nanoICT Coordination Action

Nano-scale ICT Devices and Systems

nanoICT CA short facts

- 36 months
- 1 MEuros
- 13 major institutions from 9 different EU and associated countries
- Coordinator: Phantoms Foundation

Dr. Antonio CORREIA
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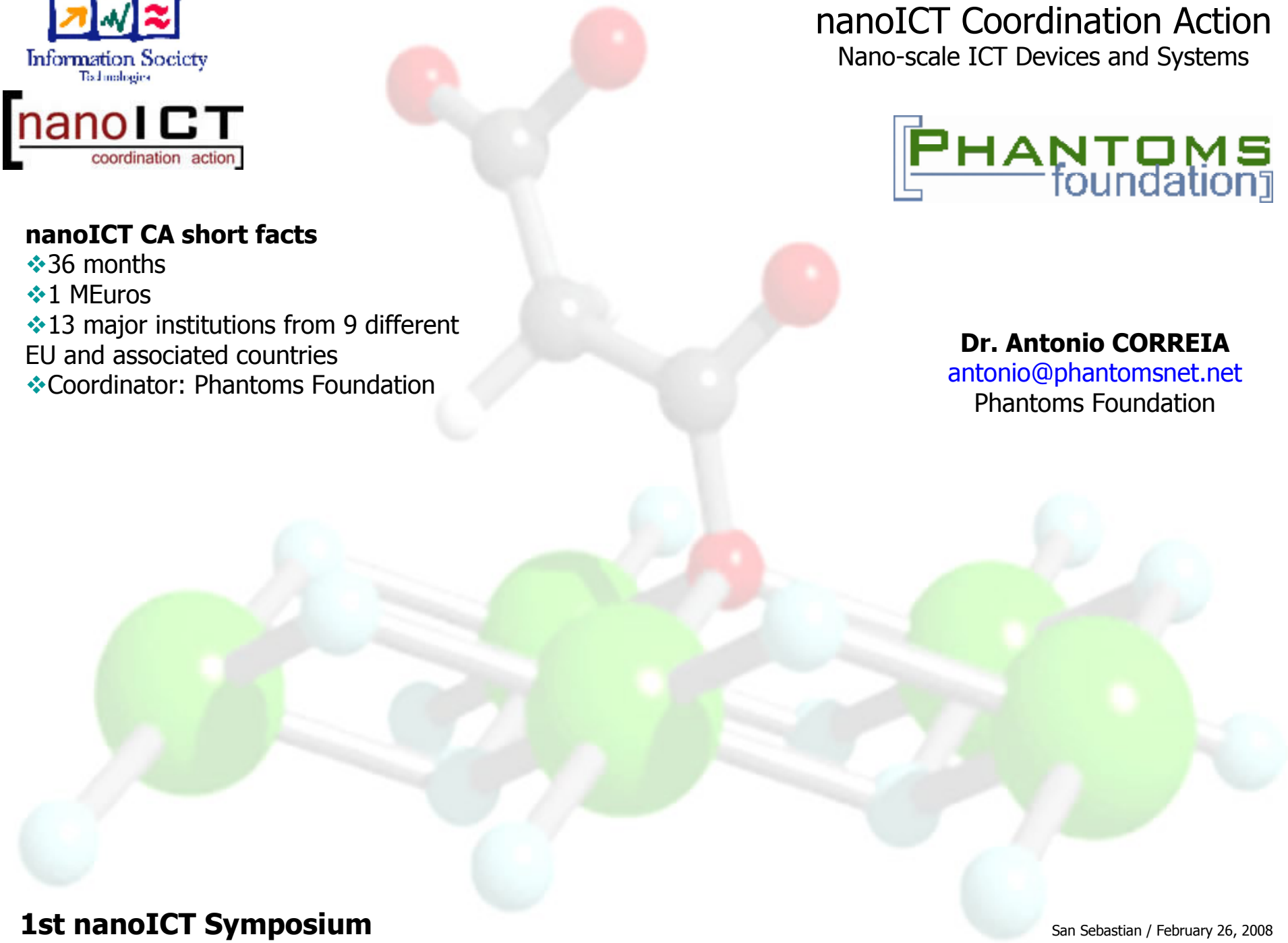
Phantoms Foundation



1st nanoICT Symposium

San Sebastian / February 26, 2008

☞ **http://www.phantomsnet.net**

Phantoms Foundation founded in November 2002 by:

