

SEVENTH FRAMEWORK PROGRAMME THE PEOPLE PROGRAMME

Industry-Academia Partnerships and Pathways

Annex I - “Description of Work”

Grant agreement no.: 251589

Project full title: ICT system addressed to integrated logistic management and decision support for intermodal port and dry port facilities

Project acronym: **SAIL**

Duration of the project: 48 Months

Start date of the project: the first day of the month following the EC signature of the contract

Date of approval of Annex I (*last version*): 19-November-2010

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1. List of Beneficiaries

Beneficiary Number	Beneficiary name	Beneficiary short name	Country	Date enter project	Date exit project
1 (Coordinator)	Università degli Studi di Trieste - DEEI	UNITS	Italy	month 1 (start of project)	month 48 (end of project)
2	Technological Education Institution of Epirus	KIC	Greece	month 1 (start of project)	month 48 (end of project)
3	TEOREMA S.c.r.l.	TEO	Italy	month 1 (start of project)	month 48 (end of project)

2. Project Summary

- **Free keywords:** Systems analysis and models development, Computer technology, Technology
- **Abstract:** The project aims at developing an integrated ICT tool able to support logistic chain of goods flow and all business operations provided in the port and the dry port areas. In recent years maritime traffic flow has been increasing in terms of volume of goods and interconnections with different means of transport, such as railway and road networks. As a matter of fact the available space in all port areas can not follow this growing trend, since ports are usually located close to or within the cities. For that reason in many metropolis available port areas are becoming scarce resources. In order to increase the available space dry ports are often established outside the classical port borders and directly connected via rail infrastructures or roads. In this new terminal operators can leave and/or collect their goods as if they were in the port. Moving the time-consuming processing of containers inland away from congested seaports can speed up the flow of cargo among ships and land transportation networks. Moreover many services such as customs clearance, storage and maintenance of containers can be transferred to the dry port. However, the overall management will become more and more complex, since the two terminals have to be managed as if they were one.

The SAIL project will develop a Decision Support System (DSS) and a Discrete Event Simulation (DES) to support the management of port intermodal facilities in a European context. Within this framework, experienced researchers will work on a precise representation, modelling and simulation of the intermodal port. There will be developed an advanced DSS based on cognitive based methodologies using soft computing along with computational intelligence techniques to provide an online strategic decision support through a state-of-the-art ICT platform. The research efforts will focus on optimizing the intermodal management between the two terminals to achieve optimal transportation and improving the environmental impact.

3. Project overview

The set up of dry ports can represent a strategic added value to the economy and the society because of the wide complexity of their services, but a set of **interdisciplinary scientific and technological challenges** have to be addressed:

- The set of procedures and IT systems able to coordinate and manage the logistics operations between the dry port and the maritime port, including the development of a Decision Support System (DSS) that support the management of the traffic flow between the terminals
- The technological integration of the information systems of the two terminals to allow the connection and the synchronization of the operations
- The interoperability of such new IT system that has to be integrated with the information systems of the logistics operators necessary to collect data and manage operations.

The **SAIL project** will address the previous challenges by setting up a long-lasting collaboration among a **high-tech SME** operating in the ICT sector and **2 universities** specialised in logistic modelling and DSSs with the **final aim** to develop innovative and comprehensive **ICT systems able to support and improve the management of goods flow requested by the emergence of dry port terminals**. **SAIL main objectives** are:

- 1) **To design and develop an advanced DSS** able to interpret huge amount of data arising from the intermodal transport and to suggest the optimal decisions, supporting operators in performing complex management tasks.
- 2) **To model and develop a Discrete Event Simulation (DES)**, with the purpose to create, simulate and assess realistic scenarios, obtained with the DSS.
- 3) **To integrate the SAIL subsystems in an overall integrated ICT platform** able to provide a comprehensive and reliable support to operators in the logical chain of business activities related to port and dry port areas.

About the state of the art, the current concept of a dry port directly connected with a seaport is quite new (formalised in 2008) and so at the moment **there are no models or algorithms for operational problems that consider the whole logistic system**. Moreover while several research activities have been realised (and are ongoing) related to the intermodal transport, it has to be outlined that no specific activities have been performed in the direction of applying modelling, simulation techniques and new technologies applied to DSS in order to address the dry-port challenges (as SAIL will to do).

In reaching such objectives, the involved **10 researchers** will have the opportunity to move from their company/university to the other partners' offices in Europe. Through the intense and profitable schedule of R&D activities within the Transfer of Knowledge programme they will share their capacities, acquire new skills, develop new competences and integrate their new know-how back to their home institutions, enhancing the economic and scientific European competitiveness. The research teams will be also supported by 2 Experienced Researchers with advanced experience in the field of software development and of advanced techniques of modelling.

The research methodology is structured in a workflow of 3 Phases and 6 WPs. In the 1st phase specific requirements of the SAIL system will be defined (it covers WP2 activities). The 2nd phase will concern with transfer of knowledge and research activities and it will be the core business phase of the project (it covers WP3-WP5 activities). The 3rd phase will concern DSS and simulation tool prototypes and algorithms will go through the process of integration and overall evaluation in the ICT platform (in covers WP6). WP1 "Management of the project" lasts the whole project.

4. Milestones and planned reviews

4.1. List and schedule of milestones

List and schedule of milestones					
Milestone no.	Milestone name	WPs no's.	Lead beneficiary short name	Delivery date¹	Comments
M0	Kick-off meeting	WP1	UNITS	1	Initial meeting with all key staff members to set up and agree on a ToK plan for the research topics and possible interactions and synergies.
M1	System requirements definition	WP2	TEO	10	Detailed TOK Plan (draft TOK Plan previously provided at M3)
M2	DSS System	WP3	KIC	30	The SAIL Decision Support System.
M3	DES System	WP4	UNITS	30	The SAIL Discrete Event Simulation System
M4	Test of the algorithms in the case studies	WP5	TEO	32	Results of the test and validation of the algorithms in the selected case studies.
M5	The final SAIL System	WP6	TEO	36	The validated Final SAIL System obtained by the integration of the prototype tools in the ICT Platform

4.2. Indicative schedule of project reviews

Indicative schedule of project reviews			
Review no.	Tentative timing, i.e. after month X = end of a reporting period ²	planned venue of review	Comments , if any
Project Review 1	After project month: 10	At TEO premises	Immediately after the system requirements definition (M1) and the TOK workshop II organized by TEO
A Mid-term review	After project month: 20	At UNITS premises or KIC	Immediately after the TOK workshop IV organized by UNITS
Project Review 2	After project month: 32	At TEO premises or KIC\UNITS	Immediately after milestones M4

¹ Month in which the milestone will be achieved. Month 1 marking the start date of the project, and all delivery dates being relative to this start date

² Month after which the review will take place. Month 1 marking the start date of the project, and all dates being relative to this start date

5. Work package list

Work package No ³	Work package title	Lead Beneficiary short name	Start month ⁴	End month ⁵
WP1	Project Management	UNITS	1	48
WP2	Requirements Analysis	TEO	1	10
WP3	Development of Decision Support System (DSS)	KIC	4	30
WP4	Development of the Discrete Event Simulation (DES)	UNITS	17	30
WP5	Test of the algorithms and tools in case studies	TEO	21	32
WP6	Integration and evaluation of the prototype tools in the overall ICT platform	TEO	27	36

³ Work package number: WP 1 – WP n.

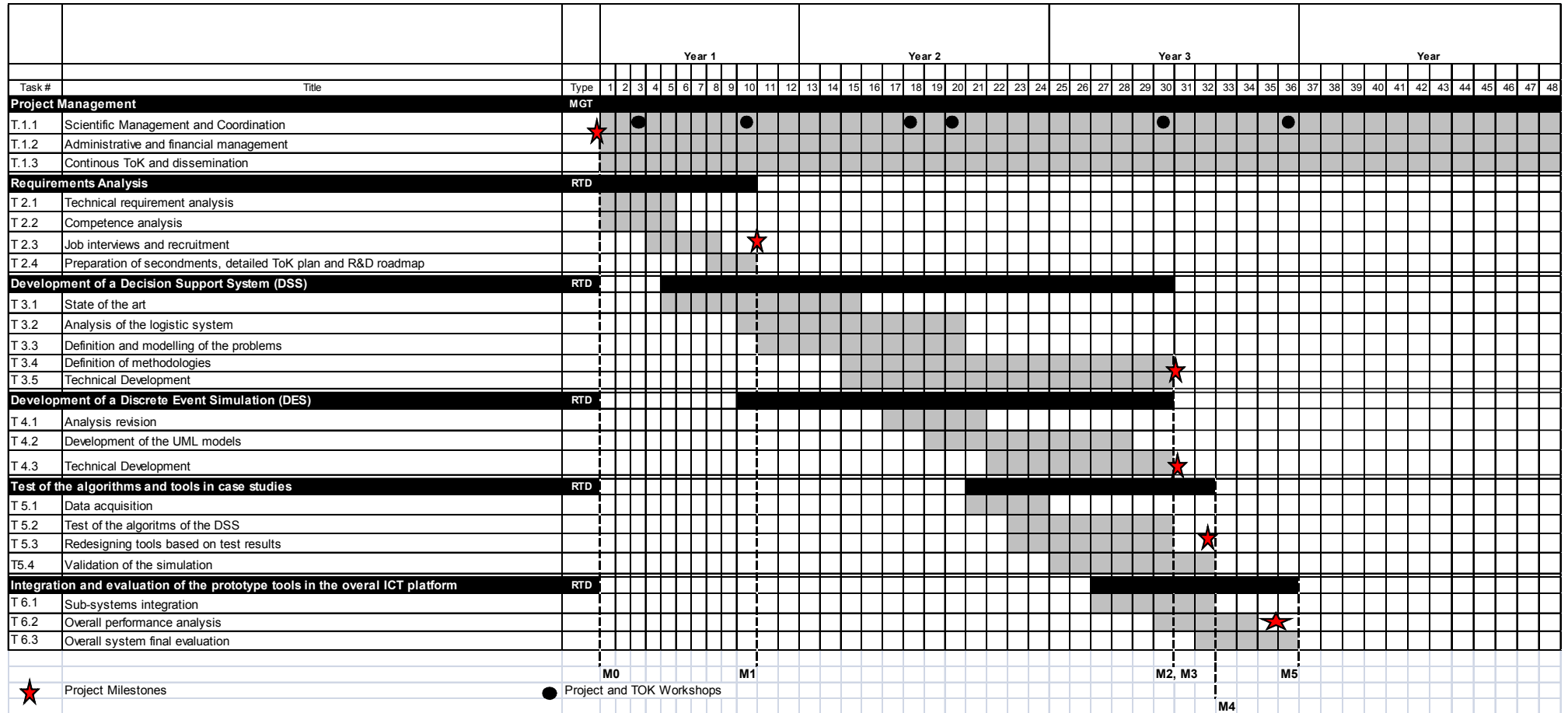
⁴ Relative start date for the work in the specific work packages, month 1 marking the start date of the project, and all other start dates being relative to this start date.

