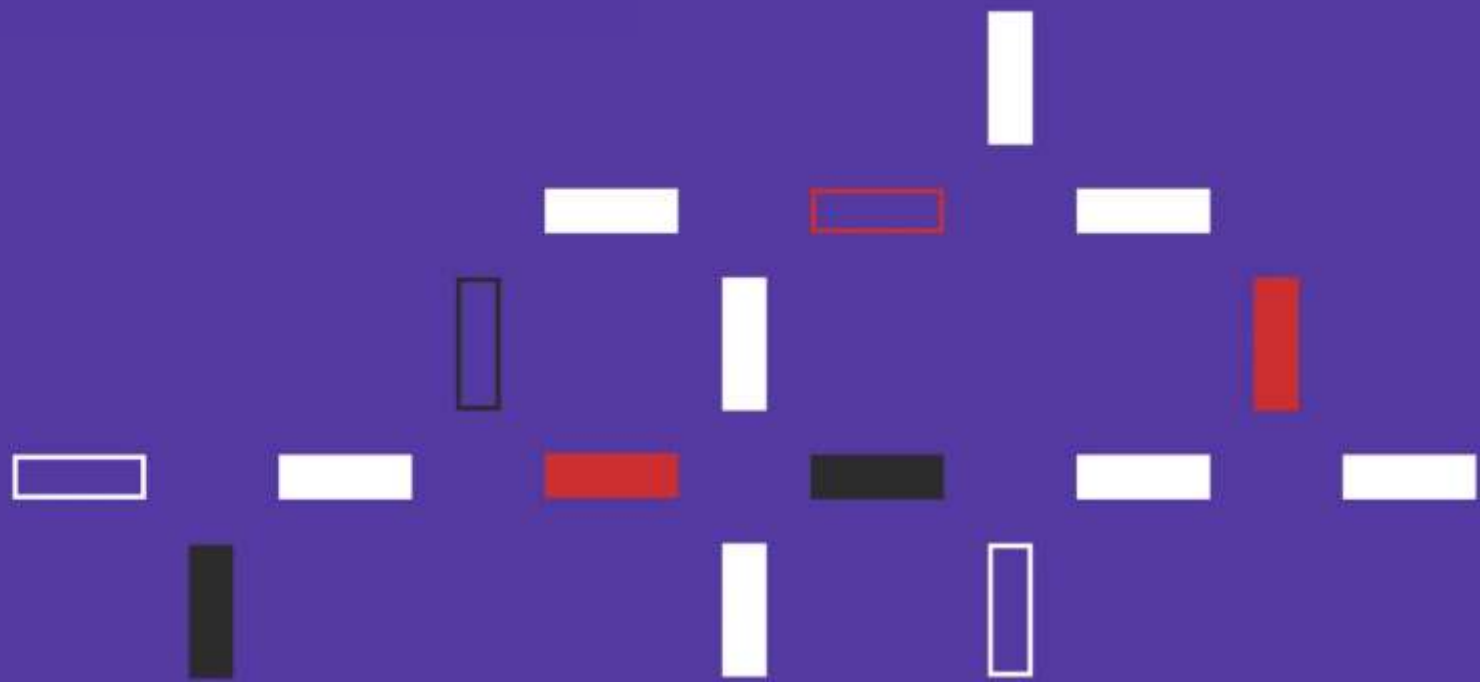




EIC Pathfinder Challenges

Walter Van de Velde

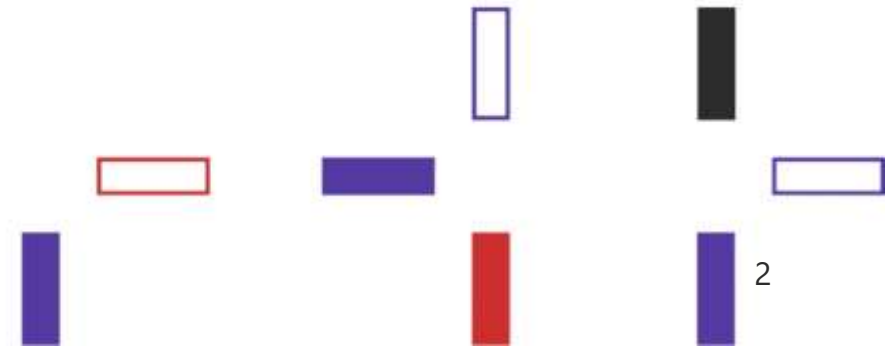
Applicants' day
19 March 2021





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- EIC Pathfinder **Challenges** > what is this?
- EIC Pathfinder **Challenges** > topics for 2021
- EIC Pathfinder **Challenges** > evaluation procedure



