European Innovation Council

EIC Info Day 2022

EIC Pathfinder Open
EIC Pathfinder Challenges

Timo Hallantie, Head of Unit EIC Pathfinder

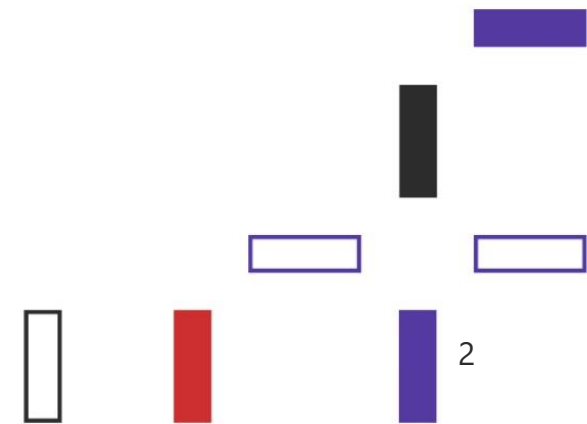Martin Lange, Deputy Head of Unit EIC Pathfinder

What is the EIC Pathfinder?

The EIC Pathfinder programme funds **research** to **develop the scientific basis** to underpin **breakthrough technologies**.

Funding schemes

- **EIC Pathfinder Open** ⟹ **bottom-up approach**. Any field of science, technology or application without predefined thematic priorities

- **EIC Pathfinder Challenges** ⟹ **top-down, challenge-driven, portfolios of projects approach**. To support proposals within a predefined thematic area and addressing specific objectives
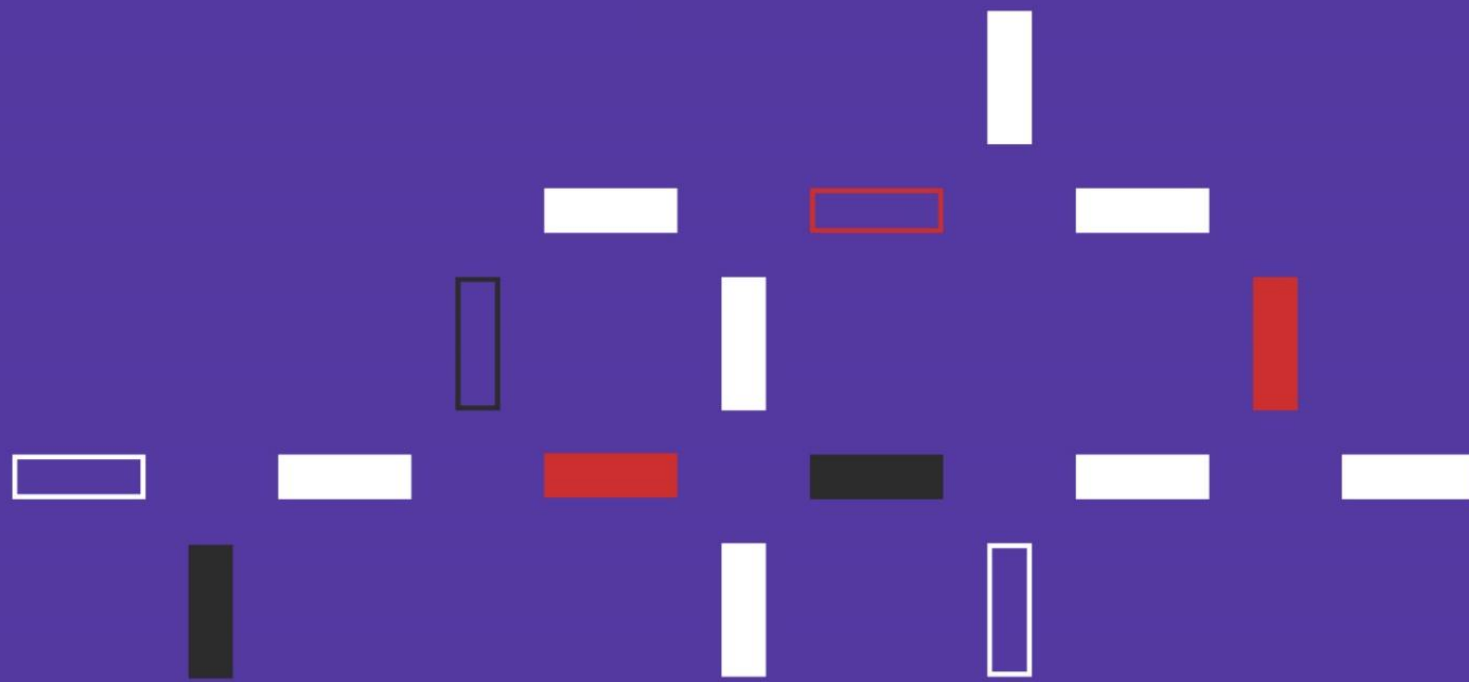
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EIC Pathfinder Open

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EIC Pathfinder Open

- Do you have **a vision for a future technology** that could make a real difference to our lives?

