

# ASCENS

## Autonomic Service-Component Ensembles

### Periodic Project Report for Months 1-12

Grant agreement number: **257414**  
Funding Scheme: **FET Proactive**  
Project Type: **Integrated Project**  
Latest version of Annex I: **7.6.2010**

Author(s): **All partners (Editors: Martin Wirsing (LMU), Matthias Hözl (LMU))**

Periodic report: **1st**  
Periodic covered: **October 01, 2010 - March 31, 2011**  
Date of periodic report: **November 15, 2011**  
Revision: **Final**  
Classification: **RE**

Project coordinator: **Martin Wirsing (LMU)**  
Tel: **+49 89 2180 9154**  
Fax: **+49 89 2180 9175**  
E-mail: **wirsing@lmu.de**

Partners: **LMU, UNIPI, UDF, Fraunhofer, UJF-Verimag, UNIMORE, ULB, EPFL, VW, Zimory, UL, IMT, Mobsya, CUNI**



## **Declaration by the scientific representative of the project coordinator**

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

- The attached periodic report represents an accurate description of the work carried out in this project for this reporting period;
- The project (tick as appropriate):
  - has fully achieved its objectives and technical goals for the period;
- The public website, if applicable
  - is up to date
- To my best knowledge, the financial statements which are being submitted as part of this report are in line with the actual work carried out and are consistent with the report on the resources used for the project (section 3.4) and if applicable with the certificate on financial statement.
- All beneficiaries, in particular non-profit public bodies, secondary and higher education establishments, research organizations and SMEs, have declared to have verified their legal status. Any changes have been reported under section 3.2.3 (Project Management) in accordance with Article II.3.f of the Grant Agreement.

Name of scientific representative of the Coordinator: Martin Wirsing

Date: 22/ 11/ 2011

## **Executive Summary**

This is the Periodic Progress Report for the first Reporting Period of the ASCENS project. It contains a publishable summary of the project, a list of project objectives for the first reporting period, and a description of the work progress and the activities that have been performed by the partners itemized by work packages. It also contains lists of Deliverables and Milestones for the first reporting period, a description of the management activities, and a justification of the resources spent by the project. Finally it contains the financial statements of the project.

The tables in Sect. 6 and 7 are generated by the NEF system and still in draft form.

## Contents

<b>1</b>	<b>Publishable Summary</b>	<b>5</b>
<b>2</b>	<b>Project Objectives for the Period</b>	<b>10</b>
<b>3</b>	<b>Work Progress and Achievements during the Period</b>	<b>11</b>
3.1	WP1: A Service-Component-Ensemble Language and its Logic . . . . .	11
3.2	WP2: Foundational Models for Service Component Ensembles . . . . .	12
3.3	WP3: Knowledge Representation and Self-Awareness . . . . .	12
3.4	WP4: Adaptation and Dynamic Self-Expression . . . . .	13
3.5	WP5: Correctness of Service Components and Service Component Ensembles . . . . .	14
3.6	WP6: Tool Integration Platform for Service Component Ensembles . . . . .	15
3.7	WP7: Case Studies . . . . .	16
3.8	WP8: Engineering and Best Practices for Service Component Ensembles . . . . .	16
3.9	WP9: Dissemination, Collaboration and Exploitation . . . . .	17
<b>4</b>	<b>Deliverables and Milestones Tables</b>	<b>17</b>
4.1	Deliverables for the First Reporting Period . . . . .	17
4.2	Milestones for the First Reporting Period . . . . .	20
<b>5</b>	<b>Management</b>	<b>20</b>
5.1	Consortium Management Tasks and Achievements . . . . .	20
5.2	Problems During the Reporting Period . . . . .	20
5.3	Changes in the Consortium . . . . .	21
5.4	List of Project Meetings . . . . .	22
5.5	Project Planning and Status . . . . .	22
5.6	Impact of Deviations from the Planned Milestones and Deliverables . . . . .	22
5.7	Website, Dissemination, Coordinating Action . . . . .	22
<b>6</b>	<b>Use of Resources</b>	<b>22</b>
<b>7</b>	<b>Financial Data</b>	<b>29</b>

# 1 Publishable Summary

## Project Description

The area of the isolated computer has passed. Instead today’s systems are often necessarily ensembles: software-intensive systems with massive numbers of nodes or complex interactions between nodes, operating in open and non-deterministic environments in which they have to interact with humans or other software-intensive systems in elaborate ways. Ensembles have to dynamically adapt to new requirements, technologies or environmental conditions without redeployment and without interruption of the system’s functionality, thereby blurring the distinction between design-time and run-time. Examples for this trend can be seen in many areas, ranging from interconnected personal devices to banking and trading networks to national infrastructure.

Today’s software engineering methods are not adequate for dealing with ensembles: Instead of static software that operates without knowledge about its environment and hence relies on manual configuration and optimization we have to build systems with self-aware, intelligent components that mimic natural features like adaptation, self-organization, and both autonomous and collective behavior.

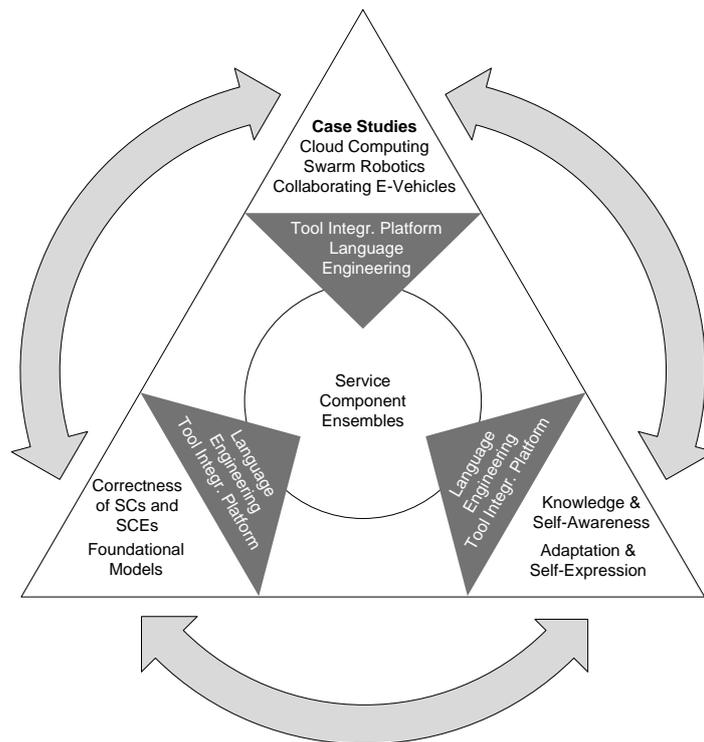


Figure 1: The ASCENS approach.

The goal of the ASCENS project is to build ensembles in a way that combines the maturity and wide applicability of traditional software engineering approaches with the assurance about functional and non-functional properties provided by formal methods and the flexibility, low management overhead, and optimal utilisation of resources promised by autonomic, self-aware systems. The overall approach of the ASCENS project is shown in Fig. 1. To this end we will research and invent new

concepts for design and development of autonomous, self-aware systems with parallel and distributed components. We will develop sound techniques for formal reasoning and verification to support the process of specification, development and runtime analysis of these systems. The project will go beyond the current state of the art in solving difficult problems of self-organization, self-awareness, autonomous and collective behavior and resource optimization in a complex system setting.

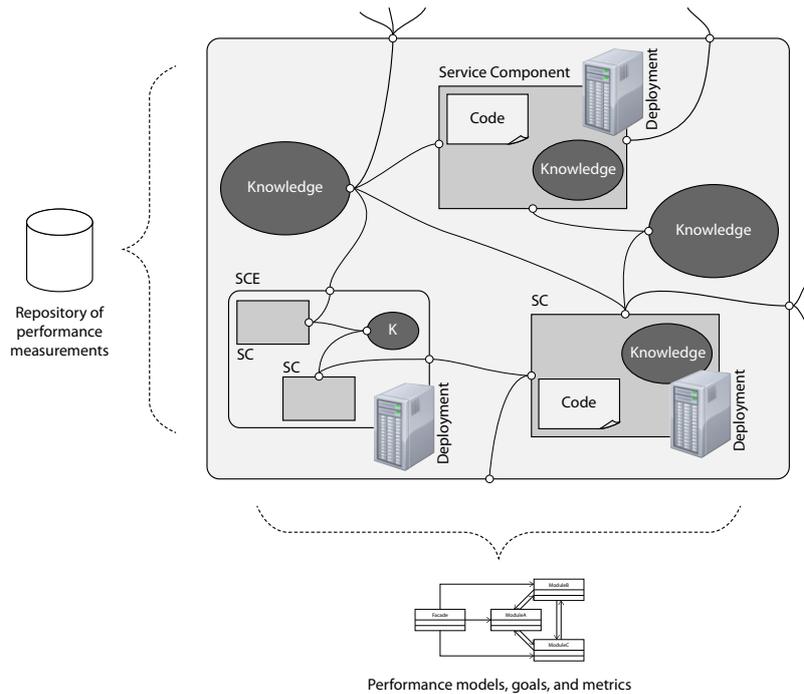


Figure 2: Service Component Ensemble

The ASCENS approach will focus on service-component ensembles (SCEs), hierarchical ensembles built from service components (SCs), simpler SCEs and knowledge units (K) connected via highly dynamic infrastructure, see Fig. 2.

Service components are nodes that can cooperate, with different roles, in an open and non-deterministic environment. These basic properties, already satisfied by, e.g., present service-oriented architectures, will be enriched by new properties of awareness: (1) self-awareness; (2) network-awareness; (3) resource-awareness; (4) awareness-rich behavior making SCs adaptable, connectable and composable. The self-awareness of service components in an ensemble is achieved by: (i) equipping SCs with declarative information about their own state and behavior; (ii) enabling SCs to collect and store information about their working environment, possibly gaining limited information about the whole system; (iii) using this information for redirecting and adapting SC behaviors for optimizing system performance or for obtaining better results in a competitive environment.

A service component ensemble is a set of service components (SCs) with dedicated knowledge units, to represent shared local and global knowledge basis about levels of awareness, resources, connectivity and networking, interconnected in a dynamic network, featuring goal-oriented, safe and secure execution and efficient resource management.

## Research Objectives

To realize ensembles of service components, whose properties go far beyond the state of the art in current software engineering and technology, we pursue the following research objectives:

1. Linguistic support for programming SCEs, expressing awareness and exchanging knowledge;
2. Formalization and modeling the fundamental properties of SCs and SCEs such as autonomous behavior and aware-rich networking;
3. Knowledge representation and self-awareness of SCs and SCEs;
4. Methods and mechanisms for adaptation and dynamic self expression;
5. Techniques and methodology for the design and development of reliable SCs and SCEs and their verification using formal methods;
6. Software infrastructure with a set of tools to support programming, deployment and execution of SCE-based applications;
7. Runtime monitoring and scalable performance analysis methods;
8. Software engineering methods for ensembles.

These objectives are based on a common framework that provides the semantic foundations for the ASCENS approach.

To demonstrate that the results of the project are applicable in practice, we pursue a number of different case studies: swarm robotics, cloud computing and e-mobility which address complementary issues and illustrate both the generic approach and the wide coverage of the ASCENS technology. The work package also serves as a major place for project integration offering a complex multidimensional problem space that motivates ASCENS multidisciplinary approach calling formal method, language and tool developers to build up their part of awareness-rich technology. The work in the first project year has been characterized by both individual and collective efforts.

## Major Achievements of the First Reporting Period

In the first reporting period the ASCENS project has achieved the following major results:

1. We have defined the Service Component Ensemble Language (SCEL), a new language specifically designed to program autonomic components and their interaction while supporting formal reasoning on their behaviors. SCEL is based on an operational semantics and provides different linguistic layers that permit describing
  - the behavior of single components,
  - the topology of the intercommunication network,
  - the environment where components operate and resource-negotiation takes place, and
  - the goal and the knowledge of the whole ensemble.

Preliminary investigations on possible probabilistic and timed extensions of SCEL have started.

2. We investigated foundational models of autonomic systems by proposing
  - a framework for resource-aware and stochastic calculi,

- a calculus for synthesizing contracts designed along the Negotiate-Commit-Execute (NCE) scheme of interaction,
  - a general system model for ensembles (GEM) as a basis for formalizing notions such as adaptation, awareness and self-awareness, and
  - game-theoretic approaches and co-algebraic techniques for investigating emerging behaviors of autonomic.
3. Based on a state-of-the-art survey and key requirements for knowledge representation we developed the high-level modeling language KnowLang for specifying knowledge in ensembles. The model is structured into hierarchically organized specification tiers and supports the parameterization necessary to cover the specification of the ASCENS knowledge domains and reasoning primitives. To facilitate the reasoning process, we also proposed an integrated mechanism for knowledge cleaning.
4. For adaptation we
- formalized the notion of black-box adaptation based on the GEM system model and proposed a simple structural criterion for white-box adaptation, where a component is deemed adaptable if it has a precisely identified collection of control data that can be modified at run-time,
  - defined a sound innovative model (SOTA) to analyze the adaptation requirements of autonomic service component ensembles, also supporting the application of early verification techniques to check the correctness of such requirements, and
  - identified some key self-adaptation patterns (both at the level of individual SCs and of SCEs) and their framing into a sound taxonomy of self-adaptation schemes centered around the key concept of control loops.
5. We have studied several variants of BIP for modeling and analyzing ensembles:
- the Dy-BIP component framework, based on rigorous operational semantics, for hierarchically constructing both static and dynamic architectures from atomic components,
  - the BI(P) component framework without priorities, where we proved its expressive power to be equivalent to (certain dialects of) Petri nets with boundaries, the wire calculus, and the tile model,
  - SMC-BIP, a stochastic extension of and model-checker for BIP for analyzing component-based systems with stochastic behaviors.

