FIRST: Coordinator's Report

A presentation by the Coordinator on the Network and the Mid-Term Review Report

Bath, December 13th, 2011

Space-time phenomena giving rise to fronts and interfaces are central issues in many contexts of Science and Technology.

A selection of some of the most challenging ones, most often of multi-disciplinary character, will be pursued by a team of 10 Full Partner Members (8 universities of different countries and two industries, Guigues Environnement (France) and Siemens (Germany)) with the help of 4 Associate Partners.

The project is divided into three general Work Packages A: Image Processing, B: Patterns in Complex Reaction-Diffusion Systems and C: Interfaces, Control and Inverse Methods in Technology Problems. The training of 18 ESRs is proposed with a interdisciplinary orientation: besides the presence of the two mentioned industries with special interest in work packages B and C, respectively, most of the mathematicians employed in this ITN in the field of image processing are collaborating with researchers from other fields as in the case of the Technion Computer Sciences and Electrical Engineering departments.

The presence of two industrial partners will also broaden the range of applications of the training techniques used in the FIRST. The Guigues and Siemens partners, are in the supervisory board of the ITN, and are involved in the training programme through complementary skills seminars. Most of the ESRs will be trained in two different universities. The list of structured training courses refers not only to a set of postgraduate courses available in the PhD programmes but also to some specialized courses which will be organized for the FIRST ITN.

The benefit to the European scientific community will be significant: the training will not only produce researchers with broad backgrounds qualified for academic careers. It will also produce individuals with an understanding of science and with an excellent perspective for a career outside academia

Network Participants	Legal Entity	Department	Person-in-charge
1. UCM	Universidad Complutense de Madrid	Departamento de Matemática Aplicada	Jesús Ildefonso Díaz
2. FAUEN	Friedrich-Alexander-Universität Erlangen-Nürnberg	Department of Mathematics	Günther Grün
3. PARIS-SUD	Université de Paris-Sud XI	Département de Mathématiques	Danielle Hilhorst
4. SUR	Sapienza Università di Rome	Dipartimento di Matematica "Guido Castelnuovo"	Alberto Tesei
5. TUE	Technische Universiteit Eindhoven	Faculteit Wiskunde en Informatica	Mark A. Peletier
6. TIIT	Technion - Israel Institute of Technology	Department of Mathematics	Haïm Brezis
7. UB	University of Bath	Mathematical Sciences,	Christopher Budd
8. UZH	University of Zurich	Institut für Mathematik	Michel Chipot
9. Guigues Environnement	Guigues Environnement	GED-ATOS-Hydro Expert	Lionel Demongodin
10. Siemens AG	Siemens AG	I IS MT EA T	Matthias Kurz
Associated Partners			
A. CU	Comenius University	Department of Applied Math. and Statistics	Pavol Quittner
B. UA	University of Athens	Department of Mathematics	Nicholas Alikakos
C. UCL	Université Catholique de Louvain	AMM	Jean Van Schaftingen
D. UFR	Université de Tours	Faculté des Sciences et Techniques	Laurent Véron

Plan

- a) Scientific subjects

- b) Training

- c) Networking

- d) Management

a) Scientific subjects

Space-time phenomena giving rise to fronts and interfaces are central issues in many contexts of Science (here understood in the largest possible meaning) and Technology (including aspects related with engineering and industry). A selection of some of the most challenging ones, most often of multi-disciplinary character and just emerging, will be given below.

An important ingredient of the proposed project will be a close contact of the experimental investigations with the corresponding theoretical analysis and interpretation. For instance, nonlinear Partial Differential Equations emerged in recent research as a major and basic tool for a wide variety of Image Processing tasks. As one of the main goals of this proposal we plan to bring together engineering researchers whose work motivated by practicality led to the development of numerical algorithms for solving complex systems of NL-PDEs, with mathematicians who have the expertise to address questions of well-posedness uniqueness of solutions and stability of solutions with respect to coefficient perturbations and small changes in the initial/boundary conditions. We expect the interaction of the various teams to lead to major developments in this domain. Obviously, careful mathematical modelling of the physical processes encountered in many other applications often leads to intricate systems formulated in terms of nonlinear partial differential equations (PDEs). These systems sometimes involve stochastic terms and/or non-local terms representing delay, hysteresis or long-range-interaction effects.

