project started off very badly, showing a lack of management (technical and administrative) and major delays in the implementation. At the first review meeting, the review panel considered an immediate termination of the project. However, the innovation ideas exposed by some of the core technical contributors in the consortium convinced the review panel that the project consortium, could redress from its underperformance.

A short deadline was given to prove the consortium capacity for reactivity and internal reorganization: an additional set of deliverables (including some rejected ones) were to be produced within 3 weeks time from the 1st review meeting. These deliverables arrived in time, were of excellent quality, and motivated to proceed with the project.

In addition, the consortium identified the need to change the coordinator, change that was promptly implemented through a contract amendment.

Those changes paid back and at the 2nd review, the consortium showed a tremendous progress (after a radical change in project management). This trend was further and better demonstrated at the last review meeting, where again impressive results were shown.

Globally, the project has reached most of its objectives, taking into account that the Technical Annex was a reworked version of the original SHIELD proposal, with limited effort and resources for the demonstrators. The major goal of proving the feasibility and the innovation potential of the proposed approach are fully achieved. The selected demonstrators are very effective and clearly show the added value of the pSHIELD technology.

All deliverables have been timely delivered and are accepted, except the final progress report, which required an update after the review meeting.

All open issues raised during the project (see section 7 below) have been handled to the full satisfaction of the review panel. The only open issue after the final review remained the resubmission of the final progress report, which had to include justification for some deviations in costs and effort.

On the technical side, the project has delivered some important breakthroughs and has documented them very well. Its main objective – demonstrate the feasibility of the foundation concepts – has been achieved and a good foundation is laid down for nSHIELD (an already funded ARTEMIS follow-up project). All project members contributed with valuable efforts to the final results. The cooperation within the project (after the 1st review) was excellent, cooperative and effective. The interaction with the review team was open and fair.

It was a worthwhile project and taxpayer's money has been well spent. Special mention is due to the fact that a large number of deliverables are public and are freely available on the project's website – which is a valuable service to the ES research community.

- Excellent progress (the Project has fully achieved its objectives and technical goals for the period and has even exceeded expectations).
- Good progress (the Project has achieved most of its objectives and technical goals for the period with relatively minor deviations).
- Unsatisfactory progress (the Project has failed to achieve critical objectives and/or is not at all on schedule).

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- b. Overall recommendations (e.g. on overall modifications, corrective actions at WP level, or re-tuning the objectives to optimise the impact or keep up with the State of the Art, or for other reasons, like best use of resources, re-focusing...).

The recommendations made by the project officer and the reviewer after the 2nd review have been accepted and implemented by the project consortium. All open issues have been closed.

Utilization of resources is in line with the results produced. There are some questions related to deviations of more than 10% in some figures and with respect to the amount requested for subcontracting by some project partners. Some additional explanation of variations in effort and some justification of costs are provided in the final progress report resubmitted after the review meeting, upon request of the project officer.

The last recommendation made by the review team is the authoring of a white paper which describes the basic concepts, paradigms, decisions and results of pSHIELD in order to give the nSHIELD project members solid foundation for a quick start.

The review panel has suggested some actions for nSHIELD (see section 7 below).

2. OBJECTIVES and WORKPLAN

- a. Have the objectives for the period been achieved? In particular, has the Project as a whole been making satisfactory progress in relation to the Technical Annex?

Yes

Partially

No

Comments

The project has fully caught up on the significant lack of performance seen during the 1st review. Most of the objectives promised in the TA have been reached, some even overachieved. The project has made highly satisfactory progress and demonstrated this in the final deliverables, including impressive demonstrators and pilot applications.

The structure of the work packages (as defined in the TA) has proven highly valuable and well suited to the implementation. The architecture of the deliverables also showed to be adequate to the final presentation of the pSHIELD results (With the agreement of the review panel the content of some deliverables was adapted).

- b. Has each work package (WP) been making satisfactory progress in relation to the Technical Annex?

Yes

Partially

No

Comments

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The excellent progress of all work packages has been demonstrated again by the presentations and pilot application demonstrations during the final review.

The most impressive progress – compared to the state of the project at the 1st review – has been demonstrated in WP1 (tremendously improved and effective project management) which is certainly the primary reason for the successful completion of the project work plan. Another reason of success is the excellent cooperation within the consortium partners (all WPs).

c. Have planned milestones and deliverables been achieved for the reporting period?

