ECHORD++

The European Coordination Hub for Open Robotics Development

E++ 3rd Review Meeting

WP3 - Experiments

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The BioRobotics Institute

Scuola Superiore Sant'Anna, Pisa, Italy

Luxembourg, February 13, 2017

Bristol Robotics Laboratory

BLUE OCEAN ROBOTICS - for humans

RUROBOTS Cognitive Science at Work

SEVENTH FRAMEWORK PROGRAMME

Objectives of WP3 - Experiments

Experiments

- **Regulatory framework** governing the experiments based on ECHORD
- **Implementation and improvement** of the process
- Close **cooperation with Quality Management (WP1)**

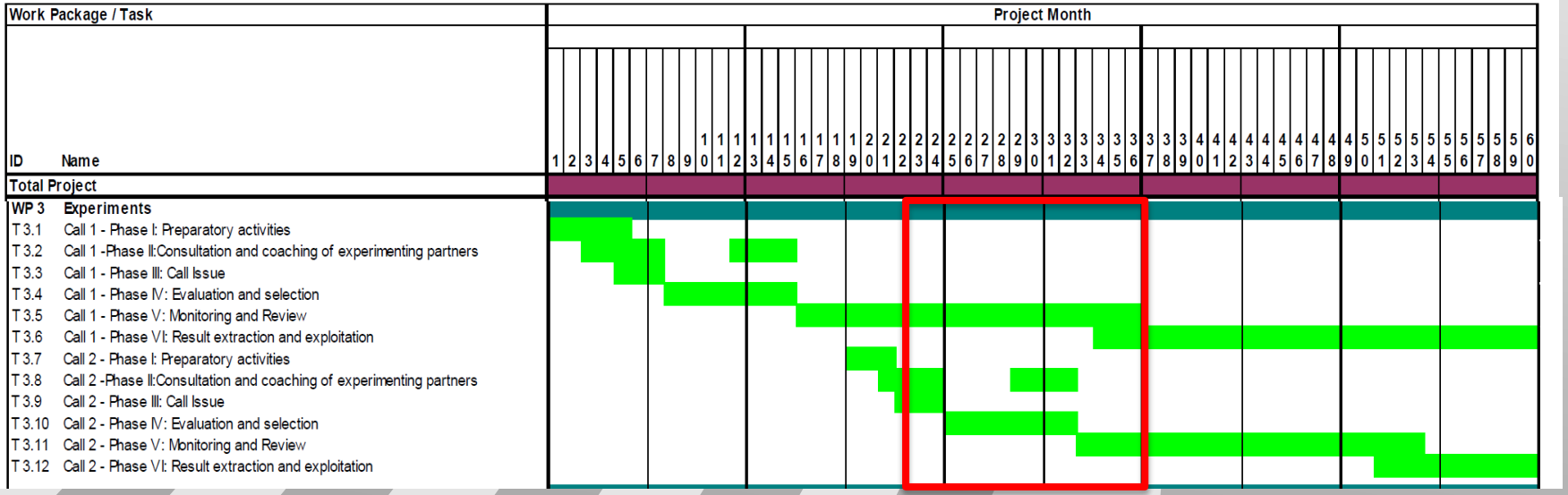
Summary WP3 - Experiments

Experiments

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
1	TUM	27.00
2	SSSA	45.00
3	UWE	0.50
4	UNIVERSITAT POLITECN	10.50
5	CEA	0.00
	Total	83.00

1.3.3 Timing of work packages and their components



Main achievements during the 3rd period (WP3)

Experiments

- **Selection of 16 experiments for Call 2**
  - ✓ **higher average scores compared to Call1**: scientific quality average **4.47/5**, (**+ 0.27** compared to Call 1), **4.25/5** for the implementation score (**+0.08** compared to Call 1) and **4.44/5** for impact score (**+0.40** compared to Call 1)
  - ✓ **Increased success rate (14.0%)** as compared to Call 1 (11.7%)

- **Improved assignment of moderators** to monitor **Call 2**
  - ✓ two specific figures as moderators: **technical and managerial**
- **Improved reporting** of the progress of the experiments
  - ✓ bimonthly traffic lights
- **New procedure** to evaluate the outcome of Call 1 experiments: **all 15 experiments were reviewed on-site** → new! procedure as compared to ECHORD

Deliverables of the reporting Period

- D 3.4.2 Collection of documents with final ranking, evaluation reports, statistics and funding suggestion
- D 3.5.2 2nd six-monthly report on experiment progress and on reviews
- D 3.5.3 3rd six-monthly report on experiment progress and on reviews
- D 3.6.1 Final report on the outcome of the experiments

Ranking

Six Monthly Report

Outcome

Milestones of the reporting Period

- MS5: second bunch of experiments and R&D partners for PCP Pilots selected (month 30)

Overview of tasks for WP3

Experiments

FIRST CALL

- Task 3.5: Call 1- Phase V: Monitoring and review
- Task 3.6: Call 1- Phase VI: Result extraction and exploitation

SECOND CALL

- Task 3.9: Call 2- Phase III: Call Issue
- Task 3.10: Call 2- Phase IV: Evaluation and selection
- Task 3.11: Call 2- Phase V: Monitoring and review

Task 3.5: Call 1- Phase V

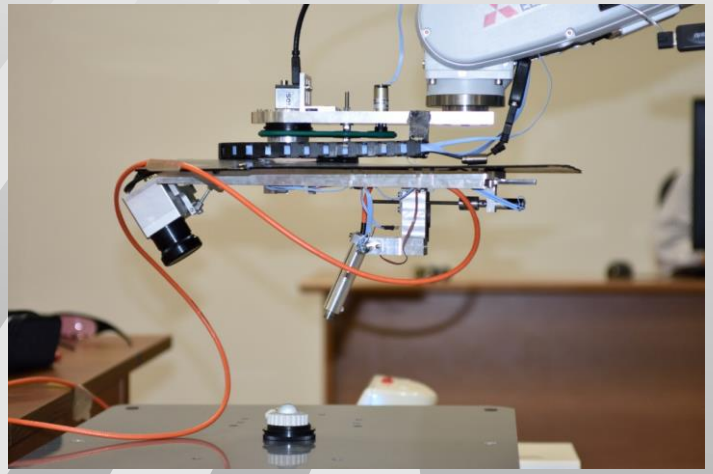
Monitoring and Review

MONTH 16-36

Contributors: TUM, SSSA, UPC

- Every 6 months→ **deliverable** (D3.5.2 and D3.5.3) **on the progress** of the experiments
- Collection of **bi-monthly** info on :
  - Self assessment
  - Deliverables
  - Milestones
  - Technical KPIs
  - Impact KPIs
  - Dissemination KPIs

Mid-term review in June 2016 LA ROSES→ the experiment was granted a **4-month extension**



Task 3.5: Call 1- Phase V

Monitoring and Review

MONTH 16-36

Contributors: TUM, SSSA, UPC

January-February 2015 | March- April 2015 → time

	3DSSC	CoHRoS	DEBURR	DEXBUDDY
Assessment	●	●	●	●
Tech. KPIs	●	●	●	●
Imp. KPIs	●	●	●	●
Deliverables	●	●	●	●
Milestones	●	●	●	●
Dissemination	●	●	●	●

	EXOTRAINER	2F	GAROTICS	LA-ROSES
Assessment	●	●	●	●
Tech. KPIs	●	●	●	●
Imp. KPIs	●	●	●	●
Deliverables	●	●	●	●
Milestones	●	●	●	●
Dissemination	●	●	●	●

	LINARM++	MODUL	MOTORE++	PICKIT
Assessment	●	●	●	●
Tech. KPIs	●	●	●	●
Imp. KPIs	●	●	●	●
Deliverables	●	●	●	●
Milestones	●	●	●	●
Dissemination	●	●	●	●

	SAPARO	TIREBOT	MARS	
Assessment	●	●	●	
Tech. KPIs	●	●	●	
Imp. KPIs	●	●	●	
Deliverables	●	●	●	
Milestones	●	●	●	
Dissemination	●	●	●	

	3DSSC	CoHRoS	DEBUR	DEXBUDDY
Assessment	●	●	●	●
Tech. KPIs	●	●	●	●
Imp. KPIs	●	●	●	●
Deliverables	●	●	●	●
Milestones	●	●	●	●
Dissemination	●	●	●	●

	EXOTRAINER	2F	GAROTICS	LA-ROSES
Assessment	●	●	●	●
Tech. KPIs	●	●	●	●
Imp. KPIs	●	●	●	●
Deliverables	●	●	●	●
Milestones	●	●	●	●
Dissemination	●	●	●	●

	LINARM++	MODUL	MOTORE++	PICKIT
Assessment	●	●	●	●
Tech. KPIs	●	●	●	●
Imp. KPIs	●	●	●	●
Deliverables	●	●	●	●
Milestones	●	●	●	●
Dissemination	●	●	●	●

	SAPARO	TIREBOT	MARS	
Assessment	●	●	●	
Tech. KPIs	●	●	●	
Imp. KPIs	●	●	●	
Deliverables	●	●	●	
Milestones	●	●	●	
Dissemination	●	●	●	

- ● One or more activities planned in the period resulted in positive outcome
- ● One or more activities planned in the period resulted slightly under expectation
- ● One or more activities planned in the period resulted significantly below expectations
- ● No action foreseen in the selected period

Bi-monthly monitoring using 'Traffic Light' representation

Task 3.6: Call 1- Phase VI

Result extraction and exploitation

MONTH 34-60

Contributors: TUM, SSSA

- **New: final reviews on-site** for all 15 experiments
- For each review: **1 external expert, 1 core member of E++**
- **Experimenters duty**:
  - Develop a **final report and questionnaire**
  - **Set a one-day presentation** (including demos)
- **Evaluators duty:**
  - **Analyze** the project
  - **Participate** in the review meeting
  - Provide **two evaluation docs**: evaluation of deliverables/milestones/KPIs; general recommendations for the project

