

# SIXTH FRAMEWORK PROGRAMME



Project contract no. 043363

**MANMADE**  
**Diagnosing vulnerability, emergent phenomena and volatility in man-made networks**  
**SPECIFIC TARGETED PROJECT**

*NEST PATHFINDER*  
*Sub-Priority Tackling Complexity in Science*

**Work Package 1– D1.1**  
***Consortium Groups and responsibilities, specific of gender action plan***  
*Revision [5]*

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<b>PP</b>	Restricted to other programme participants (including the Commission Services)	
<b>RE</b>	Restricted to a group specified by the consortium (including the Commission Services)	
<b>CO</b>	Confidential, only for members of the consortium (including the Commission Services)	

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## Executive Summary

This report describes the make up of the MANMADE consortium groups, the responsibilities assigned to each of these and the nominees from each of the organizations assigned to each group. It's sole purpose is to be a handy guide to k personnel in the project and how groups and individuals relate to each other. In essence it consists of extracts from the project's Technical Annex amended to reflect the updates concerning the nominees to the various project groups, and including new information from, up till now, new personnel and external advisors.

The scope of the report is the constitution of the groups that make up the governance bodies, their roles within the project and how they interact to provide backup both to the research, outreach, and generic objectives of the project. In addition to identifying the groups and individuals associated with the general technical management activities the aim of this report is to assist any participant of the project (be that from a contractor, external evaluator or Commission Project Officer) to quickly identify groups or individuals that could be useful in either research or clerical duties.

The outline of the report is as follows: Taking as starting point the descriptions of the working groups – identified in Section 6 of the Project Technical Annex I, Description of work– the nominees for each group are given followed by a short description of their role within the project. The affiliations and short biographical details of the concerned members are given in an appendix.

# 1. Introduction

Although MANMADE is a research project in a field of applied mathematics, it purports to engage in real-world problems and intends to bring together both researchers studying basic scientific concepts, and technologists employed by companies to manage real-world complex networks. In order to make these groups work together and assist in the management of the project, a management network was devised, which it was thought, would introduce motivation to the researchers with a set of checks and balances between basic research and practical issues in order to help bring about a cohesive effort.

The chapters below follow from the definitions given in the MANMADE technical Annex, indicating the affiliations of the individuals concerned and the tasks of the various groups.

# 2. Consortium governance groups and responsibilities

## 2.1. Overall structure of governance groups

We take as our reference the scheme for the project management defined in Section 6 of the MANMADE proposal. The diagram below describes the governance bodies of the MANMADE project.

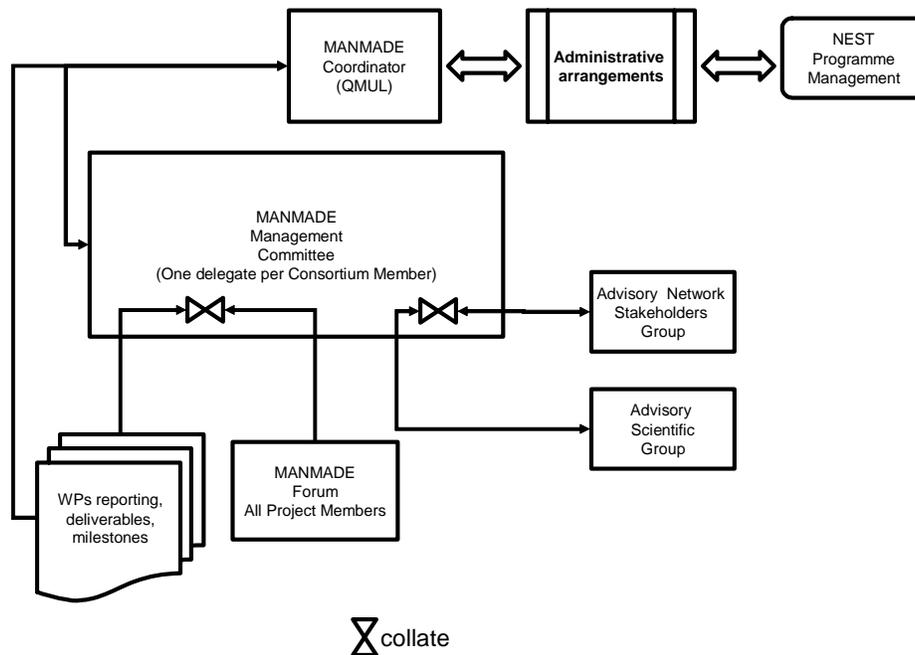


Figure 1 MANMADE management network

The first task set out once the project was approved was to identify the names and affiliations of the persons involved in each group and to iron out any difficulties encountered in setting up or identifying nominees.

