



NEST-PROMISE
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1st Regional Workshop

Risky and Visionary Research: Challenges and Opportunities

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University of Pisa
Aula Magna Storica
Via Curtatone e Montanara, 15
Pisa - Italy

Under the Auspices of

Italian Rectors' Conference



University of Pisa





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Workshop's Overview

The Workshop *Risky and Visionary Research: Challenges and Opportunities*, held in Pisa 18th September 2006 provided a set of case studies on exploratory, high-risk and interdisciplinary research programmes to exchange knowledge and share experience on national NLP (NEST like Programmes) or HINGE Programmes providing practical, experience-validated suggestions, recommendations, or simply food for thought on how this experience can be transferred to other countries. The WS aimed at sensitising key players involved in the decision-making process of national funding programmes (NEST- concept promoters) to be part of the Pan-European Network of NEST-PROMISE, to discuss, inform, and maybe coordinate different national NLP/HINGE initiatives providing researchers a valid alternative to the funding opportunities of the NEST Programme of the EC, which will not exist as such in FP7 anymore.

The event outlined a preliminary evaluation of the Pan-European survey of High Innovation/Gain/Expectation (HINGE) programmes (HPs) and other institutions promoting new and emerging science and technology in an innovative, multidisciplinary way and inquired on the methodological and social aspects of HINGE programmes. Young researchers shared their experience as to what impact this kind of research has had on their careers, NEST-PROMISE intends to market and encourage their participation (presently under-represented) as they will play ever more important roles in the future. The Italian scene was presented, as well as the evolution of NEST in FP7 thanks to the participation of the NEST-PROMISE Project Officer and the Italian NEST NCP.

The workshop was designed to offer participants the opportunity of:

- Getting to know the "local scene" and the Italian approach to Innovative Interdisciplinary Research (IIR)
- Exchanging experiences on existing national and international NLP (NEST Like Programmes) through presentations of different approaches to IIR
- bringing together the administrative and user communities of IIR and meeting people involved in IIR
- Understanding difficulties and discussing solutions
- Encouraging the introduction of NEST elements into National Research Programmes addressing policy makers and the administrative staff involved in the decision-making process of national research programmes
- Raising awareness and exchanging experiences drawing on best practices of national success stories
- Establishing a pan-European Network of contacts in the field of NEST/HINGE (High Innovation/Gain/Expectation) Programmes
- Exploring the social impact of NLP especially on the careers of young scientists, female scientists or scientists from New Member States
- Disseminate the first statistical feedback of the "Survey of research programmes that promote novel, ambitious, unconventional, and high risk research" launched by NEST-PROMISE in April 2006.

Programme

09.00	<i>Registration of Participants</i>
09.30	<p><u>Opening Address</u> Dr Enrico Giaccherini, University of Pisa</p> <p><u>Welcome Address</u> Dr Concettina Larosa, Consorzio Pisa Ricerche, Italy</p>
09.45	<p><u>The NEST activity - an "open space" to stimulate creative, visionary and anticipatory science and technology</u> Dr. Carlos Saraiva Martins, Project Officer, DG Research, European Commission</p> <p><i>Open Discussion & Questions & Answers</i></p>
10.30	<p><u>Innovative and Interdisciplinary research in Israel</u> Prof. Eli Pollak, Israel Science Foundation, Israel</p> <p><i>Open Discussion & Questions & Answers</i></p>
11.15	<i>Networking Coffee</i>
11.30	<p><u>A case study of high-risk foundational research in Italy</u> Dr Michele Muccini, CNR - ISNM , Italy</p> <p><i>Open Discussion & Questions & Answers</i></p>
12.15	<p><u>Two case studies on high-risk funding programmes in the US and the UK: SGER (NSF) and Showcase (Wellcome Trust)</u> Dr. Thomas Heinze, Fraunhofer Institute ISI, Germany</p> <p><i>Open Discussion & Questions & Answers</i></p>
13:00	<i>Networking Lunch</i>
14.00	<p><u>Initial Survey Results of research programmes that promote novel, ambitious, unconventional, and high risk research</u> Prof. Patrick Prendergast, Trinity Centre for Bioengineering, Trinity College, Ireland</p> <p><i>Open Discussion & Questions & Answers</i></p>
14:45	<p><u>Actions of the Italian Unionchamber, the role of a policy maker actor in supporting innovation and R&D in Italy</u> Dr Alessio Misuri, DINTEC, Italy</p> <p><i>Open Discussion & Questions & Answers</i></p>
15.30	<i>Networking Coffee</i>
15.45	<p><u>The Italian participation under the NEST Programme</u> Dr Monique Longo, APRE, Italy</p> <p><i>Open Discussion & Questions & Answers</i></p>
16.30	<u>Young researchers and risk: a diverging reality?</u>



	<p>Dr Renzo Rubele, ADI, Italy <i>Open Discussion & Questions & Answers</i></p>
17.00	<p><u>The social impact of high risk research on the career of researchers. Chair: Dr Renzo Rubele</u> Dr Arianna Menciassi, Sant' Anna School of Advanced Studies of Pisa, Italy Dr Cesare Stefanini, Sant' Anna School of Advanced Studies of Pisa, Italy Dr Giulio Tarlao, Institute of International Sociology of Gorizia (ISIG), Italy <i>Open Discussion & Questions & Answers</i></p>
17:45	<p><u>Reporting & Follow-up & Next Steps & Announcement of the next workshop in Ireland in December 2006.</u> Dr Concettina Larosa, Consorzio Pisa Ricerche, Italy Prof Patrick Prendergast, Trinity Centre for Bioengineering, Trinity College Dublin, Ireland</p>
18.00	<p><i>Close of workshop</i></p>



Speakers Abstracts and Biographies

Dr Enrico Giaccherini, University of Pisa

Opening address

Pisa University's engagement in the promotion of research

CV:

Vice-Rector for International Relations at the University of Pisa.

Enrico Giaccherini was born in 1947 in La Spezia, where he completed his Advanced Level Certificate Studies, and graduated in 1969 from the University of Pisa in English Language and Literature.