⁵ Relative end date, month 1 marking the start date of the project, and all end dates being relative to this start date.

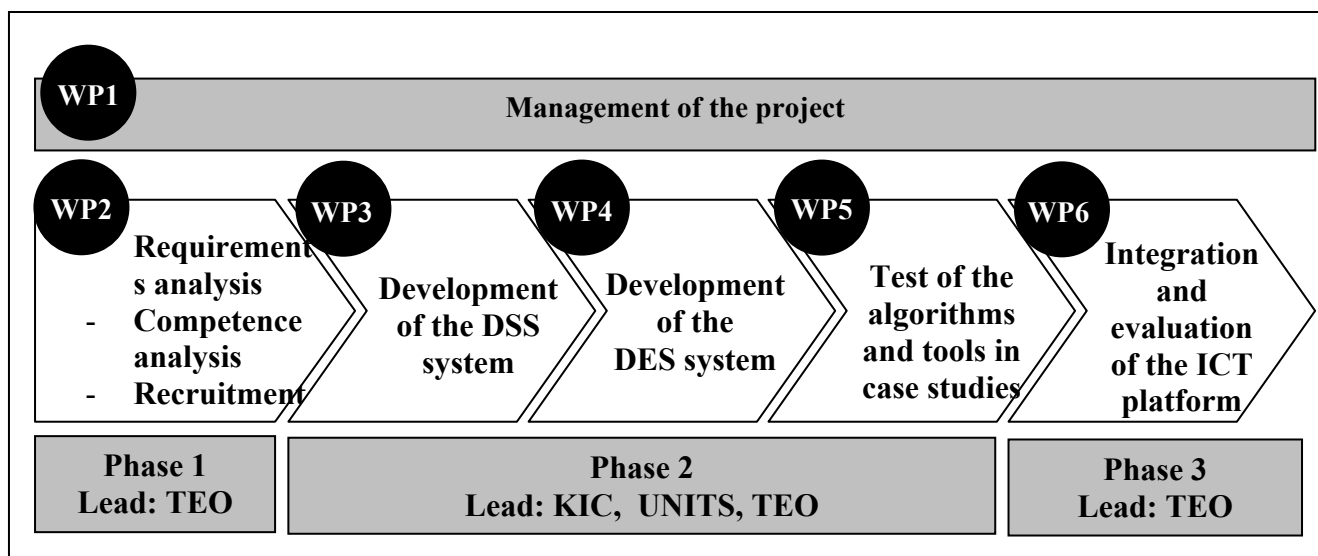
5.1. WP's and deliverables of the Project

WP	Task		WP Leader	Deliverables	Partners Involved
WP 1 Project Management	T1.1	Scientific Management and Coordination	UNITS Prof Walter Ukovich	D1.1: Continuous ToK and dissemination plan	All Partners
	T1.2	Administrative and financial management		D1.2: Collaboration plan	
	T1.3	Continuous ToK and dissemination			
WP 2 Requirements Analysis	T2.1	Technical requirement analysis of the SAIL subsystems	TEO Dr Fabrizio Simeoni	D2.1: Requirements evaluation	All Partners
	T2.2	Competence analysis			
	T2.3	Job interviews and recruitment			
	T2.4	Preparation of secondments, detailed ToK plan and R&D roadmap		D2.2: ToK and staff exchange plans finalized	
WP 3 Development of Decision Support System (DSS)	T3.1	State of the Art	KIC Prof. Chrysostomos Stylios	D3.1: The Decision Support System	All partners
	T3.2	Analysis of the Logistic Chain			
	T3.3	Definition and modelling of the problems			
	T3.4	Definition of methodologies			
	T3.5	Technical development			
WP4 Development of the Discrete Event Simulation (DES)	T4.1	Analysis revision	UNITS Prof. Walter Ukovich	D4.1: The Discrete Event Simulation System	All partners
	T4.2	Development of the UML models			
	T4.3	Technical Development			
WP 5 Test of the algorithms and tools in case studies	T5.1	Data acquisition	TEO Dr Veronica Raquel Diaz	D5.1: Test of tools and algorithms	All Partners
	T5.2	Test of the algorithms of the DSS			
	T5.3	Redesigning tools based on test results			
	T5.4	Validation of the Simulation			
WP6 Integration and evaluation of the prototype tools in the overall ICT platform	T6.1	Sub-systems integration	TEO Dr Fabrizio Simeoni	D6.1: The SAIL integrated ICT platform	All Partners
	T6.2	Overall performance analysis			
	T6.3	Overall system final evaluation			

5.2. GANTT chart with WPs, tasks and milestones



6. Work package description



Work Flow of the SAIL project

Work package number	1	Start date or starting event:	1
Work package title	Project Management		
Beneficiary short name	UNITS		
Objectives			
<p>WP1 is the Project Management Workpackage, which will last for the whole duration of the project.</p> <p>The objective of this Workpackage is to guarantee that:</p> <ul style="list-style-type: none"> - the transfer of knowledge programme is carried out according to the time schedule and budget established - the objectives are efficiently achieved - an effective co-ordinated structure is created and maintained - the project is managed according to the contract between the SAIL consortium and the EC, maintaining a continuous link with the EC overall legal, contractual, ethical, financial and administrative issues of the project 			
Description of work (possibly broken down into tasks; please include events description)			
T1.1 Scientific Management and Coordination (led by UNITS)			
<p>The coordination of the project is provided by UNITS. The overall scientific management and coordination will be assured by project management board. The <u>Project Management Board</u> consists of the <u>Scientific Project Co-ordinator</u>, a <u>Financial & Administrative Support</u> and <u>ToK Team Leaders (WP Leader)</u>. In addition, a Dissemination Board will be established to guaranty a sound link with the European academic community and with various industrial organizations.</p>			
T1.2 Administrative and financial management (led by UNITS)			
<p>The financial and administrative management will be carried out by the project supervisor with support from the Financial Department of UNITS. Duties include preparing the financial reporting towards the EC and monitoring and sharing the EC contributions between partners.</p>			
T1.3 Continuous ToK and dissemination (led by UNITS)			
<p>The consortium will carry out a competence analyses (T2.2) of the internal personnel and of the staff to be recruited that will serve as a basis for the <u>Continuous ToK Plan</u>. It represents a type of coordination plan assuring: a coherent ToK plan development and harmonization of activities, an effective communication and transfer of knowledge between the teams including organization of the ToK meetings and workshops.</p>			
<p>The following table provides an overview of the 6 ToK Workshops that will be organized to ensure a smooth transfer of</p>			

knowledge flow among the researchers and project phases.

N°	MTH	Title	Focus	Organized by	Input From – To
• I	3	Start-Up ToK	All WP themes	Create common knowledge base	
•		Presentations of core knowledge of all partners			
		Fine-tune research objectives and management	TEO		
		(Trieste, Italy) All partners to all partners			
• II	10	Requirements analysis - WP2	ToK on requirements related to the SAIL sub-systems		
		Competence analysis	TEO		
		(Trieste, Italy) Specialised knowledge from TEO to UNITS and KIC			
• III	18	Building synergies on Decision Support System (DSS) - WP3	analysis modelling and meta-modelling algorithms		
•		development of the adaptive real-time processing engine			
		studies on information pattern modelling & fusion		KIC (Greece)	Input from TEO for experimental scenarios to KIC and UNITS.
		Input from UNITS for methodology analysis and models and from KIC for the cognitive systems and computational intelligent techniques.			
• IV	20	Building synergies on Discrete Event Simulation (DES) - WP4	research on cognitive interfaces based on multimodal interaction and direct perception for decision support		
•		analysis supporting quantitative prediction of risk			
		research on cognitive situation rendering artificial intelligence for automated assessment of critical conditions			UNITS
		(Trieste, Italy) ToK from KIC to TEO for the DES development.			
		Input from TEO for the industrial logistic chain management.			
• V	30	Test of algorithms and tools in case studies - WP5	verification		
		validation	TEO		
		(Trieste, Italy) TEO will provide information on verification and validation of its tool according own competences			
• VI	36	Integrated ICT platform - WP6	Integration of the SAIL subsystems		
•		Performance evaluation of the overall ICT platform			
		Roadmap for future R&D challenges and collaboration	TEO		
		(Trieste, Italy) Cross efforts among all partners under the supervision of TEO, expert in software design			

Dissemination actions will be formally defined in the [Dissemination Plan](#) and they will take place at the scientific and technical levels:

- production of **relevant articles and publications**, also on specific magazines, addressing both the scientific and the industrial community;
- set up of a **Web Portal** hosting technical documents, public deliverables (without violating IPR and copyrights) and showing present and possible application of project results. It will be useful to interest groups in the field of maritime transport and to scientific and industrial stakeholders;
- **presentation of the SAIL project on partner's corporate websites** with a link to the project portal;
- presentation of the SAIL project at **conferences** (for example: SIG-2 Special Interest Group on Maritime transport and Ports, European Intermodal Loading Unit Conference, ECSA Seminar, UNCTAD Conferences, ECOPORTS Conference, ESPO Conference, etc.).