Whereas the project's group of contractual partners has remained stable since the initial stages of its conception, the list of interested external advisors, particularly the 'stakeholder' group has been subject to some changes, which will be reported below. From the ensemble of contractual and external partners we have composed the following groups.

### ***2.1.1. The MANMADE Management Committee***

The Committee is made up of the following persons: D. Arrowsmith from QMUL (also project coordinator), E. Gutiérrez (JRC), F. Strozzi (LIUC), G. Vattay (COLB) and L. Kocarev (MASA).

The role of the Management Committee is to assist the MANMADE coordinator in the overall running of the project. The major administrative and clerical duties (including the formal contact and distribution of project deliverables to the Commission) will be conducted by staff assigned, primarily, to the Coordinator supported by the administrative personnel of its own institution. However, the Management Committee will act as the single debating body whenever, primary decisions concerning, problem solving or communications with the Commission need to be taken, in the event that these were not comprehensively covered (or outside the scope) of the original contractual arrangements. The main tasks of the Management Committee are:

- Review the Work Package progress reports and deliverables
- Monitor input from MANMADE Forum
- Develop a gender action plan
- Control time-line of deliverables and milestones
- Collate, examine and respond to input from External Stakeholder and Scientific Group.
- Provide External Group with status of project with reference to their specific interest area.
- Identify promising or problematic areas that may imply a change to the work plan.

### ***2.1.2. The MANMADE Forum***

The MANMADE Forum is hosted on a server provided by QMUL and accessible to restricted set of users from the MANMADE consortium. The person responsible for maintaining the Forum will be K. Dzedzic From QMUL , whereas the Compilation and Analysis of the FORUM's statistics flow will be conducted by E. Gutiérrez and F. Bono from the JRC. The Forum will be compiled from the freeware source *phpbb* ( <http://www.phpbb.com/>).

The Forum will constitute the hub of MANMADE'S social-technical network project activity and will play a role in creating a concerted project effort in order to engage the project resources to best effect.

It is expected that the Forum will provide a means to measure how the project contractors are interacting. This will allow the Coordinator and the Management Committee to modify the project structure as the network evolves and highlight promising, or problematic network interactions. Analysis reports of the Forum network dynamics will constitute a number of deliverables of WP1.

In order to do so the project web-site will act both as a data-base repository, message board and project chat-line and feedback questionnaire. Forum members will be able to provide input at differing

levels of perceived importance to the project. This will allow them to differentiate between flagging important aspects or simply keep tabs on where and what members are doing. Statistics on the number and type of transactions between the contractors will constitute the data set for the analysis.

### **2.1.3. Advisory Groups**

The MAMMADE advisory and evaluation is made up from a scientific and a network stakeholder groups. These groups will assist the project by providing scientific and practically-oriented advice to the project coordinators and individuals at a research level. The participants to the stakeholder groups can be considered as external advisors at zero cost. The meeting attendance costs (travel and allowance) costs incurred by these advisors will be borne by the respective organisations. Scientific evaluators from academia, will, wherever possible be budgeted consortium management committee as part of the outreach and dissemination activities.

Stakeholder Group: This group is currently to be represented by NESÄ (the Finish Emergency Supply Agency) and FINGRID the electricity transmission system operator (TSO), also from FINLAN. These two organizations will be represented, respectively by H. Sivonen and M. Jauhiainen, and T. Ristikankare

Originally it was thought that this group would be composed of two entities/companies. However, since the start of the project, and following the presentation of the project at a number of workshops, MANMADE has attracted the attention of other potential stakeholder companies from the UK and Spain. In view of this interest, the composition of the stakeholder group –if continued external interest is maintained- may be revised in time for the forthcoming project plenary meetings.

The stakeholders will report directly to the MANMADE Management Committee. Their task is to evaluate how the consortium is addressing the problems that are most pertinent to the managing networks pertinent to their expertise, but not exclusively to their affiliated company or authority; especially on those matters relating to vulnerability and security. They will endeavour to point the project into lines of research that will result in methods that have the potential to be implemented and have an impact in the running of real-world networks. Whereas they will have no direct vote in the managing of the work programme, the Management Committee will ensure that due notice is taken of their points of view, which will be included in the general reporting to the Commission.

External advisory group: This group consists of three persons: two from the fields of network analysis and physical sciences, and a third with expertise in gender action programmes at national or EU-wide level. The researches are M.C. Calzarossa, C. Hasse; respectively from the University of Pavia, The Danish Institute of Education, and M. di Bernardo currently lecturing at both the University of Bristol and Federico II of Naples. Their role is to (a) oversee the technical excellence of the mathematical and technical methods devised and applied during the project duration, (b) monitor the Project Management Committee's efforts with regards to the gender action plan. This group will help to drive the technical excellence and balance of the project by ensuring that the ideas developed are proposed within a peer-reviewed context familiar to the technical/academic project members.