We have started investigating the relationship between (a variant of) SCEL and BIP and proposed a prototype translation from SCEL to BIP.

6. For verifying ensembles we have developed
- a framework and a tool for evaluating and automatically synthesizing controllers that behave efficiently with respect to a given cost and reward model,
  - a uniform semantics for name passing calculi supporting the specification of concurrent and distributed systems with dynamically evolving topologies, and
  - a language for statically analyzing quantitative security aspects of a system.

7. We have specified key requirements for the integration of SC and SCE tools into a single development environment. With the *SENSORIA* Development Environment (SDE) we have further identified an existing platform that fulfills these requirements and which will serve as a good basis for the ASCENS tooling platform.
8. We have catalogued the challenges faced by developers of ensembles in the real world and started to investigate software-engineering approaches for ensembles.
9. We have defined application requirements and the system needs for the case studies.

During the first project year of ASCENS, the ASCENS website was established containing a blog for communicating the goals and the progress of ASCENS in a non-technical way. About 50 scientific articles were published in important journals and proceedings of conferences and workshops related to the ASCENS topics; moreover, a short overview article was published in the *Awareness Magazine*. ASCENS results were taught in more than 15 graduate and postgraduate courses and tutorials. Project members organized 11 conferences and workshops and participated in the organization of two summer schools covering ASCENS relevant topics.

## Contact

Prof. Dr. Martin Wirsing  
Institut für Informatik  
Ludwig-Maximilians-Universität München  
Oettingenstr. 67  
D-80538 München  
Germany  
Tel: ++49 89 2180 - 9154 (-9151)  
Fax: ++49 89 2180 - 9175

Dr. Matthias Hölzl  
Institut für Informatik  
Ludwig-Maximilians-Universität München  
Oettingenstr. 67  
D-80538 München  
Germany  
Tel: ++49 89 2180 - 9183  
Fax: ++49 89 2180 - 9175

ASCENS home page: <http://www.ascens-ist.eu>

## 2 Project Objectives for the Period

The overall working structure of ASCENS reflects the main project objectives, making the achievement of each objective measurable by the results of the corresponding work package(s).

### **WP1: A Service-Component-Ensemble Language and its Logic**

The activities of the first year of WP1 has been devoted to the design of a kernel language that was based on existing coordination languages and on interaction primitives based on information exchange via shared an distributed repository. The main objectives have been the linguistic primitives and semantic concepts that are more appropriate for modeling components aggregations, components behaviors and knowledge handling by components.

### **WP2: Foundational Models for Service Component Ensembles**

The main objective of WP2 is concerned with the formalization and modeling of service component ensembles. We structured the task of the workpackage around three main research activities: T2.1 is concerned with the theoretical foundations of connectors and their distributed implementation, and the use of process calculi for resource-aware networks and stochastic systems; T2.2 focuses on autonomic systems designed along the NCE scheme of interaction, and on a conceptual framework for adaptive systems, based on clearly and neatly identified control data; T2.3 investigates game theoretical foundation for ensembles and aims at developing coalgebraic techniques for dynamic systems.

### **WP3: Knowledge Representation and Self-Awareness**

The first year of WP3 has been dedicated to the following key objectives: 1) comprehensive study of the modern knowledge representation techniques; 2) requirements for knowledge representation in open-ended ensembles of autonomic components; and 3) defining high-level models for structured knowledge and awareness in ASCENS systems. In the course of this project, we eventually came up with another desired goal for defining a specification model for KnowLang, a language for specifying knowledge in ASCENS systems.

### **WP4: Adaptation and Dynamic Self-Expression**

The key objectives of WP4 for the first year included the study and framing of relevant self-adaptive patterns (at the level of individual components and of ensemble), also to drive the activities of WP3 and produce a set of requirements for its activities. The final goals for the period included the definition of a catalog of patterns of component-level and ensemble-level self-adaptation and self-expression, and the definition of requirements for knowledge modeling.

### **WP5: Correctness of Service Components and Service Component Ensembles**

The first year of WP5 is dedicated to Task T5.1, whose objectives include the development of algorithmic techniques for verification and design (e.g., MC and synthesis) of SCs with respect to functional and non-functional properties. Non-functional properties may address complex specifications such as resource issues, and should handle quantitative aspects.

**WP6: Tool Integration Platform for Service Component Ensembles**

During the first period of the ASCENS project, requirements for the integration of SC and SCE tools into a single development environment shall be specified. These requirements shall serve as a basis for the evaluation of existing tool integration platforms, from which a the most suitable candidate shall be selected for use and further development in ASCENS. Information about the chosen platform shall be disseminated to partners within ASCENS to enable them to begin with the integration of their tools.

**WP7: Case Studies**

As stated in the DoW, the major goal of the work package WP7 is to deploy the language, tools and methods developed in other work packages in solving real world problems. The major objectives in the first project year were to perform a thorough requirement analysis in each of the application domains and to start with model syntheses that should trace the novel solutions according to the ASCENS approach. In that respect the following three major case studies(tasks) are respectively modeled as: (1) Ensemble of self-aware robots with a goal to optimize both individual and collective behavior so that the swarm as a whole will acquire the capacity to reason, plan and autonomously act (2) Ensembles of resources as science clouds with a goal to optimize the use of processing and storage resources in a unified effort to improve utilization and obtain a higher throughput in the science cloud computing setting; and (3) Ensembles of cooperative e-vehicles with a goal to optimize the usage of traffic and infrastructure resources while taking into account the typical e-mobility restrictions (range limitation, battery re-charge, individual transportation goals, parking availabilities, etc).

**WP8: Engineering and Best Practices for Service Component Ensembles**

The objective of this work package is to influence and later reflect on the work in work packages 1 to 7. Firstly, challenges of the real-world case studies must be distilled and made available to all project partners. Secondly, the foundational work done in ASCENS, and applied to the case studies in work package 7 must be put into a larger perspective from an engineering point of view, thereby identifying patterns and best practices for service component ensembles and ultimately a software-engineering approach for ensembles. Thus, this work package is integrative in nature by combining results from the foundational work packages and the real-world case studies investigated in ASCENS.

**WP9: Dissemination, Collaboration and Exploitation**

The key objectives of WP9 during the first year were: (1) to prepare the dissemination material and infrastructure that enables communication within the project and dissemination of results, (2) to perform concrete dissemination activities, such as publication, presentations and courses, and (3) to establish contact with FET projects of the initiative on Self-Awareness in Autonomic Systems in order to create the basis needed for joint activities with these other projects.

**3 Work Progress and Achievements during the Period****3.1 WP1: A Service-Component-Ensemble Language and its Logic**

The activities in WP1 have proceeded smoothly, there were no major deviations from the initial work plan and as planned, in the first year of WP1 we started working on three WP's tasks T1.1, T1.2, and T1.3. Most of the activity has however been concerned with the themes of T1.1, dealing with basic linguistic primitives for describing behavior and interaction between autonomic components and

with the semantic mechanisms for modeling components aggregations. Various partners have contributed and their interaction has been very constructive and fruitful. No criticality has emerged in the first year. Deliverable D1.1 (Languages Primitives for Coordination, Resource Negotiation, and Task Description) contains an almost final definition of the kernel part of the Language for programming Service components ensemble and we are set to start experimenting with it by considering different case studies. In particular the one based on robots interaction has been already considered. This will help us to assess the adequacy of the language to deal with adaptivity issues. Issues concerned with language implementation have been also considered. A number of papers have been prepared or are under preparation for submission to major conferences. Actually, one has already been accepted.

### **3.2 WP2: Foundational Models for Service Component Ensembles**

During months 1-12, we have been working on all of the three tasks connected to the WP2 and we have met all the objectives with no major deviation with respect to the original plan.

About Task 2.1, the first objective was to overcome the fragmentation in the body of knowledge and the many different notions and terminologies involving connectors. We thus proceeded to an overview and comparison of some of the most notable theories, defining mutual embeddings and planning possible enhancements. We then tackled the specific case of our main component framework, based on BIP, and we compared its expressive power with the power of Petri nets and tiles. On a separate line, a dynamic version of BIP has been developed, which we plan to compare with existing formalisms. In the line of Software Defined Networking (e.g. Open Flow), we extended pi-calculus with primitives which allow for the creation, activation and communication of connections. We envisage the possibility of extending SCEL in a similar way. Also, ad hoc networks, which are useful in modeling the small robot case study, could benefit a lot from the approach. With the aim of reducing the Babel of models, we developed a uniform framework for stochastic calculi, in order to provide a general, SOS-like language definitions for the class of transition systems with multiplicity.

About Task 2.2, we developed an instance of the NCE schema, where the distillation of the contract in a client-server scenario can be obtained by composing the distributed information provided directly by each participant. We presented a framework for adaptivity conceived around a prominent role of control data: they are managed to enact adaptive behaviors.

For Task 2.3, the first and foremost objective was the application of game paradigms for service component composition: we investigated the application of minority games in a peer-to-peer energy management scenario and also a repeated non-cooperative job scheduling game whose players are Grid sites and whose strategies are scheduling algorithms, showing whether different strategies may reach a Nash equilibrium or not. On a more foundational side, we defined a coalgebraic view of weighted automata.

### **3.3 WP3: Knowledge Representation and Self-Awareness**

Considering WP3, there were no major deviations from the initial work plan and as planned, in the first year of WP3 we started working on three WP's tasks T3.1, T3.2, and T3.3. As expected, the emphasis was put on T3.1 whose ultimate goal is to establish a comprehensive formal notation for knowledge representation and reasoning in ASCENS systems. We started the task with a thorough investigation of the modern approaches to knowledge representation, such as rules, frames, concept maps and ontologies. We investigated their expressiveness and formal notations. The provided formal notations of these approaches are mostly logic-based, where the most prominent logics are FOL (first order logic) or DL (description logics). This initial research helped us write a State of the Art for knowledge representation in ASCENS systems and publish 3 papers, including a journal publication

in IEEE Computer (vol. 44(8), August 2011) and an entry for the Encyclopedia of Software Engineering (ed. by Philip Laplante, Taylor & Francis, to appear in 2012). This and additional research in the problem domain, mainly emphasizing the three ASCENS case studies, eventually helped us elicit key requirements for knowledge representation and reasoning in ASCENS systems (published in another ACM paper). Further, we defined four comprehensive knowledge domains for ASCENS systems SC Knowledge, SCE Knowledge, Environment Knowledge and Situational Knowledge. Moreover, we developed a comprehensive model for structuring knowledge based on multi-tier knowledge representation where knowledge is represented at different level of depth of meaning. Note that our initial assumption was that knowledge representation can be regarded as a formal specification of knowledge data reflecting the system's understanding about itself and its surrounding world. This helped us to start developing a language for specifying knowledge in multi-agent intelligent systems, termed KnowLang. Although not planned for this period, we developed a high-level view of that language in terms of specification tiers and parameterization necessary to cover the specification of the ASCENS knowledge domains and reasoning primitives (published in two conference papers).

Concerning T3.2, we started the task as planned and have developed a high-level generic model for self-awareness in ASCENS systems. The model uses knowledge in four consecutive steps: monitoring, recognition, assessment and learning, forming an awareness control loop and helping a SC be aware of internal changes (self-awareness), external changes (context awareness: aware about both the SCE system and the SCE environment) and of situations (situational awareness). Moreover, we developed a formal algorithm for self-initiation of SCs. The algorithm is probabilistic and by using specific knowledge inputs helps a SC reason on the current SCE state (or that of the environment) and eventually self-initiate when an action is needed to be performed.

T3.3 was started as well, together with the first steps of the development of KnowLang. Both knowledge processing and update are underlined in the KnowLang specification mechanism, where we provide conceptual constructs for knowledge base operators (KB Operators) and inference primitives. Further development of those is highly dependent on our advance in T3.2.

To summarize, it is important to note that for the reported period we have published 7 peer-review papers (published in conference proceedings, journals, and book chapters). Moreover, our work on KnowLang has been presented at the Dagstuhl Seminar 11181 on Organic Computing – Design of Self-Organizing Systems. Finally, there are no significant deviations to report on the actual and planned person months for this WP.

### 3.4 WP4: Adaptation and Dynamic Self-Expression

The research activities within WP4 have proceeded smoothly, with only minor deviations from the DoW (as specified below), deviations that nevertheless does not affect the possibility to achieve the state objectives and that does not impact in any way on other WPs.

In particular, with respect to the progresses towards the stated objectives: there has been notable progresses towards the definition of the catalog of self-adaptive patterns, both at the level of individual components (T4.1) and at the level of ensembles (T4.2); A methodology has been defined to identify knowledge requirements from adaptation needs, and a study of the basic mechanisms and patterns for dynamic self-expression has been undertaken.

The significant results from this first year of activity include:

- the definition of a new general model (called SOTA) for the modeling of the requirements for self-adaptive software systems
- the identification of a methodology to apply early verification techniques to the requirements modeled in SOTA;

- the identification of a methodology to extract from SOTA modeling the requirements for knowledge processing and modeling;
- the identification of a first taxonomy of self-adaptive patterns for individual service components and for ensemble, and of key relevant self-adaptive patterns within it;
- the analysis of the relations between self-adaptation patterns and mechanisms and programming languages

The minor deviations from the DoW have been deliberate and functional to the better achievement of the overall WP objectives. In particular:

- the definition of the general model were not foreseen, but it has proven necessary to better ground the analysis of self-adaptive patterns, and it also had the positive side effect of making it possible to apply early verification techniques in the analysis of self-adaptive systems.
- the patterns of catalog of self-adaptive patterns (at the individual and ensemble level) has not been fully completed. We do have an early catalog framed around a sound taxonomy, yet we decided to wait for its completion and refinement because we noticed that, to make it really useful, we needed: (i) a more formal ground for the modeling of such patterns; (ii) experiments on the applicability and effectiveness of each of the identified patterns.