He taught first at the University of Durham in Great Britain, and then at Pisa, where he was a researcher and then Associate Lecturer of Medieval English Literature in the Faculty of Foreign Languages and Literature. Newly-Appointed and then Permanent Professor, in the Faculty of Humanities of the University of Basilicata, where he headed the Department of Humanity Studies for some years, he was then reinstated at the Faculty of Foreign Languages and Literature of Pisa in 1998. Here, he taught English Language and Literature and is presently professor of medieval English Literature at the Department of Anglistics, which he headed from 1999 to 2003. He has lived in Leghorn for many years.

His studies are primarily concerned with Middle English literature from the 13th – 15th centuries: his scientific contributions, besides articles, essays, editing and translation work, include various volumes, the most recent of which appears in the University of Pisa editions ("*Orfeo in Albione. Tradizione colta e tradizione popolare nella letteratura inglese medievale*" PLUS, 2002). He has been a member of the Scientific Committee of the review *European Medieval Drama*. He co-edits the English literature series "*Daedalus*" for the publisher ETS.

Abstract:

Pisa University's engagement in the promotion of research has constantly been strong and well-defined.

Throughout the almost seven centuries of its existence, the University of Pisa has always maintained a very high qualitative standard in research, and the effort aimed at preserving and improving this standard is certainly characterizing the present Rector's engagement, as well as that of all his collaborators.

The results of a recent evaluation, commissioned by the Ministry of Higher Education, that has taken into consideration all the 77 Italian universities as well as all the national research agencies, have confirmed that Pisa solidly occupies a very satisfactory third place. On the basis of the standard parameters internationally accepted by the scientific community, Pisa University has obtained not only a more than adequate overall position, but it belongs to a very select group of top performers in various key areas, doing honour to its competitive potential at both national and international level.

For the current year, additional internal resources have been allocated to research projects of a specifically multidisciplinary character. Moreover, the University of Pisa is currently and successfully pursuing a policy of rationalization of its many PhD courses into Doctorate Schools, targeted at further improving their efficiency and attractiveness.



NEST-Promoting Research on Optimal Methodology and Impacts Supported by Experience

Next to the two already in existence – the ‘Galilei’ School for Mathematics, Physics, Informatics, and Chemistry, and the ‘Leonardo’ School for Engineering Studies - eight new Schools have been established while more still are in the process of being created.

All this has the obvious aim of creating structures where all, or most of, the activities run at the University of Pisa can best be coordinated, with a special attention at interdisciplinarity, in the awareness that this will also advance collaboration with other national and international scientific institutions.

Finally, an important project - funded by the Tuscany Region - the University of Pisa is very keen on. Towards its realization, a protocol has been signed between Pisa University, the integrated city-and-university public-health system and the Tuscany Region. This agreement will lead to the creation of the new Pole of Regenerative Medicine, which will include a Centre for the Clinical Use of Stem Cells and an Interfunctional Centre in the field of Biotechnologies. The above-mentioned Pole is meant to represent one of the most highly qualified structures within its sector - counting on a 2,000-square-meter compound, endowed with ten fully accessorized laboratories for the manipulation of stem cells, offices and lecture rooms - and a centre of attraction for those agencies and businesses which may be interested in developing the research in the various areas connected with the study of stem cells.

Dr. Carlos Saraiva Martins, Project Officer, DG Research, European Commission

Title:

The NEST activity - an "open space" to stimulate creative, visionary and anticipatory science and technology

CV:

C. Saraiva Martins has a degree in mechanical engineering and holds a Master of Science degree in Polymer Science and his doctoral degree is in Material Science, Ceramics. He worked in industry and National Research Institutes in Portugal and the Joint Research Centre in Petten, the Netherlands. Before joining the European Commission in Brussels, he worked as Assistant Professor at Instituto Superior Técnico in Lisbon, Portugal.

At the European Commission for the last eleven years, he has been a member of the Standards, Measurements and Testing Programme and later on a member of the Knowledge-based multifunctional materials' unit.

He joined NEST in January 2003 at the outset of the activity, being the contact point for the NEST Support and more recently for the PATHFINDER Measuring the Impossible initiative.

Abstract:

The presentation gave the audience an overview on the NEST Programme and its activities explaining NEST and its main goals, he also presented the statistics of submission and funding of proposals under FP6 and gave some anticipations on the future of the NEST Programme under FP7. An overview of the European Research Council explained the mission of the ERC as the first pan-European funding agency for frontier research.

NEST can be defined an "open space" to stimulate creative, visionary and anticipatory science and technology giving researchers freedom to develop and prove their ideas within the broadest possible responding rapidly to new opportunities as well as to new problems limits



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The actions line, which have been described were: ADVENTURE, whose projects are ‘visionary’ research projects that will develop new scientific and technological opportunities in areas identified by the researchers themselves; INSIGHT, where projects assess new discoveries or newly-observed phenomena which could indicate risks or problems to society; PATHFINDER initiatives focused on specific, highly challenging objectives in emerging scientific and technological fields, and involve groups of complementary projects and the NEST SUPPORT actions such as methodological studies and activities to promote dialogue with the research community on emerging scientific and technological developments.

The statistical results about the success rate have been grouped by instruments and action. But more important than the statistics is to highlight which innovative aspects in FP7 have been pioneered by NEST e.g. rewarding “high risk / high impact” science proposed by scientific inventors, vigorously promoting multi-disciplinarity, pioneering panel-based “peer-review” style process (as used by many national agencies), nurturing new communities of knowledge.

Q&A:

A participant asked what happens in the 7FP if a NEST project proves to be successful? Dr. Saraiva Martins replied that he can apply for a grant within the ERC (European Research Council), which is an investigator driven research (no need any more for a consortium of three participants as for the NEST Programme); also it's a bottom up program with no pre-definition of areas or subjects.

Prof. Eli Pollak, Israel Science Foundation, Israel

Title:

Innovative and Interdisciplinary research in Israel

CV:

A Fellow of the American Physical Society, Prof. Pollak has received the Meitner-Humboldt senior research award of the Alexander von Humboldt Foundation (Germany) and other research awards. He serves on the editorial board of Chemical Physics and served on the editorial board of Chemical Physics Reports.