Moreover, to promote dissemination of project results, the partners will use their industrial contacts and networks to spread the knowledge about the SAIL research. In particular, a great number of SMEs, public institutions and consortia in the network of the project partners have already expressed their interest in progresses beyond the current state-of-the-art and in the innovations related to the long-term strategic business objectives: increasing the competitiveness of EU industry in intermodal transport-related technologies/ applications.

In order to optimise the benefits and impacts of the SAIL Transfer of Knowledge (ToK) results the planned dissemination activities will be targeted at the European research communities dealing with the topic of transport management software developments. Connections with ongoing and future RTD projects will be sought through direct contacts with project

coordinators and joint actions toward dissemination and exploitation of results.

Deliverables (brief description; please include description of dissemination)

Task: T1.1 Scientific Management and Coordination

Deliverable: D1.1: Continuous ToK and dissemination plan

Brief Description:

Continuous ToK plan: a detailed description of the research and transfer of knowledge activities to be carried out over the whole duration of the project and how they will be accomplished in an efficient way. It also contains a detailed schedule of settlements and activities that will be revised in case a major delay occurs.

Dissemination plan: a program of dissemination actions that will take place at the scientific and technical levels during the project duration (articles and publications, participation to conferences and workshops, etc).

Task: T1.2 - Administrative and financial management , T1.3 - Continuous ToK and dissemination

Deliverable: D1.2: Collaboration plan, Cost declarations and reports as described in EC contract.

Brief Description:

In SAIL web site is planned the development of a public area for dissemination of project activities, events and results including advertisement of the vacancies for recruitment if still needed and a restricted area for internal use (document sharing, forum for discussion, storing of project deliverables, etc.). The research vacancies will also be disseminated in several universities around Europe and in Cordis website on the Marie Curie Portal.

Brief report on each of the ToK meetings and a detailed summary of the major achievements of the project will be included.

Researchers involved (indicative list of staff, differentiating between Institution's own resources and Marie Curie Fellows) (brief description based on section B.4 of project proposal)

The project will offer to 10 researchers the opportunity to gain and build- up new knowledge. They will be involved in ToK activities for 3 years and in WPs 2-6. The whole project foresees **110 person-months** of which **74 are staff secondments** (67%) and **36 are new recruitments of 2 new experienced researchers** (33%).

Researchers involved	Seconded from	Seconded to
<i>Fabrizio Simeoni</i>	TEO	KIC
<i>Prof. Stylios</i>	KIC	TEO
<i>Prof. Ukowich</i>	UNITS	TEO

Risk Analysis (brief description of what are the main risks and what actions may be needed if these occur)

See risk analysis and contingency plan at the end of paragraph 7.

Work package number	2	Start date or starting event:	1
Work package title	Requirements Analysis		
Beneficiary short name	TEO		
Objectives			
<p>WP2 is related with Requirements Analysis, which will be dedicated to define the SAIL tool characteristics, the competence required for the researchers to be involved in the project and it will define the recruitment process among the partners. WP2 has to be considered as preparatory actions before starting the real R&D and ToK activities.</p>			
Description of work (possibly broken down into tasks; please include events description)			
T2.1 Technical requirement analysis of the SAIL subsystems (led by TEO)			
<p>Consortium will define the specific requirements of the SAIL system, such as review of the stakeholders of the logistic chain, the objectives and functionalities of the DSS and simulation subsystems, the technical specifications, etc.</p>			
T2.2 Competence analysis (led by TEO)			
<p>The consortium will carry out a competence analyses of the internal personnel and of the staff to be recruited that will serve as a basis for the <u>Continuous and detailed ToK Plan (T.1.3 and T2.4)</u> defining the research setup for the SAIL project. The competence analysis will consist of a detailed inventory of the available knowledge and a description of the research perspectives of the proposed ToK plan: this study will result in a more clear definition of specific research experiences either lacking or to be further developed. The recruitment will source out of this internal competence evaluation (T2.3). The skills and experiences needed have already been outlined for each of the researchers that will be recruited during the project:</p>			
Co. Profile Complementary skills			
TEO He/She is expert of Analysis and Design of architectures and solutions based on Microsoft technologies, using the more recent pattern and methodologies. He will have to deal with a Transnational Research Team Coordination using agile development and management methodologies and with tools as Microsoft Team Foundation Server e Project Serve. High technical skills in development WebBased solutions through ASP .Net using c# language, excellent knowledge of the Framework Microsoft .Net, and of technologies as WCF, WPF and Silverlight and of relation database.			
KIC He/She is an expert in ontologies and in designing and developing software systems based on advanced modelling techniques and computational intelligence methods. He has knowledge and experience on the state-of-the art software design and development methods for real time and web based systems utilising Java related methods for developing intelligent decision support systems, Inference. Great software design and development skills in machine learning open software tools, Intelligent Agent software, software tools for on-line reasoning engines and knowledge representation, expert systems development tools, Jess, genetic algorithms software tools			
T2.3 Job interviews and recruitment (led by TEO)			
<p>The recruitment procedure will comply with the principles of the “Code of Conduct for the recruitment of researchers” of the EC (published in <i>The European Researcher’s Mobility Portal</i>). From the project starts, the organisations will recruit the researcher in 5 months, having a European-wide horizon while looking for the best suited researcher, and making use also of its network for searching the candidate researchers. The recruitment strategy for TEO will be as follows:</p>			
<ol style="list-style-type: none"> 1. Advertisement: the three research vacancies will be published on the organisation web site, disseminated in several universities around Europe and in Cordis website on the Marie Curie Portal 2. Recruitment process: the recruitment process will follow these main steps: 1) on-line application form, 2) CV evaluation with phone or conference call interviews, 3) final interview at the company 3. Employment contract: after the signing of the contract between the coordinator and the European commission, the organisation will sign the contract with the experienced researcher that will be recruited. 			
T2.4 Preparation of secondments, detailed ToK plan and R&D roadmap (led by TEO)			
<p>The ToK plan will consist of a detailed description of the research and transfer of knowledge activities to be carried out during the project and how they will accomplished in an efficient way. The ToK plan will consist of:</p>			
<ul style="list-style-type: none"> – identification of the industrial research projects, topics and case histories to be used for ToK activities; – detailed ToK and research activities per WP and task of each of the ToK teams including a revision of GANTT 			

- (activity planning and timetable for deliverables) and milestones;
- clear identification of tasks and roles of the involved internal researchers;
- integration and supervision programme of the newly recruited staff assuring the filling of the internal knowledge gap (definition of roles, tasks and internal transfer of knowledge activities and assignment of a personal coach);
- detailed planning of staff secondments;
- reintegration programme of the returning seconded staff assuring a sustainable transfer of knowledge (interviews, coaching and team building);
- definition of performance evaluation criteria of each group and each researcher.

The **R&D roadmap** is related to future collaboration between partners for further potential strategic research activities to be performed after the project. The SAIL partners intend to continue the current Industry-Academy partnership for further potential strategic research activities to be performed after the project. No ICT tools are currently available today, offering the same benefits of the SAIL system. As long term result it will enhance the efficiency of the logistic chain between ports and dry ports, improving their role as nodal points for intermodal transport. Following, an overview of impact on the immediate and longer term, both from a scientific and business point of view.

Positive Effects of the SAIL ToK Scientific Business

Short to medium term

- Knowledge groundwork for solving existing problems related to intermodal management between port and dry port areas
- Exchange know-how and gain new knowledge on simulation and DSS systems technology
- Obtaining new competences on ICT tools for industrial logistic chain management
- Opportunities for publications
- Experience of industrial research and training on the job for all early stage researchers
- Researchers will have experience of industrial management and software implementation
- Academia learns to manage Intellectual Property (IP) towards successful involvement of an industry as TEO
- Attract interest of companies on current and future breakthroughs through the mentioned dissemination and exploitation actions
- Investments in people via specialized on-the-job trainings that lead to the creation of new competence and synergies within the consortium
- Possibility for Spin-off foundations
- Possibility for registration of patents

Longer term/strategic

- Higher reputation in the research field and reinforcement of the partner's international profile as relevant research partners in the field of ICT, DES and DSS.
- Implementation of research results in scientific strategy of the academic institutes. Moreover new results will be incorporated in future thesis and curricula/manuals of the researchers involved in the project.
- Improving the European scientific excellence in the area of intermodal logistic chain management
- Develop new and lasting research intersectoral collaborations (i.e. expectations of further European research projects)
- The SAIL project will exploit several scientific solutions and technologies for port and dry port sector
- Final results will contribute in developing further steps in the growing research field of intermodal transport
- Develop further steps in technologies for intermodal transport sector
- Providing excellent experiences for the career development of the participating researchers
- Implementation of research results in future commercial systems
- The SAIL system will be complementary to other ICT management systems already in-use in port terminal and it will certainly increase the reliability and effectiveness of management.
- Definition of new research programmes deriving from project results and integration of new partners for future multiple applications
- Collaborations in R&D projects related to the management of port and dry port terminals (e.g. connections with on going/future RTD projects in the exploitation plan) in various industrial fields
- Creation of commercial software tools in the same sector for predicting risk, optimising time for operations and improving quality factors

- Opening new academic research pathways with industrial relevance taking into account impact of the SAIL project
- Concrete prospect for patents
- Contribute to the Lisbon Strategy aiming to make EU “the most dynamic and competitive knowledge-based economy in the world” increasing the competitiveness of EU industry in intermodal transport-related technologies/ applications

Deliverables (brief description; please include description of dissemination)

Task: T2.1 - Technical requirement analysis of the SAIL subsystems

Deliverable: D2.1: Requirements evaluation

Brief Description: This deliverable will provide an overview of the state of the art about the SAIL subsystems. Furthermore, it will define the technical requirement analysis.

