



## OPEN CALL 2 – GUIDE FOR REVIEWERS

### Call Information

<b>Identifier</b>	: EARASHI-02 (call n°02)
<b>Project full name</b>	: Embodied AI/Robotics Applications for a Safe, Human, Industry
<b>Acronym</b>	: EARASHI
<b>Grant Agreement N°</b>	: 101069994

Evaluating proposals in the competitive second open call  
for Application Experiments (AE)

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***This project has received funding from the European Union’s Horizon Europe research and innovation programme under grant agreement n° 101069994.***

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## TABLE OF CONTENTS

<b>LIST OF ACRONYMS</b> .....	<b>3</b>
<b>SHORT DESCRIPTION</b> .....	<b>4</b>
<b>1 GENERAL INFORMATION</b> .....	<b>5</b>
<b>2 CONTEXT &amp; BACKGROUND</b> .....	<b>5</b>
2.1 EARASHI project overview .....	5
2.2 EARASHI 2nd open call for Application Experiments.....	7
2.3 Description of the overall evaluation process .....	8
<b>3 PROPOSAL EVALUATION &amp; SELECTION</b> .....	<b>9</b>
3.1 Evaluation for External Evaluators.....	9
3.2 Evaluation practical setup and tool .....	11
<b>ANNEX 1: EARASHI OPEN CALL 2 ANNOUNCEMENT TEXT</b> .....	<b>13</b>
<b>ANNEX 2: EARASHI OC2 CHALLENGES</b> .....	<b>15</b>
<b>ANNEX 3: EARASHI CONFIDENTIALITY AND CONFLICT OF INTEREST DECLARATION</b> .....	<b>22</b>
<b>ANNEX 4: EARASHI EXTERNAL EXPERT CONTRACT</b> .....	<b>23</b>
<b>ANNEX 5: TRL DEFINITION</b> .....	<b>26</b>

## LIST OF ACRONYMS

Acronym	Extended nomenclature
AE	Application Experiment
BB	Building Block
CF	Cascade Funding
FSTP	Financial Support to Third Party
IPR	Intellectual Property Rights
OC2	Open Call 2
SOM	Size of Market
UVP	Unique Value Proposition

## SHORT DESCRIPTION

The Guide for Reviewers contains basic information needed to guide you in reviewing proposals in context of EARASHI Open Call #2.

## 1 GENERAL INFORMATION

The **Guide for Reviewers** contains basic information needed to guide you in reviewing a proposal in the EARASHI Open Calls.

Evaluators will be compensated at a daily rate of 500 € for a one to four day review of all submitted proposals in the call. The exact duration of the review will depend on the number of proposals to be reviewed, which will be determined and will have to be agreed upon by all involved parties before the review can start. The review is expected to be completed in approximately 4 weeks. Nevertheless, the exact delivery date for the reviewers to submit their final assessment on the assigned proposals will be agreed upon between the individual reviewer and the EARASHI coordinator.

All external evaluators will have to sign a non-disclosure agreement with the EARASHI coordinator (Annex 3) and confirm that, to the best of their knowledge, they have no direct or indirect conflict of interest<sup>1</sup> in the evaluation of the proposal.

## 2 CONTEXT & BACKGROUND

### 2.1 EARASHI project overview

EARASHI, Embodied AI/Robotics Applications for a Safe, Human-oriented Industry, aims at **improving working conditions, trust, and acceptance of collaborative embodied AI in robotic systems**, for the production machines/tools sector. His outcomes are expected to help employees in their daily activities and **improve their working conditions**, leading to a productivity increase. A **worker-centric approach** by considering workforce well-being and health (e.g., MSD and stress), design thinking methodology of production machines, worker acceptance, and ethics.

**EARASHI consortium** brings together



<sup>1</sup> According to the details given on conflict of interests within the EARASHI CONFIDENTIALITY AND CONFLICT OF INTEREST DECLARATION (Annex 3)

- CEA, France
- Flanders Make, Belgium
- AMS Belgium, Belgium
- Mondragon, Spain
- INEGI, Portugal
- Ikerlan S Coop, Spain
- Minalogic Auvergne-Rhône-Alpes, France
- ST Microelectronics, France
- CECIMO, Belgium
- Blumorpho, France
- Steinbeis Innovation, Germany
- Aldakin, Spain

The R&D demonstration projects targeting EARASHI challenges are expected to reach Technology Readiness Level (TRL) 7 starting from TRL 4-5, following a competitive based approach.

The demonstration projects will target EARASHI challenges (complete list of challenges available at <https://earashi.eu/open-calls/>), and respecting EARASHI scope, e.g.:

- Support the industry in the uptake of advanced digital eco-responsible technologies (in particular AI, Data and Robotics)
- Support workers in their daily activities and improve their working conditions (safety, health and well-being) leading to a productivity increase
- Adopt a worker-centric approach by considering worker well-being and health at work (e.g. MSD and stress), design thinking methodology of production machines, worker acceptance and Ethics.

The granted projects are expected to have impact on:

- Decrease of the number of workers that perceive stress at work / the number of accidents at work / number of workers already suffering from MSD
- Increase of the number of ROS-users
- Improvement of trust in AI, Data and Robotics (implementation of ADR in manufacturing)
- Machine retrofit and refurbishment
- Deployment of eco-design approach
- Standardized, easy, non-hazardous dismantling processes shortened in time and costs.

Pan-European demonstration projects (EU member states or Horizon Europe associated countries) are strongly encouraged, through the cross-border collaboration:

- With EARASHI partners providing the technical building blocks and expertise
- Through the companies building up the proposal

The granted projects products are expected to have market potential and reach commercialization as project's outcome.

EARASHI 1<sup>st</sup> open call ran between February and May 2023 as status in <https://earashi.eu/announcement/earashi-open-call-1-5-projects-selected-for-funding/>. Some further information concerning EARASHI open call 1 results:

- 46 proposals fully submitted and eligible for evaluation
- 5 proposals selected for funding. They are described on the website at <https://earashi.eu/open-call-1-selected-projects/>
- 4 challenges and 3 BBs sold out for the second open call to come:
  - The challenges 1, 5 and 6 were largely covered by the projects selected through open call 1

- Challenge 10 raised no interest among the open call 1 applicants
- CEA and Flanders Make decided to remove BB1, 11.2 and 23 from the Building Block catalogue.