As a general remark, we point out that, in contrast with other types of models (e.g. those given by ordinary differential equations or by systems of linear PDEs) a very rich variety of mathematical and computational tools are essential for a basic understanding of the systems and also to be able to predict behaviour. Such tools range from refined mathematical modelling (constitutive laws for non-standard materials, multi-scale formulations, homogenisation, asymptotic models,...) over aspects of mathematical analysis (existence of "appropriately defined solutions", uniqueness/multiplicity, regularity of solutions, qualitative properties such as finite speed of propagation, formation of interfaces and singularities) to the design of efficient numerical schemes (adaptivity in time and in space, discretisation methods consistent with the physics of the problem, advanced numerical linear algebra – multigrid, parallelization, effective nonlinear solvers). A careful comparison between reliable numerical simulations and experimental results (usually involving careful processing of stochastic data) allows the mathematical models to be validated and further improved, and they can then be powerful tools in the prediction of new phenomena. The solution of inverse problems, in which the structure of a physical system, typically described in terms of the coefficients of the PDEs modelling it, is inferred from indirect measurements, is a further very significant area where PDEs are important in many applications and much mathematical analysis is necessary. A further step will consist of process optimization (developing algorithms which allow the system to be designed to achieve an optimal state by minimising a suitable cost function, and analyzing the reachable states, etc.) and is firmly within the scope of this proposal.

Besides this application-oriented mathematical methodology, different questions of tremendous impact and difficulty arise. They are related with intersectorial aspects of mathematics, namely links to other a priori disconnected – fields such as differential geometry, topology or probability theory. Often of a more theoretical nature, they require the development of new techniques which sometimes have to be used in combination with highly sophisticated methods already established. Many of the landmark advances in mathematics of the recent years (for instance the proof of the Poincaré conjecture) are fruits of a close-tie-approach between different fields of mathematics, and also between mathematics and other disciplines. It is a feature of mathematical research that it can often have stunning and unexpected applications in technology and that mathematical ideas are the perfect way of transferring knowledge between different disciplines.

The proposed investigation, being at the spearhead of both modern partial differential equations and industrial applications, with all the cross-disciplinary open questions to be addressed, will give an excellent opportunity to teach and train young researchers in this new and challenging field. The number of unsolved (and presently unasked) questions in this field will give them the chance to find their own field of research, not just to follow the well-known routes. We believe that just such a challenge in a novel, rather open field would give the young people the best opportunity to really grow and become independent scientists. The participation of young enthusiastic researchers should also significantly contribute to the successful completion of the proposed investigation and, hopefully, to a breakthrough in understanding of the rich and puzzling properties of some industrial applications.

The training of the most gifted young researchers in such a complex and sophisticated variety of mathematical tools in the context of applications will be developed, with the full participation of two important European industries (and another one at an intermediate level as Associated Partner), coming from different European countries (Full Partner Members located in 8 different countries). The training objective is to have young scientists (researchers who are in the first five years of their career) working on selected problems by offering structured training in new and complementary techniques, participating in the regular local research activities of the teams and in workshops organised in the context of the network as well as providing complementary skills and exposing the researchers to other sectors including private companies. Secondments to some full or associated partners will ensure complementary training. This will improve the career perspectives of the students and will mean a progress, maintaining a European dimension, in the field and keeping a closer contact with important industries as Guigues and Siemens.

Within these three different WP, the different ESRs contracts are distributed in such a way that the study of the problems will be shared between (at most of the cases) two departments which will permit a main training in one centre with strong interaction and deployment of appropriate techniques in the second, with possible short visits to other departments of the network. The following table summarizes all the topics which have been defined, with the number of months to be spent in each Full Member.

WPA: Partial Differential Equations for Image Processing

Most of the mathematicians employed in this ITN in the field of image processing are collaborating with researchers from other fields as it is the case of the Technion Computer Sciences and Electrical Engineering departments. The areas and problems of interest in PDE-based methods for Image Processing and Analysis in which the teams joining forces will be active are: i) Image Denoising and Edge Preserving Enhancement and Variational and PDE- based approaches, ii) Video Processing: Optic Flow Estimation by Over-Parameterized Variational Methods and Variational Methods for Deinterlacing, iii) Image Restoration and Inpainting, iv) Image and Video Coding Compression: Up-Scaling and Down-Scaling and Image and Video Sampling Issues, v) Scale Space Processing: Image Representations in Overcomplete Dictionaries and Sparse Representations and Their Uses. Some concrete subprojects in this Work Package are the following:

WPA1. Mathematical analysis of the total variation based denoising problem: total variation flows.
The development of fast algorithms to solve the variational formulation of these problems is of much interest at present and will require many efforts to understand existing algorithms and formulate new ones. The development of primal-dual algorithms for the denoising problem (taken as a model problem) and their analysis will permit to understand their efficiency and to study their application to other contexts like segmentation or disparity computation for stereo.

