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nSHIELD

new embedded Systems arcHItecturE for multi-Layer Dependable solutions

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Applicable Documents		
ID	**Document**	**Description**
[01]	TA	nSHIELD Technical Annex
[02]	APCA	ARTEMIS JU Projects' Consortium Agreement – APCA
[03]	D1.1	Collaborative tools and document repository
[04]	D1.2	nSHIELD Quality Control Guidelines
[05]	D1.5	Periodic Management Report First Year
[06]		Wikipedia Quality Management - http://en.wikipedia.org/wiki/Quality_management
[07]		Overlay Composability – Lesson Learned nSHIELD annual Review Rome 2012

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Executive Summary

This document includes the description of the Quality control activities effectuated during he first year of the project.

For each guideline, as described in the Quality Control Guidelines document, an assessment, concerning how the suggestion has been applied to the project, is indicated.

Additionally, a summary of the Quality Management activity, including the complete list of meetings held during the first year, is provided.

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Glossary

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

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1 Introduction

1.1 Scope

This Quality Control Report describes an assessment of the Quality Control Guidelines [D1.2] being applied to the nSHIELD project. Thus, the Quality Control Report will evidence how and if the QC guidelines have been followed during the first year of the project. Each section of D1.6 provides a summary of challenges, which is repeated here. A short review is provided to each topic to assess if the identified challenges were complete.

Several concepts concerning QC in collaborative research project are repeated in the following.

- Quality control looks at processes and the identification of bottlenecks within the collaborative work environment.
- Quality control evaluates competence and results as compared to the state of technology.
- Quality control looks at soft elements such as personalities, organizational structures and relationships.

If any of these three aspects fails then the quality of the total collaborative project is at risk.

Quality Assurance thus means introducing measures for all of the three aspects.

For nSHIELD quality management can thus much more be seen as an obstacle remover for achieving results, rather than the control of the project itself. The assessment provided at the end of each major section provides the view of the project leadership team, and thus might differ from an assessment of individual project members.

2 nSHIELD approach to "Quality"

QC approach in project management is usually related to inspect the accomplished work in order to be in line with the scope of the project. Thus the initial point of each quality control is to clearly point out the scope of the project. The nSHIELD project aims at being a pioneer investigation to address Security, Privacy and Dependability 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. The leading concept is to demonstrate composability of SPD technologies.

So the aim of nSHIELD includes the following two items:

- How can we verify a common SPD functionality strategy?
- How can we document the achievements in a satisfactory manner?

The following diagram represents the high-level structure describing the quality guidelines for project nSHIELD.

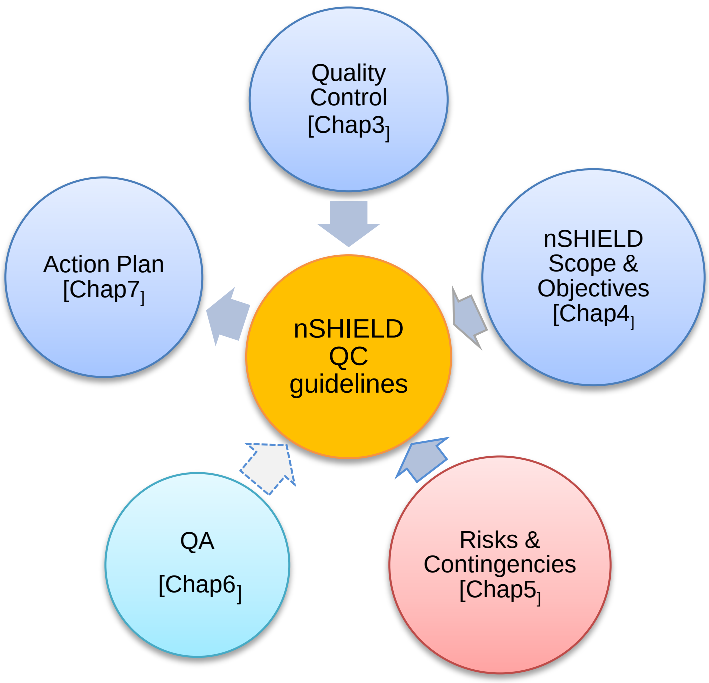

Figure 2-1: Elements of the Quality Control in nSHIELD

nSHIELD is a collaborative project aiming 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.

For this reason, the standard elements concurring to Quality Control guidelines definition of nSHIELD are considered slightly differently from the standard ones, ref [04]. The risks and the contingencies that could emerge in the development of this kind of project must be emphasized in the QC guidelines definition respect to the QA requirements. This is because of QA definitions are generally more applicable to a product instead to a technological demonstrator.

3 Quality Control

The identification of obstacles is the main challenge of a collaborative project.