Moreover it will describe a detailed inventory of the available knowledge, the research perspectives of the proposed TOK plan and a clear definition of specific research experiences either lacking or to be further developed in the recruiting company.

Task: T2.2 - Competence analysis, T2.3 - Job interviews and recruitment, T2.4 - Preparation of secondments, detailed ToK plan and R&D roadmap

Deliverable: D2.2: ToK and staff exchange plans finalized

Brief Description: The recruitment process will follow these main steps: 1) on-line application form, 2) CV evaluation with phone or conference call interviews and 3) final interview at the company.

Description of the secondments in line with the ToK workflow. A R&D roadmap for future collaboration between the academic and industrial partners outlining further potential strategic research activities to be performed after the project will be included in D2.2.

Researchers involved (indicative list of staff, differentiating between Institution's own resources and Marie Curie Fellows) (brief description based on section B.4 of project proposal)

After the WP2 accomplishment, each of the involved organization will set up a research group specifically devoted to the project. The seconded staff will work in an integrated team.

In the first months, senior researchers (Professors) and senior managers from industry will carry out short secondments with partners from the other sector to assess the available knowledge (field and level) for the current research project. At the same time, recruitment procedures for external experienced researchers will be started-up by the industrial partner. In this first phase a “Start-Up ToK Workshop” will be held (month 3) at TEO to share available knowledge among the partners to establish a “common knowledge base” and start-up the Intersectoral ToK Research groups. A detailed ToK plan and dissemination plan will be delivered by TEO in month 10, while a draft ToK Plan will be circulated among partners after two weeks from the Start-Up ToK meeting.

Researchers involved	Seconded from	Seconded to
<i>Luca Ritossa</i>	TEO	UNITS
<i>G. Georgoulas</i>	KIC	TEO

Risk Analysis (brief description of what are the main risks and what actions may be needed if these occur)

See risk analysis and contingency plan at the end of paragraph 7.

Work package number	3	Start date or starting event:	4
Work package title	Development of Decision Support System (DSS)		
Beneficiary short name	KIC		
Objectives			
<p>WP3 is related with the Development of the DSS System, with the overall purpose to improve the overall qualitative and quantitative performance of the intermodal port management.</p> <p>The DSS is focused on the means of transport and not on the goods that they are transporting. There are several problems to take into account, e.g., the assignment of available resources and the scheduling of the activities. The system is composed by many actors and there are different and limited resources.</p>			
Description of work (possibly broken down into tasks; please include events description)			
T3.1 State of the art (led by UNITS)			
This task is focused on the recognition of the existing works and significant results in international literature. Especially within this task, artificial intelligence methods will be investigated. The output of this task will help to start the analysis of the logistic system following a correct approach in order to develop the DSS.			
T3.2 Analysis of the Logistic Chain (led by UNITS)			
The analysis of the logistic system is performed in terms of definition of main involved actors, activities, resources and available information. During this task symbolic analysis will be performed in order to support on-line quantitative prediction of tasks and risks. These categories have to be specified in order to define a taxonomy, e.g., regarding the type of resources and their specific features.			
T3.3 Definition and modelling of the problems (led by KIC)			
From the previous task several problems are defined. These problems have to be formalized in order to apply solution methodologies, there will be examined approaches to model, design and develop cognitive interfaces based on multimodal interaction and direct perception for decision support. Hence, after the definition of the problems, they have to be specified in mathematical terms.			
T3.4 Definition of methodologies and algorithm (led by KIC)			
After the specification of problems, some methodologies are defined in order to solve them and to compare different solutions. Especially there will be examined knowledge based methodologies for automated assessment of critical conditions, advanced mechanisms for information assurance and advanced algorithms for data fusion. In this way, some scenarios are defined and they will be the inputs for the simulation system developed in the WP4.			
T3.5 Technical Development (led by TEO)			
Functional, architectural and technical analysis will be performed in order to:			
<ul style="list-style-type: none"> • define the characteristics of the software system needed by the users to take the correct decisions fully informed about current status and supported foreseeing consequences of decisions they will take • develop integration with systems that give the runtime status • develop user interfaces • develop algorithms to get solutions according to methodologies found in earlier steps of this WP 			
Deliverables (brief description; please include description of dissemination)			
Tasks: T3.1 - State of the art, T3.2 - Analysis of the Logistic Chain, T3.3 - Definition and modelling of the problems, T3.4 - Definition of methodologies and algorithm, and T3.5 - Technical Development			
Deliverable: D3.1: The Decision Support System			
Brief Description: Detailed description of the DSS developed			
Researchers involved (indicative list of staff, differentiating between Institution's own resources and Marie Curie Fellows) (brief description based on section B.4 of project proposal)			
Work on WP3 will start-up in month 4. The team at TEO will be reinforced by 1 newly recruited researcher at month 5, while in parallel a TEO experienced researcher (Mr. Luca Ritossa) will absorb specific knowledge in UNITS concerning the modeling methodologies of the WP3 followed and trained by Dr Gabriella Stecco under the scientific supervision Prof. Ukovich. This Knowledge exchange will be continued, once the TEO experienced researcher (Luca Ritossa) has			

gone back to TEO, by hosting the PhD Student Valentina Boschian from UNITS in TEO.

In this period, Dr. Fabrizio Simeoni, and Dr. Veronica Raquel Diaz both from TEO will have to learn about topics related to WP 3: they will therefore carry out a secondment at KIC to follow relevant courses and research activities. KIC and TEO have planned to hire an expert researcher in advanced modelling techniques that from month 4 and 5 respectively will enrich the research groups.

The ToK Workshop 2 will be realised at TEO in month 10, after the TEO researcher have concluded their first secondment cycle at KIC and have returned to their home organization.

During the second year, the transfer of knowledge concerning the development of the DSS continues at TEO, where 2 KIC researchers (Dr George Georgoulas and Dr Antonia Stefani) are seconded for 6 months, and 1 professor for one month.

At month 18 a mid-term TOK Workshop will be organised at TEO in order to build synergies on the DSS.

Researchers involved	Seconded from	Seconded to
<i>Fabrizio Simeoni</i>	TEO	KIC
<i>Luca Ritossa</i>	TEO	UNITS
<i>Veronica R. Diaz</i>	TEO	KIC
<i>Prof. Stylios</i>	KIC	TEO
<i>Dr George Georgoulas</i>	KIC	TEO
<i>Dr Antonia Stefani</i>	KIC	TEO
<i>V. Boschian</i>	UNITS	TEO
<i>Recruited Experience Researchers</i>	--	TEO
<i>Recruited Experience Researchers</i>	--	KIC

Risk Analysis (brief description of what are the main risks and what actions may be needed if these occur)

See risk analysis and contingency plan at the end of paragraph 7.

Work package number	4	Start date or starting event:	17
Work package title	Development of the Discrete Event Simulation (DES)		
Beneficiary short name	UNITS		
Objectives			
<p>In this work package, models of the logistic system involving the two terminals, port and dry port, are developed. These models represent the structure of the system including activities of the actors and the available resources. For these reasons the system is modeled as a Discrete Event System whose dynamics depends on the interaction of discrete events, such as demands, departures and arrivals of transporters at facilities, acquisitions and releases of resources by vehicles, blockages of operations. Since the task of the model is a simulation study, the Unified Modelling Language (UML) formalism is used to describe the various viewpoints of the system: static (describing the different type of objects in the considered system), functional and dynamic (describing the activities of each object with the relative relation of precedence, synchronization, cooperation, timing). Indeed, UML is defined as a graphic and textual modelling formalism intended to understand the needs and to specify the system. The DES system will have inputs on real scenario (synergies with the SlimTruck project will allow that) concerning the activities that have to be performed and the available resources and also from the DSS developed in WP3. The main outputs of this system will be the assessment of various solutions provided by the DSS.</p>			
Description of work (possibly broken down into tasks; please include events description)			
T4.1 Analysis revision (led by UNITS)			
In this task the analysis of the logistic system performed in WP3 is revised and integrated to fit the requirement of the simulation model.			
T4.2 Development of the UML models (led by UNITS)			
The main activity is to describe the model of the considered case study using the UML formalism to describe the activities and the resources.			
T4.3 Technical Development (led by TEO)			
Functional, architectural and technical analysis will be performed in order to:			
<ul style="list-style-type: none"> - define the characteristics of the software system needed by the users to introduce all information to model scenarios for simulation; - develop user interfaces; - develop algorithms to get statistics from data recorded by runtime monitoring systems; - develop algorithms to simulate scenarios and situations close that are realistic; - develop modules to help the user in comparing results for different scenarios. 			
Deliverables (brief description; please include description of dissemination)			
Tasks: T4.1 - Analysis revision, T4.2 - Development of the UML models, T4.3 - Technical Development			
Deliverable: D4.1: The Discrete Event Simulation System			
Brief Description: Detailed description of the DES developed			
Researchers involved (indicative list of staff, differentiating between Institution's own resources and Marie Curie Fellows) (brief description based on section B.4 of project proposal)			
<p>One of the 2 KIC experienced researchers will start to exchange knowledge also for the WP4 during the last two months of his secondment in TEO, working together with Luca Ritossa and Dr. Fabrizio Simeoni which will lead the Research group in TEO.</p> <p>Furthermore, Fabrizio Simeoni will be seconded to KIC where will continue the knowledge exchange together with the KIC researchers which will go back to his/her home organisation. After this secondment Fabrizio Simeoni will be able to apply the absorbed knowledge when, at the end of the second year, he will be able to transfer this specific competences to the research team, together with Valentina Boschian seconded from UNITS to his home organisation.</p> <p>Luca Ritossa will be seconded for 1 last month to UNITS just before the conclusion of the DES activities in order to collect the necessary knowledge to be translated in the SW development to be tested in the case studies.</p>			