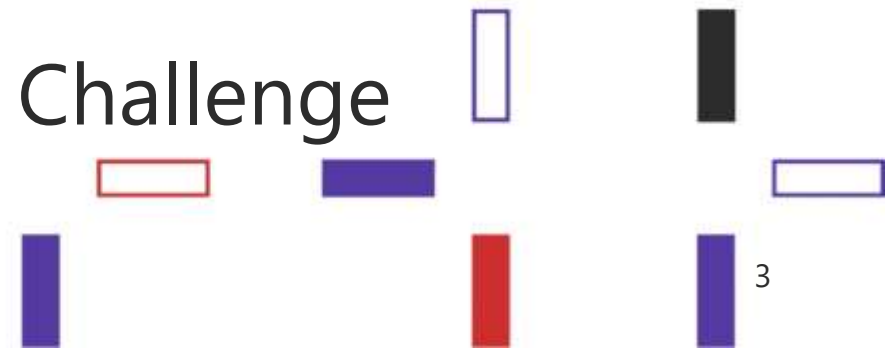


EIC Pathfinder Challenges

EIC Pathfinder Challenges aim to **build on new, cutting-edge directions in science and technology** to disrupt a field and a market or create new opportunities **by realising innovative technological solutions** grounded in high-risk/high-gain research and development.

Top-down, based on given vision for each Challenge

Indicative: TRL 2-4.





Pathfinder Challenges for 2021

Pathfinder Challenges

1. Awareness inside
2. Tools to measure & stimulate activity in brain tissue
3. Emerging Technologies in Cell & Gene Therapy
4. Novel routes to green hydrogen production
5. Engineered living materials

Call opening:
15 June 2021

Deadline:
27 October 2021 at 17.00.00 CET



Do you have what we are looking for?

- You have an **ambitious idea** to realise or significantly contribute to the vision of a specific Pathfinder Challenge.
- EIC is particularly interested in **new deep-tech**: technology that becomes possible thanks to cutting-edge science in an area of the specific Challenge.
- We are seeking **new technological solutions at early stage of development** that can disrupt the standard practice and create new opportunities.
- In order to **secure this high innovation potential**, project outcomes must include top-level scientific publications as well as an adequate formal protection of the generated (and often unexpected) intellectual property (IP).
- Be prepared to become part of a **Challenge portfolio**, overseen and pro-actively managed by **EIC Programme Managers**.

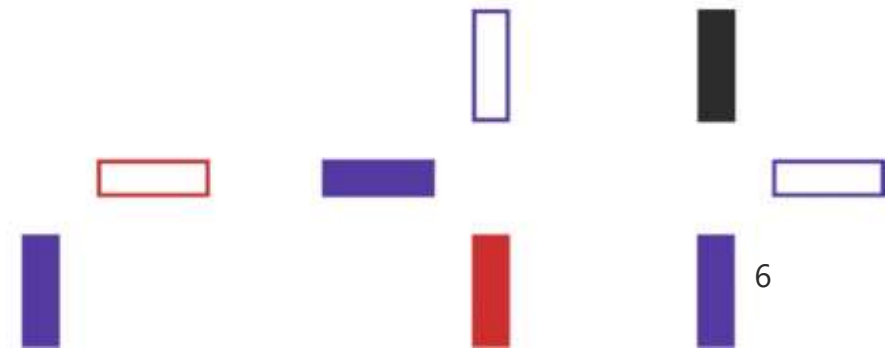


Portfolio approach

Challenge portfolio approach:

- a coherent set of projects exploring different perspectives, competing approaches or complementary aspects of the Challenge;
- multidisciplinary interactions and exchanges for synergies and serendipity;
- contributing to an overarching medium to long-term business goal and technology-based strategic plan, under the supervision of an **EIC Programme Manager**.

Projects will participate in relevant portfolio activities.





