Project no: 100204

p-SHIELD

pilot embedded Systems architecture for multi-Layer Dependable solutions

Instrument type: Capability Project

Priority name: Embedded Systems (including RAILWAYS, HEALTH, CRUISE LINERS AND FLOW-METERS)

D1.1.
Collaborative tools and document repository

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Movation AS

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)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	X
CO	Confidential, only for members of the consortium (including the Commission Services)	

Pilot SHIELD

pilot embedded Systems
arcHItecturE for multi-Layer Dependable solutions

Revision v1

SEVEN FRAMEWORK
PROGRAMME

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Modification History

Issue	Date	Description
Draft A	1. September 2010	BSCW established, Semantic Media Wiki established
Issue 1	1. March 2011	Document supporting WEB page established
Issue 2	15. March 2011	Incorporates comments from issue 1 review

Contents

Glossary

ESs   Embedded Systems
SPD   Security Privacy Dependability

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1 Introduction

pSHIELD is an international research project. The scientific and technical works of the project are going to be performed by the partners from several countries. 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 visualisation. The project should also satisfy the public interests by providing overview of the project and its partners, disseminating the scientific outcome of the project.

This deliverable describes the document repository and collaboration platform. pSHIELD collaborates in total on three platforms, each of them satisfying specific needs:

- pSHIELD Web page:
  Public for information, news and promotion
  The Web page is available at: pSHIELD Web: http://www.pshield.eu
  Further details on the Web page are provided in deliverable D7.1.1.

- Document Repository for clean document exchange
  The document repository is available at http://bscw.juartemis-pshield.eu/

- Semantic Media Wiki for collaboration and day-to-day work
  The Semantic Wiki is available at http://pshield.unik.no

This deliverable is built up as follows: It describes in section 2 the requirements for a collaborative platform. Section 3 provides the description of the document repository, while section 4 provides details on the Semantic MediaWiki.

2 Requirements for collaborative platforms

The challenge of each collaborative project is two create physical and virtual meeting places for collaboration, as well as an efficient handling of information and documentation in a platform.

Starting from the discussions during the kick-off meeting, we saw the need for different types of requirements:

- An efficient handling of deliverables, answering "where to find the latest version of that file"

- A collaborative tool for handling all "up to date" information, avoiding email spamming an the search for "latest information".

- Functional requirements like

    - single sign on

    - user management

    - data export

Based on these requirements, the project decides to select three platforms:

- pSHIELD Web page:
  The main reason for having an "own-standing platform" for the publication of information and news is the requirement for a good "look and feel". Such a functionality is not a core functionality of wiki implementations, and except for the Institute of Applied Informatics and Formal Description Methods at the Karlsruhe Institut for Technology[1]. An implementation as done by AIFB would have exceeded the frame of the project, and pSHIELD therefor decided to go for traditional Web design for the pSHIELD Web, which is available at: http://www.pshield.eu
  Further details on the Web page are provided in deliverable D7.1.1. The main deficiencies of conventional web pages are the non-interactive way of updating information and handling documents. This is the reason for using a document repository and a wiki-based collaboration tool.

- Document Repository for clean document exchange:
  The document repository uses the state-of-the-art BSCW software for document storage of all relevant documents, such as deliverables, minutes of meetings and administrative documents. The document repository is available at http://bscw.juartemis-pshield.eu/
  Further details are provided in section 3 of this documents. While BSCW software supports a clean structure for documents storage and secure access to these documents, it does not support an easy-to-use collaboration. This is the reason for having introduced a wiki-based collaboration.

- Semantic Media Wiki for collaboration:
  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. Special focus in pSHIELD was to on the semantic extensions, allowing machine-readable information and information exchange through the platform. The latter capability was introduced to open for an extension of sensor input into business process, being a part of a M2B platform. The Norwegian associate partner Norwegian Rail Authorities (Jernbaneverket - JBV) has structured all their internal processes on a

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[1] Institute of Applied Informatics and Formal Description Methods (AIFB), http://aifb.kit.edu

semantic mediawiki, thus one of the visions of pSHIELD is to allow for sensor input towards these processes.
The Semantic Wiki is available at http://pshield.unik.no

While using three different tools, the project participants recognised one major deficiency. The lack of seamless and personalised access. Each platform requires an own login, and has it's own user management. pSHIELD has tackled this lack of seamless interoperability by a clear distinction on responsibilities:

• SESM is responsible for the WEB page, and the update with relevant information

• THYIA is responsible for the BSCW server, and has provided a sufficient amount of licenses for access to the repository.

