ECHORD++

European Clearing House for Open Robotics Development Plus Plus

ECHORD++ CALL 2 INFORMATION

Christophe Leroux, CEA LIST

20 Avril 2015

Ministère de l'éducation nationale de l'enseignement supérieur et de la recherche

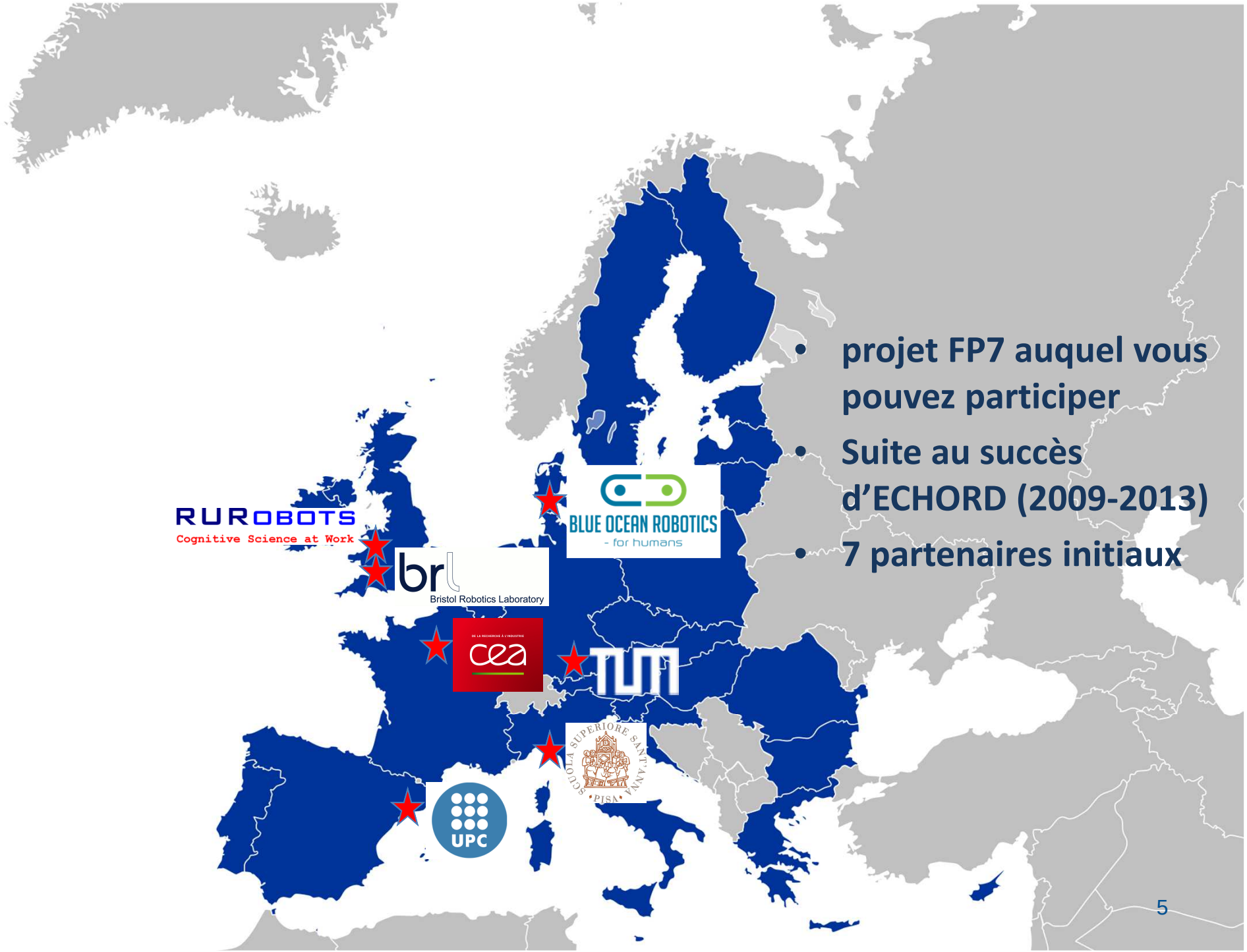
Objectif de la ½ journée

- Information sur ECHORD++
- Présentation du RIF Paris-Saclay
- Information sur le 2eme appel à expérimentations

Agenda

Début		
9:45	Accueil	
10:00	Introduction par le Ministère de l'Éducation nationale, enseignement supérieur et de la recherche	Frédéric Laurent (MENESR)
10:10	Le projet ECHORD++ et de ses opportunités	Christophe Leroux (CEA)
10:30	Le RIF Paris-Saclay	Pascale Betinelli (CEA)
10:50	Expérimentations: deuxième appel, opportunité, texte de l'appel, priorités, échéancier	Christophe Leroux (CEA)
11:10	Retour d'expérience sur le premier appel, "best practices"	
11:30	Les expertises, comment postuler, les enjeux, expérience pratique	Philippe Bidaud (ONERA)
11:50	Questions ouvertes	Christophe Leroux (CEA)
12:30	Buffet	

ECHORD++ ET SES OPPORTUNITÉS



- projet FP7 auquel vous pouvez participer
- Suite au succès d'ECHORD (2009-2013)
- 7 partenaires initiaux