## 2.2 EARASHI 2nd open call for Application Experiments

All proposals to be reviewed were submitted for the EARASHI 2<sup>nd</sup> open call for AEs on EARASHI page (<https://earashi.eu/open-calls/>) with the call text in Annex 1 and also all the useful documents and links available on the EARASHI open call page.

The key elements of the call are summarized in **Erreur ! Source du renvoi introuvable.**

**Table 1: EARASHI open call #1 key characteristics**

EARASHI offers	<ul style="list-style-type: none"> <li>● Access to EARASHI ecosystem in the domain of AI, data and Robotics</li> <li>● Up to 200 k€ of funding – representing 100% or 70% of the budget depending on the company status, start-up or SME.</li> <li>● Product support aimed at bringing innovation to target market</li> <li>● Access to technical building blocks, expertise and support provided by EARASHI consortium (<a href="https://earashi.eu/building-blocks/">https://earashi.eu/building-blocks/</a>)</li> <li>● Innovation management support</li> <li>● Coaching service fostering the deployment of human-centric/eco-design approach, cybersecurity awareness, access to validation facilities and industrial mentoring.</li> </ul>
EARASHI targets	Startups and SMEs (according to EC definition), as specified in the Guide for Applicants ( <a href="https://earashi.eu/wp-content/uploads/2023/09/EARASHI_Guide-for-Applciant_OC2_vf27092023.pdf">https://earashi.eu/wp-content/uploads/2023/09/EARASHI_Guide-for-Applciant_OC2_vf27092023.pdf</a> )
EARASHI requirements	<ul style="list-style-type: none"> <li>● To specifically target and provide answer to one of the <b>6 challenges</b> identified for the second open call <a href="https://earashi.eu/wp-content/uploads/2023/09/EARASHI-OC-2-Challenges-1.pdf">https://earashi.eu/wp-content/uploads/2023/09/EARASHI-OC-2-Challenges-1.pdf</a></li> <li>● To select one of the building blocks from the <b>building blocks catalogue</b> <a href="https://earashi.eu/building-blocks/">https://earashi.eu/building-blocks/</a></li> <li>● <b>AE duration requirement:</b> AE is expected to run between 15 and 18 months and must be completed by February 28, 2026 (end of EARASHI project)</li> <li>● <b>Transversal criteria</b> such “Sustainability and circular economy (eco-design, refitting, refurbishing, recycling, etc.)”, “Environment and low carbon economy contribution (real and measurable impact)”, “Equal opportunities, gender balance and diversity”, “Social impact” shall also be considered by the evaluators when scoring the applications.</li> <li>● <b>EARASHI open call scope</b> <i>EARASHI overall “umbrella” is to support the uptake of advanced digital eco-responsible technologies in order to support Industry workers in their daily activities and improve their working conditions (safety, health and well-being) leading to a productivity increase.</i> R&amp;D demonstration projects targeting EARASHI challenges, developed to reach TRL 7 starting from TRL 4-5, responding to one of EARASHI 6 challenges, and addressing EARASHI overall scope: <ul style="list-style-type: none"> <li>- <b>Support the industry</b> in the uptake of advanced digital eco-responsible technologies (in particular AI, Data and Robotics)</li> <li>- <b>Support workers in their daily activities and improve their working conditions</b> (safety, health and well-being) leading to a productivity increase</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>- <b>Adopt a worker-centric approach</b> by considering worker well-being and health at work (e.g. MSD and stress), design thinking methodology of production machines, worker acceptance and Ethics</li> </ul> <p>The granted projects are expected <i>to have impact</i> on the:</p> <ul style="list-style-type: none"> <li>- Decrease of the number of workers that perceive stress at work / the number of accidents at work / number of workers already suffering from MSD</li> <li>- Increase of the number of ROS-users (ROS=Robot Operating System )</li> <li>- Improvement of trust in AI, Data and Robotics (implementation of ADR in manufacturing)</li> <li>- Machine retrofit and refurbishment</li> <li>- Deployment of eco-design approach</li> <li>- Standardized, easy, non-hazardous dismantling processes shortened in time and costs</li> </ul> <p>The granted projects products are expected to have <b>market potential</b> and reach <b>commercialization</b> as project’s outcome.</p>
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### 2.3 Description of the overall evaluation process

EARASHI project will evaluate proposals received in light of the criteria that govern the European Commission’s original evaluation and selection of projects. This is achieved through an Internal Evaluation Committee with the assistance of three external experts. The three experts are independent of any member of the consortium and any proposer regarding the criteria of Excellence, Impact and Quality.

The process is further supported through business case evaluation of the proposal, which is performed by Blumorpho, an EARASHI consortium member.

In parallel, for every received AE, technical feasibility check is performed by the Building Block owner(s) (to ensure the technical feasibility of project, considering the project duration and the EARASHI technical partner resources to support the company’s implementing the selected Building Block).

Prior to these steps, the eligibility check of all the proposals is performed to make sure that all the proposals that will be technically and business wise evaluated comply with all the requests, as described in the Guide for Applicants - section 5.1.

The experts will be individuals from diverse sectors (science, industry or academy) and with experience in the field of innovation. These experts are internationally recognized authorities in the relevant specialist area. They will sign a CONFIDENTIALITY AND CONFLICT OF INTEREST DECLARATION (see Annex 3) with EARASHI coordinator. The overall process of the AE evaluation and selection is illustrated in Figure 1.



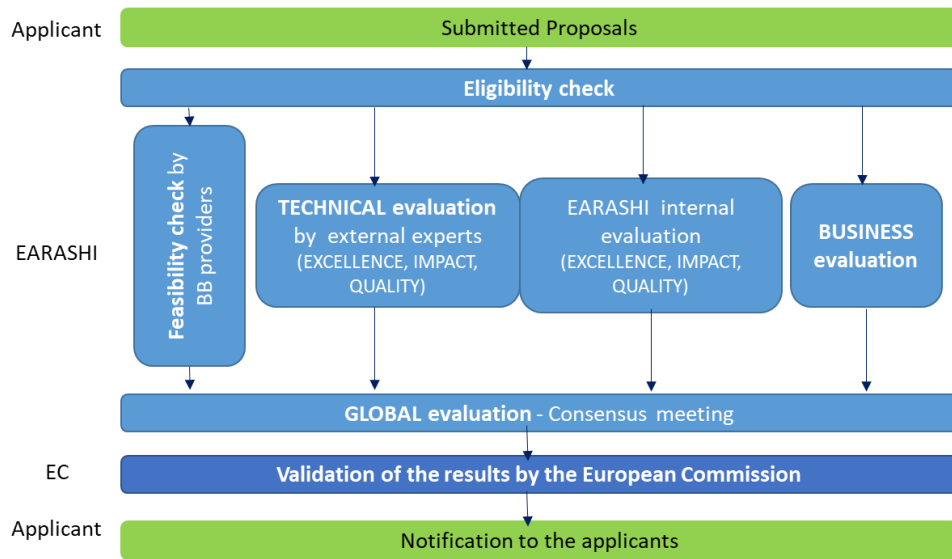


Figure 1: EARASHI – Open Call evaluation & selection process

### 3 PROPOSAL EVALUATION & SELECTION

#### 3.1 Evaluation for External Evaluators

The evaluation of Application Experiment proposals in EARASHI by external evaluators is based on scores given according to three macro-criteria: Excellence, Impact, and Quality of implementation of the Application Experiment:

Under the **Excellence** criteria, the following aspects are expected to be assessed:

- **Clarity and pertinence** of the objectives.
- The **soundness** of the concept.
- The alignment with the call scope, e.g. **Support Industry workers in their daily activities and improve their working conditions** (see §2.2)
- The extent that proposed work is **ambitious**, has **innovation potential** and is **beyond the state of the art** (e.g. ground-breaking objectives, novel concepts and approaches).
- **Stage of development of the idea** (TRL > 4 – no basic science or fundamental research is expected to be funded under this call, further information/definition of the TRL scale can be found in Annex 5.).
- **Excellence, innovation and quality** of the objectives.

Under the **Impact** criteria, the following aspects are expected to be assessed:

- **Enhancing innovation capacity and integration** of new knowledge.
- **Strengthening the competitiveness and growth** of companies involved by developing innovations meeting the needs of European and global markets; and, where relevant, by delivering such innovations to the markets.
- Any other **environmental and socially important impacts** (covered contribution to EU policies or international targets, e.g. Sustainable Development Goals);

Under the **Quality** and the efficiency of the implementation criteria, the following aspects are expected to be assessed:

- Coherence and effectiveness of the **workplan**, including appropriateness of the allocation of tasks and resources.
- Complementarity of the **participants**.
- Justification of **resources**.

Specific attention ought to be paid to the **human-centricity/worker-centric approach** in the project implementation.

**Transversal criteria** such “Sustainability and circular economy (eco-design, refitting, refurbishing, recycling, etc.)”, “Environment and low carbon economy contribution (real and measurable impact)”, “Equal opportunities, gender balance and diversity”, “Social impact” shall also be considered by the evaluators when scoring the applications.

**Please note:**

Section 2.3 of the proposal will contain information about the business case of the application Experiment. The full business case is presented in the associated pitch video. A dedicated business case evaluation of the Application Experiment will be done by the consortium member Blumorpho, evaluating the following parameters:

- **Market attractiveness** taking into account the market size, growth potential – potential market capture for the company (SOM)
- **Differentiation (UVP)** highlight your unique value proposition – the unique selling point, compared to the competition
- **The business model / go to market explaining** what is the market access for the company, what is the plan to address the first customers, what is the plan for the future business development
- **Quality of the team** describing how the team is qualified for the execution of the business plan.
- **Strategic fit for the company** explaining what is the strategic coherence of the project for the company.

**Therefore, the business case of the Application Experiment, in regards to the parameters mentioned above, should not factor into your evaluation as an external expert!**

***Evaluation Grades and Level of Confidence***

Please allocate scores to each Application Experiment proposal for the technical criteria as follows:

- A score 0-5 is awarded for **Excellence**.
- A score 0-5 is awarded for **Impact**.
- A score 0-5 is awarded for **Quality of implementation**.

Each score is weighted the same with the weighting factor 1. **Half marks may be given.** Evaluators are asked to score proposals as they were submitted, rather than on their potential if certain changes were to be made. When an evaluator identifies significant shortcomings, they must reflect this by awarding a lower score for the criterion concerned.

The scores indicate the following with respect to the criterion under examination:

- 0 – Proposal **fails** to address the criterion or cannot be assessed due to missing or incomplete information.
- 1 – **Poor.** The criterion is inadequately addressed, or there are serious inherent weaknesses/incoherences.
- 2 – **Fair.** The proposal broadly addresses the criterion, but there are significant weaknesses/incoherences.
- 3 – **Good.** The proposal addresses the criterion well, but a number of shortcomings are present.
- 4 – **Very Good.** The proposal addresses the criterion very well, but a small number of shortcomings are present.
- 5 – **Excellent.** The proposal successfully addresses all relevant aspects of the criterion. Any shortcomings are minor.

Please, together with the comment, you can allocate a level of confidence with each scoring from 0 to 5, to indicate how “sure” you are in your score and the evaluation of that aspect of the proposal, with the end of the scale meaning the following:

- 0 – **Unsure.** The scoring represents an educated guess.
- 5 – **Absolutely sure.** The scoring was done with the highest confidence.

**For each score, please also prepare a short remark/comment, explaining your scoring and why you chose that score for the criterion under examination.** Tips for providing remarks and comments:

- Exercise critical judgement and or challenging approach respect to the information given in the application
- Reflect shortcomings in a lower score for the relevant criterion
- Use the whole scale of scoring 0 to 5: for extreme scores (0 and 5) please provide full justification (detailed and overall comprehensive) on the rationale for such evaluation
- Provide an explanation of shortcomings identified (even on proposals highly scored)
- Pay particular attention to the consistency between the score attributed and the comments provided (in case of incoherence, the EARASHI consortium may contact you for clarifications)
- Avoid providing generic comments or comments generically mirroring the criteria in object

### 3.2 Evaluation practical setup and tool

All EARASHI proposals are stored on the project collaborative platform hosted on [Talkspirit](#), in a dedicated folder EARASHI-OpenCall#2.

Every external reviewer will have his own secure access to the proposals he will have to review. The invitation to join the collaborative platform will be launched by the coordinator CEA and the external reviewer will receive a mail to create and manage his own credentials.

The proposals to be reviewed are assigned by the responsible EARASHI partner. Every evaluator will evaluate all submitted proposals. A dedicated folder will be created for each reviewer gathering all the applications pdf documents to review. Not part of the evaluation but if interesting, the evaluator will have the possibility to have access to the pitch video and the eco-design questionnaire under the general open call 2 storing folder. All the submitted projects can be identified through their ID: *02-project number\_Project acronym*.