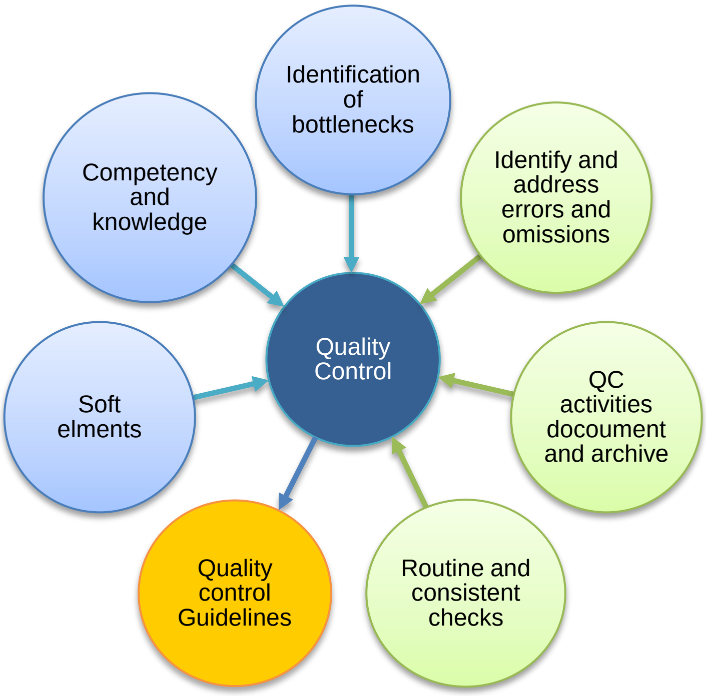

Figure 3-1: QC nSHIELD development and implementation phase

The light blue balls concern three areas strictly connected each other, including culture, competency, and language. In fact, in a collaborative research project people don't work in the same location, they don't see each other on a regular basis, and the companies they are working for might have diverging goals. And even worse, these company goals might not be in-line with the project goals.

Green balls could be considered more linked with the control processes to be used during the development of the project.

The following paragraphs are dedicated to show the activities done during the first year of the project in reference to the Quality Control Guidelines document [4].

3.1 Identification of bottlenecks

The major source of misunderstanding is due to communication. Exchange of information and information flow are considered the core assets for a successful project

Identification of bottlenecks includes the three areas:

- Communication bottlenecks
- Scope and goals
- Documentation

The major challenge identified in bottlenecks for documentation is due to the fact that documentation is not synchronous to on-going developments and discussions. Handling documentation is not easy.

Figure 3-2: Identification of bottlenecks

The following table describes how the measures listed in [4] have been applied to the project development during the first year.

Table 3-1: Bottlenecks assessment

	Guideline	Assessment
3.1a	Support audio conferences with written agenda and minutes ready as soon as possible after the meeting	Language & culture were indeed the main source of misunderstanding in the project. The physical meetings and direct phone calls helped to get a good enough understanding.
3.1b	Space in physical meetings such that partners can meet, exchange information and familiarize, thus enhancing the understanding of other culture	
3.1c	Audio conference length no more than 60 minutes	Audio conferences were reasonable for reporting, but not well enough for long discussions. The follow-on on actions agreed during audio conferences was not sufficient. Audio conferences have been associated to “almost” real time MoM or to informal written summary concerning each long technical discussion.
3.1d	Establish measurable outcomes	Some documents are reviewed by partners not directly involved in the WP to which the deliverable is associated. This activity, not always welcome by the partners, is recommended because produces high level deliverables

3.1e	Establish sub-goal for each task, when possible	Each Task Leader has distributed the activities of the task among the partners according to the skill of each one. Not all the task can be sub-divided in sub-task due to the kind of subject developed. Sub-goal of each task has been individuated and established when possible
3.1f	Definition on how the TA should be used according to JU	Contacts with JU representative have been frequently happened in order to well utilize the content of the TA. All the WP Leaders have been involved on checking the information loaded in wiki and the consistency with the TA. If not, Leaders have changed the info and then have communicated the change to the involved partners
3.1g	Use of deliverables as mean of documentation of work, but choose of on-line collaboration for information exchange	Each WP Leader has assigned a person for each deliverable belonging to the WP. This person has been required to upload on Wiki the deliverable as soon as a structure for the document was ready. Several companies are not allowed to use on-line tools for sharing and modifying documents in real time, so @mails are used to share part of documents. Research institutes are encouraged to use on-line tools when possible.
3.1h	Use of common collaboration tools to share the result of the discussions	The Wiki was a successful tool on pSHIELD and repeated for nSHIELD. The wiki has been adopted as information exchanging tool and document repository. The Wiki for nSHIELD has been slightly different from that one dedicated to pSHIELD. This because of the more complicated structure of nSHIELD respect to the pilot project. During this first year of use of Wiki, nSHIELD consortium asked some adjustment according to the need of the partners.

Collaborative tools and document repository for the nSHIELD project are described in [3].

3.2 Competency and knowledge

This section will look into competency of the partners and results as compared to the state of technology.