Experiment	External Evaluator	Visiting site	Internal evaluator	Date
LINarm++	Eugenio Guglielmelli	Milan, Italy	Simona Crea (SSSA)	16 dec
Debur	Jordi Palacin	Eibar, Spain	Antoni Grau (UPC)	19 jan
Cohros	Dr Makris	Bielefeld, Germany	Yannick Morel (TUM)	20 jan
2F	Jordi Palacin	Poggibonsi, Italy	Antoni Grau (UPC)	26 jan
Tirebot	Stefania Pellegrinelli	Correggio, Emilia, Italy	Raffaele Limosani (SSSA)	6 dec
Garotics	Prof. Francisco Rovira-Más	Buxtehude, Germany	Francesco Maurelli (TUM)	5 dec
3DSSC	Patrick van der Smagt	Belsele, Belgium	Yannick Morel (TUM)	beginning of february
Mars	Slawomir Sander	Marktoberdorf, Germany	Francesco Maurelli (TUM)	17-nov
EXOTrainer	To be defined	Spain	Hardik Shah (TUM)	Jan 2017
Pickit	Rui Loureiro	Madgeburg, Germany	Fabio Bonsignorio (SSSA)	18-nov
Saparo	Rui Loureiro	Madgeburg, Germany	Fabio Bonsignorio (SSSA)	18-nov
MODUL	Stefania Pellegrinelli	Zurich, Switzerland	Fabio Bonsignorio (SSSA)	16 september
LA ROSES	Andreas Muller	Pisa, Italy	Hardik Shah (TUM)	4 jan
MOTORE++	Andreas Muller	Pisa Italy	Hardik Shah	14, 15 september
DEXBUDDY	Patrick van der Smagt	Karlsruhe, Germany	Fabio Bonsignorio	29 july

SSSA
TUM
UPC

} Management of the Reviews

Task 3.6: Call 1- Phase VI

Result extraction and exploitation

MONTH 34-60

Contributors: TUM, SSSA

	TIREBOT	MOTORE++	LINARM++	LA ROSES	GAROTICS	MARS	PICKIT	SAPARO	3DSSC	2F	DEBUR	COHROS	DEXBUDDY	EXOTRAINER	MODUL
Milestone															
Deliverable															
Technical KPIs															
Impact KPIs															
Dissemination KPIs															

→ **successful** evaluation

→ outcome **slightly** below the expectations

→ outcome **significantly** below the expectations

- The evaluation of each parameter is based on the **average of each item**
- **Exceptions** :
  - ✓ If at least one red light → decreased ranking
  - ✓ if no website available → decreased ranking

Overview of tasks for WP3

Experiments

Recommendations

R2a: ***Experiments move along a timeline*** *(or* ***value chain****, see R1b) which* ***ideally starts with the idea and ends with a marketable product****. They should* ***describe how they have progressed and where they stand in this process.*** *The status could be visualized (e. g. using a "slider" or TRL scale). This would work well in combination with the traffic light approach.*

R1b: Expand on the ECHORD++ slogan idea "From the Lab to the Market" with a ***value chain giving more details about where ECHORD++ and its instruments make the difference****.*

Task 3.6: Call 1- Phase VI

Result extraction and exploitation

MONTH 34-60

Contributors: TUM, SSSA

TIREBOT

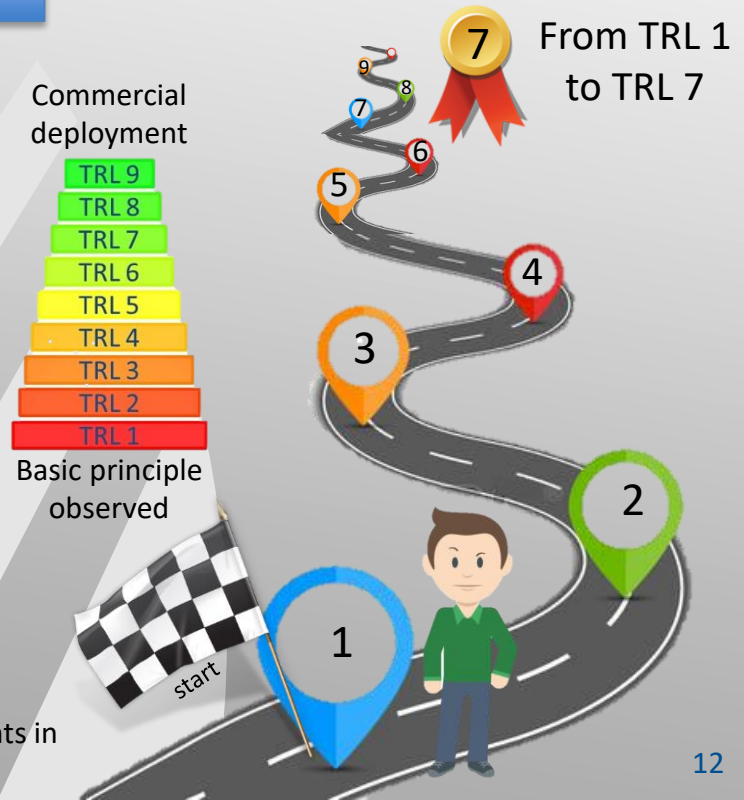
Development of a mobile robotic assistant that takes care of transporting wheels

PROs

- The **objectives** were **successfully achieved**
- The **work** is of **industrial interest**
- The **collaboration among academic and industrial** partners has been **really deep**
- **New algorithms** for the online **adaptation of safety** have been implemented
- **Safety** was **deeply analized**

CONs

- The results of TIREBOT project are at **TRL7, instead of the declared TRL8**.
- **Mitigations from initial DOW** were applied since visual tags and markers were used
- **Usability was evaluated by questionnaire** and results were presented **only as qualitative**



*TRL achievements in 18 months

Task 3.6: Call 1- Phase VI

Result extraction and exploitation

MONTH 34-60

Contributors: TUM, SSSA

MOTORE++

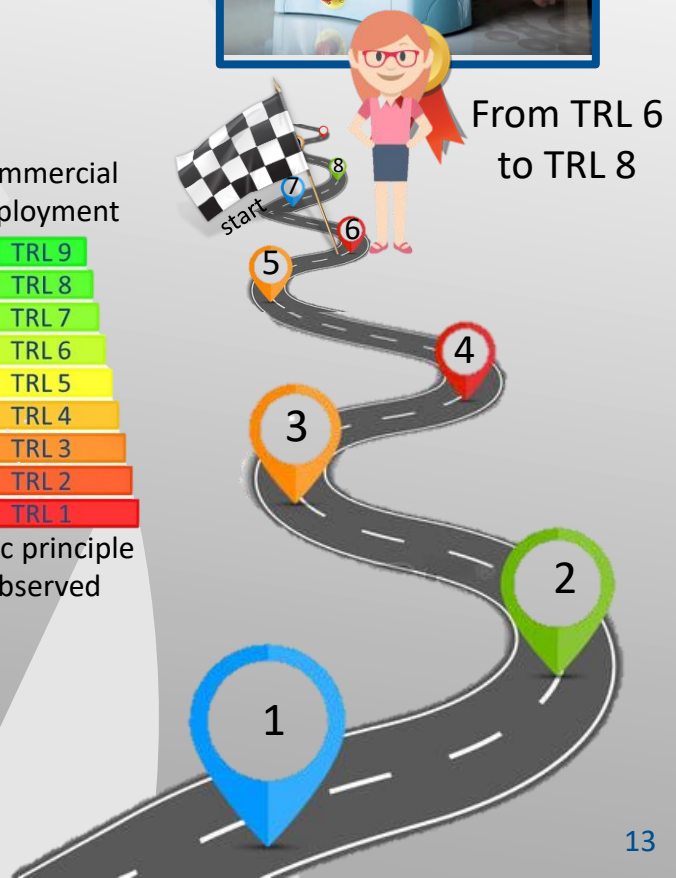
Development of a rehabilitation robot to restore upper limb functionality

PROs

- The **experiment has performed excellently** overall
- **Deliverables are of good quality** and all **milestones are reached**
- All **KPIs** in technical and impact are **reached**
- The product has **received CE certification** and **6 units have been already delivered**

CONs

- There were **some delays (**due to supplier issues)
- **Some deliverables** (Story Board and MultiMediaReport) are **missing**
- **Dissemination activities** were **not conducted as promised**



*TRL achievements in 18 months

Task 3.6: Call 1- Phase VI

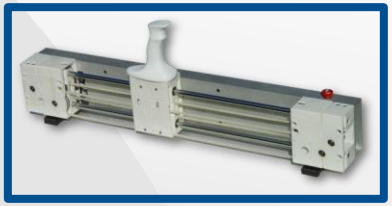
Result extraction and exploitation

MONTH 34-60

Contributors: TUM, SSSA

LINARM++

Development of a multisensory and multimodal device for neuromuscular rehabilitation of the upper limb