- Do you see a plausible way of **achieving the scientific breakthrough** that will make this technology possible?

- Can you imagine collaborating with an **interdisciplinary team of researchers and innovators** to realise the **proof of principle** and validate the scientific basis of the future technology?
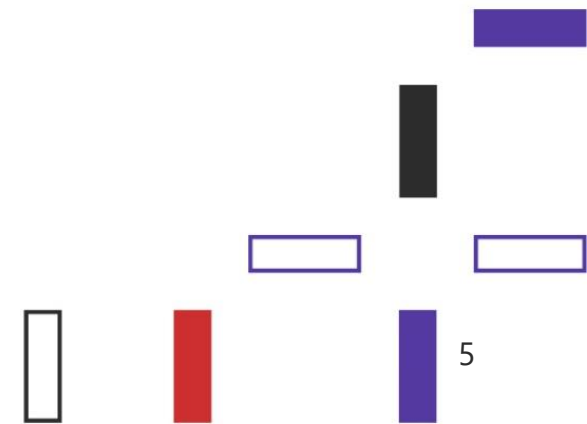
EIC Pathfinder Open: Gatekeepers

Collaborative, interdisciplinary research, meeting the following Gatekeepers:

- **convincing, long-term vision of a radically new technology** that has the potential to have a transformative positive effect to our economy and society

- **concrete, novel and ambitious science-towards-technology breakthrough**, providing advancement towards the envisioned technology

- **high-risk & high-gain research approach & methodology**, with concrete and plausible objectives
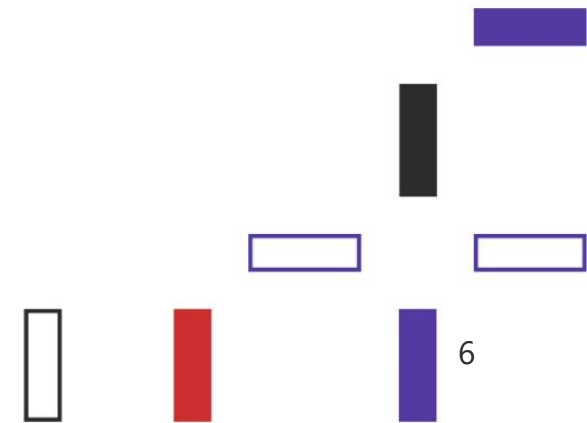
Expected outcomes of EIC Pathfinder Open projects

- the **proof of principle** that validates **the scientific basis of the envisioned future technology**

- projects must adequately **protect the generated Intellectual Property (IP)**

- projects should involve and empower **key actors** that have the potential to **become future leaders** (e.g. excellent early-career researchers, promising high-tech SMEs & start-ups)

- project are encouraged to **empower female researchers** and have **gender balance** among the work package leaders

All the above will **strengthen Europe's capacity for exploiting the scientific discoveries made in Europe** throughout the steps to market success or for solving global challenges

EIC Pathfinder Open:
# Can you apply? Consortium composition

- A consortium has to include at least **three independent legal entities**
  - each one established in a different EU Member State or Associated Country and with at least one of them established in a Member State

- Legal entities: all types are eligible
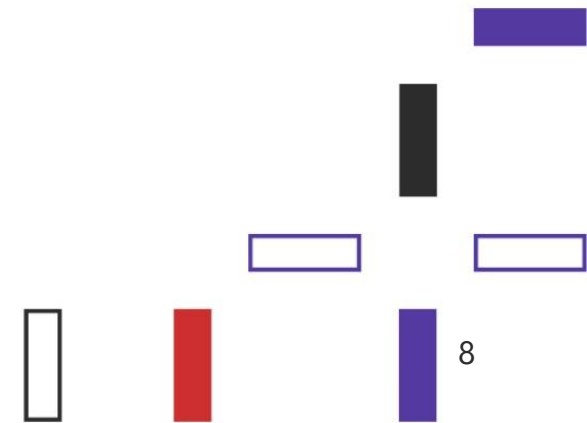
What support will you receive if your proposal is funded?