### 2.1.4. Responsibilities for Work Packages

Referring to Figure 1 it can be seen that the Management Committee also receives direct input as to the status of the individual Work Packages. During the project kick-off it was decided to appoint a set of individuals that are responsible to collate information of the progress of tasks, milestones and deliverable for each WP. The work packages and responsibilities for coordinating the tasks and deliverables associated with these are given in

Table 2.1.

**Table 2.1 Work Packages and nominated WP leaders**

Work-package No <sup>1</sup>	Work package title	Contractor Initials	Person-months <sup>3</sup>	Start month <sup>4</sup>	End months <sup>5</sup>	Deliverable No <sup>6</sup>
WP1	Project Management	QMUL/ D. Arrowsmith	26	1	36	D1.1- D1.6
WP2	Network Collation	JRC/E.Gutiérrez.	29	1	36	D2.1- D2.4
WP3	Mathematical Methods	QMUL/W.Just	97	1	36	D3.1- D3.4
WP4	Electricity Networks	COLB/I. Janosi.	49	1	36	D4.1- D4.3
WP5	Dynamics of supply-chain and market volatility of networks	LIUC/F.Strozzi	55	1	36	D5.1- D5.5
WP6	Vulnerability of interconnected networks	MASA/L.Kocarev	59	1	36	D6.1- D6.4
	<b>TOTAL</b>		315			

## 3. Gender Action Plan

It was stated in the MANMADE proposal that the specific policies regarding gender balance, and, more specifically, women in science, were expected to vary considerably between the participant's organisations and their ordinary member states. In view of this it was decided to adopt a system of key points to which each of the consortium partners were requested to address replying either in the negative or positive as to the status of their organization. The most appropriate solution, given the

European-wide involvement of this project, was to adopt the principles given by the document ‘*Gender action plans: A compendium of good practices*’ published by the European Commission DG RTD Directorate C Science and Society. We identified the following criteria as the basis of recommendations as given in the section ‘Good practices in designing a Gender Action Plan’. The broad lines are given below and the input from each organization is shown adjacent to it:

1. Within the context of academic institutions: inform female undergraduate and research students of the Project’s research activities and actively request them to participate in both scientific and management activities.
 

**JRC** will actively seek a female researcher, either as a contractual agent or a final year university *stage* , to participate in the MANMADE project.

**LIUC** provides the project with a female WP leader, Fernanda Strozzi, who will be the principal researcher and project manager for her institution vis-à-vis the MANMADE project. In addition LIUC will have a female student studying for a master’s thesis on a subject related to the MANMADE project: “Gestione del rischio nei contesti di supply chain globale: Indagine bibliografica e modelli interpretativi”.

**MASA** employs two female researchers who will actively work in the project: Irina Petreska, holder of master degree, will work towards her PhD on a subject related to the project, and senior researcher Natasha Markovska, PhD, permanent staff at MASA. MASA will provide additional efforts to attract more students to work in MANMADE.
2. Steer project workshops and seminars with the aim of maximizing the population of female scientists from the consortium.
 

**QMUL** will make information available of our key activities on “women in science” websites as they become available.
3. Collecting gender statistics on the workforce employed by the Consortium and monitor the progress made in terms of gender balance. Within the context of the MANMADE Forum, data compilation on gender balance (or lack of it) will be highlighted.
 

**JRC** and **QMUL** will introduce this aspect into format of data compilation of MANMADE FORUM.
4. Establishing a Gender Awareness Group or equivalent structure to encourage networking and mentoring amongst women researchers.
 

**JRC** has a well structured and highly active *Women in Science Network*. MANMADE has established contact with representatives from WISN wishing to inform the network our activities and hoping that will provide input to assist in the outreach activities geared towards women researchers.
5. Organising outreach activities to future women scientists: the consortium will contact local educational authorities and draw up an action plan geared to motivate female high-school students into international research programmes.
 

**QMUL** will be organizing two one-day workshops on the sub-theme of “women in science”. They will be part of national outreach activities organized by QMUL in response to substantial UK government funding for widening knowledge of mathematics careers.
6. Special provisions for female researchers with young children. In particular, the Project partners will endeavour to:
  - Provide (or subsidize the costs) of daytime child care services.
 

**JRC** does provide easily accessible daytime care; however service is always in demand and resources (number of child places) has not grown pro-rata with demographic demand from new accession countries.