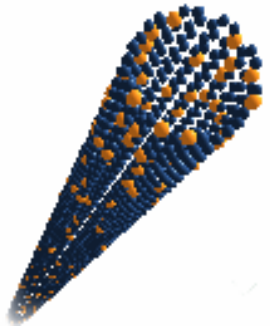
Dr. Antonio Correia (President): antonio@phantomsnet.net
Prof. Clivia Sotomayor Torres

Located at: UNIVERSIDAD AUTONOMA DE MADRID — PARQUE CIENTÍFICO DE MADRID

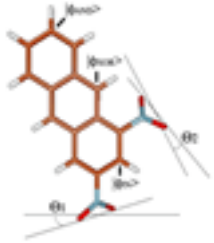
Staff: Jose-Luis Roldan / Joaquin Ramon Laca / Soraya Serrano / Carmen Chacon & Concepcion Narros Hernandez
Collaborators: Dr. Natalia Leon

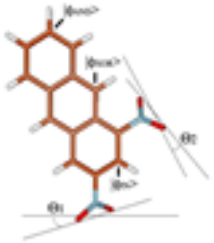
Current Activities:

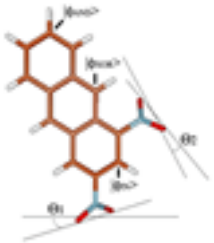
- Project Management (European – NaPa, PicoInside & nanoICT – and National Level)
- Scientific Network Coordination (NanoSpain, M4nano Initiative)
- Scientific Conference Organisation (TNT conference series, etc.)
- Support to Conference Organisation (WEB site, management, etc.)
- Scientific Dissemination (Newsletters, reports, articles in journals, roadmaps, etc…)

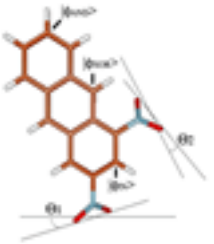


nanoICT Coordination Action Activities









The **nanoICT Coordination Action** activities will reinforce and support the whole European Research Community in **"ICT nanoscale devices"** covering the following research areas expected to demonstrate unconventional solutions beyond the expected limits of CMOS technology:

- Demonstration of new concepts for switches or memory cells

- Demonstration of new concepts, technologies and architectures for local and chip level interconnects with substantial improvements over current solutions

- Demonstration of radically new functionalities by the integration of blocks from a few nanometres down to the atomic scale into high added-value systems

nanoICT Coordination Action Activities

The CA action plans will go beyond the organisation of conferences, workshops, exchange of personnel, WEB site, etc. developing the following activities:

- Consolidation and visibility of the research community in ICT nanoscale devices
- Mapping and benchmarking of research at European level, and its comparison with other continents
- Identification of drivers and measures to assess research in ICT nanoscale devices, and to assess the potential of results to be taken up in industrial research
- Coordination of research agendas and development of research roadmaps
- Coordination of national or regional research programmes or activities, with the aim to involve funding authorities in building the ERA around this topic
- Development of strategies for international cooperation on themes related to NanoICT

Expected impact will be the enhanced visibility, shaping and consolidation of the NanoICT research community in Europe

nanoICT Consortium

Geographical coverage of the NanoICT consortium

Participant no.	Participant organisation name	Part. short name	Country
1 (coordinator)	Fundacion Phantoms	PH	Spain
2	Commissariat à l'Energie Atomique	CEA	France
3	Ecole Polytechnique Fédérale de Lausanne	EPFL	Switzerland
4	Technical Research Center of Finland	VTT	Finland
5	Consorzio Nazionale Interuniv. per la Nanoelettronica	IUNET	Italy
6	Institut Català de Nanotecnología	ICN	Spain
7	Universidad del Pais Vasco	UPV	Spain
8a	CNRS-CEMES	CNRS	France
8b	CNRS-ORSAY		
9	University of Cambridge	UCAM-DENG	UK
10	Lund University	Lund	Sweden
11	Forschungszentrum Juelich GmbH	FZJ	Germany
12	Jagiellonian University	NANOSAM	Poland