- A **grant** for a **Research and Innovation Action** to cover eligible costs
- In EIC Pathfinder Open grants are awarded **up to EUR 3 million**
  - Larger amounts are possible, if properly justified
- The funding rate **100% of the eligible costs**
- The total indicative budget for this call: **EUR 183 million**
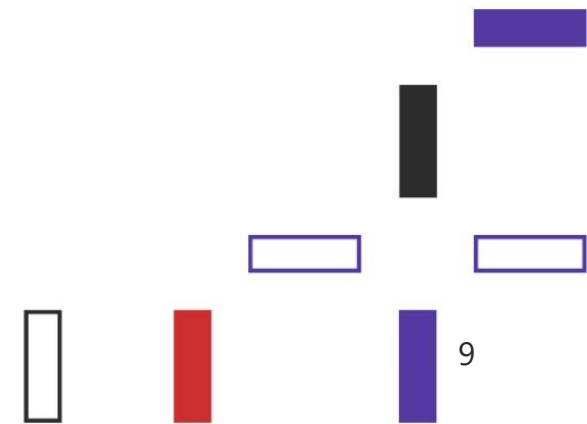
Additional opportunities for EIC Pathfinder projects

Projects or their beneficiaries funded by EIC Pathfinder are eligible:

- for **EIC Booster grants** with fixed amounts of up to €50,000 for complementary activities:
  - for potential pathways to commercialization
  - for portfolio activities
- to submit a proposal to the **EIC Transition** for transforming their research results into innovation opportunities
- to submit an **EIC Accelerator** proposal via the **Fast Track** scheme
- to receive free access to a wide range of **Business Acceleration Services**

How do you apply; how long does it take?

- You must submit your application via the **EU Funding & Tender Opportunities Portal** before the given deadline

- Proposal has Part A & Part B (max 17 A4 pages – Section 1 to 3)

- You will be informed about the outcome of the evaluation within **5 months from the call deadline** (indicative)

- If your proposal is accepted for funding, your grant agreement will be signed by **8 months after the call deadline** (indicative)

- The deadline to submit the proposal is 4 May, 2022 at 17h00 CET

How does the EIC decide if your proposal will be funded?

Submission → **Individual remote phase** → **Rebuttal phase** → **Evaluation committee phase** → **Feedback**

Evaluation procedure

- **Excellence**
- **Impact**
- **Quality and efficiency of the implementation**
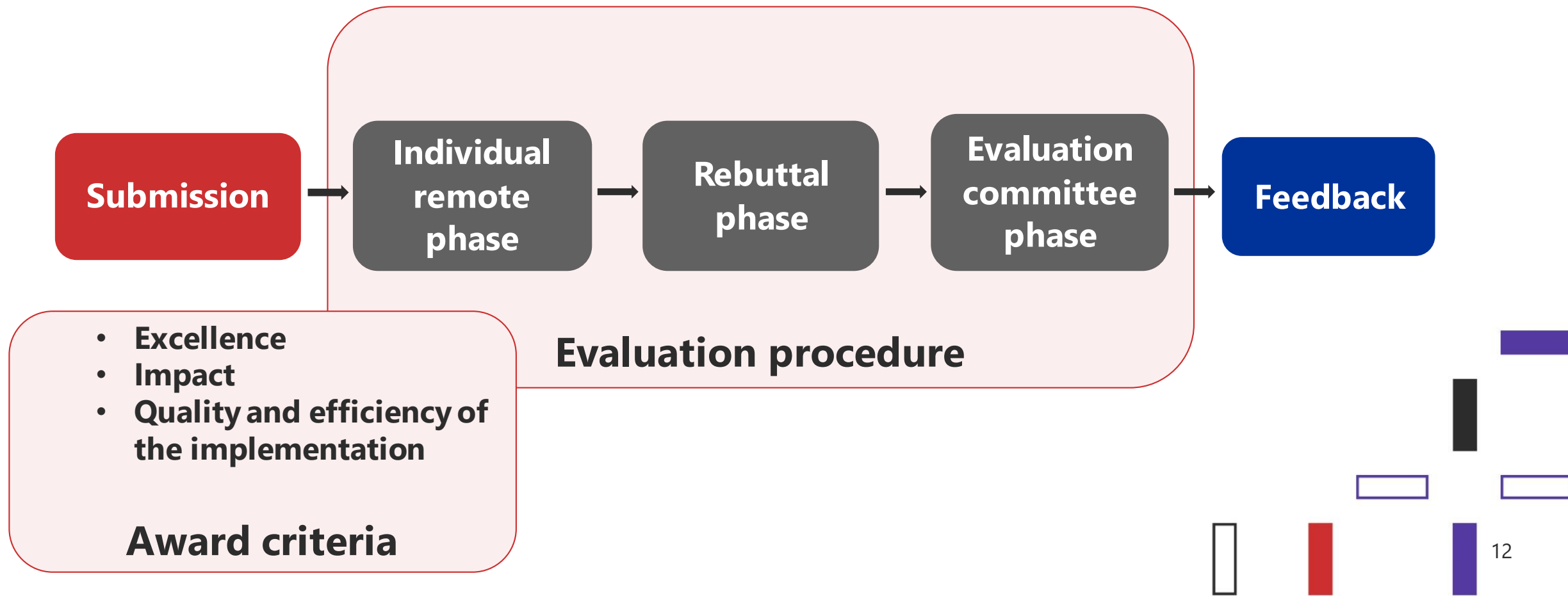
Award criteria

Award criterion "Excellence"

- **Long-term vision:** How convincing is the vision of a radically new technology towards which the project would contribute in the long term?