Researchers involved	Seconded from	Seconded to
<i>Fabrizio Simeoni</i>	TEO	KIC
<i>Luca Ritossa</i>	TEO	UNITS
<i>Antonia Stefani</i>	KIC	TEO
<i>Valentina Boschian</i>	UNITS	TEO
<i>Recruited Experience Researchers</i>	--	TEO

Risk Analysis (brief description of what are the main risks and what actions may be needed if these occur)
See risk analysis and contingency plan at the end of paragraph 7.

Work package number	5	Start date or starting event:	21
Work package title	Test of the algorithms and tools in case studies		
Beneficiary short name	TEO		
Objectives			
<p>WP5 is the Test of Algorithms and Tools in Case Studies Work Package, where the efforts are addressed to evaluate the accuracy, the reliability and the security of all algorithms and components of the SAIL systems. Further evaluations will then dedicated to the integrated ICT platform in WP6.</p>			
Description of work (possibly broken down into tasks; please include events description)			
T5.1 Data acquisition (lead by TEO)			
<p>The SAIL project will benefit by the synergies that will be established with the SLIMPORT project, an R&D project funded at national level including 40 partners, among which TEO (with the collaboration of UNITS). Such project, aimed at establishing a high-level ITC system for different ports in Italy, will allow TEO and UNITS to gather real data on dry and maritime port related to the port of Trieste, thus SAIL will benefit by such data acquisition for the analysis, modelling and development of the DSS. Moreover, the final test of the SAIL platform can be realised using real scenarios.</p>			
T5.2 Test of the algorithms of the DSS (lead by KIC)			
<p>Testing will be conducted to verify the adequacy to requirements of the DSS also with respect to its capability to provide support to interpret huge amount of data arising from the intermodal transport, and to suggest the optimal decisions, supporting operators in performing complex management tasks.</p>			
T5.3 Redesigning tools based on test results (lead by TEO)			
<p>The results of the analysis done in T5.2 are then useful to refine design choices and re-focus research activities, if needed. On the basis of test results, new heuristic algorithms could be defined and existing heuristics could be retuned in order to get better solutions and improved application performance. The developed software will be modified according to the results achieved in such re-analysis of test outcomes.</p>			
T5.4 Validation of the simulation (lead by TEO)			
<p>This task concerns the validation of the DES with respect to its capability to simulate the case studied, concerning entities and operations dislocated in multiple locations (port and dry port area). The ability to create, simulate and assess realistic scenarios, obtained with the DSS, will be validated by comparing simulation results with real system data. This will assure us that our simulation model is capable to represent the real system.</p>			
Deliverables (brief description; please include description of dissemination)			
<p>Task: T5.1 - Data acquisition, T5.2 - Test of the algorithms of the DSS, T5.3 - Redesigning tools based on test results, T5.4 - Validation of the Simulation</p>			
<p>Deliverable: D5.1: Test of tools and algorithms</p>			
<p>Brief Description: Each tool is tested and evaluated. Report on tests, evaluations and tools refining, if needed. Description of tests and validation of the Simulation.</p>			
Researchers involved (indicative list of staff, differentiating between Institution's own resources and Marie Curie Fellows) (brief description based on section B.4 of project proposal)			
<p>Luca Ritossa will be seconded to UNITS for a longer period, of which some months will be dedicated to WP3 while most months of his permanence in UNITS will be dedicated to transfer knowledge for the test of the previously defined algorithms (WP5) to the UNITS researchers and to Dr Gabriella Stecco in particular. This WP will be led by Veronica Raquel Diaz (TEO Senior Researcher) that will be seconded to KIC at month 9 and for 3 months in order to organise the research group in KIC and start up the WP5 the related activities.</p>			
<p>At the start of year 3, the attention of the project will see a strong shift from more theoretic and basic research to tool development and testing resulting from the WPs 3 and 4, although the WP5 activities already started at the end of year 2 in strong synergy with the previous WP, thus using the results partially available from WP2 and WP3 so allowing to reach the final results following an iterative path.</p>			
<p>During the last phase of the WP5, Veronica Raquel Diaz will be seconded again to KIC for a short period, in order to</p>			

transfer the knowledge concerning the partial results of the test of the algorithms in the case studies. In this period both KIC and UNITS will send to TEO an experienced researcher from their organizations in order to share knowledge about the test of the algorithms in the case studies in Trieste.

In month 28 Dr Gabriella Stecco will be seconded from UNITS to TEO in order to complete the ToK concerning the WP5.

Researchers involved	Seconded from	Seconded to
<i>Veronica R. Diaz</i>	TEO	KIC
<i>Luca Ritossa</i>	TEO	UNITS
<i>G. Georgoulas</i>	KIC	TEO
<i>Gabriella Stecco</i>	UNITS	TEO

Risk Analysis (brief description of what are the main risks and what actions may be needed if these occur)
See risk analysis and contingency plan at the end of paragraph 7.

Work package number	6	Start date or starting event:	27
Work package title	Integration and Evaluation of Prototype Tools in the ICT		
Beneficiary short name	TEO		
Objectives			
<p>WP6 is the Integration and Evaluation of Prototype Tools in the ICT Platform Work Package. It will include the overall integration of the prototype tools developed in the second phase of the work flow and their overall performance evaluation. After defining experimental scenarios and evaluation criteria, the robustness and the accuracy of the integrated SAIL system will be tested. This process will assure that the final result system will be a reliable tool for the logistic chain of port and dry port management.</p>			
Description of work (possibly broken down into tasks; please include events description)			
T6.1 Sub-systems integration (lead by TEO)			
T6.1 will investigate on techniques for integration and overall evaluation for the SAIL subsystems. According to the best technique selected, the integration will be projected and implemented, in order to get an efficient and performing global system.			
T6.2 Overall performance analysis (lead by TEO)			
The overall performance analysis will be conducted to verify the adequacy to requirements of the ICT platform in real scenarios. After the integration and the evaluation of each tool (WP5), it is particularly crucial to perform a complete analysis of testing results, attained if necessary by means of technical meetings.			
T6.3 Overall system final evaluation (lead by TEO)			
This task will develop the final validation of the SAIL platform in real context. Differently from the previous one, it takes care of the initial overall requirements and constraints, as well as of assessing the project outputs. Major activities that are planned in the task are: preparation of a validation plan; validation and assessment of the project results using the experimental scenarios. The performance indicators defined in the analysis phase (WP3 and WP4) will be evaluated to identify which changes in the system processes could be more efficient in improving its performances. The performance indicator set will probably include:			
Performance indicator	Definition		
Throughput	Total Number of TEU* per year		
Land Utilization Rate	TEU*s per acre of terminal area		
Crane Utilization Rate	TEU*s per container gantry crane		
Operational Process Costs	In EUR per hour		
Total Terminal Costs per Container	In EUR per container		
Total Truck Waiting Time	Total waiting time in the terminal area in minutes		
Average Ship Turnaround Time	Total hours vessels stay in port divided by the total number of vessels		
Dwell Time	Number of days that a ton of cargo remains in Port		
Average Truck Turnaround Time	Total hours trucks stay in port area divided by the total number of trucks		
* The twenty-foot equivalent unit (TEU) is an inexact unit of cargo capacity often used to describe the capacity of container ships and container terminals. It is based on the volume of a 20-foot-long (6.1 m) intermodal container, a standard-sized metal box which can be easily transferred between different modes of transportation, such as ships, trains and trucks.			
Such indicators and all those defined during analysis phase will be compared to their actual value to evaluate the changes suggested to the logistic system under consideration.			
Deliverables (brief description; please include description of dissemination)			
Task: T6.1 - Sub-systems integration, T6.2 - Overall performance analysis, T6.3 - Overall system final evaluation			
Deliverable: D6.1: The SAIL integrated ICT platform			
Brief Description: The SAIL platform is tested and evaluated. Report on tests and evaluations			
Researchers involved (indicative list of staff, differentiating between Institution's own resources and Marie Curie Fellows) (brief description based on section B.4 of project proposal)			
The WP6 will start In month 27 and the researcher (Valentina Boschian) previously sent by UNITS to TEO for the Discrete Event Simulation research activities will prolong his secondment in TEO for working with the TEO research staff			

to the integration of the final ICT platform. Moreover, an early stage researcher will be sent from KIC to TEO for 8 months in order to absorb knowledge concerning the real industrial application of the SAIL project, thus acquiring knowledge on the integration of the prototype in the overall ICT platform.

Also, Fabrizio Simeoni, will have his final 2 months secondment to KIC to transfer knowledge also to the other KIC researcher involved in the SAIL Project.