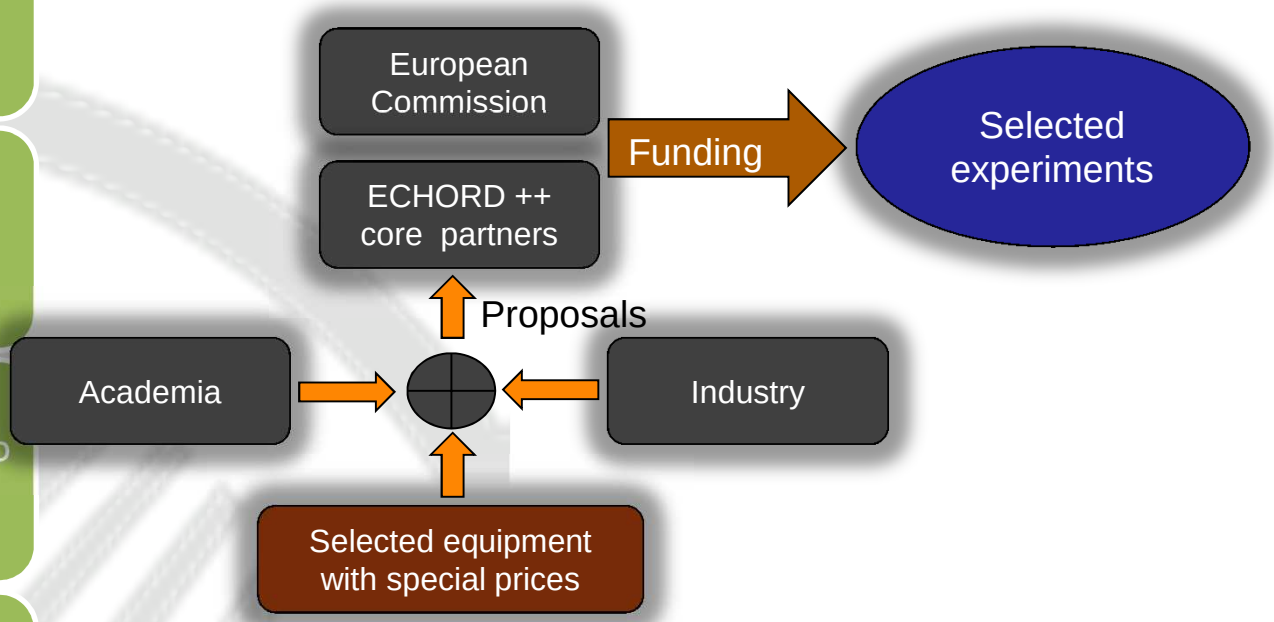
ECHORD++ Project facts

Oct 2013 –sept 2018

Funding ~20 M€

Most of the funding re-distributed to new partners

Focus on application-oriented R&D through small-scale “experiments” and “structured” dialogue between academia and industry



ECHORD++ Instruments

- To stimulates interaction between industry, research and users
- Goal achieved by implementing three different instruments

Experiments

Robotics Innovation Facilities (RIF)

Public end-user Driven Technological Innovation (PDTI)

ECHORD++ Instruments

Experiments

Robotics Innovation Facilities (RIF)

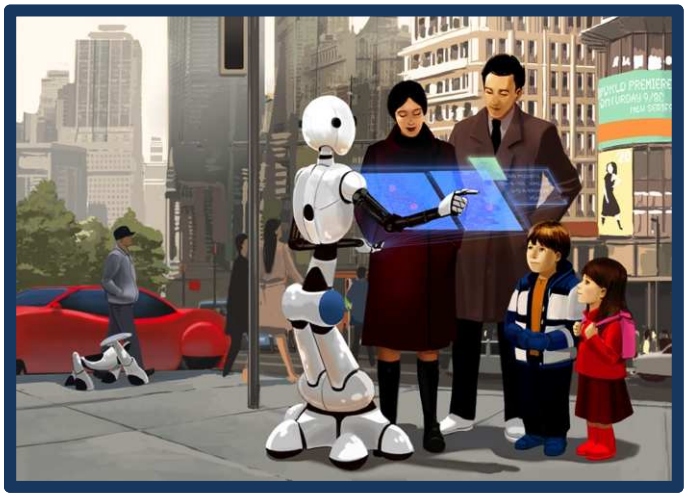
Public end-user Driven Technological Innovation (PDTI)

PDTI within E++ - Scenarios

Healthcare

Assistive robotics for elderlies

Urban Robotics



Cleaning of sewage

Objectives

- A way of integrating public bodies in the development of robotics
- Selecting best challenges where robotic can be applied
- Test selected solutions in scenarios.

ECHORD++

Instruments

Experiments

Robotics Innovation Facilities (RIF)

Public end-user Driven Technological Innovation (PDTI)

Experiments

- Small to medium size **scientific research and/or technology development** projects with a clear focus on **generation of impact**
- Funding ~ 300k€ per experiment
- Duration up to 18 months
- Small consortia, typically 2-3 partners
- No need for 3 different countries
- Two calls, spring 2014, and mid-2015
  - Call 1: 16 proposals selected
  - **Call 2: starting now**

Framing of experiments

3 Types

- Joint technology development
- Application and use cases
- Feasibility demonstration

5 to 6 scenarios

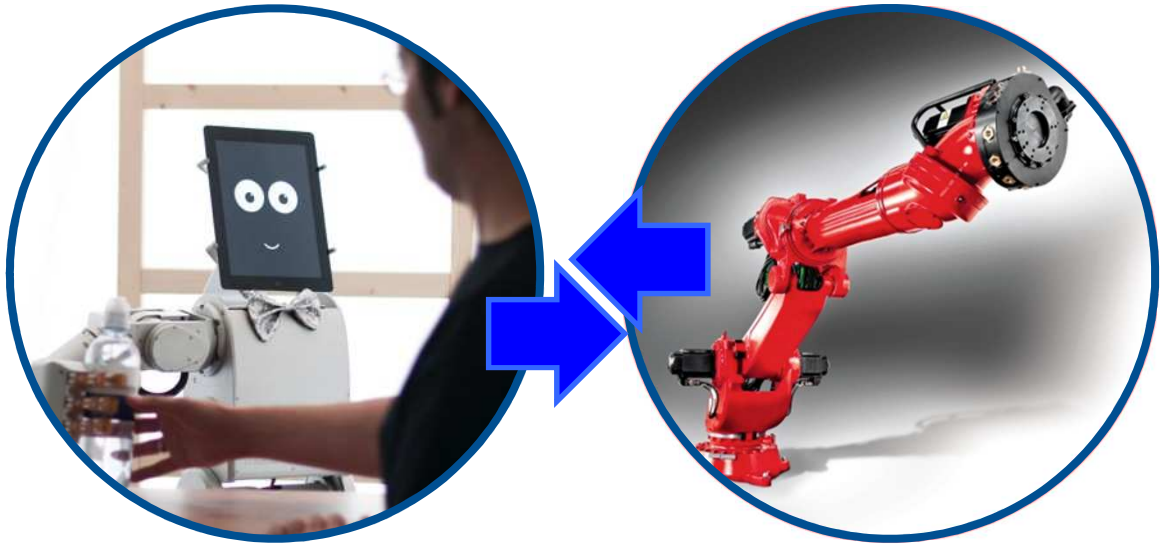
- Cognitive Tools and Workers
- General Purpose Co-workers
- Cognitive Logistics Robots
- Medical Robotics
- Agricultural and Food Robotics

Research focuses

- Machine Cognition
- Advanced Capabilities
- Cooperating robots
- Architectures and Engineering

ECHORD++

Linking RIFs and Experiments



Experiments

Robotics Innovation Facilities (RIF)

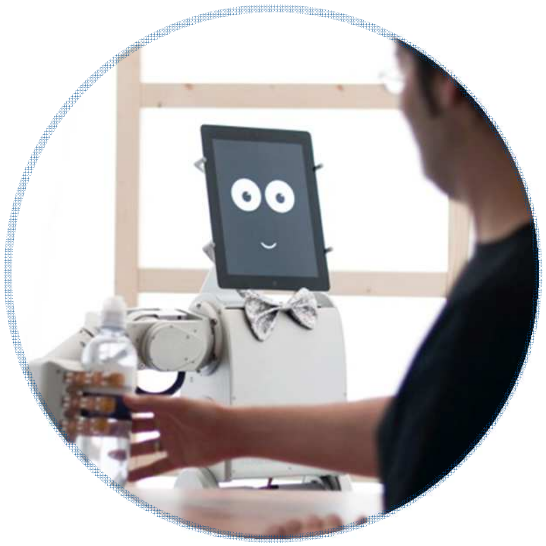
- Use RIFs as test beds outside the own lab
- Get access to robotics equipment and experts to support bootstrapping and knowledge transfer
- Show your results and participate in dissemination events