In any case, the above slight deviation from the DoW:

- does not impact on the allocation of resources to the WP;
- does not affect the possibility to achieve the planned WP4 goals, in that the catalog of patterns will be completed along with the experimentation of the effectiveness of each patterns;
- does not undermine the activities of other tasks or WPs. In fact, the early catalog we have identified is already enough to enable all other WPs to start reasoning on various classes of self-adaptation patterns, the fact that such self-adaptation patterns are now grounded on a solid model, can notably facilitate such reasoning.

There are no significant deviations to report on the actual and planned person months for this WP. The resources allocated on the WP have been functional and necessary to the achievement of its results.

There are not corrective actions to suggest. Simply, the completion of the catalog of patterns will proceed across the second year in parallel with experimentation activities to assess the patterns.

### **3.5 WP5: Correctness of Service Components and Service Component Ensembles**

#### **Summary of Work in Progress of the Main Research Directions**

During the first year of the project, we mainly worked on Task T5.1, as planed in the DoW. We tried to incorporate quantitative aspects of a SC or SCE, and contributed to the following research directions.

- We developed a framework to (i) evaluate the efficiency of a controller and (ii) construct a controller that behaves most-efficient in a given probabilistic environment. Efficiency is defined in terms of a cost model (e.g., energy consumption) and a reward model (e.g., reliability). The controller aims to find an optimal trade-off between costs and rewards.

- We developed SMC-BIP, a statistical model checking method and tool for the BIP framework. SMC-BIP permits to model uncertainty in the design and can verify quantitative properties. Moreover, it can handle large models that cannot be verified using classical model checking techniques, as shown by an avionics case study for which we successfully applied SMC-BIP. We used the SMC-BIP tool to estimate (i) the precision of clock synchronization in an aircraft communication network using the PTP protocol and (ii) the latencies for particular virtual links in complex AFDX (Avionics Full Duplex Ethernet) networks.
- We have developed a denotational model (based on a presheaf category) for fusion calculi, calculi with complex topologies, where system states are equipped with constraints expressing the identity of some of the allocated names (i.e., resources).
- We have developed a state-space reduction technique for rule-based specifications that allows us to verify larger models. We have finalized our research on behavioural type systems for the pi-calculus. We have identified a decidable fragment of Spatial logic and we have proven that any model checking algorithm for this logic is characterized by exponential complexity.
- We have started investigating the relationship between a variant of SCCEL and BIP and proposed a prototype translation of the former into the latter.
- We have introduced stochastic history expressions, a formalism to statically check quantitative aspects of security issues in a distributed context.

### **Verification of implementation properties)**

In the area of source code verification, we followed the description of work and started to prepare the GMC C language model checker for extensions allowing it to scale to real-life systems. So far, we implemented support for 64-bit platforms, which allowed both a little faster execution, but more importantly the use of significantly larger amount of operational memory, which was a crucial issue. To further extend the applicability of GMC to case studies, we also started to implement a module for support of the C++ language, which consists of handling C++ features such as the new operator, exception handling, inheritance, etc. This involved further investigation of the GIMPLE intermediate code and the realization of the aforementioned constructs in it. The implementation of the C++ module as well as of various improvements is still in progress. Nonetheless, we already ran GMC on small but complex examples including heap manipulation, pointers, and recursion.

### **3.6 WP6: Tool Integration Platform for Service Component Ensembles**

In discussions with project partners we identified twelve key requirements for the integration of SC and SCE tools into a single development environment, which we described in detail in our first-year deliverable D6.1. Based on these requirements we argued in the same deliverable that the SENSORIA Development Environment (SDE) provides a good basis for our ASCENS tooling platform, named the SCE Workbench. Over the course of the first period we disseminated information about the SDE technology and how the integration of tools can be performed to our projects partners, e.g. in the form of a tutorial at a general meeting or an online course. Currently, the integration of two tools, Maude and SAM, is underway. The integration of two additional tools, ARGOS and D-Finder, is planned to begin during the second period of the ASCENS project.

### 3.7 WP7: Case Studies

As stated in DoW, a common approach in this work package is to maintain the same strategy in implementing and deploying ASCENS technology in practice. In collaboration with other projects' work packages the systems requirements for the case studies have been specified and the initial plans for modeling and development are set accordingly. At the beginning, the focus has been at the separate problem space specification and individual system requirements description. After this separate activity, the partners joined to discuss common characteristics and extract generic features that represent each case study. Following the sound principles in software engineering, a common ASCENS approach has been constructed modeling a complex system with ensembles of service components. Further work is focused on modeling synthesis. It will include more collaboration with the partners that should develop SCEL language and means for self expression and self awareness and partners that should provide means for formal reasoning on system behavior.

The significant results in the first year:

- The robotic case study has been defined and their requirements fully specified. A number of formal considerations for the separate problems from the swarm robotics have been considered in WP2 and WP5.
- The science cloud computing has been specified as a collection of resource aware entities that can self-optimize both the use and cloud infrastructure.
- The e-mobility has been fully specified and modeled as a collection of service components and ensembles of service components that should optimize both individual and collective goals of the system. The system description motivates WP4 to do initial modeling and reason about liveness and safety properties of the e.-mobility system.
- The major common properties of all the three case studies have been extracted. Each case study can be modeled as ensemble of autonomous entities with the following characteristics: Global goals, self-awareness, Autonomous and collective behavior, Optimization, Adaptation, Robustness.

The work within WP7 achieved all the stated objectives set for the first project year. There were no deviations from the description of work (Dow) as given in the Annex I. The uses of resources were according to plan.

### 3.8 WP8: Engineering and Best Practices for Service Component Ensembles

Since WP8 is integrative in nature and relies on the results of other work packages, tasks T8.2 (An SCs component repository for self-aware autonomous ensembles) and T8.3 (Best Practices for SCEs) have been scheduled in the DoW to start only in months 13 and 19, respectively. The main focus in the first reporting period was therefore on task T8.1 (Challenges of Developing SCEs in the Real World). To this end, we created, in cooperation with WP7, scenario descriptions for each of the case studies; initial versions of these scenarios were made available to all project partners in the first three months of the project, and subsequently refined and clarified. The scenarios present challenges that are typical for the domain of the case study in a way that is easy to understand for the other project partners, and they were widely used in the project to enable and focus collaborative research between project partners. Deliverable D8.1 summarizes the challenges presented in the scenarios in a more systematic form that focuses on those challenges that are common to ensembles in general. The work in WP8 proceeded as planned and all goals were reached in time.

### **3.9 WP9: Dissemination, Collaboration and Exploitation**

The main achievements during the first reporting period were:

- Set-up of a web site containing general information on the project and its objectives.
- Definition of the project identity that comprises the ASCENS logo and templates for presentations, deliverables and reports.
- Production of dissemination material as a poster and a short journal overview article.
- Set-up of a blog and the regularly publication of blog entries.
- 50 publications of research results at journals, conferences and workshops, and 40 additional presentations on ASCENS topics.
- Implementation of a publication management system which enables automatically update of the publication list on the web site.
- ASCENS related topics were taught in 17 courses.
- Organization of 11 events such as conferences and workshops by members of ASCENS partners.
- Participation in the activities of the Coordination Action AWARENESS.
- Contacts to several other projects.
- Definition of the exploitation strategy for three components by the industrial partners of the ASCENS project.

## **4 Deliverables and Milestones Tables**

This section contains the tables of Deliverables and Milestones for the first reporting period.

### **4.1 Deliverables for the First Reporting Period**

The Deliverables correspond exactly to the list in the DoW; no Deliverable has been cancelled or regrouped, and no new Deliverable is proposed. All Deliverables were completed within 60 days after the end of the reporting period.

Del. no.	Deliverable name	Version	WP no	Lead beneficiary	Nature	Diss. Level	Delivery date	Actual delivery date	Status	Contractual	Comments
JD1.1	ASCENS White Paper	Final		Martin Wirsing (LMU)	R	PU	Month 12	30.11.11	S	yes	
D1.1	First Report on WP1: Language Primitives for Coordination, Resource Negotiation, and Task Descriptions	Final	WP1	Rocco De Nicola (IMT)	R	PU	Month 12	30.11.11	S	yes	
D2.1	First Report on WP2: Enhanced Connectors, Resource-Aware Operational Models, and the Negotiation-Commit-Execute Scheme and its Foundations	Final	WP2	Fabio Gadducci (UNIFI)	R	PU	Month 12	30.11.11	S	yes	
D3.1	First Report on WP3: Software Requirements, Knowledge Modeling and Knowledge Representation for Self-Awareness—Report and Survey with Experimental Results for Intelligent Multi-agent Systems	Final	WP3	Emil Vassev (UL)	R	PU	Month 12	30.11.11	S	yes	
D4.1	First Report on WP4: Catalog of Patterns of Component- and Ensemble-Level Self-Adaptation and Self-Expression, and Requirements for Knowledge Modeling	Final	WP4	Franco Zambonelli (UNIMORE)	R	PU	Month 12	30.11.11	S	yes	see Sec. 5.2
D5.1	First Report on WP5: Verification Techniques for SCs and Correctness Proofs for Negotiate-Commit-Execute Schemes	Final	WP5	Saddek Bensalem, Jacques Combaz (UJF-Verimag)	R	PU	Month 12	30.11.11	S	yes	
D6.1	First Report on WP6: SCE Tooling—Tool Integration Requirements and Technology	Final	WP6	Stephan Reiter (LMU)	R	PU	Month 12	30.11.11	S	yes	

Del. no.	Deliverable name	Version	WP no	Lead beneficiary	Nature	Diss. Level	Delivery date	Actual delivery date	Status	Contractual	Comments
D7.1	First Report on WP7: Requirement Specification and Scenario Description of the ASCENS Case Studies	Final	WP7	Nikola Serbedzija (Fraunhofer)	R	PU	Month 12	30.11.11	S	yes	
D8.1	First Report on WP8: Challenges of Developing SCEs in the Real World	Final	WP8	Matthias Hölzl (LMU)	R	PU	Month 12	30.11.11	S	yes	
D9.1.a	Dissemination and Exploitation Plan	Final	WP9	Nora Koch (LMU)	R	RE	Month 12	30.11.11	S	yes	
D9.1.b	Progress Report on Dissemination, Collaboration and Exploitation	Final	WP9	Nora Koch (LMU)	R	RE	Month 12	30.11.11	S	yes	
D10.1.a	Periodic Project Report for Months 1–12	Final	WP10	Martin Wirsing (LMU)	R	RE	Month 12	30.11.11	S	yes	

## 4.2 Milestones for the First Reporting Period

All Milestones for the first reporting period were completed in time.

Milestone no.	Milestone name	WP no	Lead beneficiary	Delivery date	Achieved	Actual achievement	Verification
M1	Language Primitives and Patterns for Self-Aware, Autonomic SCEs	WP1, WP3, WP4	Rocco De Nicola (IMT), Michael Hinchey (UL), Franco Zambonelli (UNIMORE)	Month 12	yes	30.11.11	D1.1, D3.1, D4.1
M2	Correctness Proofs for Negotiate-Commit-Execute Schemes	WP2, WP5	Ugo Montanari (UNIFI), Josef Sifakis (UJF-Verimag)	Month 12	yes	30.11.11	D2.1, D5.1

## 5 Management

This section describes the consortium management tasks, problems occurring during the reporting period, changes in the consortium during this reporting period. It contains a list of project meetings and the project planning for the next reporting period.

### 5.1 Consortium Management Tasks and Achievements

The consortium management tasks consisted in the

- preparation of the contract and consortium agreement;
- financial administration of the project, including coordination and distribution of the initial advance;
- the preparation of the annual periodic progress and self-evaluation reports, the monitoring of the EC periodic reports, the preparation of the EC final reports, and the delivery of all reports to the project officer;
- day-to-day coordination activities including the organisation/timetabling of meetings and EC reviews, deadline monitoring with work package coordinators, administrative support to partners, workshops coordination, integrated problem solving across the project, and serving as contact point to the project officer;
- risk and self-evaluation management activities including monitoring scientific and technological state-of-art, monitoring the scientific progress of the project, supervision of progress reports, and evaluation of quality metrics of project results.

### 5.2 Problems During the Reporting Period

There were no major problems during the reporting period (month 1–12). Minor deviations from the work planned in the Description of Work happened in WP4; these deviations stayed within the usual

variability of a research project and had no influence on the overall goals of ASCENS. A more detailed description is given in the following subsection.

#### **Deviation from the DoW in WP4**

The overall ultimate goal of this WP4, as stated in the DoW (“provide a sound and uniform set of conceptual and practical tools to guide developers of complex autonomic systems in the engineered exploitation of such patterns at the level of abstract system modeling, verification, and implementation”) is still valid.

However, over the course of the first year, we have understood that the original plan to reach the goal was a bit too simplistic. In first instance, we thought that the best way to kick off the activity could have been to (quoting from the DoW) “study and frame the relevant self-adaptive patterns at the level of both individual components and ensemble, also to drive the activities of WP3 by producing requirements for its activities”, and eventually produce, at the end of the first year (quoting from the D4.1 description in the DoW): “Catalogue of Patterns of Component- and Ensemble-level Self-adaptation and Self-expression, and Requirements for Knowledge Modeling”.