The evaluation (score and comments) are collected through the excel file that will be provided. It is strongly recommended to download the excel file, fill in locally and then upload the final version on Talkspirit, e.g. when the evaluation is fully performed.

## ANNEX 1: EARASHI OPEN CALL 2 ANNOUNCEMENT TEXT

EARASHI, Embodied AI/Robotics Applications for a Safe, Human-oriented Industry, will launch 2 open calls (February and September 2023) to select 10 projects distributing 2 M€ among them. The selected projects should address one of EARASHI 10 challenges defined by EARASHI advisory board, and publicity announced within the open call.

The Open Call 1 was closed in May , 2023 with 5 selected projects and 1 M€ of funding.

The Open Call 2 will be launched on September 29, 2023 to select 5 projects distributing 1 M€ among them. The selected projects should address one of EARASHI 6 open challenges.

Besides funding, the selected projects will benefit from **EARASHI programme**:

- Integration of a Technical building block of your choice and associated expertise, among the Building Block portfolio offered by EARASHI.
- Coaching services such as Business, human-centered design, eco-design, cybersecurity, engineering system integration, mentoring & access to validation facility.

The **funding instrument** will include a lump-sum grant of up to 200 k€ per project for developing solutions at demonstration scale and coaching session during and beyond their development. The total duration of a project is expected to be 15-18 months. Granted companies cannot individually receive more than 200 k€. Only startups and SMEs are eligible to receive such funding.

R&D demonstration projects targeting EARASHI challenges will be developed to reach Technology Readiness Level (TRL) 7 starting from TRL 4-5, following a competitive based approach. The demonstration projects will respond to one of **EARASHI 6 challenges**, and address **EARASHI overall scope**:

- **Support the industry** in the uptake of advanced digital eco-responsible technologies (in particular AI, Data and Robotics)
- **Support workers in their daily activities and improve their working conditions** (safety, health and well-being) leading to a productivity increase
- **Adopt a worker-centric approach** by considering worker well-being and health at work (e.g. MSD and stress), design thinking methodology of production machines, worker acceptance and Ethics
- **Target the machine tool / production machine / manufacturing industry application**

The granted projects are expected to have impact on:

- Decrease of the number of workers that perceive stress at work / the number of accidents at work / number of workers already suffering from MSD
- Increase of the number of ROS-users (ROS=Robot Operating System )
- Improvement of trust in AI, Data and Robotics (implementation of ADR in manufacturing)
- Machine retrofit and refurbishment
- Deployment of eco-design approach
- Standardized, easy, non-hazardous dismantling processes shortened in time and costs

The granted projects products are expected to have **market potential** and reach **commercialization** as project's outcome.

Pan-European demonstration projects (EU member states or Horizon Europe associated countries) are strongly encouraged, through cross-border collaboration either with the EARASHI partners providing the technical Building Blocks and expertise or through the companies building up the proposal.

The project must :

- Be proposed by a micro-consortium of a minimum of 1 independent legal entity (maximum 2) including exclusively Start-up or SME, established in the Member States of the European Union and its overseas countries and territories (OCT) and Horizon Europe associated Countries
- Involve an EARASHI building Block partner chosen among the Building Block portfolio.
- Address one of EARASHI challenges

## ANNEX 2: EARASHI OC2 CHALLENGES



# EARASHI Open Call#2 Description of the 6 Challenges



EARASHI is an EU project funded by Horizon Europe under GA 101069994



## EARASHI Open Call objectives

- Through FSTP for 10 AE dedicated to the production machines/tools application field, EARASHI will support the industry, especially SMEs, in the uptake of advanced digital eco-responsible technologies (in particular **AI, data and robotics**).
- These technologies will **support workers in their daily activities and improve their working conditions** (safety, health and well-being) leading to a productivity increase.
- EARASHI adopts a **worker-centric** approach by considering worker well-being and health at work (e.g., MSD and stress), design thinking methodology of production machines, worker acceptance, and ethics.



2



## EARASHI Open Call expected outcomes

### ▪ Human Centricity

- Decrease the number of workers that perceive stress at work, the number of accidents at work, and the number of workers already suffering from MSD.
- Increase the number of ROS-users
- Improve trust in ADR (implementation of ADR in manufacturing)

### ▪ Sustainability

- Machine retrofit and refurbishment
- More Integration of LCA
- Standardized, easy, non-hazardous dismantling processes shortened in time and costs.

### ▪ Economics

- 20 products with 1 commercialization plan for the robotic company and 1 for the technology providers.



3



## EARASHI Open Call#2 - 6 challenges

### ▪ 10 challenges

- The submitted projects should respond to one of the 6 challenges assessed by EARASHI external advisory board involving pan-European industrials with different profile and involved in various application domain markets.
- For each challenge, we provide
  - One use-case
  - Associated challenges
  - An example of solutions
  - Proposal of available competencies within EARASHI consortium: building blocks and services

### ▪ Recommendations

- It is reminded that every proposal should involve the implementation of one EARASHI building-block (described in the Building block portfolio)
- The services and their uses are detailed in the Coaching service catalogue



4



## CHALLENGE 1: Mobile robotic assistance for repetitive tasks

EARASHI

**Related Pain point** #Health #Hiring

**Description of the use case**

Repetitive tasks on the production lines face several stakes: time consumption, fatigue, difficult tasks for older people and human error, possibly leading to accidents and absenteeism. Smaller businesses do not invest in a full robotic line and could benefit from a versatile solution which could be implemented anywhere in the factory when and where needed.

**Associated challenges**

- Trained workers to implement robotic assistance within shopfloors
- Acceptance of workers
- Time required for set up
- Quality Insurance
- Safety of workers, accident and absenteeism reduction
- Risk assessment at the implementation phase
- Human-robot collaboration Engineering
- Flexibility and autonomy leveraging on AI
- Productivity Increase

**Example of an existing solution**

A company has developed a solution that inserts up to 6 screws in a minute, assisting factory workers with the screwing process.

