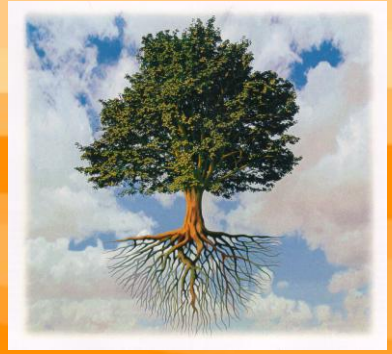
Future and Emerging Technologies
Neuro-Bio-Inspired Systems
Call 9 objective 9.11

National Contact Point Meeting on ICT theme
Brussels 29 November 2011



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Neuro-Bio-Inspired Systems
Call 9, Objective 9.11

- Challenge
  - Brains are computing systems outperforming conventional artificial systems in many tasks
  - Despite tremendous progress in computational neuroscience and ICT we are unable to build artificial "thinking" systems comparable with even simple insect brains.

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- The objective addresses the need to
  - Learn more about how information is represented in the brain
  - Develop deeper and more comprehensive theories of neural processing
  - Motivate interdisciplinary work to close the gap between neuroscience and engineering

Neuro-Bio-Inspired Systems
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IPs / STREPs

- Should address at least two of the following:
  a) New recording systems to understand neural processing and interfaces
  b) Theories of neural representation
  c) Development / prototyping modular brain-like computing architectures
- Total EU Budget: 22 M€

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IPs / STREPs

a) New recording systems to understand neural processing and interfaces

- New concepts for neural recording & imaging
  - Integrate information from
    - multiple recording technologies
    - Multiple scales
    - Managing dynamic integration of data
- New concepts for interfacing
  - Connections between brain and ICT
  - Fully integrated interdisciplinary approach

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IPs / STREPs

b) Theories of neural representation

- How is information represented in the brain?
  - New multi-scale dynamical theories
  - New neuro-bio-ICT systems for high-level processing
    - Robust object recognition
    - categorization
    - Learning and adapting

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IPs / STREPs

c) Development / prototyping modular brain-like computing architectures

- Combining neural processing primitives
- Better understanding of brain function through interaction between research and theory
- Design of more complex processing systems (real-time, performance optimization)

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CSA

- Target outcome
  - World-class global research cooperation and alliances in this area, links with similar actions outside Europe, i.e. from USA and Japan
  - Activities can include conferences, summer schools, workshops, but NOT research projects
- Expected impact
  - New long-term research collaborations in multiple disciplines, e.g. engineering, physical & life sciences
- Total EU Budget: 1 M€

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CSA

- Involvement of wider RTD community, e.g.
  - Bio-ICT (CSN): www.csnetwork.eu
  - Human-Computer Confluence (HC2): hcsquared.eu

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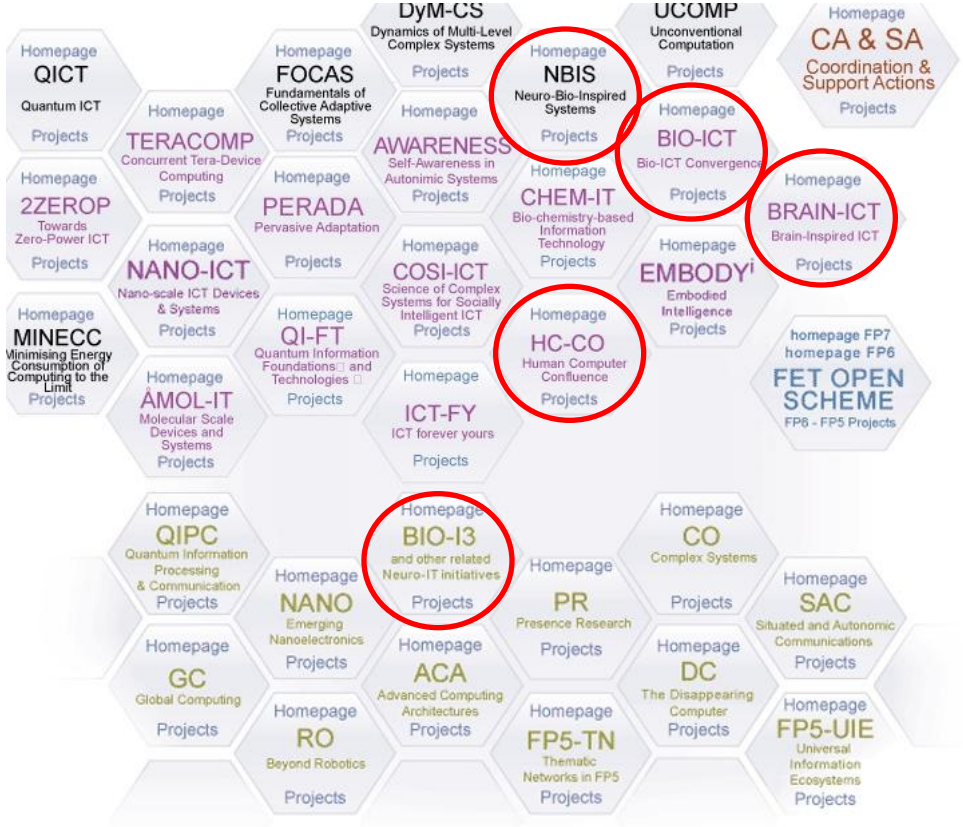
For information on existing related projects:
http://cordis.europa.eu/fp7/ict/fet-proactive/areas_en.html



Neuro-Bio-Inspired Systems
Call 9, Objective 9.11

- Budget: 22 M€ (IP, STREP), 1 M€ (CSA)
- IPs / STREPs should at least address 2 of
  - New recording systems to understand neuron processing and interfaces
  - Theories of neural representation
  - Development/prototyping modular brain-like computing architectures
- Ethical issues should be properly addressed
- Contact: christiane.wilzeck (at) ec.europa.eu
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- Deadline for submission: 17 April 2012, 17:00
- Web: http://cordis.europa.eu/fp7/ict/fet-proactive/nbis_en.html

Thank you for your attention!