The fact is that, as we started framing such self-adaptive patterns, we understood that:

- A sound conceptual “frame” in which to insert self-adaptive patterns was missing. Then, in the absence of such frame, studying self-adaptive patterns and producing a catalogue of it would have reduced in making a bibliographic study, and the resulting catalogue would have been of little use to designers and developers, and of little use to the ASCENS project as well.
- A catalogue of patterns, for being useful, requires both a frame as well as experiences and scenarios of usage. Accordingly, the idea of cataloguing patterns first and only later, in the second year, to experiment with them, was meaningless.

The research approach that we have thus decided to undertake, as detailed in D4.1, is our reaction to such understanding.

The SOTA model can act as an effective framework upon which to rely to produce a sound and well-organized catalogue of patterns. This may have delayed a bit the completion of the pattern catalogue, but will end up in a much better organized catalogue. The experimental activities that was planned to start in the second year have been somewhat anticipated, and will continue intensively.

In the end, the SOTA model along with the experimental activities will enable us to produce, by the second year, a complete catalogue of patterns, also including for each of the patterns useful guidelines (based on experimental evidence) on what patterns to adopt in which conditions.

As for self-expression, the DoW states that most of the studies in self-expression will be performed in Year 2. We confirm this, although we emphasize that some preliminary study on the basic mechanisms to support self-expression has already started.

### **5.3 Changes in the Consortium**

A consortium consisting of Ludwig-Maximilians-Universitt Mnchen, Charles University Prague, Universita degli Studi di Firenze and Zimory GmbH Berlin gained funding for a “top-up” proposal “ASCENS-Enlarged EU” in which the original scope of ASCENS was extended with run-time monitoring and performance analysis. At the request of the European Union the original ASCENS project was amended to include the ASCENS-Enlarged EU project. These changes are reflected in Version 2.2 of the Description of Work. Charles-University Prague (CUNI) joined the ASCENS consortium starting on July 1, 2011.

The main researcher of UDF, Prof. Rocco De Nicola, moved from UDF to IMT Lucca. Since he is instrumental in the design of the SCEL language we wanted to retain his expertise in the project. Therefore IMT Lucca (IMT) joined the consortium starting on July 1, 2011.

The main developer of the robots used in the swarm robotics case study, Michael Bonani, has moved from EPFL to Mobsya and the site leader of EPFL, Francesco Mondada, is president of Mobsya. In order to retain the expertise required for the hardware of the robot case study in ASCENS, Mobsya joined the consortium starting on July 1, 2011.

#### **5.4 List of Project Meetings**

The following General Meetings took place during the project reporting period.

- Munich, October 11-13, 2010 Kick-Off meeting
- Pisa, March 2-4, 2011, General Meeting
- Grenoble, July 7-8, 2011, General Meeting

The General Meetings also included sessions of the General Assembly. Numerous smaller meetings, involving between 2 and 5 project partners and focused on specific topics were held, often in conjunction with workshops or conferences.

#### **5.5 Project Planning and Status**

Except for the minor deviation in WP4, work in the project has progressed as planned. We therefore plan to proceed with the work for the second reporting period as described in the Description of Work.

#### **5.6 Impact of Deviations from the Planned Milestones and Deliverables**

All Milestones were achieved and all Deliverables were provided within the required 60 days after the end of the first reporting period.

#### **5.7 Website, Dissemination, Coordinating Action**

The development of the project website, dissemination activities, and co-ordination activities undertaken by ASCENS are reported in Deliverable D9.1.b “Progress Report on Dissemination, Collaboration and Exploitation”.

### **6 Use of Resources**

Tables detailing the use of resources are included on the following pages.

Project Number	257414	Project Acronym	ASCENS
----------------	--------	-----------------	--------

<b>Table 3.1 Personnel, subcontracting and other Major cost items for beneficiary 1 for the period.</b>			
<b>LUDWIG-MAXIMILIANS-UNIVERSITAET MUENCHEN</b>			
<b>Work Package</b>	<b>Item description</b>	<b>Amount in € with 2 decimals</b>	<b>Explanation</b>
WP1 WP7 WP6 WP9 WP8 WP4	Personnel costs	123,574.00€	Salaries of 1 full-time and 1 part-time senior researcher and 1 PhD student
WP1 WP6 WP8 WP7 WP9 WP4	Other direct cost	8,253.00€	Travel to ASCENS project meetings and scientific workshops/conferences. Travel costs for project meetings are higher than for other partners since LMU is the coordinator and therefore more LMU personnel take part in project meetings.
WP10	Personnel costs	25,622.00€	Salaries of 1 full-time and 1 part-time senior researcher
WP10	Other direct cost	5,796.00€	Travel Costs and Catering for ASCENS kickoff meeting
<b>TOTAL COSTS</b>		<b>163,245.00€</b>	

<b>Table 3.1 Personnel, subcontracting and other Major cost items for beneficiary 2 for the period.</b>			
<b>UNIVERSITA DI PISA</b>			
<b>Work Package</b>	<b>Item description</b>	<b>Amount in € with 2 decimals</b>	<b>Explanation</b>
WP2 WP1 WP4 WP5 WP7 WP9 WP10	Personnel costs	77,510.00€	one permanent researcher plus five part time researchers
WP2 WP1 WP4 WP5 WP7 WP9 WP10	Other direct cost	16,563.00€	travel and conference fees, catering of Pisa general meeting
<b>TOTAL COSTS</b>		<b>94,073.00€</b>	

<b>Table 3.1 Personnel, subcontracting and other Major cost items for beneficiary 3 for the period.</b>			
<b>UNIVERSITA DEGLI STUDI DI FIRENZE</b>			
<b>Work Package</b>	<b>Item description</b>	<b>Amount in € with 2 decimals</b>	<b>Explanation</b>
WP1 WP2 WP3 WP4 WP5 WP7 WP9	Personnel costs	52,038.00€	Salaries of three full time researchers and four part time researchers
WP1 WP2 WP3 WP4 WP5 WP7 WP9	Other direct cost	7,298.00€	Travel to ASCENS project meetings (Kick-Off meeting, Workshop on SCEL and its Models, General

<b>Table 3.1 Personnel, subcontracting and other Major cost items for beneficiary 3 for the period.</b>			
<b>UNIVERSITA DEGLI STUDI DI FIRENZE</b>			
<b>Work Package</b>	<b>Item description</b>	<b>Amount in € with 2 decimals</b>	<b>Explanation</b>
			Meeting), scientific workshops/conferences (Workshop on Behavioural Types, International Workshop on Quantitative Modelling and Formal Analysis, ETAPS 2011, Discotec 2011), visit other partners (EPFL)
WP10	Personnel costs	1,247.00€	Salary of one part time researcher
TOTAL COSTS		60,583.00€	

<b>Table 3.1 Personnel, subcontracting and other Major cost items for beneficiary 4 for the period.</b>			
<b>FRAUNHOFER-GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V</b>			
<b>Work Package</b>	<b>Item description</b>	<b>Amount in € with 2 decimals</b>	<b>Explanation</b>
WP4 WP7 WP9	Personnel costs	43,718.00€	Salaries for 2 scientists and 1 student
WP9	Other direct cost	412.00€	Travel costs: IFIP 2.4 Meeting, Nikola Serbedzija
WP7 WP10	Other direct cost	415.00€	Travel costs: ASCENS Project Kick-off, Nikola Serbedzija
WP9	Other direct cost	72.00€	Travel costs: Edinburgh Science Festival, Nikola Serbedzija
WP9	Other direct cost	459.00€	Travel costs: FET 2011 Conference, Nikola Serbedzija
WP9	Other direct cost	185.00€	Travel costs: Vehicular Workshop, Nikola Serbedzija
WP9	Other direct cost	579.00€	Travel costs: Science Festival und Affective Computing Meeting, Nikola Serbedzija
WP7 WP10	Other direct cost	646.00€	Travel costs: ASCENS General Meeting, Nikola Serbedzija
WP7 WP10	Other direct cost	352.00€	Travel costs: ASCENS Collaboration Potentials, Nikola Serbedzija
WP7 WP10	Other direct cost	161.00€	Travel costs: MOBESENSE Project Meeting, Nikola Serbedzija
WP7	Other direct cost	164.00€	Consumables
WP7	Other direct cost	161.00€	

<b>Table 3.1 Personnel, subcontracting and other Major cost items for beneficiary 4 for the period.</b>			
<b>FRAUNHOFER-GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V</b>			
<b>Work Package</b>	<b>Item description</b>	<b>Amount in € with 2 decimals</b>	<b>Explanation</b>
			Other Costs: Subsistence 02.09.11 ASCENS WP7 Meeting
WP10	Personnel costs	1,105.00€	Salaries Scientist
TOTAL COSTS		48,429.00€	

<b>Table 3.1 Personnel, subcontracting and other Major cost items for beneficiary 5 for the period.</b>			
<b>UNIVERSITE JOSEPH FOURIER GRENOBLE 1</b>			
<b>Work Package</b>	<b>Item description</b>	<b>Amount in € with 2 decimals</b>	<b>Explanation</b>
WP2	Personnel costs	5,230.00€	WP2: salaries of 1.4 MM
WP4	Personnel costs	23,416.00€	WP4: salaries of 6.2 MM
WP5	Personnel costs	33,584.00€	WP5: salaries of 8.8 MM
WP6	Personnel costs	13,146.00€	WP6: salaries of 3.5 MM
WP7	Personnel costs	1,591.00€	WP7: salaries of 0.4 MM
WP9	Personnel costs	2,244.00€	WP9: salaries of 0.5 MM
WP10	Personnel costs	1,959.00€	WP10: salaries of 0.2 MM
WP10	Other direct cost	2,163.00€	WP 10: Ascens meeting 2 persons Italy (Lucca) Jan 2011
WP4	Other direct cost	1,989.00€	WP4: Ascens meeting 2 persons Italy (Pise) march 2011
WP2	Other direct cost	306.00€	WP2: Ascens meeting 3 persons Lausanne
WP6	Other direct cost	86.00€	WP6: Summer school 1 person Aix (France) sept 2011
TOTAL COSTS		85,714.00€	

<b>Table 3.1 Personnel, subcontracting and other Major cost items for beneficiary 6 for the period.</b>			
<b>UNIVERSITA DEGLI STUDI DI MODENA E REGGIO EMILIA</b>			
<b>Work Package</b>	<b>Item description</b>	<b>Amount in € with 2 decimals</b>	<b>Explanation</b>
	Personnel costs	81,651.00€	Salaries of two full-time researchers (for a total of 11,80 MM) and of four part-time faculties (for a total of 10,27 MM).
	Other direct cost	6,452.00€	Participation of researchers to the ASCENS Meetings, visits to partner sites for

<b>Table 3.1 Personnel, subcontracting and other Major cost items for beneficiary 6 for the period.</b>			
<b>UNIVERSITA DEGLI STUDI DI MODENA E REGGIO EMILIA</b>			
<b>Work Package</b>	<b>Item description</b>	<b>Amount in € with 2 decimals</b>	<b>Explanation</b>
			WP-specific activities, and participation to International conferences for presentation of ASCENS results.
	Other direct cost	1,016.00€	1 Notebooks and 3 Tablets for experimenting with contextual information and dynamic situations (costs represent the actual fraction of amortization).
	Other direct cost	664.00€	Registration to CTS conference and various consumables
TOTAL COSTS		89,783.00€	

<b>Table 3.1 Personnel, subcontracting and other Major cost items for beneficiary 8 for the period.</b>			
<b>UNIVERSITE LIBRE DE BRUXELLES</b>			
<b>Work Package</b>	<b>Item description</b>	<b>Amount in € with 2 decimals</b>	<b>Explanation</b>
WP7 WP6 WP8 WP9 WP10	Personnel costs	21,167.00€	Salary Pincirolì Carlo
WP6 WP7 WP8 WP9 WP10	Personnel costs	26,659.00€	Salary O'Grady Rehan
WP6 WP7 WP8 WP9 WP10	Other direct cost	8,149.00€	Travel costs
WP7	Other direct cost	2,032.00€	Building robotic arena
TOTAL COSTS		58,007.00€	

<b>Table 3.1 Personnel, subcontracting and other Major cost items for beneficiary 9 for the period.</b>			
<b>ECOLE POLYTECHNIQUE FEDERALE DE LAUSANNE</b>			
<b>Work Package</b>	<b>Item description</b>	<b>Amount in € with 2 decimals</b>	<b>Explanation</b>
WP7	Subcontracting	0.00€	none
WP7	Other direct cost	990.00€	Travel to meetings.
WP6 WP7 WP9	Personnel costs	24,310.00€	Salary of Fanny Riedo and Philippe Rétornaz
TOTAL COSTS		25,300.00€	

<b>Table 3.1 Personnel, subcontracting and other Major cost items for beneficiary 10 for the period.</b>			
<b>VOLKSWAGEN AG</b>			
<b>Work Package</b>	<b>Item description</b>	<b>Amount in € with 2 decimals</b>	<b>Explanation</b>
WP7	Personnel costs	112,588.00€	

<b>Table 3.1 Personnel, subcontracting and other Major cost items for beneficiary 10 for the period.</b>			
<b>VOLKSWAGEN AG</b>			
<b>Work Package</b>	<b>Item description</b>	<b>Amount in € with 2 decimals</b>	<b>Explanation</b>
			Salaries of 3 engineers related to 16.0 person months
WP7	Other direct cost	3,271.00€	9 Travels to project meetings in Munich, Pisa, Grenoble, Berlin
WP9	Personnel costs	4,828.00€	Salaries of 3 engineers related to 0.7 person months
	Other direct cost	184.00€	1 Travel to a meeting in Aachen
<b>TOTAL COSTS</b>		<b>120,871.00€</b>	

