

# Future and Emerging Technologies *Proactive Initiatives in FP7 call 6*

National Contact Point Meeting on ICT theme  
Brussels 20 October 2009



**David Guedj**

Principal Project Officer INFSO F1, FET - Proactive  
david.guedj (at) ec.europa.eu



European Commission  
Information Society and Media



NCP meeting, Brussels 20 October 2009

David Guedj, FET proactive



# Overview of presentation

1. FET mission
2. Call 6 FET objectives
3. Molecular-Scale Devices and Systems objective (8.7)
4. Coordination and Support action objectives (8.9, 8.10)
5. Next presentation
  - Brain-Inspired ICT (8.8) - J. Ellis



# FET Mission

*Supporting the emergence of new visionary ICT research*

1. Pathfinder and Incubator for exploring new visionary ideas
2. Focusing on long term foundational research
3. Focusing on high risk/high pay-off multi- and inter-disciplinary research aiming at S&T breakthroughs
4. Maturing & structuring emerging research fields, research communities and research practices

FET Proactive + FET Open:  
two intertwined successful schemes



# FET Proactive – WP 2009-2010

*transformative and foundational research*

		CSA	CSA
Call 4	<p><b>Concurrent Tera-Device Computing (15M€, IP/Strep)</b></p> <p><b>Quantum Information Foundations &amp; Techn. (15M€, IP)</b></p> <p><b>Bio-Chemistry based Information Techn. (7M€, Strep)</b></p>	1,5M€	0,5M€
Call 5	<p><b>Human-Computer Confluence (15M€, IP)</b></p> <p><b>Self-Awareness in Autonomic Systems (15M€, IP/Strep)</b></p> <p><b>Towards Zero-Power ICT (7M€, Strep)</b></p>	1,5M€	0,5M€
Call 6	<p><b>Molecular Scale Devices and Systems (15M€, IP/Strep)</b></p> <p><b>Brain Inspired ICT (15M€, IP/Strep)</b></p>	1,5M€	0,5M€



# FET Call 6 proposers' information day

- Date: 2<sup>nd</sup> half of January 2010, 9:00 – 17:30 (tbc)
- Location: Brussels, CCAB (tbc)
- Details on FET Proactive Cordis web site:  
[http://cordis.europa.eu/fp7/ict/fet-proactive/home\\_en.html](http://cordis.europa.eu/fp7/ict/fet-proactive/home_en.html)
- Will cover the 2 FET Proactive Initiatives in Call 6 + Coordination/Support Actions in 8.9/8.10
- Registration free, but obligatory



# Molecular-Scale Devices and Systems **rationale and objectives**

- **Rationale**

Modern technology is racing forward with techniques for building systems on atomic and molecular scales. In the near future, devices will be assembled on an atom-by-atom basis, and provide means for controlling their dynamics and interactions with unprecedented precision. We can expect, as a result, a vast new range of ICT technologies.

- **General objective**

Develop the foundations for radically new kinds of ICT devices and systems based on atomic & molecular precision, control and intrinsic properties.



# Molecular-Scale Devices and Systems research topics

1. aim at developing physical implementations at the single-molecule level and with small assemblies of molecules for computation, sensing and storage to achieve proofs of concept and demonstrate working, scalable, functional devices and systems.
2. explore and develop supporting technologies for molecular-scale information devices and systems such as :
  - measurement and control systems
  - simulation and modelling tools
3. Explore and demonstrate radically new characteristics and functionality of molecular-scale systems by investigating new non-charge based information techniques supported by experimental implementations



# Molecular-Scale Devices and Systems

## **Expected Impact**

### The research should

- Open new avenues and explore new possibilities in ICT devices and technologies at the molecular scale.
- Reach experimental demonstration of principle and feasibility of such devices.
- Offer new perspectives on potential applications with concrete advantages (e.g. energy consumption, data and operation integrity, speed,...)



# Molecular-Scale Devices and Systems

## Origins

- Consultation and Brainstorming 2004-2006
- Nano-ICT (FET-Proactive FP7-Call 1)
- Topical workshop
  - ‘Molecular-Scale Information Systems’, (30 Jan. ‘08).
- Public consultation, ISTAG FET group, ...
- related FET proactive initiatives in FP5 and FP6:
  - E-Nano
  - E-Nano



NCP meeting, Brussels 20 October 2009

David Guedj, FET proactive



# Molecular-Scale Devices and Systems

ICT-2009.8.7, a FET proactive challenge in FP7 Call 6

- Budget: 15 M€
- Funding schemes:  
STREPs (>30%), IPs (>50%)
- Contact: [david.guedj@ec.europa.eu](mailto:david.guedj@ec.europa.eu)  
[werner.steinhoegl@ec.europa.eu](mailto:werner.steinhoegl@ec.europa.eu)
- Web page on Cordis:  
[http://cordis.europa.eu/fp7/ict/fet-proactive/amolit\\_en.html](http://cordis.europa.eu/fp7/ict/fet-proactive/amolit_en.html)
- Background document
  - FET workshop 'Molecular-Scale Information Systems'  
[ftp://ftp.cordis.europa.eu/pub/fp7/ict/docs/fet-proactive/molecsc-ict-01\\_en.pdf](ftp://ftp.cordis.europa.eu/pub/fp7/ict/docs/fet-proactive/molecsc-ict-01_en.pdf)