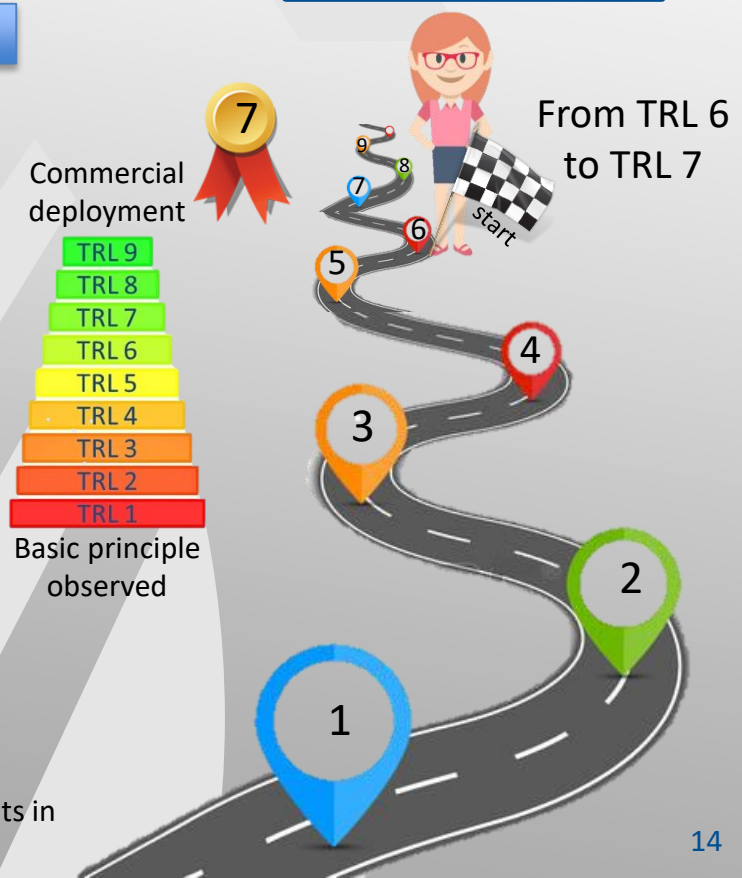


PROs

- The **overall evaluation** of the project is **positive**
- **Most of the milestones have been achieved on time** and reports of good quality have been timely delivered
- **Commendable achievements** in the engineering of the smart wearable modules for recording physiological signals→ **large market potential**

CONs

- Extensive clinical research activities **still required to prove the efficacy**
- The proposed variable stiffness **actuation system has significant limitations**→ risk in the deployment to the market
- **Proper strategies for IPR management should be carefully analyzed** to attract industrial interest



*TRL achievements in 18 months

Task 3.6: Call 1- Phase VI

Result extraction and exploitation

MONTH 34-60

Contributors: TUM, SSSA

GAROTICS

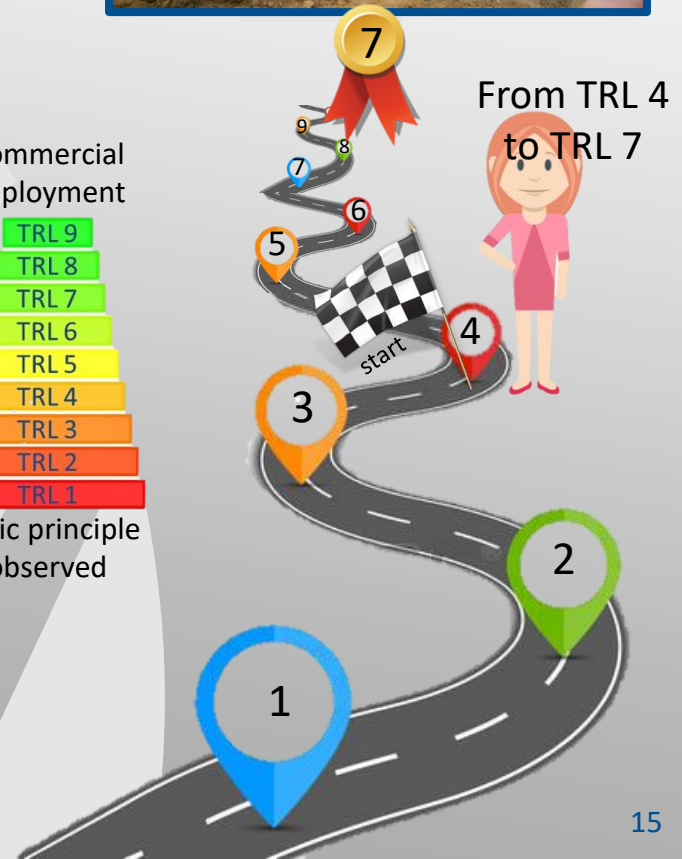
Development of a new gripping mechanism for an automatic harvesting systems for green asparagus

PROs

- The **project** can be considered **satisfactory and successful**
- Customer usability: **important network already demanding higher autonomy in this field**
- The **machine can be pulled by a regular tractor**
- **Efficient strategy devised for the movement of the gripper**

CONs

- The **problem of real time detection of asparagus not fully solved** due to some occlusions caused by the gripper close to camera
- Recommendable to start defining the **intellectual property** (IP) policy to protect key algorithms and gripper designs
- **Long-term reliability and endurance tests need being scheduled** for upcoming developments



*TRL achievements in 18 months

Task 3.6: Call 1- Phase VI

Result extraction and exploitation

MONTH 34-60

Contributors: TUM, SSSA

MARS

Development of a small and stream-lined mobile agricultural robot for the seeding process for corn performed by two robots

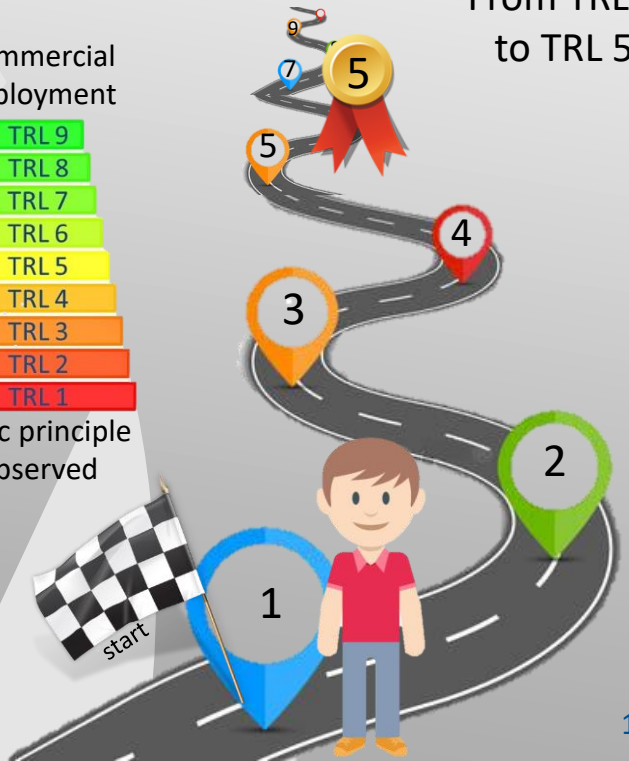
PROs

- Two robots have been able to **perform a combined seeding task in real conditions**
- The **UX interface is nice**
- Both **SW and HW were operational and results promising**

CONs

- The **number of seeds germinated has not been validated** quantitatively
- The **number of successful seed placements is not known**
- The **maximum mission time has not been validated** with experiments

From TRL 1 to TRL 5



*TRL achievements in 18 months

Task 3.6: Call 1- Phase VI

Result extraction and exploitation

MONTH 34-60

Contributors: TUM, SSSA

PICKIT

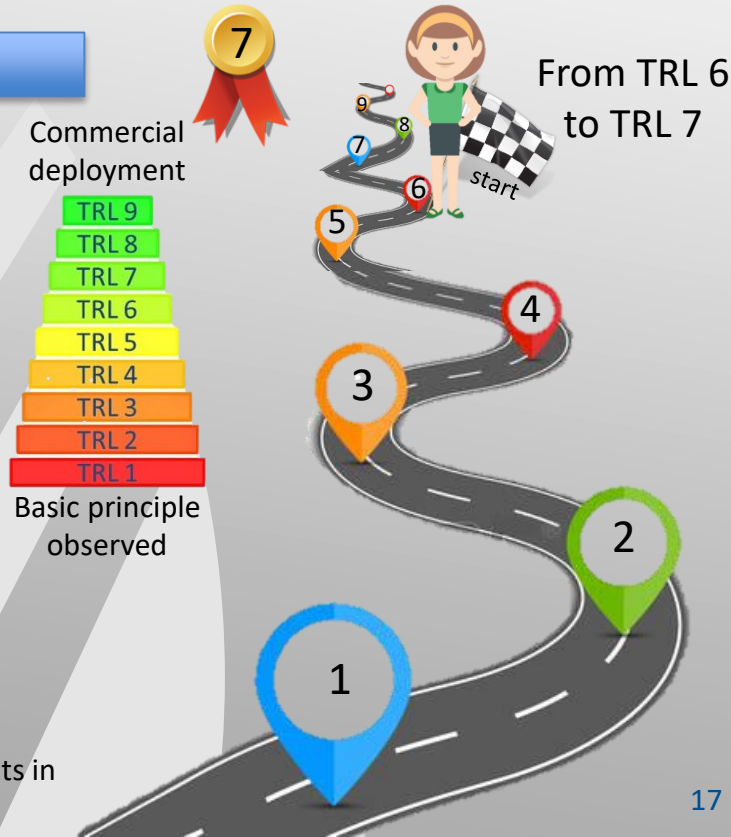
Development of a commercially available vision based bin-picking system to handle a variety of objects

PROs

- The bin-picking application shows **significant progress in the SoA**
- Quite impressive **capability to pick transparent glasses**
- The **objectives have been met**
- There is a **significant potential for exploitation in real industrial settings**

CONs

- Even though the results are promising, they **require additional work** because in **certain lighting conditions**, when the number of glasses is lower than 3, sometimes the **system is unable to identify the objects**



*TRL achievements in 18 months

Task 3.6: Call 1- Phase VI

Result extraction and exploitation

MONTH 34-60

Contributors: TUM, SSSA

SAPARO

Combination of a pressure-sensitive tactile floor with a projection system to ensure safe human-machine interaction in the work cell

PROs

- **Impressive demonstration** of human-robot collaborative interaction in an industrial setting
- **Safe human-machine interaction ensured in the work cell**
- **Potential for commercialization** is high (TUM purchased a system for its own use)
- **Strong commitment towards exploitation** from the industrial partner