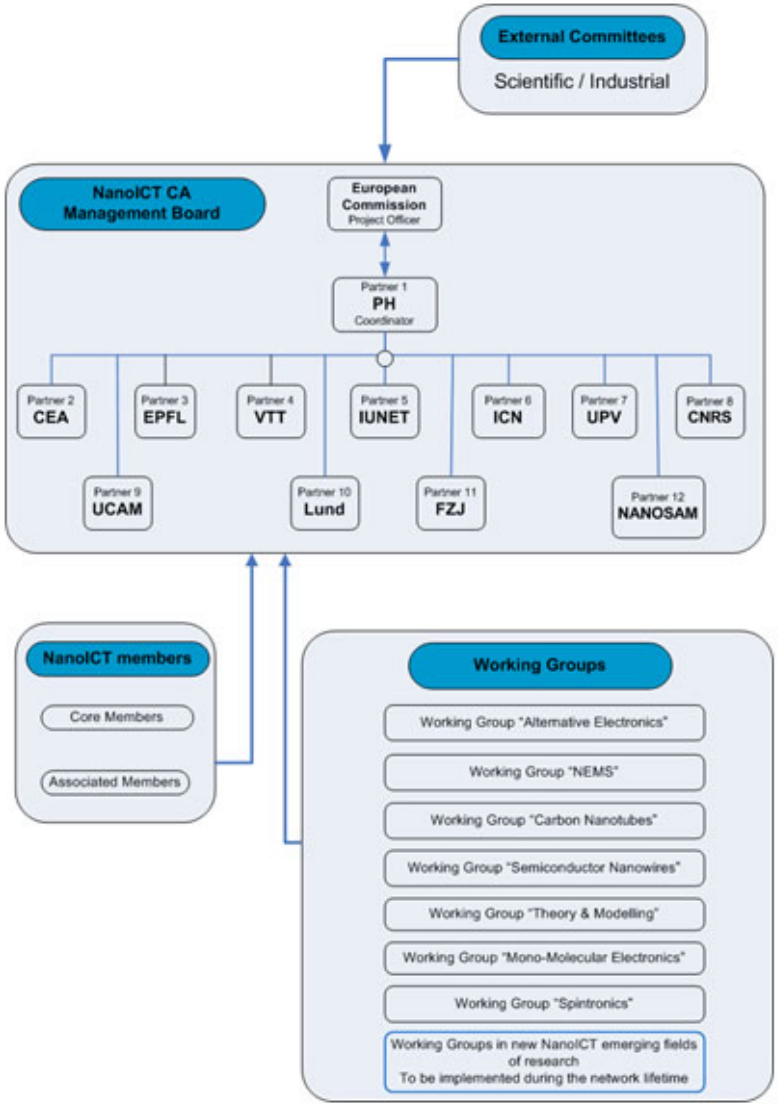
The nanoICT CA Consortium will involve 13 major institutions from 9 different EU and associated countries (Finland, France, Germany, Italy, Poland, Spain, Sweden, Switzerland and UK).

nanoICT CA structure

To provide consolidation and visibility of the research community in "ICT nanoscale devices", a comprehensive guide -"who's who"- of groups working in related NanoICT areas will be created (**nanoICT database**), including two different lists:

- **Core members** including institutions active and experienced in the field of "nanoscale ICT devices and systems" (emerging R&D research areas mapped by the network).
- **Associated members** including institutions working on related topics, less mainstream nanoelectronics but performing relevant research.

This **mapping** will also provide a benchmarking of NanoICT research in Europe. Its comparison with other continents will be an element of the focused reports delivered by the Coordination Action.
Institutions involved in the FP7 NanoICT projects as well as in previous FP5 & FP6 EU ICT/FET initiatives will be contacted.
Membership will be open to all ERA groups (active or interested in NanoICT research) and widely advertised.



Graphical presentation of the CA components

Coordination, Training and Management activities will be organised around 8 major Workpackages (WPs):

WP 1: Dissemination of knowledge and results
Task1 – WEB site
Task2 – Newsletters
Task3 – Flyer
Task4 – Conference attendance
Task5 – e-dissemination

WP 2: NanoICT and FET-Cluster workshops
Task1 – NanoICT workshop
Task2 – FET-Cluster workshops
Task3 – NanoICT sessions at high-level conferences

WP 3: Working Groups (WGs)
Task1 – Working Group meetings
Task2 – Position papers