**LIUC** does not provide daytime child care service.

- QMUL** does provide daytime care for children of staff at a reduced cost.  
**MASA** does not provide daytime child-care service.
- Encourage flexible working hours to allow female researchers to attend to young children when circumstances require.  
**JRC** allows and encourages both flexi and part-time whenever one JRC employee is a parent to young children.  
**LIUC**, like all the other academic institutions allows female researchers to attend to young children when circumstances require because of the flexibility of the working hours.  
**QMUL** allows and encourages both flexi and part-time whenever one JRC employee is a parent to young children.  
**MASA** allows and encourages both flexi and part-time whenever one MASA employee is a parent to young children.
  - Ensure tenure of post during pregnancy or maternity leave.  
**JRC** offers tenure of post for permanent staff.  
**LIUC** offers tenure of post for permanent staff.  
**QMUL** offers tenure of post for permanent staff.  
**MASA** offers tenure of post for permanent staff.
  - Encourage maternity leave planning by WP and Task leaders by making provisions to cover female researchers' posts during their absence.  
**JRC** encourages such planning and includes this specifically as part of its working conditions.  
**LIUC** offers provisions to cover female researchers' posts during their absence, at least during their teaching duties are made for.  
**QMUL** provides for cover for staff during maternity leave  
**MASA** provides for cover for the staff during maternity leave.

To oversee the agenda we intend to seek advice to the Project Management Committee from Dr. D. Al-Khudhairy. She has been involved in a number of initiatives relating to promoting gender balance in EU and other international scientific research projects, and was the Chair of the JRC Women in Science Network. She is currently the Unit Head of the External Security Unit of the JRC-IPSC.

## ANNEXES

The following annexes provide a brief résumé of the affiliations and the personnel identified in the preceding sections. We have reproduced the affiliations and the short ‘bios’ of key personnel from the MANMADE technical Annex; however we have obly introduced those that will be directly involved in the working groups mentioned above.

New affiliations and bios are provided for the external evaluators as these were not finalised at the time when the MANMADE contract was formalised.

### A. ANNEX 1: Affiliations and lead personnel from contractual partners.

#### QMUL - School of Mathematical Sciences, Queen Mary, University of London

The Queen Mary, University of London, School of Mathematical Sciences has some 50 permanent academic staff with a very strong research group in Dynamical Systems consisting of 8 staff. There is a strong research culture of weekly seminars, and workshop activity, in all the major areas of interest within the School. There is also an interdisciplinary Networks Group in the Department of Electronics with which we have strong links and which has collaborated on three major joint EPSRC research assistant grants since 1996.

**David Arrowsmith** is a Professor and also Head of the School of Mathematical Sciences at Queen Mary. He has wide experience of dynamical systems having published authoritative texts on the area, as well as many papers. He also has current research interests in walker configurations on lattice graphs and the associated percolation problems. He has had an extensive collaboration including two EPSRC awards with Professor J.M. Pitts and Dr R.J. Mondragón of the Electronic Engineering group on packet traffic modelling. He has spoken regularly at international conferences over the last few years on modelling of networks. He is scheduled to be a member of the International Organizing Committee for an IMA conference in 2006 on the Mathematics of Networks and is currently supported by EPSRC for a research assistantship. He has successfully supervised all of his 6 PhD students. A former and current student have been part-supported by British Telecom grants. The current BT sponsored student is researching the behaviour of ad-hoc networks using percolation theory.

**Wolfram Just** is a reader in the School of Mathematical Sciences. His research covers topics from theoretical physics and applied mathematics with a special focus on nonlinear dynamics and statistical physics far from equilibrium. Results have been published in about 60 publications in international journals (6 contributions to Phys. Rev. Lett., others in Phys. Rev. E, Physica D, J. Stat. Phys. and others) and two textbooks. Some of the articles have been cited more than 100 times.

My two major research branches are concerned with fundamental aspects as well as applications in solid state physics. From the point of view of fundamental research investigations of space-time chaos, nonlinear stochastic systems, and various techniques for the derivation of effective equations of motion are at the centre of my interest. Concerning applications the focus is on time-delay dynamics and in particular control problems. Both parts of this research strategy benefit from intense collaboration with several research groups, experimental as well as theoretical, on the continent.

**Konrad Dzedzic** has an MSc. in Computer Science and has key skills in information security management: risk assessment, authentication techniques, cryptography, business continuity planning, disaster recovery procedures design, Server hardware installation and support (HP Proliant, DELL Power Edge, disk arrays, Raritan). He has also been employed as Computer Systems Manager (Royal Caribbean International), Assistant Systems Manager (Port of Gdynia Authority S.A.). He has also been involved with internet applications and Oracle programming – specialist, freelance web design, programming and photography.