• CWIN has implemented the Semantic MediaWiki and is hosting the software. Requirements were provided by Movation and SESM, based on their expertise in collaboration and open innovation.
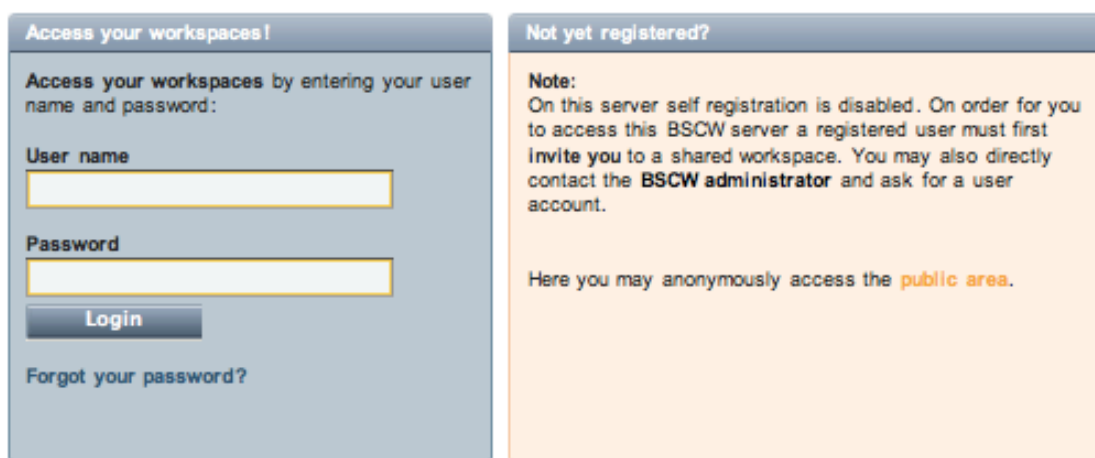
The following section will provide an overview over the special functionality provided by the document repository and the collaboration platform.

3 Document Repository

The document repository is based on the state-of-the-art BSCW software for document storage of all relevant documents, such as deliverables, minutes of meetings and administrative documents. The document repository is available at http://bscw.juartemis-pshield.eu/.

As BSCW software is state-of-the-art, this section only provides a screen shot of the software. Figure 1 provides a screenshot of the login screen.

Figure 1: Login-Screen of the pSHIELD document repository

Our implementation of the BSCW has sufficient licenses to provide an appropriate handling of documents.

Figure 2: BSCW screenshot, providing the document structure for all document.

While BSCW software supports a clean structure for documents storage and secure access to these documents, as shown in Figure 2, it does not support an easy-to-use collaboration. This is the reason for having introduced a wiki-based collaboration, which is described in the next section.

4 Collaboration Platform

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.

Special focus in pSHIELD was to on the semantic extensions, allowing machine-readable information and information exchange through the platform. The latter capability was introduced to open for an extension of sensor input into business process, being a part of a M2B platform. The Norwegian associate partner Norwegian Rail Authorities (Jernbaneverket - JBV) has structured all their internal processes on a semantic MediaWiki, thus one of the visions of pSHIELD is to allow for sensor input towards these processes.

This vision of sensor input for business processes is "a long way ahead", and will not be implemented in the "pilot" pSHIELD project. However, the selection of a semantic MediaWiki platform introduces lot's of functionality to handle the specific challenges for projects. These functionalities are further described in the next sections.