WPA1. *Mathematical analysis of the total variation based denoising problem: total variation flows.*

The role of total variation in developing image models and algorithms has been increasing since its introduction by Rudin-Osher-Fatemi in 1992. To understand its qualitative properties, we propose to compute explicit solutions of the total variation denoising problem. We propose also to study the regularity properties of its solutions of and of solutions of the minimizing total variation flow. We will study primal-dual algorithms and work on the development of fast algorithms to solve these problems. Finally, we will consider its application to image segmentation and disparity computation in stereo.

WPA2. *Non-local variational formulation of the image inpainting problem and High Angular Resolution Diffusion Imaging: a multi-scale geometrical point of view.*

The unification of geometric and texture-based methods is a very interesting research trend that can lead to the development of robust and performant inpainting methods. Diffusion Magnetic Resonance Imaging is a biomedical acquisition protocol that produces in vivo images of fibrous tissue, such as brain white matter and muscle. Popular approaches utilise Diffusion Tensor Imaging (DTI) or, more generally, High Angular Resolution Diffusion Imaging (HARDI), to obtain information on local water diffusivity profiles, which are believed to be indicative of underlying fibrous structures. Tractography and connectivity analysis can be employed to extract candidate fibres in the form of geodesic curves, or congruences of such curves emanating from a fiducial origin or region of interest in a Hamilton-Jacobi framework.

WPA3. *Adaptive and directional local processing in Image processing*

We propose to go beyond of this idea (proposed by Bruckstein et al in 1994) in several different directions. In particular connecting this idea with a different approach to image processing and analysis, closely related to and influenced by a multi-scale view that comes from diffusion-based "scale-space" ideas: an approach based on a new way of doing harmonic analysis by wavelet bases.

WPA4. *Variational methods in Image Processing: application to ill-posed problems.*

An application of variational methods is related to optical flow based upon mean curvature will be developed with special application to models which initially are ill-posed (as it is the case of the *Perona-Malik equation*) but for which it is possible to get a coherent theory on their solutions, at least for suitable initial data.

WP	ESR	Partner			Topic
WPA1	ESR 1 **This position has been filled**	Madrid (18)			*Total variation based denoising problem*
	ESR 2		Zurich (12)		
	ESR 3			Rome (6)	
WPA2	ESR 4 **This position has been filled**	Haifa (23)			*Non-local variational formulation of the image inpainting problem and High Angular Resolution Diffusion Imaging: a multi-scale geometrical point of view*
	ESR 5			Paris (12)	
WPA3	ESR 6 **This position has been filled**	Eindhoven (12)			*Adaptive and directional local processing*
	ESR7		Haifa (12)		
	ESR8			Paris (12)	
WPA4	ESR 9 **This position has been filled**	Rome (30)			*Variational methods: ill-posed problems*
	ESR 10			Zurich (6)	
WPA		Total=143 Researcher-months			

WPB1. *Mathematical modelling of some open problems in flame propagation*

The objective of the proposed research is the development and exploration of new mathematical models for a selection of combustion phenomena related to flame-flow interaction with the aim of improving current understanding of the underlying mechanisms.

WPB2. *Plant community patches as localized solutions of a reaction-diffusion system*

Plant communities in water limited systems can be described by reaction-diffusion equations for the plant-biomass and water variables. Numerical integration of the equations reveals stationary pulse solutions. These solutions provide important information about species assemblage properties such as species richness, abundance and composition. The topic of water-limited ecosystems is of extreme importance in many countries and especially in Spain (because of the desertification process in southern Spain: a World Coordination Center for the study of desertification is established in Almeria).