NEW

- **Science-towards-technology breakthrough:** How concrete, novel and ambitious is the proposed science-towards-technology breakthrough with respect to the state-of-the-art? What advancement does it provide towards realising the envisioned technology?

- **Objectives:** How concrete and plausible are the proposed objectives? To what extent is the high-risk/high-gain research approach appropriate for achieving them? How sound is the proposed methodology, including the underlying concepts, models, assumptions, appropriate consideration of the gender dimension in research content, and the quality of open science practices?

NEW

- **Interdisciplinarity:** How relevant is the interdisciplinary approach from traditionally distant disciplines for achieving the proposed breakthrough?

Threshold
4/5

Weight
60%

13

Award criterion "Impact"

NEW

- **Long-term impact:** How significant are the potential transformative positive effects that the envisioned new technology would have to our economy, environment and society?

- **Innovation potential:** How adequate are the proposed measures for protection of results and any other exploitation measures to facilitate future translation of research results into innovations? How suitable are the proposed measures for involving and empowering key actors that have the potential to take the lead in translating research into innovations in the future?

- **Communication and Dissemination:** How suitable are the measures to maximise expected outcomes and impacts, including communication activities, for raising awareness about the project results' potential to establish new markets and/or address global challenges?

Threshold
3.5/5

Weight
20%

Award criterion "Quality and efficiency of the implementation"

- **Quality of the consortium:** To what extent do the consortium members have all the necessary high quality expertise for performing the project tasks?

- **Work plan:** How coherent and effective are the work plan (work packages, tasks, deliverables, milestones, time-line, etc.) and risk mitigation measures in order to achieve the project objectives?

- **Allocation of resources:** How appropriate and effective is the allocation of resources (person-months and equipment) to tasks and consortium members?

Threshold
3/5

Weight
20%
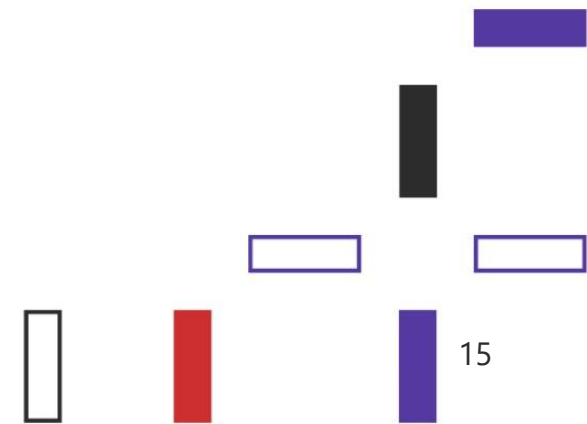
Rebuttal phase - "Right-to-react"

- About 1.5-2.5 months after the call deadline, you will have the opportunity to **reply within 8 calendar days** (at 17h00 Brussels local time) with a strict page limit (**maximum two A4 pages**) to the evaluators' comments

- Your **reply cannot be used to alter or add to the content** of the proposals, but must strictly focus on responding to potential misunderstandings or errors by the evaluators

- Your reply will be **made available to the evaluation committee**

- The evaluation committee will **take it into consideration** before deciding on the final score

