Minimising Energy Consumption of Computing to the Limit

MINECC
FET Objectives
Supporting the emergence of visionary ICT research

- Pathfinder and Incubator for exploring new visionary ideas
- Focusing on long term foundational research
- Focusing on high risk/high pay-off multi- and inter-disciplinary research aiming at S&T breakthroughs
- Maturing & structuring emerging research fields, research communities and research practices
Future and Emerging Technologies
A well established successful ICT scheme

Two complementary inter-linked schemes
FET Proactive + FET Open

FET Proactive
• Top-down approach
• Set of novel pre-defined themes

€ 143 M(*)

FET Open
• Bottom-up approach
• Open to any research idea

€ 93 M

(*) figures from WP 2011-2012
FP7 Proactive Initiatives
WP2007-2008

Components

Intelligence

Systems

Nanoscale ICT Devices & Systems

Pervasive Adaptation

ICT Forever Yours

Bio-ICT Convergence

Complex Systems for Socially Intelligent ICT

Embodied Intelligence

Total funding: € 120 M

Call 1

Call 3
FP7 Proactive Initiatives
WP2009-2010

Quantum Technologies
Molecular Scale Devices & Systems
Bio-chemistry based ICT
Concurrent Tera Computing
Self-Awareness in Autonomic Systems
Brain-Inspired ICT
Human-Computer Confluence

Zero-Power ICT

Total funding: €110 M

Call 4
Call 5
Call 6

ZeroPower workshop. Cork. 26th October 2011
FET Proactive Initiatives
WP 2011-2012

Call FET-F
FET Flagship Preparatory Actions (CSA) 10M€

Call 7
9.12 e. ERA-NET follow-up (CSA) 2,5M€

Call 8
9.6 Unconventional Computing (STREP) 15M€
9.7 Dyn. of Multi-Level Complex systems (IP/Strep) INCO dimension (CSA) 22M€
9.8 Minimising Energy Consumption of Computing to the Limit (Strep) 15M€

Call 9
9.9 Quantum ICT (IP/Strep) including ERA-NET Plus (ERA-NET-Plus) 15M€
9.11 Neuro-Bio-Inspired Systems (IP/Strep) INCO dimension (CSA) 22M€

Total funding: € 143 M
Objective ICT-2011.9.8: Minimising Energy Consumption of Computing to the Limit (MINECC)

“Energy efficiency of state-of-the-art ICT is orders of magnitude above the theoretical limits! So Closing this gap will offer a bouquet of new opportunities!”

-Funding/Instruments: 15 MEuro STREPs
-Closing of Call 8: 17 Jan 2012
-Contact: francisco.ibanez@ec.europa.eu
Objective ICT-2011.9.8: Minimising Energy Consumption of Computing to the Limit

Target Outcome:
Foundations for radically new ICT technologies striving for the theoretical limits in energy consumption

a. New elementary devices and inter-device-communication mechanisms

b. Novel computing paradigms with radically improved energy efficiency (e.g. inspired by biology, post-Boolean logics, ...)

c. Software models and programming methodologies supporting the strive for the energetic limit (e.g. energy cost awareness, ...)

Proof of concept, indication of expected energy gain, appropriate energy metrics or benchmarks for verification
FET Prospects for 2013
Timetable for Work-programme 2013

- Oct. 2011 – Feb 2012: Consultation
- July 2012: Adoption of WP 2013
- July-August 2012: Call 10 publication (tbc)
- January 2013: Call 10 closing (tbc)
- Jan. - April 2013: Call 11 publ. – closing (tbc)
FET Flagship Initiatives
Main features

- science-driven
- target a **unifying goal** (visionary and highly ambitious)
- require **multidisciplinary** collaboration
- are nucleated from ICT future and emerging technologies and going **beyond** the ICT programme.
- are envisioned to be **long term** programmes
- on a **scale** beyond FET Proactive Initiatives.
- they can only be realised through a **federated effort of key stakeholders**
Flagship Pilots retained topics/themes beyond ICT

FuturICT
- Environment & Climate, Science and Society,
  Energy, Research Infrastructures
  (ICT: e-Gov)

Guardian Angels
- NMP, Energy, Environment, Health, Research Infrastructures
  (ICT: AAL, Nanoelectronics, Microsystems, ICT for Sustainable Growth, e-Health, e-Gov)

Human Brain Project
- Health, Research Infrastructures
  (ICT: e-Health, Robotics)

ITFoM
- Health, Research Infrastructures
  (ICT: e-Health)

Graphene
- NMP
  (ICT: Nanoelectronics)

RoboCom
- NMP
  (ICT: Robotics)
Conclusions

- FET promotes high-risk long-term research
- FET seeks novelty from multidisciplinary science
- FET great transformation potential: FET transforms mainstream industrial research agendas, approaches to problems, research topics and communities
- Importance of MINECC within the FET programme
Thanks for your attention!

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