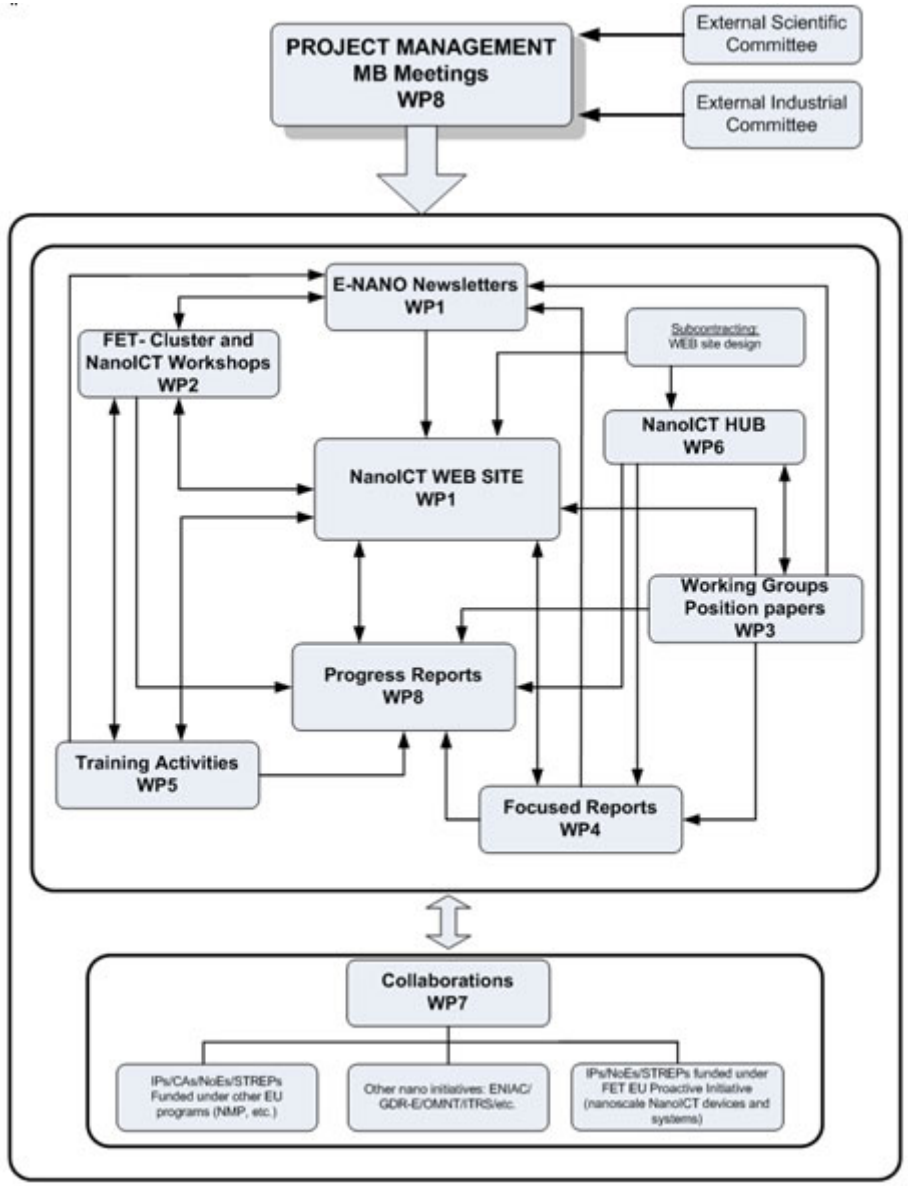
WP 4: NanoICT Focused Reports

WP 5: Training activities
Task1 – Summer-winter training school
Task2 – PhD one-day session (NanoICT workshop)
Task3 – Short training courses
Task4 – Exchanges visits

WP 6: NanoICT computational HUB

WP 7: External Collaborations

WP 8: Project Management
Task1 – Overall project management
Task2 – Management Board (MB) meetings



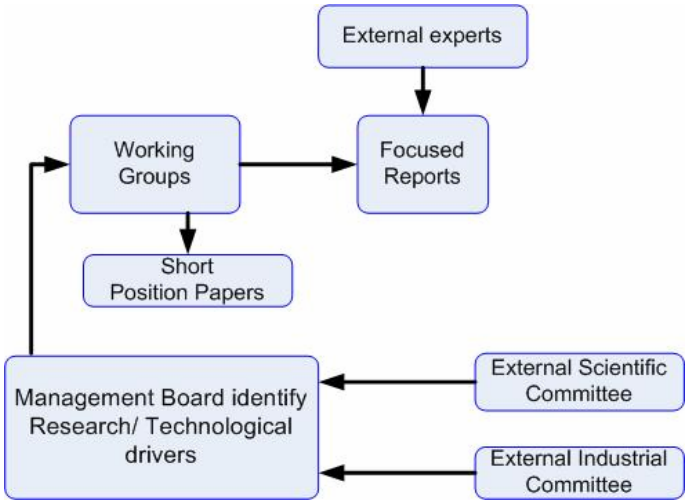
Working Groups, Position Papers and Focused Reports

Beyond the organisation of conferences, workshops, training courses/schools, exchange of personnel, WEB site, etc. other activities are also needed to reinforce and support the whole research community in ICT nanoscale devices.

