European Network for the Advancement of Artificial Cognitive Systems

A Proposal for a Coordination Action in Cognitive Systems

euCognition is NOT ECVision II

Goals

- Support the research community in FP6 & help others become involved
  - Interaction between projects
  - Collaboration between individuals
    - Staff/student exchanges
    - Development and dissemination of training material
    - Research planning
    - Dynamic web-based repository of resources for research, education, and outreach
- Leverage added-value from existing work through interaction
- Foster interaction between many different scientific sectors in this highly multi-disciplinary field

Goals

AI
Psychology
Neuroscience
Non-linear dynamical systems theory
Synergetics
Autonomous systems theory
Machine learning
Pattern recognition
Computer vision
Haptic sensing
Cybernetics
Neural networks
Epistemology
Philosophy
Language
Semiotics
Robotics
Manipulation
Communication
...

Problems:

Different perspectives
Different languages
Hard & Soft Science

Mathematical Models

Organization

- Different areas of cognitive system
  - Underlying paradigms of cognition
  - Scientific development of cognitive systems
  - Highly-topical issues
- Activities of the network
  - Outreach
  - Scientific Outlook
  - Education
  - Resources for the Community
- Activity Coordination
- Management

Inter-project collaboration
Involvement of new blood

Areas of Cognitive Systems

Areas of Cognitive Systems

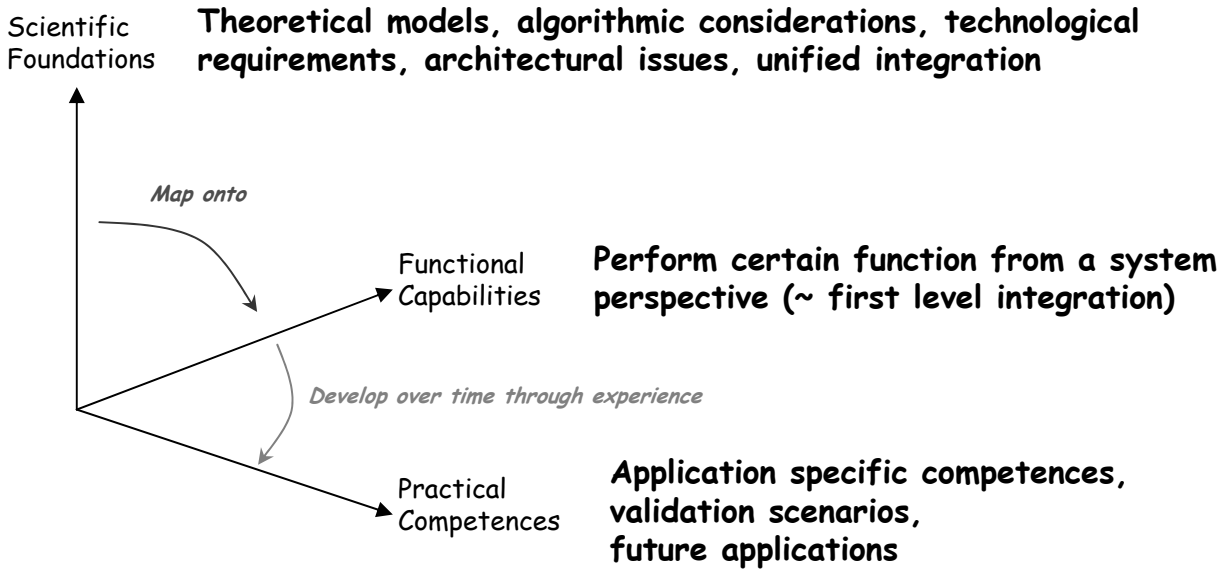
- Underlying paradigms of cognition
  - Alternative viewpoints
    - Cognitivism
    - Connectionism
    - Dynamical systems
    - Enactive systems & autopoiesis
    - Artificial life
    - Human
    - Non-human
    - Social (macroscopic)
    - Individual (microscopic), …

Areas of Cognitive Systems

- Scientific Development

  Practical problems: empirical research – building systems

Detection & localization
Tracking
Recognition
Classification & categorization
Deliberation
Prediction
Concept formation
Visualization
Inter-agent communication
Expression
Planning
Perceptuo-motor coordination



Areas of Cognitive Systems

- Topical Issues
  - Transcend all the foregoing
  - Shape the discipline in a significant manner
    - Nature of and need for embodiment & forcible action
    - Balance between phylogenic configuration & ontogenic development
    - Architectural problems of system integration
    - [more] …

Activities of the Network

Activities of the Network

1. Outreach
2. Scientific Outlook
3. Education
4. On-line Resources
5. Activity Coordination
6. Management of the Consortium

Activities of the Network

- Outreach
  - Inter-project collaboration
  - Involvement of new blood from both academia and industry
  - Bi-lateral exhanges, esp. with those not yet involved in funded projects
  - Provide resources for new pilot initiatives (e.g. providing access to platforms for experimental work in embodied cognition)