LE RIF PARIS-SACLAY

Pascale Betinelli

ECHORD++

Instruments



Experiments

Robotics Innovation Facilities (RIF)

Public end-user Driven Technological Innovation (PDTI)

DEUXIÈME APPEL À EXPÉRIMENTATIONS

Opportunité, priorités, échéancier

Call text

ECHORD++

European Clearing House for Open Robotics Development Plus Plus
www.echord.eu

First Call for Experiment Proposals

Opening: March 3rd 2014 **Deadline:** April 14th 2014, at 17:00 (Brussels time)

This competitive call for experiment proposals is related to the EU-funded Seventh Framework Programme (FP7) project **ECHORD++** (European Clearing House for Open Robotics Development Plus Plus, Grant Agreement Number 601116).

The aim of **ECHORD++** is to strengthen the knowledge transfer between scientific research and industry in robotics and to stimulate their cooperation. In the context of **ECHORD++**, small-scale projects, so-called "experiments", will be conducted, which will use state-of-the-art robotic equipment. The research community, enterprises and robot manufacturers are asked to submit experiment proposals, written in English only.

Five scenarios for likely future robot use have been defined to outline the scope of the research work to be performed in the experiments:

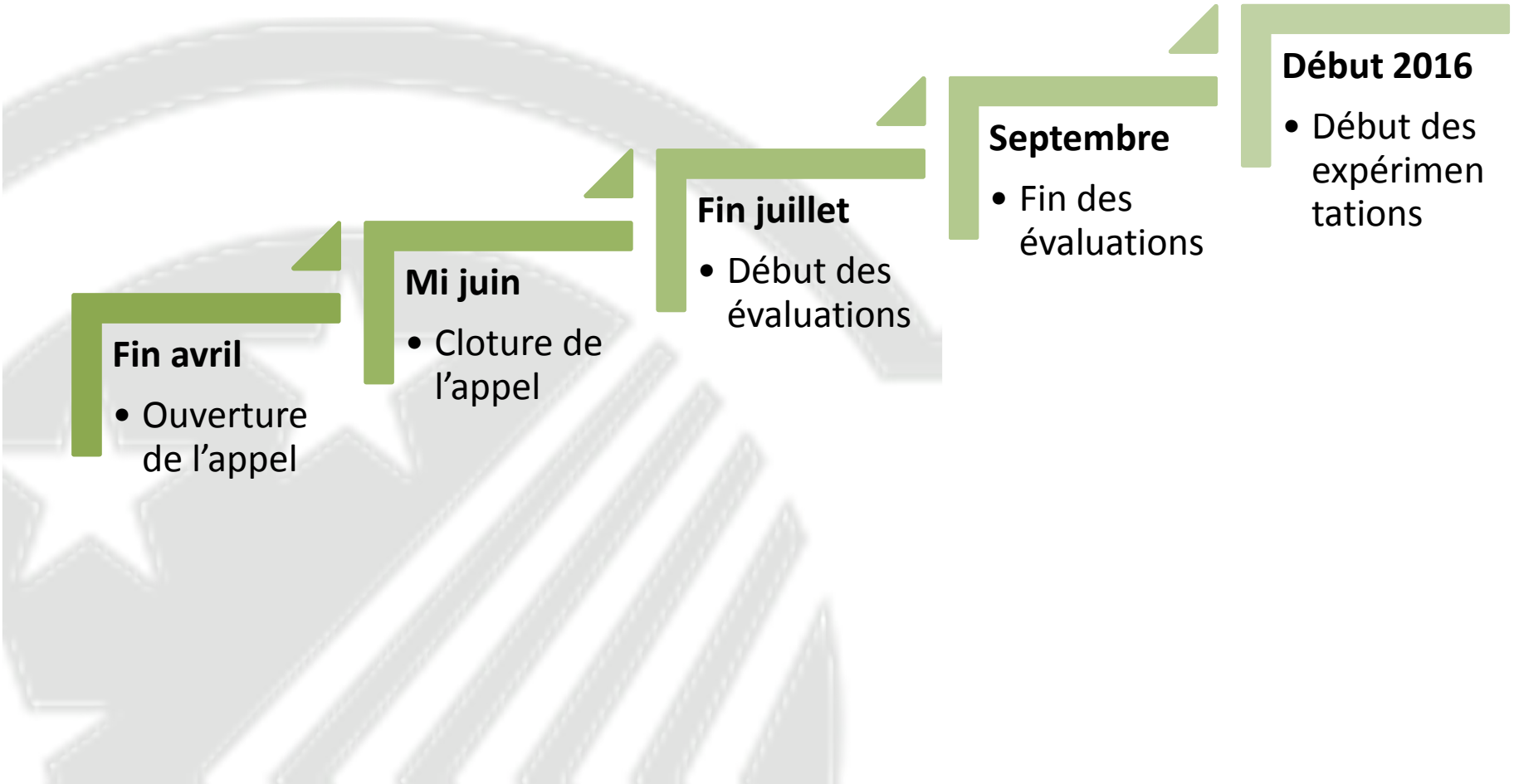
Cognitive tools and workers for cognitive factories, general purpose robotic co-workers, cognitive logistics robots for industry, medical robotics, agricultural and food robotics.

Each experiment has a maximum duration of 18 months, the funding of an experiment is expected to be about **€ 300.000.** The total indicative funding for this call is **€ 5.000.000.** Please note that the Seventh Framework Programme only offers part-funding of research activities. The project encourages the participation of organizations from non-EU countries under the rules applying for funding.

More information and the full call documents, including the guide for applicants and an electronic submission system, can be found on the website **www.echord.eu.**

If you have further questions, please contact us via **info@echord.eu**

Echéancier prévisionnel pour le call 2 Echord++



Which rules do apply?