Yes

Partially

No

Comments

The re-planned milestones have been fully reached. Some backlog in formal documentation has been caught up.

All deliverables promised in the TA have been delivered and are of high quality, both in content and presentation. All deliverables are accepted. The final progress report has been resubmitted and it is accepted.

Deliverable Number	Deliverable Title	Deliverable Status (final review)	Remarks
D1.1.3	D1.1.3: Final Management Report	rejected	Received 9.2.2012 There are some questions related to deviations of more than 10% in some figures and with respect to the amount requested for subcontracting by some project partners. These have to be explained and justified in the resubmitted final progress report, expected latest February 29, 2012 by the project officer
D1.1.3	D.1.13: Final management Report – resubmitted version	accepted	Observations raised at the final meeting were addressed. Some data inconsistency remains which affects few partners (THYIA – unjustified costs, ES – increase in PM effort, ETH – recourse to subcontract)
D1.1.5	Quality Control Report	accepted	Received 2.2.2012
D1.2.1	Liaisons Report	accepted	Received 2.2.2012
D3.2	SPD nano, micro/personal node technologies prototype report	accepted	Received 2.2.2012
D3.3	SPD power node technologies prototype	accepted	Received 2.2.2012

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Deliverable Number	Deliverable Title	Deliverable Status (final review)	Remarks
	report		
D3.4	SPD self-x and cryptographic technologies prototype report	accepted (with reluctance)	Received 2.2.2012 Document incomplete (e.g. pages 13, 20, 21, 45)
D4.2	SPD network technologies prototype report	accepted	Received 2.2.2012
D5.3	pSHIELD semantic models report	accepted	Received 2.2.2012 Together with D5.1 excellent work!
D5.4	SPD middleware and overlay functionality report	accepted	Received 2.2.2012
D6.1.1	Platform integration report	accepted	Received 2.2.2012
D6.2.1	Platform validation and verification	accepted	Received 2.2.2012
D6.3.1	Lifecycle and SPD Support Report	accepted	Received 2.2.2012
D6.4.1	pSHIELD demonstrator	accepted	Received 2.2.2012
D7.1.1	Final Public Website www.pshield.eu	accepted	Accessed 10.2.2012 Great progress both in structure and content
D7.1.2	Dissemination Report	accepted	Received 2.2.2012 Excellent dissemination material produced and published. Valuable PhD and MS thesis generated
D7.2.1	Exploitation Plan	accepted	Received 2.2.2012 Exploitation avenues will have to be specified in more detail and with more evidence in the nSHIELD exploitation plan

- d. Are the objectives for the coming period(s) i) still relevant and ii) still achievable within the time and resources available to the Project?

Comments

This was the final review and no objectives are open.

A number of recommendations for nSHIELD objectives have been made by the review team (listed in the closing remarks in section 7 below)

3. RESOURCES

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- a. To the best of your estimate, have resources used, i.e. personnel resources and other major cost items, been (i) utilised for achieving the progress, (ii) in a manner consistent with the principle of economy, efficiency and effectiveness. Note that both aspects (i) and (ii) have to be covered in the answer.

i	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Yes	Partially	No
ii	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Yes	Partially	No

Comments

In the main reporting figures no obvious discrepancies between claimed effort and results are visible. Overall the project costs are in line with project output.

However, during the review meeting some questions were raised related to the deviations of more than 10% in PM effort of some partners (ASTS, ATHENA, HAI, and THYIA). Other observations were also addressed to the amount requested for subcontracting and other costs by some project partners (THYIA, ETH).

These observations led to the rejection of the management report. The consortium was then requested to review the figures and submit a new version of the management report with more detailed explanation on cost and effort.

In the resubmitted management report, the variation in PM efforts accounts for a shift of effort from THYIA (former coordinator) to ASTS (taking over more technical responsibilities on the demonstrators). The relatively low under spending of Greek partners is to be analysed in light of impact of the general economic crisis on the Greek industry.

The increase in the amount for subcontracting costs for ETH is explained as a need for the project: the production of the power node. This is indeed one of the good results of the project. The eligibility of the increase in subcontracting costs is to be verified by the NFA.