4.1 Functionality overview

The pSHIELD collaboration platform is based on a Semantic Wiki implementation and is available at http://pshield.unik.no. Figure 3 shows the entry page for the pSHIELD wiki.
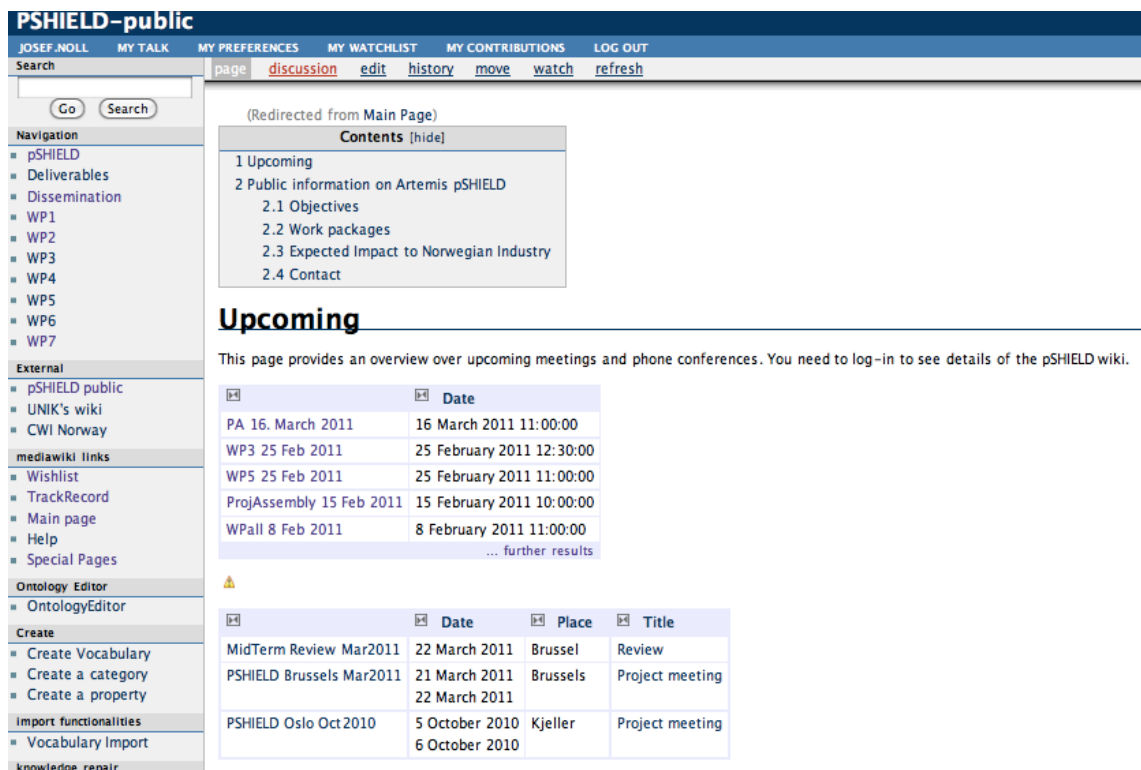
Figure 3: Welcome page for the pSHIELD wiki, providing a quick overview on activities

The platform was originally developed for interaction between the Norwegian partners and the associate partners JBV and Telenor Objects. Having demonstrated the functionality towards project partners, the platform has been adopted for pSHIELD as a collaboration platform.

Figure 4 provides the disclaimer of the collaboration platform.

pSHIELD Wiki is generated to easy the communication amongst the participants in the Artemis pSHIELD project.

The machine is based on a Semantic MediaWiki

--Josef.Noll 12:27, 10 March 2011 (CET)
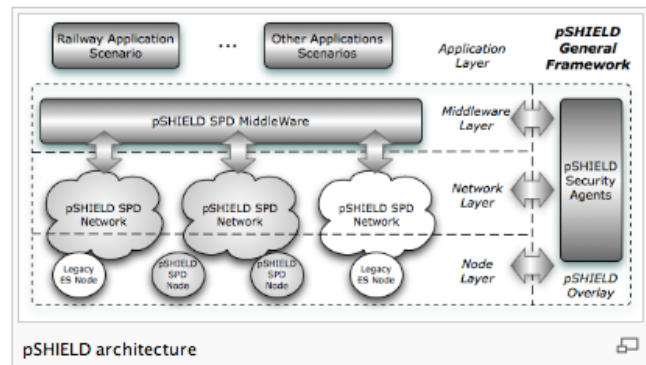
Figure 4: Disclaimer for the pSHIELD collaboration platform

The platform uses form templates for creating inputs, such that these semantic informations can be used to in automated page generations, avoiding the input for manual creation of pages.

4.2   Semantic search for automated pages

Traditional Web pages are hand-made, and require manual input for any relevant updates. Advanced Web tools use dynamic content, which is configured through manually described page settings.

pSHIELD introduces a Semantic MediaWiki, allowing the on the fly generation of pages based on the semantic queries and the input being provided through forms and templates.   Two examples of such forms are provided here, further details can be obtained directly from the wiki: http://pshield.unik.no

WP2 – SPD metrics, requirements and system design [edit]

The objectives of WP 2 are:

- The definition of the SPD requirements and specifications of each layer, as well as of the overall system on the basis of the application scenario;
- 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 SHIELD system architecture. Identification of the SPD layers functionalities, their intra and inter layer interfaces and relationships

Deliverables in WP2 [edit]