Standard FP7 rules, including financial ones

- Cost claims and payment based on regular periodic reports
- Special rules for Echord++: equipment costs are capped at 100% of the net cost
- Depreciation according to national and local rules
- Pre-payment of equipment and in selected cases (SME) part of the labour cost

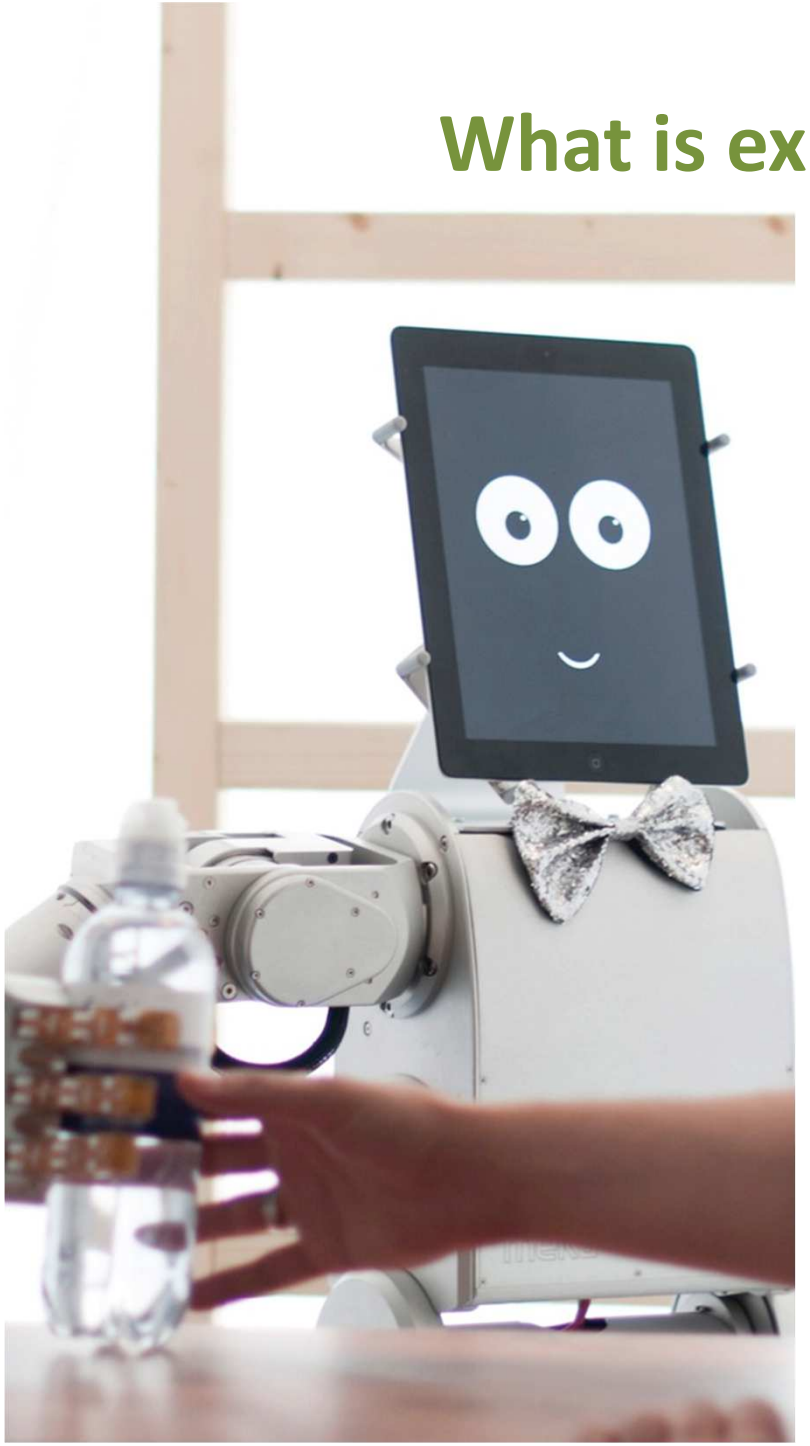
Ensure early legal and financial validation of your institution

How are experiments monitored

Monitoring similar to ECHORD procedure

- Regular (two monthly) blog entries on the E++ website with self assessment of the status and discussion with a monitoring moderator (Echord++ staff)
- Optional mid-term review by independent experts
- Mandatory review by independent expert

What is expected in addition?



- Production of multi-media material: image, video, etc.
- At least one multimedia report for a public audience
- Exploitation strategy already in the proposal
- Dissemination of project results through appropriate channels
  - Presence at a fair; organise joint booth with E++
  - Presentations at suitable workshops, conferences, industrial forums, etc.
- Interaction with the RIF

What are the evaluation criterions?

The same as in FP7

Scientific and/or technological excellence

- Objective
- Advances targeted (in terms of TRL)
- Progress beyond state of the art

Efficiency of implementation

- Structure
- Description of partnership
- Overall Experiment resource costs & funding (“value for money”)

Expected impact

- Expected results
- Exploitation plan
- Expected impact on the market created by the experiment when successful
- Realistic outcome: to be proven with a visit to a RIF or another kind of demonstration

Types of experimentations

Joint enabling technology development

- *Develop new robots, components, etc. based on the bi-directional exchange of knowledge and on the industrial quality equipment provided by robot manufacturer*

Application development and implementation of use cases

- *Robot equipment from the robot manufacturer together with components from third parties, combined to perform tasks in new applications*

Feasibility demonstration

- *Demonstrating that robots can be used in new complex industrial settings*

Scenarios

- Cognitive tools and workers for cognitive factories
- General purpose robotics co-workers
- Cognitive Logistics Robots for industry
- Medical Robotics
- Agricultural and food robotics
- Urban robotics

Scenario 1: Cognitive Tools and Workers for Cognitive Factories

Cognitive tools and cognitive robotic workers embedded into a cognitive factory.

- **Cognitive tools**: tools able to adapt parameters automatically according to situation,
- **Cognitive robotic workers**: complete sensor-based robots able to work more or less autonomously in variable environment

Factory composed of a multitude of cognitive robotics workers, able to self-adapt to changing working conditions

Factory as a whole fault-tolerant and robust system

Cognitive tools and robot workers able to work on diversity of tasks in structured environments, such as cognitive factories, labs, warehouses, landfill