**JRC-IPSC Joint Research Centre** in Ispra, Italy is a European scientific and technical research Centre established by the European Commission, which comprises several sites and Institutes. Within the Institute for the Protection and Security of the Citizen a number of Units are currently dealing with vulnerability of transport and energy networks. The scientific approaches range from statistical to structural analysis with a strong emphasis on the operational knowledge of such systems.

The European Laboratory for Structural Assessment (ELSA) is an analysis and experimental facility of the Joint Research Centre of the European Commission. Its mission is to provide research and contribute to European Standards for risk mitigation in construction, transport, and industrial installations. An emerging area of research activity in the Unit has been the development of numerical methods to study the behaviour of non-linear systems within an interdisciplinary context especially in the field of seismic vulnerability of transport infrastructures.

Within the context of FP5 and FP6, ELSA has been participating in more than 20 research projects together with other European research teams and industries. Their aims are to contribute to the set-up and validation of design codes and norms for the open common market, to promote high-level scientific and technical developments and to increase the competitiveness of the European industry through the assessment of new innovative techniques for construction and transport. The role of the JRC, in addition to networks data collation and analysis in the various research work packages, is to develop the interface between researchers and network users.

**Eugenio Gutiérrez** is a Mechanical Engineer with post-graduate studies in Applied Mechanics and Dynamical Systems Theory. He is currently involved in applying dynamical systems theory to generic non-linear problems in structural engineering and networked infrastructures. He has worked in number of interdisciplinary projects related to complex systems, such as multivariate GIS-based analysis of earthquake mortality, the analysis and control of discontinuous mechanical systems and, more recently, the application of non-linear time series analysis to electricity grid blackouts and network vulnerability indicators.

He has extensive experience in EU funded projects and contractual research work which has motivated his interest in applying an interdisciplinary approach to solving real-world technical problems grounded in analytical dynamical systems methods. His research approach to complex systems analysis is to synthesise the qualitative phenomena that generate complex behaviour in networked systems and transform these into simple but tractable mathematical problems. His role in the project will be to act as a bridge between the scientific specialists and the network stakeholders.

**Flavio Bono** is, by academic training, a civil engineer with a broad experience in the industrial IT applications sector (including project management) of manufacturing systems integration solutions; analysis, design and development of industrial integration software, management and design of industrial production scheduling systems project, warehouse management systems: analysis and development of the production data integration with the SAP system for production line environments, analysis and solution proposal for the manufacturing system management of heavy engineering production; strategic intranet management system for the automotive sector, database design and software development for the automotive industrial and the development and data management of Web based applications and data bases for which he had, until recently been developing a neural network clinical data analysis tool.

**COLB Collegium Budapest – Institute for Advanced Study** was founded in 1992 as an international research institute by a consortium of six European states and some private foundations. It is a multidisciplinary institute with a program comprising the humanities and the social sciences, as well as the theoretical natural sciences. With a small number of permanent fellows and some 35 outstanding scholars visiting each year, CB has established itself as a Centre of Excellence, and has been recognized as such by the European Commission in 2000. Recently it has become involved in two large scale FP6 Integrated Projects: EVERGROW (structure, stability and future of the internet) and ECAGENTS (possible evolution of communication between artificial agents – robots), and has built up a powerful information technology infrastructure. Last year CB won a major grant from the Hungarian National Office of Research and Technology and established a Centre of Complex Systems within the institute, with the mission of carrying out research in network data analysis including structural, stability and traffic studies in the global financial network, risk and risk governance, the power grid, and emergence, reliability and vulnerability of biological organizations. In order to carry out these programs, CB has developed close links with a number of Hungarian and foreign university groups, and has a team of about 30 additional researchers working on the projects.

**Imre M. Janosi**, born in 1963, MSc (physics, 1987), PhD (statistical physics, 1992), MA (European studies, 2000), associate professor at the Department of Physics of Complex Systems at Eötvös University. Author of 76 papers (44 in refereed journals). Guest research experience in Germany (3 years), Denmark (6 months), Brasil (2 months), and USA (1 months), several short visits and conference participations (over 30 occasions). Research interest:

nonlinear time series analysis, geophysical fluid dynamics, statistical climatology, modeling biological systems and ecological networks, chaotic systems. Education: general physics, environmental fluid flows, nonlinear time series analysis, statistics.