CONs

- **RIF visit not possible** but verified from initial results
- **Some dissemination activities were not performed,** but other opportunities were found

*TRL achievements in 18 months

Task 3.6: Call 1- Phase VI

Result extraction and exploitation

MONTH 34-60

Contributors: TUM, SSSA

DEBUR

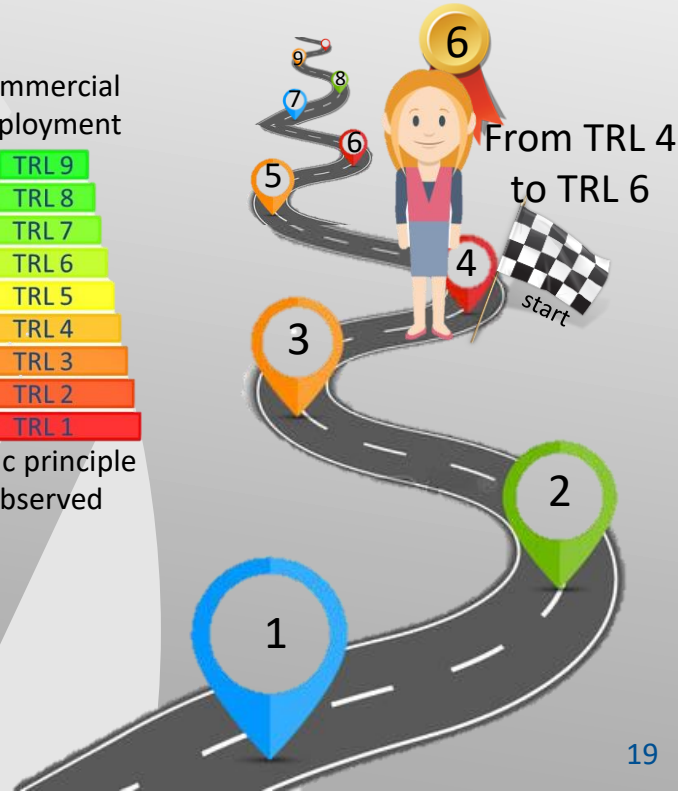
Design and set up of an automated robotic station for laser deburring of metal castings of three-dimensional, high quality, complex parts

PROs

- The results **fulfilled the expectations**
- **Cost reduction up to 20%**
- **Volume of lubricants** and **abrasives reduced by 30%**
- **Reduction of scrap parts by 30%**

CONs

- The **deliverables were uploaded** in the ECHORD portal, although with **some delays**
- **Difficulties in the reduction of the protrusion** (keep it below 0.2mm)
- Eventually, experimenters visited the **Bristol RIF** although **some difficulties were encountered in the contact and execution of the visit**



*TRL achievements in 18 months

Task 3.6: Call 1- Phase VI

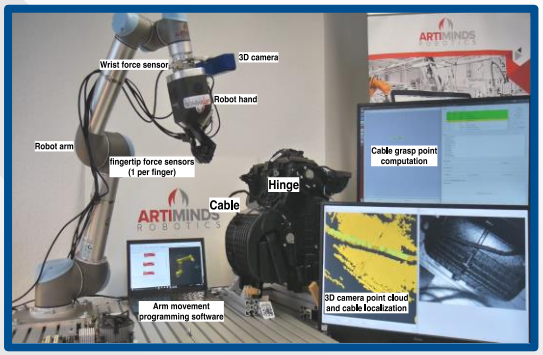
Result extraction and exploitation

MONTH 34-60

Contributors: TUM, SSSA

DEXBUDDY

Dexterous robotic co-worker for real industrial scenarios



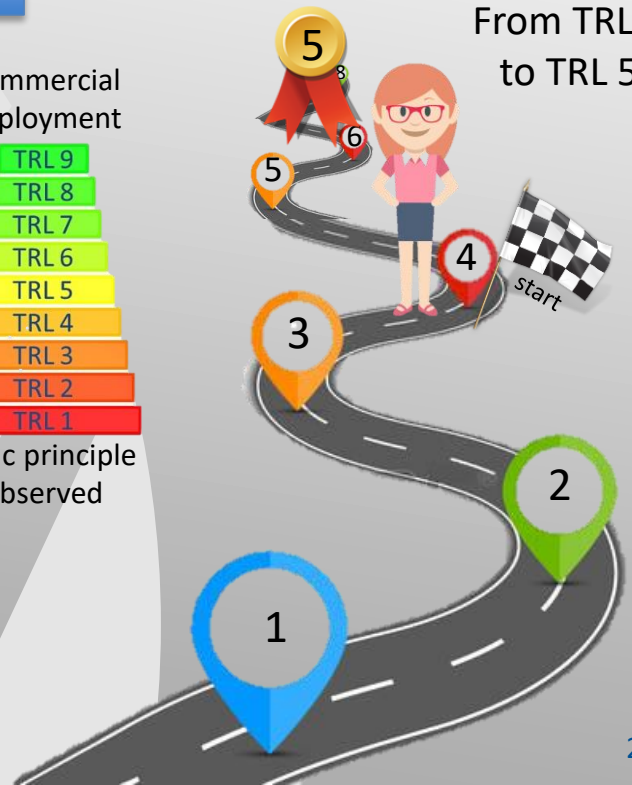
PROs

- The project is ambitious and has **good industrial relevance**
- The resulting vision component is **hand-crafted which works but lacks robustness**

CONs

- The **choice of hardware is not clear**
- **Results are not publishable nor usable in a real scenario**
- The **dissemination** of the results are **not in line with the project proposal**

From TRL 4 to TRL 5



*TRL achievements in 18 months

Task 3.6: Call 1- Phase VI

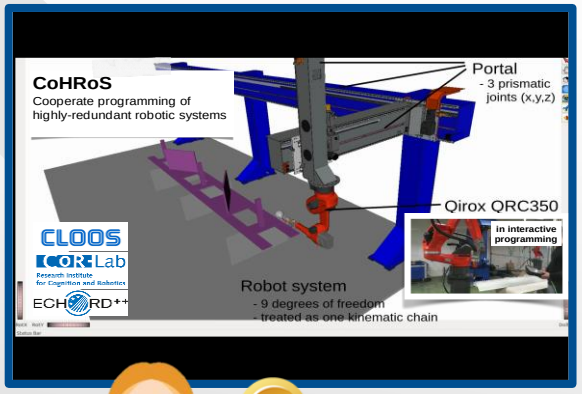
Result extraction and exploitation

MONTH 34-60

Contributors: TUM, SSSA

COHROS

Development of a practical and robust method for assistive teaching



PROs

- The results showed **potential to enhance programming of complex applications**
- **Incremental improvements were made** mainly on the interaction aiming to eliminate the part of the kinesthetic teaching and partially in robot learning

CONs

- The method was **implemented and tested only partially**
- The **progress** made was **limited by the reduced effort invested in validation** of the technology
- **Comparison with company's commercial products not considered**

*TRL achievements in 18 months

Task 3.6: Call 1- Phase VI

Result extraction and exploitation

MONTH 34-60

Contributors: TUM, SSSA

MODUL

Development of a Series Elastic Actuation (SEA) unit which will be modular and suited for outdoor operation

PROs

- The project **successfully reached and even exceeded the objectives**
- The product is **ready for industrialization** (TRL7)
- The **exploitation plans are convincing**
- In September 2016, **a spin-off company was founded (8 people, 1.5 M€ investement)**

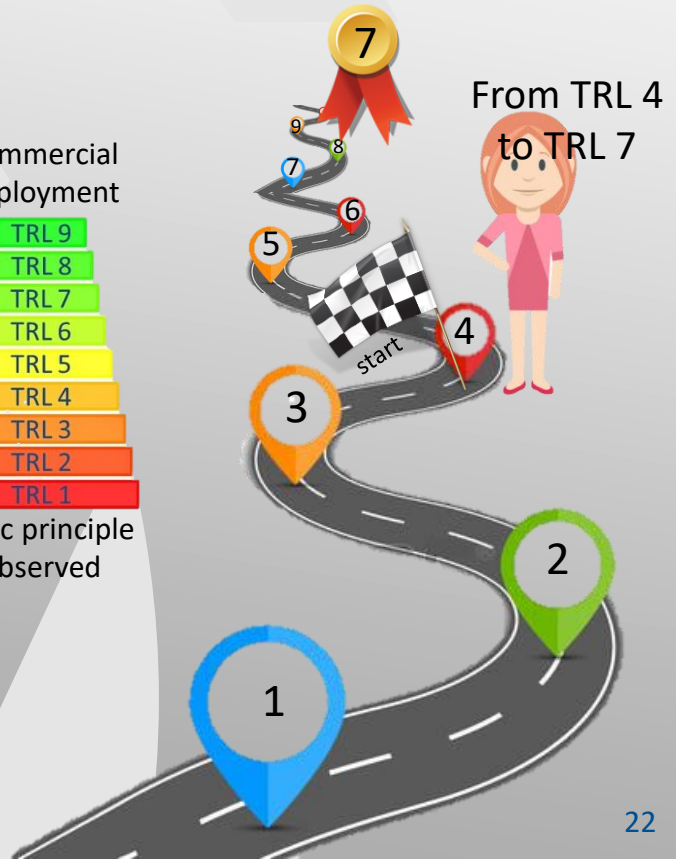
CONs

- The consortium justified the **missed visit to BRL RIF since they had more dedicated infrastructures than in Bristol**