Pathfinder Challenges for 2021

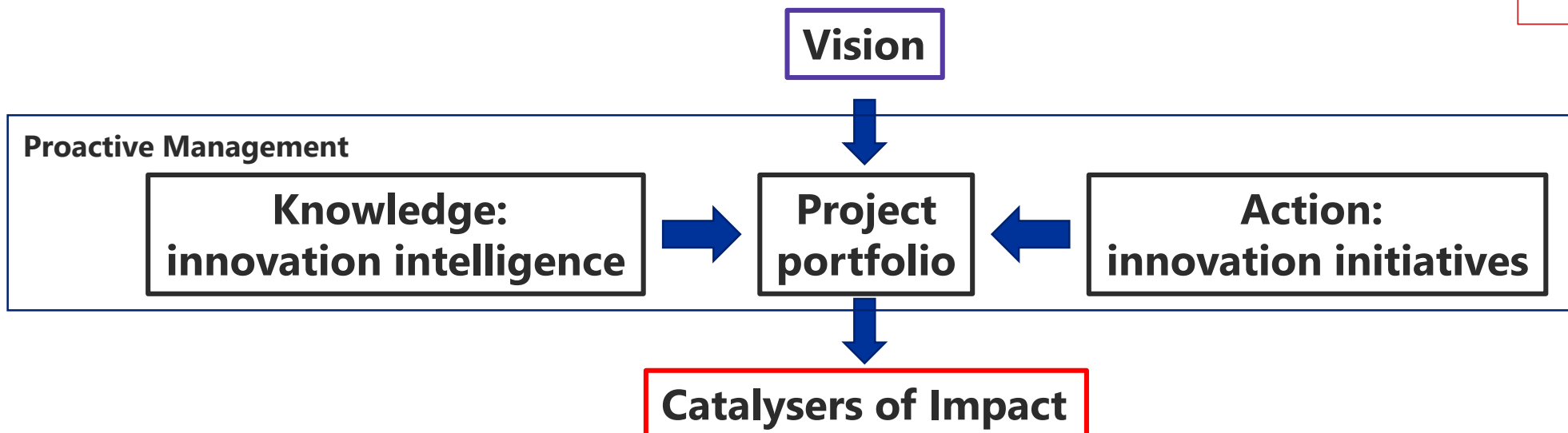
Pathfinder Challenges	Programme Managers
1. Awareness inside	Walter VAN DE VELDE (Acting)
2. Tools to measure & stimulate activity in brain tissue	Enrique CLAVEROL-TINTURE
3. Emerging Technologies in Cell & Gene Therapy	Iordanis ARZIMANOGLU
4. Novel routes to green hydrogen production	Francesco MATTEUCCI Antonio Marco PANTALEO
5. Engineered living materials	Barbara GERRATANA (Acting)



EIC Programme Managers

bringing together cutting-edge expertise and visionary drive to turn new technological breakthroughs into relevant and responsible innovations for Europe and for the world: ready to work with others, to accelerate where possible, to be patient where needed, to learn from mistakes and, ultimately, to share the success

Not to miss!
**Webinar with the
EIC Programme
Managers,**
March 26th 2021,
10:00-12:30 *





Proactive Management: Impacts



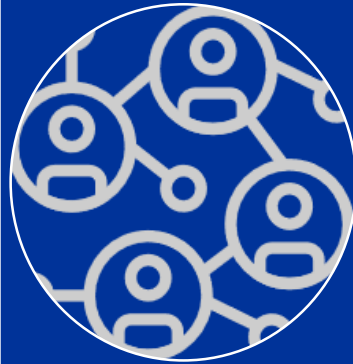
Engagement and interaction among projects to seed new ideas and facilitate cross sectorial contamination: impact on specific research



Vision to integrate projects towards ambitious targets and address broader research challenges (the portfolio goals)



Nurture the transition to innovation by balancing dissemination and IP protection, and networking with key players



Bridging EIC projects and other European programmes i.e. Horizon Missions, ERC, EIT, societal challenges, national/regional programmes



Identify regulatory or legislative gaps and propose opportunities to bridge them



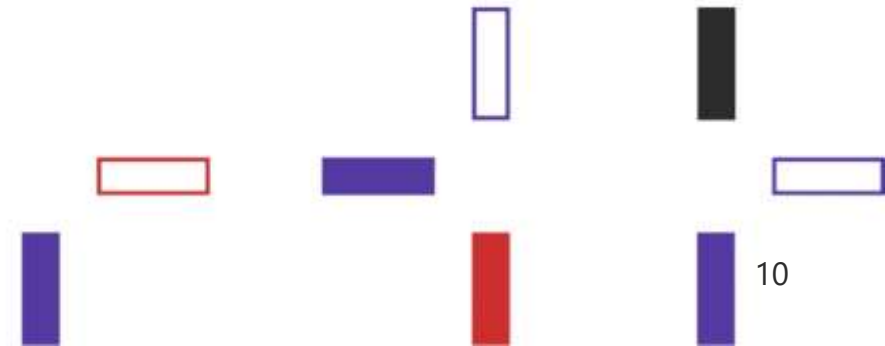
Steer the research and innovation towards EU policy orientations: take strategic directions and influence policy





