

Application Form / Workshop Description



Session Title:

The FET-Flagship Candidate Robot Companions for Citizens: enabling technology for sustainable welfare

Time of workshop:

March 7, 2012, h. 08:30-12:30

Organisers:

Prof. Paolo Dario

CA-RoboCom Coordinator

The BioRobotics Institute, Scuola Superiore Sant'Anna, Pisa, Italy

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To announce the intended participation to the workshop or for general enquiries:

Dr. Calogero M. Oddo and Dr. Nicola Vitiello

CA-RoboCom Scientific Secretariat

The BioRobotics Institute, Scuola Superiore Sant'Anna, Pisa, Italy

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Motivation and objective:

After a 1-year consultation phase, on July 2010 the European Commission launched a call for FET Flagship preparatory actions. The aim of this call was the selection of 6 Pilot Actions to be funded (1.5 M€ for each Pilot Action) over a duration of 12 months starting from May 2011. These Coordination Actions aim at creating a design and description of consolidated candidate FET Flagship Initiatives.

FET flagships (FET-F) are visionary research initiatives building on areas of established European excellence and oriented towards a unifying goal via a FET-nucleated multidisciplinary approach. Future Emerging Technologies (FET) scheme is part of the EU DG INFSO ICT Programme (http://cordis.europa.eu/fp7/ict/programme/fet_en.html).

FET is the ICT incubator and pathfinder for exploring new visionary ideas. It promotes long-term, high-risk / high pay-off, multi- and inter-disciplinary foundational research, offset by potential breakthrough with high technological and societal impact.

FET-F initiatives are proposed to generate waves of technological innovation and economic exploitation, ideally in a variety of areas and sectors, and would carry an important societal impact. They are envisioned to run for at least 10 years, on a budget in the range of 100 M€ per year and per initiative. Finally, they are envisioned to be of such magnitude that they can only be realised through a federated effort of different EC programmes, along with Member States, funding agencies, universities and research institutions, global partners and industry. By mid-2012 the FET Flagship Pilots will present a structured community in good position to implement their integrated research agenda, including the involvement and commitment from key stakeholders. In the second half of 2012 at least two of the Pilots are expected to be chosen to be launched as full FET Flagship Initiatives in 2013.

One of the six Pilot Actions selected by the EU Commission is the CA-RoboCom Project, which aims at the design and description of the FET Flagship Candidate "Robot Companions for Citizens" (RCC), including its scientific and technological framework, governance, financial and legal structure, funding scheme, competitiveness strategy and risk analysis.

The FET Flagship initiative RCC will realize a unique and unforeseen multidisciplinary science and engineering program supporting a radically new approach towards machines and how we deploy them in our society.

We believe that a new class of machines and embodied information technologies, which we call the Robot Companions for Citizens (RCCs), is required to help us achieve sustainable

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welfare. RCCs will perform a multitude of assistive roles in our public services, enhance productivity and safety at work, and help us to cope more effectively with large-scale events such as natural disasters. Due to their ability to act and interact, physically and socially, with humans they will become ubiquitous yet safe; they will be unobtrusive, affordable and recyclable. This new generation of robots will extend the active independent lives of citizens, bolster the labour force, preserve and support human capabilities and experience, provide key services in our cities, and help us to maintain our planet.

Today we can find self-driving metros or trains, but their rails are a striking symbol of the limitations of current robotic systems – no existing robot or autonomous system is capable of operating without sharp boundaries that delimit its role and protect it from harming humans, the environment or itself. This is the reason why today no machine can behave as a personal assistant or caregiver, even though our society has an urgent need for better technologies for care.

To solve this problem, and to develop dependable machines able to safely interact with humans, requires a fundamental rethink in how we conceptualize and construct robots.

These future robots will require a high number of degrees of freedom for movement, a high density of sensors, and a distributed computational architecture.

For a traditionally engineered system this would result in high demands for energy, computation and storage whilst, at the same time, controllability would become increasingly intractable.

The RCC Flagship will overcome the limitations of existing approaches by following an alternative and biologically-grounded paradigm, exploring fundamental scientific pillars, principles and methodologies such as **Simplexity**, **Morphological Computation** and **Innovative Fabrication Technologies** to yield to the expression of the function of **Sentience** in Robot Companions.

Driven by its vision of sustainable welfare, RCC will involve pertinent stakeholders in science and technology, society, finance, politics and industry by means of a dedicated **Society** pillar included in the workplan, and will attentively consider any ethical or legal implications. To realize its goal, and in order to place Europe in the lead in future robotics, RCC envisions a Flagship as an incubator of advanced science and engineering involving thousands of researchers. Resources will be allocated in a competitive fashion to the best ideas that contribute to answering the RCC grand challenge.