In the financial tables, the costs reported for the partner THYIA raise major concerns, as several inconsistency are not eliminated nor fully justified (incoherent cost evolution over the various reporting periods, overlaps in reporting periods, cost for external resources higher than in house resources, use of subcontracting, other costs, etc.). The costs reported by THYIA are therefore to be carefully analysed by the NFA, as eligibility and regularity of those costs are questioned and are to be checked against national rules. In particular, it appears that in the period July-december 2011, THYIA reports costs for 452.041 €, which is about 90% of the full project costs for the partner, while in the same period the PM effort is limited to 36, which is 50% of the total project effort for the partner.

- b. If applicable, please comment on large deviations with respect to the planned resources.

Comments

Justification for deviations of more than 10% were requested and made visible in the re-submitted version of the management report.

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4. IMPLEMENTATION OF THE PROJECT

a. Has the Project management been performed as required?

Yes

Partially

No

Comments

The excellent performance of both business and technical management is to a very large extent responsible for the very successful completion of the project. The collaboration with the reviewer and the JU was excellent.

b. Has the collaboration between the beneficiaries been effective?

Yes

Partially

No

Comments

The radically changed spirit in the consortium (very much missed at the 1st review), where people are helping each other and openly discuss about technical issues and related solutions, has been maintained and was clearly visible at this final review.

This is certainly the second reason (in addition to the excellent management) for the success of the project demonstrated during the final review.

The consortium has collectively demonstrated a very high sense of commitment to the project, assuming the additional charge deriving from the serious gap in project management of the first period. Where needed, the consortium has collectively and successfully mitigated risks of single partners' inefficiencies and/or lack of cooperation, by closing the gaps generated by missing and/or incomplete contributions to deliverables.

c. Do you identify evidence of underperforming beneficiaries, lack of commitment or change of interest of any beneficiaries?

Yes

Partially

No

Comments

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The change of project management and the guidance for all participants has led to a full commitment and cooperation resulting in good, even some excellent, performance. All project partners have contributed valuable and visible results to the final outcome of pSHIELD.

The deliverables clearly reflect the contributions of each project partner. From the project review and from the management and its reports, there is no evidence of any specific underperforming beneficiary.

5. USE AND DISSEMINATION OF FOREGROUND

a. Is there evidence that the Project has/will produce significant scientific, technical, commercial, social, or environmental impacts (where applicable)?

Yes

Partially

No

Comments

The final review clearly showed a number of excellent technical results and breakthroughs.

A non-exhaustive list includes:

Identification and formalization of a coherent SPD Metric;

Compliance with the existing standard Common Criteria (ISO 15408);

Power Node PCB Layout design completed

The project generated a number of relevant and valuable demonstrators (with relevant features as very well summarized in the last review meeting):

- An FPGA based Power node prototype
 - SPD metrics, Self-recovery from hardware transient faults(through fault-injection), Auto-reconfiguration, Data encryption, Provision of security and privacy services, Hardware data encryption/decryption
- A Cognitive Radio prototype
- Middleware prototype for composability
 - SPD Audit, Cryptographic Support, Identification and Authentication, Protection of the SPD functionalities, Security Management
- Heterogeneous Platform prototype(SPD)
 - Auto start up on power failure, Auto reconfigurable on software failure, Auto synchronization on software failure, End-to-end secure communication, Mal-user detection, Access control for accessing sensor data
- Rail car monitoring system(SPD)
 - Intrusion awareness, fault-tolerance, data redundancy and diversity

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- b. Is the plan for the use of foreground, including any update, appropriate? Namely, please comment on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiary or groups of beneficiaries and its progress to date.

Yes

Partially

No

Comments

pSHIELD is the pilot project for nSHIELD and has demonstrated the necessary foundational technology. nSHIELD should considerably improve the chances of industrial acceptance and wider use of the results. Also the good dissemination done by pSHIELD should foster reuse and industry take-up. The information exchange with key industrial players and standardization bodies needs to be intensified (nSHIELD)

- c. Have the beneficiaries disseminated Project results and information adequately (publications, conferences...)?