Scenario 2: General Purpose Robotic Co-workers

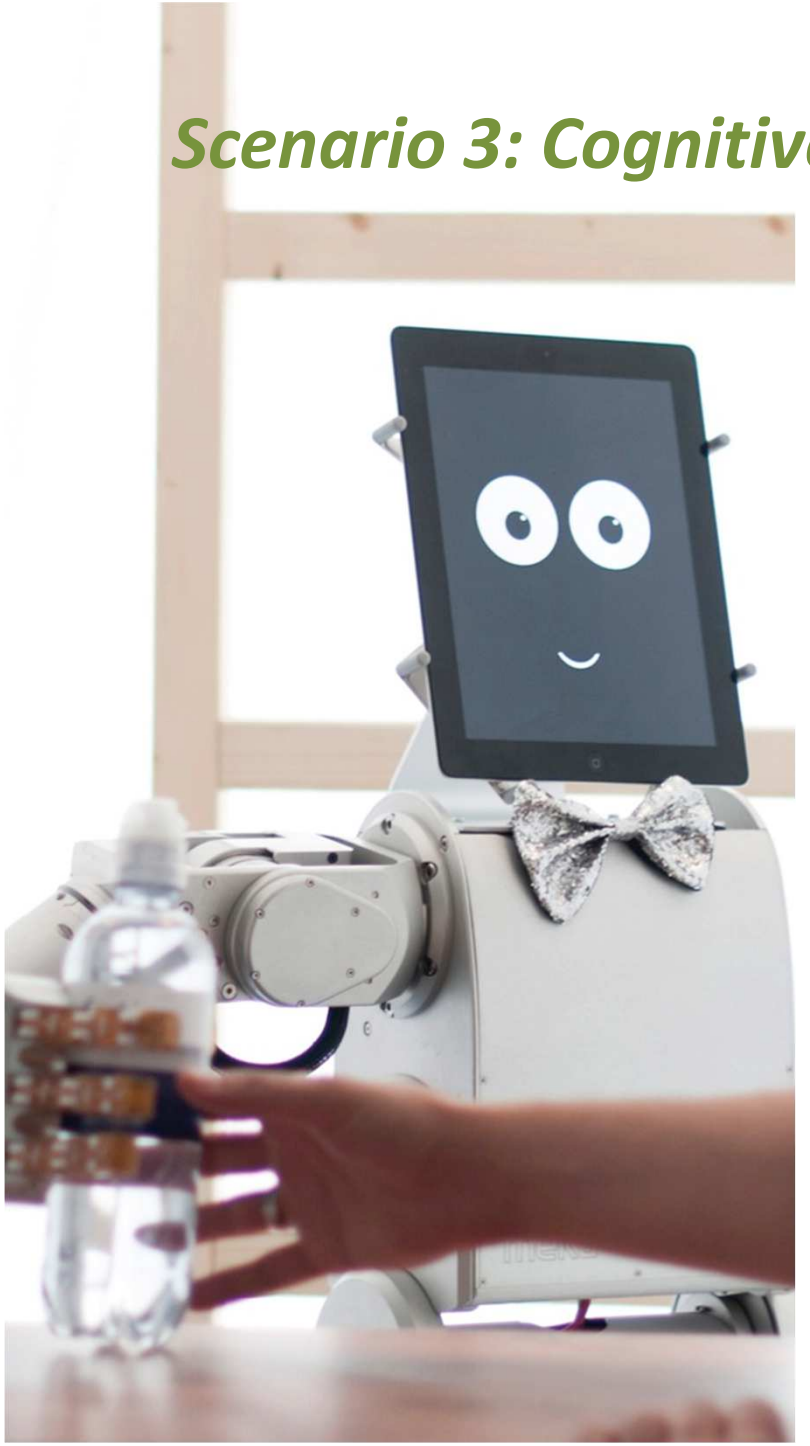
Humans and robots sharing a common workspace, instruct and assist each other

Make use of specific skills of either the robot or the human.

general purpose co-worker, i.e., not restricted in its application to a specific set of tasks.

Learning and explaining actions and plans

Scenario 3: Cognitive Logistics Robots for Industry



Transportation of loads and people, material flow and “handling” inside the factory.

Fully robotic environment

Service for people

Simplification of the execution of specific tasks

Examples: adaptive transportation based on cognitive technology, cognition for route recognition and planning, “fleet management”, transport supervision, fault-tolerance/self-repair

Scenario 4: Medical Robotics

Introduction of robust cognitive technologies and human-robot interfacing.

More support for the surgeon, increased dexterity, practical sensing capabilities, more cognitive skills

Examples: “intelligent”, adaptive and auto-navigating instruments, cooperating robots, interfaces for instrument control and multimodal feedback, situation-sensitive assistance, observation systems

Scenario 5: Agricultural Robotics

Improve farming efficiency and food security: *"from farm to fork"*

Development of agricultural robots for precision farming

All of the research foci are applicable

Not restricted to farming

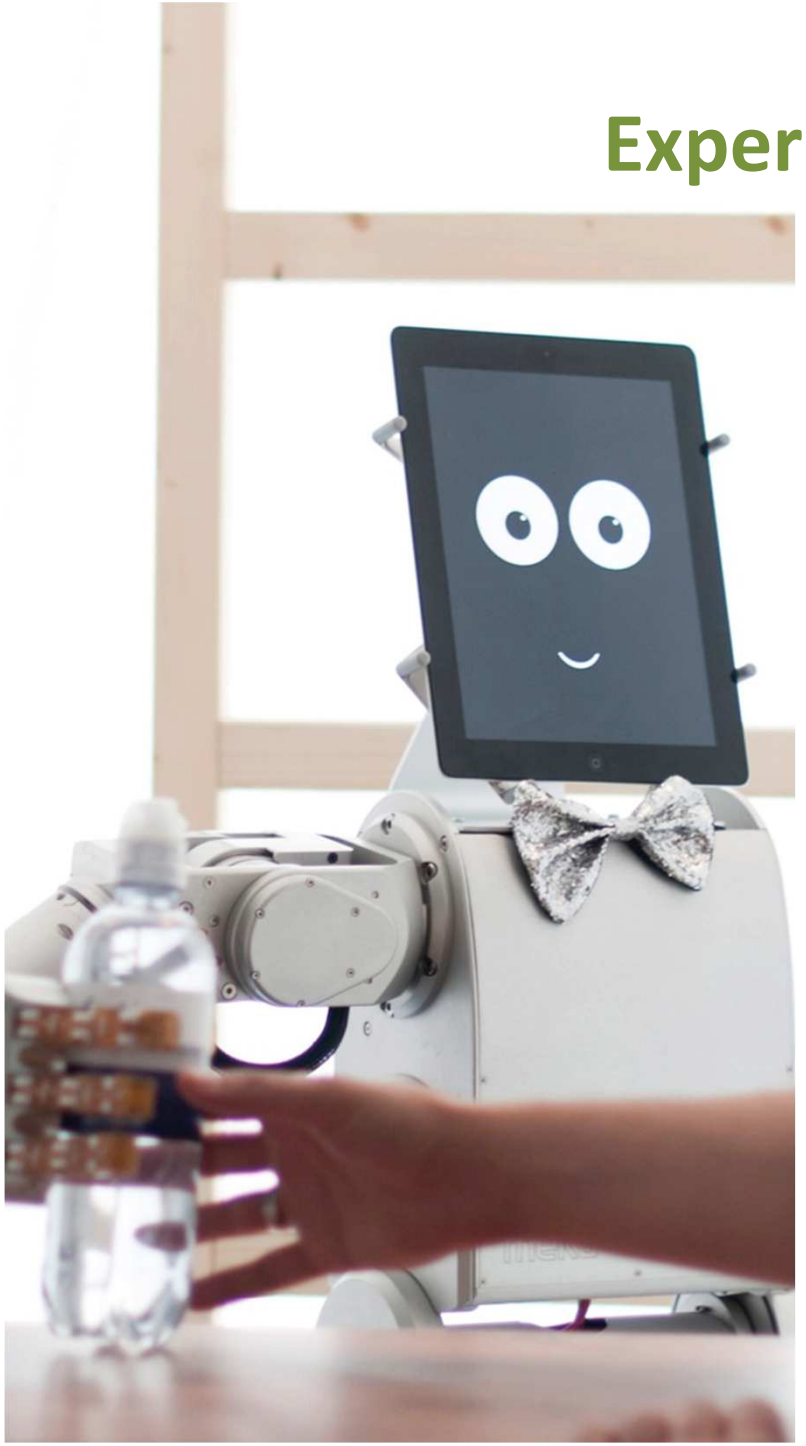
- robotics can change the entire homestead or agricultural facility
- Automation of process from raw product to finished one

Examples: cooperation between robots, comprehensive data logistics, safety, robust human-robot-interaction.