European
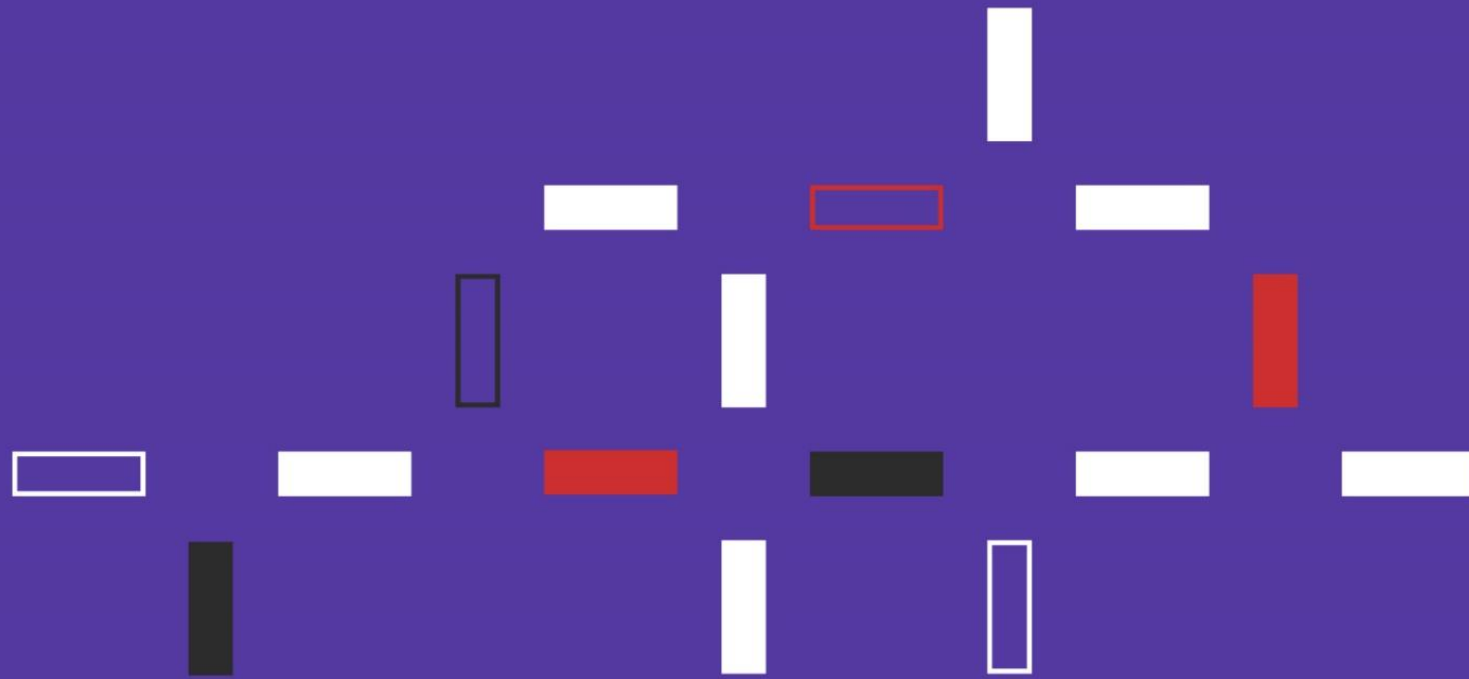Innovation
Council

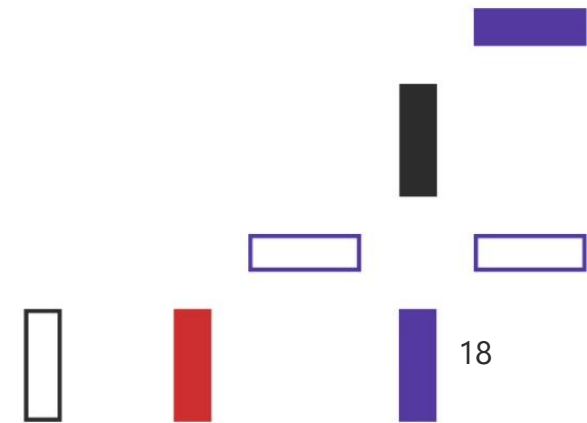# EIC Info Day 2022

EIC Pathfinder Challenges

Martin Lange,
Deputy Head of Unit EIC Pathfinder

EIC Pathfinder Challenges

- General call conditions
- Evaluation procedure
- Topics 2022

EIC Pathfinder Challenges - introduction

- Build on **new, cutting-edge directions in science and technology**
- Disrupt a market or to create new opportunities **by realising innovative technological solutions** grounded in high-risk/high-gain research and development;
- Establish **a portfolio of projects** for each Challenge that explore different perspectives, competing approaches or complementary aspects;
- Proactively steered by **EIC Programme Managers**

Expected project outcomes

- Expected outcomes specifically defined for each challenge
- **Top-level scientific publications** as well as an adequate **formal protection of the generated intellectual property**
- **Involve and empower key actors** with potential to become future leaders in their field, e.g.:
  - excellent early-career researchers
  - promising high-tech SMEs, including start-ups
- **Empower female researchers**, achieve gender balance among work package leaders.

Pathfinder Challenge Guides

- Specific objectives of each challenge described in Challenge guides, e.g.:
    - detailed assessment of **state of the art** and related (existing) projects in the field
    - **technical information** to underpin the objectives
    - potential societal, economic, environmental **impacts** if the objectives are achieved
    - relevant references
- Challenge Guides available when call opens (16 June 2022)

Can you apply?

Consortia or **single legal entities**:

- In case of **consortia**, they have to include **at least two** independent legal entities:
  - **consortia of two** must have independent legal entities from two different Member States or Associated Countries;
  - **consortia of three or above** follow standard rules i.e., at least one legal entity must be from a Member State and at least two other independent legal entities, each established in different Member States or Associated Countries;
  - Legal entities: all types are eligible.

