

EUROPEAN COMMISSION

**Thematic Priority:**  
**SIXTH FRAMEWORK PROGRAM**



**Priority 2.5.3**  
**INFORMATION SOCIETY TECHNOLOGIES**  
**Unit G3 Embedded Systems**



**Project Acronym:**

**SOCRADES**

**Project Full Title:**

**Service-Oriented Cross-layer infRAstructure for  
Distributed smart Embedded devices**

**Proposal/Contract No: EU FP6 IST-5-034116 IP SOCRADES**

# **Deliverable**

## **6-Month Project Report (M1-M6)**

**Status: Final**

**Dissemination Level: CO**

**Date: 20.04.2007**

**Organization Name of the Lead Contractor for this Deliverable: Schneider Electric**

---

### Status Description:

Scheduled completion date <sup>1</sup> :	28.02.2007	Actual completion date <sup>2</sup> :	20.04.2007
Short document description:	The 6-month progress report includes Progress Report (main technical and management activities of the reporting period), Dissemination Report, Standardisation Report, IPR Report, Report on using and disseminating of knowledge, Quality Assessment Report and Financial report (6-monthly cost statements per partner and resource consumption).		
Author(s) deliverable:	Nataliya Popova, Walter Colombo, Ralf Neubert, Ulf Westblom, Prof. Paul Drews, Th. Bangemann, Radmehr Monfared, Marco Taisch, Stamatis Karnouskos, Axel Klostermeyer, Ivan Delamer	<b>Report/deliverable classification:</b> <input type="checkbox"/> Deliverable <input type="checkbox"/> Three-Month Activity Report <input checked="" type="checkbox"/> Six-Month Activity Report	
<input type="checkbox"/> Partner <input type="checkbox"/> Peer reviews <input type="checkbox"/> Contributions	<input checked="" type="checkbox"/> Schneider Electric <input checked="" type="checkbox"/> ABB <input checked="" type="checkbox"/> APS GmbH <input type="checkbox"/> Boliden AB <input type="checkbox"/> FlexLink Automation Oy. <input checked="" type="checkbox"/> Institut f. Automation und Kommunikation e.V. Magdeburg <input type="checkbox"/> Kungliga Tekniska Högskolan	<input checked="" type="checkbox"/> Loughborough University <input type="checkbox"/> Luleå University of Technology <input checked="" type="checkbox"/> Politecnico di Milano <input checked="" type="checkbox"/> SAP AG <input checked="" type="checkbox"/> Siemens AG <input checked="" type="checkbox"/> Tampere University of Technology <input type="checkbox"/> Jaguar Cars Ltd. <input type="checkbox"/> ARM Ltd.	
Peer review approval : <input type="checkbox"/>	<input type="checkbox"/> Approved <input type="checkbox"/> Rejected (improve as specified hereunder)	Date:	[dd.mm.yyyy]
Suggested improvements:	[suggested improvements]		