Pathfinder Challenge Guides

- The Challenge Guide **provides more information** about the specific objectives of the challenge, e.g.:
 - a detailed assessment of the 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
 - portfolio considerations for constituting a coherent set of projects.
- The Challenge Guides will be **published when the call opens (15 June 2021, tentatively)** on the EIC website and through the EU Funding & Tender Opportunities Portal.





Can you apply?

Consortia or single legal entities (unless stated otherwise for the specific challenge*):

- In case of consortium, 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;
 - Legal entities: all types are eligible.
- In the case of **single entity**, mid-caps and larger companies are not permitted.

***Challenge 1** is only open to proposals for **collaborative projects with at least 3 partners** following the standard eligibility conditions.



What support will you receive if your proposal is funded?

- You will receive a **grant** for a **Research and Innovation Action (RIA)** to cover the eligible costs, necessary for the implementation of your project, including the portfolio activities.
- For this call, the EIC considers proposals with an EU contribution of **up to EUR 4 million** as appropriate. Nonetheless, this does not preclude you to request larger amounts, if properly justified or stated otherwise in the specific Challenge. The funding rate of this grant will be **100% of the eligible costs**.
- The total indicative budget for this call is **EUR 132 million** which is expected to be allocated in approximately equal shares across the Challenges.



Additional opportunities for selected projects

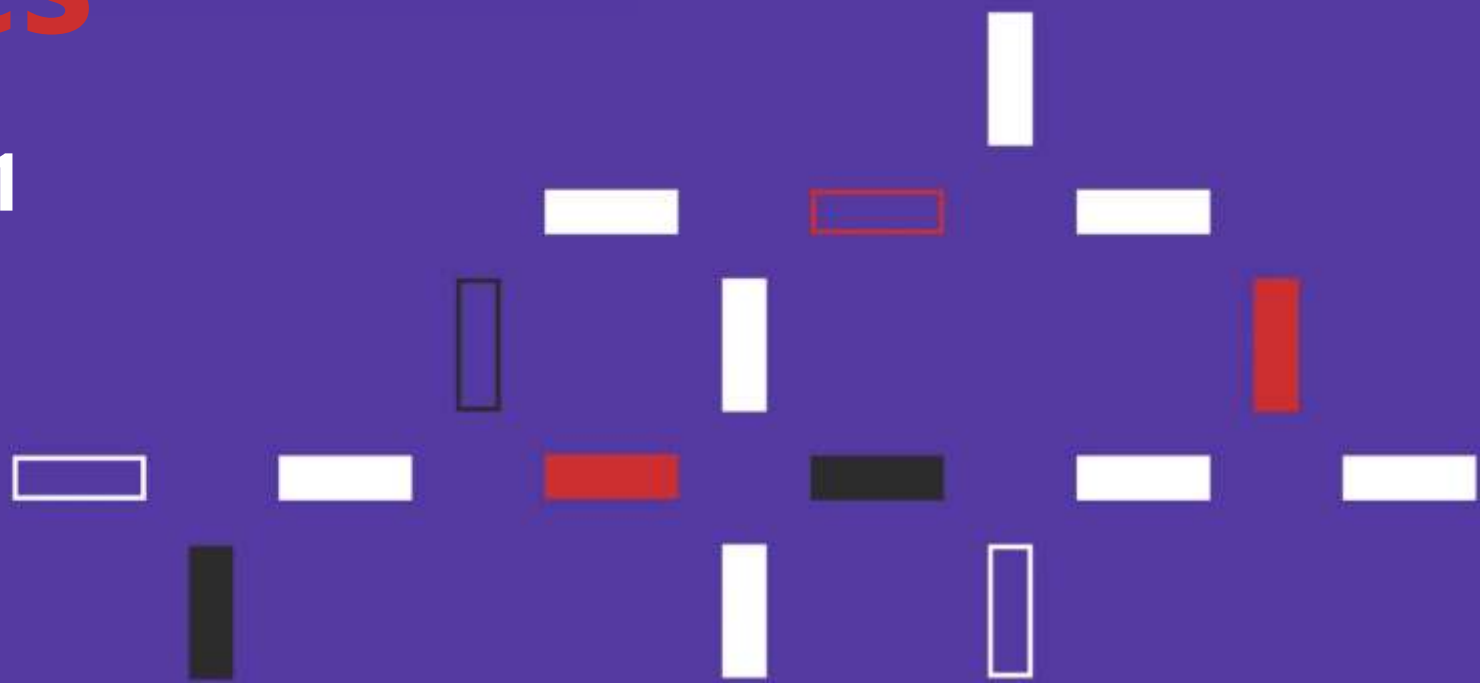
Projects or their beneficiaries funded through EIC Pathfinder are eligible:

- to receive additional **Ad hoc grants** (up to 3 per project or more if duly justified) with fixed amounts of up to €50,000 :
 - for complementary activities to explore 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**.



EIC Pathfinder Challenges

Challenges for 2021





Pathfinder Challenges for 2021

Pathfinder Challenges	Programme Managers
1. Awareness inside	Walter VAN DE VELDE (Acting)
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5. Engineered living materials	Barbara GERRATANA (Acting)



Pathfinder Challenges for 2021 (1/2)

1. Awareness inside: to **develop new concepts of awareness** that are applicable to systems other than human, including technological ones, with implications of how it can be recognised or measured, to demonstrate and validate the role and added-value of such an awareness in an aware technology, class of artefacts or services, to **define an integrative approach for awareness engineering**, its technological toolbox, the needs and implications and its limits, including ethical and regulatory requirements.
2. Tools to measure & stimulate activity in brain tissue: to **develop novel neurotechnologies to diagnose or treat brain, spinal cord or peripheral nerve-related disorders** and which can be rapidly accepted by clinicians and patients.



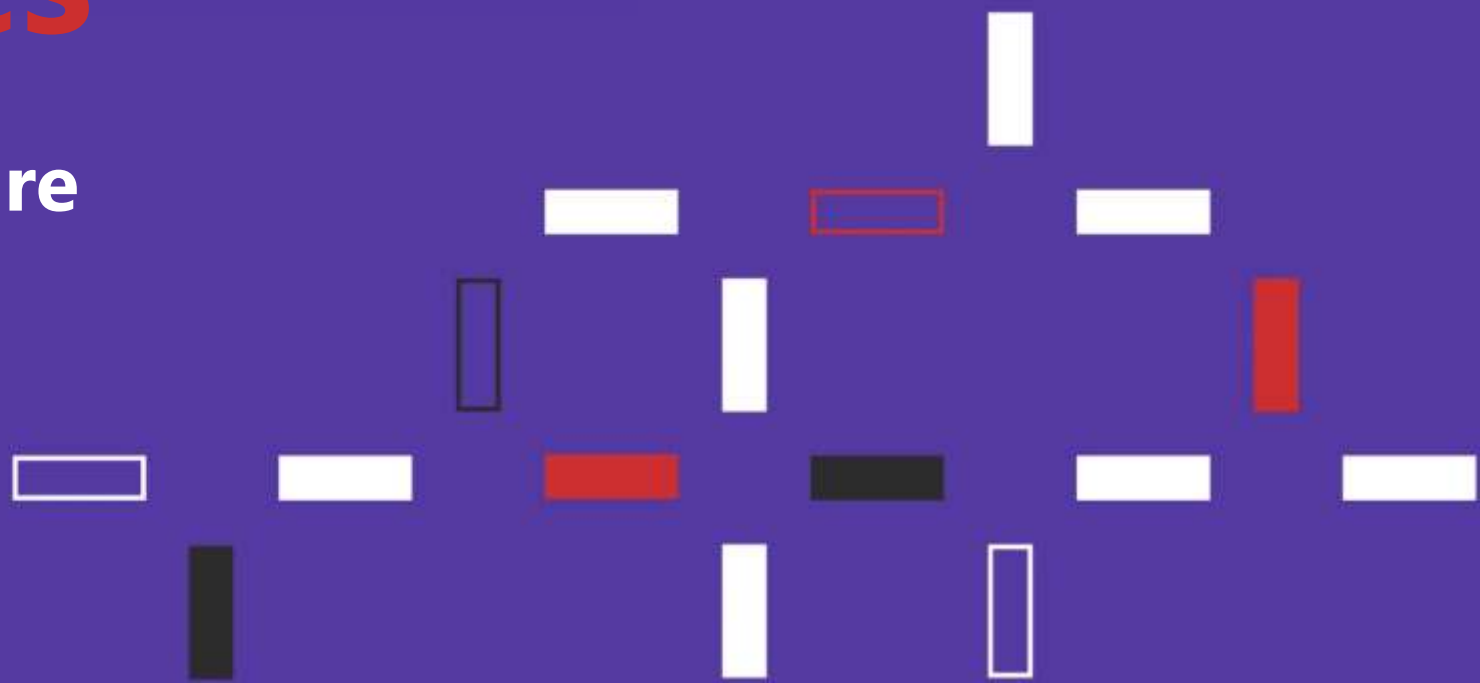
Pathfinder Challenges for 2021 (2/2)