- In the case of **single entity**, mid-caps and larger companies will not be permitted.
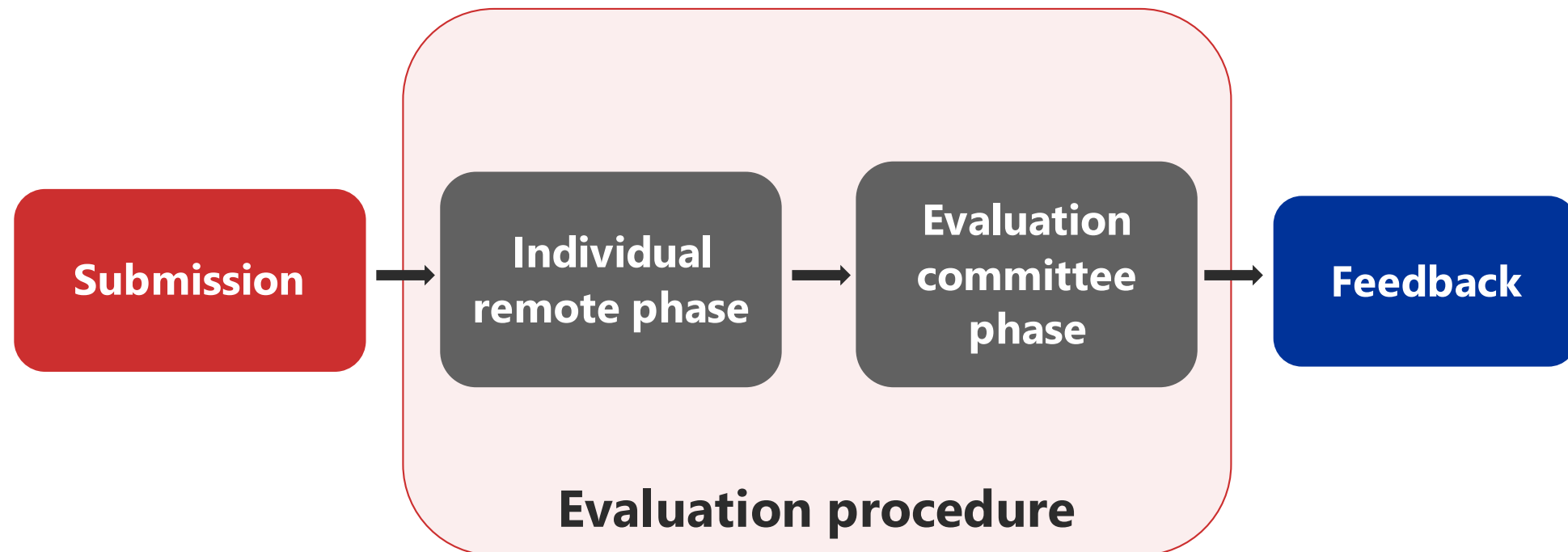
What support will you receive if your proposal is funded?

- A **grant** for a **Research and Innovation Action** to cover eligible costs

- EIC considers proposals with an EU contribution of **up to EUR 4 million** as appropriate (larger amounts possible, if properly justified)

- Funding rate **100% of the eligible costs.**

- Total indicative budget for this call: **EUR 167 million** (approximately equally shared across the six challenges).

How does the EIC decide if your proposal will be funded?

Submission → **Individual remote phase** → **Evaluation committee phase** → **Feedback**

Evaluation procedure

Step 1: Individual Remote phase

- EIC expert evaluators to assess **each application separately** against the defined award criteria:
  - Excellence
  - Impact
  - Quality and efficiency of the implementation.
- **Remote score** for each award criterion is the median of the evaluators' scores.
- **Overall remote score** is weighted sum of three median scores from three award criteria.
- All proposals that **meet the thresholds** to be considered in Step 2.

Award criterion "Excellence"

- **Objectives and relevance to the Challenge:** How clear are the project's objectives? How relevant are they in contributing to the overall goal and the specific objectives of the Challenge?

- **Novelty:** To what extent is the proposed work ambitious and goes beyond the state-of-the-art?

- **Plausibility of the methodology:** How sound is the proposed methodology, including the underlying concepts, models, assumptions, appropriate consideration of the gender dimension in research content, and the quality of open science practices?

Threshold
4/5

Weight
60%
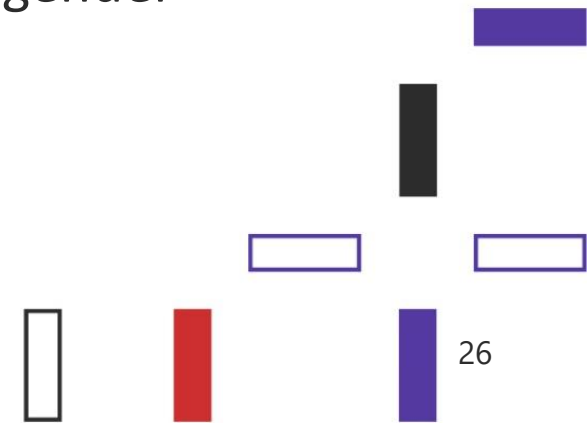
Award criterion "Impact"

- **Potential Impact:** How credible are the pathways to achieve the expected outcomes and impacts of the Challenge? To what extent would the successful completion of the project contribute to this?