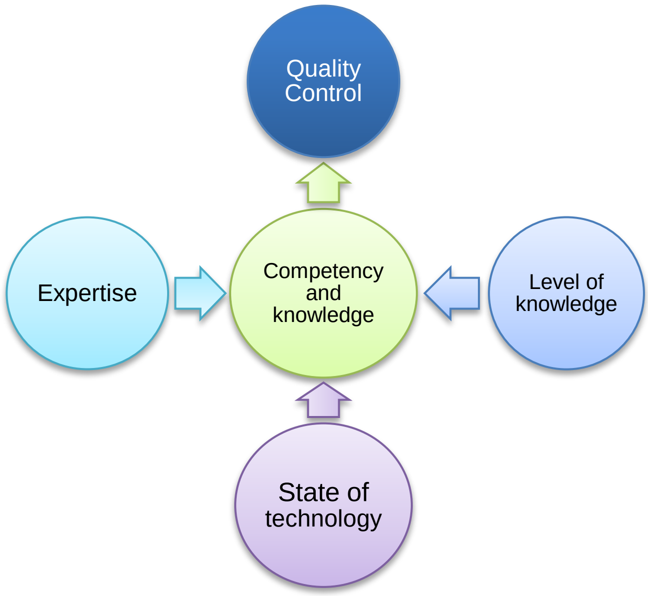

Figure 3-3 Competency and knowledge

The following figure indicates the challenges related to competency, and especially points out that competency and knowledge have to be compared to the state of technology. Though the wording "state of technology" is commonly used, it might not mean the same thing for participating people. A business-oriented person will always relate the results as how they can be brought to the market, while a research oriented person will always challenge himself as compared to other research results.

The measures in the competency and knowledge area may include:

- Level of knowledge
- Expert in this field
- Comparison to state of technology

nSHIELD is the evolution of the pilot project pSHIELD. Most of partners of nSHIELD project were also partners of pSHIELD consortium. A common view on the project outcomes was easily achieved during the Brussels meeting in February 2012. Competency and knowledge were not the major bottlenecks in nSHIELD, but rather the diverging understanding of the anticipating outcomes and the different aims between pSHIELD and nSHIELD.

Table 3-2: Competency and Knowledge assessment

	Guideline	Assessment
3.2a	Improvement of internal knowledge exchange by mean of training session.	The project was a project of experts, several of which already involved in the pilot project, where little training was needed for knowledge exchange. Face-to-face meetings and voice calls created common understanding.
3.2b	Subgroups of expert (in certain fields) definition.	Subgroups of experts existed, but they were not formalized.
3.2c	State of technology to be reach definition: e.g. algorithm development, prototype development.	The refocus on prototypes caused all participants to focus on SPD functionalities. Thus we partly developed diverging approaches. A harmonization of these approaches is a major task for the follow-on project nSHIELD.

3.3 Soft elements

Under soft elements we mean the personalities of the engaged people, the organizational structures that people find in their respective organization, and relationships of people. Project participants might be used to take leadership, linked to the culture of the person, of the company, or of the area.

Some culture tends to have a more collaborative approach, while other cultures prefer a more dominant leadership. While the dominant leader may be perfect for a dissemination and exploitation of results, he might not have the same understanding within the project. A project based on experts needs to look for collaborative leaderships.

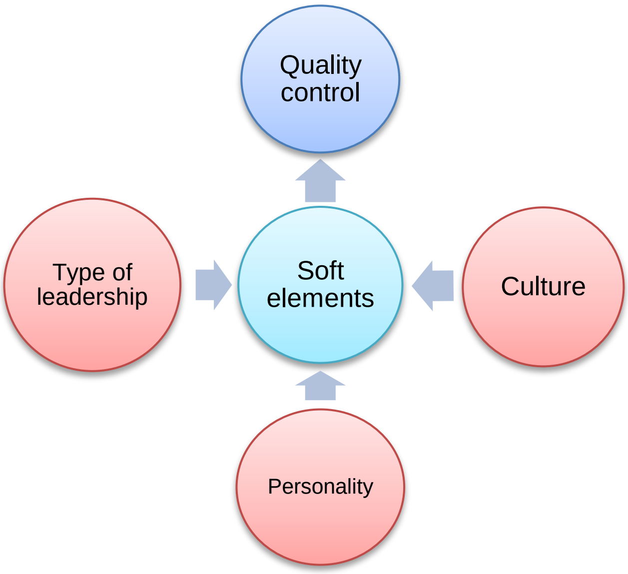

Figure 3-4: Soft element that may influence the project

In companies, project participants often go through the process of getting known to each other. They meet each other on daily basis and thus get used to the personality of their co-workers. This is not the case in an international research project.

This part reflects the major challenges in nSHIELD. The change of leadership and the different understanding of roles in the project were the real nSHIELD challenges.

Table 3-3: Soft Element assessment

	Guideline	Assessment
3.3a	A collaborative leadership structure built on the expertise of experts in each domain.	The leadership team worked very well, thanks to Elisabetta Campaiola, Josef Noll and Luigi Trono for their inclusive way of handling the project team members. The Design Authority is represented by a group of partner representatives of the major industries and of one research institute that are part of the Technical Management Committee (TMC).
3.3b	Opening meeting allowing cultural exchange and common understanding.	A Technical Task Force which works as horizontal coordination body for all work packages has been instituted. The partners involved on the Technical Task Force will meet typically every two weeks, or when necessary, depending on the amount of work. Each meeting can be held by call phone, Webex or Skype, depending on the suitable media selected by the partners day by day.
3.3c	Leadership shared among participants.	As pointed out in 3.3a, this aspect was taken into consideration through the collaborative team.

3.4 Errors and omissions identification

nSHIELD is devoted to the demonstrators development and the implementation, so the first step is to identify and address eventual errors and omissions as defined for a basic QC system. Errors and omission may be caused by incorrect or inaccurate use of information shared with the partners or by data that are inadequately documented for effective use by the consortium.