NCP meeting, Brussels 20 October 2009

David Guedj, FET proactive



# FET Objectives 8.9 + 8.10

## Coordination and Support Actions in FET Proactive

**Objective 8.9, Budget 1.5 M€.**

**Coordinating Communities Plans and Actions  
in FET Proactive Initiatives**

**Objective 8.10, Budget 0.5 M€.**

**Identifying new research topics, Assessing  
emerging global S&T trends in ICT for future  
FET Proactive Initiatives**



NCP meeting, Brussels 20 October 2009

David Guedj, FET proactive



## 8.9 Coordinating Communities, Plans and Actions in FET Proactive Initiatives

### Foci for coordination and support actions

- Supporting targeted research communities
  - Increase visibility and collective impact of scientific community, industry & public
  - Consolidation of research agendas
  - Foster coordination of national, regional and international programmes and activities
  - Encouraging establishment of new educational curricula

**OR**

- Actions specifically aiming at networking of research activities at national or regional level
  - Should involve national or regional research programme owners
  - Coordination of national, regional or international programmes and activities
  - Preparation and implementation of joint trans-national calls
  - ERA-NET plus action in subsequent phase

*Research communities can be linked to existing proactives (based around running projects), or communities that are new to FET.*



NCP meeting, Brussels 20 October 2009

David Guedj, FET proactive



# What is expected from CSAs?

- **Coordination action:**
  - Typical: funding around 500K€, 3-6 partners, duration 3 years
  - At least 3 partners
  - A large representation of scientific groups is often better achieved through a scientific board.
- **Specific support action:**
  - Typical: funding around 100K€, 1-2 years
  - can be only 1 partner



## 8.9: Finding more information

- Examples of running CAs:
  - PEACH ([www.peachbit.org](http://www.peachbit.org))
  - PERADA ([www.perada.eu](http://www.perada.eu))
  - NanoICT  
([www.phantomsnet.net/nanoICT](http://www.phantomsnet.net/nanoICT))
  - QUROPE ([www.qurope.net](http://www.qurope.net))
- Preproposals:
  - Feel free to informally discuss preproposals with Wide Hogenhout ([wide.hogenhout@ec.europa.eu](mailto:wide.hogenhout@ec.europa.eu))

## 8.10: What is expected from actions in this objective?

Efforts towards definition of future FET proactives either:

- Identifying new research topics
  - Position paper with need for action, research challenges and impact foreseen in science, technology and society.
  - Suggestions should not be at project level but at proactive initiative level

**OR**

- Assessing emerging global S&T trends in ICT
  - That could lead to the definition of research topics, to overcome roadblocks and set the future picture
  - assess the potential of recent breakthroughs in FET related research

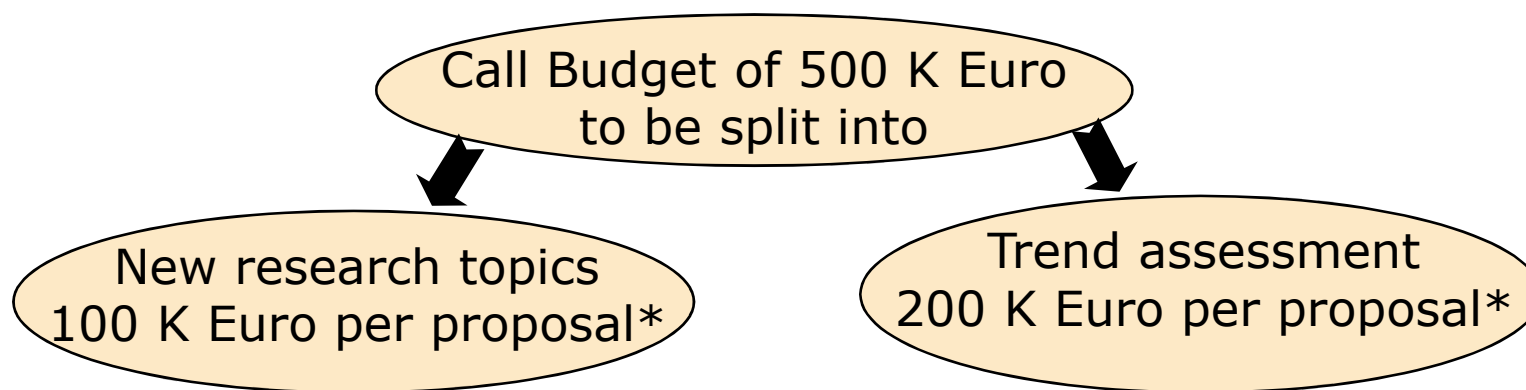


# What type of instrument?

## Coordination Specific Actions (6-12 months)

Coordination Actions (CAs)  
Involvement of different groups (3-5)

Specific Support Actions  
(SSAs)  
Could be just one group



(\*rough expected EU contribution per proposal)

**In both cases a clearly motivated idea and assessment of the impact are expected**



NCP meeting, Brussels 20 October 2009

David Guedj, FET proactive



# Examples of candidate topics (not exhaustive)

- Emerging global S&T future ICT trends in areas like components, systems or intelligence which could form the basis of new proactive initiatives
- New methods for information processing, possibly drawing inspiration from disciplines outside ICT



## 8.10: Finding more information

- Preproposals:

Feel free to informally discuss pre-proposals with José Fernandez-Villacanas

([Jose.Fernandez-Villacanas \(at\) ec.europa.eu](mailto:Jose.Fernandez-Villacanas@ec.europa.eu))