<b>Table 3.1 Personnel, subcontracting and other Major cost items for beneficiary 11 for the period.</b>			
<b>ZIMORY GMBH</b>			
<b>Work Package</b>	<b>Item description</b>	<b>Amount in € with 2 decimals</b>	<b>Explanation</b>
	Other direct cost	2,359.00€	Server hardware testbed
	Other direct cost	260.00€	Travel Jose Velasco Kick-Off Munich
	Personnel costs	43,228.00€	Salaries
	Other direct cost	350.00€	Travel Max Ahrens Kick-Off Munich
	Other direct cost	494.00€	Travel Jose Velasco Pisa, Grenoble
<b>TOTAL COSTS</b>		<b>46,691.00€</b>	

<b>Table 3.1 Personnel, subcontracting and other Major cost items for beneficiary 12 for the period.</b>			
<b>UNIVERSITY OF LIMERICK</b>			
<b>Work Package</b>	<b>Item description</b>	<b>Amount in € with 2 decimals</b>	<b>Explanation</b>
WP3	Personnel costs	81,823.00€	contribution to WP3
WP3	Other direct cost	6,477.00€	contribution to WP3
WP3	Personnel costs	1,035.00€	contribution to WP3
WP3	Other direct cost	3,224.00€	contribution to WP3
<b>TOTAL COSTS</b>		<b>92,559.00€</b>	

<b>Table 3.1 Personnel, subcontracting and other Major cost items for beneficiary 13 for the period.</b>			
<b>SCUOLA IMT (INSTITUZIONI, MERCANTI, TECNOLOGIE) ALTI STUDI DI LUCCA</b>			
<b>Work Package</b>	<b>Item description</b>	<b>Amount in € with 2 decimals</b>	<b>Explanation</b>

<b>Table 3.1 Personnel, subcontracting and other Major cost items for beneficiary 13 for the period.</b>			
<b>SCUOLA IMT (INSTITUZIONI, MERCANTI,TECNOLOGIE) ALTI STUDI DI LUCCA</b>			
<b>Work Package</b>	<b>Item description</b>	<b>Amount in € with 2 decimals</b>	<b>Explanation</b>
WP1	Personnel costs	3,778.00€	SCEL (WP1)
WP2	Personnel costs	4,867.00€	Adaptation, Verification (WP2)
WP4	Personnel costs	4,367.00€	Adaptation, Case Studies (WP4)
WP2	Personnel costs	2,028.00€	Contracts (WP2)
TOTAL COSTS		15,040.00€	

<b>Table 3.1 Personnel, subcontracting and other Major cost items for beneficiary 14 for the period.</b>			
<b>ASSOCIATION MOBSYA</b>			
<b>Work Package</b>	<b>Item description</b>	<b>Amount in € with 2 decimals</b>	<b>Explanation</b>
WP7 WP6 WP10 WP9	Personnel costs	20,887.00€	Salary of Michael Bonani.
WP7 WP10 WP9 WP6	Other direct cost	575.00€	Travel to meetings in Berlin and Grenoble
TOTAL COSTS		21,462.00€	

<b>Table 3.1 Personnel, subcontracting and other Major cost items for beneficiary 15 for the period.</b>			
<b>UNIVERZITA KARLOVA V PRAZE</b>			
<b>Work Package</b>	<b>Item description</b>	<b>Amount in € with 2 decimals</b>	<b>Explanation</b>
WP5 WP6 WP1 WP4	Personnel costs	14,832.00€	Part time salaries for six researchers and six doctoral students.
WP1 WP4 WP5 WP6 WP10	Other direct cost	2,349.00€	Trip to GA ASCENS meeting Grenoble, Frantisek Plasil, Lubomir Bulej.
WP10	Subcontracting	137.00€	Document courier services.
TOTAL COSTS		17,318.00€	

## **7 Financial Data**

The financial overview and Form Cs are included on the following pages.

# FP7 - Grant Agreement - Annex VI - Collaborative project

## Summary Financial report - Collaborative project

Project acronym	ASCENS	Project nr	257414	Reporting period from	01/10/2010	to	30/09/2011	Page	1/1
-----------------	--------	------------	--------	-----------------------	------------	----	------------	------	-----

Funding scheme		CP		Type of activity								Total		Req. EC Contrib.	Receipts	Interest
Benef. nr	If 3rd Party, linked to benef.	Adjustment (Yes/No)	Organisation Short Name	RTD (A)		Demonstration (B)		Management (C)		Other (D)		Total (A+B+C+D)				
				Total	Max EC Contrib.	Total	Max EC Contrib.	Total	Max EC Contrib.	Total	Max EC Contrib.	Total	Max EC Contrib.			
1		No	LMU MUENCH	210,923	158,192	0	0	50,268	50,268	0	0	261,191	208,460	208,460	0	0
2		No	UNIPI	150,516	112,887	0	0	0	0	0	0	150,516	112,887	112,887	0	0
3		No	UDF	94,937	71,202	0	0	1,995	1,995	0	0	96,932	73,197	73,197	0	0
-999	3	No	ISTI	22,719	17,039	0	0	0	0	0	0	22,719	17,039	17,039	0	0
4		No	Fraunhofer	77,808	58,356	0	0	1,926	1,926	0	0	79,734	60,282	60,282	0	0
5		No	UJF-VERIMA	137,142	102,856	0	0	0	0	0	0	137,142	102,856	102,856	0	0
-996	5	No	INPG	-	-	-	-	-	-	-	-	-	-	-	-	-
-995	5	No	CNRS	-	-	-	-	-	-	-	-	-	-	-	-	-
6		No	UNIMORE	143,652	107,739	0	0	0	0	0	0	143,652	107,739	107,739	0	0
8		No	ULB	92,811	69,608	0	0	0	0	0	0	92,811	69,608	69,608	0	0
9		No	EPFL	40,480	30,360	0	0	0	0	0	0	40,480	30,360	30,360	0	0
10		No	VW	222,314	111,157	0	0	9,577	9,577	0	0	231,891	120,734	120,734	0	0
11		No	ZIMORY	74,769	56,076	0	0	0	0	0	0	74,769	56,076	56,076	0	0
12		No	UL	141,280	105,960	0	0	6,814	6,814	0	0	148,094	112,774	112,774	0	0
13		No	IMT	24,063	18,047	0	0	3,778	3,778	0	0	27,841	21,825	21,825	0	0
14		No	Mobsya	34,339	25,754	0	0	0	0	0	0	34,339	25,754	25,754	0	0
15		No	CUNI	27,489	20,616	0	0	137	137	0	0	27,626	20,753	20,753	0	0
<b>Total</b>				<b>1,495,242</b>	<b>1,065,849</b>	<b>0</b>	<b>0</b>	<b>74,495</b>	<b>74,495</b>	<b>0</b>	<b>0</b>	<b>1,569,737</b>	<b>1,140,344</b>	<b>1,140,344</b>	<b>0</b>	<b>0</b>

# FP7 - Grant Agreement - Annex VI - Collaborative project

Form C - Financial Statement (to be filled in by each beneficiary)

Project Number	257414	Funding scheme	Collaborative project
Project Acronym	ASCENS		
Period from	01/10/2010	Is this an adjustment to a previous statement ?	No
To	30/09/2011		
Legal Name	LUDWIG-MAXIMILIANS-UNIVERSITAET MUENCHEN	Participant Identity Code	999978433
Organisation Short Name	LMU MUENCHEN	Beneficiary nr	1
Funding % for RTD activities (A)	75.0	If flat rate for indirect costs, specify %	60

## 1. Declaration of eligible costs/lump sum/flat-rate/scale of unit (in €)

	Type of Activity				Total (A+B+C+D)
	RTD (A)	Demonstration (B)	Management (C)	Other (D)	
Personnel costs	123,574	0	25,622	0	149,196
Subcontracting	0	0	0	0	0
Other direct costs	8,253	0	5,796	0	14,049
Indirect costs	79,096	0	18,850	0	97,946
<b>Total costs</b>	<b>210,923</b>	<b>0</b>	<b>50,268</b>	<b>0</b>	<b>261,191</b>
Maximum EU contribution	158,192	0	50,268	0	208,460
Requested EU contribution					208,460

## 2. Declaration of receipts

Did you receive any financial transfers or contributions in kind, free of charge from third parties or did the project generate any income which could be considered a receipt according to Art.II. 17 of the grant agreement ?  
If yes, please mention the amount (in €)

No

## 3. Declaration of interest yielded by the pre-financing (to be completed only by the coordinator)

Did the pre-financing you received generate any interest according to Art.II.19 ?  
If yes, please mention the amount (in €)

No

## 4. Certificate on the methodology

Do you declare average personnel costs according to Art.II.14.1 ?

No

Is there a certificate on the methodology provided by an independent auditor and accepted by the Commission according to Art.II.4.4 ?

No

Name of the auditor	Cost of the certificate (in €), if charged under this project
---------------------	---

## 5. Certificate on the financial statements

Is there a certificate on the financial statements provided by an independent auditor attached to this financial statement according to Art.II.4.4 ?

No

Name of the auditor	Cost of the certificate (in €)
---------------------	--------------------------------

## 6. Beneficiary's declaration on its honour

We declare on our honour that:

- the costs declared above are directly related to the resources used to attain the objectives of the project and fall within the definition of eligible costs specified in Articles II.14 and II.15 of the grant agreement, and, if relevant, Annex III and Article 7 (special clauses) of the grant agreement;
- the receipts declared above are the only financial transfers or contributions in kind, free of charge, from third parties and the only income generated by the project which could be considered as receipts according to Art.II.17 of the grant agreement;
- the interest declared above is the only interest yielded by the pre-financing which falls within the definition of Art.II.19 of the grant agreement;
- there is full supporting documentation to justify the information hereby declared. It will be made available at the request of the Commission and in the event of an audit by the Commission and/or by the Court of Auditors and/or their authorised representatives.

Beneficiary's Stamp	Name of the Person(s) Authorised to sign this Financial Statement
	Willibald Seitz
	Date & signature

# FP7 - Grant Agreement - Annex VI - Collaborative project

Form C - Financial Statement (to be filled in by each beneficiary)

Project Number	257414	Funding scheme	Collaborative project
Project Acronym	ASCENS		
Period from	01/10/2010	Is this an adjustment to a previous statement ?	No
To	30/09/2011		
Legal Name	UNIVERSITA DI PISA	Participant Identity Code	999862712
Organisation Short Name	UNIFI	Beneficiary nr	2
Funding % for RTD activities (A)	75.0	If flat rate for indirect costs, specify %	60

## 1. Declaration of eligible costs/lump sum/flat-rate/scale of unit (in €)

	Type of Activity				Total (A+B+C+D)
	RTD (A)	Demonstration (B)	Management (C)	Other (D)	
Personnel costs	77,510	0	0	0	77,510
Subcontracting	0	0	0	0	0
Other direct costs	16,563	0	0	0	16,563
Indirect costs	56,443	0	0	0	56,443
Total costs	150,516	0	0	0	150,516
Maximum EU contribution	112,887	0	0	0	112,887
Requested EU contribution					112,887

## 2. Declaration of receipts

Did you receive any financial transfers or contributions in kind, free of charge from third parties or did the project generate any income which could be considered a receipt according to Art.II. 17 of the grant agreement ?  
If yes, please mention the amount (in €)

No

## 4. Certificate on the methodology

Do you declare average personnel costs according to Art.II.14.1 ?

No

Is there a certificate on the methodology provided by an independent auditor and accepted by the Commission according to Art.II.4.4 ?

No

Name of the auditor

Cost of the certificate (in €),  
if charged under this project

## 5. Certificate on the financial statements

Is there a certificate on the financial statements provided by an independent auditor attached to this financial statement according to Art.II.4.4 ?

No

Name of the auditor

Cost of the certificate (in €)

## 6. Beneficiary's declaration on its honour

We declare on our honour that:

- the costs declared above are directly related to the resources used to attain the objectives of the project and fall within the definition of eligible costs specified in Articles II.14 and II.15 of the grant agreement, and, if relevant, Annex III and Article 7 (special clauses) of the grant agreement;
- the receipts declared above are the only financial transfers or contributions in kind, free of charge, from third parties and the only income generated by the project which could be considered as receipts according to Art.II.17 of the grant agreement;
- the interest declared above is the only interest yielded by the pre-financing which falls within the definition of Art.II.19 of the grant agreement;
- there is full supporting documentation to justify the information hereby declared. It will be made available at the request of the Commission and in the event of an audit by the Commission and/or by the Court of Auditors and/or their authorised representatives.

Beneficiary's Stamp	Name of the Person(s) Authorised to sign this Financial Statement
	Dott.ssa Paola Fabiani
	Date & signature

# FP7 - Grant Agreement - Annex VI - Collaborative project

Form C - Financial Statement (to be filled in by each beneficiary)

Project Number	257414	Funding scheme	Collaborative project
Project Acronym	ASCENS		
Period from	01/10/2010	Is this an adjustment to a previous statement ?	No
To	30/09/2011		
Legal Name	UNIVERSITA DEGLI STUDI DI FIRENZE	Participant Identity Code	999895789
Organisation Short Name	UDF	Beneficiary nr	3
Funding % for RTD activities (A)	75.0	If flat rate for indirect costs, specify %	60

## 1. Declaration of eligible costs/lump sum/flat-rate/scale of unit (in €)

	Type of Activity				Total (A+B+C+D)
	RTD (A)	Demonstration (B)	Management (C)	Other (D)	
Personnel costs	52,038	0	1,247	0	53,285
Subcontracting	0	0	0	0	0
Other direct costs	7,298	0	0	0	7,298
Indirect costs	35,601	0	748	0	36,349
Total costs	94,937	0	1,995	0	96,932
Maximum EU contribution	71,202	0	1,995	0	73,197
Requested EU contribution					73,197

## 2. Declaration of receipts

Did you receive any financial transfers or contributions in kind, free of charge from third parties or did the project generate any income which could be considered a receipt according to Art.II. 17 of the grant agreement ?