3. Emerging Technologies in Cell & Gene Therapy: to advance the domain of the Cell and Gene therapy (CGT) by funding **breakthrough** projects that propose **novel concept-based** technological solutions **or technological platforms** far beyond the current **state-of-the-art with aim to tackling** current bottlenecks from discovery to the manufacturing step **towards clinical grade and thus**, reinforce critical components of the European cell and gene therapy innovation-driven community.
4. Novel routes to green hydrogen production: to **develop novel processes and technologies to produce Green H₂**, at different scales (from small to large) and with higher flexibility, entirely based on renewable sources and on the use of toxic free, non-critical raw materials.
5. Engineered living materials: to **position strategically Europe at the forefront** of the newly emerging Engineered living materials (ELMs) field and **to overcome the technological challenges** to harness the engineering potential of nature for the production of living materials by supporting the development of new technologies and the nascent community in this field.



EIC Pathfinder Challenges

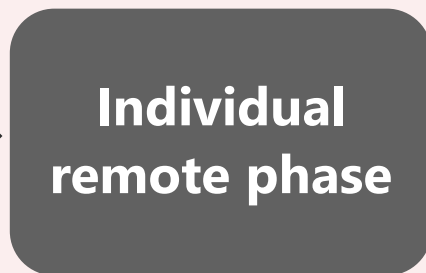
Evaluation procedure



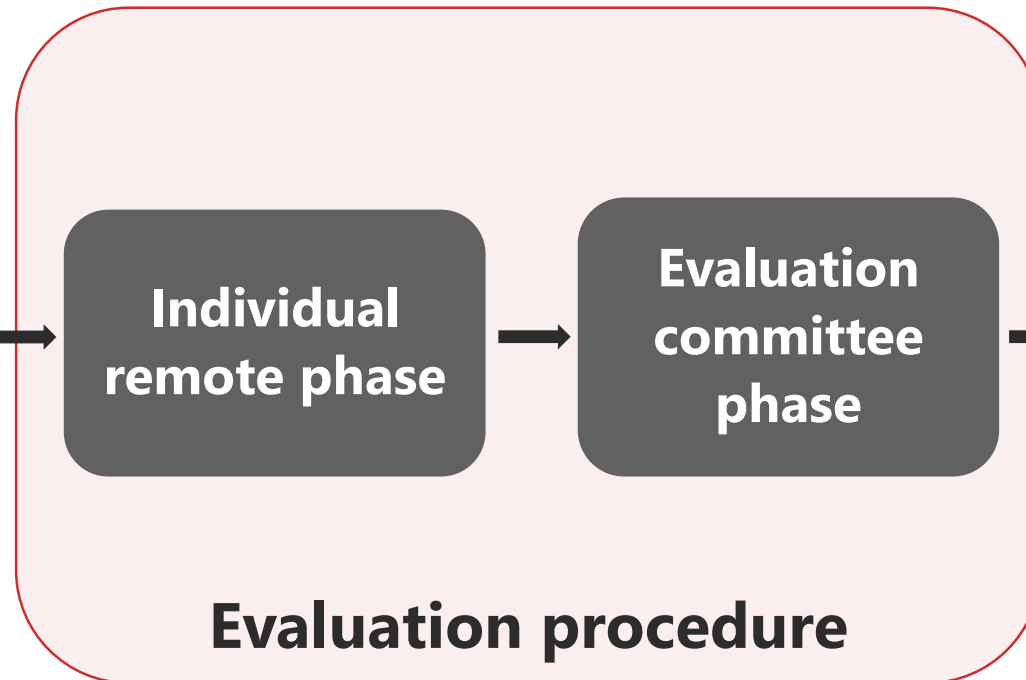


How does the EIC decide if your proposal will be funded?