He has held visiting positions at Columbia University (New York) and the University of California at Berkeley and has authored over 200 scientific articles. His public service includes membership on the board of governors of the College of Judea and Samaria and its controlling committee. An expert in media affairs, he is a member of the scientific advisory board of Media Monitor International (Bonn, Germany), has served on the public governing board of the Israel Broadcasting Authority and on an Israeli government commission on media-related policy. Prof. Pollak is the NEST-PROMISE Coordinator and the Chairperson of the project's Steering Committee.

Abstract:

The Israel Science Foundation (ISF) is Israel's major source of funding for basic research. Its budget accounts roughly for 50% of the national funding. Close to 90% of its budget (60 million USD in 2006) is distributed to researchers in Israel's seven universities. The ISF supports research in all fields, in practice ca. 16% of the budget goes to the humanities and the social sciences; the rest supports research in the natural sciences and mathematics.



Close to ten years ago, the ISF recognized that the conventional funding procedure disfavours interdisciplinary, innovative, ground breaking, risky projects. There were many reasons, most notably, the conservatism of reviewers, and the hesitancy of researchers to submit truly original ideas and the difficulty of moving from one field of research to another. It was also clear that young scientists were justly worried that work in untested areas could lead to a dead end in their career.

To encourage HINGE related projects, the ISF initiated the FIRST program, whose annual budget is ca. 2 million USD. The mandate of FIRST is to support highly original and/or risky and/or multidisciplinary research. The program provides three tracks of support: Individual Scientist, Institutional, Post-Doctoral Fellowships.

The individual scientist track provides individual researchers with grants of 30-60 thousand USD per annum for three years. The funding supports both equipment and personnel. The application procedure proceeds in two steps, submission of pre-proposals and then a call for full proposals. Typically, 50% of the pre-proposals are chosen for full submission, and of these ca. 40% are approved.

In preparation for the first NEST-PROMISE workshop held in PISA, we have analyzed data coming from the first two cycles of operation of the program. Grants approved in 2002 and 2003 have reached their natural termination and final reports have been submitted by the researchers. Statistics for these two cycles show that the 11 grants approved in 2002 led to 18 published articles, while the 8 grants approved in 2003 led to 30 articles in peer-reviewed, highly-ranked, international journals. The average impact factor of articles supported by the 2002 grants was 4.3 while for those initiated in 2003 it was 4.8. These results indicate that the second year of operation was much more successful, perhaps due to experience gained in the selection process as well as higher awareness of the research community to the existence of the FIRST program.

Institutional funding shows the same tendency. Two institutional grants were funded in 2002 and two in 2003. The total annual budget for 2002 grants was USD 480,000, while for 2003 it stood at USD 340,000 (including institutional matching). Nevertheless a quantitative analysis of the output again indicates that the 2003 grants were substantially more successful than those for 2002. Only 7 publications emanated from the 2002 cycle while 22 publications came from the 2003 cycle. The 2003 grants led to five articles published in the highest ranking journals such as Science, Nature, Analytical Chemistry, Genetics and Bioinformatics. One publication made the cover page of Advanced Materials. The 2002 grants led only to one article in "Nature Genetics".

The postdoctoral track has also achieved its initial goal of helping young scientists to undertake innovative, multidisciplinary projects. During the five years of operation 41 applications were submitted, 21 received postdoctoral fellowships. Most importantly, already 12 of these young people have received tenure track positions at Israeli Universities.

Qualitative results were also presented from individual scientists grants. Three examples were considered, to provide a feeling for the quality of the work approved, its originality and multidisciplinary nature. The first example was a combination of archeology, physics, optics and computer analysis. Prof. U. Smilansky of the Weizmann Institute of Science joined forces with Dr. I. Sharon from the Dept. of Archeology, Hebrew University of Jerusalem and Dr. A. Gilboa, Archaeology, Haifa University in creating a computerized typology of pottery. This has advanced the former hand-crafted typology, used in standard analysis of pottery to 21st century methods.

A unique combination of researchers from the Hebrew University of Jerusalem laid the groundwork for proving a direct relationship between psychological states of patients and bone growth. Professor I. Bab, from the Bone Laboratory, Professor R. Yirmiya from the Dept. of Psychology and Prof. E. Shohami from the Dept. of Pharmacology and their coworkers



demonstrated that depression induces bone loss via stimulation of the sympathetic nervous system, while the neuronal cannabinoid receptor, CB1, regulates bone formation by modulating adrenergic signaling. These results were published in the prestigious Proceedings of the National Academy of Sciences.

The third project was that of Prof. L. Schachter from the Dept. of Electrical Engineering Technion – Israel Institute of Technology. He used an original combination of optics, laser physics and accelerator physics to invent what he terms as the PASER - Particle Acceleration by Stimulated Emission of Radiation. Groundbreaking results indicate that substantial improvement in the energetics of electron beams can be achieved by this methodology, in which stimulated emission of radiation is used to accelerate electrons.

In summary, at this point, the FIRST program seems to have achieved its major goals. This conclusion is though based on initial data. Hopefully the 2004 data should become available during the middle of 2007, providing a more conclusive picture.

Q&A:

Q: How come that the FIRST budget is so small?

A: It's true. Initially FIRST budget meant to be 10% of ISF's general budget; but due to budget cuts it remained 2 million dollars per annum.

Q: How to deal with the problematic issues involved in the evaluation process due to the interdisciplinarity of the project?

A: Chose the panel carefully, to include researchers who understand science in the broad sense; replace the panel every three years.

Q: Is it true that the program is open to humanities as well?

A: Yes, e.g. physics and archaeology, physics and linguistics, communications and education

Q: Is the industry involved in this program as well?

A: No, due to lack of money.

Dr Michele Muccini, CNR - ISNM , Italy

Title:

A case study of high-risk foundational research in Italy

CV:

Michele Muccini is the head of the Research Unit “Advanced multifunctional devices based on nanostructured materials” of CNR-ISMN. He is responsible of a number of national (FIRB) and international research projects and is coordinator of two European Projects within the V and the VI framework program, priority IST - Future and Emerging Technologies. He is serving the European Commission as expert for evaluation of proposals within the IST and NMP priority of the VI framework Program. He belongs to the

Scientific Committee of the international Conferences “Optical Probes of Conjugated Polymers” and “SPIE – Photonics Europe”. M. Muccini is author of more than 100 scientific papers in international journals in the field of organic and hybrid optoelectronics, and is editor of 3 thematic books on organic semiconductors. He gave more than 25 invited talks at international conferences,



and organized as Chairman 3 international conferences on electronics and optoelectronics of organic and hybrid systems.