Commercial deployment

TRL 9
TRL 8
TRL 7
TRL 6
TRL 5
TRL 4
TRL 3
TRL 2
TRL 1

Basic principle observed



*TRL achievements in 18 months

Task 3.6: Call 1- Phase VI

Result extraction and exploitation

MONTH 34-60

Contributors: TUM, SSSA

2F

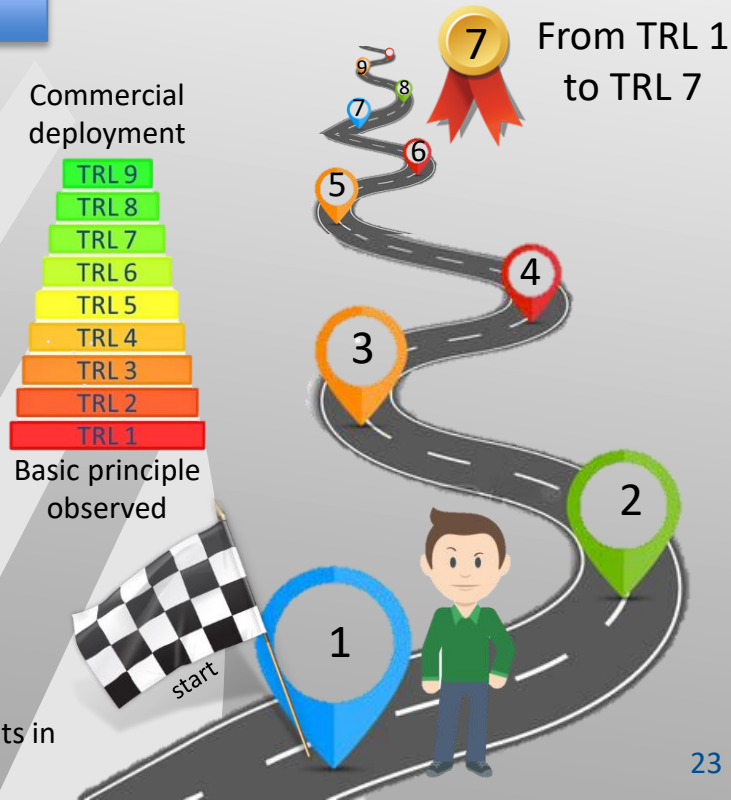
Development of a co-working robot for specific floor building functions: grout removal and floor washing with acid

PROs

- The on-site review revealed that **the real work is largely better that the documentation delivered via the portal**
- The work is **satisfactory and the experiment passes the evaluation**
- The experimenters have developed a **nice prototype** that, after some and huge refinements, **can be an industrial product**

CONs

- **Large delays in some delivarables**, and **lack of clarity** in most of them
- **Deliverables did not demostrate the real work** that experimenters did
- The **final report has been delivered again because it was very weak** and did not demonstrate the reality of the experiment at its closure



*TRL achievements in 18 months

Task 3.6: Call 1- Phase VI

Result extraction and exploitation

MONTH 34-60

Contributors: TUM, SSSA

3DSSC

- JUST EVALUATED (February 10, 2017)

EXOTRAINER

- TO BE EVALUATED (end of February 2017)

LA ROSES

- EVALUATION BEING FINALISED BY EXPERTS

Task 3.6: Call 1- Phase VI

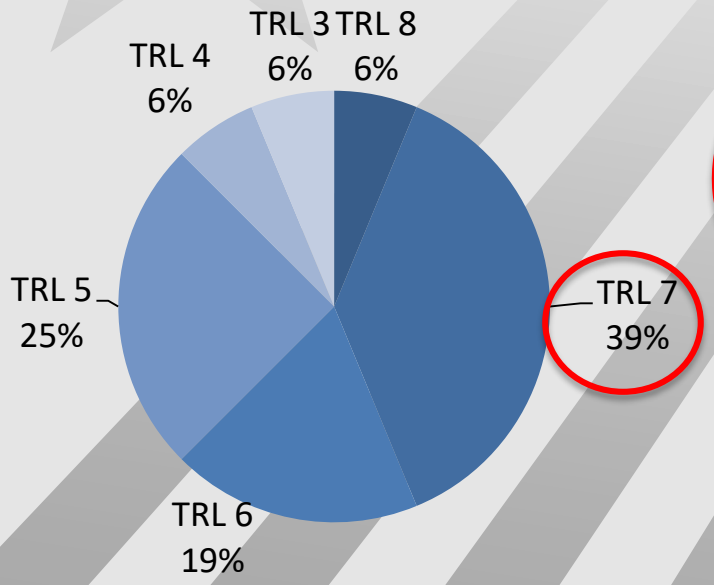
Result extraction and exploitation

MONTH 34-60

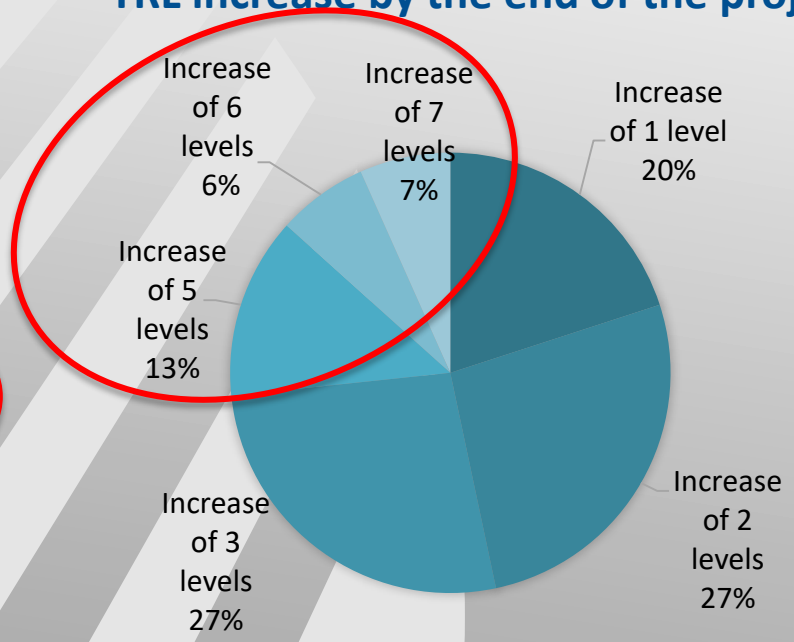
Contributors: TUM, SSSA

- **27%** developed a product with at least **one additional application**
- **80%** claim they will increase the cross-application of their product
- **2 experiments (TIREBOT, MODUL)** intend **to promote a spin-off**
- **1 experiment (MOTORE++)** obtained the **CE mark**

TRL by the end of the project



TRL increase by the end of the project



Task 3.6: Call 1- Phase VI

Result extraction and exploitation

MONTH 34-60

Contributors: TUM, SSSA

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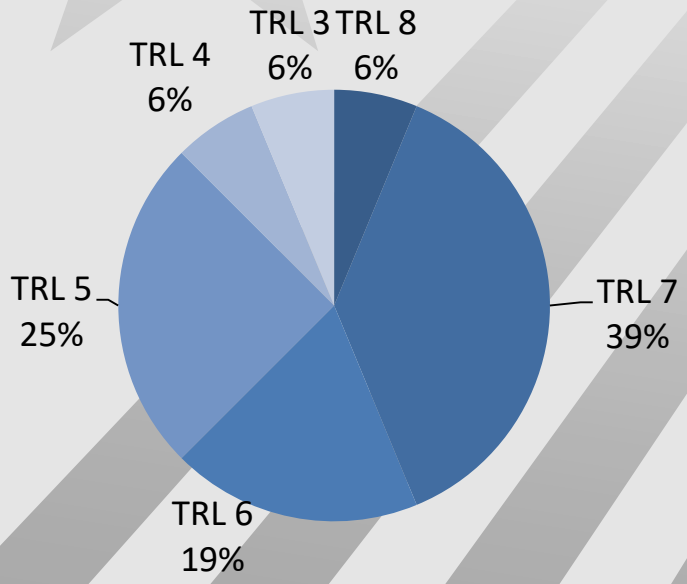
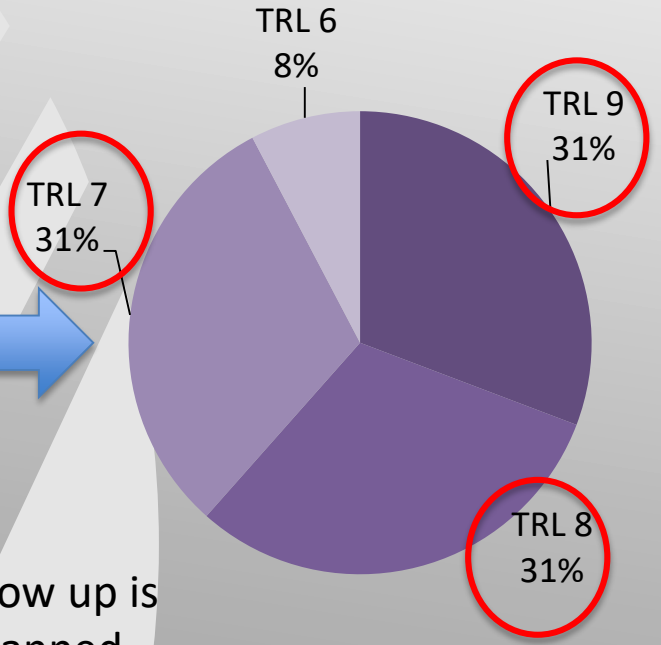
TRL by the end of the project