<sup>1</sup> As defined in the DoW

<sup>2</sup> Scheduled date for approval

**Table of Contents:**

**1. EXECUTIVE SUMMARY ..... 6**

**2. PROGRESS REPORT FOR THE PERIOD ..... 6**

2.1. WP1 – TREND SCREENING, REQUIREMENTS, STATE-OF-THE ART, TECHNOLOGY ASSESSMENT ..... 7

    2.1.1. *Work package objectives, starting point of work* ..... 7

    2.1.2. *Tasks progress* ..... 7

    2.1.3. *Deviations of the project work program (if applicable)* ..... 8

    2.1.4. *List of deliverables for the reporting period (if applicable)* ..... 8

    2.1.5. *List of milestones for the reporting period (if applicable)* ..... 8

2.2. WP2 – FRAMEWORK SPECIFICATION FOR AD-HOC NETWORKING SERVICE PLATFORM ..... 8

    2.2.1. *Work package objectives, starting point of work* ..... 8

    2.2.2. *Tasks progress* ..... 8

    2.2.3. *Deviations of the project work program (if applicable)* ..... 9

    2.2.4. *List of deliverables for the reporting period (if applicable)* ..... 9

    2.2.5. *List of milestones for the reporting period (if applicable)* ..... 9

2.3. WP3 – WIRELESS SERVICE-ORIENTED SENSOR/ACTUATOR NETWORKS ..... 9

    2.3.1. *Work package objectives, starting point of work* ..... 9

    2.3.2. *Tasks progress* ..... 10

    2.3.3. *Deviations of the project work program (if applicable)* ..... 10

    2.3.4. *List of deliverables for the reporting period (if applicable)* ..... 10

    2.3.5. *List of milestones for the reporting period (if applicable)* ..... 10

2.4. WP4 – DEVICE CENTRIC INFRASTRUCTURE ..... 10

    2.4.1. *Work package objectives, starting point of work* ..... 10

    2.4.2. *Tasks progress* ..... 10

    2.4.3. *Deviations of the project work program (if applicable)* ..... 11

    2.4.4. *List of deliverables for the reporting period (if applicable)* ..... 11

    2.4.5. *List of milestones for the reporting period (if applicable)* ..... 11

2.5. WP5 – SERVICE-CENTRIC INFRASTRUCTURE ..... 11

    2.5.1. *Work package objectives, starting point of work* ..... 11

    2.5.2. *Tasks progress* ..... 11

    2.5.3. *Deviations of the project work program (if applicable)* ..... 11

    2.5.4. *List of deliverables for the reporting period (if applicable)* ..... 11

    2.5.5. *List of milestones for the reporting period (if applicable)* ..... 11

2.6. WP6 – ENTERPRISE INTEGRATION ..... 12

    2.6.1. *Work package objectives, starting point of work* ..... 12

    2.6.2. *Tasks progress* ..... 12

    2.6.3. *Deviations of the project work program (if applicable)* ..... 12

    2.6.4. *List of deliverables for the reporting period (if applicable)* ..... 12

    2.6.5. *List of milestones for the reporting period (if applicable)* ..... 13

2.7. WP7 – SYSTEM ENGINEERING & MANAGEMENT ..... 13

    2.7.1. *Work package objectives, starting point of work* ..... 13

    2.7.2. *Tasks progress* ..... 13

    2.7.3. *Deviations of the project work program (if applicable)* ..... 14

    2.7.4. *List of deliverables for the reporting period (if applicable)* ..... 14

    2.7.5. *List of milestones for the reporting period (if applicable)* ..... 14

2.8. WP8 – APPLICATION PILOTS, DEMONSTRATORS ..... 14

    2.8.1. *Work package objectives, starting point of work* ..... 14

    2.8.2. *Tasks progress* ..... 14

    2.8.3. *Deviations of the project work program (if applicable)* ..... 14

2.8.4. List of deliverables for the reporting period (if applicable) .....	14
2.8.5. List of milestones for the reporting period (if applicable) .....	15
2.9. WP9 – DISSEMINATION .....	15
2.9.1. Work package objectives, starting point of work .....	15
2.9.2. Tasks progress .....	15
2.9.3. Deviations of the project work program (if applicable) .....	15
2.9.4. List of deliverables for the reporting period (if applicable) .....	15
2.9.5. List of milestones for the reporting period (if applicable) .....	16
2.10. WP10 – EXPLOITATION, STANDARDS & ROADMAPING .....	16
2.10.1. Work package objectives, starting point of work .....	16
2.10.2. Tasks progress .....	16
2.10.3. Deviations of the project work program (if applicable) .....	17
2.10.4. List of deliverables for the reporting period (if applicable) .....	17
2.10.5. List of milestones for the reporting period (if applicable) .....	17
<b>3. CONSORTIUM MANAGEMENT (WP11 – PROJECT MANAGEMENT) .....</b>	<b>17</b>
3.1.1. Work package objectives, starting point of work .....	17
3.1.2. Tasks progress .....	17
3.1.3. Deviations of the project work program (if applicable) .....	18
3.1.4. List of deliverables for the reporting period (if applicable) .....	18
3.1.5. List of milestones for the reporting period (if applicable) .....	18
<b>4. DISSEMINATION REPORT .....</b>	<b>19</b>
4.1. PLANNED ACTIVITIES FOR THE NEXT PERIOD .....	20
<b>5. STANDARDIZATION AND IPR REPORT .....</b>	<b>20</b>
<b>6. EXPLOITATION REPORT/REPORT ON USING AND DISSEMINATING OF KNOWLEDGE .....</b>	<b>20</b>
6.1. PLANNED ACTIVITIES FOR THE NEXT PERIOD .....	20
<b>7. FINANCIAL REPORT AND ALLOCATION OF RESOURCES FOR THE REPORTING PERIOD .....</b>	<b>20</b>
<b>8. RISK MANAGEMENT .....</b>	<b>21</b>
8.1. RISK ANALYSIS AT PROJECT LEVEL .....	21
8.2. RISK ANALYSIS PER WP .....	21
<b>9. QUALITY MANAGEMENT .....</b>	<b>22</b>
9.1. QUALITY ASSURANCE FOR DELIVERABLES FINISHED DURING THE CURRENT PERIOD .....	23
9.1.1. Used procedure .....	23
9.1.2. Results of the assessment of deliverables for the current period: .....	23
9.1.3. Summary .....	23
9.2. QUALITY ASSURANCE OF WORK PACKAGES .....	24
9.2.1. Work Package Quality Status Overview .....	24

### List of Figures:

Figure 1: Work plan schedule - Overview

**List of Tables:**

Table 1: Evaluation table for work package progress self evaluation .....  
Table 2: List of meetings / phone conferences.....  
Table 3: List of publications.....  
Table 4: List of presentations/posters.....

## 1. Executive summary

This progress report presents activities and results achieved by the SOCRADES consortium during the first 6-month reporting period (September 1st 2006, until February 28th, 2007). It is based on the Guidelines for preparing project reports for FP6 (<http://cordis.europa.eu/fp6/find-doc-management.htm#reporting>).

This report is aimed to monitor the 6-monthly progress of the project. Most of the information is filled in by the Coordinator and the WPLs, except the financial information that is provided by all partners. The due date for the contributions is 3 weeks after the end of the six-monthly period. The Coordinator compiles afterwards the feedbacks, generates the final version of the report and distributes it internally to the consortium. A peer-to-peer assessment review meeting (similar to any deliverable review) is then organised by the Project Coordinator, and the assessed report is sent to the EC at the latest 45 days after the period end.

The following diagram presents an overview of the SOCRADES work plan.

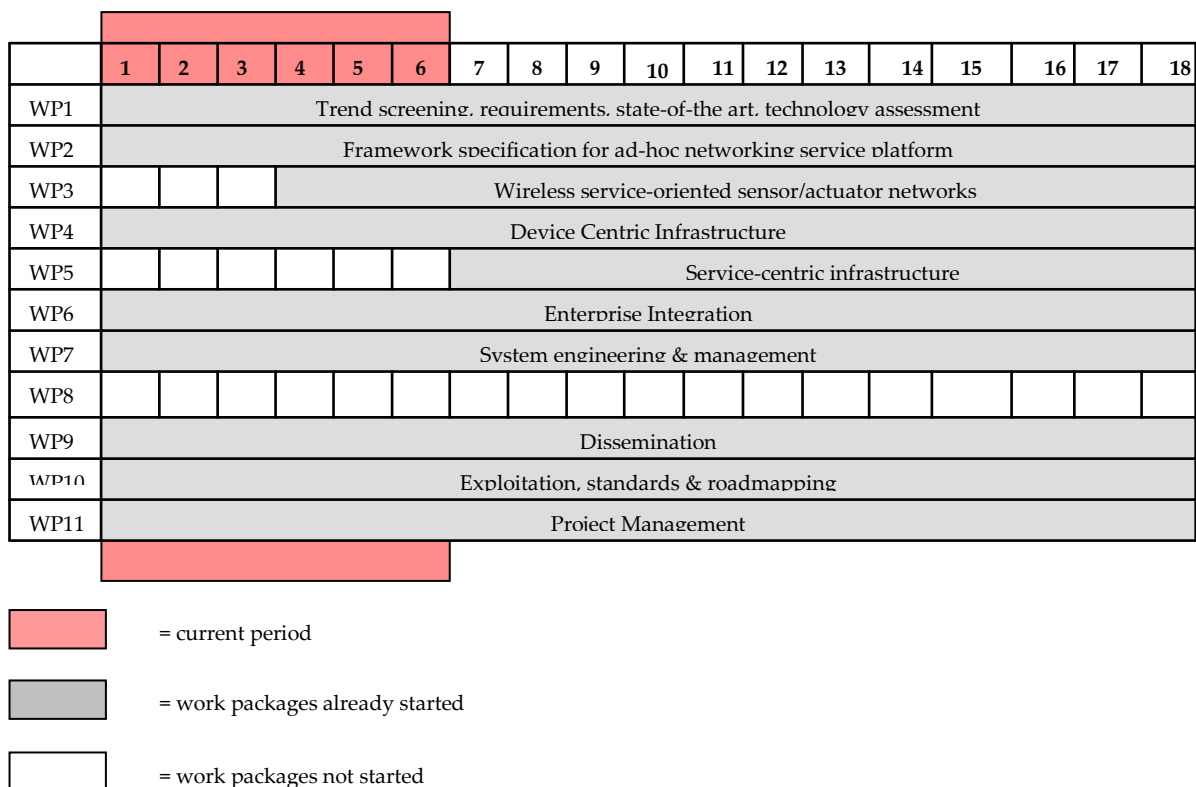


Figure 1: Work plan schedule - Overview

## 2. Progress report for the period

This section includes a summary of objectives for the considered reporting period and the actions carried out, based on the work packages which were active, as well as some indications for future activities. For each work package, the following information is given:

- Work package objectives and starting point of work at beginning of reporting period;
- Progress towards tasks worked on and achievements made with reference to planned objectives, identifying contractors involved;
- Deviations from the project work programme, and corrective actions taken/suggested: identifying the nature and the reason for the problem, identifying contractors involved;
- List of deliverables, including due date and actual/foreseen submission date;
- List of milestones, including due date and actual/foreseen achievement date.

## **2.1. WP1 – Trend screening, requirements, state-of-the art, technology assessment**

### **2.1.1. Work package objectives, starting point of work**

This work package is dedicated to analyzing the state-of-the-art of the overall project subjects, identifying relevant use cases as a basis for requirements specification and trend screening across the entire project.

### **2.1.2. Tasks progress**

#### ***Task 1.1: State-of the-art and technology assessment***

Work carried out within Task 1.1 during this reporting period was dedicated to state-of-the-art analysis in different directions to identify the starting point for the work to be done within the other work packages. The results of this work will finally be documented within D1.1.