**Available Competences within EARASHI**

**Building Block**

BB5 <small>kerlan</small> ROS based control platform	BB8 <small>M&amp;KE</small> Computer Vision	SERVICE Engineering System Integration	
BB11 <small>M&amp;KE</small> Sensors toolbox for autonomy	BB12 <small>M&amp;KE</small> Mixed Reality		SERVICE Human centric design
BB21 <small>M&amp;KE</small> Skill based AI-enabled robot programming	BB1 <small>CSA</small> Stress observer		SERVICE Business coaching
	BB2 <small>ST</small> Monitor control SW devlpt kit		SERVICE Cybersecurity
	BB3 <small>ST</small> AI solutions		

*SOLD OUT*

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## CHALLENGE 2: Robotic assistance for heavy duty

EARASHI

**Related Pain point** #Health #Hiring

**Description of the use case**

On the same line as repetitive tasks on the production lines, heavy duty often lead to health & productivity issues. In terms of health, musculoskeletal disorders are long term consequences on the heavy duty workers which lead to a decrease in productivity and a low attractiveness in hiring. The risk of accidents is also high. A robotic assistance can decrease the risks on the workers and give them more time focus on more added value tasks.

**Associated challenges**

- Limitations and capabilities of exoskeleton and other cobots technologies
- Reduction of time required for the task achievement
- Safety of workers, accident and absenteeism reduction
- Acceptance of workers
- Quality Insurance
- Human-robot collaboration Engineering

**Example of an existing solution**

A company has developed a solution based on ants: associating robots cooperating to carry loads basing their cooperation on the number, the size and the weight of the loads.

**Available Competences within EARASHI**

**Building Block**

BB15 <small>m</small> ADAPT	BB17 <small>m</small> Deflectometry	SERVICE Engineering System Integration	
BB16 <small>m</small> Deep learning	BB21 <small>M&amp;KE</small> Skill based AI-enabled robot programming		SERVICE Human centric design
BB10 <small>M&amp;KE</small> Explainable AI	BB6 <small>kerlan</small> MBD Simulation		SERVICE Business coaching
BB4 <small>M&amp;KE</small> Sensors toolbox for autonomy	BB4 <small>ST</small> IIoT connectivity		SERVICE Cybersecurity
BB5 <small>kerlan</small> ROS based control platform	BB18 <small>m</small> Fuzzy logic-based modelling		
BB1 <small>CSA</small> Stress observer	BB2 <small>ST</small> Monitor control SW devlpt kit		

*SOLD OUT*

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### CHALLENGE 3: Machine/tools for recycling goods, electronics, batteries

**Related Pain point** #Decarbonization #SupplyChain #Sovereignty

**Description of the use case**  
 Recycling practices and recycled materials are more and more implemented in different value chains. Recycled components are often **not competitive**. **Efficient and cost-effective** recycling requires solutions to **sort and separate wastes** as well as recycling processes limiting human intervention and exposition to hazardous compounds.

**Associated challenges**

- Low uniformity of the different types of wastes, requiring complex algorithms
- Waste recognition efficiency and speed, supported by AI
- Versatile grippers to pick mixed items
- Productivity of automated sorting/recycling systems
- Cost-effectiveness compared to new products/components
- Human intervention limitation

**Example of an existing solution**  
 Several recycling companies have implemented computer vision associated with AI to make waste identification more efficient.

**Available competencies within EARASHI**

BB8 MAKE Computer Vision	BB11 MAKE Sensor toolbox for autonomy	SERVICE Engineering System Integration
BB9 MAKE Operator guidance recom.	SOLD OUT observer	SERVICE Human centric design
BB5 ikerlan ROS based control platform	BB18 M Fuzzy logic-based modelling	SERVICE Eco-design
BB21 MAKE Skill based AI-enabled robot programming	BB16 M Deep learning based method	SERVICE Cybersecurity
BB19 Lean DFX Framework	BB22 MAKE Follow-me principle	SERVICE Business coaching
		Building Block 8

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### CHALLENGE 4: Digitalization procedure for production tools & machines for industry 5.0

**Related Pain point** #Sovereignty

**Description of the use case**  
 Industry 5.0 builds on lessons learnt of Industry 4.0, implementing sustainability, human centricism and resilience in supply chains, and focusing less on the financial benefits. To ensure the shift on the shop floor, the digitalisation needs to be thought of differently and implemented with care.

**Associated challenges**

- Sustainability description in algorithms/model
- Worker's health and emotional assesments
- Human factor description in algorithms/model
- Accuracy and quality of digitalization models
- Identification of the ideal data flow through various shopfloor systems and production equipment
- Standardized interface(s) for connectivity of assets

**Example of an existing solution**  
 A number of solutions offer a digital twin of factories. It is limited to visualisation, how to enter the Human in the digital twin is less clear;

**Available competencies within EARASHI**

BB8 MAKE Computer Vision	BB7 ikerlan Digitization solutions	SERVICE Engineering System Integration
SOLD OUT BB13 MAKE Predictive maintenance	BB20 Multi-Layer Stream Mapping	SERVICE Human centric design
BB14 Data operationalization	BB4 ST IoT connectivity	SERVICE Eco-design
BB16 Deep learning	BB3 ST AI solutions	SERVICE Cybersecurity
BB18 Fuzzy logic-based modelling	BB2 Monitor control SW dvlpt kit	Building Block 9

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## CHALLENGE 5: Workers' stress monitoring and assistance to limit work-related stress

**Related Pain point** #Health

**Description of the use case**  
 Modern manufacturing processes are stressful, and require maximum concentration. The employee attention who is working with the complex equipment should be focused on what is happening. The multifunctionality of the control panels is increasing even more.

**Associated challenges**

- The right information reaching the right person at the right time, limiting the amount of data
- Worker's acceptance
- Guidance of workers via HMI's
- Adaptative user interface
- Safety of workers, accident and absenteeism reduction
- Mixed Reality
- Automated fatigue and stress assessments

**Example of an existing solution**  
 Speech recognition technology will help to transfer many of the required controls into the oral type, which will drastically reduce the emergency messages and increase the efficiency of work.

**Available competencies within EARASHI**

**Building Block**

BB1 <small>USE</small> Stress observer	BB8 <small>MAKE</small> Computer Vision	SERVICE Engineering System Integration
BB12 <small>MAKE</small> Mixed reality for operators	BB9 <small>MAKE</small> Operator guidance recom.	SERVICE Human centric design

10

## CHALLENGE 6: Collaboration between AI and Human supervisors to solve complex problems

**Related Pain point** #Sovereignty #Hiring

**Description of the use case**  
 Today, using AI is commonplace. It allows companies to use their existing software to analyze the vast amount of data they routinely collected. However, it is today solely focused on machines and tools. There is now a need to implement an AI supervision process applied to the whole process, from data to all machines and conclusions to the entire product.