**Gábor Vattay**, born 1965, PhD (statistical physics, 1994), full professor and head of the Department of Physics of Complex Systems at Eötvös University. He is the coordinator of the Large International Project “Cooperative Center for Communication Network Data Analysis” which includes the Complex Networks Research Center at Collegium Budapest – Institute for Advanced Study. He is board member of EXYSTENCE, a network of excellence in complex systems and subproject manager of the IST FET Complex Systems Integrated Project EVERGROW. His research interest includes modeling of dynamical systems, interdisciplinary application of statistical physics. In 2000 he funded the Communication Networks Laboratory at Eötvös University with the support of ERICSSON Research Sweden and his research interest shifted towards computer and communication networks. He published one book and about 50 per reviewed publications.

**MASA - The Macedonian Academy of Sciences and Arts** is the highest scientific, scholarly and artistic institution in the Republic of Macedonia. As an independent scientific and artistic institution the Academy achieves its objectives by basic, developmental and applied research, comprehensive and inter-disciplinary research projects, by organising scientific and scholarly conferences and symposia, publishing the results of the same and of other scientific research and organising events in the field of the arts. The Academy collaborates with the universities, other scientific, scholarly and cultural institutions, scientific and artistic societies and other comparable organisations in the Republic of Macedonia. It also co-operates with other academies of sciences and arts, and with scientific, scholarly and artistic institutions abroad. The Department of mathematical and technical sciences at MASA has 15 members.

**Ljupco Kocarev** is a member of MASA, Professor at the Graduate School of Electrical Engineering, Ss. Cyril and Methodius University, Skopje, Macedonia, and Research Professor at University of California San Diego, USA. He has coauthored more than 100 journal papers in 18 different international journals, ranging from mathematics to physics, and from electrical engineering to computer sciences. According to Science Citation Index his work has been cited more than 2500 times. He is a fellow of IEEE. His scientific interests include networks, nonlinear systems and circuits; coding and information theory; networks on chip; and cryptography.

**LIUC Università Carlo Cattaneo** is one of the youngest Universities in Italy. Set up by the Industrial Association of the Province of Varese, it was officially founded by decree of the Ministry of Universities and Technological and Scientific Research on 31<sup>st</sup> October 1991. LIUC has three faculties, Law, Economics and Engineering; since 1991 it has run a degree course in Business Administration, and since 1994 a diploma course (the so-called short degree) in Logistics and Production Engineering. The teaching program is interdisciplinary with courses linking economic and technological areas of study to give a global vision of the company, its functions and problems. This means that in the degree course in Business Administration, attention is paid to the economic, organizational and strategic significance of technological change and the university diploma course in Engineering looks at management methods and business administration. This represents an innovative approach within the Italian academic tradition.

**Dr. Fernanda Strozzi** graduated in Mathematics from Pavia University (Italy). PhD in Mathematics and Chemical Engineering from Twente University, Enschede (The Netherlands) in 1997. PhD title: Runaway prevention in chemical reactors using chaos theory techniques. She has worked for LIUC as contract Professor, teaching Numerical Analysis and Dynamical Systems theory since 1997. In parallel she researches on Nonlinear Economic dynamics and on Logistics. She was a work package leader in a EU founded project: AWARD (Advance Warning and Runaway Disposal) on the safety of chemical reactors .

## B. ANNEX 2: Affiliations and personnel from External Advisory Groups

### Stakeholder Group

**NATIONAL EMERGENCY SUPPLY AUTHORITY (NESA, Finland)** will participate as a key stakeholder through the interests and services of Hannu Sivonen, a Senior Researcher at the agency. His direct interest in our proposal will ensure that any systems developments or further understanding of the dynamics of supply chains (including energy, trading and transport systems) could be implemented in the emergency planning strategies of member states. NESA devotes considerable resources for emergency planning, which affects a large and varied number of utilities and services at both national level, and its interaction with neighbouring EU and non-EU states. Their direct insight into the aspects of supply chain will motivate the development of complex systems analysis techniques that are anchored to real-world systems with a direct impact on the lives of EU citizens, both in terms of practical applications and national standards. The direct involvement of NESA in the project opens up the possibility of using our findings in the emergency supply chain policy of an EU member state. The main contact is Hannu Sivonen. (<http://www.nesa.fi/>)

**FINGRID OYJ** is the electricity transmission system operator in Finland, responsible for the main transmission grid. They too will act as a background stakeholder so that they will comment on MANMADE papers to NESA which will in turn liaise with MANMADE project. The contact person is Timo Ristikankare. ([http://www.fingrid.fi/portal/in\\_english](http://www.fingrid.fi/portal/in_english))

**ENERGY MARKET AUTHORITY (EMA, Finland)** The Energy Market Authority is an expert body subordinate to [the Ministry of Trade and Industry](#). Its operation started as the Electricity Market Authority on 1 June 1995. At the same time the Electricity Market Act took effect, opening stepwise the electricity market to competition. The Electricity Market Authority was changed to the Energy Market Authority on 1 August 2000, at the same time the Natural Gas Market Act took effect. In August 2004 the Energy Market Authority became also the National Emissions Trading Authority in Finland. (<http://www.energiamarkkinavirasto.fi/select.asp?gid=102>) The mission of the Energy Market Authority is to supervise and to promote functioning of the electricity and natural gas markets and to establish preconditions for the emission trade.