To assure high impact, this federated research effort will require exceptional effort in project governance. A fundamental question for projects on this scale concerns the incentives for the communities involved to collectively delivery on their promises. Governance in the RCC project will therefore be built on four solid cornerstones: the concrete and well defined goal of Robot Companions; the RCC explicit science and technology roadmap; an uncompromising commitment to scientific excellence; and an insistence that, in order to realize ambitious goals, nobody can be above scrutiny.

The scientific momentum of the RCC Flagship will provide leverage for educational programmes at all stages from junior school to undergraduate and graduate teaching. Our vision for a new robotics, and its underlying science, is inclusive and provides integration from material sciences to sociology; this needs to be matched with an equally ambitious programme in training and education. RCC will realize new pan-European training programmes federating existing programmes and driving the development of new ones, in particular at the interfaces between disciplines.

Through the immediacy of building life-like robots, and their clear application to realizing sustainable welfare, the RCC FET Flagship will attract a large and diverse range of women and men to train for careers in science and technology. RCC will therefore promote a new educational spirit that reaches across the traditional boundaries especially those between science, social science, and engineering.

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Across of all these areas, RCC will instigate a dynamic and robust economic push that will reinvigorate the European economy and create new markets and opportunities for our manufacturing and service industries at home and across the world.

The ambitious goals of the RCC initiatives will be pursued by means of a massive, interdisciplinary European-driven effort, open to contributions by different scientific communities and “global” (non-European) partners, industry different stakeholders, and pursuing cooperation and synergies with existing and future European initiatives in the field of robotics (such as EURON, EUROP, euRobotics, Robotics PPP, and so forth).

Based on these **motivations**, the **objective** of the proposed workshop is to provide the participants with the latest information on the **status of the RCC proposal preparation**, to **get feedback** to be used for the finalization of the proposal, and to **collect candidacies** for possible inclusion in the initiative.

Approach:

At the date of the workshop, the CA-RoboCom Project – Coordination Action for the Design and Description of the FET Flagship Candidate Robot Companions for Citizens – will be at a very advanced stage, but still open to general feedback, specific contributions and offer for participation in the initiative.

Therefore, the workshop will aim at presenting and discussing the advancements towards the presentation of the RCC FET Flagship proposal, being characterized by a very open and inclusive methodology.

Agenda of the workshop:

- 08:30-09:15
 - o Introduction and presentation of the RCC workplan, Pillars and RTD structure
Paolo Dario
- 09:15-10:00
 - o RCC S&T priorities
Paul Verschure, Pieter Roelfsema and Chris Melhuish
- 10:00-10:30
 - o RCC platforms and demonstrator
Alin Albu-Schaeffer and Giorgio Metta
- 10:30-11:00
 - o Coffee break
- 11:00-11:20
 - o Participation of Industry and Governance Model
Christophe Leroux and Uwe Haass
- 11:20-12:20
 - o Open discussion
- 12:20-12:30
 - o Conclusions
Paolo Dario

Speakers:

Prof. Paolo Dario

CA-RoboCom Coordinator

The BioRobotics Institute, Scuola Superiore Sant’Anna, Pisa, Italy

Members of the CA-RoboCom Executive Board, Advisory Board and European and International Cooperation Board

Representatives from Robotics networks and associations

Established and potential partners (from academia, research institutions and industry) and stakeholders of the FET Flagship Candidate Robot Companions for Citizens

The European Robotics Forum is supported by the euRobotics Coordination Action, funded by the European Commission within the 7th Framework Programme (FP7-ICT-244852; 01/2010 – 12/2012)
<http://www.robotics-forum.eu>

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How can participants contribute to, and prepare for, the workshop?

Participants are suggested to explore the contents of the CA-RoboCom website.

For any inquiry, please contact the CA-RoboCom Coordinator or the Scientific Secretariat (contacts provided in the “Organizers” paragraph above).

Further information:

www.robotcompanions.eu

<http://www.robotcompanions.eu/node/146>

<http://cordis.europa.eu/fp7/ict/programme/fet/flagship/>

Planned follow-up:

The CA-RoboCom Coordinator and Boards will make attentive use of the outcomes of the workshop to steer the very final phase towards the presentation of the RCC FET Flagship proposal (CA-RoboCom Project Final Report due by April 30, 2012; Robot Companions for Citizens FET Flagship Final Proposal due by October 2012).

Please reply to:

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The European Robotics Forum will take place from 5-7 March 2012 in Odense, Denmark, hosted by the Danish Technological Institute (DTI). More than 300 robotics researchers from industry and academia, as well as entrepreneurs and public investors are expected to discuss the latest developments, research challenges and business opportunities for European robotics. This year's theme of the European Robotics Forum is “European Robotics towards new horizons”.