Researchers involved	Seconded from	Seconded to
<i>Fabrizio Simeoni</i>	TEO	KIC
<i>D. Anastasopoulou</i>	KIC	TEO
<i>Valentina Boschian</i>	UNITS	TEO

Risk Analysis (brief description of what are the main risks and what actions may be needed if these occur)
See risk analysis and contingency plan at the end of paragraph 7.

7. Risk Analysis

There are 4 main risks that may have an impact on the planned objectives, milestones and on the overall project management:

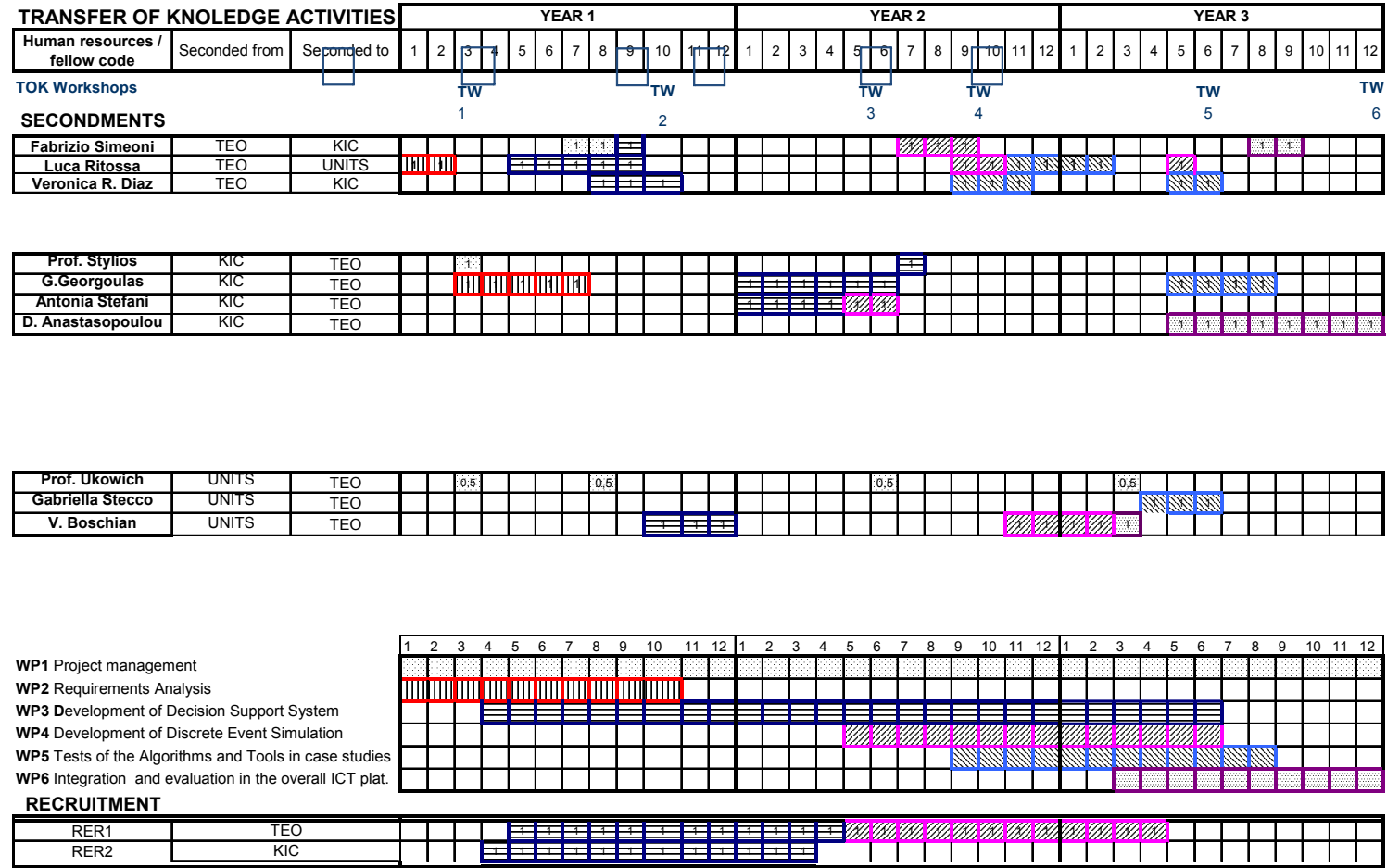
1. **Delays in the recruitment:** this risk may occur in the initial phase during the recruitment campaign of the 2 Experience Researchers. It may cause problems in the start up of planned WP activities.
2. **Delays in the planned schedule of secondments:** this risk may occur throughout the duration of the project and may be caused by different reasons: illness or injuries, family problems of fellows, pressing and not deferrable work duties, personal problems. It may cause difficulties in the development of WP activities and accomplishment of results within the planned timing.
3. **Delays in the selection of research fellows to involve in the ToK activities:** this risk may occur in the initial phase of the project. A number of research fellows has already been appointed for participation to the project. The remaining staff (2 experienced researchers) will be easily found among the many eligible researchers who are willing to engage in the international mobility programme. The main risk is however related to assurance of a proper gender balance.
4. **Overall gender unbalance:** this risk may occur in the initial phase during recruitment and appointment of research fellows from the consortium.

Below is outlined a contingency plan for the overall project.

Potential difficulties	Risk (low, medium, high)	Contingency plan (corrective actions)
Delays in the recruitment	Low to Medium	TEO and KIC aim at recruiting the most talented research fellows through an international recruitment campaign. This will be done through a selective recruitment procedure that may take some time to come up with the best three candidates. They will open the recruitment campaign at day 1 of the project that will have a predetermined duration, i.e. 4 months for KIC and 5 months for TEO. A continuous monitoring by the Management Board will assure that the ERs are employed before the deadlines while assuring the desired overall gender balance.
Delays in the planned schedule of secondments	Medium	All the ToK activities are supposed to end in M36 activities with the final workshop to be held and the last deliverables to be prepared. Because it is not possible to establish the amount of delay that could accumulate a 3-months cushion period has been foreseen (project ending in month 39). This period will serve for compensations of the unpredictable delays that may occur. If a delay having an impact on the overall implementation of activities occurs a revised version of the ToK plan with the new schedule plan will be re-issued.
Delays in the selection of research fellows to involve in the ToK activities	Low	Part of research fellows has been already selected and appointed for participation to the project. The remaining will be easily selected among the many eligible researchers who are willing to engage in the international mobility programme.
Overall gender unbalance	Very low	A continuous monitoring by the Management Board from day 1 of the project will assure the fulfilment of the proper gender balance. If for some reasons the targeted participation of woman proves not to be achievable in reality, the project coordinator will prepare a report explaining the reasons for such occurrence (e.g. all male candidates being far better than the female ones). However this incident seems to be reasonably implausible.

It is not foreseen that other technical risks or risks caused by the implementation of proposed research methodology can hinder the achievement of the scientific and business objectives of the project.

8. Gantt chart of recruitments and secondments



PERSON MONTHS		
TOT TEO	8,0	14
OUT*	16	47%
HOME*	14	
TOT KIC	2	
OUT*	31	0%
HOME*	0	
TOTUNITS	2,0	
OUT*	0	100%
HOME*	13	
TOT SECONDMENTS	47	27
TOTAL	74	36%
TOT RECRUIT.	24	
HOME*	12	
SAIL HOME TOTAL PM	110	25

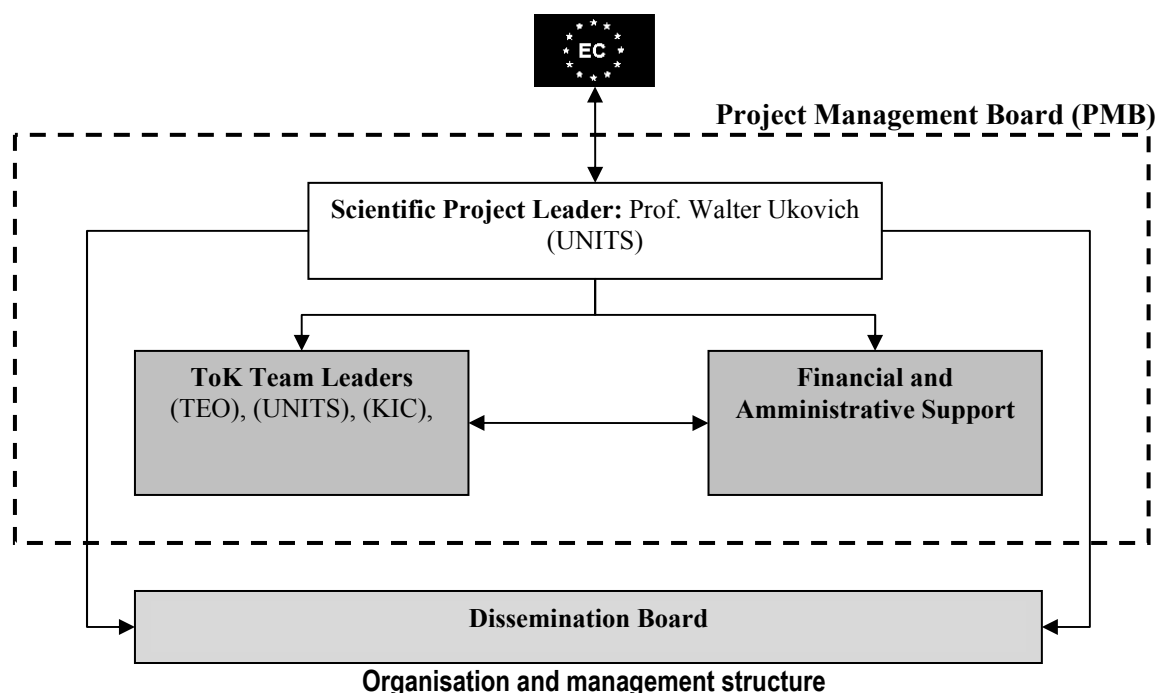
RER Recruited Experienced Researcher (4-10 years) **MER** More Experienced Researcher (>10 years)
ER Experienced Researcher (4-10 years) **ESR** Early stage Researcher (>1 & <4)
OUT* Staff seconded OUT of the home country **HOME*** Staff seconded to a partner in the fellow's HOME country

9. Project management

The project will be implemented under the scientific management and coordination of the project management board. The Project Management Board consists of the Scientific Project Co-ordinator, a Financial & Administrative Support and ToK Team Leaders (WP Leader). The ToK Team leaders are representatives of the research fellows and other scientific staff of the SAIL partners involved in the work packages.