The state-of-the-art, as described in D1.1, gives an overview about technologies and aspects that enable service oriented architectures with the main focus on networked embedded systems. Therefore the deliverable starts with a description of the service oriented architecture to provide a common understanding of the subject to the entire project team.

The work done also covers the engineering view of both control and business levels.

To establish a complete service oriented ecosystem, a broad range of technologies like distributed control platforms, agent-based control, IP-based networks, Service oriented Architectures for devices, networked control, wireless technologies and industrial device profiles has been investigated.

In addition, effort was spent to initiate a glossary. It is the intention that the terms it defines shall be used in each of the project's work packages.

The deliverable D1.1 is a collection of contributions from the experts involved in the project. It shows therefore also the view to the state-of-the-art at the beginning of the project. Mutual understanding has increased writing this deliverable and gives a starting point for the detailed work in the other work packages.

The other work packages will partly precise and extend the technical content of the specific topics, so that the complete knowledge of the technologies can only be acquired reading D1.1 and the other deliverables.

#### ***Task 1.2: Requirements assessment***

Within Task 1.2 at first a general guideline for use case definition has been defined. This is to guarantee easy reading and understanding contributions coming from several partners representing different domains. Based on this approach, use cases for networked embedded devices have been investigated. To cope with all the life time of targeted components, different life cycle phases have been identified to be considered by the selection of use cases. Investigations were done in several fields of application of networked embedded devices, as there are industrial automation, flexible car manufacturing, process control, high-level management through MES and ERP systems, wireless applications and flexible manufacturing of electronic components.

Based on these use cases, requirements on distributed smart embedded devices and their use have been specified. Following the same idea of a common approach for defining all the requirements (as done for use cases), firstly the introduction of the approach applicable to requirements specification within D1.2 as well as to be used within other work packages was done. Requirements are defined in a hierarchical manner starting with general and use case related requirements. Discussion of these requirements led to more specific functional and non-functional requirements. The result of the work done in Task 1.2 will be documented in D1.2.

#### ***Task 1.3: Trend screening and self-evaluation***

Work on Task 1.3 has just been started at the end of this reporting period.

### 2.1.3. Deviations of the project work program (if applicable)

### 2.1.4. List of deliverables for the reporting period (if applicable)

Del. no.	Deliverable name	WP no.	Lead part.	Del. type	Security	Due date	Actual date
D1.1	State of the art	1	ifak	deliverable	RE	31.03.2007	31.03.2007
D1.2	Requirements of end users and component vendors/system integrators	1	ifak	deliverable	CO	31.03.2007	31.03.2007
D1.3	Trend screening report 1	1	ifak	deliverable	CO	31.11.2007	31.11.2007

### 2.1.5. List of milestones for the reporting period (if applicable)

MS No.	Milestone name	Lead part.	Due date	Actual date
M1.1	Requirement Specification	ifak	31.03.2007	31.03.2007

## 2.2. WP2 – Framework specification for ad-hoc networking service platform

### 2.2.1. Work package objectives, starting point of work

The goal of WP2 is to provide a set of specifications that will define the service-oriented infrastructure that will be used to implement all interactions between SOCRADES components. The tasks that were initiated during this reporting period, and their respective main objectives, are:

- Task 2.1: specifications of extensions to the existing standard Devices Profile for Web Services (DPWS).
- Task 2.5: specification of a Semantic Web Services framework, which builds on top of the DPWS layer to provide semantic descriptions of devices and their Web Services.
- Task 2.6: Service gateway framework, which specifies harmonized guidelines for developing technology-specific gateways to legacy or back-end protocols.

No tasks were yet concluded during the reporting period.

### 2.2.2. Tasks progress

The progress for Task 2.1 has been marginal. This is due to the low budget of 7 person-months distributed over 12 months and 5 contractors. The task will become more active once input and experience is gained from other tasks. This will allow determining which are the key extensions to be made, in order to support the frameworks, which are built on the current DPWS within the other WP2 tasks.

#### **Task 2.5: Semantic Web Services Framework**

Task 2.5 was initiated after the middle of the reporting period. The lead contractor is TUT, and it is the only partner with a contribution over 1 person-month. TUT has reviewed existing literature and approaches in order to determine which is best suited for the SOCRADES infrastructure. Based on pre-existing know-how, TUT will lead the development of the framework specification, and will receive contributions from the other contractors in the form of staged feedback and guidance and through additional functionality contributions.

#### **Task 2.6: Service Gateway Framework**

Task 2.5 was initiated after the middle of the reporting period. The lead contractor is TUT, and it is the only partner with a contribution over 1 person-month. TUT has reviewed existing literature and approaches in order to determine which is best suited for the SOCRADES infrastructure. Based on pre-existing know-how, TUT will lead the development of the framework specification, and will receive contributions from the other contractors in the form of staged feedback and guidance and through additional functionality contributions.

Task 2.6 has consumed the bulk of the effort in WP2, and is scheduled to be completed 2 months after the end of the current 6-month reporting period. The contractors are developing a framework specification that will allow the development of Service-oriented gateways for devices that:



- Utilize legacy technology
- Are too resource-limited to support a Web Services stack

The specification does not address a particular legacy or limited device, but is intended to provide a set of guidelines or “recipes” for developing specific gateways. The aspects that have been considered are:

- *Gateway topologies*: Gateways can be located in different topological configurations in wired or wireless networks. The topologies specification include software platform extensions, hardware platform extensions, detached devices, and PC-based platforms, including wireless sensor networks and embedded control devices.
- *Hardware platforms*: an analysis into the HW requirements for different types of gateways has been realized, providing a specification of HW platforms for different gateway roles and configurations.
- *Back-end protocols*: the gateway specification considers different types of back-end protocols, such as wireless protocols and legacy wired protocols.

*SOA adaptation*: different mechanisms have been devised to adapt the SOA information paradigm (process-, operation- and event-oriented) to the back-end protocol models (data-centric and often scan-based).

### 2.2.3. Deviations of the project work program (if applicable)

N/A

### 2.2.4. List of deliverables for the reporting period (if applicable)

Del. no.	Deliverable name	WP no.	Lead part.	Del. type	Security	Due date	Actual date
N/A							

### 2.2.5. List of milestones for the reporting period (if applicable)

MS No.	Milestone name	Lead part.	Due date	Actual date
N/A				

## 2.3. WP3 – Wireless service-oriented sensor/actuator networks

### 2.3.1. Work package objectives, starting point of work

For future automation solutions it might be imaginable to equip sensors and actuators with a freely programmable processor each. In such wired / wireless networked HW/SW systems embedded in distributed smart physical objects, so called “sensor-/actuator networks”, all processors use the same communication medium and are able to communicate directly with each other according to the peer-to-peer-principle – without any coordinating instance. All (or at least the most important of) these processors then could be equipped with corresponding software based on a service oriented architecture concept as e.g. DPWS. This would enable such sensor/actuator networks to provide necessary functionalities for the wished degree of interoperability with the ERP/MES level.

Almost inescapably in context with these sensor-/actuator networks wireless technologies have to be mentioned. Though these from a theoretical point of view are not imperative for sensor-/actuator networks, in practical considerations wired sensor-/actuator networks are not of any relevance as the wiring of a high amount of sensor and actuator nodes would be difficult and not economic.