If yes, please mention the amount (in €)

No

## 4. Certificate on the methodology

Do you declare average personnel costs according to Art.II.14.1 ?

Is there a certificate on the methodology provided by an independent auditor and accepted by the Commission according to Art.II.4.4 ?

No

No

Name of the auditor

Cost of the certificate (in €), if charged under this project

## 5. Certificate on the financial statements

Is there a certificate on the financial statements provided by an independent auditor attached to this financial statement according to Art.II.4.4 ?

No

Name of the auditor

Cost of the certificate (in €)

## 6. Beneficiary's declaration on its honour

We declare on our honour that:

- the costs declared above are directly related to the resources used to attain the objectives of the project and fall within the definition of eligible costs specified in Articles II.14 and II.15 of the grant agreement, and, if relevant, Annex III and Article 7 (special clauses) of the grant agreement;
- the receipts declared above are the only financial transfers or contributions in kind, free of charge, from third parties and the only income generated by the project which could be considered as receipts according to Art.II.17 of the grant agreement;
- the interest declared above is the only interest yielded by the pre-financing which falls within the definition of Art.II.19 of the grant agreement;
- there is full supporting documentation to justify the information hereby declared. It will be made available at the request of the Commission and in the event of an audit by the Commission and/or by the Court of Auditors and/or their authorised representatives.

Beneficiary's Stamp	Name of the Person(s) Authorised to sign this Financial Statement
	Renzo PINZANI
	Date & signature

# FP7 - Grant Agreement - Annex VI - Collaborative project

Form C - Financial Statement (to be filled in by Third Party) Only applicable if special clause nr 10 is used

Project Number	257414	Funding scheme	Collaborative project
Project Acronym	ASCENS		
Period from	01/10/2010	Is this an adjustment to a previous statement ?	No
To	30/09/2011		
3rd party legal Name	CONSIGLIO NAZIONALE DELLE RICERCHE		
3rd party Organisation Short Name	ISTI	Working for beneficiary nr	3
Funding % for RTD activities (A)	75.0	If flat rate for indirect costs, specify %	N/A

## 1. Declaration of eligible costs/lump sum/flat-rate/scale of unit (in €)

	Type of Activity				Total (A+B+C+D)
	RTD (A)	Demonstration (B)	Management (C)	Other (D)	
Personnel costs	12,003	0	0	0	12,003
Subcontracting	0	0	0	0	0
Other direct costs	2,625	0	0	0	2,625
Indirect costs	8,091	0	0	0	8,091
<b>Total costs</b>	<b>22,719</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>22,719</b>
Maximum EU contribution	17,039	0	0	0	17,039
Requested EU contribution					17,039

## 2. Declaration of receipts

Did you receive any financial transfers or contributions in kind, free of charge from third parties or did the project generate any income which could be considered a receipt according to Art.II. 17 of the grant agreement ?  
If yes, please mention the amount (in €)

No

## 4. Certificate on the methodology

Do you declare average personnel costs according to Art.II.14.1 ?

No

Is there a certificate on the methodology provided by an independent auditor and accepted by the Commission according to Art.II.4.4 ?

No

Name of the auditor	Cost of the certificate (in €), if charged under this project
---------------------	---

## 5. Certificate on the financial statements

Is there a certificate on the financial statements provided by an independent auditor attached to this financial statement according to Art.II.4.4 ?

No

Name of the auditor	Cost of the certificate (in €)
---------------------	--------------------------------

## 6. Beneficiary's declaration on its honour

We declare on our honour that:

- the costs declared above are directly related to the resources used to attain the objectives of the project and fall within the definition of eligible costs specified in Articles II.14 and II.15 of the grant agreement, and, if relevant, Annex III and Article 7 (special clauses) of the grant agreement;
- the receipts declared above are the only financial transfers or contributions in kind, free of charge, from third parties and the only income generated by the project which could be considered as receipts according to Art.II.17 of the grant agreement;
- the interest declared above is the only interest yielded by the pre-financing which falls within the definition of Art.II.19 of the grant agreement;
- there is full supporting documentation to justify the information hereby declared. It will be made available at the request of the Commission and in the event of an audit by the Commission and/or by the Court of Auditors and/or their authorised representatives.

Beneficiary's Stamp	Name of the Person(s) Authorised to sign this Financial Statement
	Claudio Montani
	Date & signature

# FP7 - Grant Agreement - Annex VI - Collaborative project

Form C - Financial Statement (to be filled in by each beneficiary)

Project Number	257414	Funding scheme	Collaborative project
Project Acronym	ASCENS		
Period from	01/10/2010	Is this an adjustment to a previous statement ?	No
To	30/09/2011		
Legal Name	FRAUNHOFER-GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V	Participant Identity Code	999984059
Organisation Short Name	Fraunhofer	Beneficiary nr	4
Funding % for RTD activities (A)	75.0	If flat rate for indirect costs, specify %	N/A

## 1. Declaration of eligible costs/lump sum/flat-rate/scale of unit (in €)

	Type of Activity				Total (A+B+C+D)
	RTD (A)	Demonstration (B)	Management (C)	Other (D)	
Personnel costs	43,718	0	1,105	0	44,823
Subcontracting	0	0	0	0	0
Other direct costs	3,606	0	0	0	3,606
Indirect costs	30,484	0	821	0	31,305
<b>Total costs</b>	<b>77,808</b>	<b>0</b>	<b>1,926</b>	<b>0</b>	<b>79,734</b>
Maximum EU contribution	58,356	0	1,926	0	60,282
Requested EU contribution					60,282

## 2. Declaration of receipts

Did you receive any financial transfers or contributions in kind, free of charge from third parties or did the project generate any income which could be considered a receipt according to Art.II. 17 of the grant agreement ?  
If yes, please mention the amount (in €)

No

## 4. Certificate on the methodology

Do you declare average personnel costs according to Art.II.14.1 ?

Yes

Is there a certificate on the methodology provided by an independent auditor and accepted by the Commission according to Art.II.4.4 ?

Yes

Name of the auditor	KPMG AG Wirtschaftsprüfungsgesellschaft	Cost of the certificate (in €), if charged under this project	0
---------------------	--	--	---

## 5. Certificate on the financial statements

Is there a certificate on the financial statements provided by an independent auditor attached to this financial statement according to Art.II.4.4 ?

No

Name of the auditor		Cost of the certificate (in €)	
---------------------	--	--------------------------------	--

## 6. Beneficiary's declaration on its honour

We declare on our honour that:

- the costs declared above are directly related to the resources used to attain the objectives of the project and fall within the definition of eligible costs specified in Articles II.14 and II.15 of the grant agreement, and, if relevant, Annex III and Article 7 (special clauses) of the grant agreement;
- the receipts declared above are the only financial transfers or contributions in kind, free of charge, from third parties and the only income generated by the project which could be considered as receipts according to Art.II.17 of the grant agreement;
- the interest declared above is the only interest yielded by the pre-financing which falls within the definition of Art.II.19 of the grant agreement;
- there is full supporting documentation to justify the information hereby declared. It will be made available at the request of the Commission and in the event of an audit by the Commission and/or by the Court of Auditors and/or their authorised representatives.

Beneficiary's Stamp	Name of the Person(s) Authorised to sign this Financial Statement
	Tobias Rechmann
	Date & signature

# FP7 - Grant Agreement - Annex VI - Collaborative project

Form C - Financial Statement (to be filled in by each beneficiary)

Project Number	257414	Funding scheme	Collaborative project
Project Acronym	ASCENS		
Period from	01/10/2010	Is this an adjustment to a previous statement ?	No
To	30/09/2011		
Legal Name	UNIVERSITE JOSEPH FOURIER GRENOBLE 1	Participant Identity Code	999907429
Organisation Short Name	UJF-VERIMAG	Beneficiary nr	5
Funding % for RTD activities (A)	75.0	If flat rate for indirect costs, specify %	60

## 1. Declaration of eligible costs/lump sum/flat-rate/scale of unit (in €)

	Type of Activity				Total (A+B+C+D)
	RTD (A)	Demonstration (B)	Management (C)	Other (D)	
Personnel costs	81,170	0	0	0	81,170
Subcontracting	0	0	0	0	0
Other direct costs	4,544	0	0	0	4,544
Indirect costs	51,428	0	0	0	51,428
Total costs	137,142	0	0	0	137,142
Maximum EU contribution	102,856	0	0	0	102,856
Requested EU contribution					102,856

## 2. Declaration of receipts

Did you receive any financial transfers or contributions in kind, free of charge from third parties or did the project generate any income which could be considered a receipt according to Art.II. 17 of the grant agreement ?  
If yes, please mention the amount (in €)

No

## 4. Certificate on the methodology

Do you declare average personnel costs according to Art.II.14.1 ?

No

Is there a certificate on the methodology provided by an independent auditor and accepted by the Commission according to Art.II.4.4 ?

No

Name of the auditor	Cost of the certificate (in €), if charged under this project
---------------------	---

## 5. Certificate on the financial statements

Is there a certificate on the financial statements provided by an independent auditor attached to this financial statement according to Art.II.4.4 ?

No

Name of the auditor	Cost of the certificate (in €)
---------------------	--------------------------------

## 6. Beneficiary's declaration on its honour

We declare on our honour that:

- the costs declared above are directly related to the resources used to attain the objectives of the project and fall within the definition of eligible costs specified in Articles II.14 and II.15 of the grant agreement, and, if relevant, Annex III and Article 7 (special clauses) of the grant agreement;
- the receipts declared above are the only financial transfers or contributions in kind, free of charge, from third parties and the only income generated by the project which could be considered as receipts according to Art.II.17 of the grant agreement;
- the interest declared above is the only interest yielded by the pre-financing which falls within the definition of Art.II.19 of the grant agreement;
- there is full supporting documentation to justify the information hereby declared. It will be made available at the request of the Commission and in the event of an audit by the Commission and/or by the Court of Auditors and/or their authorised representatives.

Beneficiary's Stamp	Name of the Person(s) Authorised to sign this Financial Statement
	Geneviève Gras
	Date & signature

# FP7 - Grant Agreement - Annex VI - Collaborative project

Form C - Financial Statement (to be filled in by Third Party) Only applicable if special clause nr 10 is used

Project Number	257414	Funding scheme	Collaborative project
Project Acronym	ASCENS		
Period from	01/10/2010	Is this an adjustment to a previous statement ?	No
To	30/09/2011		
3rd party legal Name	INSTITUT POLYTECHNIQUE DE GRENOBLE		
3rd party Organisation Short Name	INPG	Working for beneficiary nr	5
Funding % for RTD activities (A)	75.0	If flat rate for indirect costs, specify %	60

## 1. Declaration of eligible costs/lump sum/flat-rate/scale of unit (in €)

	Type of Activity				Total (A+B+C+D)
	RTD (A)	Demonstration (B)	Management (C)	Other (D)	
Personnel costs	-	-	-	-	-
Subcontracting	-	-	-	-	-
Other direct costs	-	-	-	-	-
Indirect costs	-	-	-	-	-
Total costs	-	-	-	-	-
Maximum EU contribution	-	-	-	-	-
Requested EU contribution					

## 2. Declaration of receipts

Did you receive any financial transfers or contributions in kind, free of charge from third parties or did the project generate any income which could be considered a receipt according to Art.II. 17 of the grant agreement ?

If yes, please mention the amount (in €)

No

## 4. Certificate on the methodology

Do you declare average personnel costs according to Art.II.14.1 ?

Is there a certificate on the methodology provided by an independent auditor and accepted by the Commission according to Art.II.4.4 ?

No

No

Name of the auditor	Cost of the certificate (in €), if charged under this project
---------------------	---

## 5. Certificate on the financial statements

Is there a certificate on the financial statements provided by an independent auditor attached to this financial statement according to Art.II.4.4 ?

No

Name of the auditor	Cost of the certificate (in €)
---------------------	--------------------------------

## 6. Beneficiary's declaration on its honour

We declare on our honour that:

- the costs declared above are directly related to the resources used to attain the objectives of the project and fall within the definition of eligible costs specified in Articles II.14 and II.15 of the grant agreement, and, if relevant, Annex III and Article 7 (special clauses) of the grant agreement;
- the receipts declared above are the only financial transfers or contributions in kind, free of charge, from third parties and the only income generated by the project which could be considered as receipts according to Art.II.17 of the grant agreement;
- the interest declared above is the only interest yielded by the pre-financing which falls within the definition of Art.II.19 of the grant agreement;
- there is full supporting documentation to justify the information hereby declared. It will be made available at the request of the Commission and in the event of an audit by the Commission and/or by the Court of Auditors and/or their authorised representatives.

Beneficiary's Stamp	Name of the Person(s) Authorised to sign this Financial Statement
	Date & signature

# FP7 - Grant Agreement - Annex VI - Collaborative project

Form C - Financial Statement (to be filled in by Third Party) Only applicable if special clause nr 10 is used

Project Number	257414	Funding scheme	Collaborative project
Project Acronym	ASCENS		
Period from	01/10/2010	Is this an adjustment to a previous statement ?	No
To	30/09/2011		
3rd party legal Name	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE		
3rd party Organisation Short Name	CNRS	Working for beneficiary nr	5
Funding % for RTD activities (A)	75.0	If flat rate for indirect costs, specify %	60

## 1. Declaration of eligible costs/lump sum/flat-rate/scale of unit (in €)

	Type of Activity				Total (A+B+C+D)
	RTD (A)	Demonstration (B)	Management (C)	Other (D)	
Personnel costs	-	-	-	-	-
Subcontracting	-	-	-	-	-
Other direct costs	-	-	-	-	-
Indirect costs	-	-	-	-	-
Total costs	-	-	-	-	-
Maximum EU contribution	-	-	-	-	-
Requested EU contribution					

## 2. Declaration of receipts

Did you receive any financial transfers or contributions in kind, free of charge from third parties or did the project generate any income which could be considered a receipt according to Art.II. 17 of the grant agreement ?