Call opening:
15 June 2021



Deadline:
27 October 2021 at 17.00.00 CET



**Your application must consist of max. 25 pages
(Part B, Sections 1-3 of proposal application form)**



Step 1: Individual Remote phase

- EIC expert evaluators will assess **each application separately** against the defined evaluation criteria:
 - Excellence
 - Impact
 - Quality and efficiency of the implementation.
- The **score** for each evaluation criterion will be the average of the individual evaluators' scores.
- The **overall proposal score** will be calculated as the weighted sum of the average scores from the evaluation criteria.
- All proposals that **meet the thresholds** defined in the evaluation criteria will be considered in the second step.

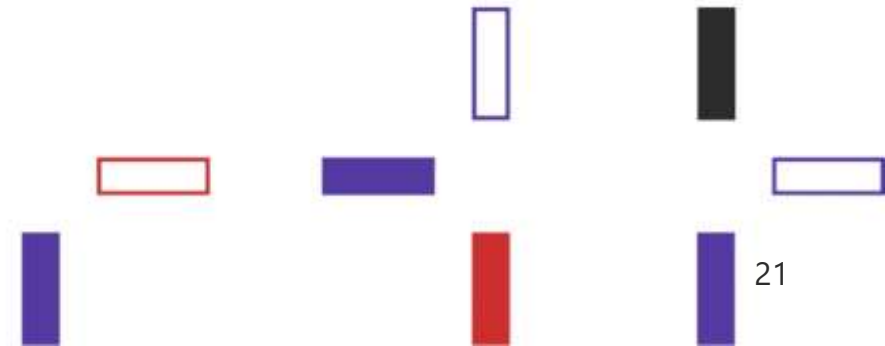


Evaluation criterion “Excellence”

- **Relevance to the Challenge:** How relevant are the project’s objectives in contributing to the overall goal and the specific objectives of the Challenge?
- **Novelty:** How novel and ambitious are the proposed technological breakthroughs with respect to the state-of-the-art? How relevant and effective are they in achieving the expected outcomes of the Challenge?
- **Plausibility of methodology:** To what extent is the Research, Development & Innovation methodology described in the proposal appropriate to reach its objectives? How plausible is it that the objectives set out in the proposal are achieved within the time span of the project?

Threshold
4/5

Weight
60%





Evaluation criterion “Impact”

- **Potential Impact:** To what extent the successful completion of the project may have economic and societal impact and how credible it is argued and quantified (e.g. via KPIs or equivalent)? How appropriate are the expected outcomes of the project to contribute to the potential economic or social impacts of the Challenge?
- **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 societal or economic impact? How suitable are the proposed measures for empowering key actors that have the potential to take the lead in translating research into innovations?
- **Communication and Dissemination:** How convincing and wide reaching are the proposed measures and plans for public/stakeholder engagement and for raising awareness about the project outcomes, including through Open Science, with respect to their potential to establish new markets and/or address global challenges?

Threshold
3.5/5

Weight
20%

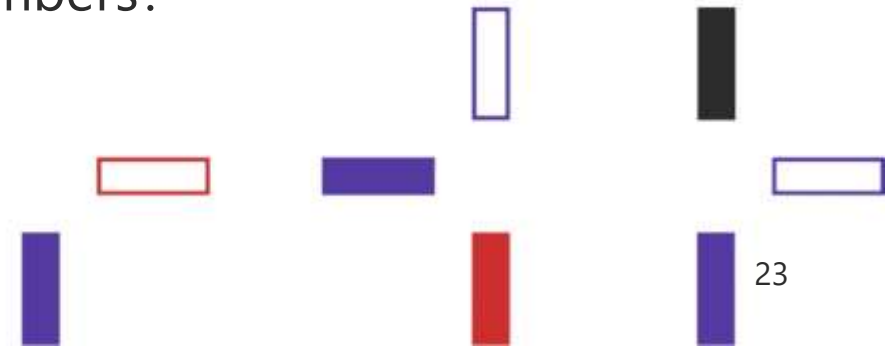


Evaluation criterion “Quality and efficiency of the implementation”

- **Quality of the applicant/consortium** (depends if mono or multi-beneficiaries): 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%