Yes

Partially

No

Comments

WP7 produced an impressive list of high quality papers and conference contributions. The generation of 6 PhD's thesis and some MS thesis is commended and appreciated.
Excellent pSHIELD Wiki.
Impressive demonstrators and pilot applications. Public website well made, both content- and navigation-wise. Large number of valuable public deliverables.

- d. Are potential users and other stakeholders (outside the consortium) suitably involved (if applicable)?

Yes

Partially

No

Comments

Some cooperation with other EU projects. Potential users and stakeholders are addressed via dissemination (papers, conference publications). Talks to potential industrial users have started but must be intensified in nSHIELD

- e. Is the consortium interacting in a satisfactory manner with other related ARTEMIS Projects or other R&D national/international programmes, standardisation bodies (if relevant)?

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Yes

Partially

No

Comments

There are only very few ARTEMIS projects which it can interact – These are addressed.
The contribution to standardization bodies is not yet established – although it would be somewhat to early (left to nSHIELD).

6. OTHER ISSUES

- a. Have policy-related and/or regulatory issues been properly handled (if applicable)?

Yes

Partially

No

Comments

The most important regulatory-related issue is safety. The project works with this view in mind.

- b. Have ethical issues been appropriately handled (if applicable)?

Yes

Partially

No

Comments

No ethical issues involved in pSHIELD

- c. Have safety issues been properly handled (if applicable)?

Yes

Partially

No

Comments

Safety is a key topic of pSHIELD (see *Question 6a* above) and is addressed excellently and methodically – the quantification (metrics) for security is a key innovation of pSHIELD.

7. APPENDIX

7.1 Closing Remarks

The following closing remarks from the review team concluded the review meeting:

Review organization:

- The final review was well organized and efficient
- The presentations were excellent, both in form and content
- The demonstrators were informative (Clear progress from Oslo meeting)
- The review covered all points and responded well to the open issues
- All documents (deliverables) were made available in time
- All presentations were distributed after the review meeting in electronic form

General statements on the technical value of the project:

- pSHIELD was an important and challenging project. The review panel acknowledges the project results represent “good value for money”
- The pSHIELD proposal contains many novel, good concepts whose implementation was further elaborated and documented in the final review period
- The results of the pSHIELD project will have a positive impact on the ES landscape in Europe – hopefully already through nSHIELD. However, they need more elaboration, more systems thinking (in addition to the component thinking), theoretical background (formal models) and tool support.
- All partners contributed to the final pSHIELD achievements
- There are still some theoretical (potentially hard to solve) questions open, which will be addressed in the follow-up project
- The “technical pillars” (such as University of Roma) have performed an outstanding work which provides the foundation for pSHIELD and its follow-up project.

Work Progress:

- The project has again made impressive, admirable progress since the 2nd review,
- All work packages have delivered good, some even excellent, results
- The documentation delivered is mostly complete and comprehensive (with few exceptions) and are well made, both from format and content
- All deliverables scheduled in the TA were timely delivered – with the exception of the final project review report - and accepted.

Final Assessment:

- The project has achieved most of its stated objectives, even overachieved some of them. The catch-up effort after the unsatisfactory 1st review was impressive and has shown excellent results
- Both the new technical and management leadership (established after the 1st review) have demonstrated an excellent performance (and have indeed secured the project results)
- pSHIELD provides the basic knowledge for nSHIELD, which was an important goal

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- A large number of interesting deliverables are public (and already available on the Website) which is an excellent service to the research community
- All open issues have been addressed and are closed to the satisfaction of the review panel
- The pilot applications (especially the railway demonstrator & the power node) successfully demonstrated the implementation and feasibility of a number of the novel pSHIELD concepts
- An excellent job with respect to dissemination has been done by the consortium. A special value lies in the fact that a number of young researchers had the opportunity, to deliver thesis (6 PhD's, some masters) based on the new material from pSHIELD
- Globally the outcome of the work packages justifies the effort. There are some discrepancies in the effort figures which needs justification. This is expected in a resubmitted final project progress report, deadline: End of February 2012. Please remember that any deviation planned/actual of more than 10% requires explicit explanation. Also the cost for some partners needs clarification (THYIA, ETH)
- The clearly identified breakthroughs are acknowledged with appreciation (e.g. SW-radio, power node, composability etc.).
- The consortium's cooperation with the review team was competent, fair and well-spirited – which was highly appreciated
- It was a worthwhile project – taxpayer's money well spent!

