

## Network Action Proposal

Title:	<b>Barcelona cognition, brain and technology summer school</b>
Membership number(s)	140, 4, 11, 30
Member name(s)	Paul Verschure, Tom Ziemke, Andreas Engel, Giulio Sandini
Member institute/company name(s)	Universitat Pompeu Fabra
Goals of the action	<p>There are a large number of initiatives developed by the EC in the 6<sup>th</sup> and 7<sup>th</sup> framework program that support and develop research in the areas of cognitive systems, robotics and the relationship between biology and technology. These initiatives connect hundreds of research groups throughout Europe. Thus far there is no common practical platform for the exchange and dissemination of the results of these research efforts beyond short workshops and conferences. In order to fully develop the European research potential in this area such a practical platform is needed. The Barcelona cognition, brain and technology summer school - BCBT (<a href="http://mtg33.upf.es/bcnsc/">http://mtg33.upf.es/bcnsc/</a>) to be held from Sept 8 to 22, 2008 – aims at providing this platform for both student training and the development of a common research agenda. BCBT is positioned at the interface between cognitive systems, robotics, biology (in particular neuroscience) and technology and a dozen European research consortia already support it. With respect to FP7 and FP6 this means that BCBT is catering to the research communities addressed by the “cognitive systems”, “bio-ict convergence”, “embodied intelligence”, and related FET calls. BCBT is aiming at making a positive contribution to the development of an active and integrated multi-disciplinary research environment in these areas.</p> <p><b>Audience</b> BCBT caters to the students and researchers involved in the associated European projects listed below, but is of course also open to participants from other related FP6 and FP7 projects and euCognition members.</p> <p>ReNaChip – Angie Silmon Neurochem – Santiago Marco ICEA – Tom Ziemke Cogniron - Raja Chatila Neurorobotics - Paolo Dario CoSy - Henrik I Christensen POP - Radu Horaud Synthetic Forager (SF) – Paul Verschure Robot Cub – Giulio Sandini/Giorgio Metta BIOTACT - Tony Prescott</p> <p>The coordinators of these consortia are all member of the organizing committee of the summer school. BCBT will offer up to 30 student slots for the practical workshops while as many researchers of the broader community can</p>

	<p>sign up to attend the presentations and discussion sessions as are interested. For the lectures the limit will be placed at 75 given the capacity of the available lecture theatre. In addition, we will open up 10 additional student slots for euCognition members.</p>
<p>Principal activity to which it contributes</p> <ul style="list-style-type: none"> <li>○ Community Outreach</li> <li>○ Scientific Outlook</li> <li>○ Education &amp; Training</li> </ul>	<p><b>Scientific outlook (thematic workshops) &amp; Education/Training</b></p> <p>BCBT follows a combined presentation and hands-on practicals format. Sessions on high-level research related topics, including tutorial level introductions with reports on cutting edge research will be combined with introductions in practical technological and methodological issues that will culminate in projects that the students will develop and present during the summer school. In parallel we foresee smaller ad-hoc meetings dealing with specific themes and/or issues relevant to specific consortia.</p> <p><b>Scientific outlook</b> The program committee has defined the following single track sessions:</p> <ol style="list-style-type: none"> <li>1 Hybrid brain-like systems</li> <li>2 The replication, simulation, validation and emulation of biological systems</li> <li>3 Principles and technology of biologically based cognitive architectures</li> <li>4 Learning, development and adaptation: theoretical and biological perspectives</li> <li>5 System level explanations of brain function</li> <li>6 Consciousness: mechanisms and functions</li> </ol> <p>These sessions will be distributed over 10 of the 14 days of the summer school.</p> <p><b>Training:</b> The practical sessions will include an introduction to a number of emulation and simulation techniques combined with robotics oriented workshops. The afternoon and evenings of the first week of the summerschool will be dedicated to introductory workshops. Each workshop will be coordinated and supervised by a post doctoral researcher. The second week of BCBT puts the emphasis on projects that will be realized by small groups of students under the supervision of the workshop leaders. Proposals for these projects will be developed and discussed in the first week. With respect to the practical workshops BCBT has available:</p> <ol style="list-style-type: none"> <li>1: large-scale neuronal simulations with the IQR simulation environment</li> <li>2: large and small mobile (e.g. ePuck, robonova, robosoft mobile platforms) and flying robots (quadcopters, blimps)</li> <li>3: game engine based virtual reality robot systems (avatars, etc)</li> <li>4: a mixed reality interactive space</li> <li>5: real-time physiology systems (ECG, GSR, EEG, etc.)</li> <li>6: eye tracking system</li> <li>7: haptics and exoskeleton systems interfaced to VR tools</li> <li>8: interactive music systems</li> <li>9: Hardware computation and interface systems: FPGA, fidgets, etc.</li> </ol>