If yes, please mention the amount (in €)

No

## 4. Certificate on the methodology

Do you declare average personnel costs according to Art.II.14.1 ?

Is there a certificate on the methodology provided by an independent auditor and accepted by the Commission according to Art.II.4.4 ?

No

No

Name of the auditor	Cost of the certificate (in €), if charged under this project
---------------------	---

## 5. Certificate on the financial statements

Is there a certificate on the financial statements provided by an independent auditor attached to this financial statement according to Art.II.4.4 ?

No

Name of the auditor	Cost of the certificate (in €)
---------------------	--------------------------------

## 6. Beneficiary's declaration on its honour

We declare on our honour that:

- the costs declared above are directly related to the resources used to attain the objectives of the project and fall within the definition of eligible costs specified in Articles II.14 and II.15 of the grant agreement, and, if relevant, Annex III and Article 7 (special clauses) of the grant agreement;
- the receipts declared above are the only financial transfers or contributions in kind, free of charge, from third parties and the only income generated by the project which could be considered as receipts according to Art.II.17 of the grant agreement;
- the interest declared above is the only interest yielded by the pre-financing which falls within the definition of Art.II.19 of the grant agreement;
- there is full supporting documentation to justify the information hereby declared. It will be made available at the request of the Commission and in the event of an audit by the Commission and/or by the Court of Auditors and/or their authorised representatives.

Beneficiary's Stamp	Name of the Person(s) Authorised to sign this Financial Statement
	Date & signature

# FP7 - Grant Agreement - Annex VI - Collaborative project

Form C - Financial Statement (to be filled in by each beneficiary)

Project Number	257414	Funding scheme	Collaborative project
Project Acronym	ASCENS		
Period from	01/10/2010	Is this an adjustment to a previous statement ?	No
To	30/09/2011		
Legal Name	UNIVERSITA DEGLI STUDI DI MODENA E REGGIO EMILIA	Participant Identity Code	999840887
Organisation Short Name	UNIMORE	Beneficiary nr	6
Funding % for RTD activities (A)	75.0	If flat rate for indirect costs, specify %	60

## 1. Declaration of eligible costs/lump sum/flat-rate/scale of unit (in €)

	Type of Activity				Total (A+B+C+D)
	RTD (A)	Demonstration (B)	Management (C)	Other (D)	
Personnel costs	81,651	0	0	0	81,651
Subcontracting	0	0	0	0	0
Other direct costs	8,132	0	0	0	8,132
Indirect costs	53,869	0	0	0	53,869
Total costs	143,652	0	0	0	143,652
Maximum EU contribution	107,739	0	0	0	107,739
Requested EU contribution					107,739

## 2. Declaration of receipts

Did you receive any financial transfers or contributions in kind, free of charge from third parties or did the project generate any income which could be considered a receipt according to Art.II. 17 of the grant agreement ?

If yes, please mention the amount (in €)

No

## 4. Certificate on the methodology

Do you declare average personnel costs according to Art.II.14.1 ?

Is there a certificate on the methodology provided by an independent auditor and accepted by the Commission according to Art.II.4.4 ?

No

No

Name of the auditor	Cost of the certificate (in €), if charged under this project
---------------------	---

## 5. Certificate on the financial statements

Is there a certificate on the financial statements provided by an independent auditor attached to this financial statement according to Art.II.4.4 ?

No

Name of the auditor	Cost of the certificate (in €)
---------------------	--------------------------------

## 6. Beneficiary's declaration on its honour

We declare on our honour that:

- the costs declared above are directly related to the resources used to attain the objectives of the project and fall within the definition of eligible costs specified in Articles II.14 and II.15 of the grant agreement, and, if relevant, Annex III and Article 7 (special clauses) of the grant agreement;
- the receipts declared above are the only financial transfers or contributions in kind, free of charge, from third parties and the only income generated by the project which could be considered as receipts according to Art.II.17 of the grant agreement;
- the interest declared above is the only interest yielded by the pre-financing which falls within the definition of Art.II.19 of the grant agreement;
- there is full supporting documentation to justify the information hereby declared. It will be made available at the request of the Commission and in the event of an audit by the Commission and/or by the Court of Auditors and/or their authorised representatives.

Beneficiary's Stamp	Name of the Person(s) Authorised to sign this Financial Statement
	Mauro Dell'Amico
	Date & signature

# FP7 - Grant Agreement - Annex VI - Collaborative project

Form C - Financial Statement (to be filled in by each beneficiary)

Project Number	257414	Funding scheme	Collaborative project
Project Acronym	ASCENS		
Period from	01/10/2010	Is this an adjustment to a previous statement ?	No
To	30/09/2011		
Legal Name	UNIVERSITE LIBRE DE BRUXELLES	Participant Identity Code	999986290
Organisation Short Name	ULB	Beneficiary nr	8
Funding % for RTD activities (A)	75.0	If flat rate for indirect costs, specify %	60

## 1. Declaration of eligible costs/lump sum/flat-rate/scale of unit (in €)

	Type of Activity				Total (A+B+C+D)
	RTD (A)	Demonstration (B)	Management (C)	Other (D)	
Personnel costs	47,826	0	0	0	47,826
Subcontracting	0	0	0	0	0
Other direct costs	10,181	0	0	0	10,181
Indirect costs	34,804	0	0	0	34,804
Total costs	92,811	0	0	0	92,811
Maximum EU contribution	69,608	0	0	0	69,608
Requested EU contribution					69,608

## 2. Declaration of receipts

Did you receive any financial transfers or contributions in kind, free of charge from third parties or did the project generate any income which could be considered a receipt according to Art.II. 17 of the grant agreement ?

If yes, please mention the amount (in €)

No

## 4. Certificate on the methodology

Do you declare average personnel costs according to Art.II.14.1 ?

Is there a certificate on the methodology provided by an independent auditor and accepted by the Commission according to Art.II.4.4 ?

No

No

Name of the auditor

Cost of the certificate (in €), if charged under this project

## 5. Certificate on the financial statements

Is there a certificate on the financial statements provided by an independent auditor attached to this financial statement according to Art.II.4.4 ?

No

Name of the auditor

Cost of the certificate (in €)

## 6. Beneficiary's declaration on its honour

We declare on our honour that:

- the costs declared above are directly related to the resources used to attain the objectives of the project and fall within the definition of eligible costs specified in Articles II.14 and II.15 of the grant agreement, and, if relevant, Annex III and Article 7 (special clauses) of the grant agreement;
- the receipts declared above are the only financial transfers or contributions in kind, free of charge, from third parties and the only income generated by the project which could be considered as receipts according to Art.II.17 of the grant agreement;
- the interest declared above is the only interest yielded by the pre-financing which falls within the definition of Art.II.19 of the grant agreement;
- there is full supporting documentation to justify the information hereby declared. It will be made available at the request of the Commission and in the event of an audit by the Commission and/or by the Court of Auditors and/or their authorised representatives.

Beneficiary's Stamp	Name of the Person(s) Authorised to sign this Financial Statement
	Patrick Goblet
	Date & signature

# FP7 - Grant Agreement - Annex VI - Collaborative project

Form C - Financial Statement (to be filled in by each beneficiary)

Project Number	257414	Funding scheme	Collaborative project
Project Acronym	ASCENS		
Period from	01/10/2010	Is this an adjustment to a previous statement ?	No
To	30/09/2011		
Legal Name	ECOLE POLYTECHNIQUE FEDERALE DE LAUSANNE	Participant Identity Code	999973971
Organisation Short Name	EPFL	Beneficiary nr	9
Funding % for RTD activities (A)	75.0	If flat rate for indirect costs, specify %	60

## 1. Declaration of eligible costs/lump sum/flat-rate/scale of unit (in €)

	Type of Activity				Total (A+B+C+D)
	RTD (A)	Demonstration (B)	Management (C)	Other (D)	
Personnel costs	24,310	0	0	0	24,310
Subcontracting	0	0	0	0	0
Other direct costs	990	0	0	0	990
Indirect costs	15,180	0	0	0	15,180
<b>Total costs</b>	<b>40,480</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>40,480</b>
Maximum EU contribution	30,360	0	0	0	30,360
Requested EU contribution					30,360

## 2. Declaration of receipts

Did you receive any financial transfers or contributions in kind, free of charge from third parties or did the project generate any income which could be considered a receipt according to Art.II. 17 of the grant agreement ?  
If yes, please mention the amount (in €)

No

## 4. Certificate on the methodology

Do you declare average personnel costs according to Art.II.14.1 ?

No

Is there a certificate on the methodology provided by an independent auditor and accepted by the Commission according to Art.II.4.4 ?

No

Name of the auditor	Cost of the certificate (in €), if charged under this project
---------------------	---

## 5. Certificate on the financial statements

Is there a certificate on the financial statements provided by an independent auditor attached to this financial statement according to Art.II.4.4 ?

No

Name of the auditor	Cost of the certificate (in €)
---------------------	--------------------------------

## 6. Beneficiary's declaration on its honour

We declare on our honour that:

- the costs declared above are directly related to the resources used to attain the objectives of the project and fall within the definition of eligible costs specified in Articles II.14 and II.15 of the grant agreement, and, if relevant, Annex III and Article 7 (special clauses) of the grant agreement;
- the receipts declared above are the only financial transfers or contributions in kind, free of charge, from third parties and the only income generated by the project which could be considered as receipts according to Art.II.17 of the grant agreement;
- the interest declared above is the only interest yielded by the pre-financing which falls within the definition of Art.II.19 of the grant agreement;
- there is full supporting documentation to justify the information hereby declared. It will be made available at the request of the Commission and in the event of an audit by the Commission and/or by the Court of Auditors and/or their authorised representatives.

Beneficiary's Stamp	Name of the Person(s) Authorised to sign this Financial Statement
	Benoît Deveaud-Plédran and Hannes Bleuler
	Date & signature

# FP7 - Grant Agreement - Annex VI - Collaborative project

Form C - Financial Statement (to be filled in by each beneficiary)

Project Number	257414	Funding scheme	Collaborative project
Project Acronym	ASCENS		
Period from	01/10/2010	Is this an adjustment to a previous statement ?	No
To	30/09/2011		
Legal Name	VOLKSWAGEN AG	Participant Identity Code	999939924
Organisation Short Name	VW	Beneficiary nr	10
Funding % for RTD activities (A)	50.0	If flat rate for indirect costs, specify %	N/A

## 1. Declaration of eligible costs/lump sum/flat-rate/scale of unit (in €)

	Type of Activity				Total (A+B+C+D)
	RTD (A)	Demonstration (B)	Management (C)	Other (D)	
Personnel costs	112,588	0	4,828	0	117,416
Subcontracting	0	0	0	0	0
Other direct costs	3,271	0	184	0	3,455
Indirect costs	106,455	0	4,565	0	111,020
<b>Total costs</b>	<b>222,314</b>	<b>0</b>	<b>9,577</b>	<b>0</b>	<b>231,891</b>
Maximum EU contribution	111,157	0	9,577	0	120,734
Requested EU contribution					120,734

## 2. Declaration of receipts

Did you receive any financial transfers or contributions in kind, free of charge from third parties or did the project generate any income which could be considered a receipt according to Art.II. 17 of the grant agreement ?

If yes, please mention the amount (in €)

No

## 4. Certificate on the methodology

Do you declare average personnel costs according to Art.II.14.1 ?

Is there a certificate on the methodology provided by an independent auditor and accepted by the Commission according to Art.II.4.4 ?

Yes

No

Name of the auditor

Cost of the certificate (in €), if charged under this project

## 5. Certificate on the financial statements

Is there a certificate on the financial statements provided by an independent auditor attached to this financial statement according to Art.II.4.4 ?

No

Name of the auditor

Cost of the certificate (in €)

## 6. Beneficiary's declaration on its honour

We declare on our honour that:

- the costs declared above are directly related to the resources used to attain the objectives of the project and fall within the definition of eligible costs specified in Articles II.14 and II.15 of the grant agreement, and, if relevant, Annex III and Article 7 (special clauses) of the grant agreement;
- the receipts declared above are the only financial transfers or contributions in kind, free of charge, from third parties and the only income generated by the project which could be considered as receipts according to Art.II.17 of the grant agreement;
- the interest declared above is the only interest yielded by the pre-financing which falls within the definition of Art.II.19 of the grant agreement;
- there is full supporting documentation to justify the information hereby declared. It will be made available at the request of the Commission and in the event of an audit by the Commission and/or by the Court of Auditors and/or their authorised representatives.