Abstract:

A case study of high risk research in the field of organic optoelectronics will be presented and discussed in the frame of available national and European funding schemes. The strategy of a mixed academic-industrial partnership to set a new ground of development in the field of hybrid optoelectronics and photonics will be outlined and the evaluation reports of proposals submitted in response to specific calls for long term and visionary research will be analyzed. It is found that despite the exploratory nature of the research activity, key aspects for a successful evaluation have been the participation to the project of an industrial partner (especially at European level), and the previous experience of the coordinator in managing multi-partners project. These issues will be critically analyzed and proposed as discussion items in view of the definition of evaluation criteria of future funding schemes of high risk and visionary research. The output of this high risk research activity will be briefly reviewed and the novel application opportunities opened in this quickly moving field will be finally discussed.

Dr. Thomas Heinze, Fraunhofer Institute ISI, Germany

Title:

Two case studies on high-risk funding programmes in the US and the UK: SGER (NSF) and Showcase (Wellcome Trust).

CV:

Thomas Heinze studied sociology, economics, statistics and administrative sciences at the Universities of Trier, Speyer (Germany) and Stirling (UK). He obtained a Diploma in Sociology (Trier) and a PhD in Administrative Science (Speyer).

His current research interests are: institutional theory, organisational sociology, network analysis, and technological innovation processes, particularly nano S&T. Thomas Heinze published in major social science journals including *Economy & Society*, *Science & Public Policy*, *Kölner Zeitschrift für Soziologie*, *Wissenschaftsrecht* and *Zeitschrift für Soziologie*. He has been reviewer for various international and German language journals. In 2006, Thomas gives presentations at the following conferences: Atlanta Conference on S&T Policy, 9th International S&T Conference Leuven, SPRU 40th Anniversary Conference.

Thomas joined the Fraunhofer Institute ISI in 2001 as doctoral researcher and since 2005 he is scientist in the Department of Innovation Systems and Policy.

In 2004, he stayed as DAAD Visiting Scholar at the Scandinavian Consortium for Organizational Research at Stanford University, California.

Abstract:

The presentation introduced four representative examples of HINGE programmes, all of which are funded by private, not-for-profit foundations: "Showcase Award" (Wellcome Trust, UK), "Off the beaten track" (Volkswagen Foundation, DE), "21st Century Science Initiative" (McDonnell Foundation, US), and "Hughes Investigator" (Hughes Institute, US). These programmes were compared with respect to budget size, start year, end year, target group, target field, eligibility criteria, selection process, and selection criteria. All variables were used to identify commonalities and differences between the programmes, to understand why these programmes have been



established, and to build a programme typology that might be used for the analysis of other programmes of this kind. Finally, the presentation addressed the issue of gaps in current funding initiatives. In the following, programme titles are abbreviated to the foundation's name.

Except for Wellcome (1996-2003), all programmes are currently running. While some programmes target junior faculty (Volkswagen, McDonnell), others explicitly address top scientists (Hughes). Two programmes focus on biomedical sciences (Hughes, Wellcome), while others are either open for all sciences (Volkswagen) or to a set of relatively broad research areas (McDonnell). Regarding the selection process, one can differentiate between programmes with a national focus (Hughes, Wellcome), and initiatives which are open to scientists internationally (Volkswagen, McDonnell). While in the standard grant proposal system scientists typically apply on their own, two of our programmes rely on processes where research institutions submit proposals or nominations on behalf of scientists. In the case of the Hughes Investigator Programme, there are competitions every 3-5 years where all leading research institutions are encouraged to nominate their candidates who are subsequently reviewed by outstanding and leading peers. Generally, all programmes make use of both internal and external peers to prepare their funding decisions. In this regard, we find a variety of approaches, including a combination of outline and full proposals (Wellcome, Volkswagen, Hughes), but also 1-step processes (McDonnell).

Perhaps the most interesting aspects for comparing these four funding programmes are budget size, funding duration and selection criteria. Three programmes spend less than 150 thousand euro/dollar per proposal/researcher in a given year (Wellcome, Volkswagen, McDonnell), while the truly sizeable Hughes programme spends ca. 1.5 million dollars per investigator and year. This finding corresponds to the fact that most HINGE programmes represent only a small share of a foundation's whole research budget (e.g., Wellcome – less than 1 percent). In contrast, Hughes spends almost two thirds of its research expenditure on the Investigator Programme (ca. 67 percent). Average programme duration ranges between 1.5 years (Wellcome) and 5 years (Hughes). With respect to selection criteria, all programmes select proposals with high degrees of originality, unconventionality and multi-disciplinarity. In contrast, collaboration with other research institutions is not given the highest priority, and programmes differ as to their request for addressing societal challenges. Finally, while Wellcome and Volkswagen have introduced their programmes to specifically alleviate some of the shortcomings of standard grant schemes, Hughes and McDonnell understand themselves as institutions that support particularly promising and outstanding scientists/groups.

Q&A:

Q: Why do the case studies deal with private organizations only? Does this mean there's no national HINGE programs?

A: In Europe there are no national funding bodies for HINGE programs. Dr. Saraiva Martins disagreed. He is pretty sure that there is such programme in Great Britain. Prof. Pollak thought that the success rate is too high, and this is not our purpose.

Prof. Patrick Prendergast, Trinity Centre for Bioengineering, Trinity College, Ireland

Title:

Initial Survey Results of research programmes that promote novel, ambitious, unconventional, and high risk research.



CV:

Patrick Prendergast, BA, BAI, PhD Director of the Trinity Centre for Bioengineering (TCBE) Dean of Graduate Studies, University of Dublin Associate Professor, Mechanical and Manufacturing Engineering.