	Title	Due date	Lead partner	Dissemination level
D2.1.1	System Requirements and Specifications	M03	THYIA	Public
D2.2.1	Preliminary SPD metrics specifications	M06	ESI	Public
D2.2.2	SPD metrics specifications	M10	THYIA	Restricted
D2.3.1	Preliminary system architecture design	M06	THYIA	Restricted
D2.3.2	System architecture design	M10	THYIA	Restricted

Partners in WP2 [edit]

- T2.1 (Lead partner THYIA, Partner SESM, CS, CWIN, ED, ETH, THYIA)
- T2.2 (Partner ASTS, ATHENA, CS, ED, ESI, ETH, THYIA)
- T2.3 (Partner SESM, ATHENA, CS, CWIN, ED, ETH, THYIA)

Tasks in WP2 [edit]

- T2.1 (Multi-technology requirements & specification, Lead partner THYIA, Partner SESM, CS, CWIN, ED, ETH, THYIA, Objective This task will identify the requirements and describe the specifications of the overall SHIELD system. For each SPD technology, for each layer, a formal set of high level, architectural, interface and performance requirements will be identified. This task will be influenced by the application scenario. This scenario will be taken as a reference for defining the SPD requirements of each architectural layer (even though the conceived architecture will be able to support any ES scenario). Requirements and specification will be also influenced by the liaisons activated in WP 1.An iterative approach will be adopted. A preliminary set of requirements and specification will be provided at the early beginning of the project. The preliminary outcome of this task will be

Figure 5: Workpackage description containing Deliverables, Contributors (Partners) and Tasks

Figure 5 shows an implementation of WP2, providing both the list of deliverables, the contributors and tasks of this workpackage. A traditional web or wiki would have needed duplication of information, while our pSHIELD Wiki uses semantic queries based on the ask[2] functionality.

Using these functionality, our implementation uses the following commands to establish WP2:

```
=[[Workpackage::{{PAGENAME}}]] - SPD metrics, requirements and system design=
The objectives of {{PAGENAME}} are:
* The definition of the SPD requirements and specifications of each layer, as
well as of the overall system on the basis of the application scenario;
* 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 SHIELD system architecture. Identification of the SPD
layers functionalities, their intra and inter layer interfaces and
relationships

==Deliverables in {{PAGENAME}} ==
{{#ask:  [[Workpackage::{{PAGENAME}}]] [[Deliverable::+]]
| ?Title
| ?Due date
| ?Lead partner
| ?Dissemination level
}}

==Partners in {{PAGENAME}}==
```

---

[2] Search in the Semantic MediaWiki: http://semantic-mediawiki.org/wiki/Help:Semantic_search

```
{{#ask: [[Workpackage::{{PAGENAME}}]] [[Partner::+]]| ?Lead partner | ?
Partner | format=ul
}}

==Tasks in {{PAGENAME}}==
{{#ask: [[Workpackage::{{PAGENAME}}]] [[Task number::+]] [[Objective::+]]
| ?Title=
| ?Lead partner
| ?Partner
| ?Objective
| format=ul
}}
```

The first part of the codes establishes the workpackage specific description, while the second part starting contains three "ask" statements, which provide the list of deliverables, the list of partners and the description of tasks in this workpackage.

The same mechanism is used to establish the responsibility of each partner, shown in Figure 6 for CWIN.

CWIN leads

- D7.2 (Title Dissemination report)
- T7.2 (Title Exploitation)

CWIN is involved in the following activities

⋈	⋈ Title
T2.1	Multi-technology requirements & specification
T2.3	Multi-technology architectural design
T3.1	Nano, Micro and Personal node
T3.2	Power node
T5.1	SPD driven Semantics
T5.3	Policy-based management
T6.1	Multi-Technology System Integration
T6.4	Multi-technology Demonstration
T7.1	Dissemination
T7.2	Exploitation

Involvement of people and activities from CWIN in pSHIELD are

- Kaja.Haavardsholm (Kaja Elisabeth, Mosserud Haavardsholm, e: kaja@unik.no ✉, p: 64844706)
- Kristin.Scheen (Kristin, Scheen, e: kritins@unik.no ✉, p: 64844749)
- Mushfiq.Chowdhury (Mohammad Mushfiqur, Rahman Chowdhury, e: mohammad@unik.no ✉, m: +4795798902)
- Paal.Spilling (Pål, Spilling, e: paal@unik.no ✉)
- Sarfraz.Alam (Sarfraz, Alam, e: sarfraz@unik.no ✉, m: +4746393153)
- Vladimir.Oleshchuk (Vladimir, Oleshchuk, e: vladimir.oleshchuk@uia.no ✉, p: +4737253212, m: +47 41209000)
- Zahid.Iqbal (Zahid, Iqbal, e: zahid@unik.no ✉, p: +47 9343 8622, m: +47 9343 8622)