Recommendations for nSHIELD:

- Although the pSHIELD results are impressive and well-founded, nSHIELD should execute a review with respect to all results of pSHIELD and assess their future-proofness for nSHIELD
- nSHIELD should continue and improve the formal modelling (e.g. in SysML and Ontology) for all concepts and their relationships. The pSHIELD consortium has shown a limited understanding of formal modelling (Example: The “formal conceptual model of a pSHIELD node” on p. 18 of D3.2 is far away from a formal model – and this represents one of the basic models of pSHIELD!)¹
- The pSHIELD concepts are excellent on the node & network level. However, the same thoroughness is not evident on the *system level*, such as configuration, contingency handling etc. From a system-level viewpoint requirements will feed back into the node/architecture level. nSHIELD should look into this issue
- D3.2 (p. 89ff) gives an excellent treatment of the CIAA properties (Confidentiality, Integrity, Authenticity and Availability). However, two additional properties should also be handled (at least thought about in this context): *Non-repudiation* and *traceability*. These properties become very important, e.g. in the case of a railway accident with dangerous materials (= pilot applications) when actions and decisions of different parties need to be presented to an enquiry or to a court of law
- The consortium is invited to author and publish a White Paper. This white paper should contain all pSHIELD paradigms, decisions and concepts with clear descriptions. The purpose of this white paper is 1) align the mind-sets of all participants in nSHIELD (and thus avoid unnecessary discussions and misunderstandings) and 2) provide an easy and reader-friendly entry for external people into the pSHIELD world

¹ “Formal models have a well-defined set of structural elements and rules that they must obey (such as UML or SysML) and a precise and unambiguous semantics, based on well-understood and accepted mathematical concepts” (see: Bill Karakostas, Yannis Zorghiou: **Engineering Service Oriented Systems – A Model Driven Approach**. IGI Publishing, London UK, 2008. ISBN 978-1-59904-968-7.

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- pSHIELD produced a number of demonstrators, each showing part of the pSHIELD achievements. nSHIELD should aim for one (or more) significantly larger and more integrated demonstrator(s). This would prove the integration efforts of the consortium and contribute to the ARTEMIS objective of reducing the ES fragmentation in today's industry
- Please use a central glossary, not individual (possibly diverging) glossaries in each document

7.2 Suggested References

The consortium asked the reviewer to suggest some references relevant to nSHIELD. These are:

[1] Bill Karakostas, Yannis Zorgios: **Engineering Service Oriented Systems – A Model Driven Approach**. IGI Publishing, London UK, 2008. ISBN 978-1-59904-968-7.

Good introduction to the formal modelling of services. Describes many current approaches and methodologies, however, no definitive solution is presented.

[2] Stephan Murer, Bruno Bonati, Frank J. Furrer: **Managed Evolution – A Strategy for Very Large Information Systems**. Springer Verlag, Berlin & Heidelberg, 2011. ISBN 978-3-642-01632-5.

Describes a strategy for the evolution of very large information systems (applied to the global IT system of a financial institution. Shows the importance of system architecture, modelling and service management.

[3] Hermann Kopetz: **Real-Time Systems – Design Principles for Distributed Embedded Applications**. Springer Verlag, New York, 2011. ISBN 978-1-4419-8236-0.

Excellent architecture tutorial for the design of embedded systems. Focuses on the importance of non-functional properties, such as real-time parameters/guarantees and uses the TTA (Time Triggered Architecture) as an example.

[4] Steven Kelly, Juha-Pekka Tolvanen: **Domain-Specific Modeling – Enabling Full Code Generation**. John Wiley & Sons, New Jersey USA, 2008. ISBN 978-0-470-03666-2.

Describes in detail the approach from models to code automation. Contains a number of wonderful examples.

[5] Dragan Gasevic, Dragan Djuric, Vladan Devedzic: **Model Driven Architecture and Ontology Development**. Springer Verlag, Berlin & Heidelberg, 2006. ISBN 978-3-540-32180-2.