An detailed error and omission map provides a summation and analysis of the information gathered through an identification process, that could be summarized in:

- Reviews of all available information, internal reports, minutes, external reports.
- Questionnaires to be distributed to a few key personnel in the project team to obtain critical information.
- Targeted interviews to round out the information already gathered, in particular to the End User and Advisory Board
- Error and omission gap analysis by reviewing the reports through a spiral approach, in order to identify potential gaps and overlaps.

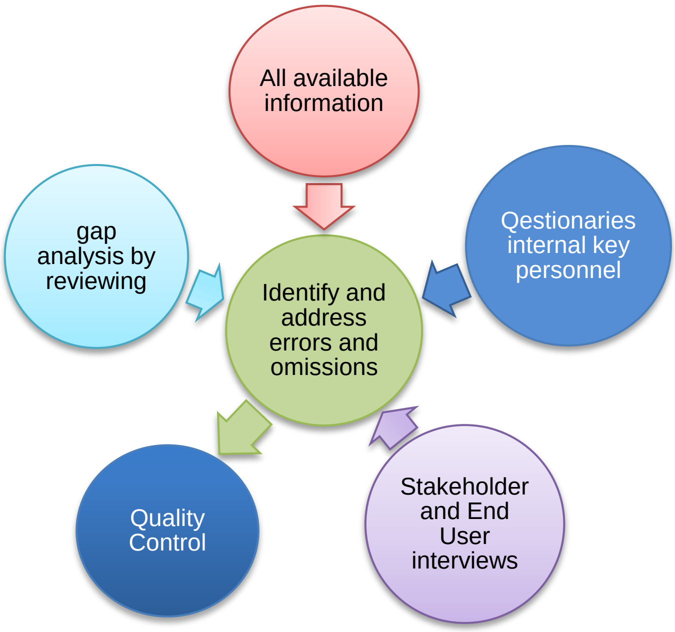

Figure 3-5: Errors and Omissions identification map

Table 3-4: Errors and Omissions assessment

	Guideline	Assessment
3.4a	Identifying and mitigating E&O as early as possible, including immediate engagement of partners in addressing the problem.	Concerning a R&D project, the analysis of data provides information relevant to conformity and trend of nSHIELD processes and solution. Each WP leader analyses own data and, if necessary, promotes (defines) the action to improve own processes and solution. Each WP leader is responsible for the mitigation action just in case of the E&O involves his WP.
3.4b	Properly evaluating the nature and impacts of E&O.	The previous mitigation actions are evaluated at Project Management and at Task Force level in case of impact on several WPs. The results from the above analysis will be reviewed during the Management Review meetings.

3.5 Routine and consistent checks

In computer science, data validation is the process of ensuring that a program operates on clean, correct and useful data. It uses routines, often called "validation rules" or "check routines", that check for correctness, meaningfulness, and security of data that are input to the system. The rules may be implemented through the automated facilities of a data dictionary, or by the inclusion of explicit application program validation logic. [Wikipedia]

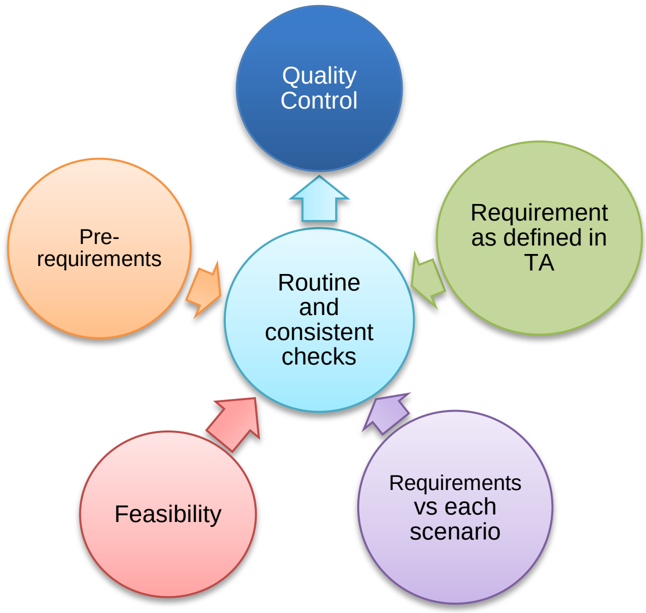

Figure 3-6: Routine and consistent check

Because of the nSHIELD system aims to define modular and scalable SPD applicable to different scenarios, it is necessary to define procedures and routines designed to preserve the consistency of the program and consistency with the proposed objectives.

This process occurs through:

- Verify the consistency of requirement against the Technical Annex
- Verify the consistency of requirement through the different scenarios
- Verify the validity of assumption in each scenarios
- Verify the feasibility of implementation for each scenarios

Table 3-5 Routine and consistency checks assessments

	Guideline	Assessment
3.5a	Verify consistency, Validity and feasibility.	The Task Force and the TMC support the partners involved in each scenario. Josef Noll, the Project Coordinator, is member of the Task Force group and the responsible for the coordination of the scenarios demonstrators. His multiple roles assure the management and the continuous monitoring, during the scenarios development, according to validation processes acting to preserve the consistency of the program and consistency with the proposed objectives.