87% experiments claim they will increase TRL in the next 2 years

Expected TRL in the next 2 years



Follow up is planned

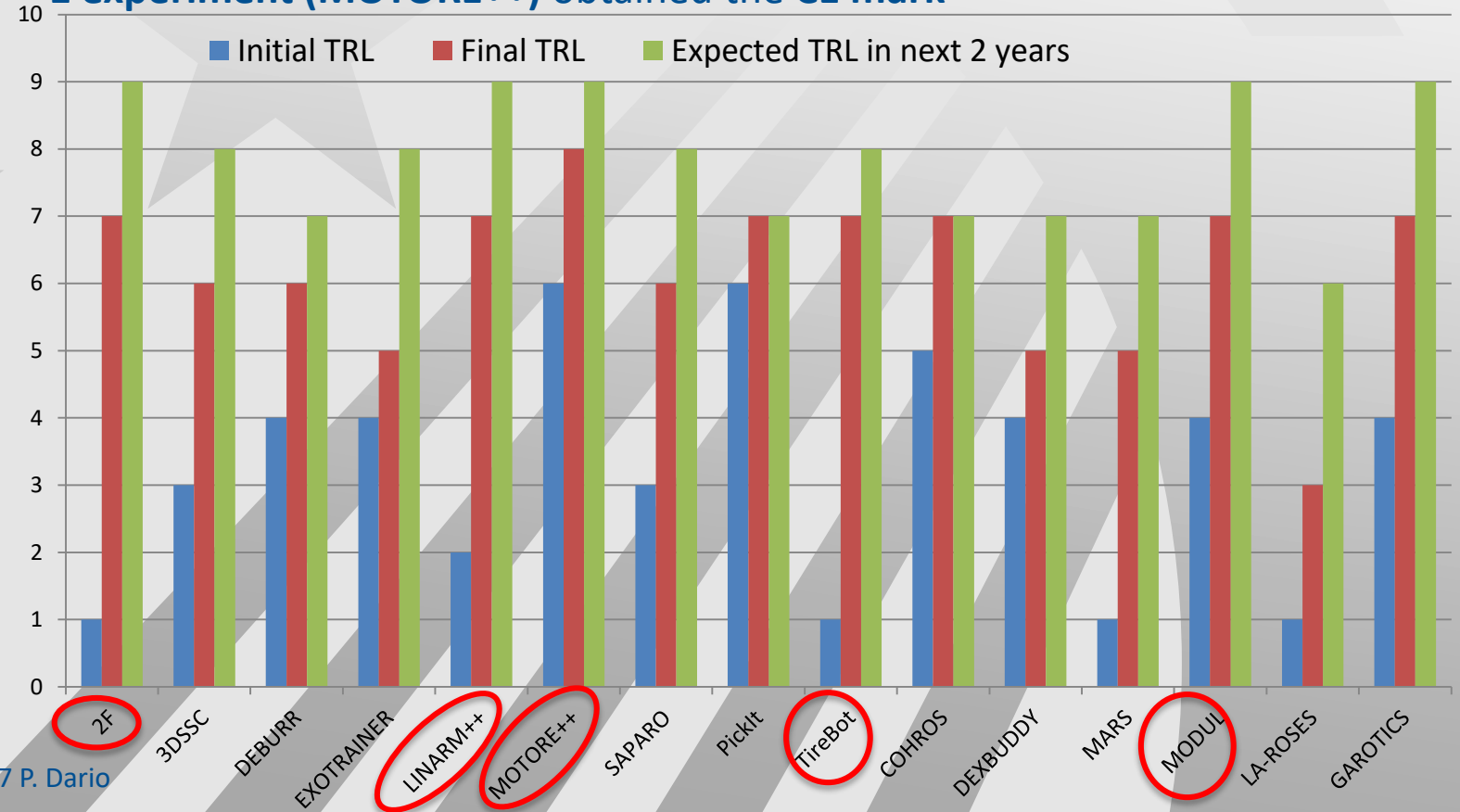
Task 3.6: Call 1- Phase VI

Result extraction and exploitation

MONTH 34-60

Contributors: TUM, SSSA

- **27%** developed a product with at least **one additional application**
- **80%** claim they will increase the cross-application of their product
- **2 experiments (TIREBOT, MODUL)** intend **to promote a spin-off**
- **1 experiment (MOTORE++)** obtained the **CE mark**