Professor Prendergast obtained a BAI in 1987 and a PhD in 1991 both from the University of Dublin. Before joining the staff at Trinity College Dublin, he held post-doctoral positions at the Istituti Ortopedici Rizzoli, Bologna, Italy, and the University of Nijmegen, The Netherlands. On a sabbatical year in 2000, he was a Visiting Professor at the Institute of Fundamental Technological Research, Warsaw, Poland, and a Senior Research Fellow at the Technical University of Delft, The Netherlands. He is a Chartered Engineer and a Fellow of the Institution of Engineers of Ireland. He is member of the Editorial Boards of the Journal of Biomechanics (as Book Reviews Editor 2001-05, as Surveys Editor 2005), Clinical Biomechanics, European Cells and Materials (www.ecmjournal.org), Journal of the Royal Society: Interface (www.pubs.royalsoc.ac.uk/interface) and Journal of Orthopaedics and Traumatology.

He was awarded the European Society of Biomechanics Research Award (now the Perren Award) in 1996 and Parsons Medal in Engineering Sciences from the Royal Irish Academy in 2003.

He is past President (1998-2000) of the Section of Bioengineering of the Royal Academy of Medicine in Ireland and of the European Society of Biomechanics (2002-2004). He is currently President-elect of the European Alliance of Medical and Biological Engineering Societies.

Abstract:

The authors described their own organisation in the Irish and the international context, noting that Ireland has increased funding for research significantly in recent years. Main among these increased have been the programme for Research in Third Level Institutions (PRTLTI) and Science Foundation Ireland (SFI). Some of the funding of SFI fits within the definition of New and Emerging Science and technology projects (NEST).

The authors then described the background to the survey conducted under the present project titled "Promoting Research on Optimal Methodology and Impacts Supported by Experience – PROMISE. The survey is a survey of HINGE programmes in Europe, where HINGE stands for High Innovation/Gain/Expectation programmes.

A list of contacts was designed using input from (i) PROMISE partners, (ii) all European NEST contacts, (iii) European Research Area Network (ERA-NET) contacts, and (iv) through additional research (internet/and Irish contacts, in particular the Irish NEST contact).

The questionnaire itself was presented. It requests details in the following categories: (i) programme details, (ii) numbers applying/funded by the programme, (iii) criteria for allocating funds, (iv) decision process for allocating funds.

As of 10th September 2006, 201 questionnaires were sent and 41 were returned (i.e. 20%). 21 of the 41 returned surveys funded HINGE programmes. Distribution by geographic area was western Europe (17), eastern Europe (1), North America (3). It is recognised that this data is too few to draw definite conclusions at this stage but the following points do seem clear.

Eastern Europe returned only one HINGE programme funded by a national government. The single response of Eastern Europe [Janos Irinyi Programme Idea, Agency for Research, Fund Management, and research exploitation, Hungary] may not reach the HINGE definition, although it is significant perhaps that the funding body classifies it as such.

HINGE programmes were overwhelmingly in the area of Science, Engineering, and Mathematics, though there were two that stated they were open to the Humanities (Irish Programme for Research



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in Third Level Institutions and Volkswagen's "Off the beaten track"). Again, we must note that it is a self-assessment that they are HINGE programmes.

HINGE programmes tended to be open to all, regardless of age and experience.

Funding: in western Europe the funding amount tended to be below, or very much below, a €1m threshold, e.g. Vienna Science and Technology Fund Thematic Programme in Life Sciences (~700k). In North America we had three replies: NIH Director's Pioneer Award programme with an average of \$1m each; Georgia Tech Focused Research programme 150k per awardee; Natural Science and Engineering Research Council of Canada Special Research Opportunity with 64 awards in the most recent year and a CAN\$11.1m budget.

16 found the originality of the proposal to be indispensable whereas 5 did not. There seemed to be no regional pattern in this, but it seems that some respondents viewed scientific originality differently than originality of the problem to be solved.

The first point to emphasise is that, by self-assessment criteria, many organisations worldwide see themselves as funding High Innovation/Gain/Expectation programmes. Reasons that they do it, according to the reply to the questionnaire, are the pursuit of new research opportunities, encouragement of new collaborations, to make the region a 'research hub', to attract top researchers, to encourage R&D in small and medium size enterprises, and finally to attract top researchers to the country. Interestingly, some programmes specified criteria for HINGE funding outside the options given on the survey; among these were: Coherence in the national politics of research, Scientific relevance of proposers, Appropriate share of basic science to be funded, Willingness of partners to 'network', Contribution to push the development of renewables or energy saving.

What has been presented in this paper is by way of an interim report on the data. It can not be considered conclusive until further surveys are received back. In addition, it will be necessary to assess each questionnaire returned to analyse whether or not the programme is indeed HINGE as the self-assessment procedure is not sufficiently objective. Despite the need for further questionnaires to be returned, this does present the first attempt to obtain a pan-European view of the funding situation for innovative and risky research which can be built on in the future.

Dr Alessio Misuri, DINTEC, Italy

Title:

Actions of the Italian Unionchamber: the role of a policy maker actor in supporting innovation and R&D in Italy

CV:

Alessio Misuri is currently the Innovation Manager at DINTEC (Italian Union of the Chambers of Commerce and ENEA consortium). He is actively involved in defining the politics in matter of innovation for the Italian Chambers of Commerce, aiming at the promotion of Italian SME's activities in R&D. He is also the project manager of the Innovation Web Site of the Union of the Chambers of Commerce.

Abstract:

The presentation was aimed to give an overview on the actions focused on supporting innovation and R&D and on the difficulties encountered - especially by SMEs - in the innovation process, through a statistic analysis of the current situation.



In Italy it is a urgent need to increase the efficient use of the public funds and the SMEs attention on the possible returns of the public research is growing.

95% of Italian enterprises employ less than 10 employees and only 1% of the enterprises says that it has innovated because of the contribution of a Public Research Center, this shows a difficult communication between enterprises and researchers.

An Italian committee (the CIVR Comitato di Indirizzo per la Valutazione della Ricerca) composed of different scientists has taken into consideration the Italian studies made in 20 research areas, and it has examined their quality, importance, originality/innovation degree, international competitiveness, marking them with one of the following 4 notes: excellent, good, acceptable, not good. 30% of the publication and patent were classified as excellent (the maximum level).

Mathematics and computer science (0,83), physics (0,83), literature (0,84) and sciences of the earth (0,88), turned out to be the Italian fields with the best performances.