## **External Scientific Evaluators**

### **Mario di Bernardo**

#### **Current Position**

Professor at the Universities of Bristol and Naples Federico II, Italy.

#### **His current research interests are:**

- Hybrid and Piecewise-smooth dynamical systems , Nonlinear Control Theory, Bifurcations of Nonsmooth systems, Analysis, Synchronization and Control of Complex Networks, Mathematical modelling and industrial applications of mathematics

#### **Recent research Grants:**

-VI EU Framework Project "Engineering Complexity in Biological Systems (COBIOS)" , (EUR 2.500.000) - 2006 - 2009  
 -EPSRC Complexity Initiative: grant to organize graduate course on complex networks in Bristol in July 2006. (£ 19.000) Co-investigator with Prof S.J. Hogan (Bristol)  
 -Italian Ministry of University and Research Grant (approx EUR 40.000) - 2006-2008 Node coordinator of research a network with the Universities of Naples, Siena, Milan, L'Aquila and Cagliari  
 V EU Framework Project "Simulation and Control of Nonsmooth Systems (SICONOS)", (EUR 2.000.000) - 2002-2006  
 Co-organiser with Prof. B. Brogliato (Grenoble, France) of the project which involves 13 European Universities and Research Centres;  
 -EPSRC Critical Mass Grant, "Bristol Centre for Applied Mathematics", (approx. £ 1.000.000) - 2002-2006 (co-investigator)  
 -EPSRC Research Grant number: GR/R72020  
 -EPSRC CASE Award with Jaguar Engineering Centre "Analysis of mechanical systems with backlash"  
 -EPSRC Grant (General Engineering Programme) "Adaptive Control of Systems with Nonlinear and Chaotic Dynamics with Applications to the Control of Bifurcations in Flight Dynamics", 2000-2003 (£ 168.878)  
 D.E.R.A (now QinetiQ) Grant on "Analysis of chaos synchronization for secure communications"(approx £ 125.000) (co-investigator)  
 -EPSRC Fast Stream (Mathematics Programme) "Analytical and numerical investigation of sliding orbits and their bifurcations in piecewise linear dynamical systems", (approx. £ 60.000)- 1999-2002  
 - Nuffield Award to Newly Appointed Lecturers "Analysis and Classification of Discontinuous Bifurcations in Piecewise-smooth Dynamical, Systems and Applications" (£ 4.000) - 1999-2001, Workshops and Meetings  
3 months Programme on Nonsmooth Complex Systems at the Centre de Recerca Matematica, Barcelona, Spain, January-March 2007  
International School on Piecewise Smooth Dynamical Systems, Naples, Italy, September 2006  
EPSRC Graduate Course on Complex Networks held in Bristol in July 2006  
 Publicity Chair of the International Conference on Nonlinear Theory and its Applications (NOLTA 06), Bologna, Italy, September 2006  
 Member of the Organizing Committee of the 1st IFAC Workshop on Control of Chaotic Systems, Reims, France, June 2006  
 Member of the Organizing Committee of the IFAC Conference on the Analysis and Design of Hybrid Systems, Alghero, Italy, June 2006  
 Co-organizer and co-chairman of the International Workshop on Piecewise Smooth Dynamical Systems, held in Bristol in September 2004  
 Co-organizer International Meeting on Nonlinear Dynamics in Information and Communication Technologies held in Bologna in September 2004  
 Organizer of the International Workshop on the Analysis and Applications of hybrid and switching systems" held in Milan in October 2004  
 Co-organizer of the International Meeting on Codimension-two bifurcations in nonsmooth dynamical systems held in Bristol in June 2003  
 Organizer of the International Workshop on "Bifurcations in nonsmooth systems" held in Milan in October 2004

#### **Editorial Activity**

Associate Editor IEEE Transactions on Circuits and Systems: Express Letters (Jan 2006-)  
 Member of the Editorial Board of Newsletter of the Circuits and System Society (2006-)  
 Associate Editor IEEE Transactions on Circuits and Systems II (Jan 2003 - Dec 2005)  
 Associate Editor IEEE Transactions on Circuits and Systems I (Jan 1999 - Dec. 2002)  
 Guest Editor-in-chief Nonlinear Dynamics (2006)  
 Guest Editor-in-chief IEEE Transactions on Circuits and Systems I (2003)  
 Guest Editor Dynamical Systems (2002)

