

EuRoC in a Nutshell

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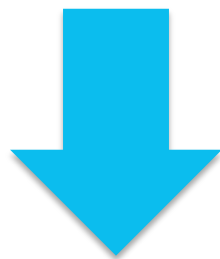
CREATE/UNICAS



Workshop on “Additional Funding Opportunities”
Thursday 13 March 2014 • 12:00–12:30

The Motivation

The European manufacturing industry needs competitive solutions to keep global leadership in products and services



EuRoC project

- Question the status quo of technology transfer
- Benchmark on existing shared resources
- Showcase potential of robotics challenges

The Consortium

KUKA

**ASCENDING
TECHNOLOGIES**



Fraunhofer
IPA

LAAS-CNRS



INNOCENTIVE®

ETH Zürich

ALSTOM
Inspection Robotics



The Objectives

1. Successfully run the three challenges

- Involving whole manufacturing supply chains within **production**, **logistics** and **servicing** while favouring technology transfer from academia to industry

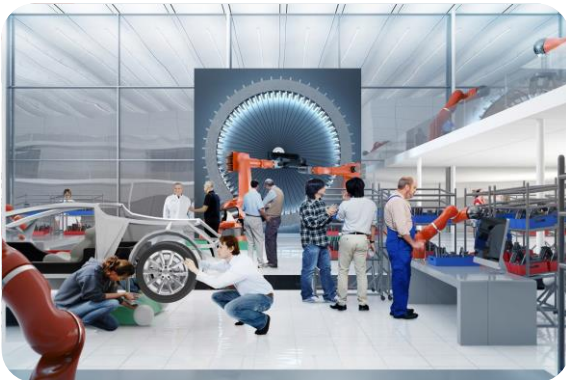
2. Empower robotics platforms and benchmark infrastructures

- Sharing existing resources available at three top European platforms

3. Ensure sustainability and adaptability to end users

- Developing experiments in labs under realistic conditions and taking them down to the real field

- **Three industry-relevant Challenges**
 - Open call framework
 - Three stages of increasing complexity (incl. application experiments)
 - Financial support
 - **Benchmarking and performance evaluation on shared resources**



**Reconfigurable Interactive
Manufacturing Cell**



**Shop Floor Logistics
and Manipulation**



**Plant Inspection
and Servicing**

Challenge C1

Reconfigurable Interactive Manufacturing Cell

- **Motivation**: to develop a new generation of flexible, adaptable, collaborative robotic work cell
- **RTD issues**: multi-role multi-arm cooperative robot systems, perception and cognitive skills, safe and effective human–robot collaboration
- **Research experts**: CREATE-PRISMA Lab, CNRS-LAAS, DLR, IPA
- **Technology supplier**: Open, as IPA can provide support to a range of different robot models and components
- **System integrator**: IPA / Open, as teams can recruit their own system integrator
- **Platform host**: IPA
- **Benchmark environment**: ARENA 2036 research factory with multiple robot cell setups for different production operations, as well as a mechanical workshop and an electronics lab for engineering of different tools and grippers



Challenge C2

Shop Floor Logistics and Manipulation

- **Motivation**: value creation beyond mere logistics of goods (which is already an update of the EUROP SRA application scenario “logistics”)
- **RTD issues**: navigation on dynamic shop floor, coping with uncertainties by means of 3D vision and compliant manipulation and grasping, true mobile manipulation to improve cycle time, safe human-robot coexistence
- **Research experts**: DLR, KUKA Labs, CNRS-LAAS
- **Technology supplier**: KUKA Labs (omniRob with Light-weight robot)
- **System integrator**: KUKA Roboter, KUKA Systems
- **Platform host**: DLR
- **Benchmark environment**: realistic factory set-up with elements from manufacturing of real end users