Interesting survey of the methods and languages to develop system architecture and ontology development for systems starting from models

[6] John Holt, Simon Perry: **SysML for Systems Engineering**. The Institution of Engineering and Technology, Herts UK, 2008. ISBN 978-0-86341-825-9

Excellent tutorial about the structural modeling of IT systems using SysML

The project officer and the reviewer congratulate the project team to the excellent work

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7.3 Open Issues

This appendix lists all open points and issues and tracks their completion status.

Document History			
Version	Date	Author(s)	Changes/Remarks
V0.1	24.03.2011	Frank J. Furrer	Open points from 1 st review listed
V0.2	30.09.2011	Josef Noll	Consortium response to the open points
V0.3	29.10.2011	Frank J. Furrer	Comments to consortium response and open points from 2 nd review added
V0.4	19.02.2012	Frank J. Furrer	Closed list after the final review of Feb. 14, 2012

Status:

- completed
- handled (= partially open, needs more information)
- open (= response not delivered)

Note: The numbering in column 1 maintains the original numbering, i.e. the creation number

#	Open Issue	Created	Status	Remarks Reviewers	Remarks Consortium
1	Provide all deliverables both electronically and in printed form to JU and the reviewer latest 2 weeks (14 days) before the date of the review	1 st review	completed	Valid for all following review	To fulfill that request the special page at pSHIELD Wiki was created. In the page there is list of all files with links to their electronic versions. For redundancy, files are also available at project secure repository bscw server. Consortium also makes efforts to provide printed form of documents. pSHIELD Wiki page: http://pshield.unik.no/wiki/Deliverables_for_JU

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#	Open Issue	Created	Status	Remarks Reviewers	Remarks Consortium
4	<p>Provide the following information latest 15.4.2011 (in electronic form) to JU:</p> <ol style="list-style-type: none"> 1. A new deliverable "Formalized Conceptual Models of the Key pSHIELD Concepts". This deliverable must contain – in sufficient detail and internal consistency – formal, conceptual models for all key concepts required to implement the pSHIELD key objectives and its technology foundation, 2. A proposal for the aggregation of SPD-metrics during composition which does not exhibit the weaknesses listed in footnote 1 above, 3. A signed endorsement of these conceptual models by all partners, i.e. the explicit agreement of the consortium members to accept and use these models, 4. A formal project extension is to be requested immediately: 6 months is expected as minimum time extension (i.e. bringing the project end date to 31.11.2011). Provide a new work plan accounting for all the changes required, including all milestones, deliverables and corresponding new delivery dates. 5. The TA on page 8 clearly defines the focus areas of pSHIELD. The project consortium is asked to provide a document listing - for each of the focus areas - the key innovations which the project commits to deliver by its completion; the project outputs and the tangible results with a delivery time plan to allow close and timely monitoring of the project evolution. 6. A new version of the Management Report (Progress Report) with the required reporting information. The coordinator is reminded that the template provided by ARTEMIS is to be filled-in with detailed and appropriate information in all its sections. 	1 st review	completed	Expected latest 15.4.2011	<p>All requested documents were provided to JU in defined time. All the documents are available in electronic form in project repository at bscw server BSCW Server: http://bscw.iuarteremispshield.eu/bscw/bscw.cgi/12529 Folder: Mid-term review additional deliverables, and sub folders: Point 1 to Point 6</p>

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#	Open Issue	Created	Status	Remarks Reviewers	Remarks Consortium
8	Provide a list of all public publications produced by pSHIELD (papers, conference contributions, workshop materials etc.). Provide an electronic copy of the most important ones to JU and the reviewer (as far as copyright permits)	1 st review <u>Expected:</u> for final review	completed	ok	In frame of project dissemination tasks there is on pSHIELD Wiki available page listing: Targeted Industrial Dissemination, Workshops and Exhibitions, Industrial publications and Scientific dissemination. The dissemination page is continuously updated. Electronic copies of most important materials are also available at the page, and they will be sent to JU and available for reviewer. Fiaschetti A., Lavorato F., Suraci V., Palo A., Tagliatela A., Morgagni A., Baldelli A., Flammini F., "On the use of semantic technologies to model and control Security, Privacy and Dependability in complex systems" , Proc. Of 30th International Conference on Computer Safety, Reliability and Security (SAFECOMP'11), Sep. 2011. Naples, Italy. pSHIELD Wiki dissemination page: http://pshield.unik.no/wiki/PSHIELD_DisseminationFuture deliverboard D7.1.2 Dissemination Report
9	Explicitly respond to each of these open points in a specific session and in the management report for each review. Use the rightmost column of this form to communicate the key response to the open point	1 st review <u>Expected:</u> for each review	completed	Ok, please do the same for the final review (new open issues below)	
2	Provide paper copies of all presentations at the start of the review meeting and send electronic copies of them after the meeting to JU and the reviewer	1 st review	completed	Valid for all following reviews	Done for 2 nd review. Thanks
3	Review presentations: <ul style="list-style-type: none"> Do NOT repeat material from the TA or from the deliverables if they are not necessary for the sequence of the presentation (PO and reviewer have read the deliverables!) Focus on achievements, problems, challenges and key results Leave enough time for Q/A-sessions 	1 st review	completed	Valid for all following reviews	Done for 2 nd review. Thanks. Please keep up for final review

