European robotics competitions and challenges: status quo and lessons learned

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Motivation

- This workshop is aimed at analysing the outcome of the competitions in the **European Robotics League (ERL)** and of the **EuRoC** challenges, based on both
  - the experiences of successful teams
  - best practice and recommendations suggested by the **RockEU2** Consortium

- Previous events
  - Workshops on robotics competitions and challenges at the **European Robotics Forum** in past years
  - **ERL Experts Forum** at Robocup 2016

Overview of the schedule

- Status of the European Robotics League (ERL) and main results
  - *Introduction*
  - *Position statements by ERL participant teams*
- Status of EuRoC and main results
  - *Introduction*
  - *Position statements by EuRoC participant teams*
- Break
- Panel discussion – Chairperson: Matteo Matteucci
  Anne Bajart (EU Commission) , Rainer Bischoff (KUKA), Fabio Bonsignorio (Scuola Superiore Sant'Anna, I), Gabriele Ferri (NATO STO -CMRE), Sabine Hauert (Bristol Robotics Laboratory and University of Bristol, UK), Daniele Nardi (University of Roma "La Sapienza", I), Robin Williamson (Scuola di Robotica, I), Marta Palau Franco (University of the West of England Bristol, UK)

Key recommendations towards roadmapping EU competitions

- *Organisers of competitions should track advances both in science and technology (in collaborative projects, conferences, industry) in order to reflect them in new rules and scenarios. New challenges should be present every year.*
- *Teams should use standard technology when available (no "reinventing the wheel"). This would allow to focus on architecture, control, strategy etc.. Forms of sponsorship could include in-kind contribution by companies: sensors, motors, grippers.*
- *Parallel events suggested for the ERL tournaments have to be used also for benchmarking and real comparison of results from EU-funded research projects, where consortia have to show robustness without long preparation and ad-hoc solutions.*

Key recommendations towards roadmapping EU competitions

- *Proposals for new EU projects should possibly include a budget for participation to competitions, or specific Coordination and Support Actions (CSAs) could be envisaged for such purpose. New CSAs may be proposed for dissemination and match-making towards demonstration of project results in really challenging scenarios.*
- *For possible classes in the curriculum dedicated to basic mechatronics and coding for robotics competitions, research and industry groups should meet at the national level to stimulate the National Ministry of Education.*
- *Rehearsal camps and integration weeks before competitions should be encouraged also for improving team spirit.*

Key recommendations towards roadmapping EU competitions

- *In any case, the topic of dedicated funding for keeping some technical roles in the teams is crucial.*
- *Brokerage events should be organised at local tournaments and at major conferences to allow technology developers and end-users to meet teams.*
- *In order to attract industry, tasks have to represent an abstraction of the problems the industrial sector is interested to solve. Tasks must contain the core of a problem without focusing on details.*
- *A dedicated budget for dissemination has to be properly estimated in the organisation of tournaments, in order to provide the needed visibility for the teams and the sponsors*

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