In particular more than 50% of the papers produced in the areas of physics and literature have been considered by the committee excellent.

From a statistics point of view in terms of Italian funds for R&D, the percentage of the GDP (Gross Domestic Product) for the R&D is about 1% (it was 1,07 % in 2000 and 1,04 % in 2002). In USA this percentage is 2,7% and in Japan 3%. Moreover 50% of Italian GDP for research comes from PUBLIC funds. There is also gap between scientific papers and patents: Italian Public Research Institutes published more than 30.000 articles, but they registered less than 160 patents (data taken by the study on the “Italian national public scientific- technology offer”)

The complexity of Technology Transfer processes (especially when involving SMEs) requires the Chambers of Commerce to give their support, mainly in order to identify the technology needs of the SMEs and support the processes which permit to link the technology demand to the technology offer. The main goals of the support offered by the Chambers of Commerce focus on deepening the knowledge of the SMEs needs, building an innovative process aimed at helping the SMEs in their path towards the innovation (through the involvement of the Chambers of Commerce),making the connections between University – Research and Innovation in SMEs stronger.

Dr Monique Longo, APRE, Italy

Title:

The Italian participation under the NEST Programme

CV:

Monique Longo joined APRE in 2002, after a University degree in Political Sciences and a post-graduation master focused on the e-Business Management.

Within APRE, she is currently responsible for providing consultancy and assistance concerning the SMEs, Research for policy support and New and Emerging Science and Technology, Science&Society and Citizens and Governance programmes.

She is NCP for the programme New and Emerging Science and Technology (NEST) in the sixth Framework Programme (2002-2006). She is coordinator of the FP6 European Project (CITIZEN) Think & Act. She is project manager in two European projects: ETHNIC (that aimed at raising public awareness of science & technology among ethnic minorities) and MENTOR (EU Leonardo programme) ensuring that the project activities were properly carried out. She is also involved as project officer in 3 European projects: Fashion Net and Fashion2Future that aims to help SMEs in the fashion sector; PLATON that aims to support SMEs to participate at the Social Sciences and Humanities research projects.



Abstract:

In the 6 calls launched by the DG-Research NEST Unit during the 5 years of the FP6, the Italian participation has been very high especially if compared with the participation of the other European countries.

813 organizations participated to the 6 calls as coordinator or partner. Among them only 102 organizations were in proposals that approached the negotiation phase and were retained for funding.

If we compare the Italian participation to that of the 3 more industrialised and innovating European countries (Germany, France and United Kingdom), we will find out that Italy is at the third position below Germany and United Kingdom.

Analysing the trend of the Italian participation, we find out that the Italian interest is turned from the OPEN calls to the PATHFINDER calls that introduced new themes and that the Italians appreciated ever and ever.

The Italian participation by instruments follows the funds availability in each call. In fact the NEST programme dedicated more funds to the STREP projects, that are research projects, than to the Coordination or Support action projects. Can we state that the Italian creativity was more attracted from the research projects than the CA/SSA ones?

Definitively the Italian participation to the NEST programme was successful. In fact if we compare the Italian success rate and the European success rate, we will discover that the Italian one sometimes overcome the European one or it is not so lower than the EU one.

Q&A:

Q: in FP7, the program for young researchers – how many years since the PhD?

A: Answer (by Dr Saraiva Martins) – up to 10 years after.

Dr Renzo Rubele, ADI, Italy

Title:

Young researchers and risk: a diverging reality?

CV:

Renzo Rubele was born in Verona (Italy) and graduated magna cum laude in Physics at the University of Padova in 2000. He is currently enrolled in a doctoral programme at the University of Salerno, and his doctoral research is in the field of Condensed Matter Theory.

He became involved in the associative life of young researchers since 2001 at the national and international level. In particular, he has been Vice-President and then President of EURODOC, the European-wide Federation of national association representing doctoral candidates and junior researchers. He contributed to numerous European events and took part in committees at the European Commission, among which a High-level Forum on University-based Research. Recently he has been elected in the Governing Board of EUROSCIENCE, a paneuropean grassroots association of researchers.

Abstract:

The growing pressure to get results and build up a track record of successful projects and publications is among the features conditioning the development of a researcher's career. The choice of the field of inquiry and the definition of a scientific profile are particularly sensitive for

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researchers at the early stages of their profession. Embarking onto a pathway of investigations that are “risky” and “visionary” in their own character is facing increasing difficulties despite being in the mind and suited to the aspirations of many talented young.

In this talk we review some of the features of the *multi-dimensional space of risks* that affect the research environment where young researchers are concretely operating. Themes and conclusions are drawn qualitatively from the discussions and activities held within European young researchers’ organisations.

There is a renewed attention towards research training in the recent years at the European level, due to the Lisbon targets and the Bologna Process, but pressure on the career path mounts especially after the Ph.D. when considering, in particular:

- employment on short-term contracts,
- external funding of projects,
- question of the independence of the researcher (in a group/institution/society),
- assessment criteria, recruitment conditions,
- research environment, “systemic variables”.

Over this base, a number of actions and situations appears to be risks and/or opportunities for the development of the career according to the specific conditions of their realisation, including:

- the geographical, inter-disciplinary and inter-sectorial mobility,
- the weighting of possibilities across different institutional traditions and practices,
- the threaten of academic localism,
- the definition of a track towards a stable position,
- the overall research strategies of the organisation where an individual works, and the related decisions.

The questions on how to best support risky research projects remains open. Funding bodies, their ways of operation and assessment criteria may not be optimal. In this context, it is nevertheless very much appreciated the establishment of the European Research Council and the launch of its strategy targeted to help young researchers in setting up their own research group.

A cultural move to understand the whole tangle of choices and situations faced in developing one’s career is needed in order to enable those willing to dedicate their efforts to all kind of research to do so, for the sake of human knowledge and future profit of society.

Q&A:

Q: The presentation showed only one side, whereas there are advantages for mobility and changing places.

A: It's true but there are real differences in the cultural environment between east and west Europe and this put more difficulties for young researchers.