3.6 QC activities documents and archive

The Quality documentation describes or references the processes, including the roles, responsibilities, and authorities of management and team, for:

Figure 3-7: QC activities documents and archive

- identifying quality-related documents and records requiring control;
- preparing, reviewing for conformance to technical and quality system requirements, approving, issuing, using, authenticating, and revising documents and records;
- ensuring that records and documents accurately reflect completed work;
- maintaining documents and records including transmittal, distribution, retention, access, preservation, traceability, retrieval, removal of obsolete documentation;

The following table summarizes the activities developed during the first year on this subject.

Table 3-6: QC activities documents and archive assessments

	Guideline	Assessment
3.6a	Identifying, preparing, reviewing, ensuring and maintaining.	The documents and archive activities are well executed by the constant use of Wiki [3]. Wiki software is the state-of-the-art collaboration software and used in a number of international projects. It supports day-to-day work through a useable interface. Wiki is a conventional web page non-interactive way of updating information and handling documents. This is the reason for using the Wiki as document repository and collaboration. The document repository is a good and useful feature for document storage of all relevant documents, such as deliverables, minutes of meetings and administrative documents. All the nSHIELD partners are allowed to Wiki.

4 nSHIELD scope and objective

This chapter defines challenges with respect to the scope of the nSHIELD project. We understand the scope of a research project is to establish state-of-the-art developments, to support new technologies, and to document the achievements.

The nSHIELD project is the first investigation towards the realization of the SHIELD Architectural Framework for Security, Privacy and Dependability (SPD).

As defined in the Technical Annex and illustrated in the following figure, the nSHIELD project is focused on the six principal aspects for SPD.

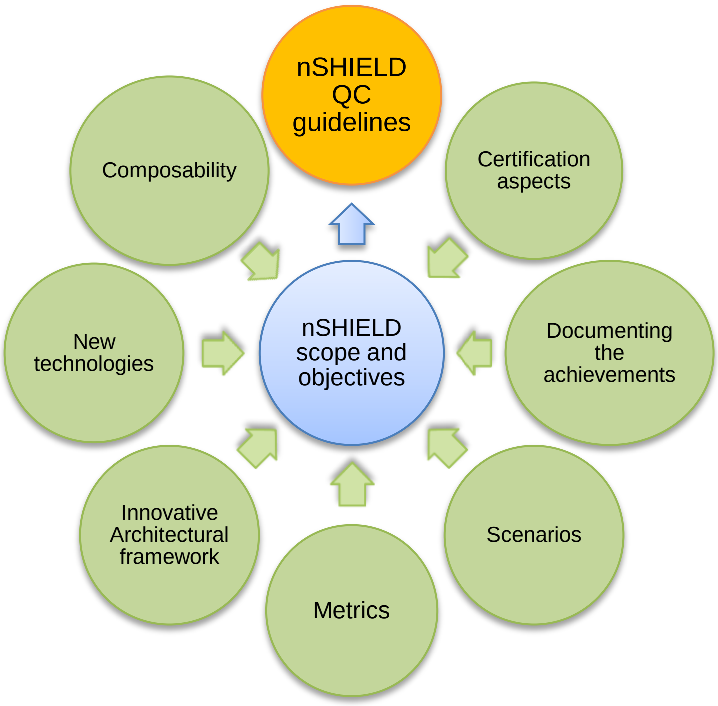

Figure 4-1: Categories contributing to SHIELD scope and objectives

4.1 Composability

According to the TA, the leading concept of nSHIELD is to demonstrate composability of SPD technologies. It means the ability to derive instantiations of architecture from a generic platform that support the constructive composition of large systems out of components and sub-systems without uncontrolled emergent behaviour or side effects.

The activity of this first year of nSHIELD has been focused on the analysis of:

- Static & Dynamic Composability of SHIELD SPD Modules -> Security Agent
- SHIELD Composable technologies -> Semantic representation.

at 4 different levels: node, network, middleware and overlay and on the main suggestions to establishing on SPD composability demonstration.

Although the pilot project showed limited scope in the semantic middleware for composability, pSHIELD results have been critically taken into account highlighting limits and good heritage.

Table 4-1: Composability guidelines and assessment

	Guideline	Assessment
4.1a	Results general as possible although it is not possible to represent the whole system knowledge with a single model.	Four different demonstration areas are evaluated. Decoupling between Information used to compute the configuration of SPD functionalities and Information used to implement the configuration and tailor it to the scenario needs. Dynamic composability would be enabled.
4.1b	Modelling procedure close to existing standard.	The Common Criteria logical chain (SPD levels, Attributes, Threats, Means) is used for modelling procedure derivation.
4.1c	Modularity and scalability inspiration.	Scalable meta-models associated to the physical system are used. Decoupling between decision making and knowledge, assures flexibility, scalability and increases the lifetime of the proposed solution.
4.1d	The Security Agent is expected to be a consolidated entity to be deployed.	Complex and articulated SW module architecture together with hierarchical structures are evaluated.

The previous assessments are the results of the first year of study on SPD Composability and are detailed on [07].

4.2 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. The SPD technologies will be then enhanced with the “composability” functionality that is being studied and designed in nSHIELD, in order to fit in the SHIELD architectural framework.