	<p>A number of these setups already comprise well-tested tutorial material. This list will further expand with the contributions from other associated consortia and the material the attendants will bring.</p>
<p>Concrete outcomes of the action (at least one of which should be material suitable for publication on the euCognition website)</p>	<ol style="list-style-type: none"> <li>1. <b>Summer school proceedings</b> will be published as peer reviewed articles in a high-impact journal.</li> <li>2. The <b>extended abstracts of the presentations</b> will be made available on the euCognition web site.</li> <li>3. The <b>presentations of the invited speakers</b> will be made available online including a <b>summary presentation by the organizers.</b></li> <li>4. All <b>tutorial material</b> will be made available online for dissemination by euCognition</li> <li>5. A number of discussions during the summer school will be focused on the development of <b>roadmaps</b> for future research. These discussions will be summarized and made available in the euCognition wiki.</li> <li>6. A <b>summary briefing</b> will be produced with suggestions on how to further and coordinate the interactions and collaborations in the BCBT research area.</li> </ol>
<p>Effort in person-days that will be charged to the Network Action (if any)</p>	<p>0</p>
<p>Expected start and duration in months</p>	<p>September 8-21, 2008</p>
	<p><b>Funding is requested for travel and accommodation for 30 invited speakers</b> (from Europe and the US).</p> <p><u>Travel costs:</u></p> <p>Up to <b>47800 Euros</b>.</p> <p>Per invited speaker we calculate an economy travel fare (average: 700) and a 4 day stay at the BCBT (130/day=520). Hence, 1220 per speaker for 30 invited speakers = 36600</p> <p>euCognition students – not covered by associated FP6/FP7 consortia. Per euCognition student we expect an average travel fare of 400 and a cost per day of 80 (residence 60, per diem 20). Hence, 1120 per student x 10 slots = 11200.</p> <p><u>Other costs:</u></p> <p>n/a</p> <p><u>Labour costs:</u></p> <p>None.</p> <p>We have received Definite (D) or Provisional (P) confirmations from the following 18 renowned international speakers:</p> <p>Yoshi Shacham-Diamand  <a href="http://www2.tau.ac.il/nano/researcher.asp?id=agdmigeck">http://www2.tau.ac.il/nano/researcher.asp?id=agdmigeck</a> P</p>

	<p>Elan Vaadia  <a href="http://motorcortex.huji.ac.il/">http://motorcortex.huji.ac.il/</a> D</p> <p>Joseph Ayers  <a href="http://www.neurotechnology.neu.edu/ayers.html">http://www.neurotechnology.neu.edu/ayers.html</a> P</p> <p>F. Grasso  <a href="http://www.brooklyn.cuny.edu/">http://www.brooklyn.cuny.edu/</a> D</p> <p>B. Scassellati  <a href="http://cs-www.cs.yale.edu/homes/scaz/Research.html">http://cs-www.cs.yale.edu/homes/scaz/Research.html</a> P</p> <p>Mark Cutkosky  <a href="http://www-cdr.stanford.edu/~cutkosky/">http://www-cdr.stanford.edu/~cutkosky/</a> P</p> <p>Eugene Izhikevich  <a href="http://vesicle.nsi.edu/users/izhikevich/">http://vesicle.nsi.edu/users/izhikevich/</a> P</p> <p>Geert-Jan Kruijff  <a href="http://www.dfki.de/~gj/">http://www.dfki.de/~gj/</a> P</p> <p>Wolfram Schultz  <a href="http://www.pdn.cam.ac.uk/staff/schultz/">http://www.pdn.cam.ac.uk/staff/schultz/</a> D</p> <p>D. Salzman  <a href="http://www.neuroscience.columbia.edu/?page=28&amp;bio=172">http://www.neuroscience.columbia.edu/?page=28&amp;bio=172</a>  D</p> <p>Germund Hesslow  <a href="http://www.mphy.lu.se/avd/nf/hesslow/">http://www.mphy.lu.se/avd/nf/hesslow/</a> D</p> <p>P. Redgrave  <a href="http://www.shef.ac.uk/psychology/staff/academic/peter-redgrave.html">http://www.shef.ac.uk/psychology/staff/academic/peter-redgrave.html</a> D</p> <p>Reza Shadmehr <a href="http://www.shadmehrlab.org/">http://www.shadmehrlab.org/</a> D</p> <p>Pieter Roelfsema <a href="http://www.nin.knaw.nl/viscog/">http://www.nin.knaw.nl/viscog/</a> D</p> <p>Murray Shanahan  <a href="http://www.doc.ic.ac.uk/~mpsha/">http://www.doc.ic.ac.uk/~mpsha/</a>P</p> <p>Axel Cleeremans  <a href="http://srsc.ulb.ac.be/axcWWW/axc.html">http://srsc.ulb.ac.be/axcWWW/axc.html</a> P</p> <p>Thomas Metzinger  <a href="http://www.philosophie.uni-mainz.de/metzinger/">http://www.philosophie.uni-mainz.de/metzinger/</a> P</p> <p>Steven Laureys  <a href="http://www.coma.ulg.ac.be/">http://www.coma.ulg.ac.be/</a> P</p> <p>Paul Cisek  <a href="http://www.cisek.org/pavel/">http://www.cisek.org/pavel/</a> P</p> <p>We still have 11 invitations unconfirmed.</p>
<p>Please identify any other sources of funding that contribute to this Action (actions to support events such as workshop and conferences should include an outline budget identifying the total cost)</p>	<p>BCBT will charge every non-euCognition participant a workshop fee of 200. With an expected attendance of 75 this will generate an income of about 15000 that will be used for other expenses such as reception, meeting social events, administration etc.</p> <p>The associated EC consortia will support the attendance of their own members to BCBT. In addition they will provide further financial back up for exceptional items or budget deficits.</p>
<p>Workshops: <i>official euCognition event</i> (yes/no &amp; maximum number of members that can be accommodated)</p>	<p>Yes.</p> <p>Maximum number of members that can be accommodated: in the lectures is 25.</p> <p>The 10 euCognition student members we want to include in the event are included in the budget of BCBT.</p> <p>euCognition funding will be exclusively used to support those students who can not be supported by an associated EC consortium.</p>