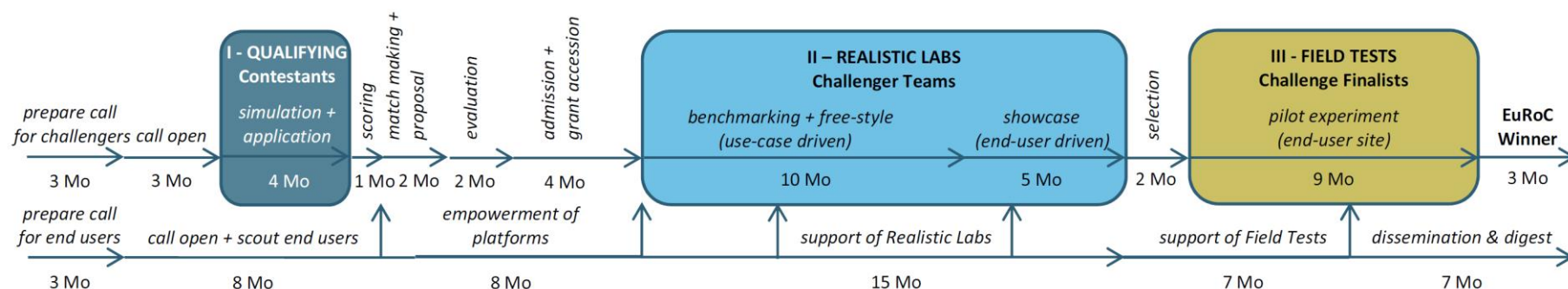
Plant Servicing and Inspection

- **Motivation**: inspection through micro aerial robots (MAV) opens absolutely new applications in servicing of large plants and infrastructures
- **RTD issues**: highly reliable vision-only navigation, dynamic control of MAVs in challenging industrial environments, high-level task allocation by mission expert, e.g. "follow this wall"
- **Research experts**: ETHZ, CREATE-PRISMA Lab, DLR
- **Technology supplier**: Ascending Technologies
- **System integrator**: Alstom Inspection Robotics
- **Platform host**: ETHZ
- **Benchmark environment**: realistic set-up on an industrial infrastructure, e.g. pipework and infrastructure for energy-/fuel-/operating material supply, tanks and storages



The Project Timeline

- **Launch:** 1 April 2014
- **Three challenges articulated in three stages**
 - QUALIFYING
 - REALISTIC LABS
 - FIELD TESTS
- **Duration:** 48 months



Stage I – QUALIFYING [4 Mo]

PART A: Call for Challengers (and End Users)

- 1 page pitch: team description and challenge objectives
- Submit to simulation test (up to 30 teams per Challenge)
 - *Scoring according to objective metrics*

→ **The best 3 × 15 are selected**

PART B: Advance to Stage II (Realistic Labs)

- Match-making event: Challengers team up with end users and system integrators
- Each team submits 15-page proposal
 - *Evaluation by Challenge Advisors and independent experts*

→ **The best 3 × 5 are selected**

Stage II – REALISTIC LABS [15 Mo]

PART A: Benchmarking + freestyle [10 Mo]

- Teams will receive funding to prepare Round A
- Mid-term evaluation at Automatica 2016
 - *Challenge Advisory Board and team of independent experts decide admission to Round B*

PART B: Showcase [5 Mo]

- Teams will receive funding to prepare Round B
- End-user driven task aimed at showcasing customizability under realistic conditions
 - *Challenger teams will be ranked according to objective metrics by Advisory Board and independent experts*

→ **The best 3 × 2 are selected**

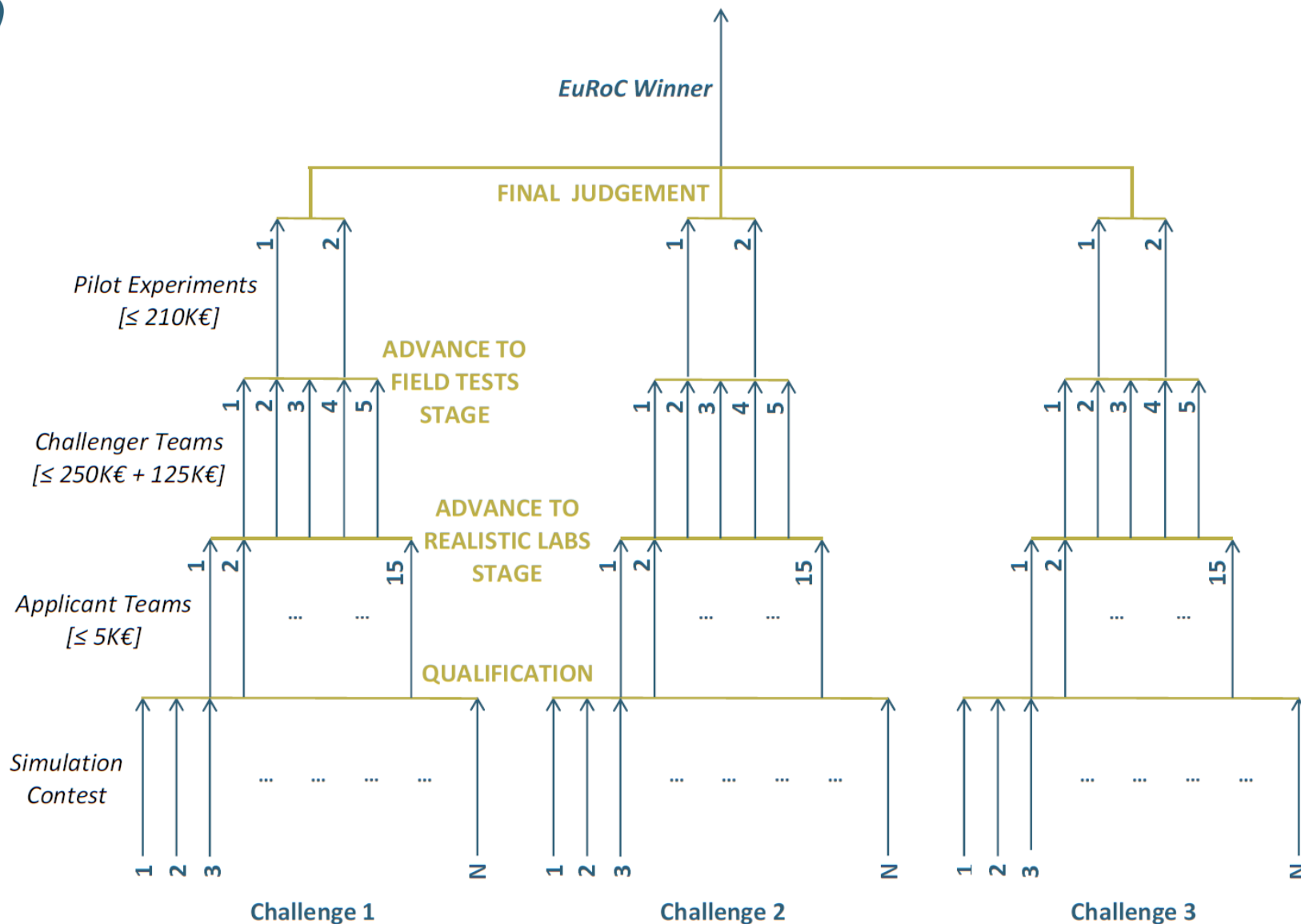
Stage III – FIELD TESTS [9 Mo]