- **Innovation potential:** How adequate are the proposed measures for protection of results and any other exploitation measures to facilitate future translation of research results into innovations with positive societal, economic or environmental impact? How suitable are the proposed measures for involving and empowering key actors that have the potential to take the lead in translating research into innovations in the future?

- **Communication and Dissemination:** How suitable are the proposed measures, including communication activities, to maximise expected outcomes and impacts for raising awareness about the project results' potential to establish new markets and/or address global challenges

Threshold
3.5/5

Weight
20%

Award criterion "Quality and efficiency of the implementation"

- **Quality of the applicant/consortium (depends if mono or multi-beneficiaries):** To what extent do(es) the applicant/consortium members have all the necessary high quality expertise for performing the project tasks?

- **Work plan:** How coherent and effective are the work plan (work packages, tasks, deliverables, milestones, timeline, etc.) and risk mitigation measures in order to achieve the project objectives?

- **Allocation of resources:** How appropriate and effective is the allocation of resources (person-months and equipment) to tasks and consortium members?

Threshold
3/5

Weight
**20%**

Step 2: Evaluation committee phase

- Ranking list of proposals will be established based on:
  - the **evaluation scores** from the first step, as decided by the committee;
  - **each proposal's contribution** to the setting up of a consistent Challenge Portfolio of projects.
- **Portfolio considerations** to be detailed in Pathfinder Challenge Guide
- General principle: **categorisation of the proposals**, allocation of proposals to different components or categories, e.g.:
  - building blocks or subsystems
  - technical areas and/or competing technologies
  - risk level, size, budget.
- Evaluation committee to select a **suitable portfolio of proposals to be funded** from the highest scoring ones for each category or component
- Evaluation committee may also **propose adjustments** to the proposals.

Pathfinder Challenges for 2022

1. Carbon dioxide and nitrogen management and valorisation

2. Mid-long term, systems-integrated energy storage

3. Cardiogenomics

4. Towards the Healthcare Continuum: technologies to support a radical shift from episodic to continuous healthcare

5. DNA-based digital data storage

6. Alternative Quantum Information Processing, Communication, and Sensing
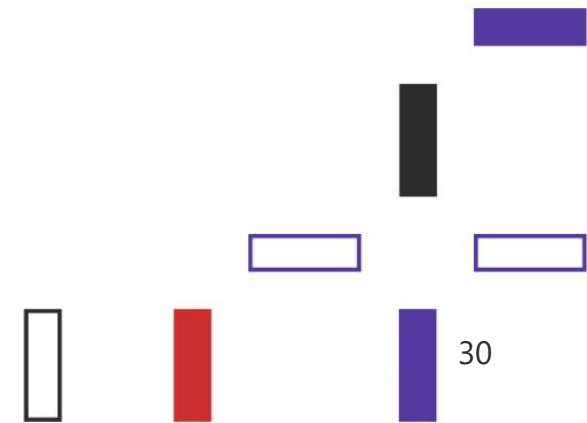
Pathfinder Challenge II.2.1; Carbon dioxide and nitrogen management and valorisation

Scope:

- technologies, sustained by renewable energy, able to increase CO_2/N cycle efficiency introducing novel management and valorisation practices and approaches and in turn to reduce GHG emissions, nitrogen losses and carbon losses. The processes should focus on the use of renewable energy as input to develop carbon negative or net zero systems. #Multidisciplinarity #Cross-sectorial approaches #Circularity.

Specific objectives:

- PoC or lab-scale validated innovative technology
- Integration at system or process level of the different steps of the CO_2/N management and valorisation process

Expected outcomes and impacts:

- a net zero carbon process involving conversion of CO_2 from various sources and streams into renewable fuels or net zero materials, using renewable energy as input (#CO_2 capture/conversion #storage #valorization)
- N integrated management cycle

Pathfinder Challenge II.2.2; Mid-long term, systems-integrated energy storage

Scope:

- To increase energy systems flexibility, sectors coupling, demand response and smart interoperability solutions through non **critical raw material-based** systems and life-cycle driven technologies in order to develop low cost and competitive solutions. #high round-trip efficiency #high energy density

Specific objectives:

- PoC or lab-scale validated innovative mid to long term storage raging from large to mid scale, excluding micro scale. #computational modelling and optimisation #chemical and thermochemical technologies #integration #multi-vector energy grids #innovative concepts for H2 storage/compression

Expected outcomes and impacts:

- Optimisation European energy storage
- High penetration of intermittent renewable technologies
- multidisciplinary and cross-sectorial approaches are particularly welcome