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#	Open Issue	Created	Status	Remarks Reviewers	Remarks Consortium
5	Provide a list of all Master and PhD thesis initiated or executed within pSHIELD	1 st review <u>Expected:</u> for final review	completed	Please update for final review	Listed in D7.1.2: Dissemination Report
6	Provide a list of all list of all key achievements and breakthroughs (compared to the state of the art) generated by pSHIELD	1 st review <u>Expected:</u> for final review	completed	Thanks. Please update for final review (covering all deliverables which document breakthroughs)	<ul style="list-style-type: none"> • Identification of pSHIELD semantic technologies (to model SPD issues); • Semantic models to enable the pSHIELD seamless approach definition of main services at middleware layer; • Prototypes of ontologies; • Prototypes of semantic patterns of SPD composition; • Experimental semantic engine for SPD composition; • Analysis of the OSGi Knoplerfish platform as technological demonstrator for pSHIELD Middleware • Service Oriented technology selection to address the seamless approach and interoperability requirements; <p><u>Documented in:</u> D5.1: pSHIELD Semantic Models D5.2: SPD middleware and overlay functionalities prototype</p>
7	Upgrade Website, i.e. fill in meaningful and informative content	1 st review <u>Expected:</u> for final review	completed	Wiki = excellent and up-to-date. Public website good, but needs more material	The project on-line collaborative tools are composed of three elements: Semantic Wiki, Website and secure Repository. Partners' technical discussions, agendas, minutes, meetings, phone conferences, etc. are managed through Wiki. Important documents are managed through Repository. For above reasons Website is less used by partners. Anyway Website is a way to communicate project achievements to wide audience and we will make efforts to keep it updated and informative.

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#	Open Issue	Created	Status	Remarks Reviewers	Remarks Consortium
10	<p>The most important regulatory-related issue is <u>safety</u>. The project works with this view in mind.</p> <p>It would be beneficial to get a list of all the security and safety standards which:</p> <ul style="list-style-type: none"> a) Have been used and adhered to during the pSHIELD development b) Candidates of international standards which could be improved by the pSHIELD results 	<p>2nd review <u>Expected:</u> for final review</p>	completed		Presented at final review
11	<p>Update and finalize table 5-2 (= measures on how pSHIELD has reached the scope) in D1.1.2 (Quality Control Guidelines)</p>	<p>2nd review <u>Expected:</u> for final review</p>	completed		Presented at final review
12	<p>Provide a complete documentation, especially for the demonstrators/pilot applications</p>	<p>2nd review <u>Expected:</u> for final review</p>	completed		Presented at final review
13	<p>Provide a paragraph in the public project report with the content:</p> <ul style="list-style-type: none"> • Breakthroughs elaborated by pSHIELD • Open issues and questions • Suggestions for further research 	<p>2nd review <u>Expected:</u> for final review</p>	completed		Presented at final review
14	<p>Resubmit the final progress report</p> <ul style="list-style-type: none"> • Justify any deviation of >10% in the figures • Justify the subcontractor payments 	<p>Final Review <u>Expected:</u> latest February 29, 2012 to project officer</p>	open	More information can be obtained directly from the project officer	

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8. SIGNATURES

Name of the expert assisting te JU Office in the review meeting: Dr. Frank J. Furrer

Name of the ARTEMIS JU Officer: Antonio Vecchio

Date: May 3, 2012

Signature: 