WPB3. *Higher order reaction-diffusions giving rise to solution with blow-up in finite time.*

In contrast with second order systems, the case of a diffusion given by higher order differential equation is badly understood (many methods available for second order systems can n be applied). Special energy, symmetry, numerical methods and the classification of the solutions in terms of the initial data must be obtained.

WPB4. *Reaction –diffusion with non local termd and other effects*

Very interesting nonlinear problems in biology, population dynamics are depending on nonlocal quantities (as for instance the total population for population issues). The analysis to be done, for instance to determine the asymptotic behaviour in time of such problems, is non trivial since the usual techniques of reaction diffusion systems or equations fail. Also the stationary points associated to these problems can be very numerous which complicates the behaviour of such systems. Problems set in cylinders or depending on periodic data are expected to present some interesting properties when the size of the domain where they are set is growing. Other effects, arising in some reaction-diffusion processes, will be also considered.

WPB5: *Singular terms in reaction-diffusion systems*

Many reaction-diffusion equations (as for instance, the ones arising in 2-d space charge electron problem or in the Thomas-Fermi equation) lead to the presence of no differentiable or singular reaction terms. The study of the interface generated by the solutions will be the main difficulty in this study. Some special mathematical models of blood coagulation will be analysed.

WPB6. *Finite volume methods for two-phase flow in porous media.*

We investigate a newly developed variant of the finite volume method for convection-reaction-diffusion systems. This will permit to include inhomogeneous and anisotropic diffusion terms and to write efficient programs in the case of real geological meshes as is of interest for the Guigues Environment. We shall also extend our research to the simulation of multiphase flow in porous media.

WPB7. *Upscaling of interacting particle systems*

The aim is to construct a rigorous framework for the upscaling of interacting particle systems to macroscopic diffusion processes.

WPB1	ESR 11 **This position has been filled**	Paris (12)			*Flame propagation*
	ESR 12		Haifa (12)		
	ESR 13			Eindhoven (12)	
WPB2	ESR 14 **This position has been filled**	Madrid (18)			*Plant community patches*
	ESR 15		Haifa (6)		
	ESR16			Paris (12)	
WPB3	ESR 17 **This postition has been filled**	Bath (30)			*Higher order reaction-diffusions: blow-up*
	ESR 18			Madrid (6)	
WPB4	ESR 19 **This position has been filled**	Zurich (23)			*Reaction –diffusion with non local terms and other effects*
	ESR 20			Rome (12)	
WPB5	ESR 21 **This position has been filled**	Haifa (18)			*Singular terms in reaction-diffusion systems*
	ESR 22		Madrid (12)		
	ESR 23			Paris (6)	
WPB6	ESR 24 **This position has been filled**	Egis (24)			*Finite volume methods for transport of contaminants in porous media*
	ESR 25		Paris (6)		
	ESR 26			Zurich (6)	
WPB7	ESR 27 **This position has been filled**	Bath (23)			*Upscaling of interacting particle systems*
	ESR 28			Eindhoven (12)	
WPB	Total=250 Researcher-months				

WPC1. *Colloid-enhanced flow of contaminants in porous media*

Experimental evidence shows that the transport of contaminants in porous media is strongly enhanced by the attachment of contaminants to colloids. We must derive, analyze and discretize efficient multi-scale models to explain these phenomena and to further exploit them in environmental technologies.

WPC2. *Electrowetting: modeling, analysis, and simulation*

In microfluidics, tiny amounts of liquids may be manipulated (drop transport, splitting & coalescence) by applying electric fields without the need for any tear-and-wear-elements such as valves, pumps etc. We shall derive and analyze new models for electrowetting, taking in particular different mass densities of the involved fluids into account. For appropriate quasi-stationary model versions, optimal control of droplet motion may be studied as well.

WPC3. *Level Set Methods for Multilayer Geological Folding*   *Link EURAXESS*

Singularity formation in the bending shapes of multilayers can be predicted by geometry, and are observed in actual geological formations, but lead to significantproblems in variational formulations involving bending energy and friction terms. Further work is needed to develop more sophisticated models for geological deformation and to establish a consistent variational formulation of rock folding which will predict the complex folding patterns observed in practice.

WPC4. *Non linear systems in some technology problems*

Micromagnetism is essentially a theoretical formalism which enables the prediction of magnetisation structures such as domain walls and the investigation of magnetisation reversal mechanisms in bulk magnetic materials. It has applications in the area of recording media. Our project research bears on the magnetization in thin ferromagnetic films, and in particular, compactness for the two-dimensional approximation of the micromagnetic energy. Moreover we shall study the application of this type of technique to nonlinear optics.