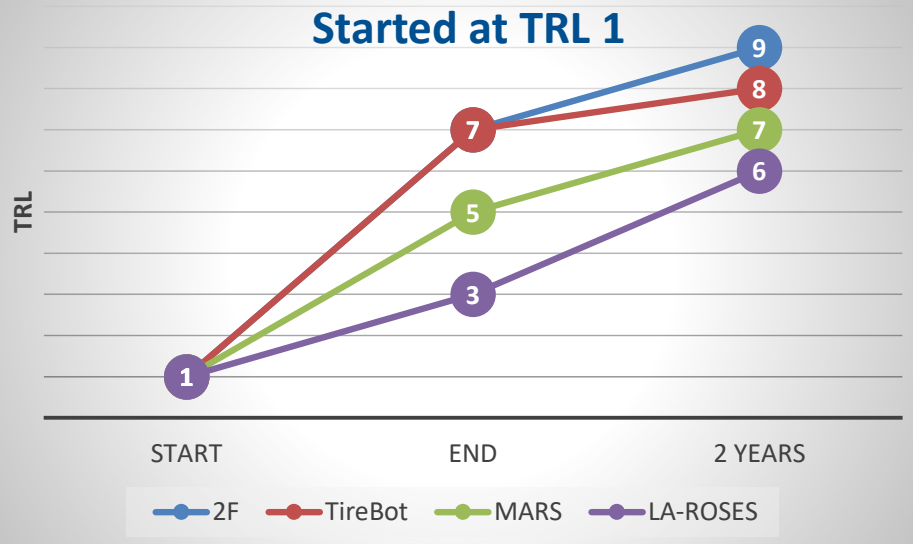


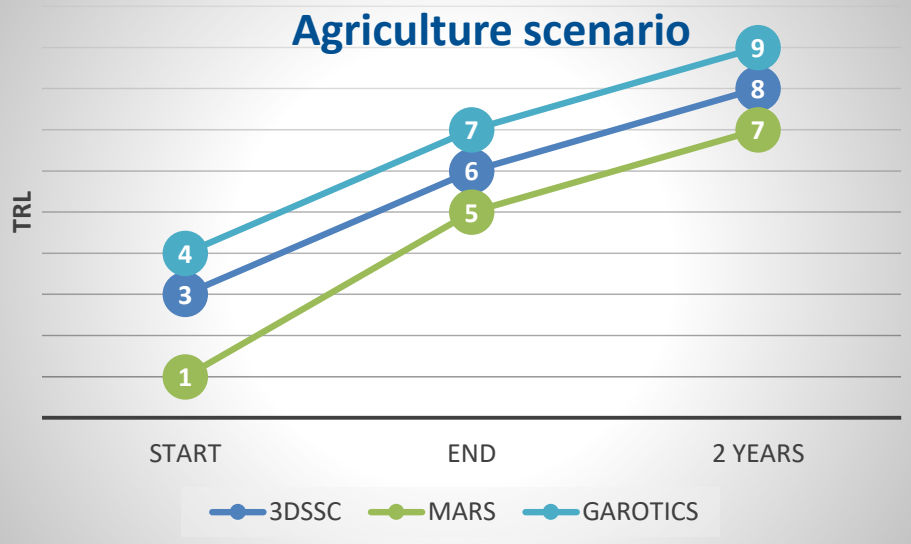
Task 3.6: Call 1- Phase VI

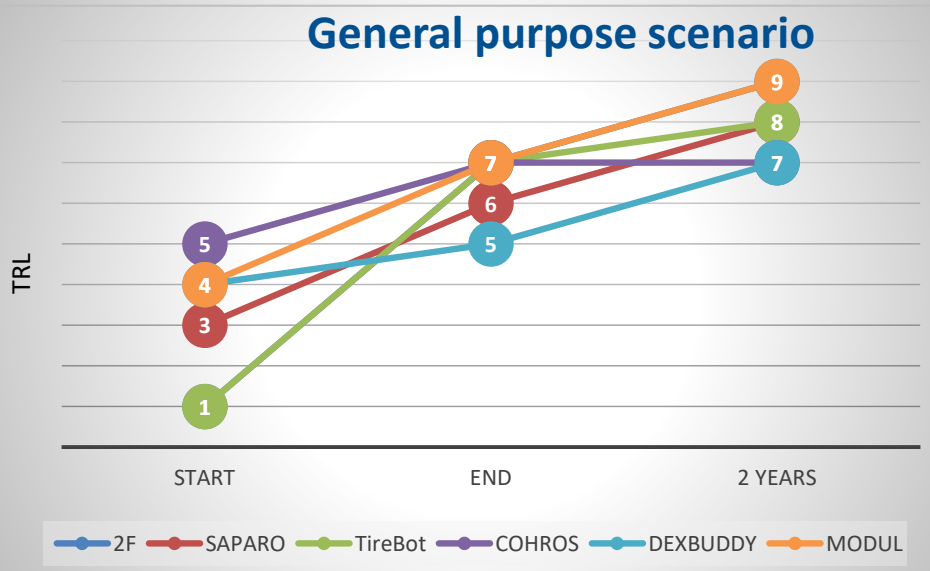
Result extraction and exploitation

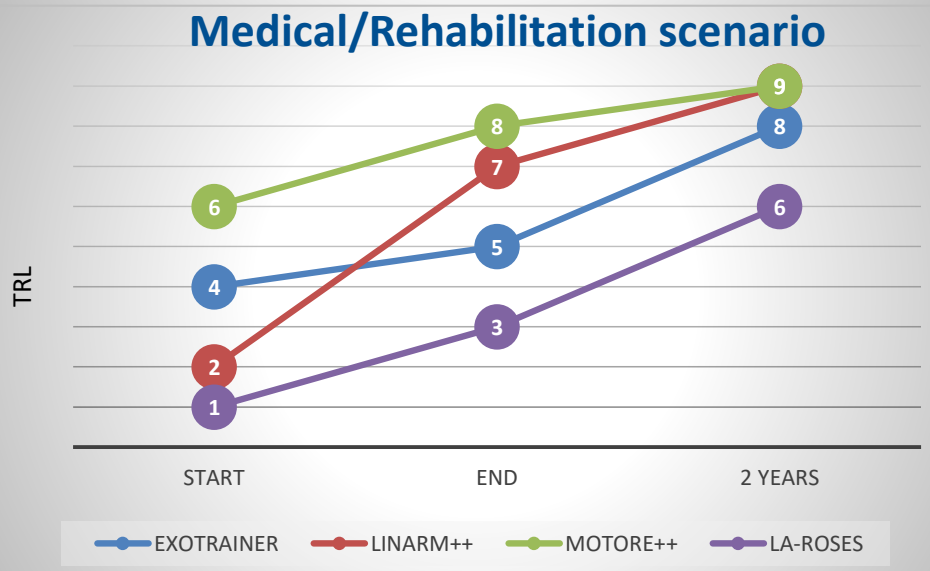
MONTH 34-60

Contributors: TUM, SSSA









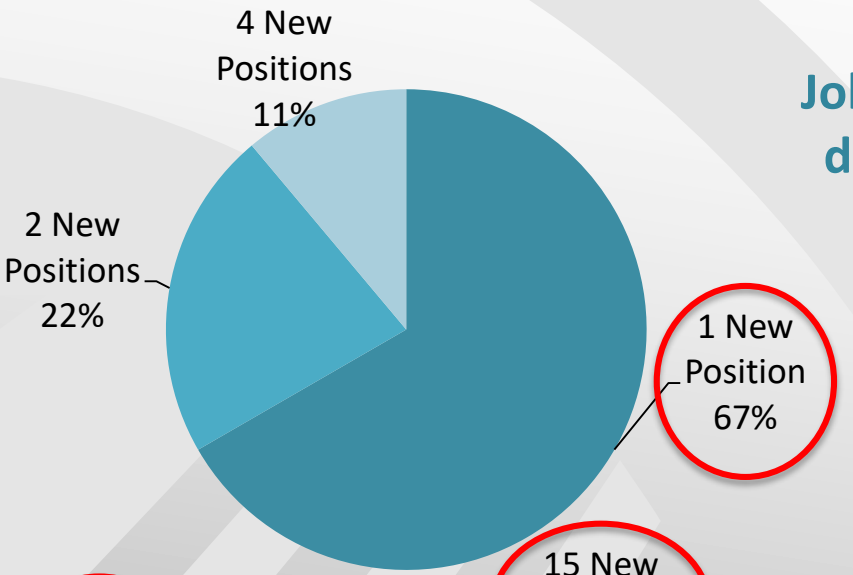
Task 3.6: Call 1- Phase VI

Result extraction and exploitation

MONTH 34-60

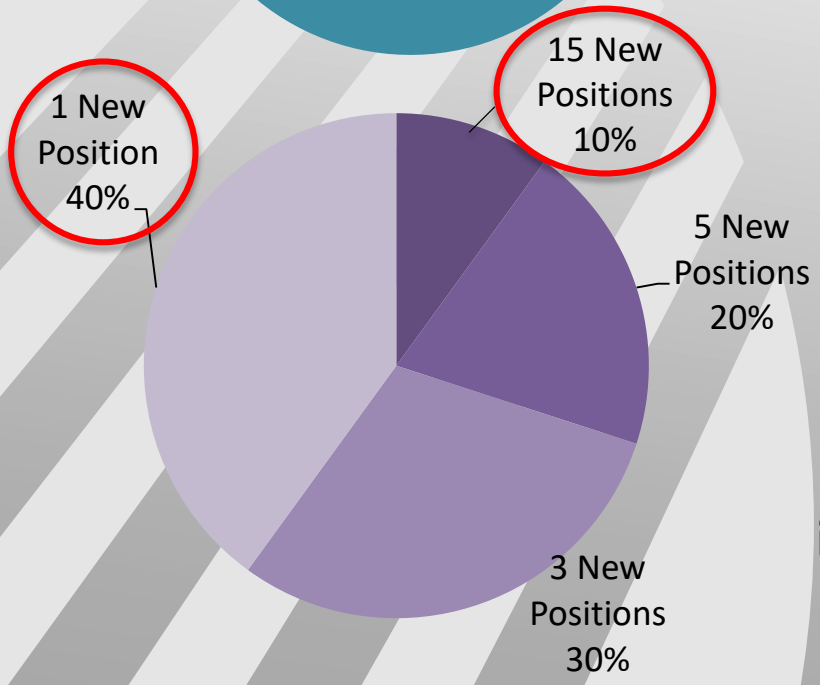
Contributors: TUM, SSSA

9 experiments created new jobs, of which:



Jobs created during the project

10 experiments will create new jobs in 2 years, of which:



Jobs expected to be created in the next 2 years

Task 3.6: Call 1- Phase VI

Summary of data

ECHORD++

Contributors: TUM, SSSA

MONTH 34-60

	At the end of the experiment			Expected in the next 2 years		
Experiment	**Patents**	**# Jobs**	**Turnover**	**Patents**	**# Jobs**	**Turnover**
MODUL	1	4	0	1	15	2M
3DSSC	1	2	0	2	6	400K - 1.2M
MOTORE++	0	2	120K	0	1	200K
EXOTRAINER	0	1	0	0	5	1.5M
TireBot	0	1	N/A	1	1	N/A
COHROS	0	1	0	0	0	N/A
DEXBUDDY	0	1	0	1	5	450K
MARS	0	1	N/A	5	1	N/A
LA-ROSES	0	1	N/A	1	2	N/A
2F	0	0	0	1	0	N/A
DEBURR	0	0	0	0	2	150K
LINARM++	0	0	0	1	1	N/A
SAPARO	0	0	N/A	1	2	N/A
PickIt	0	0	0	1	1	N/A
GAROTICS	0	0	0	1	3	500K

Objectives of WP3- Experiments

Experiments

FIRST CALL

- Task 3.5: Call 1- Phase V: Monitoring and review
- Task 3.6: Call 1- Phase VI: Result extraction and exploitation

SECOND CALL

- Task 3.9: Call 2- Phase III Call Issue
- Task 3.10: Call 2- Phase IV: Evaluation and selection
- Task 3.11: Call 2- Phase V: Monitoring and review

Task 3.10: Call 2- Phase IV

Evaluation and Selection

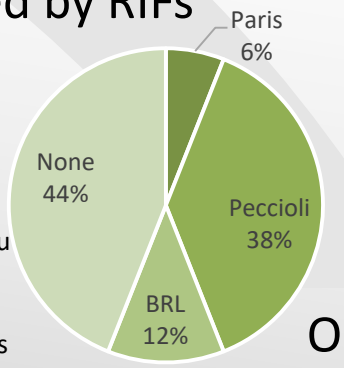
MONTH 25-32

Contributors: TUM, SSSA

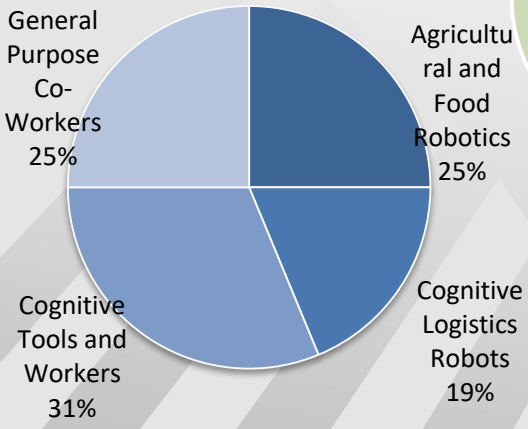
- **16** experiments **selected**
- Organizations: **47**
- Average scientific and/or technological quality score: **4.47/5** (+0.27 Call 1)
- Average implementation score: **4.25/5** (+0.08 Call 1)
- Average impact score: **4.44/5** (+0.40 Call 1)

Success rate 14%↑ (11.7% Call 1)

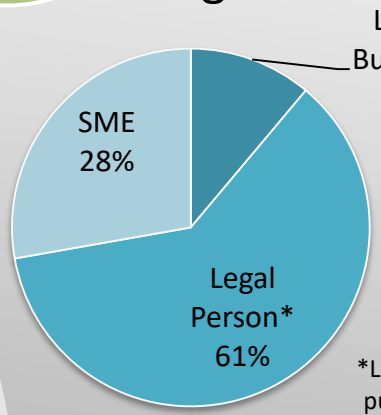
Experiments hosted by RIFs



Scenarios

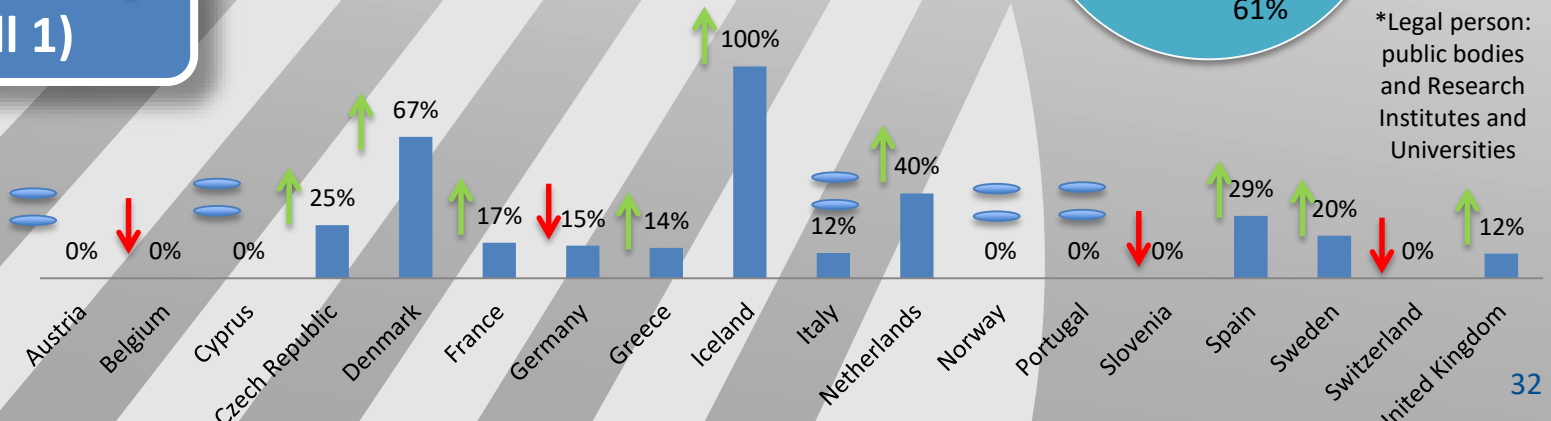


Organisation type



*Legal person: public bodies and Research Institutes and Universities

Success Rate per Country



Task 3.11: Call 2- Phase V Monitoring and Review

ECHORD++

Contributors:

MONTH 33-60 TUM, SSSA, UPC, CEA

- Lesson learnt from Call 1: **more communication** to support the correct development of the experiment
- New: division between **one technical moderator** and **one managerial moderator** for each experiment
- **Same monitoring approach** (different portal): bi-monthly assessment, deliverables, KPIs (technical, dissemination, impact)
- **KPIs** defined in **collaboration with experimenters → increased feasibility** and **perceived as real incentives**
- **3 additional female moderators** involved in the process→ improved gender balance

	A	C	D
1	Acronym	Technical Moderator	Management Moderato
2			
3	AAWSBE1	CEA	SSSA-Manuele Bonaccorsi
4	CATCH	UPC - Josep K	SSSA- Raffaele Esposito
5	CoCoMaps	TUM	CEA
6	DUALARMWORKER	SSSA- Annagiulia	UPC - Ana
7	FASTKIT	CEA	TUM
8	FlexSight	SSSA- Raffaele Limosani	UPC - Ana
9	GRAPE	UPC - A Grau	SSSA- Stefano Betti
10	HOMEREHAB	CEA	TUM
11	HyQ-REAL	TUM	SSSA- Laura Fiorini
12	INJEROBOT	UPC - A Grau	SSSA- Alessandra Moschett
13	Keraal	CEA	SSSA-Abdul BUTT
14	MAX ES	TUM	UPC - Ana
15	RadioRoSo	TUM, UPC - A Grau	SSSA- Grazia Pastucci
16	SAFERUN	TUM	UPC - Ana
17	SAGA	SSSA- Alessandro Manzi	TUM
18	WIRES	SSSA- Ilaria Strazzulla	TUM

CEA SSSA TUM UPC

Task 3.11: Call 2- Phase V

Monitoring and Review

ECHORD++

Contributors:

MONTH 33-60 TUM, SSSA, UPC, CEA

- Every 6 months→ **deliverable** (D3.5.3) **on the progress** of the experiments
- Collection of **bi-monthly** info on:
  - Self assessment
  - Deliverables
  - Milestones
  - Technical KPIs
  - Impact KPIs
  - Dissemination KPIs

	DUALARMW	INJEROBOT	SAGA	FLEXSIGHT
Assessment				
Tech. KPIs				
Imp. KPIs				
Deliverables				
Milestones				
Dissemination				

	MAX ES	AAWSBE1	WIRES	KERAAL
Assessment				
Tech. KPIs				
Imp. KPIs				
Deliverables				
Milestones				
Dissemination				

	SAFERUN	RADIOROSO	HOMEREHAB	FASTKIT
Assessment				
Tech. KPIs				
Imp. KPIs				
Deliverables				
Milestones				
Dissemination				

	COCOMAPS	GRAPE	CATCH	HYQ-REAL
Assessment				
Tech. KPIs				
Imp. KPIs				
Deliverables				
Milestones				
Dissemination				

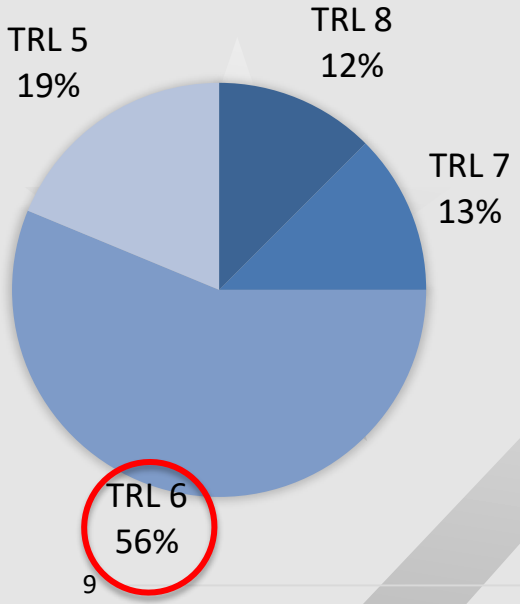
- One or more activities planned in the period resulted in positive outcome
- One or more activities planned in the period resulted slightly under expectation
- One or more activities planned in the period resulted significantly below expectations
- No action foreseen in the selected period

Task 3.11: Call 2- Phase V Monitoring and Review

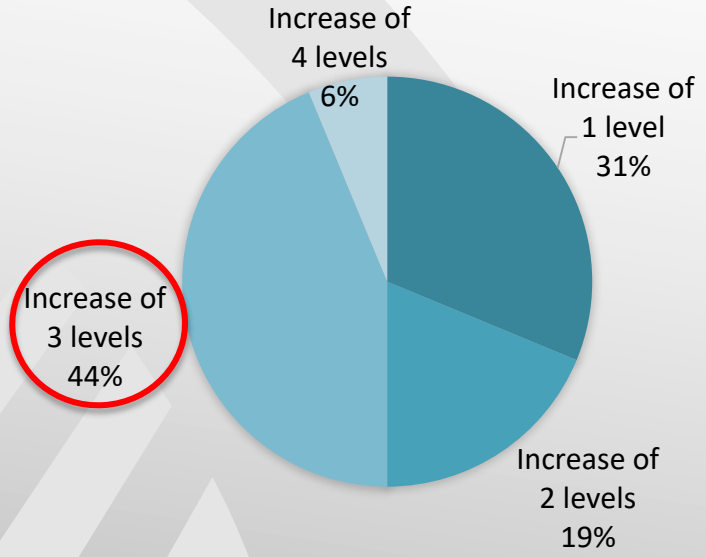
ECHORD++

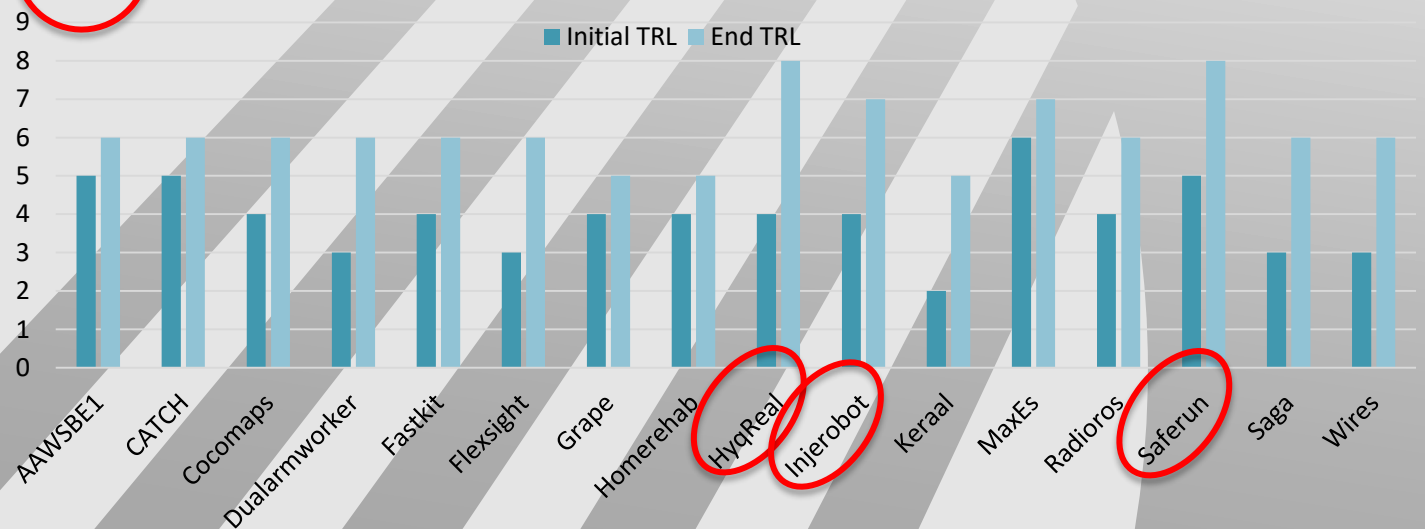
Contributors:
MONTH 33-60 TUM, SSSA, UPC, CEA

TRL at the end of the project



TRL increase at the end of the project





No experiment starting from TRL 1

Summary of WP3 – 3rd periodic report

Experiments

- **15** projects **evaluated through bi-monthly reports** and **final on-site reviews**
- **MOTORE++ and MODUL** showed **most relevant outcomes** and **additional 10 experiments** obtained **successful evaluations**
- **KPIs** defined in **collaboration with experimenters → increased feasibility** and **perceived as real incentives**
- **3 additional female moderators** involved in the process→ improved gender balance
- **16** projects **currently evaluated through bi-monthly reports** and **improved monitoring method**
- **On-site reviews** proved to be **extremely useful to assess the actual technological development,** especially for **those unable** to properly **transfer results on the portal**
- **The value chain tool** enable us to analyse the actual **progress of Call 1 experiments and will provide a support to achieve a better evaluation on Call 2 experiments**

Thank you. Questions?

The ECHORD Plus Plus Consortium acknowledges support by the European Commission under FP7 contract 601116.