Session: The social impact of high risk research on the career of researchers

Dr Arianna Menciassi, Sant' Anna School of Advanced Studies of Pisa, Italy

CV:

Arianna Menciassi (MS, 1995; PhD, 1999) joined the CRIM Lab of the Scuola Superiore Sant'Anna (Pisa, Italy) as a Ph.D. student in Bioengineering with a research program on the micromanipulation of mechanical and biological micro-objects. The main results of the activity on micromanipulation were presented at the IEEE International Conference on Robotics & Automation (May 2001, Seoul) in a paper titled “Force Feedback-based Microinstrument for Measuring Tissue Properties and Pulse



in Microsurgery”, which won the “ICRA2001 Best Manipulation Paper Award”. In the year 2000, she was offered a position of Assistant Professor in Biomedical Robotics at the Scuola Superiore Sant’Anna and in June 2006 she obtained a promotion to Associate Professor. Her main research interests are in the field of biomedical microrobotics, biomimetics, microfabrication technologies, micromechatronics and microsystem technologies.

She is working on several European projects and international projects for the development of minimally invasive instrumentation for medical applications and for the exploitation of micro- and nano-technologies in the medical field.

Abstract:

Surgical procedures of the future are expected to increasingly involve “endoluminal” approaches, in which very small precision-guided tools travel through the natural vessels and tubes of the human body. Such procedures will minimise the trauma and damage associated with surgery, enabling more effective treatment and much shorter recovery times.

This will require new surgical tools which are capable of entering the body through natural openings or very small incisions and then configuring themselves into complex operational structures at the specific site of intervention. The primary objective of the ARES NEST Adventure project is to investigate a revolutionary system for endoluminal surgery and to develop prototyped surgical robots.

The planned forms of endoluminal surgery will encompass several distinct steps. The first will use scanning images and other data to plan and simulate the intervention. This will be followed by computer-aided design of the optimal configuration of the endoluminal robotic tool that will be customised for the specific therapy at the target site. The appropriate robotic modules needed to construct the complete device within the body will then need to be selected. These individual modules may be between 0.1 and 0.5 cubic centimetres in volume, and will interconnect to create whatever specific structure is required for each operation.

The chosen modules will be delivered into the body in capsule form and will auto-assemble, in situ, to create the pre-planned robotic device. The surgical intervention will then proceed under very precise control. Afterwards, the robot will have to be disassembled and either recovered or biodegraded naturally.

In order to achieve tangible results in the project’s three-year time frame, ARES is focusing on the specific objective of developing prototyped surgical robots for the use in the gastrointestinal (GI) tract. The chosen objective of the project should be assisted by the fact that the GI tract has two natural openings and relatively large internal dimensions. This makes it an ideal target for developing approaches that may later be modified for use in smaller and more difficult locations. One of the most critical issues of the project will be to develop joints and connections between distinct modules that can achieve the necessary flexibility in both length and configuration, and allow easy removal at the end of the operation.

The ARES consortium includes groups with expertise in computational robotics, biomedical robotics, bioengineering and microtechnologies, The coordinating team also benefits from the support and input of one of the world’s leading pioneers of minimally invasive and endoluminal surgery.

ARES is taking the early steps towards a dramatic revolution in medicine. It will also involve significant innovations in several non-medical fields, such as modular robotics, creative robotic design and micro- and nanotechnology.



Dr Cesare Stefanini, Sant' Anna School of Advanced Studies of Pisa, Italy

CV:

CESARE STEFANINI received his Laurea Degree in Mechanical Engineering (with honors) from the University of Pisa in 1997, as a student of the Scuola Superiore Sant'Anna, where he also obtained his Ph.D. in Microengineering with a thesis titled: "Microengineering Principles and Examples in the Design of Actuators and Mechanisms for Minimally Invasive Surgery". In 2003 he obtained a position of Assistant Professor in Biomedical Engineering at the Center of Research in Microengineering of the Scuola Superiore Sant'Anna, after a visiting research period at the University of Stanford. His research activity is in the field of microactuators, micromechatronics and tools for minimally invasive surgery and endoscopy. His interests are also in microrobotics: with a microrobot equipped with an innovative micromotor he took part in four editions of the International Micro Robot Maze Contest in Nagoya, Japan, receiving three first prizes and one second prize.

Dr. Stefanini is working on several international Projects focused on biomedical microengineering, and on a recently funded European research in the field of miniature power sources. Dr. Stefanini is the author or co-author of six articles on refereed international journals, of nineteen papers published in international conferences proceedings and of two international patents.

Abstract:

The goal of VIMPA is to develop a new class of high energy and high power density generators to be embedded in portable or autonomous devices. The addressed domain is the one of Power MEMS, i.e. Micro Electro-Mechanical Systems able to exploit combustion for mechanical and electrical power generation. Output densities are projected to reach many W/cc for power, while energy densities up to many KJ/cc are expected: both values are several times higher than the respective upper values of traditional batteries.

The VIMPA project is looking to produce a step-change development in MEMS power supply, by developing a vibrating frictionless structure using repeated combustion pulses.

The multidisciplinary project consortium from Italy, Sweden and Germany will focus on a design using positive displacement rather than turbomachinery, and will avoid rotary or sliding joints to minimise friction, as well as inertial flywheels, since these types of energy storage become ineffective as machines scale down.

Dr Giulio Tarlao, Institute of International Sociology of Gorizia (ISIG), Italy

CV:

Giulio Tarlao, born in Gorizia 29/06/1974. Graduated in Political Science, sociologist.

MA in Sociology of Culture at the Essex University (UK), 1999-2000 Trainee at the Directorate General for Research (DG4) of the European Parliament in Brussels, 2000-2001 Researcher at the Institute of International Sociology of Gorizia since 2001 onwards PHD in Sociology of International and Territorial Phenomena at the University of Trieste (Italy), 2004 Lecturer of Sociology of Environment and Territory at the Faculty of Economics of the University of Trieste, 2006.



Abstract:

The presentation dealt with the phenomenon of obesity in contemporary Italian society. It is based on the fieldwork carried out during the year 2005 within the EU-funded project PorGrow, a NEST project.

Probably the most peculiar feature of such research has been the ambition to address a very large number of social sectors, and to collect data and evaluations from participants representing all these field of expertise.