WPC5. *Reduced order plasticity models for the real-time control for hot rolling of steel*

In production lines of steel plates, there is currently still a considerable amount of energy and material wasted due to difficulties with the optimal shape-formation of the plates. Siemens plans to employ one ESR who will derive and implement a reduced order model based algorithm for the real time control of steel plate production. It is planned to implement the results of this research in algorithms for the control of steel mills.

WPC6. *Models with a not controllable linearized control system and Computational aspects of interfaces*

For many equations or systems considered in this project to model porous media, one can act on them by using suitable controls. A practical important question is the problem of controllability: can one steer the control system from a first given state to a desired state? One knows many tools to study the controllability of such control systems if they are linear. From the controllability of the linearized control systems at some equilibrium one can deduce the local controllability around this equilibrium. However, in many important cases, associated to free boundary problems, the linearized control system is not controllable. The computational aspects of such type of problems will be also studied: a first part will be related to the study of interfaces in direct problems of computational electromagnetics, faced in the form of material discontinuities, for instance the edges of conductors or metal sheets for shielding. A second part will be related to the evaluation of modelling errors.

WPC7. *Control and stabilization of flows in networked transportation systems*

Optimal control and stabilization of flow of gas, water and traffic in networked pipe- and road-systems, respectively, is one of the major challenges in Civil Engineering and Applied Mathematics. Such systems are used along the links (pipes, roads) while nodal conditions are to be applied at the multiple nodes (joints) and boundary conditions at the intake-nodes. Control instruments are to be modelled via nonlinear and non-homogenous nodal conditions at simple and multiple nodes. The first goal is to fully understand the reachability and stabilizability properties under constraints both in the states and the controls. The second goal is to derive sensitivities, including shock-sensitivities, in order to apply real-time capable algorithms for the numerical treatment of optimal controls for systems of realistic size.

WPC1	ESR 29 **This position has been filled**	Erlangen (24)			*Colloid-enhanced flow of contaminants in porous media*
	ESR 30			Eindhoven (12)	
WPC2	ESR 31 **This position has been filled**	Erlangen (36)			*Electrowetting: modeling, analysis, and simulation*
WPC3	ESR 32	Bath (15)			*Level Set Methods for Multilayer Geological Folding*
	ESR 33			Eindhoven (12)	
WPC4	ESR 34 **This position has been filled**	Haifa (12)			*Non linear systems in some technology problems*
	ESR 35		Madrid (12)		
	ESR 36			Rome (12)	
WPC5	ESR 37 **This position has been filled**	Siemens (36)			*Reduced order plasticity models for the real-time control for hot rolling of steel* (Siemens)
WPC6	ESR 38 **This position has been filled**	Madrid (16)			*Models with a not controllable linearized control system and Computational aspects of interfaces*
	ESR 39		Paris (11)		
	ESR 40			Zurich (6)	
WPC7	ESR 41 **This position has been filled**	Erlangen (24)			*Control and stabilization in networked transportation*
	ESR 42			Paris (12)	
WPC		Total= 249 Researcher-months			

b) Training

• the training programme (distinguishing between that ESRs and ERs);
• secondments;
• complementary skills
• training events open to external participants

Visiting scientists

To complement the network's capacity to transfer new knowledge and strengthen supervision of the network-wide training activities, the following Visiting Scientists will be recruited for multiple stays within the network. Their involvement in the project will be stronger than the external researchers invited for the workshops, as they will spend longer time in the different laboratories, and will have more time to discuss with the participants. They will also be asked to present seminars during some workshop to broaden the scientific training part. For simplicity of organization, each scientist will be linked to one partner, but the aim of their participation is to have them visit other different universities of the network. Each of them will spend 1 month within FIRST.