**Associated challenges**

- The right information reaching the right person at the right time
- Model and algorithms accuracy
- Insurance of data quality. Automatic recognition of possibly flawed data.
- How to make AI & Robots the assistant to human operators & not the opposite?
- Automatic generation of alternative solutions for a problem
- Increase in Overall Equipment Effectiveness (OEE)
- Tracking problem issues
- Make AI calculation outcomes accessible and readable to operators

**Example of an existing solution**  
 A company has developed a platform to automate what the human supervisor would do if they were everywhere in a factory.

**Available competencies within EARASHI**

**Building Block**

BB17 <small>USE</small> Deflectometry	BB10 <small>MAKE</small> Explainable AI	SERVICE Engineering System Integration
BB23 <small>USE</small> Manual Task Recognition	BB11 <small>MAKE</small> Sensors toolbox for autonomy	SERVICE Eco-design
BB8 <small>MAKE</small> Computer Vision	BB13 <small>MAKE</small> Predictive maintenance	SERVICE Cybersecurity
BB16 <small>USE</small> Deep learning based method.	BB7 <small>MAKE</small> Digitization solutions	

11

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## CHALLENGE 7: Human-centric robotic assistance for assembly work cell

**Related Pain point** #Health

**Description of the use case**

The assembly of **small systems** causes **posture problems** leading to **mental and physical fatigue** as well as **musculoskeletal pain** in the long term. Complexity and dexterity make **humans essential assets** for these manufacturing processes. Collaborative solutions are needed to improve working conditions and efficiency.

**Associated challenges**

- Detection of when and where the operator has issues
- Safety of workers, accident and absenteeism reduction
- Acceptance of workers
- Human-robot collaboration Engineering
- Human tasks reduction
- Bringing the right item at the right place at the right time
- Sensibility of Algorithms in Robots

**Example of an existing solution**

Cobots that will handle the right items to the operator to limit its movements.

**Available competencies within EARASHI**

<b>BB23</b> MAKE Mixed Reality Task recognition <i>SOLD OUT</i>	<b>BB8</b> MAKE Computer Vision	<b>SERVICE</b> Engineering System Integration
<b>BB24</b> MAKE Smart observer <i>SOLD OUT</i>	<b>BB9</b> MAKE Operator guidance recom.	<b>SERVICE</b> Human centric design
<b>BB12</b> MAKE Mixed reality for operators	<b>BB21</b> MAKE Skill based AI-enabled robot programming	<b>SERVICE</b> Cybersecurity
<b>BB15</b> ADAPT ADAPT	<b>BB5</b> kerlan ROS based control platform	<b>BB2</b> STI Monitor control SW dvlpt kit
<b>BB18</b> MAKE Fuzzy logic-based modelling <b>Building Block</b>	<b>BB16</b> Deep learning	<b>BB3</b> STI AI solutions
		<b>BB22</b> MAKE Follow-me principle

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## CHALLENGE 8: Automation for the optimization of intra-factory logistics

**Related Pain point** #Sovereignty #SupplyChain

**Description of the use case**

Improvements and automation in intralogistics would allow the **optimization of the incoming flow for machines and work cells**, and more globally optimize operations at the shopfloor level, including stocks and ERP management. Such solutions would **support operators** in supplying the machines or accessing the right tools to achieve their tasks.

**Associated challenges**

- Items and good flow optimization
- Algorithms/model for flow optimization
- Fleet management
- Reduction of operator travel/movements
- Simultaneous Localization and Mapping algorithms
- Handling systems optimization


**Example of an existing solution**

4.0 work cells equipped with multiple connected and ergonomic objects. Guaranteeing optimal quality, traceability and productivity of operations.

**Available competencies within EARASHI**

<b>BB23</b> MAKE Smart toolbox for autonomy <i>SOLD OUT</i>	<b>BB8</b> MAKE Computer Vision	<b>SERVICE</b> Engineering System Integration
<b>BB5</b> kerlan ROS based control platform	<b>BB15</b> ADAPT ADAPT	<b>SERVICE</b> Cybersecurity
<b>BB20</b> MAKE Multi-Layer Stream Mapping <b>Building Block</b>	<b>BB4</b> STI IIoT connectivity	

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## CHALLENGE 9: Enhanced digital planning to optimize the execution of the tasks of production operators

#Health
#Hiring

**Description of the use case**

With the increase of robotic assistance on the shopfloors and digitization of production lines, factory workers are often confronted with working several machines. Enhanced digital planning need to provide real time data to factory workers and directly update the machines tasks to increase productivity.

**Associated Challenges**

- Impact of customer requests on planning
- Worker acceptance
- Worker feedback collection and implementation in algorithms
- Optimization of production according to different companies' divisions requirements. Connexions between MES and ERPs
- Increase in Overall Equipment Effectiveness (OEE) and productivity

**Example of an existing solution**

A company has developed solutions that provide instant visibility and intuitive decision support enabling companies to become more agile by exploiting supply chain complexity.

**Available competencies within EARASHI**

**Building Block**

**BB9** MAKE  
Operator guidance recom.

**BB14** MAKE  
Data operationalization


**BB11** MAKE  
Sens. toolbox autonomy

**SERVICE**  
Human centric design

**SERVICE**  
Cybersecurity

14

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## CHALLENGE 10: Gamification of work tasks via the use of digital technologies (AI, Drone, AR...)

#Hiring

**Description of the use case**

In times where recruiting is becoming challenging, manufacturers have to adapt their workplaces, make them more attractive, the work more engaging, and the time spent on the shop floor more impactful. Studies have shown a positive effect of gamification (smartphone based) factory workers motivation and willingness to embrace their tasks. Companies with highly engaged employees tend to outperform those without engagement by 20%.

**Associated challenges**

- Gamification in a non fully digitized environment / Gamification as a driver for digitization
- Workers acceptance
- Training time reduction
- Increase in Overall Equipment Effectiveness (OEE) and productivity
- Workers' motivation stimulation
- Personalization of gamification for operators, depending on work task

**Example of an existing solution**

Some companies already develop gamification solutions to efficient their missions objectives and return on investment.

**Available competencies within EARASHI**

**Building Block**

**BB21** MAKE  
Skill based AI-enabled robot programming

**BB8** MAKE  
Computer Vision

**BB9** MAKE  
Operator guidance recom.

**BB6** Make  
MBD Simulation

**SERVICE**  
Engineering System Integration

**SERVICE**  
Human centric design

**SERVICE**  
Cybersecurity

15

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## ANNEX 3: EARASHI CONFIDENTIALITY AND CONFLICT OF INTEREST DECLARATION



**Expert address**  
Ms. Jane Doe  
Main Street 123a  
12345 Anycity  
COUNTRY

City, Country, 5 May 2023

### CONFLICT OF INTEREST DECLARATION

I the undersigned that, in participating as an independent expert in the evaluation of proposals received in the open call of the EARASHI project  
I do not, to the best of my knowledge, have any interest in any of the proposals submitted in this call. I have not been involved in their preparation and I do not benefit either directly or indirectly from the eventual selection. Should I discover a conflict of interests during the evaluation, I declare to undertake this and to withdraw from the evaluation.