Against that background, the following research topics are addressed within this work package:

- Node architecture, sensor integration and the interface between sensors and the network,
- Wireless Network topology, self-configuration, self-management, routing, scalability,
- Communication technologies for Wireless Sensor/Actuator Networks (WSN) in industrial environment (e.g. IEEE 802.15.4, 802.15.4a or ZigBee),
- Power supply for the network infrastructure as well as the sensor itself,
- New Services with Wireless Sensor Networks,

- Demonstrator setup.

As a starting point of work it can be stated that consortium members are active in a number of relevant working groups which deal with radio communication and industrial communication e.g. the Institute of Electrical and Electronics Engineers (IEEE), the International Electrotechnical Commission (IEC), the Zentralverband der Elektrotechnik und Elektronikindustrie (ZVEI), the German Commission for Electrical, Electronic & Information Technologies of DIN and VDE (DKE), the German VDI/VDE-Society. The continuous contact to these panels increases the acceptance of a later standardisation following in this area.

### **2.3.2. Tasks progress**

WP3 officially started on December 1<sup>st</sup> 2006. After some preparatory actions an official kick-off with participants of all contributing partners was held on February 15<sup>th</sup> 2007 at the Siemens premises in Nuremberg. There the partners agreed on the content of this WP in general, the harmonization of WP 4 and WP3 as “neighboring” technical topics, discussed integrating elements for the whole project and finally operatively kicked off the work in task 3.1.

### **2.3.3. Deviations of the project work program (if applicable)**

None

### **2.3.4. List of deliverables for the reporting period (if applicable)**

Not applicable as the first deliverable is not due before month 9 of the project’s run time

### **2.3.5. List of milestones for the reporting period (if applicable)**

Not applicable as the first milestone is not due before month 9 of the project’s run time.

## **2.4. WP4 – Device Centric Infrastructure**

### **2.4.1. Work package objectives, starting point of work**

The main focus of WP 4 is to make it possible to control continuous processes with wireless technology.

### **2.4.2. Tasks progress**

The architecture description is starting to converge, base on use cases and two base scenarios from the process industry. The project has now formulated the use cases and requirements. The requirements are derived from two base scenarios that will drive the development. The work on the architecture is progressing, although not finalized – an important aspect of this is finding a common understanding between the partners due to the different theoretical backgrounds.

We have developed and defined a list of requirements for a couple of Scenarios in a document for MS 4.1. These requirements have been reviewed between ABB (Martin Strand, Ulf Westblom) and Schneider Electric (Armando Colombo, Francois Jammes) on March 29. This document has thus been jointly assessed and approved.

The **technical activities** in the project during the period include:

- Requirements and use cases
  - Use cases have been described both for the whole SOCRADES system (in deliverable D1.2) and for the WP4 sub-system (D4.1). Use cases include among others engineering, commissioning and operation.
  - Two base scenarios have been described including the control problem and requirements. The first scenario is based on the floatation process (process section C at the Boliden ore concentration plant) and has been produced in collaboration with Boliden. The second case is based on a Steckel mill roll stand and it has been developed in collaboration with the Rolling mill unit within ABB.
  - The project has visited the ore concentration plant in Boliden (March 6).

- Requirements have been derived from the use cases and scenarios. The requirements have been formally documented and reviewed by the coordinator and technical manager of the SOCRADES project.
- System architecture
  - One workshop (March 6) with LTU and KTH to discuss and identify the main building blocks of the system and research challenges.
  - The architecture has now been updated and the main building block has been identified. Three architectural views have been identified and outlined: Logical, Functional and Deployment.

The overall architecture of SOCRADES has been discussed with Schneider Electric (Seligenstadt meeting and Västerås meeting). A first proposal for how WP4 shall be included has been produced and tentatively accepted by the technical manager of SOCRADES.

#### **Task 4.1: Architecture for fault-tolerant application interaction**

The administrative activities in the project during the period include the following planning and coordination activities:

- Work package organization and progress was reported at a second project PCC meeting (Coordinator + work package leaders) in Seligenstadt (March 12-13))
- A visit to Siemens (Nuremberg) to coordinate the activities with WP3
- Contacts with APS (TeleCon, email and meeting in Seligenstadt) to coordinate the APS effort in WP4.
- The project passed milestone MS4.1 according to plan. The milestone was reviewed by the coordinator (Armando Colombo) and technical manager (Francois Jammes) in a meeting in Västerås March 29.

#### **2.4.3. Deviations of the project work program (if applicable)**

N/A

#### **2.4.4. List of deliverables for the reporting period (if applicable)**

Del. no.	Deliverable name	WP no.	Lead part.	Del. type	Security	Due date	Actual date
N/A							

#### **2.4.5. List of milestones for the reporting period (if applicable)**

MS No.	Milestone name	Lead part.	Due date	Actual date
4.1	Requirement specification	ABB	28.02.07	28.02.07

### **2.5. WP5 – Service-centric infrastructure**

#### **2.5.1. Work package objectives, starting point of work**

WP starts at Month 7 (March 2007).

#### **2.5.2. Tasks progress**

Task 5.6 starts at Month 7 (March 2007).

#### **2.5.3. Deviations of the project work program (if applicable)**

#### **2.5.4. List of deliverables for the reporting period (if applicable)**

Del. no.	Deliverable name	WP no.	Lead part.	Del. type	Security	Due date	Actual date
N/A							

#### **2.5.5. List of milestones for the reporting period (if applicable)**

MS No.	Milestone name	Lead part.	Due date	Actual date
--------	----------------	------------	----------	-------------

N/A				
-----	--	--	--	--

## 2.6. WP6 – Enterprise Integration

### 2.6.1. Work package objectives, starting point of work

WP6 aims at the integration of aggregated device - level services with higher - level Web Services and business processes situated at the level of business applications - in particular Enterprise Resource Planning (ERP) systems - in order to demonstrate seamless integration of device level functionality into higher - order business application scenarios in manufacturing, logistics, or similar areas. The integration should not require changes to business application code, but be based on and leverage the Web Service - enablement of device networks as addressed by SOCRADES.

The respective tasks are:

- Task 6.1: Integration concept analysis and design
- Task 6.2: Integration of aggregated services into business applications
- Task 6.3: Integration of non Web Service enabled devices into business processes

All of the tasks have been kick-started, none of them concluded within this reporting period (M1-M6).

### 2.6.2. Tasks progress

The main goal of WP6 was focusing on contributing on D6.1. The progress in the respective tasks depicts exactly this fact, and their results are integrated in the D6.1 which is sent to the Commission. In more detail:

#### **Task 6.1: Integration concept analysis and design**

The task participants discussed heavily on how the devices can be easily integrated into the business layer. Experiences from previous projects helped greatly towards analysis, design and at the end the drafting of integration architecture according to SOCRADES goals. The architecture is expected to be further refined and revised as we move towards specifying in detail its components.

#### **Task 6.2: Integration of aggregated services into business applications**

The task participants focused on taking a close look on several business applications that depend on aggregated services. For those areas such as Extended Business Activity Monitoring, Mobile Equipment Assistance, Maintenance Optimization, Overall Equipment Effectiveness etc., several scenarios have been discussed and proposed in order to demonstrate how the (near) real time information flow from the device layer can be integrated into business processes and what new capabilities are now possible. It is expected that in the next months some of the scenarios will be discussed in detail or may be modified in order to come up with at least one advanced scenario that will be implemented and demonstrated by M18. The requirements of the scenarios were taken into account in order to draft the requirements that the embedded networked devices need to fulfil.