UNITS is the proposed coordinating organization. As such, this organization is responsible for: project management, competence analysis, exchange and training planning.

In addition, a Dissemination Board will be established to guaranty a sound link with the European academic community and with various industrial organizations. The Overall Scientific Project Leader and the Team Leaders agree on the tasks defined in the ToK Plan, including the planned timing. The Project Management Board will ensure that the activities performed within the ToK Plan are in line with the original plans and requirements. The Board will also ensure that the ToK Plan results are in accordance with the strategic long-term expectations of the industrial-academia partnership.



Overall Scientific Project Leader

The responsibility of the Scientific Project Leader is the overall success of the project: the realization of the objectives including the dissemination of the results. While the Team Leaders are given most of the practical, organizational and monitoring responsibilities, the Overall Scientific Project Leader remains in charge of the overall information flow, progress of the ToK Plan and scientific content. The project leader is also the contact point towards the EC and the Dissemination board.

The Overall Scientific Project Leader is Prof. Walter Ukovich at UNITS, In his function he will have frequent contacts with the team members and team leaders and will chair the team meetings.

Meetings & Contact Schedule: Contact with ToK Team Leaders (mail, telephone) every month with face to face meetings and more frequent contacts if required. Take regularly part to the ToK team progress meeting every 3 months. **Other important tasks and responsibilities concern the following:**

- Keeping clear administrative procedures and financial administration of the project for internal use and also for reporting obligations towards the Commission.
- Preparing yearly progress reports and financial reports to be sent to the Commission.
- Forward EC contribution to the partner organizations.

Financial and Administrative Support

The project coordinator will be supported in his activities by the Financial Departments of UNITS to manage all financial and administrative needs including financial reporting towards partners and the EC. The Financial Department of UNITS will deliver personnel-related and administrative support. Important tasks and responsibilities include among others:

- keeping clear administrative procedures and day-to-day financial administration of the project, both for internal use and external reporting obligations towards the EC;
- preparing yearly progress and financial reports for the EC;
- forwarding EC contributions to all partners;
- performing contractual and social personnel-related activities.

The overall estimate of costs for this project amounts up to € 874.774.

ToK Team Leaders (Wp-Leaders)

The ToK Team leaders are responsible for the successful performance of the research and ToK/training activities of their work package. The ToK Team leaders responsibilities and tasks include the following:

- Ensure programme times, costs and resources are maintained and flag any discrepancy to the Overall Scientific Project Leader
- Ensure the objectives and results of activities within the work packages are achieved
- Ensure deliverables are available according to plan
- Chair of ToK Team meetings
- Attend Project Management Board meetings

Meetings and contact schedule with the Overall Scientific Project Leader	
Project Management Board	Kick-off meeting and a ToK meetings
ToK Team Leaders	Progress meeting every 3 months , mail correspondence every 2 weeks
Dissemination Board	Whenever needed, but at least once a year . Members of the dissemination board may attend one or more Project Management Board meeting.

Summary of meetings and contact schedule with the Overall Scientific Project Coordinator

Dissemination Board

The Dissemination Board consists of an extensive information platform of scientific and business relations of the network of the participating partners and will be created at the start of the project inviting representatives of the ongoing EU projects in the field.

Communication Process

On top of the described meeting schedule the project partners will intensively communicate throughout the project. The project coordinator is responsible for an effective communication procedure. He will organise, promote the contact schedule and attend the meetings. A virtual communication platform in the form of a joint website, available to all project members will be established to maintain an easy flow of information. A record of the discussion will be distributed to the project fellows after each meeting. The project partners will agree on standard file formats to be used for data and documentation exchange. Internet-based communication (incl. On-line archiving, discussion boards etc.) and e-mail will be the principal mechanism for the internal/external communication.

Case of Serious Disputes

In case of serious disputes among partners, conflict resolution procedures will be initiated whereby the coordinator will advise the Project Management Board (PMB) that it will have to meet in emergency session to discuss the conflict and reach a resolution by majority vote.

The Consortium believes that any conflicts should be resolved as speedily as possible so that within 21 days of notification by the Coordinator of the requirement for an emergency procedure, the PMB will have to meet in session. The quorum threshold for this meeting would be 90%. The meeting will attempt to achieve full consensus on the resolution of the issue but in any case a majority vote will be taken to determine what resolution should be implemented; where necessary the Coordinator will use a casting vote. In circumstances of persistent and serious

conflict that may put the continuation of the project in jeopardy, the PMB will consider its options such as involving the EU project officer, seeking external advice followed by a review of the situation and the advise in emergency session for a collective decision in order to implement a final remedy of the issues involved.

Monitoring and Reporting Process

The ToK Team Leaders are responsible for the progress monitoring of the day-to-day research and transfer of knowledge activities. They will forward the monitoring results and comments to the Scientific Project Leader every three months. The project proposal defines measurable progress monitoring steps (deliverables) and milestones, which can easily be monitored since they are tied to an observable outcome and a realistic timeline.

The reporting process will consist of:

- the internal progress reporting twice a year delivered by the Scientific Project Leader
- the yearly external progress reporting and financial reporting delivered by the Scientific Project Leader towards the European Commission.

Subcontracting

For the Management activities SAIL consortium will be supported by a subcontractor, namely CiaoTech Srl (PNO Group)

Company Profile

CiaoTech Srl (CTECH) is a private company specialised in Innovation Management, providing support services to private and public organisations in Product and Process Innovation, Technology Transfer, IT solutions and support for research and development projects. Headquartered in Italy (Rome, Milan, Pescara, Udine), CTECH is made up of a pool of professional engineers with consolidated experience in international working environments (Europe, Latin America, USA). The Company is furthermore specialised in Technology Transfer and Grant Consultancy services and 100% part of the PNO Consultants Group leading independent consultancy in 12 countries in EU.

Set up in 2002, CTECH is a high-growth knowledge intensive company, doubling its turnover each year and expanding its operation in the whole Europe. The growth of CTECH could be explained by the innovative and specific services that the company offers, by supporting Industrial and Research organisations in defining and implementing their innovation and research strategies, through the usage of advanced methodologies and ICT solutions oriented. Moreover, thanks to its multidisciplinary expertise, CTECH has developed a specific expertise in setting up complex international technology transfer consortium and networks. The experience of the CTECH team can be attributed to the strong involvement in R&D activities conducted with highly qualified European Companies and Research Centers (University of Rome, University of Naples, Institute Fraunhofer, Finmeccanica Spa, Microsoft Corporation, HP, Intel).

The expertise of CTECH in conducting research activities in the field of IT knowledge management has been recognised by several research centers in Europe with which CTECH is realising projects.

In particular CTECH coordinates itself different EU funded projects targeted to support SMEs in the innovation and technology transfer process in projects such as “@Health” (FP6/ICT) in the e-Health sector, “SECURE-FORCE” (FP6/Innovation) in the Security sector, “AEROPORTAL” (FP7/Aeronautics), “SMART” (FP7/Transport) in the surface Transport domain, “SHARE” (FP7/ICT) in the Open Source domain, “GLOBE” (FP7/Security) in the Border Security sector and “OSMOSIS” (FP7/Security). CTECH has also conducted different EU funded R&D projects in order to outline a scientific methodology and tools to support SMEs in the innovation management process for examples by the projects named “AMI-SME”, “KNOW-IT” and “INTECH” (this latter funded by the Lazio Region, Italy).

CiaoTech support to SAIL consortium

CTECH will provide professional support in the project management as well as the dissemination of results.

SAIL consortium agreed to subcontract the following limited tasks to CTECH that only concern certain parts of the project, as the implementation of the project lies with the beneficiaries. Thus, the subcontracted parts are not "core" parts of the project work:

- Providing communication materials such as templates and other electronic material
- Assisting beneficiaries in organisation of network-wide events
- Promoting training activities to other participants
- Assisting beneficiaries in organisation the project meetings.
- Assisting the consortium partners in the project administration.

There are two reasons for subcontracting these minor support services, which do not represent core elements of the project work, to CTECH:

1. To reduce the administrative workload of the beneficiaries (project administration)
2. To strengthen the training activities (organisation)

SAIL consortium has ensured that work subcontracted does not affect their rights with regard to the use and dissemination of knowledge that are their property and rights by signing a consortium agreement.

SAIL consortium agreed that TEOREMA will pay CTECH 3.500€ each of the 4 project years by its 3% EC contribution for management costs.

The Coordinator will adhere to Annex II.7. Subcontracting of the Grant Agreement (GA), and thus not subcontract tasks such the distribution of funds, the review and collection of reports and others tasks mentioned under Article II.2.3.