Table 4-2: New technologies guideline and assessment

	Guideline	Assessment
4.2a	New technologies are expected to be integrated and harmonized in a modular, composable, expandable and high-dependable architectural framework.	During the demonstration architecture design the most appropriate SPD algorithms, technologies and procedures, will be improved and developed (where necessary) according to SPD guidelines. Most important is a strong ecosystem of partners promoting common developed interfaces.

4.3 Innovative architectural framework

The nSHIELD approach 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, 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.

nSHIELD will refine and develop the framework in a complex scenario.

Table 4-3: Innovative architectural framework guideline and assessment

	Guideline	Assessment
4.3a	Innovative architectural framework is expected to be integrated and harmonized in a modular, composable, expandable and high-dependable architectural framework.	The nSHIELD architecture is well defined regarding the middleware based on Semantic Technologies. However, the challenge of light-weight semantics and the delegated decision making are two examples of topics that need further investigations. During the demonstration architecture design the most appropriate SPD algorithms, technologies and procedures, will be improved and developed (where necessary) according to SPD guidelines.

4.4 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.

In the framework of nSHIELD, the developed SPD-based solutions will be proved in a set of ambitious application scenarios aiming at verifying the achieved SPD performance, measured in terms of properly defined SPD metrics.

Table 4-4: Metrics guideline and assessment

	Guideline	Assessment
4.4a	The first fundamental step is the definition of SPD metrics and their ontological description.	SPD metrics have been the object of several internal meeting before the issue of the D2.5 (first year deliverable) in October 2012, responsible TECNALIA. The document represents the preliminary SPD metric specification and will be the base for the first architecture description of each demonstrator. The D2.5 will be also the guideline for the common SPD metric definition, (deliverable for the third year of the project).
4.4b	Homogeneous metrics will ease the monitoring of the current SPD levels of the various layers and of the overall system, as well as the assessment of the various SPD levels.	The D2.5 is the result of the collaboration among the partners that will contribute to the four demonstrators, i.e. ASTS, SE and SG.

4.5 Scenarios

The SHIELD General Framework consists of four layered system architecture and Application Layer in which three scenarios are considered: 1) Railway, 2) Voice/Facial Recognition, 3) Dependable Avionic Systems and in a feasibility study concerning Social Mobility and Networking.

No activity related to the scenarios has been planned during the first year of the project.

4.6 Documenting the achievements

The Scope of the project includes the documentation of achievements through targeted dissemination, scientific dissemination, internal dissemination, and deliverables.

Table 4-5: Documenting the achievements guideline and assessment

	Guideline	Assessment
4.6a	Trainings and living documentation is a way of internal dissemination, which is nowadays often achieved through a wiki-based collaboration platform, as for the pilot project.	To facilitate the effective cooperation between the partners, the project should enable an easy-to-use document repository platform and a collaboration platform supporting knowledge management and visualization. A collaborative platform will allow acting as a living document, where ideas and discussions can be contributed at any time. The challenge of a collaborative platform is often that the content turns into an unstructured cloud of information. The Wiki repository [03] is used to share draft documents, suggestions and general ideas in a well-defined structure.
4.6b	Contributions to journals will help to distribute the results on a much broader basis, and allows for partnership to research groups, which have not been identified previously.	Dissemination activities are relatively weak at this stage. Despite this, public interests are satisfied by much excellent material (in progress to be published) providing overview of the project and its partners.

4.7 Certification aspects

Table 4-6: Certification aspects: guideline and assessment

	Guideline	Assessment
4.7a	The nSHIELD project aims at addressing SPD in the context of ESs as “built in” functionalities, proposing and perceiving with this strategy the first step towards SPD certification for future ESs.	The opportunity to contact the Industrial Association ATEMIS-IA is taken in consideration, in order to receive and provide suggestion finalized to the promotion of standardization for ESs

5 Risk & contingency

A precondition to risk assessment is establishment of objectives that shall be identified in the TA and in the Quality Control document. Risk assessment is the identification and analysis of relevant risks to achieve the stated objectives of the previous documents, and forms the basis for determining how the Consortium will manage the risks.

Different types of risks and crisis have to be contemplated. The general rule is that the Project Manager/Coordinator will be in charge of early crisis detection in order to search for the first informal solutions; when not possible, the problem will be submitted to the Task Force (Steering Committee) debating in an urgency mode.

Figure 5-1: nSHIELD Risks assessment

Several of these potential risks can be assessed concerning their probability and level of (negative) impact. Risks with a high probability and a severe impact are handled with particular caution during the project.

Due to the high number of SPD technologies that will be developed and integrated in the nSHIELD system, for the sake of simplicity, instead of listing all the risks associated to each technology, two macro-risks have been identified, see [1].

Table 5-1: Research and technological risks

	Guideline	Assessment
Risk 1. A technology development at node, network or middleware layer delays. *Probability*: [Medium] *Gravity*: [Medium/High]	If a critical delay occurs in one or more of the SPD technologies, two main countermeasures can be taken.	It has been verified that the technologies involved in the project are very numerous and interchangeable in some cases.
Risk 2. The composability concept fails *Probability*: [Low/Medium] *Gravity*: [Medium]	Strict requirements and specifications and a more efficient system design can be studied, to improve the nSHIELD performances with the minimum effort.	This risk could be present during the integration and validation demonstration phase. Detailed requirements are included in the preliminary specification deliverables. All the partners have been required to contribute to the definition. Final requirements and specification will be delivered in the following period of the project.