Figure 6: CWIN responsibilities, involvement, members and contact information in pSHIELD

The associated query is again established by just three ask functions:

```
{{PAGENAME}} leads {{#ask: [[Lead partner::{{PAGENAME}}]] | ?Title | format=ul
}}

{{PAGENAME}} is involved in the following activities
{{#ask:  [[Partner::{{PAGENAME}}]] [[Task number::+]]
 | ?Title
}}

Involvement of people and activities from {{PAGENAME}} in pSHIELD are
{{#ask:  [[Partner::{{PAGENAME}}]] [[User::+]]
 | ?Prename=
 | ?Name=
 | ?Email= e:
 | ?Phone = p:
 | ?Mobile phone = m:
  | format=ul
}}
```

This description is identical for all partners, thus the set-up of the complete collaboration platform is made extremely easy. Once developed, the content of each partner info page is identical.

The semantic functionality opens for export of information towards other platforms and systems. it further allows the import of information, a functionality which will be further investigated to realise the vision of importing sensors into business processes.

4.3 List of Forms and Templates

As indicated in the previous section, the pSHIELD collaboration platform uses standardised input mechanisms based on semantic templates. These forms were established allowing the following tasks:

1. ActionItem
2. AddTask
3. AddUser
4. Deliverable
5. Meeting
6. NewTask
7. PhoneConf
8. UserRegistration
9. Workpackage

Figure 7 provides an overview table using the functionality for action items, phone conferences and meetings.

Actions, Meetings and Phone conferences

Open ActionItems:

- AI01-201102 (2011/02/28, for Spase.Drakul, AI: Fix review date)
- AI02-201102 (2011/03/10, for Josef.Noll, Spase.Drakul, AI: Create one page summary for D1.1.1 and D7.1.1)
- AI04-201102 (2011/02/16, for Inaki.Eguia, AI: Ask for contribution for D2.2.1)
⚠

Meetings:

	Date	Place	Title
PSHIELD Oslo Oct 2010	5 October 2010 6 October 2010	Kjeller	Project meeting
PSHIELD Brussels Mar2011	21 March 2011 22 March 2011	Brussels	Project meeting
MidTerm Review Mar2011	22 March 2011	Brussel	Review

Planning a new meeting? Please add through Form:Meeting

Phone Conferences:

	Date	Phone
WP2 skypeConf Jan2011	13 January 2011 1099	Skype
WPall 20 Jan 2010	20 January 2011 1099	+39 081 197 23 888, pin: 3434
WPall 8 Feb 2011	8 February 2011 11:00:00	+39 081 197 23 888, pin: 3434
ProjAssembly 15 Feb 2011	15 February 2011 10:00:00	+386 1 309 93 96, pin 91253004.
WP5 25 Feb 2011	25 February 2011 11:00:00	+39-0577 781498, Call number: 232 PIN: 0207.
		... further results

⚠ Planning a phone conference? Please add through Form:PhoneConf

Figure 7: Form-based information for pSHIELD providing collaboration tools

Figure 7 shows an example of form-based information used in pSHIELD. The experience within our project shows that such a collaboration platform provides relevant information.

However, it requires a change of mentality for users being used to distribute all information by email.

5 **Conclusions**

pSHIELD is an international research project. The scientific and technical works of the project are going to be performed by the partners from several countries. To facilitate the effective cooperation between the partners, the project provides three distinct tools:

- pSHIELD Web page:
  The main reason for having an "own-standing platform" for the publication of information and news is the requirement for a good "look and feel". Such a functionality is not a core functionality of wiki implementations, and except for the Institute of Applied Informatics and Formal Description Methods at the Karlsruhe Institut for Technology. An implementation as done by AIFB would have exceeded the frame of the project, and pSHIELD therefor decided to go for traditional Web design for the pSHIELD Web, which is available at: http://www.pshield.eu
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- Semantic Media Wiki for collaboration:
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  The Semantic Wiki is available at http://pshield.unik.no

Through these platforms pSHIELD enables an efficient way of collaboration, and opens for the vision of pSHIELD sensor input for business processes.