Name	
Signature	
Date	

## ANNEX 4: EARASHI EXTERNAL EXPERT CONTRACT



### EARASHI – Expert contract

#### 1- NON DISCLOSURE AGREEMENT

This confidentiality agreement (hereinafter referred to as the “Agreement”) is made by and between:

**Commissariat à l'énergie atomique et aux énergies alternatives**, a French state-owned research entity with a scientific, technical or industrial activity duly organised under the laws of France and having its registered office located at 25 rue Leblanc, Bâtiment « Le Ponant D » - 75015 Paris, FRANCE, declared at the Paris Register of Commerce and Trade under the following registration number: R.C.S. Paris B 775 685 019, acting for its Technological Research Division (DRT), and represented by M. Fabien CLERMIDY, Director of the DSYS Department, and duly authorized for the purposes hereof, hereinafter referred to as “CEA”,

And

**Mr./Ms. \*\* \*\***, with Identification Number (D.N.I.) **\*\*\*** and address in **\*\*\*** hereinafter referred to as “External Evaluator”.

hereinafter, jointly or individually, referred to as “Parties” or “Party”.

#### WHEREAS:

Commissariat à l'énergie atomique et aux énergies alternatives, Flanders Make VZW, AMS Belgium bvba, Mondragon Goi Eskola Politeknikoa Jose Maria Arizmendiarieta S Coop, INEGI – Instituto de Ciencia e Inovacao em Engenharia Mecanica e Engenharia Industrial, Ikerlan S Coop, Minalogic Auvergne-Rhône-Alpes, ST Microelectronics Grenoble 2 Sas, Comité Européen de Cooperation des Industries de la Machine-Outil CECIMO AISBL, Blumorpho, Steinbeis Innovation GGMbH and Servicio De Asistencia Técnica Eléctrica S.L. (Aldakin) (hereinafter the “Project Partners”) are the participants to the project called **EARASHI** as part of the Horizon Europe – the Framework Programme for Research and Innovation (2021-2027) which is approved by the European Commission (Grant Agreement reference 101069994), entitled “**Embodied AI/Robotics Applications for a Safe, Human-oriented Industry**” (hereinafter referred to as “Project”). More specifically:

- CEA is the Coordinator of the Project;
- CEA is the chairperson of the EARASHI Evaluation Committee.

The Project Partners have the necessity to constitute an Evaluation Committee in order to evaluate the applications of the different Third Parties (hereinafter referred to as “Purpose”); for this Purpose, CEA, as Coordinator of the Project, has taken contact with **Mr./Ms. \*\* \*\***, for the advice and assessment in the Project;



In order to participate in the above said Evaluation Committee, the Expert will have access to Confidential Information (as defined at Section 1 below) that the Expert should keep it as confidential.

#### NOW, THEREFORE, IT IS HEREBY AGREED AS FOLLOWS:

1) For the purpose of this agreement the following definitions will apply:

**Application Experiment:** means the experiments to be carried out with the Selected Third Party or the Selected Third Parties, as envisaged in the Consortium Plan, with the objective to foster the introduction of digital technologies in their product and service offerings. They will involve at least one EARASHI Technical Partner (the Building Block owner) designed as the Monitoring Partner, and one or two Selected Third Party (ies), and the Cascade Funding Partner.

**Application Experiment Partners:** means all the partners involved in an Application Experiment.

**Cascade Funding Partner:** means the Party distributing Cascade Funding to the Selected Third Parties for performing the Application Experiments. At the time of signature of the Grant Agreement, the Cascade Funding Partners is the monitoring partner of CEA when the monitoring partner is ST Microelectronics.

**Confidential Information:** means all information (financial, commercial, technical, legal or whatever nature) in whatever form or mode of communication (writing or drawings, orally, in the form of samples, models, computer program or in any form whatsoever including information derivable by visual inspection), which is disclosed by the Disclosing Party to the Recipient or to which the Recipient has access in any way in connection with the Project and with the different Application Experiments (this includes all the information provided by applicants).

**Disclosing Party:** means all Application Experiment Partners (including the Cascade Funding Partner, the Monitoring Partner, the Selected Third Party(ies) and possible Innovation Management Partner).

**Monitoring Partner:** means the Party that will be in charge of managing and monitoring the Application Experiments carried out by the Selected Third Party(ies). The Monitoring Partner is naturally the building block owner of the building block selected by the Third Party(ies) for the granted project.

**Third Party(ies):** means the legal entities chosen through open calls in accordance with the Grant Agreement and the Consortium Agreement. The Selected Third Parties implement Application Experiments with the objective to develop innovative European CPS and embedded systems. They are third parties since they are not party to the Grant Agreement or the Consortium Agreement.

**Receiving Party:** means **Mr./Ms. \*\* \*\***.


2) The Confidential Information, all copies thereof and all rights thereto, shall remain the exclusive property of the Disclosing Party.

All Confidential Information, included inside the application submitted to EARASHI Open Call or related to the application, whether original or copies thereof, including any document, note, meeting report, project submissions, etc. containing such information, shall be promptly returned by the Receiving Party to the Disclosing Party on receipt of the Disclosing Party or CEA's written request therefor. The Receiving Party will not retain any copies, extracts or reproductions in whole or in part of the Confidential Information.

2) The Receiving Party hereby undertakes during the implementation of the Project and for a period of five (5) years after the end of the Project:

not to use Confidential Information otherwise than for the Purpose for which it was disclosed;

not to disclose Confidential Information to any third party without the prior written consent by the Disclosing Party;

  
not to duplicate or otherwise reproduce Confidential Information except for such copies as the Receiving Party may require for the Purpose as aforesaid, provided that all copies shall contain the same proprietary and confidential notices and legends as appear on the original Confidential Information,

not analyze, reverse-engineer, disassemble, decompose or re-formulate any Confidential Information, including any Samples;

not to claim nor to register any Intellectual Property right, nor to exercise any Intellectual Property right or any other right on Confidential Information received under the Agreement;

to return to the Disclosing Party on demand or destroy all Confidential Information which has been supplied to or acquired by the Receiving Party including all copies thereof and to delete all information stored in a machine readable form. The Receiving Parties may keep a copy to the extent it is required to keep, archive or store such Confidential Information because of compliance with applicable laws and regulations or for the proof of on-going obligations.