Beneficiary's Stamp	Name of the Person(s) Authorised to sign this Financial Statement
	Prof. Dr. T. Form; W. Müller-Pietralla
	Date & signature

# FP7 - Grant Agreement - Annex VI - Collaborative project

Form C - Financial Statement (to be filled in by each beneficiary)

Project Number	257414	Funding scheme	Collaborative project
Project Acronym	ASCENS		
Period from	01/10/2010	Is this an adjustment to a previous statement ?	No
To	30/09/2011		
Legal Name	ZIMORY GMBH	Participant Identity Code	990797965
Organisation Short Name	ZIMORY	Beneficiary nr	11
Funding % for RTD activities (A)	75.0	If flat rate for indirect costs, specify %	60

## 1. Declaration of eligible costs/lump sum/flat-rate/scale of unit (in €)

	Type of Activity				Total (A+B+C+D)
	RTD (A)	Demonstration (B)	Management (C)	Other (D)	
Personnel costs	43,228	0	0	0	43,228
Subcontracting	0	0	0	0	0
Other direct costs	3,503	0	0	0	3,503
Indirect costs	28,038	0	0	0	28,038
<b>Total costs</b>	<b>74,769</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>74,769</b>
Maximum EU contribution	56,076	0	0	0	56,076
Requested EU contribution					56,076

## 2. Declaration of receipts

Did you receive any financial transfers or contributions in kind, free of charge from third parties or did the project generate any income which could be considered a receipt according to Art.II. 17 of the grant agreement ?  
If yes, please mention the amount (in €)

No

## 4. Certificate on the methodology

Do you declare average personnel costs according to Art.II.14.1 ?

No

Is there a certificate on the methodology provided by an independent auditor and accepted by the Commission according to Art.II.4.4 ?

No

Name of the auditor	Cost of the certificate (in €), if charged under this project
---------------------	---

## 5. Certificate on the financial statements

Is there a certificate on the financial statements provided by an independent auditor attached to this financial statement according to Art.II.4.4 ?

No

Name of the auditor	Cost of the certificate (in €)
---------------------	--------------------------------

## 6. Beneficiary's declaration on its honour

We declare on our honour that:

- the costs declared above are directly related to the resources used to attain the objectives of the project and fall within the definition of eligible costs specified in Articles II.14 and II.15 of the grant agreement, and, if relevant, Annex III and Article 7 (special clauses) of the grant agreement;
- the receipts declared above are the only financial transfers or contributions in kind, free of charge, from third parties and the only income generated by the project which could be considered as receipts according to Art.II.17 of the grant agreement;
- the interest declared above is the only interest yielded by the pre-financing which falls within the definition of Art.II.19 of the grant agreement;
- there is full supporting documentation to justify the information hereby declared. It will be made available at the request of the Commission and in the event of an audit by the Commission and/or by the Court of Auditors and/or their authorised representatives.

Beneficiary's Stamp	Name of the Person(s) Authorised to sign this Financial Statement
	Maximilian Ahrens
	Date & signature

# FP7 - Grant Agreement - Annex VI - Collaborative project

Form C - Financial Statement (to be filled in by each beneficiary)

Project Number	257414	Funding scheme	Collaborative project
Project Acronym	ASCENS		
Period from	01/10/2010	Is this an adjustment to a previous statement ?	No
To	30/09/2011		
Legal Name	UNIVERSITY OF LIMERICK	Participant Identity Code	999809071
Organisation Short Name	UL	Beneficiary nr	12
Funding % for RTD activities (A)	75.0	If flat rate for indirect costs, specify %	60

## 1. Declaration of eligible costs/lump sum/flat-rate/scale of unit (in €)

	Type of Activity				Total (A+B+C+D)
	RTD (A)	Demonstration (B)	Management (C)	Other (D)	
Personnel costs	81,823	0	1,035	0	82,858
Subcontracting	0	0	0	0	0
Other direct costs	6,477	0	3,224	0	9,701
Indirect costs	52,980	0	2,555	0	55,535
<b>Total costs</b>	<b>141,280</b>	<b>0</b>	<b>6,814</b>	<b>0</b>	<b>148,094</b>
Maximum EU contribution	105,960	0	6,814	0	112,774
Requested EU contribution					112,774

## 2. Declaration of receipts

Did you receive any financial transfers or contributions in kind, free of charge from third parties or did the project generate any income which could be considered a receipt according to Art.II. 17 of the grant agreement ?

If yes, please mention the amount (in €)

No

## 4. Certificate on the methodology

Do you declare average personnel costs according to Art.II.14.1 ?

Is there a certificate on the methodology provided by an independent auditor and accepted by the Commission according to Art.II.4.4 ?

No

No

Name of the auditor	Cost of the certificate (in €), if charged under this project
---------------------	---

## 5. Certificate on the financial statements

Is there a certificate on the financial statements provided by an independent auditor attached to this financial statement according to Art.II.4.4 ?

No

Name of the auditor	Cost of the certificate (in €)
---------------------	--------------------------------

## 6. Beneficiary's declaration on its honour

We declare on our honour that:

- the costs declared above are directly related to the resources used to attain the objectives of the project and fall within the definition of eligible costs specified in Articles II.14 and II.15 of the grant agreement, and, if relevant, Annex III and Article 7 (special clauses) of the grant agreement;
- the receipts declared above are the only financial transfers or contributions in kind, free of charge, from third parties and the only income generated by the project which could be considered as receipts according to Art.II.17 of the grant agreement;
- the interest declared above is the only interest yielded by the pre-financing which falls within the definition of Art.II.19 of the grant agreement;
- there is full supporting documentation to justify the information hereby declared. It will be made available at the request of the Commission and in the event of an audit by the Commission and/or by the Court of Auditors and/or their authorised representatives.

Beneficiary's Stamp	Name of the Person(s) Authorised to sign this Financial Statement
	Rosemary Fogarty
	Date & signature

# FP7 - Grant Agreement - Annex VI - Collaborative project

Form C - Financial Statement (to be filled in by each beneficiary)

Project Number	257414	Funding scheme	Collaborative project
Project Acronym	ASCENS		
Period from	01/10/2010	Is this an adjustment to a previous statement ?	No
To	30/09/2011		
Legal Name	SCUOLA IMT (ISTITUZIONI, MERCANTI, TECNOLOGIE) ALTI STUDI DI LUCCA	Participant Identity Code	965146412
Organisation Short Name	IMT	Beneficiary nr	13
Funding % for RTD activities (A)	75.0	If flat rate for indirect costs, specify %	60

## 1. Declaration of eligible costs/lump sum/flat-rate/scale of unit (in €)

	Type of Activity				Total (A+B+C+D)
	RTD (A)	Demonstration (B)	Management (C)	Other (D)	
Personnel costs	15,040	0	3,778	0	18,818
Subcontracting	0	0	0	0	0
Other direct costs	0	0	0	0	0
Indirect costs	9,023	0	0	0	9,023
Total costs	24,063	0	3,778	0	27,841
Maximum EU contribution	18,047	0	3,778	0	21,825
Requested EU contribution					21,825

## 2. Declaration of receipts

Did you receive any financial transfers or contributions in kind, free of charge from third parties or did the project generate any income which could be considered a receipt according to Art.II. 17 of the grant agreement ?  
If yes, please mention the amount (in €)

No

## 4. Certificate on the methodology

Do you declare average personnel costs according to Art.II.14.1 ?

No

Is there a certificate on the methodology provided by an independent auditor and accepted by the Commission according to Art.II.4.4 ?

No

Name of the auditor	Cost of the certificate (in €), if charged under this project
---------------------	---

## 5. Certificate on the financial statements

Is there a certificate on the financial statements provided by an independent auditor attached to this financial statement according to Art.II.4.4 ?

No

Name of the auditor	Cost of the certificate (in €)
---------------------	--------------------------------

## 6. Beneficiary's declaration on its honour

We declare on our honour that:

- the costs declared above are directly related to the resources used to attain the objectives of the project and fall within the definition of eligible costs specified in Articles II.14 and II.15 of the grant agreement, and, if relevant, Annex III and Article 7 (special clauses) of the grant agreement;
- the receipts declared above are the only financial transfers or contributions in kind, free of charge, from third parties and the only income generated by the project which could be considered as receipts according to Art.II.17 of the grant agreement;
- the interest declared above is the only interest yielded by the pre-financing which falls within the definition of Art.II.19 of the grant agreement;
- there is full supporting documentation to justify the information hereby declared. It will be made available at the request of the Commission and in the event of an audit by the Commission and/or by the Court of Auditors and/or their authorised representatives.

Beneficiary's Stamp	Name of the Person(s) Authorised to sign this Financial Statement
	Fabio Pammolli
	Date & signature

# FP7 - Grant Agreement - Annex VI - Collaborative project

Form C - Financial Statement (to be filled in by each beneficiary)

Project Number	257414	Funding scheme	Collaborative project
Project Acronym	ASCENS		
Period from	01/10/2010	Is this an adjustment to a previous statement ?	No
To	30/09/2011		
Legal Name	ASSOCIATION MOBSYA	Participant Identity Code	974500413
Organisation Short Name	Mobsya	Beneficiary nr	14
Funding % for RTD activities (A)	75.0	If flat rate for indirect costs, specify %	60

## 1. Declaration of eligible costs/lump sum/flat-rate/scale of unit (in €)

	Type of Activity				Total (A+B+C+D)
	RTD (A)	Demonstration (B)	Management (C)	Other (D)	
Personnel costs	20,887	0	0	0	20,887
Subcontracting	0	0	0	0	0
Other direct costs	575	0	0	0	575
Indirect costs	12,877	0	0	0	12,877
<b>Total costs</b>	<b>34,339</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>34,339</b>
Maximum EU contribution	25,754	0	0	0	25,754
Requested EU contribution					25,754

## 2. Declaration of receipts

Did you receive any financial transfers or contributions in kind, free of charge from third parties or did the project generate any income which could be considered a receipt according to Art.II. 17 of the grant agreement ?

If yes, please mention the amount (in €)

No

## 4. Certificate on the methodology

Do you declare average personnel costs according to Art.II.14.1 ?

Is there a certificate on the methodology provided by an independent auditor and accepted by the Commission according to Art.II.4.4 ?

No

No

Name of the auditor	Cost of the certificate (in €), if charged under this project
---------------------	---

## 5. Certificate on the financial statements

Is there a certificate on the financial statements provided by an independent auditor attached to this financial statement according to Art.II.4.4 ?

No

Name of the auditor	Cost of the certificate (in €)
---------------------	--------------------------------

## 6. Beneficiary's declaration on its honour

We declare on our honour that:

- the costs declared above are directly related to the resources used to attain the objectives of the project and fall within the definition of eligible costs specified in Articles II.14 and II.15 of the grant agreement, and, if relevant, Annex III and Article 7 (special clauses) of the grant agreement;
- the receipts declared above are the only financial transfers or contributions in kind, free of charge, from third parties and the only income generated by the project which could be considered as receipts according to Art.II.17 of the grant agreement;
- the interest declared above is the only interest yielded by the pre-financing which falls within the definition of Art.II.19 of the grant agreement;
- there is full supporting documentation to justify the information hereby declared. It will be made available at the request of the Commission and in the event of an audit by the Commission and/or by the Court of Auditors and/or their authorised representatives.

Beneficiary's Stamp	Name of the Person(s) Authorised to sign this Financial Statement
	Michael Bonani and Francesco Mondada
	Date & signature

# FP7 - Grant Agreement - Annex VI - Collaborative project

Form C - Financial Statement (to be filled in by each beneficiary)

Project Number	257414	Funding scheme	Collaborative project
Project Acronym	ASCENS		
Period from	01/10/2010	Is this an adjustment to a previous statement ?	No
To	30/09/2011		
Legal Name	UNIVERZITA KARLOVA V PRAZE	Participant Identity Code	999923434
Organisation Short Name	CUNI	Beneficiary nr	15
Funding % for RTD activities (A)	75.0	If flat rate for indirect costs, specify %	60

## 1. Declaration of eligible costs/lump sum/flat-rate/scale of unit (in €)

	Type of Activity				Total (A+B+C+D)
	RTD (A)	Demonstration (B)	Management (C)	Other (D)	
Personnel costs	14,832	0	0	0	14,832
Subcontracting	0	0	137	0	137
Other direct costs	2,349	0	0	0	2,349
Indirect costs	10,308	0	0	0	10,308
<b>Total costs</b>	<b>27,489</b>	<b>0</b>	<b>137</b>	<b>0</b>	<b>27,626</b>
Maximum EU contribution	20,616	0	137	0	20,753
Requested EU contribution					20,753

## 2. Declaration of receipts

Did you receive any financial transfers or contributions in kind, free of charge from third parties or did the project generate any income which could be considered a receipt according to Art.II. 17 of the grant agreement ?

If yes, please mention the amount (in €)

No

## 4. Certificate on the methodology

Do you declare average personnel costs according to Art.II.14.1 ?

Is there a certificate on the methodology provided by an independent auditor and accepted by the Commission according to Art.II.4.4 ?

No

No

Name of the auditor	Cost of the certificate (in €), if charged under this project
---------------------	---

## 5. Certificate on the financial statements

Is there a certificate on the financial statements provided by an independent auditor attached to this financial statement according to Art.II.4.4 ?

No

Name of the auditor	Cost of the certificate (in €)
---------------------	--------------------------------

## 6. Beneficiary's declaration on its honour

We declare on our honour that:

- the costs declared above are directly related to the resources used to attain the objectives of the project and fall within the definition of eligible costs specified in Articles II.14 and II.15 of the grant agreement, and, if relevant, Annex III and Article 7 (special clauses) of the grant agreement;
- the receipts declared above are the only financial transfers or contributions in kind, free of charge, from third parties and the only income generated by the project which could be considered as receipts according to Art.II.17 of the grant agreement;
- the interest declared above is the only interest yielded by the pre-financing which falls within the definition of Art.II.19 of the grant agreement;
- there is full supporting documentation to justify the information hereby declared. It will be made available at the request of the Commission and in the event of an audit by the Commission and/or by the Court of Auditors and/or their authorised representatives.

Beneficiary's Stamp	Name of the Person(s) Authorised to sign this Financial Statement
	Prof. RNDr. Zdenek Nemecek, DrSc.
	Date & signature