By having a look the stakeholders we interviewed one can have an idea of the social scope of a research like Porgow:

Food processing company representatives; .Farming industry representatives; Representatives of large commercial catering chains; Representatives of large food retailers; Representatives of small 'health' food retailers; Representatives of public sector caterers (eg school meal providers); Representatives of consumer groups; Senior official government policy makers in health ministry; Senior official government policy makers in finance ministry; Public health professionals; Town and transport planners; Representatives of life insurance industry; Representatives of commercial sport or fitness providers; Representatives of school teachers; Members of expert nutrition/obesity advisory committees; Health journalists; Representatives of advertising industry; Representatives of the pharmaceutical industry; Public health non-governmental representatives; Public interest sport and fitness NGOs; Representatives of trades unions.

We have to consider, moreover, that in the very recent years in Italy the topic of overweight and also obesity is achieving an ever-growing level of awareness on the part of almost every social group, and that the richness of such debate is testified by the large attention all the media are paying to the new initiatives launched by public institutions and associations in order to address the epidemic, as well to any fresh data emerging from new social research in the field.

The fact that several different actors in these months approached our Institute to be informed on the results of Porgrow research (personally I have been for example interviewed for a documentary by Gorizia local health agency, and invited to give speech by a number of public institutions active in the social sector), demonstrate that Porgrow project does enjoy a remarkable social impact.

Attendance List

Name	Surname	Organisation	Country	Role*
Maria	Aluchna	Warsaw School of Economics, Department of Management Theory	Poland	P
Antonio	Bagnelli	Press Office University of Pisa	Italy	P&M
Giovanni	Bertini	Grado Zero Espace	Italy	P
Shula	Bonjack	F.I.R.S.T.	Israel	P
Sheena	Brown	Trinity Centre for Bioengineering, Trinity College Dublin	Ireland	S
Giovanni	Cossu	Consorzio Apice	Italy	P
Marek	Darowski	Institute of Biocybernetics & Biomedical Engineering, Polish Academy of Sciences	Poland	P
Assunta	De Salvo	Granducato (local TV)	Italy	P&M
Franco	Dinelli	CNR - IPCF	Italy	P
Giorgio	Faconti	CNR	Italy	P
Enrico	Giaccherini	University of Pisa	Italy	S
Monica	Giagheddu	Sviluppo Italia Toscana SCpA	Italy	P
Laurette	Gonzales	Consorzio Pisa Ricerche	Italy	O
Thomas	Heinze	Fraunhofer Institute for Systems and Innovation Research	Germany	S
Paolo	Lanari	Liberologico	Italy	P
Concettina	Larosa	Consorzio Pisa Ricerche	Italy	S
Luca	Lelli	Inera srl	Italy	P
Tiziana	Lombardo	Consorzio Pisa Ricerche	Italy	O
Monique	Longo	APRE	Italy	S
Luca	Lunedì	La Nazione (daily newspaper)	Italy	P&M
Aldo	Macchi	E-Media Srl	Italy	P
Angelo	Marcatulli	Regione Toscana	Italy	P
Flavia	Marzano	University of Bologna	Italy	P
Paolo	Mascellani	Metaware Spa	Italy	P
Alexa	Mason	The Harvard University Centre for Italian Renaissance Studies	Italy	P
Elena	Matteucci	University of Pisa	Italy	P
Arianna	Menciassi	Sant'Anna School of Advanced Studies of Pisa	Italy	S
Beata	Mierzejewska	Warsaw School of Economics, Department of Management Theory	Poland	P
Alessio	Misuri	DINTEC	Italy	S
Michele	Muccini	CNR - INSM	Italy	S
Nicola	Ng pak	Sant'Anna School of Advanced Studies of Pisa	Italy	P
Andrea	Pantani	Il Tirreno (daily newspaper)		P&M



Stefano	Pimazzoni	Regione Toscana	Italy	P
Eli	Pollak	Israel Science Foundation	Italy	S
Erika	Porquier	E-Media Srl	Israel	P
Patrick	Prendergast	Trinity Centre for Bioengineering, Trinity College Dublin	Italy	S
Alfredo	Ricchi	FINSA	Ireland	P
Giovanni Battista	Rossi	University of Genova	Italy	P
Renzo	Rubele	ADI	Italy	S
Carlos	Saraiva martins	European Commission	Italy	S
Andrzej	Slawinski	Institute for Fundamental and Technological Research of Polish Academy of Sciences	Belgium	P
Pasquale	Sodano	INFN Perugia	Poland	P
Giulio	Tarlao	University of Trieste	Italy	S
Elena	Turco	Grado Zero Space	Italy	P
Valerio	Zupo	Benthic Ecology Laboratory	Italy	P

*P= Participant, S= Speaker, O= Organiser, P&M= Press & Media

Conclusions

As a follow-up from the workshop preparation activities and the survey carried out at national level to list the main Italian research funding institutions, HINGE programmes (HPs), NEST-concept promoters and other interested parties, the first lessons learned underlined a lack of NEST Like Research Programmes in Italy. The information on Funding Programmes available is also quite fragmented and incomplete and there is also a lack of HINGE Concept Promoters among the people involved in the decision making process of National Funding Programmes. This important aspect was also confirmed during the workshop itself. As a consequence the Italian participation under the NEST programme is very high, statistics show that Italy ranks 3rd in terms of participation and 4th in terms of successful participation..

Despite the “poorness” of the Italian scenario, people contacted by the organisers during these preparation months showed a high interest in learning more about NEST and HINGE programmes, which play a key role in guaranteeing highly innovative, multidisciplinary and risky driven research.

The challenge launched by NEST-PROMISE provides a big opportunity as it raises awareness among potential HINGE Concept promoters who can determine a debate on the benefits and cost-effectiveness of including NEST like elements into National Programmes.

This first workshop was a first step towards the achievement of the project’s expected results.



Upcoming NEST-PROMISE Events

The NEST-PROMISE Consortium looks forward to meeting you during the future events:

14th December 2006 – Second Regional Workshop – The Printing House, Trinity College Dublin
- Dublin, Ireland

16th April 2006 - Third Regional Workshop - Polish Academy of Sciences - Warsaw, Poland

June 2007 – Final Dissemination Brokerage Event - Brussels, Belgium

For more information visit www.nest-promise.net