Table 5-2: Standardization and exploitation risks

	Guideline	Assessment
Risk 3. Products appear on the market before the project work is completed *Probability*: [Low]. *Gravity*: [Medium/High].	Check that all the features and functions of nSHIELD could be included in any product that could emerge within the next couple of years.	Our response from market players shows that nSHIELD is still some 3-5 years ahead of product development.
Risk 4. Standards emerge that prevent the deployment of the results, or lead towards a different solution to that being developed in the project *Probability*: [Low]. *Gravity*: [High].	The components could be very modular and composable, and the necessary adaptations should be largely a case of modifying the external interfaces.	nSHIELD work is “ahead of standards”. The challenge is to build up knowledge in this area and to set-up the ecosystem for measureable security in embedded systems prior to standardization

Table 5-3: Organization risks

	Guideline	Assessment
Risk 5. Withdrawal of a key partner. *Probability*: [High]. *Gravity*: [Medium].	The consortium is expected to be able to manage withdraw of partners by the replacing of partners of the consortium, first, or by an external organization.	All key players remained in the project and contributed with their experience. Partners with limited involvement on the project have been replaced without impact on the activities.
Risk 6. Since WP6 builds on all other work packages, the main risk identified is the delaying of components delivery. *Probability*: [Medium]. *Gravity*: [Medium].	Measures can be taken to minimize the risks if there’s some foreseen delay.	If necessary, some components can be replaced with older versions or components already developed in other projects, so that a single delay should not compromise the final demonstration.

Methodological risks relate primarily to the need to merge research results from different organizations, with a potentially large degree of difference in methods, terminology, and outputs.

Table 5-4 Methodological risks

	Guideline	Assessment
Risk 7. The consortium fails to deliver proper models and tools. *Probability*: [Medium] *Gravity*: [Medium]	Parameterization and configuration of the field test, based on the extensive experience of the project partners in development of SPD systems and technologies, are recommended.	The project is expected to use formal methods to establish the middleware, the metrics and the composability, also if the whole architecture is not verified through formal methods/models.
Risk 8. The consortium fails to deliver prototypes according to the specifications and requirements. *Probability*: [Medium] *Gravity*: [Medium]	A minimal combination of existing industrial partner products would provide a substitution for the prototype, in order to be able to provide most functionality as possible of the project prototype.	The various prototypes demonstrate different SPD aspects. Each prototype is approached and realized by groups of different partners and could include components with similar functionalities.

Table 5-5 investment related risks

	Guideline	Assessment
Risk 9. Low or negative investment return *Probability*: [Medium]. *Gravity*: [High].	Acceptance preparation activities should be conducted starting from the beginning of the project	Acceptance requirements could be part of the specification preliminary definition.

6 Quality Assurance

The focus of Quality Assurance is on the processes used in the project. Quality assurance ensures that project processes are used effectively to produce quality project deliverables. It involves following and meeting standards, continuously improving project work, and correcting project defects.

Good practice for QA procedures requires an objective review to assess the quality of the project, and also to identify areas where improvements could be made.

The project may be reviewed as a whole or in parts. The objective in QA implementation is to involve reviewers that can conduct an unbiased review of the project.

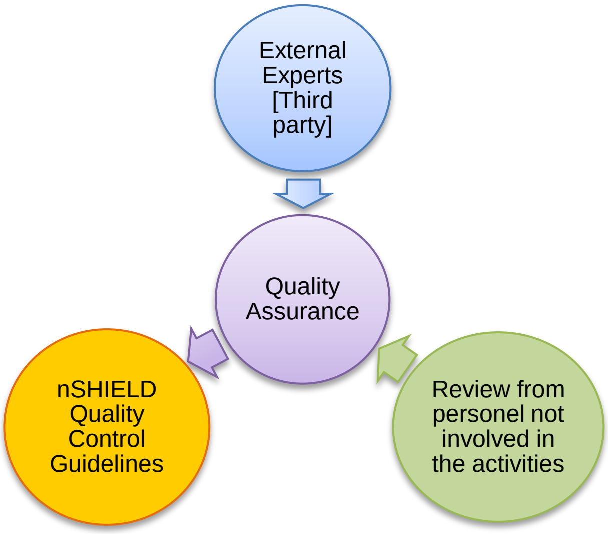

Figure 6-1: Quality Assurance good practice

Table 6-1: QA guideline and assessment

	Guideline	Assessment
6.a	It is good practice to use QA reviewers that have not been involved in same project.	Although the guidelines for QA are universally known and used, slightly different approaches could be evidenced among research institutes, laboratories and industries. The consortium includes all of those kinds of partners and not all are involved in all the activities. Consequently, each partner is (or could be) requested to review deliverables or processes, on the QA point of view, where not directly involved.

7 Action Plan

Generally speaking, the action plan summarizes the quality control guidelines, the priorities evidenced by partners and by stakeholders and the background as showed in the following figure.