#### **Task 6.3: Integration of non Web Service enabled devices into business processes**

Although our prime goal in the first reporting period was on how to integrate web-service enabled devices into business processes, we have also considered and discussed on how legacy systems as well as devices that are not expected in the mid-term to be capable of running web-services e.g. due to low computing power, could be integrated in the SOCRADES infrastructure. The results are depicted in the integration architecture presented in D6.1.

### 2.6.3. Deviations of the project work program (if applicable)

### 2.6.4. List of deliverables for the reporting period (if applicable)

Del. no.	Deliverable name	WP no.	Lead part.	Del. type	Security	Due date	Actual date
D6.1	Service integration concept for field related data into business processes	6	SAP	R	CO	28.02.2007	31.03.2007

### 2.6.5. List of milestones for the reporting period (if applicable)

MS No.	Milestone name	Lead part.	Due date	Actual date
N/A				

## 2.7. WP7 – System engineering & management

### 2.7.1. Work package objectives, starting point of work

This work package looks at user requirements from an applications engineering perspective. Despite some delay on starting the activities on this work package the progress is now on track and according to the project schedule. This work package builds up on the outputs of the work package 1, where the state-of-the-art and general requirement of systems are defined.

### 2.7.2. Tasks progress

#### **Task7.1: User requirements for system engineering and lifecycle support**

The objective of this task is to identify the main user requirements, in a largely technology-independent manner, for the applications systems engineering and lifecycle support of distributed smart embedded devices in selected manufacturing applications.

Within this task, capturing the detailed user requirements (from the various supply-chain partner perspectives) related to the automotive assembly system, in collaboration with Jaguar and Ford UK has already been started. Further, a set of user requirements was provided in the domain of sub-assembly of the ship building industry, by APS, as well as user requirements in the virtual engineering domain.

As part of this task, the outcomes of the other major European funded projects were also studied to provide a more complete catalogue of the requirements for users related to applications engineering from a broader perspective. In addition, the generic system requirements derived from all the general use-cases addressed in deliverable 1.2 of this project were also studied, and the relevant set of these requirements was cross-referenced to the user requirements identified in this task (7.1) to ensure as complete a capture of applications engineering requirements as possible.

The findings of the first 6 months of the Task 7.1 are documented in deliverable 7.1 which was submitted in March 2007. However, as work with collaborators in the automotive industry is progressing, it is expected that a more complete and user-validated set of industrially compatible user needs will be progressively identified through the remainder of this task.

#### **Task 7.2: Investigation of enabling technologies, methods and tools**

The status of the current enabling technologies is the main focus of this task. Here a set of tools, methods and techniques related to the engineering environment are being analysed and evaluated based on the user requirements and the criteria described in task 7.1. In the first 6 months of the project, a large number of enabling technologies have been identified for critical analysing. Currently, we are short listing the available technologies and formalising a systematic approach for evaluating various techniques and tools.

A template for the deliverable 7.2 (which is due for month 12) is being formatted and will be sent to the project partners for their collaborative input. Action lists related to this task have been updated to reflect the recent activities within the project.

#### **Task 7.3: Application description and configuration**

Work has begun on a framework for the engineering tools-related activity as the first part of this task. This framework will support application description and configuration tool specification, with the potential to accommodate multiple engineering tools on the SOCRADES platform.

#### **Task 7.4: Simulation and verification**

No major activity – task has just initiated

### Task 7.5: Device-support and maintenance

This task is coordinated by ifak with close collaboration with Loughborough. The task has been just started – task activities and the deliverable template have been agreed.

#### 2.7.3. Deviations of the project work program (if applicable)

#### 2.7.4. List of deliverables for the reporting period (if applicable)

Del. no.	Deliverable name	WP no.	Lead part.	Del. type	Security	Due date	Actual date
D7.1	User requirements for the application systems engineering	7	Lboro	deliverable	CO	31 Mar 2007	27 Mar 2007

#### 2.7.5. List of milestones for the reporting period (if applicable)

MS No.	Milestone name	Lead part.	Due date	Actual date
N/A				

## 2.8. WP8 – Application pilots, demonstrators

### 2.8.1. Work package objectives, starting point of work

The main goals of WP 8 are:

- To set up application pilots for selected scenarios of the process industry as well as in the field of manufacturing automation
- To run trials and to test real world situations like automatic set-up and system start; device or system failure; plug & play situations; control failure; hard real-time conditions, staff failure; change of production volume, product type, quality requirements and delivery times, impact of lead times; as well as process monitoring, diagnostic and prognostic capabilities, ad-hoc networking, or service-oriented cross layer communication.
- Comparison with the performance of traditional process automation and control technology provided by the end-users and refinement of the application and demonstrator prototypes
- Evaluation and assessment of results

The starting point is scheduled for month 19.

### 2.8.2. Tasks progress

Although the WP 8 will start officially at the second half of the SOCRADES project, APS in cooperation with Schneider Electric and SAP have already started to prepare a technical cooperation platform for the mechatronic trials. First activities are focussed on the definition of HW/SW components and of the interfaces of mechatronic components to assure their integration into a communication network with border crossing remote capabilities.

The preparation work was continued throughout the second 3 months period on the basis of the SOCRADES integration concept developed within the project. In this context APS has started to implement DPWS technology into existing mechatronic devices selected for the trials. In parallel, appropriate technologies for wireless networking have been evaluated to be integrated into the trial site. This included experimental work focused on the use of WLAN, ZigBee and nanoNet technologies in sensor/actuator networks.

#### 2.8.3. Deviations of the project work program (if applicable)

#### 2.8.4. List of deliverables for the reporting period (if applicable)

Del. no.	Deliverable name	WP no.	Lead part.	Del. type	Security	Due date	Actual date
N/A							



### 2.8.5. List of milestones for the reporting period (if applicable)

MS No.	Milestone name	Lead part.	Due date	Actual date
N/A				

## 2.9. WP9 – Dissemination

### 2.9.1. Work package objectives, starting point of work

The objectives of the work package are to identify, organize and perform the activities needed to promote the project's results with the widest dissemination of knowledge from the project. Dissemination is a horizontal activity and concentrates on disseminating the results of the project itself to a wide range of existing or potential stakeholders. International conference special sessions and workshops are planned to be organized to promote SOCRADES with:

- the notification of the project results in the scientific sector,
- the promotion of the project in the industrial world,
- the dissemination via centers and networks of excellence.

The aim is to form a critical mass of key industrialists and academics to promote the SOCRADES concept. In particular, effective dissemination is important in order: 1) to make key individuals and groups aware of the work, 2) to enable them to understand the concepts and potential benefits and 3) to obtain critical feedback from them to assess the perceived value of the approach.

The starting point of Dissemination is defined in D9.1 [Dissemination Plan] where the activities to be performed to identify and organise the widest dissemination of knowledge from the project are identified. An update of such document is scheduled every 6 months.

### 2.9.2. Tasks progress

The detailed plan of dissemination activities expected to be carried out in the first 18 PM has been developed in D9.1. The Consortium partners have planned a set of activities according to two issues:

- Some activities are referred to a short time horizon and activities referred to a long time horizon. The former ones may not be strictly related to dissemination of the results of the projects, but more oriented to the project advertisement; this is due to the fact that significant project results will be achieved starting from month 18th. The latter ones will be more result dissemination oriented and will involve companies more extensively.
- Therefore, dissemination activities are divided in two groups: "Events" and "Long lasting" activities. In relation to the previous remark, the "Events" happening before the 18th project month, will be oriented to project advertisement, the ones happening after the 18th project month will be more results dissemination oriented. On the other hand "long lasting" activities will be able to present both aspects.