Research focuses

- Key issues in practical machine cognition
- Advanced perception and action capabilities
- Multiple cooperating mobile manipulator
- System architecture, system & software engineering processes and tools

Experiments and RIF



Why experiments should use a RIF

- Possibility to **have ready-to-use realistic test-bed** according to the plan in the proposal ⇨ minimize deviations & error
- **Cost saving**: take advantage of a tested technological location, do not waste time and money in developing your own ⇨ invest money in your project and travel to RIF
- **Technology transfer/knowledge sharing** ⇨ straightforward access to robotics and experts to support bootstrapping
- **Specific technology – oriented** programs for spin-offs/SME

LES EXPERTISES, COMMENT POSTULER, LES ENJEUX, EXPÉRIENCE PRATIQUE

Philippe Bidaud

RETOUR D'EXPÉRIENCE SUR LE PREMIER APPEL, "BEST PRACTICES"

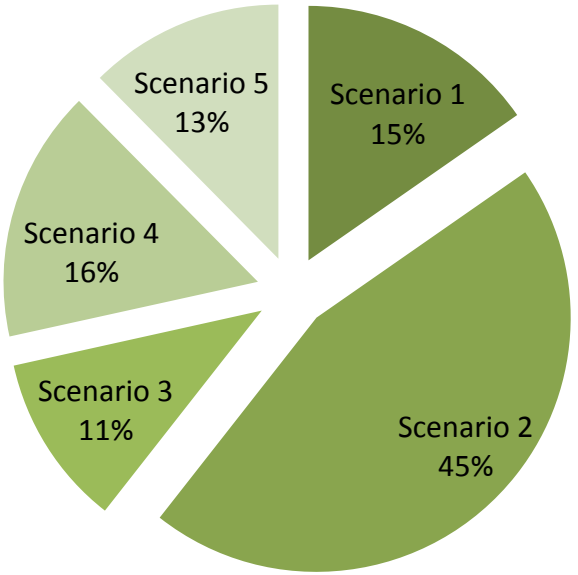
Preliminary Results of E++ First Call for Experiment

137 Eligible Proposals submitted

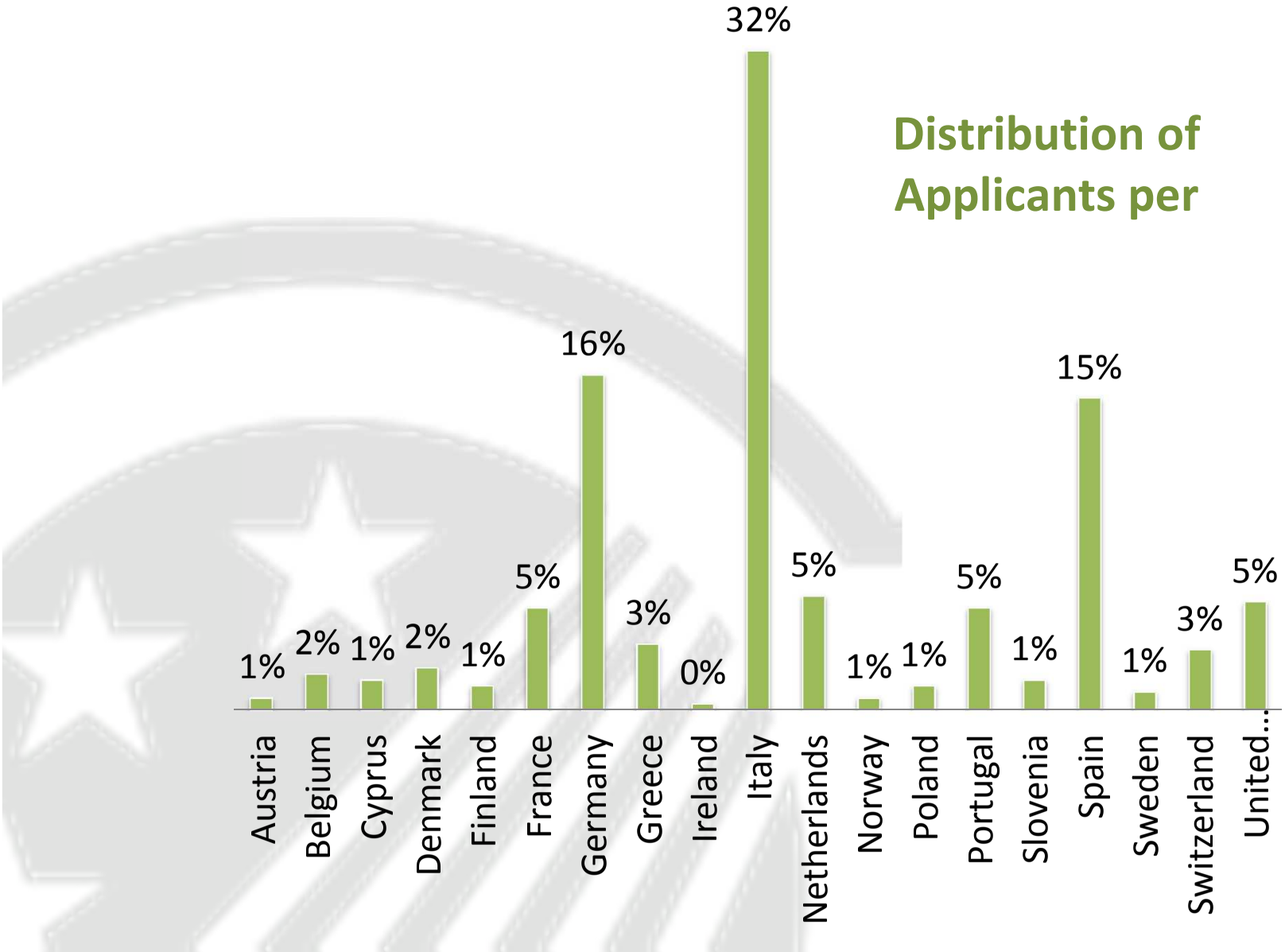
Scenarios

1. Cognitive Tools and Workers for Cognitive Factories
2. General Purpose Robotic Co-workers
3. Cognitive Logistics Robots for Industry
4. Medical Robotics
5. Agricultural and Food Robotics