Pilot experiments

- Teams will receive funding to prepare field tests
- 3 x 2 teams will do experiments under real conditions at end-user site (demonstrated at public event)
 - *Finalists will be undergo final evaluation by a Board of Judges*

→ **1 EuRoC winner is selected**

The Challenge Chart



The Project Lures

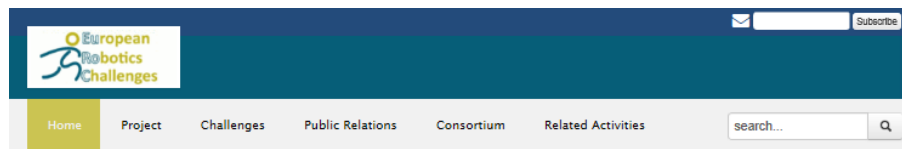
- 1. Cumulative sum of € 7 M grant money available to the Challengers**
 - 30 Teams will receive up to € 5 K each in the first stage
 - 9 Teams will receive up to € 375 K each in the two stages
 - 6 Teams will receive up to € 585 K each in the three stages
- 2. Added value of the challenge experiments**
 - Benchmark new algorithms on three first-class European hosting platforms
 - End users, technology developers and system integrators on board from start
 - Open access to platforms
 - Full support from local hosts and end users
 - Test algorithms at end-user site in the final stage
 - Financial support available to cover personnel and travel/lodge costs
- 3. Formation of Challenger teams**
 - Gain business experience
 - Great networking opportunities

Call for Challengers

- Publication: 1 April 2014
- Deadline: 30 June 2014

Call for End Users

- Publication: 1 April 2014
- Deadline: 15 November 2014



Welcome to the European Robotics Challenges

"The European manufacturing industry needs competitive solutions to keep global leadership in products and services."



Reconfigurable Interactive Manufacturing Cell



Shop Floor Logistics and Manipulation



Plant Inspection and Servicing

Since the eighteenth-century Longitude Prize and the 1927 Orteig Prize as well as the challenges of today on driverless vehicles and suborbital spaceflight, there are great examples of challenges driving innovation. Aimed at extraordinary breakthroughs, storied outcomes or multiple innovation returns on the total programme costs, all of these initiatives share the strive for questioning the status quo.

The application of challenge-driven approaches are literally infinite. And the buzz surrounding challenges is a beneficial consequence of combining high awards with competition programmes. In the 21st century however, most of the significant challenges have been initiated by American organisations.

With the EuRoC challenge programme, not only do we intend to change the fact that there have not been many of such prosperous initiatives in Europe, but we are also determined to Showcase the potential of such targeted challenges for driving the development of innovative products and services. With this programme, we are striving to make a sustainable change in the perception of European citizens, demonstrate the stimulating factors of such initiatives and set the scene for more of these open innovation programmes to come in the future.

In the long run, prize competitions have the potential to become an additional component of the research and development funds of the European Union in the Horizon 2020 framework: on the one side, to promote innovation in research, on the other side, to promote transfer of results achieved in basic science to marketable products and solutions. Importantly, we do not suggest for prize competitions to replace the established grant application process of the European Research Frameworks, but to use prize competitions as an additional tool in the set of measures used in funding research and Innovation.

With the EuRoC challenge program, we want to bring Europe to the forefront of prize induced innovation and showcase the potential of such targeted challenges. So far most of the famous challenge programs of the 21st century have been initiated and conducted by US organizations. Data of McKinsey and Company from 2009 show an exponential increase in funds available for prize competitions.

Partner of

I4MS

ICT Innovation for Manufacturing SMEs

www.i4ms.eu

News

EuRoC@I4MS 17.10.2013

2013-10-17 08:00 CET

Representatives of all projects involved in the I4MS initiative met in Brussels on the 11th of October to discuss joint market visibility, synergies among projects etc.

[In the... read more](#)

[go to news archive](#)

Events

March 2014						
Mo	Tu	We	Th	Fr	Sa	Su
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

EuRoC Challenge Design Workshop

Date: 2014-01-23 to

All Queries

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European Robotics Challenges