A detailed schedule was also provided and intended to be kept updated as new or more detailed information becomes available; this is in line with the fact that a revision and update of this document is planned every 6 months.

For information on dissemination activities already carried out, please refer also to chapter 4.

### 2.9.3. Deviations of the project work program (if applicable)

No deviations to be reported

### 2.9.4. List of deliverables for the reporting period (if applicable)

Del. no.	Deliverable name	WP no.	Lead part.	Del. type	Security	Due date	Actual date
D 9.1	Dissemination Plan	WP 9	POLIMI	document	CO	March 2007	March 2007

### 2.9.5. List of milestones for the reporting period (if applicable)

MS No.	Milestone name	Lead part.	Due date	Actual date
MS9.1	Dissemination and use plan	POLIMI	28.02.2007	03.04.2007

## 2.10. WP10 – Exploitation, standards & roadmapping

### 2.10.1. Work package objectives, starting point of work

Since the first deliverables of WP10 are scheduled for month 12 of the SOCRADES project, major actions were focused on the definition and planning of activities for the upcoming project phase to guarantee a good progress of WP10.

The initial draft planning was presented at the SOCRADES kick-off meeting. The first major actions were the contributions and editing of the first two project leaflets for SOCRADES as well as the definition of the WP organization by the contributing (mainly industrial) partners. A contact list and action plan were defined, deployed (by Groove and mail) and executed accordingly.

During the last couple of months several activities according to the action plan for WP10 have been initiated, executed and finished. Main focus was on preparation of the next half year activities that will lead to a first version exploitation plan (deliverable D10.a) and a first roadmap (D10.4). Due to the early stage of the SOCRADES project in terms of technological developments and results, both dissemination (WP9) and exploitation (WP10) clearly focusing on the preparation of necessary activities during the project phases.

### 2.10.2. Tasks progress

#### **Task 10.1: Exploitation plan**

Despite the general activity to setup the WP/task organization, major activities in task 10.1 were to gather additional input from partners and to define and execute actions for task 10.1 such as:

- Contribution to leaflets
- Preparation of exploitation community within SOCRADES project (e.g. list of contacts have been defined)
- Planning surveys in the technology domains for SOCRADES
- Preparation of exhibition and fair lists
- Planning (schedule, reviews etc. ) of preparation for deliverable 10.1a
- In order to create a consistent planning for dissemination (WP9) and exploitation (WP10) activities across the SOCRADES project an individual interview session with each industrial partner is planned in the next 3 months to collect and consolidate feedback and inputs. It will be focused on potential business plans and partner strategies and on deriving a proper planning for both dissemination and exploitation.
- Together with task leader 10.3 (same as WP9 leader) a questionnaire and meeting calendar will be defined and used during these sessions. A first draft has been defined and shared already.

#### **Task 10.2: Standards specification and submission to standardisation body**

The task leader organized a meeting on October 19th 2006 with Schneider standardisation specialists in order to start working on the possible standardisation paths. Among all possible standardisation committees, IEC 65 is seen as the most appropriate organization, since it is recognized as the major standardisation body for industrial applications, the SOCRADES industrial partners are very well represented in this organization and real opportunities to get the Web Services technology accepted as a standard are feasible as well.

The following procedure will be followed:

- The consortium will identify technically what could be standardized and write a proposal
- The proposal will be presented as a PAS (Publicly Available Standard) in the relevant committee with the help of the industrial partners' standardisation specialists.



### **Task 10.3: Road mapping for the adoption of the SOCRADES paradigm**

A first gap analysis for SOCRADES technologies is planned to be started for the second half year according to deliverable 10.4a. Several meetings or phone conferences between the task leader and the work package leader have been made and established regularly. As already mentioned for task 10.1 the joint action regarding partner interviews will provide some input for roadmapping.

During the 2<sup>nd</sup> PCC Meeting, March 2007, it was agreed with all consortium partners to manage the evolution of roadmapping similar to the stepwise approach of the exploitation plan.

#### **2.10.3. Deviations of the project work program (if applicable)**

None

#### **2.10.4. List of deliverables for the reporting period (if applicable)**

Del. no.	Deliverable name	WP no.	Lead part.	Del. type	Security	Due date	Actual date
N/A							

#### **2.10.5. List of milestones for the reporting period (if applicable)**

MS No.	Milestone name	Lead part.	Due date	Actual date
N/A				

## **3. Consortium management (WP11 – Project management)**

### **3.1.1. Work package objectives, starting point of work**

This WP is concerned with ensuring that the project remains on course and that it is effectively and correctly managed. This includes the following detailed objectives:

- Monitoring, tracking and controlling deviations due to progress, costs, financial and scheduling changes.
- Managing the project according to approved plans.
- Ensuring that the required reporting is prepared and delivered in a timely manner.
- Implementing procedures for quality management.
- Implementing an administration and communication infrastructure to establish a basis for efficient and easy communication within the project. To also ensure that external communication (project Web site, dissemination and exploitation) is done and controlled by the project management.

### **3.1.2. Tasks progress**

#### **Task 11.1: Planning and scheduling (M0-M3)**

The objective of this task was to provide accurate planning of different actions during the project's lifetime. Activities that have been performed in this task are:

- Creation of the project implementation plan
- Communication and meetings with WP Leaders
- Preparation of updated plans of WPs for final approval in the Project Co-ordination Committee (PCC)
- Communication of updated plans with the consortium members
- Generation and actualization of the agenda for Quality Assessment.

Three main consortium meetings were organised, i.e., the kick-off meeting (September 12-14, 2006, Grenoble), the first PCC meeting (November 23, 2006, Helsinki) and the second PCC meeting (March 12, 2007, Seligenstadt).

### **Task 11.2: Progress and cost reporting (M0-M18)**

The objective is to establish a clear reporting structure and processes to the European Commission and for the project activities within the project.

Activities performed in this task include:

- Provide templates for the reporting instances to all concerned participants
- Maintain a document repository for incremental reporting
- Create periodic reports
  - 3-Monthly Project Progress Report. This is an internal document to the consortium
  - 6-Monthly Project Progress Report. This is an official deliverable to the EU Commission. It includes the 6-monthly financial report based on the yearly financial report template that will be audited each year.

### **Task 11.3: Monitoring, control and quality management (M0-M18)**

Progress control is being done on WP level by measuring resources and costs. Activities performed include:

- Progress control
- Cost control
- Checking schedules and milestones
- Risk management
  - Identification of risks and risk management strategies for each WP (included as a part of the 6-monthly report)
  - Identification of risks and risk management strategies for the project as a whole (included as a part of the 6-monthly project report)
- Quality assessment for deliverables and WPs
  - Assessment of D11.1
  - Definition of the assessment procedure for each deliverable and for the assessment of work packages (included in the first version of the project handbook)

### **Task 11.4: Communication management and administration infrastructure (M0-M18)**

To perform fast and effective communication in the project, different procedures and tools have been implemented. Activities performed in this task are:

- Created Project Handbook.
- Implementation and administration of online collaboration platform (Groove system)
- Planning and arrangement of project co-ordination meetings (periodical phone-meetings / each 2 weeks / of the PC, TM and BM)

#### **3.1.3. Deviations of the project work program (if applicable)**

None

#### **3.1.4. List of deliverables for the reporting period (if applicable)**

Del. no.	Deliverable name	WP no.	Lead part.	Del. type*	Security	Due date	Actual date
11.1	SOCRADES Goal Definitions	11	1	R	CO	30.11.2006	30.11.2006
11.2 a	6-Monthly Project Report	11	1	R	CO	28.02.2007	31.03.2007

#### **3.1.5. List of milestones for the reporting period (if applicable)**

MS No.	Milestone name	Lead part.	Due date	Actual date
N. A.				