Distribution of scenarios



Proposal Submission Statistics



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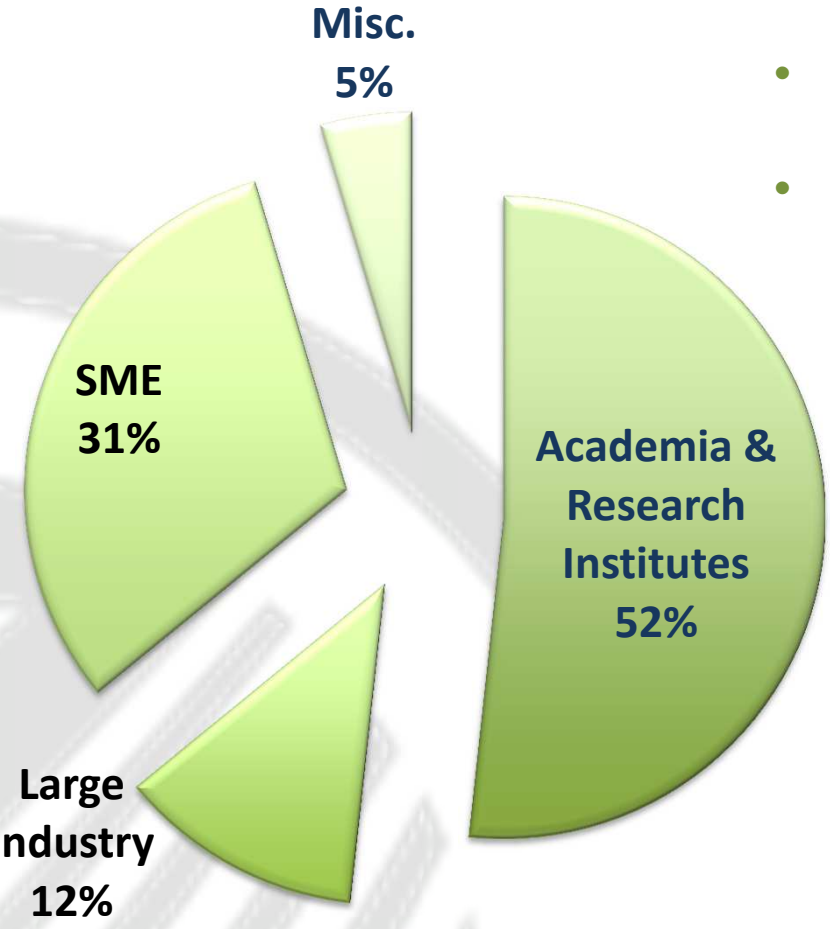
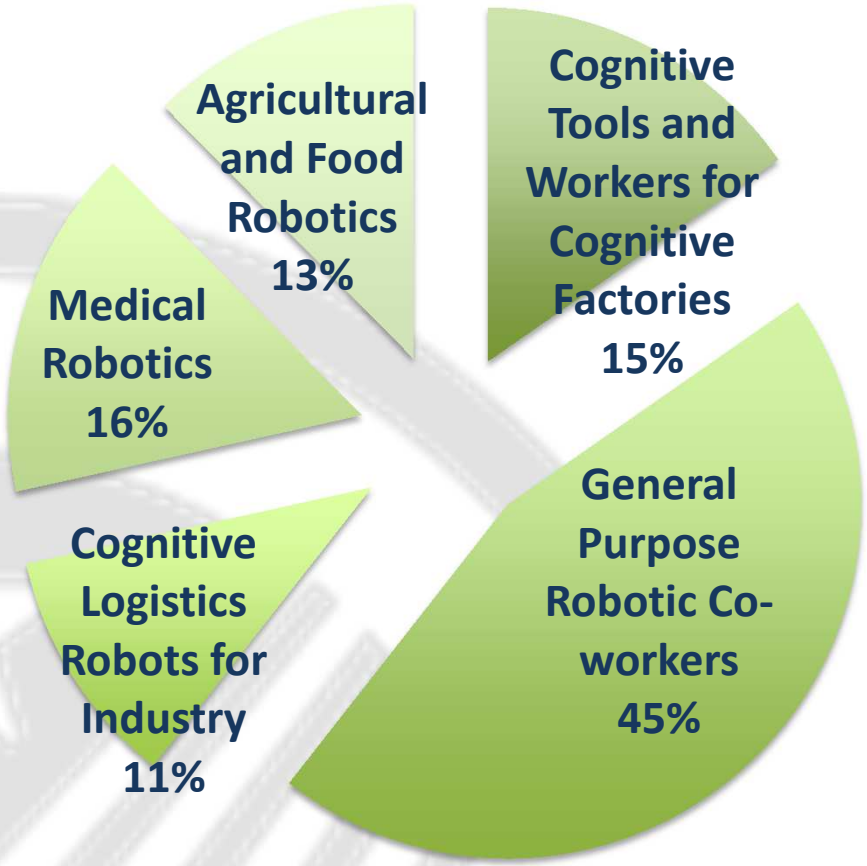


- 348 Organizations applied
- 67 new hired organizations!