Visiting Scientist	Topic	Participation	Month
VS1: Michiel Bertsch	Pattern formation	June 26-July 26 Paris	6 and 7
VS2	Reaction-Diffusion	1 month, Bratislava	15
VS3	Signal processing	1 month, Bath	24
VS4	Nonlinear PDEs	1 month, Haifa	33
VS5	interfaces	1month, Zurich	36
VS6	Signal processing	1 month, Madrid	48

c) Networking

• how the Network functions and how the partners cooperate in practice;

• interaction with private sector

Meetings and Visiting scientists

Date	Event	Location	Topic	Duration
2010 (Year 1) June, 28 -30, 2010.	Opening Meeting	Paris	State of the art and network goals	June, 28 -30, 2010.
2010 (Year 1) November 29th- December 1st, 2010	Workshop	Rome	Ill-posed problems	November 29th- December 1st, 2010
2011 (Year 2) March (Month 15)	Workshop	Bratislava	Blow-up and singularities	3 days
2011 (Year 2) June (Month 18)	Workshop	Louvain	Singular Reaction-diffusion	3 days
2011 (Year 2) September Month 21	*Complementary skills* *Workshop*	*Paris*	*Complementary skills for ESRs (organized by Guigues)*	2 days
2011 (Year 2) December (Month 24)	Mid-term meeting	Bath	Review progress, set new objectives, finalise mid-term report	3 days
2012 (Year 3) March (Month 27)	*Workshop and Complementary skills*	*Erlangen*	*Complementary skills for ESRs (organized by Erlangen and Siemens)*	3 days
2012 (Year 3) June (Month 30)	Workshop	Tours	Quasilinear PDEs	3 days
2012 (Year 3) September (Month 33)	Workshop	Haifa	Image processing and Reaction-Diffusion	3 days
2012 (Year 3)	Workshop	Zurich	Nonlocal problems	3 days

INTERNATIONAL CONFERENCES / EVENTS OPEN TO EXTERNAL RESEARCHERS

Event Number	Participant hosting the event	Type of Event	Month when the event took place	Start date of the event	End date of the event	Total number of researchers outside the network attending the event	Total number of researcher days for researchers from outside the network attending the event	Website of the event
1	UPS	Opening Meeting (Orsay)	6	28/06/2010	30/06/2010	4		http://www.math.u-psud.fr/~gtanl/FIRST/home_index_ws.htm
2	SUR	workshop on Ill-posed problems (Rome)	12	29/11/2010	01/12/2010	15		http://www.mat.ucm.es/~FIRST/Abstract_Ill_Posed.pdf
3	UCM	workshop on Blow-up and singularities (Bratislava)	15	23/03/2011	25/03/2011	4	12	http://www.iam.fmph.uniba.sk/institute/quittner/itn/
4	UCM	workshop on Singular Reaction-diffusion (Louvain-la Neuve)	18	27/06/2011	29/06/2011	8	24	http://sites.uclouvain.be/sc-analyse/FIRST-workshop.html
5	GUIGUES	workshop Complementary skills (Lyon)	21	28/09/2011	29/09/2011	4	8	http://www.mat.ucm.es/~FIRST/meetings.htm
6	UB	Mid-Term Review Meeting (Bath)	24					
7	SIEMENS	workshop Complementary skills (Erlanguen)	27					
8	UCM	workshop Quasilinear PDEs (Tours)	30					
9	TIIT	workshop on Image procesing and Reaction-Diffusion (Haifa)	33					
10	UZH	Workshop on Nonlocal problems (Zurich)	36					
11	TU/e	workshop: Young researchers (Eindovhen)	39					
12	UCM	Final meeting (Madrid)	42					

Collaboration with the organization of other workshops:

* INdAM Workshop on "NONCONVEX EVOLUTION PROBLEMS" organized by Adriana Garroni, Corrado Mascia and Alberto Tesei. November 30 - December 3, 2010

*4th Euro-Japanese Workshop on Blow-up (6-10 September 2010)

*Phase-Field Models in Fluid Mechanics" (14-16 February 2011) (http://www.uniregensburg.de/Fakultaeten/nat_Fak_I/Mat8/lst/workshop2011/index.html)

*Getting Started with PDE", Summer Workshop for Graduate Students, Technion, Haifa, Israel (18-22 September 2011) (http://www.math.technion.ac.il/cms/decade_2011-2020/year_2010-2011/summer-workshop/)

*ITN Winterschool on "Mathematical Models for Wetting: Analysis and Numerics", February 13th-17th, 2012, Veilbronn (near Erlangen, Germany).