Pathfinder Challenge II.2.3; Cardiogenomics

Scope:

- Address existing gaps in the diagnosis and treatment of CVDs: to pave the way for novel therapies for major CVD conditions including haemorrhagic and ischemic stroke, aneurysm, cardiomyopathy and certain types of arrhythmias and other conditions

Specific objectives:

- to identify single or multiple gene variants of high biological significance or other key molecules associated with the CVDs
- to identify novel targets based on these variants for specific CVD indication(s)
- to seek for novel technological solutions that could contribute to the development of major CVD conditions

Expected outcomes and impacts:

- identification of pathogenic mutations or multiple variants that have actionable effects
- accelerating the implementation of personalised care in CVD through targeted genetic testing
- gathering the necessary knowledge and data that would enable to apply disease modelling for CVD

Pathfinder Challenge II.2.4;
Towards the Healthcare Continuum: technologies to support a radical shift from episodic to continuous healthcare

Scope:

- To develop systems and technologies starting at very low TRL for unobtrusive monitoring of human health with new continuous and personal imaging and sensing modalities, implementing continuous assessment, processing and analysis of the data to identify early signs of disease.

Specific objectives:

- develop a novel technology for unobtrusive proactive healthcare
- Proof-of-Concept and preliminary data suggestive of adequate safety and performance
- clinically acceptable solution amenable to successful evaluation under common Health Technology Assessment (HTA) methodologies
- the path to future integration in the European healthcare workflow should be plausible

Expected outcomes and impacts:

- the establishment of the basis for the transformation of the prevailing episodic, symptom-triggered, healthcare system into continuous healthcare, in which individuals are accompanied continuously and unobtrusively by health monitoring technology and practitioners, proactively offering diagnosis and treatment.

Pathfinder Challenge II.2.5; DNA-based digital storage

Scope:

- to explore scalable and reliable high-throughput approaches for using DNA as a general data-storage medium
- to address the read/write/edit operations of digital data in synthetic DNA
- The use of DNA sequences as chassis for non-standard forms of information coding, or of other polymeric substrates and related coding/decoding techniques
- Scope for different scenarios for such a technology, for instance for data-processing, in-vivo sensing or fingerprinting

Specific objectives:

- new approaches for coding, decoding, modification or computational use of digital data in synthetic DNA with quantitative
- Proof-of-Concept of technical feasibility with indications of at least state of the art benefits and major operational characteristics and going well beyond for some of them
- end-to-end scenarios of use, be it for data storage) or other purposes that exploit the benefits of the technology.

Expected outcomes and impacts:

- a range of new techniques of applicability of DNA-based data storage;
- broader range of scenarios and uses for DNA-based data technologies;
- emergence and anchoring of a European innovation eco-system on DNA-based data technologies and applications
- contribution to standardisation in the field

Pathfinder Challenge II.2.6;
Alternative approaches to Quantum Information Processing, Communication, and Sensing

Scope:

- to develop innovative approaches to encoding, manipulating, or storing information in quantum objects or to exploiting quantum phenomena for information processing, communication, and sensing in a way that differs from the mainstream approaches currently being pursued in quantum research

Specific objectives:

- to contribute to the development of information processing, communication or sensing components, for terrestrial or space applications
- describe how their proposed information processing would be controlled and could lead to the development of an information processing or communication device using a non-classical information theory approach;
- show how information processing or communications principles and architectures would demonstrate a quantifiable advantage with respect to classical approaches and mainstream quantum technology alternatives.
- show how the foundations for novel approaches to encoding, manipulating, and storing information would be established.
- describe how the proposed information processing or communication system would be controlled, programmed, and measured.

Expected outcomes and impacts:

- basis for future information processing, communication, and sensing technologies on ground and in space;
- collaboration with existing European platforms, infrastructures, and innovation eco-systems in quantum technology;
- increased diversity of information processing technologies platforms
- foster the interdisciplinary communities and innovation eco-systems that are driving new information processing or communication systems forward.

Pathfinder calls 2022 – Summary table

	Pathfinder Open	Pathfinder Challenges
Total budget	€183 million	€167 million
Proposals (indicative)	Up to €3 million	Up to €4 million
Funding rate	100% of eligible costs	100% of eligible costs
Opening	1 March 2022	16 June 2022
Deadline	4 May 2022 at 17.00 CET	19 October 2022 at 17.00 CET
Length of proposal	17-page proposal (part B)	25-page proposal (part B)
Applicants	Consortia: min. 3 partners from 3 different MS/AC (of which at least 1 partner in a MS)	1. Single legal entities in a MS/AC (conditions apply) 2. Consortia: - If 2 partners: from different MS/AC, otherwise - Min. 3 partners from 3 different MS/AC (of which at least 1 partner in a MS)

Thank you!

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