3) Nothing in this Agreement shall be construed as compelling the Application Experiment Partners to disclose any Confidential Information to the Expert, or to enter into any further contractual relationship with the Expert.

4) Nothing contained in this Agreement shall be construed as granting or conferring upon the Receiving Party, whether expressly or impliedly, any right by license or otherwise under any proprietary or statutory right of the Disclosing Party existing prior to or coming into existence after the effective date of the Project.

5) The Agreement is personal to the Parties (« intuitu personae ») and the Receiving Party undertakes not to assign nor transfer its rights or obligations under the Agreement to any third party without the Disclosing Party's prior written approval.

6) The above shall not apply for disclosure or use of Confidential Information, if and in so far as the Receiving Party can show that:


- the Confidential Information has become or becomes publicly available by means other than a breach of the Receiving Party's confidentiality obligations;
- the Disclosing Party subsequently informs the Receiving Party that the Confidential Information is no longer confidential; or
- the Confidential Information is communicated to the Receiving Party without any obligation of confidence by a third party who is to the best knowledge of the Recipient in lawful possession thereof and under no obligation of confidence to the Disclosing Party; or
- the Confidential Information, at any time, was developed by the Receiving Party completely independently of any such disclosure by the Disclosing Party; or
- the Confidential Information was already known to the Receiving Party prior to disclosure; or
- the Receiving Party is required to disclose the Confidential Information in order to comply with applicable laws or regulations or with a final court or administrative order, subject to the provision Section 9 hereunder.

7) The Receiving Party shall apply the same degree of care with regard to the Confidential Information disclosed as with its own confidential and/or proprietary information, but in no case less than reasonable care.

8) The Receiving Party shall promptly advise CEA in writing of any unauthorized disclosure, misappropriation or misuse of Confidential Information after it becomes aware of such unauthorized disclosure, misappropriation or misuse.

9) If The Receiving Party becomes aware that it will be required, or is likely to be required, to disclose Confidential Information in order to comply with applicable laws or regulations or with a court or administrative order, it shall, to the extent it is lawfully able to do so, prior to any such disclosure:

- notify CEA,
- comply with the CEA's reasonable instructions to protect the confidentiality of the information, and
- make such disclosure only to the extent it is required.

  
10) This Agreement shall be construed and interpreted in accordance with the laws of Belgium.

11) Any dispute arising in connection with this Agreement, including any dispute related to the validity, interpretation, implementation and/or termination of the Agreement, which cannot be amicably settled within the sixty (60) days following its occurrence shall be finally settled under the Rules of Arbitration of the International Chamber of Commerce by one arbitrator appointed in accordance with those Rules. The arbitration proceedings shall take place in Brussels (Belgium). The language to be used in the arbitral proceedings shall be English.

12) Any notices for technical correspondence in connection with the Agreement shall be sent to:

- Isabelle DOR, if to CEA  
CEA-LETI/DSYS/SSCE , 17 Rues des Martyrs 38000 Grenoble Cedex  
Tel: +04 38 78 59 70  
Email: Isabelle.dor@cea.fr

Mr./Ms. \*\* \*\*\*,  
[address]  
Tel: .....  
Email: .....

13) The Agreement cancels and supersedes all previous written or oral agreements and understandings between the Parties with regard to the Purpose, and constitutes the Parties' entire agreement as to such Purpose. No addition or modification of the terms of the Agreement shall be valid between the Parties unless made in writing and signed by their duly authorized representatives.



**2- CONTRACTUAL AND FINANCIAL CONDITIONS**



The services are being contracted from:

Mr./Ms. \*\* \*\*  
 [address]  
 Tel: .....  
 Email: .....

This service agreement is effective from the 30/05/2023 until the 12/07/2023.

Role of the Expert:

- Provide support to EARASHI project by evaluating, scoring and commenting Application Experiments proposals received at EARASHI second Open Call
- Evaluation period is scheduled 15/01/2024 to 23/02/2024
- Evaluation reports to be delivered to EARASHI on 23/02/2024
- Attend TELCOS, if needed, to discuss their evaluation results with fellow Jury Members from EARASHI between 23/02/2024 to 08/3/2024.

Financial Elements & Payment Conditions

The Expert is entitled to a financial allocation of 500 € per worked day (excluding VAT). It is expected that the Expert will analyze an average of 10 EARASHI Application Experiments proposals per day.

Payments requests are subject to the following conditions:

- Delivery of the Evaluation reports of the received AEs proposals, including score and comments, before 23/02/2024
- Expert will establish a claim of costs in due and proper form
  - invoice identifier 2024/CEA-LETI/EARASHI-OC2
  - the bank account number / IBAN
  - the amount to be paid (excluding VAT): based on the number
  - the following label
    - Reference and date of Evaluation report delivery to CEA : ref Date
    - Number of Application Experiment proposals evaluated: reference amount 1
    - Number of days spent on the mission: reference amount 2
    - =>the reference date and reference amounts will be detailed in the "Claim of Cost" which will be provided to Earashi once the review task is finished.

The claim of costs needs to be addressed in pdf signed by email to Isabelle DOR at [isabelle.dor@cea.fr](mailto:isabelle.dor@cea.fr).

Executed in two (2) original counterparts, one (1) for each Party:



For CEA: M. Fabien CLERMIDY Director of DSYS Department Date:	Mr./Ms. ** ** Date: 1
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## ANNEX 5: TRL DEFINITION

Where a topic description refers to a TRL, the following definitions apply, unless otherwise specified ([https://ec.europa.eu/research/participants/data/ref/h2020/wp/2014\\_2015/annexes/h2020-wp1415-annex-g-trl\\_en.pdf](https://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/annexes/h2020-wp1415-annex-g-trl_en.pdf)):

- TRL 1 – basic principles observed
- TRL 2 – technology concept formulated
- TRL 3 – experimental proof of concept
- TRL 4 – technology validated in lab
- TRL 5 – technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)
- TRL 6 – technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies)
- TRL 7 – system prototype demonstration in operational environment
- TRL 8 – system complete and qualified
- TRL 9 – actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)

More details can be found at: <https://horizoneuropencppportal.eu/store/trl-assessment>