*The Meeting of the Studiegroep Wiskunde met de Industrie (SWI2012) will be held from January 30 to February 2 at the Department of Mathematics of the Vrije Universitet in Amsterdam (http://www.eurandom.nl/events/workshops/2012/SWI_2012/index.html)

Distribution of tasks:

Madrid	Coordination of Network and training, web-page and Financial management
Erlangen	Recruitment
Paris	Career guidance / Complementary skills and Evaluation
Rome	Workshop coordination
Eindhoven	Equal opportunities
Haifa	Computation facilities
Bath	Industrial links & Video lectures
Zurich	Coordination of participation of associated members
Guigues and Siemens	Career guidance / Complementary skills and Evaluation

d) Management

- Recruitment report
- Financial aspects
- any proposed re-orientations of the networks' activities

CONTRACT DELIVERABLES UPDATE

M - Months

RESR - Researcher

FAC B - Fixed amount contract B (%)

Participants	Early Stage Researchers (ESR)									Experienced Researchers (ER)									Visiting scientists (VS <10)									Visiting scientists (VS >10)								
	Foreseen			Implemented			Difference			Foreseen			Implemented			Difference			Foreseen			Implemented			Difference			Foreseen			Implemented			Difference		
	M	RESR	FAC B	M	RESR	FAC B	M	RESR	FAC B	M	RESR	FAC B	M	RESR	FAC B	M	RESR	FAC B	M	RESR	FAC B	M	RESR	FAC B	M	RESR	FAC B	M	RESR	FAC B	M	RESR	FAC B	M	RESR	FAC B
UCM	82	6	0	34	3	0	48	3	0	0	0	0				0	0	0	0	0	0	0	0	0	0			2	2	0	1	1	0	1	1	0
FAUEN	84	3	0	42	3	0	42	0	0	0	0	0				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0
UPS	83	8	0	18	2	0	65	6	0	0	0	0				0	0	0	0	0	0	0	0	0	0			1	1	0	1	1	0	0	0	0
SUR	60	4	0	13	1	0	47	3	0	0	0	0				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0
TU/e	60	5	0	12	1	0	48	4	0	0	0	0				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0
TIIT	83	6	0	32	3	0	51	3	0	0	0	0				0	0	0	0	0	0	0	0	0	0	0	0	1	1	0				1	1	0
UB	77	3	0	35	4	0	42	-1	0	0	0	0				0	0	0	0	0	0	0	0	0	0	0	0	1	1	0				1	1	0
UZH	53	5	0	12	1	0	41	4	0	0	0	0				0	0	0	0	0	0	0	0	0	0	0	0	1	1	0				1	1	0
GUIGUES	24	1	0	3	1	0	21	0	0	0	0	0				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0
SIEMENS	36	1	0	12	1	0	24	0	0	0	0	0				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0
Total	642	42	0	213	20	0	429	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6	0	2	2	0	4	4	0

Documents and data submitted by the ESR applicants

(in preparation)

Name	Data	Curriculum Vitae	Cover Letter	Research Interests in One Page	Qualification Certificates	*Recommendation Letter 1*	*Recommendation Letter 2*	Degree Final Marks	
								Bachelor	Master
Abera Ayalew Muhamed	Application Form	CV	CL	RIOP	QC	RL1	RL2		
Afshan Jamshaid	Application Form	CV	CL	RIOP	QC	RL1	RL2		
Amin Amani	Application Form	CV	CL	RIOP	QC	RL1	RL2		
Andrea Cadarso Rebolledo	Application Form	CV	CL	RIOP	QC	RL1	RL2		
Anna Morra	Application Form	CV	CL	RIOP	MC BC	RL1	RL2		
Arpan Ghosh	Application Form	CV	CL	RIOP	QC	RL1	RL2		
Asmaa Elbeidaq	Application Form	CV	CL	RIOP	QC	RL1	RL2		
Azhar Mahmood	Application Form	CV	CL	RIOP	QC Other Docs	RL1	RL2		
Behnam Hosseini	Application Form	CV	CL	RIOP	QC	RL1	RL2		
Bolor Jargalsaikhan	Application Form	CV	CL	RIOP	QC	RL1	RL2	4,635	4,3625
Boussaïd Samira	Application Form	CV	CL	RIOP	QC	RL1	RL2		

Intranet

Initial Training Network **FIRST**

Annex I

Everything You Always Wanted to Know About FIRST Implementation

Documents and data submitted by ESR applicants (in preparation June 21, 2010)