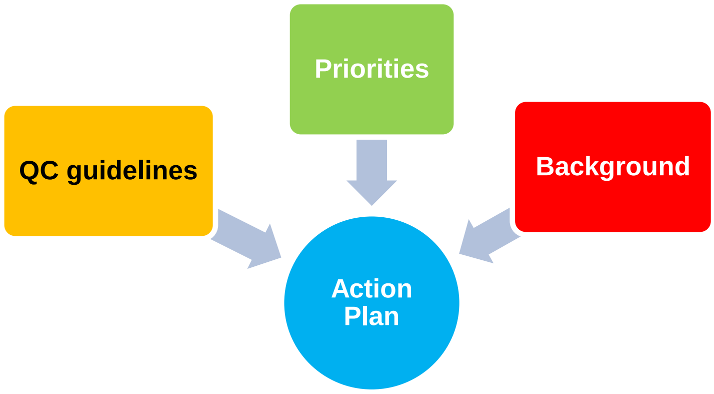

Figure 7-1: Action Plan input

The resources involved in terms of time, money and technologies are described in D1.4, for the first half of the project, and will be available in D1.7 (still in progress), for the first year. Time and costs are in line with the plan.

The analysis of the first year of nSHIELD activities indicates that the overall progress is good, and that only a limited number of areas require further attention in the quality management. In particular this aspect is related to the areas of information, structure, procedures, and tools. This need is because of the consortium that is composed by 25 partners from 6 different European countries.

Concerning the three steps of impact of the action plan:

1. Short term - learning about problems and misunderstanding
2. Medium term – action and decision for the selection of the suitable solution
3. Long term impact – solution and methodologies for collaborative research

This first year of project activity can be clearly linked with the first step, while the second one could be subject of the remaining two years of nSHIELD and the last one is expected to have impact in the future.

Our major concern was how to achieve living information, which is consistent and which can be distributed to relevant experts without spamming them. The conclusion on how to achieve living information was to establish the collaboration platform, based on wiki implementation, characterized by a really clear structure.

As the project addresses security privacy and dependability, the approach was to use semantics as a tool for dependable information. Dependable information means that the change in one topic should be reflected in all the other topics that are related to it. This requirement for consistent information led us to the semantic MediaWiki, where specific extensions towards the need of the project were found. The structure of the project is sufficiently described in the TA, addressing both the rules of the project management, the technical leadership and the duties of the work packages and task leaders. The main tools for collaboration are the semantic MediaWiki, while phone and physical meetings are the “tools” for communication.

8 nSHIELD Quality Management

All the documents delivered during the first year of nSHIELD activity have been issued according to the template available on Wiki [http://nshield.unik.no/wiki/Deliverables].

Each deliverable responsible has guided and controlled the issuing of the deliverable under the supervision of both the Project Coordinator and the technical Manager as identified in [4].

8.1 Meetings

The following list summarizes the meetings performed during the first year:

- 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.
- Project Meeting was held in Rome on May 2012
- Project meetings were held in Budapest on 11-12 September 2012
- Project meeting was held in Rome on 16 October 2012
- First Year Review meeting held in Rome on 17 October 2012
- Meetings were taken in parallel with conferences where some partners attended

Minutes of Meetings as well as corresponding documents are stored at the project official repository and Collaborative Tool (http://nshield.unik.no). The following table shows the list of the meeting (Phone call and Skype) specifically dedicated to each technical WP during the first year of activity.

Table 8-1: First year WP meeting

WP	Date (Phone call- Skype)
WP2 - SPD Metric, requirements and system design	November (2011) 17, 20, 30 January 12 February 2, 7 March 6 April 25 May 2, 11 June 20, 21 July 3, 17
WP3 - SPD Node	February 15 March 22 May 11, 17 June 20
WP4 - SPD Network	January 12 May 22 June 25
WP5 - SPD Middleware & Overlay	November (2011) 17 February 3 April 26 May 3, 17, 18
WP8 - Knowledge exchange and industrial validation	February 1 June 22

Information is also available at the nSHIELD website.

Limited activities related to WP6 “Platform integration, validation & demonstration” and to WP7 “SPD Applications” have been planned during the first year of the project.

One Technical Management Committee meeting was held on February 2012 to discuss and approve Amendments.

No Technical Task force meeting was required during the first year of the project.

WP1 “Project Management” responsible is involved on all the Face to Face meeting and on most part of the WPs meetings.

9 Conclusions

For quality control it is important to:

- Identify potential bottlenecks of a collaborative project
- Identify risks in the project and establish a contingency plan
- Clearly outline the scope of the project, including detailed sub-goals for work packages, tasks and deliverables
- Establish an action plan
- Clearly apply Quality Management activities.

This document has performed a detailed analysis of the application of the QC guidelines [4] applied to the nSHIELD project during the first year of activity.

Assessments have been specifically defined for each obstacle identified in [4] chapter 4.

The scope and the objectives of the project have been outlined according to the six principal aspects for SPD.

Risk management is taken care of, risks identified, and assessments according to the contingency plan are established.

When it comes to the action plan, we have addressed and implemented the areas of information, structure, procedures, and tools, which is achieved through the use of a collaboration platform based on a Semantic MediaWiki.

Quality Management activities have been described in Chapter 8.