These are for example the coordination of research agendas and development of research roadmaps or the mapping and benchmarking of research at European level and its comparison with other continents. To reach these objectives, the NanoICT CA will establish a set of instruments such as the Working Groups or the Position papers / Focused reports elaboration, with an adequate and coherent personnel allocation.

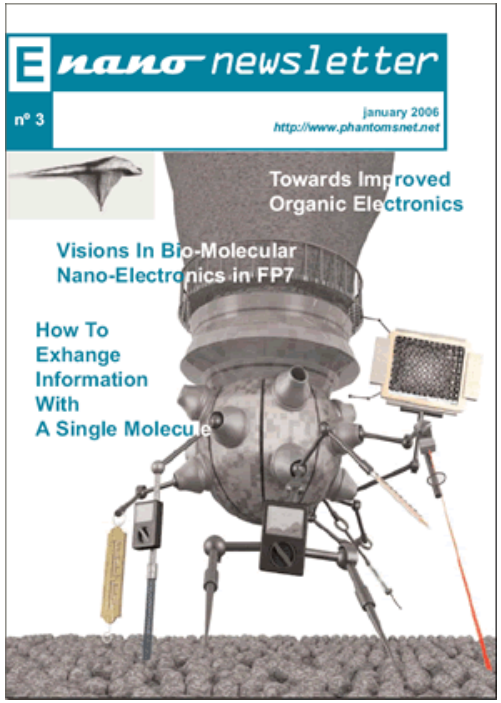
7 Working Groups (WG) are planned, each of them dealing with research areas of interest for the FET/NanoICT proactive initiative: a "global vision" one and 6 more focused.

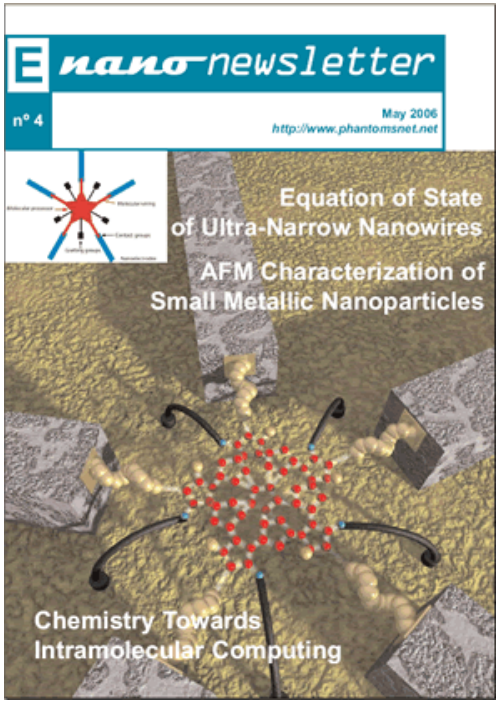
- **WG1 - Alternative Electronics from a global point of view:** WG coordinated by Robert Baptist/Jean Philippe Bourgoin (CEA, France)
- **WG2 - NEMS:** WG coordinated by Juergen Brugger (EPFL, Switzerland)
- **WG3 - Carbon Nanotubes (CNT):** WG coordinated by Bill Milne (Cambridge University, UK)
- **WG4 – Semiconductor Nanowires (NW):** WG coordinated by Lars Samuelson (Lund University, Sweden)
- **WG5 - Theory and Modelling:** WG coordinated by Massimo Macucci (IU.NET, Italy)
- **WG6 - Mono-Molecular Electronics (M2e):** WG coordinated by Christian Joachim (CNRS-CEMES, France)
- **WG7 - Spintronics:** WG coordinated by Claude Chappert (CNRS-ORSAY, France)