Distribution of ESR applicants according to the contracts (June, 21, 2010)

Applicants_ESR_1 (Madrid)

Applicants_ESR_4 (Haifa)

Applicants_ESR_6 (Eindhoven)

Applicants_ESR_9 (Rome)

Applicants_ESR_11 (Paris)

Applicants_ESR_14 (Madrid)

Applicants_ESR_17 (Bath)

Applicants for ESR 1 (Madrid)

Name	Surnames	Gender	Nationality	Date of Birth	University and country
Thi Thuong Huyen	Nguyen	Male	Vietnamese	07/04/1965	Université de La Rochelle
Sergio Federico	Yapur	Male	Argentian	21/11/1980	Universidad Nacional del Litoral, Argentine
Faizullah Khan	Faiz	Male	Pakistani	14/07/1974	PIEAS, Islamabad, Pakistan
Muhammad Waseem	Khan	Male	Pakistani	25/06/1985	Comsats, Pakistan
Mozhdeh	Seifi	Female	Iranian	21/03/1984	CIMET Erasmus Mundus
Nguyen	Thanh Nam	Male	Vietnamese	24/12/1986	University of Paris 13, France
Sari	Haj Hussein	Male	Syrian	14/04/1981	Chalmers University of Technology, Gothenburg, Sweeden
Julian	Ting	Male	Taiwan	05/12/1960	University of Southern California, USA
Dilia	Handini	Female	Indonesian	26/06/1979	Nanyang Technological University, Singapore
Tahir	Jameel	Male	Pakistani	08/01/1982	GIK Institute, Pakistan
Vinh	Nguyen	Male	Vietnamese	03/02/1987	HoChiMinhy University of Science, Vietnam
Mikalai	Zhudro	Male	Bielorussian	18/12/1979	Johann Kepler University
Abera Ayalew	Muhamed	Male	Ethiopian	26/09/1983	Addis Ababa University, Ethiopia
Afshan	Jamshaid	Female	Pakistani	02/03/1982	Peshawar University, Pakistan
Thi Trang	Nguyen	Female	Vietnamese	05/11/1987	University of Orleans, France (Pole Universitaire Français in Ho Chi Minh City)
Labiba	Gilani	Female	Pakistani	22/03/1980	GIKI-NWFP
Moresmau	Frédéric	Male	French	15/02/1963	Technical University Munich, Germany
Le Trong Thanh	Bui	Male	Vietnamese	20/12/1987	University of Sciences, Vietnam National University, Ho Chi Minh City, Vietnam
Oleksandr	Kirichek	Male	Ukranian	01/05/1984	Prydniprovska State Academy of Civil Engineering and Architecture, Ukraine
Werner	Wee	Male	Filipino	03/06/1985	University of the Philippines Diliman, Philippines
Mahfoudh	Meima	Female	Mauritanian	31/08/1988	University if La Rochelle, France
Anna	Morra	Female	Italian	28/12/1983	Universita degli Studi di Torino, Italy
Sara	Sharifzadeh	Female	Iranian	16/08/1979	Mazandaran University, Iran
Oleh	Krehel	Male	Ukaranian	29/04/1986	Hamburg University, Germany
Cosimo-Andrea	Munari	Male	Italian	23/01/1984	University of Milan, Italy
Nicodemus	Banagaaya	Male	Ugandan	06/02/1985	JKU, Austria and Technical University Eindhoven, Netherlands
Philipp	Öffner	Male	German	27/02/1984	Julius-Maximilian University, Germany
Inan	Ates	Male	Turkish	22/08/1964	Ege University, Turkey

any proposed re-orientations of the networks' activities

External Experts Board of First.

Darryl Holm from Imperial College: d.holm@ic.ac.uk,   WPA

John King : etzjrk@math.nottingham.ac.uk   WPB

Michael Hinze michael.hinze@uni-hamburg.de   WPC.

in the Annex I, it is mentioned the following:

An external advisory board will be present at the mid-term meeting and will help the FIRST members in analysing the results obtained, and in setting the new objectives, if necessary, of FIRST.

Later, in page 22 we repeat again:

For the mid-term review, a special external board of 3 experts, specialised in the 3 Work Packages, will be invited to help the FIRST members reviewing the progress of the network, and defining new directions, if necessary.