Small equipment for SME

Platform for dynamic simulation

A simulation environment that re-creates systems and processes in a virtual environment in order to analyze them from dynamic and stochastic points of view. Simulation shall enable the dynamic analysis of the designed system, test management criteria, evaluate particularly critical situations, validate project decisions and compare alternative solutions even from the economic point of view.

Optimizer

A mathematical optimization software that enables resolution of problems that could be represented as mathematical/linear/quadratic/etc. programming models. This software shall be able to manage all constraints and variables that will be found in the analysis activities. The software needed will show characteristics like: excellent time performance (to support real time critical decision making), flexibility (to solve different types of models), robust, easily integrable with the others modules of the developing system.

Hardware

To build an adequate development/simulation/pre-production environment this hardware is needed:

- 2 server min 16 Gb Ram
- 1 Printer/Fax/Scanner
- 4 notebook
- 2 monitor LCD
- Software for log maintenance
- Server Storage (NAS)

Gender aspects

Even if there are a lot of women as key persons, there is a clear gender unbalance in the male/female personnel involved because the internal staff already appointed is almost composed by men. For this reason the partners of the consortium will recruit researchers and appoint the remaining staff aiming at contributing to a better gender balance. The candidate who best within the ToK programme, whether male or female, will be chosen, but if male and female candidates have the same qualifications, the female researcher will preferably be selected according with an overall gender balance principle.

Partners will actively promote participation of women to the recruitment campaign and to the selection procedure of research fellows to be involved in the ToK activities.

Ethical issues (if applicable)

None

10. Deliverables

A3.2: Deliverables

Project Number ¹	251589	Project Acronym ²	SAIL
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One Form per Project

	Recruitments						Secondments						Total			
	Experienced researchers (4-10)			Experienced researchers (>10)			Early stage researchers			Experienced researchers (4-10)		Experienced researchers (>10)				
	Months	Researchers	% Fixed amount contract (B)	Months	Researchers	% Fixed amount contract (B)	Months	Researchers	% Fixed amount contract (B)	Months	Researchers	% Fixed amount contract (B)		Months	Researchers	% Fixed amount contract (B)
UNITS	0	0	0%	0	0	0%	0	0	0%	14	1	0%	0	0	0%	14
KIC-TEIEP	12	1	0%	0	0	0%	0	0	0%	0	0	0%	16	2	0%	28
TEO	24	1	0%	0	0	0%	16	2	0%	24	3	0%	4	2	0%	68
Total	36	2	0%	0	0	0%	16	2	0%	38	4	0%	20	4	0%	110

11. EU contribution

A3.4: Total contribution per cost category

Project Number ¹	251589	Project Acronym ²	SAIL
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One Form per Project

	Monthly living and mobility allowance (A)	Travel allowance (B)	Career exploratory allowance (C)	Contribution to the participation expenses of eligible researchers (D)	Contribution to the research/ training/ transfer of knowledge programme expenses (E)	Management activities (including audit certification) (G)	Contribution to overheads (H)	Other types of eligible expenses / specific conditions (I)	Total
Year 1	309,584	4,000	4,000	0	68,400	13,868	42,026	27,478	469,356
Year 2	198,870	500	0	0	45,600	9,204	27,895	0	282,069
Year 3	44,711	500	0	0	12,000	3,109	9,420	27,478	97,218
Year 4	20,131	0	0	0	6,000	0	0	0	26,131
Total	573,296	5,000	4,000	0	132,000	26,181	79,341	54,956	874,774

Reference rates from the 2009 Work Programme

Table 3.1: Reference rates for monthly living allowances (cost of living index 100)⁶

Researchers Categories	A (EUR/year)	B (EUR/year)
Early-stage researchers	35 300	17 650
Experienced researchers (4-10 years experience)	54 300	27 150
Experienced researchers (>10 years experience)	81 400	40 700

This amount represents an increase of roughly 2.45% of the 2008 Work programme, reflecting the average inflation in the EU during the intervening period as published by Eurostat.

Table 3.2. Travel allowances

Distance ¹ (km)	Fixed-amount contribution (EUR)
< 500	250
500 – 1 000	500
1 000 – 1 500	750
1 500 – 2 500	1 000
2 500 – 5 000	1 500
5 000 – 10 000	2 000
>10 000	2 500

For researchers eligible to receive travel allowances, the allowance is based on the direct distance (in a straight line) between the place of origin and the host institution of the researcher, calculated on the basis of one payment for every period of 12 months or less, when the first period or the last one is less than 12 months. Only one travel allowance shall be paid per period of 12 months, independently of possible interruptions or stays with different partners.

⁶ Rates for individual countries are obtained by applying to these rates the correction factors for cost of living, as referred in Table 3.3

Table 3.3 Correction Coefficients – The EU-25 Member States^{37, 38}

Austria	102.2	Estonia	76.5	Hungary	66.5	Luxembourg	100	Slovak Rep.	82.2
Belgium	100.0	Finland	112.0	Ireland	113.3	Malta	97.5	Slovenia	80.8
Cyprus	99.0	France	104.4	Italy	103.9	Netherlands	101.2	Spain	95.5
Czech Republic	77.2	Germany	101.5	Latvia	71.1	Poland	71.6	Sweden	108.9
Denmark	133.5	Greece	90.1	Lithuania	71.2	Portugal	91.4	UK	109.2

The non-EU Countries (and Romania and Bulgaria while in transition period for the calculation, and New Caledonia a French overseas territory)

Albania	80.2	Cape Verde	82.3*	Fiji	73.5	Indonesia	53.9	Mexico	74.4	Russia	122.6	Tanzania	61.7*
Algeria	88.7	Cen African Rep.	119.1	FYROM	71.7	Israel	109.5	Moldova	58.5*	Rwanda	90.9*	Thailand	67.7
Angola	121.8*	Chad	129.4	Gabon	123	Jamaica	90.5	Morocco	89.5	Saudi Arabia	84.6	Togo	89.4
Argentina	54.9*	Chile	71.5	Gambia	60.5	Ivory Coast	98.7*	Mozambique	77.7	Senegal	87.7	Trinidad & Tobago	68.6*
Armenia	123.5	China	77.4	Gaza Strip	92.1	Japan (Naka)	101	Namibia	72.5	Serbia	66.1	Tunisia	71.5
Australia	112.2	Colombia	82.1	Georgia	96.6	Japan (Tokyo)	106.5	Nepal	78.8*	Sierra Leone	76.6*	Turkey	85.9*
Bangladesh	48.2	Congo	130.2	Ghana	69.2*	Jordan	75.9*	New Caledonia	135.3	Singapore	102.5	Uganda	69.4*
Barbados	127.5*	Costa Rica	70.8*	Guatemala	79*	Kazakhstan	121.6*	New Zealand	109.6	Solomon Islands	94.8	Ukraine	108.2
Benin	91.9	Côte d'Ivoire	98.7	Guinea(Conakry)	49.2*	Kenya	81.9	Nicaragua	57.3*	South Africa	60.2	US	103.1*
Bolivia	48	Croatia	106.8	Guinea-Bissau	100.7	Kyrgyzstan	84.3*	Niger	87	South Korea	117.3*	Uruguay	69.8
Bosnia & Herzegovina	78.7	Cuba	86.1	Guyana	61.3*	Laos	74.2	Nigeria	86.1	Sri Lanka	53.2	Vanuatu	122.6
Botswana	58.1*	Dem Rep Congo	131.6	Haiti	114.8*	Lebanon	92.3*	Norway	132	Sudan	55.1*	Venezuela	64.1*
Brazil	93.2	Djibouti	94.3	Honduras	69.7	Lesotho	62	Pakistan	50.7	Suriname	49.4	Vietnam	51.5
Bulgaria	80.4	Dominican Rep.	69.3	Hong Kong	94.8	Madagascar	84.7*	Panama	61	Swaziland	57	West Bank	92.1
Burkina Faso	90.7	Ecuador	64.8	India	47.6*	Malawi	73.1*	Papua New Guinea	74.3	Switzerland	109.8	Yemen	76*
Cambodia	69.8	Egypt	49.6	Indonesia(Jakarta)	79.5*	Malaysia	74.4	Paraguay	78.8*	Switzerland(Bern)	109.7	Zambia	56.3*
Cameroon	103.5	El Salvador	76.6*			Mali	86.3*	Peru	77.5	Syria	70.6*		
Canada	92.7*	Eritrea	51.3			Mauritania	65.3	Philippines	64.4	Taiwan	83.7		
		Ethiopia	87.1*			Mauritius	69.5	Romania	73.9	Tajikistan	66.5*		

³⁷ For the EU-25 Member States based on the Council Regulation No 1895/2006 of 19 Dec 2006 (OJ L397, 30.12.2006) page 6, adjusting the weightings applicable to the remuneration of officials of the European Communities. For the other countries (and Bulgaria and Romania as most recent two EU Member States in transition) it is based on an updating of Council Regulation (EC) No 453/2007 of 25 April 2007 laying down the weightings applicable from 1 July 2006 to the remuneration of officials of the European Communities. Please note that the basis of the calculation of the two sets of coefficients differ in detail)

³⁸ For countries where the correction coefficient is not available (not indicated in the table, Afghanistan, Azerbaijan, Belarus, Burundi, Liberia, Micronesia, Uzbekistan, Samoa, Somalia, Tonga, Zimbabwe), the Commission will decide on a case-by-case basis. For countries where there are multiple entries, but none of them exactly match the location of the fellowship, then the lowest coefficient for that country will be applied. For Iceland the rate of Norway applies.

* These are the new Correction Coefficients introduced for specific countries as per Commission Decision published in IA No 24-2008/08.05.2008, "Weightings applicable in third countries, Articles 12 and 13 of Annex X to the Staff Regulations.