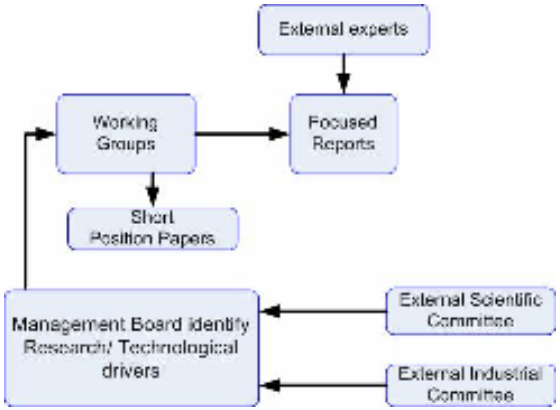


Working Groups, Position Papers and Focused Reports

Position papers: Contribution to E-nano Newsletters



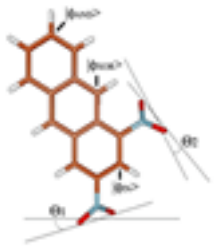
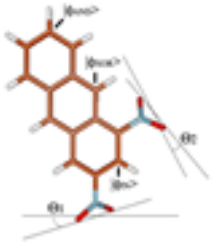
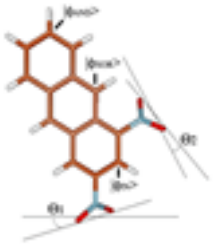
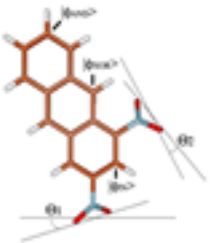




Focused reports:

- Research agenda for "NanoICT" including strategic objectives, identification of research drivers and measures for assessment
- European research landscape in "NanoICT" (stock taking and benchmarking)
- Concepts for coordination of national and regional funding activities and for international cooperation in "NanoICT".

nanoICT related events

Month 1-6:

- 1st nanoICT Symposium (San Sebastian, Spain): February 26, 2008
- M4nano 1 day Symposium: Modelling for Nanotechnologies (Grenoble, France): June 24, 2008 - http://www.minatec-crossroads.com/uk/eve_m4nano.htm

Programme (18 Speakers)

- Antonio Correia (Phantoms Foundation , Spain)
  Nano-ICT Coordination Action
- François Triozon (CEA, MINATEC-LETI)
  Multiscale Computational Approaches for modelling Carbon Nanotubes, Semiconducting Nanowires and Graphene-based Field Effect transistors.
- Mairbek Chshiev (CEA, MINATEC-SPINTEC , RTRA award)
  Modelling spintronics phenomena
- Gianaurelio Cuniberti (TU-DRESDEN, Germany)
  "Of nanotube molecular junctions, graphene and biomimetic materials for nanoelectronics: modeling perspectives"
- Mads Brandbyge (Institute for Micro and Nano Technology, DTU, Denmark)
  Inelastic transport modelling in molecular devices & semiconducting nanowires
- Denis Rideau (STMicroelectronics)
  Modelling study of quantum confinement and strain in low dimensional devices
- H.S. Philip Wong (Standford University , USA -- RTRA award)
  Simulation of NanoFET and memories
- Jim Greer (Tyndall National Institute, Ireland)
  Atomic Scale Simulation at the End-of-the-Roadmap
- Massimo Macucci (University of Pisa , Italy)
  Noise in Nanodevices
- Luigi Genovese (CEA, MINATEC-DRFMC)
  European Efforts in Upscaling DFT-capability BigDFT : strategy & performances
- Thierry Deutsch (CEA, MINATEC-DRFMC)
  Nanosimulation programme at CEA
- Xavier Blase (Institut Néel, CNRS)
  AB-INITIO simulation in Nanosciences : Case studies
- Juanjo Saenz (Univ. Autonoma de Madrid, Spain)
  Nano-optics & nano-photonics simulation
- Jean-François Mehaut (INRIA)
  Nanoscale simulations: What are the new challenges for Computer Science and Parallel Computing?
- Marc Bescond (University of Marseille)
  Simulation of nanowire MOSFETs: influence of the intrinsic fluctuations
- Xavier Bouju (CNRS/CEMES)
  Simulations for molecular machines
- Valerio Olevano (Institut Néel, CNRS)
  ETSF/nanoSTAR : Spectroscopy and Nanosciences (to be confirmed)
- Daniel Sanchez-Portal (Donostia International Physics Center, Spain)
  Simulating Nanoscience with Order N ab initio methods

THANKS FOR YOUR ATTENTION

Contact Person:

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Fundación Phantoms