#### **Professional Societies**

Elected Member of the Board of Governors of the IEEE Circuits and Systems Society (2007-)  
 Representative of the IEEE Circuits and System Society on the IEEE Systems Council (2006-)  
 Member of the Technical Committee on Nonlinear Circuits and Systems of the IEEE CAS Society (2004-)  
 Member of the Governing Board of the Italian Society for Chaos and Complexity (elected in 2005)  
 Associate Member of the Centre for Chaos Control and Synchronisation, City University of Hong Kong

### **Maria Carla Calzarossa**

#### **Education**

Laurea in Mathematics at the University of Pavia, Italy in 1981

#### **Current position:**

Professor of Computer Science at the Engineering School of the University of Pavia (since 1990)

#### **Previous positions**

Associate Professor at the University of Pavia (1987-1990)  
 Researcher at the Numerical Analysis Institute of the Italian Research Council (1985-1987)  
 Visiting Scientist at Duke University (1985)

Visiting Scientist at University of California - Berkeley (1984)

#### Scientific awards

Senior Member of IEEE

Member of IFIP WG 7.3

Best paper award at ACM Sigmetrics Conference, Austin, Texas (1985)

#### Research interests

Performance evaluation of complex information and networked systems

Workload characterization of web services, mail services and multimedia applications

High-performance computing

Benchmarking of new generation systems and services

#### Projects and Grants

Principal Investigator of the research project "Perf: Performance Evaluation of Complex Systems: Methodologies, Techniques and Tools", funded by the Italian Ministry of Universities, Education and Research under the FIRB Programme and involving 15 Italian Universities (2002-2006). Principal Investigator of research projects funded by European Commission, Italian Space Agency, SPEC, Italian Research Council, Austria-Italy Protocol, DEC, Italian Ministry of Research.

#### Publications

Guest Editor of special issues of international journals

Co-author of three edited books. Author and co-author of more than 85 papers published in international journals and conference proceedings.

#### Scientific services

Chairperson and Member of the Program Committee of International Conferences, including IFIP WG 7.3 Performance 2007, ANSS'07, SPECTS'07, VALUETOOLS 2007, ISCIS'06, ANSS'06, SPECTS'06, IFIP WG 6.4 Networking 2005, IFIP WG 7.3 Performance 2005, IEEE FIRB-PERF 2005. Invited lectures at conferences, universities and research centers, including University of Maryland, University of Edinburgh, IBM Research, AT&T, University of Vienna, ECMWF, University of California-Berkeley, HP Labs, Ptools Consortium, Iowa State University, University of Central Florida.

Referee for International journals and conferences

#### Professional activities

Chairperson of the "Observatory of ICT Certifications in Italian Universities" (2001-present)

Member of the panel of the EUCIP4U Programme of the Conference of the Rectors of Italian Universities (2005-present)

Member of the Scientific Council of the CNUCE Institute of the Italian Research Council (1999-2003)

Chairperson of the Working Group on "Parallel Systems" of the Italian Computer Society - AICA (1990-97)

Independent Observer of the EC Programme "Improving Human Research Potential Programme - Marie Curie Individual Fellowships" (2001-2002)

Rapporteur of the Monitoring panel of the 6<sup>th</sup> Framework Programmes (2006)

Reviewer of Integrated Projects for the EC (2004-present)

Member of the Monitoring panel of the 6<sup>th</sup> Framework Programmes (2005)

Chairperson of the Embark Initiative panel of the Irish Research Council (2004)

Reviewer of grant proposals of the UK EPSRC (2004)

Reviewer of research projects for the Italian Ministry of Universities, Education and Research (2001-2004)

Rapporteur of evaluation panels of the EC Programme "Sustainable Surface Transport" (2003-2004)

Member of evaluation panels of the EC Programme "IST Grid-based systems for solving complex problems" (2005, 2003)

Member of the selection panel of Lucent Technology Fellowships (2001)

Member of selection panels of the Italian Research Council and of Italian Universities

Reviewer of e-government projects for the Department of Innovation of the Italian Prime Minister Office (2002)

Chairperson of the evaluation panels of the EC Programme "Improving Human Research Potential Programme - Marie Curie Individual Fellowships" (1999-2001).

Member of Mathematics and Informatics panels for the Irish National Basic Research Grants Scheme (1999-2000)

Member of Mathematics and Informatics panels of the EC TMR Programme "Marie Curie Individual Fellowships" (1996-1998)

We are currently discussing with Cathrine Hasse (Danish University of Education) the possibility of her becoming an external adviser.