Distribution of Organizations

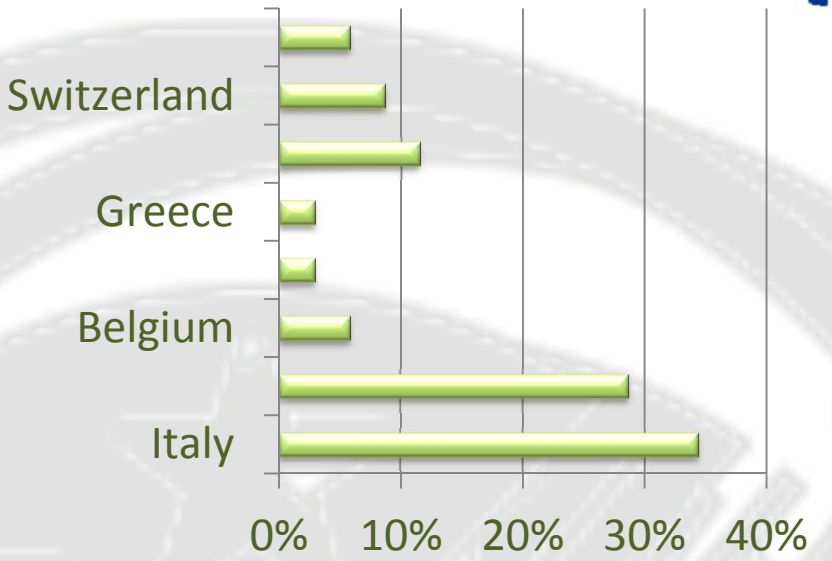
Proposal Submission Statistics

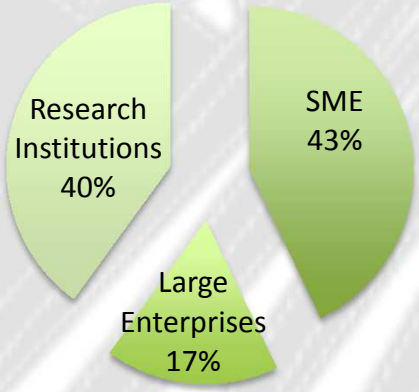


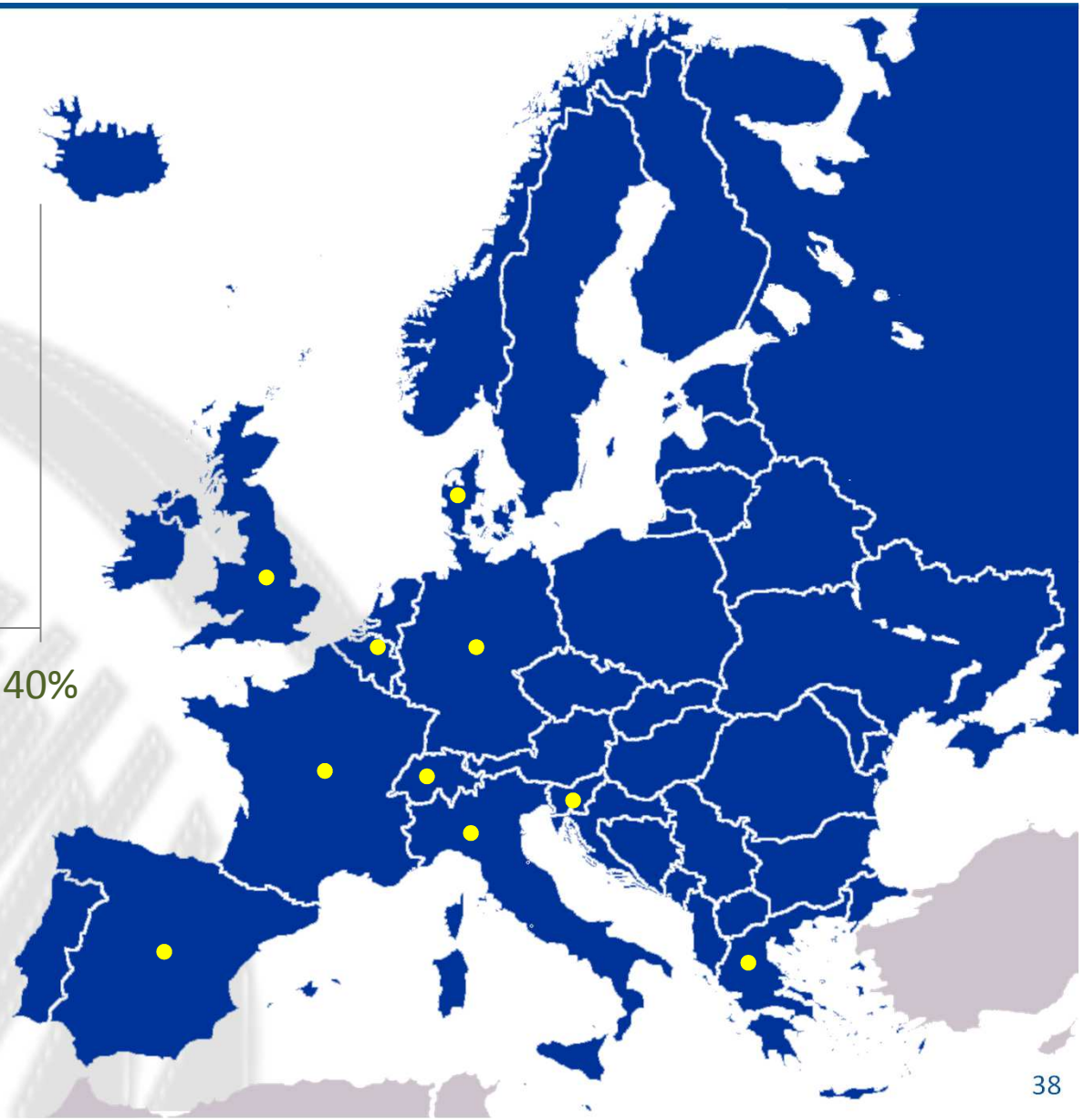
Distribution of Scenarios

Selected Experiments (first call)

- **Total: 16 Experiments**
- **Partners: 40**
- **13 out of 16 will use E++'s RIFs**

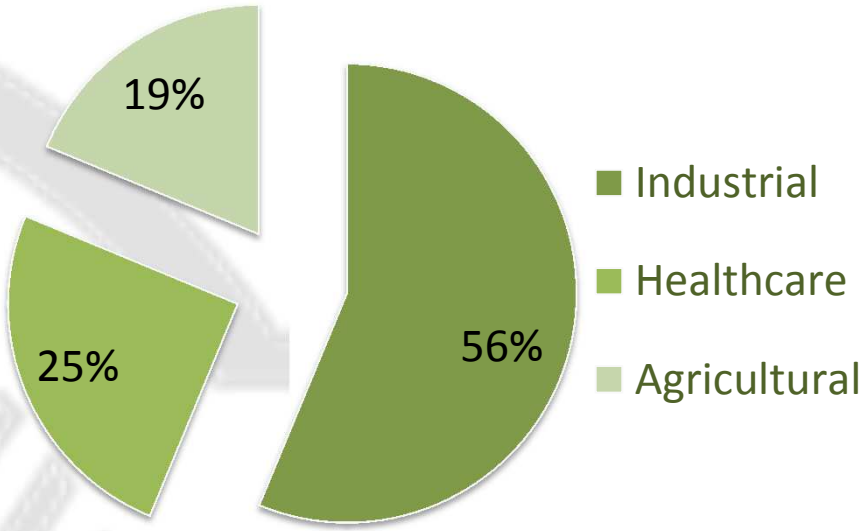






Experiments – Application scenarios

- Mobile robot locomotion
- Surgical robotics
- Rehabilitation Robotics
- Sensor Integration
- Agricultural Robotics
- Industrial Inspection
- Vision – Image processing
- Industrial manufacturing
- Human robot Interaction



QUELQUES ELEMENTS POUR CONCLURE

Quelques éléments à retenir

- Fertilisation croisée industrie académie de préférence porté par un industriel
- Durée très courte de l'ouverture (6 semaines) pour limiter le nombre de réponses. Incertitudes sur les dates définitives
- Probablement pas de préannonce, publicité limitée
- => Consulter le site Echord++ régulièrement
  => Anticiper pour être prêt
- Recherche d'experts provenant de l'industrie

Reference documents and information

Echord++ portal: http://echord.eu/portal/

- submission of the proposal

Proposal documents: http://echord.eu/portal/ProposalDocuments

- Proposal template
- Call text
- Guide for applicants

Contacts for further information

Echord++

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Experimentations

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