#### 4. Dissemination report

This section includes a cumulative overview of the project's undertaken dissemination activities for the reporting period (if applicable).

Planned/ Actual dates	Type	Type of audience	Countries addressed	Size of audience	Partner/Re sponsible involved
26.01.2007	<i>Presentation: Zoltan Nochta, presentation of SOCRADES to students of University of Darmstadt, in the scope of a series of lectures given by Prof. Lutz Heuser (VP SAP Research) on Smart Items projects</i>	University	Germany		SAP
26.02–02.03 2007	<i>Publication: Stamatis Karnouskos, "Autonomic sensor networks for future enterprise services", KiVS 2007 Conference, Bern, Switzerland</i>	Research & Industry	International		SAP
08.12.2007	<i>Workshop: Enterprise Services Community Workshop "Sensor Networks - Paving the Road to Real Business Applications", SAP AG Headquarters, Walldorf, Germany.</i>	Industry	Europe	45	SAP
7-9.02.2007	<i>Workshop: SAP internal workshop on integrating sensor network services in enterprise systems, SAP Research, Karlsruhe, Germany.</i>	Industry	Germany		SAP
02.2007	<i>Interview: Stamatis Karnouskos, Interview in the EU IST RUNES (Reconfigurable Ubiquitous Networked Embedded Systems) Newsletter on the importance of dependability, reconfiguration and the RUNES approach in networked embedded systems.</i>	General public	Europe		SAP
05-06.10.2006	<i>Presentation: ITEA 2 Symposium 2006: European research excellence for competitive software-intensive systems and services (Paris) - Fair</i>	Research & Industry	Europe	522 partners	Schneider Electric
09-10.11.2006	<i>Presentation and leaflets: Manufuture Conference 2007, Tampere</i>	Research & Industry	Europe	400	Schneider Electric, POLIMI
07-10.11.2006	<i>Presentation: IECON 2006 (IEEE) - Paris</i>	Research & Industry	65 countries	959 papers in 131 sessions	Schneider Electric
13.11.2006	<i>Magazine: Parliament Magazine - short article presenting the SOCRADES project</i>	General public	International		Schneider Electric, POLIMI
11.12.2006	<i>Presentation: IPROMS training on-line course on Multi Agents technology (spreading of excellence)</i>	Research	Worldwide	10-15 participants	Schneider Electric
21-23.11.2006	<i>Workshop and leaflet: IST Conference in Helsinki</i>	Research & Industry	Worldwide	Over 4,500 delegates	Schneider Electric, POLIMI
17-18.01.2007	<i>Presentation and leaflets: The Manufacturing in FP7 Conference, Cardiff, UK</i>	Research & Industry	Europe		Schneider Electric, POLIMI
30.01- 02.02.2007	<i>Fair: Initi@tive 2007 in Nice, France</i>	Industry	Worldwide	4000	Schneider Electric
01.02.2007	<i>Poster: ICT Proposers' Day, Köln, Germany</i>	Research & Industry	Worldwide	~3000	Schneider Electric

26.02.2007	Leaflet: Electronics Made in Europe" Opportunities under the ICT Theme of FP7 Information Day, Brussels, Belgium	Research & Industry	Europe	70	Schneider Electric, POLIMI
------------	--	------------------------	--------	----	----------------------------------

#### 4.1. Planned activities for the next period

The planned activities for the next period are (for a plan for the 18 month please refer to D9.1):

<i>Planned dates</i>	<i>Type</i>	<i>Type of audience</i>	<i>Countries addressed</i>	<i>Size of audience</i>
2007-4	Tutorial/keynote (Hanover Fair 2007)	Industry	International	100s
2007-5	Conference presentation (IEEE AINA 2007, SOCNE workshop)	Research & industry	International	30
2007-06	WCEAM 2007 (World Conference on Enterprise Asset Management)	Research	International	100
2007-6	Conference presentation (Schneider Electric Initi@tive – Warsaw, Poland)	Industry	International	100s
2007-6	Conference presentation (IEEE ISIE 2007)	Research & industry	International	30
2007-7	Conference track organisation (IEEE INDIN 2007)	Research & industry	International	50
2007-7	IPROMS Virtual Conference 2007	Research & industry	International	4000

#### 5. Standardization and IPR report

This section includes a cumulative overview of the project's undertaken standardization activities for the reporting period (if applicable).

N/A

#### 6. Exploitation report/Report on using and disseminating of knowledge

This section includes a cumulative overview of the project's undertaken exploitation activities for the reporting period (if applicable).

<b>Exploitable knowledge</b> (description)	<b>Exploitable product(s) or measure(s)</b>	<b>Sector(s) of application</b>	<b>Timetable for commercial use</b>	<b>Patents or other IPR protection</b>	<b>Owner &amp; Other Partner(s) involved</b>
N/A					

Table 1 Exploitable knowledge - Overview

#### 6.1. Planned activities for the next period

N/A

#### 7. Financial report and allocation of resources for the reporting period

A financial overview about the 6-months period is to be provided.

Excel Files containing the following views:

- Person-months (by WP and Task)
- Total Project Costs
- Total Project EC Contribution

will be provided to the partners, including information on how to fill in these files.

## 8. Risk management

This section addresses key risks that have been identified for the whole project and summarizes the main risks related to each work package (if applicable), concerning the current phase of the project life cycle.

### 8.1. Risk analysis at project level

Description of Risk	Consequences and Seriousness	Risk evaluation (H/M/L)	Response actions	WP No	Undertaken actions from the last 6M report
Completeness of all the legal steps to setup the SOCRADES CA among all 15 partners	Without all 15 partners signing the CA, there is not enough stability of the consortium and the EU funding can not completely be distributed by the coordinator	H	There have been generated three Supplementary Agreements to the CA. With the first one were 12 partners signing the CA; with the second one were 13 partners signing the CA and with the third one should be 15 partners signing the CA.	11	Negotiations with KTH, SAP and Jaguar/Ford.
Integration of the SOCRADES technology developments of the WPs led by the major industrial technology developers	Isolated developments of each of the major industrial technology developers. Missing technical integration aspects within the consortium.	H	Development of a common global SOCRADES infrastructure that includes the integration of the developments of the major industrial technology developers.	2, 3, 4, 5, 6, 7 and 11	Technical Workshop associated to the 2 <sup>nd</sup> PCC meeting (Seligenstadt, March 13 <sup>th</sup> , 2007)
Integration of the SOCRADES technology with legacy systems and processes	Non adoption of the SOCRADES technology by the industrial world	H	1) Strong integration of User-Requirements issued by FlexLink, Jaguar and Boliden into the 1 <sup>st</sup> two deliverables that deal with this aspect of SOCRADES Technology Requirements. 2) Development of a common global SOCRADES architecture that includes the integration of the developments of the major industrial technology developers into a planned SOCRADES-based shop floor demonstration/trial.	1, 4, 6 and 7	Technical Workshop associated to the 2 <sup>nd</sup> PCC meeting (Seligenstadt, March 13 <sup>th</sup> , 2007)