Activities of the Network

- Scientific Outlook
  - Research planning
  - Technology watch
  - Refining and developing the initial characterization of cognition
  - Create an ambitious but inclusive research agenda
  - Key focus: cross-fertilization of ideas

Activities of the Network

- Education
  - Alleviate difficulties posed by the multi-disciplinary nature of the area
  - Bridge gaps between sub-disciplines
  - Targetted at
    - Research practitioners
    - Graduate students
  - Summer schools (cf. IP commitments)
  - Creation of teaching material

Activities of the Network

- On-line Resources
  - Dynamic web-based repository
  - Cognitive systems community
    - Research
    - Education
  - Visibility in the greater community
  - Show-case results & example validation experiments
  - Forum for sharing information
  - www.euCognition.org

All activities apply to all areas

eCognition			Areas of Cognitive Systems				
			Underlying Paradigms	Scientific Development			Topical Issues
				Scientific Foundations	Functional Capabilities	Practical Competences	
Activities of the Network	Outreach	Inter-Project Collaboration					
		External Involvement					
		Pilot Initiatives					
	Scientific Outlook	Research Planning					
		Technology Watch					
	Education	Course Material					
		Summer Schools					
	On-line Resources						
	Activity Coordination						
	Management	Financial & Reporting					

Organizational Structures

Four principal bodies are involved in the running of the network:

1. The Executive Committee
2. A Watchdog Panel
3. A Project Coordinators Round-Table Forum
4. The European Commission Officer

Executive Committee

David Vernon (Coordinator)
Tom Ziemke
Matthias Scheutz
Fred Cummins
Christoph von der Malsburg
Bill Sharpe
Erik Hollnagel
Markus Vincze

Project Coordinators Round-Table Forum

Paolo Arena
Harold Bekkering
Henrik Christensen
Rino Falcone
Goesta Granlund
Erich Rome
Giulio Sandini
John Taylor
David Vernon (ex officio)

Watchdog Panel

Small number of people not directly involved in euCognition

Suggestions?

Contractual & Operational Issues

European Network for the Advancement of Artificial Cognitive Systems

Currently, a consortium of four contractors

- Italian Institute of Technology
- University College Dublin
- Technical University of Vienna
- University of Skövde

However will expand as necessary

Issues:

Membership
Contracts, audit certificates, financial reports
Subcontracts

Membership

- No such thing as 'member' in FP6
- Either contractor or subcontractor
- Contractor
  - Audit certificate
  - Financial reports
  - Significant administration & cost
- Subcontractor
  - Foreseen (in Annex I)
  - Unforeseen (with permission of Commission)

Membership

- 'Member' is an affiliate of the network
- Non-labour costs incurred by member
  - Reimbursed directly by the coordinating contractor
  - Send in claim with travel receipts, reimbursed by electronic transfer within a month (or less)
- Labour costs
  - Either member becomes a contractor
  - Or reimbursed via a subcontract

Subcontracts

- Call for tenders on website
- Receive tenders (including one from member)
- Tender assessed by Executive Committee
- Choose tender with best quality/price ratio
- Obtain approval of Commission project officer
- Issue subcontract
- Acceptable labour costs subject to a ceiling

Membership

- All institutes that are part of an FP6 cognitive systems project automatically members
  - Need an application form to collect member data
- All members of ECVision automatically eligible for membership
  - Need an application form to collect member data
- Membership open to all other who are active in the domain of cognitive systems
  - Submit membership application form
  - Subject to reviewed by Executive Committee

Operating Procedures

- All members eligible to claim travel costs associated with official euCognition event
  - As advertized on the website
  - Subject to guidelines
- Free to apply for limited funding for relevant actions
  - Reviewed by Executive Committee
  - Final approval from Commission PO

Assessment of Impact

- Expenditure of public funds
  - Good return on investment
  - Open to audit and scrutiny
- Normal approach is (long) list of deliverables
  - Simple
  - Transparent
  - Inhibits evolution
- Proposed instead
  - Assess success by outcome
    - Each area / activity pairing

All activities apply to all areas

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		Summer Schools					
	On-line Resources						
	Activity Coordination						
	Management	Financial & Reporting					

Assessment of Impact

- Every action
  - (meeting, student exchange, tutorial, …)
- Must have a concrete output in a persistent form
  - (document, video, commentary, …)
- Archived on the eCognition website
- Accessible through an effective relational access mechanism
- Uploaded directly by member and integrated automatically
- Flagged to members
- Reimbursement of costs conditional on submission

Assessment of Impact

- Set of metrics to indicate success of CA
  - Decided by Commission
- Based on statistics of network actions
  - Degree of population of area/activity pairing
  - Frequency of access
  - Source of access (member, external body)
- Tracked automatically by the website server
- Available to both Commission and Watchdog Panel

Point of Departure
Not
Point of Arrival

Ideas, suggestions, …???