### 8.2. Risk analysis per WP

Description of Risk	Consequences and Seriousness	Risk evaluation (H/M/L)	Response actions	WP No	Undertaken actions from the last 6M report
Delay of D2.1	Medium	L	Too soon to estimate whether delay will occur and plan response actions.	2	N/A
Delay of D2.2	Low (follow-up tasks begin much later)	M	Further synchronization activities (face-to-face meeting, teleconference).	2	N/A
Incomplete requirement analysis or gap/deviations between requirements from WP1 and WP3	Neglecting important requirements to meet industrial and technical needs Possibly unclear input for specification	M/L	Ongoing requirement analysis with strong support of industrial partners	3	Regular and ongoing evaluation and possible updates of requirements Cross-checking between WPs

Incomplete selection of available communication standards, existing wireless solutions, and technologies for WSN	Neglecting important technologies and approaches, which could influence the SOCRADES specification	L	Ongoing and careful observation of the market, both industrial and academic	3	See column "Response actions"
Delay in the finalisation of the integration architecture	Delayed start of prototype implementation	M	A meeting was set up, subsequently ConfCalls and other F2F meeting(s) are to be planned.	6	
Capturing incomplete user requirement set.	This could result in study and development of application engineering tools for SOCRADES that may not be fully compatible with industrial needs.	L	Continuous collaboration and feedback from industrial partners to validate the requirement sets.	7	It was agreed to extend the user requirement set defined by D7.1, if necessary, as the project progresses and more detailed information is captured from Industrial collaborators, in particular Ford and Jaguar.
Application pilots and selected demonstrators are too ambitious for a technical realisation as expected	Not of specific relevance after 6 months of work	L	Permanent monitoring and evaluation of technical progress	8	none
Complexity of technical development prevents from full demonstrator functionality	Not of specific relevance after 6 months of work	L	Too early to start any action	8	none
Time constraints coming up due to the number of different demonstrators	Consolidated specification is necessary	L	Early specification of the application pilots and demonstrators	8	none
WS-integration problems with legacy systems	Need to take care of this problem	L	Early analysis and experimental tests	8	none
Interoperability problems due to a high number of networked sub systems	Not of specific relevance after 6 months of work	L	Increased standardisation and coordinated development of interface technology	8	none
Acceptance problems, no confidence in SOCRADES developments	Need to take care of this problem	L	Continuous dissemination activities	8,9	none
Results later than scheduled	Exploitation activities may impacted	M	Regular review of work package planning and define action plan if necessary	10	
Competition vs. common exploitation of SOCRADES technologies	Individual business interests may lead to unsuccessful exploitation of results	M	Early preparation and share of common activities. Regular reviews with industrial partners of exploitation plan and related actions	10	

**Table 2 Risks analysis**

No risks identified for WP1 and WP9.

## 9. Quality management

This section summarizes the results of the quality assessment activities undertaken during this reporting period. As described in Annex 1 of the project plan, the deliverables as well as the work packages status are monitored and assessed.

## 9.1. Quality Assurance for Deliverables finished during the current period

### 9.1.1. Used procedure

Each deliverable is sent out by the WP Leader (responsible) to the selected reviewers for their comments and for checking if the deliverable's criteria have been fulfilled (see p.18 from D11.1). After that a call or face-to-face meeting takes place to assess the deliverable and go through the eventual comments for resolution. The following lines from the deliverable's template reflect the approval of the document.

### 9.1.2. Results of the assessment of deliverables for the current period:

#### Deliverable 11.1:

Peer review approval :	√ Approved Rejected (improve as specified hereunder)	Date:	23/11/2006
Suggested improvements:			

#### Deliverable 7.1:

Peer review approval :	√ Approved Rejected (improve as specified hereunder)	Date:	26/03/2007
Suggested improvements:	Providing better links to deliverable 1.2		

#### Deliverable 6.1:

Peer review approval :	√ Approved Rejected (improve as specified hereunder)	Date:	31/03/2007
Suggested improvements:			

#### Deliverable 9.1:

Peer review approval :	√ Approved Rejected (improve as specified hereunder)	Date:	04/04/2007
Suggested improvements:			

#### Deliverable 1.1


Peer review approval :	√ Approved Rejected (improve as specified hereunder)	Date:	27/03/2007
Suggested improvements:			


#### Deliverable 1.2


Peer review approval :	√ Approved Rejected (improve as specified hereunder)	Date:	27/03/2007
Suggested improvements:			

### 9.1.3. Summary

In the following table, the current situation of the deliverables is reported

Del. no.	Deliverable name	WP no.	Lead part.	Del. type	Protection	Due date	Actual date	Status	Approval Project Coord. (date)	Approval Quality Manager (date)
										

<sup>3</sup>  = Deliverable earlier than expected/ in time realized/ implemented

 = Deliverable exceeds envisaged date by 0 to 10%

D11.1	SOCRADES Goal definitions	11	SE	deliverable	CO	30.11.2006	30.11.2006	😊	28.11.2006	03.04.2007
D7.1	User requirements for the application systems engineering and lifecycle support of distributed smart embedded devices	7	Lboro	deliverable	CO	31.03.2007	27.03.2007	😊		03.04.2007
D6.1	Service Integration Concept for Field Related Data into Business Processes	6	SAP	deliverable	CO	28.02.2007	31.03.2007	😬		03.04.2007
D9.1	Dissemination Plan	9	POLI MI	deliverable	CO	28.02.2007	10.04.2007	😬		10.04.2007
D1.1	State of the art	1	ifak	deliverable	RE	31.03.2007	10.04.2007	😬		10.04.2007
D1.2	Requirements of end users and component vendors/system integrators	1	ifak	deliverable	CO	31.03.2007	10.04.2007	😬		10.04.2007
D11.2a	6-Monthly Project Progress report	11	SE	deliverable	CO	28.02.2007	11.04.2007	😬		

## 9.2. Quality Assurance of Work Packages

The work package progress is monitored by the status of its corresponding deliverables and milestones.

### 9.2.1. Work Package Quality Status Overview

WP No.	WP stage OPEN MS CLOSE <sup>4</sup>	Milestone name (if milestone)	Due date	Actual date	Status 😊😬😞 5	Corrections actions (in case if the status is yellow or red)	Approval Project Coord. (date)	Approval Quality Manager (date)
WP1	MS1.1	Requirement Specification	31.03.2007	05.04.2007	😊			10.04.2007
WP4	MS4.1	Requirements	28/02/2007	28/02/2007	😊		29/03/2007	
WP9	MS9.1	Dissemination and use plan	28.02.2007	04.04.2007	😬			10.04.2007

REMARK: All WPs, except WP5 and WP8, are in stage OPEN.



= Deliverable exceeds envisaged date by 10 to 20 %



= Deliverable exceeds envisaged date by more than 20 %

4

OPEN = See Project Handbook

MS = See Project Handbook

CLOSE = See Project Handbook

5

😊 = Stage reached without corrective actions

😬 = Stage reached with some corrections

😞 = Stage not reached