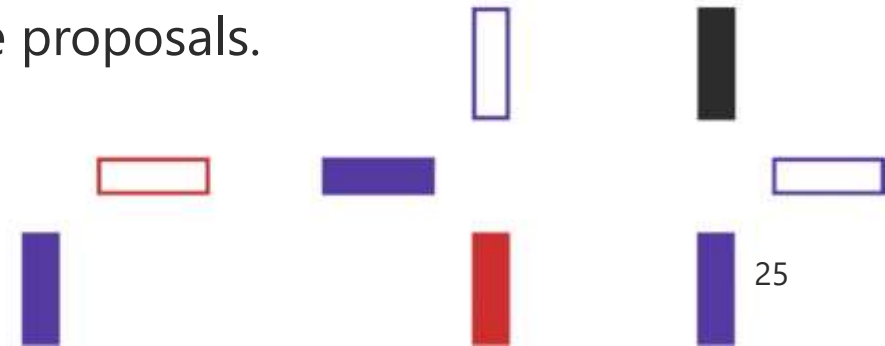
Step 2: Evaluation committee phase (1/2)

- The evaluation committee will be composed of EIC **expert evaluators** and EIC **Programme Managers**
- The evaluation committee **will consider together all proposals** meeting the threshold set in the evaluation criteria in order to assess the best portfolio of projects to achieve the specific objectives of the Challenge
- A list of proposals will be established based on the **evaluation scores** from the first step, as decided by the committee, and on **each proposal's contribution** to the setting up of a consistent portfolio of projects.
 - Therefore, each proposal should specify which **objectives, or aspects of objectives**, it addresses taking into account the technical specifications in the Challenge Guide. (e.g., potential applications, range and expected outcomes of the projects, and the associated risks for achieving them, TRLs of the different tools and technologies proposed).



Step 2: Evaluation committee phase (2/2)

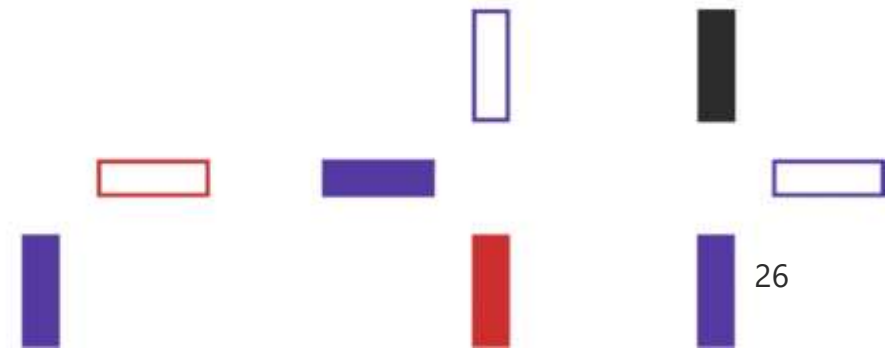
- **Portfolio considerations** will be detailed in the Pathfinder Challenge Guide, as it is topic and domain specific. As a general principle, in order to balance out the portfolio, **a categorisation of the proposals** will be used and the proposals will be allocated to different components or categories. Example of possible categories are:
 - building blocks or subsystems
 - technical areas and/or competing technologies
 - risk level, size, budget.
- A **suitable portfolio of proposals to be funded** will be **selected** by the evaluation committee from the highest scoring ones for each category or component and proposed for funding.
- The evaluation committee may also **propose adjustments** to the proposals.





Feedback to Applicants

- All applicants will receive a **collation of the comments** from the individual reports or excerpts from them.
- Applicants of proposals **above threshold** assessed further by the evaluation committee will also receive **summary comments** of the committee's assessment.





EIC Pathfinder Challenges Call 2021 – Summary table

	Pathfinder Challenges
Total budget	€132 million
Proposals (indicative)	Up to €4 million
Funding rate	100% of eligible costs
Opening	15 June 2021 – and publication of Challenge Guides
Deadline	27 October 2021 at 17.00 CET
Length of proposal	25-page proposal (Part B, Sections 1-3)
Applicants	<ul style="list-style-type: none">1. Single legal entities in a MS/AC (conditions apply)2. Consortia:<ul style="list-style-type: none">- 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) (unless differently stated in the Challenge chapter)



Thank you!

@EUeic

#Eueic

* Webinar organised jointly by FETFX and Access2EIC

<http://www.fetfx.eu/event/eic-programme-managers-visions-paths-european-innovation-council/>

Not to miss!
**Webinar with the EIC
Programme Managers,**
March 26th 2021,
10:00-12:30 *

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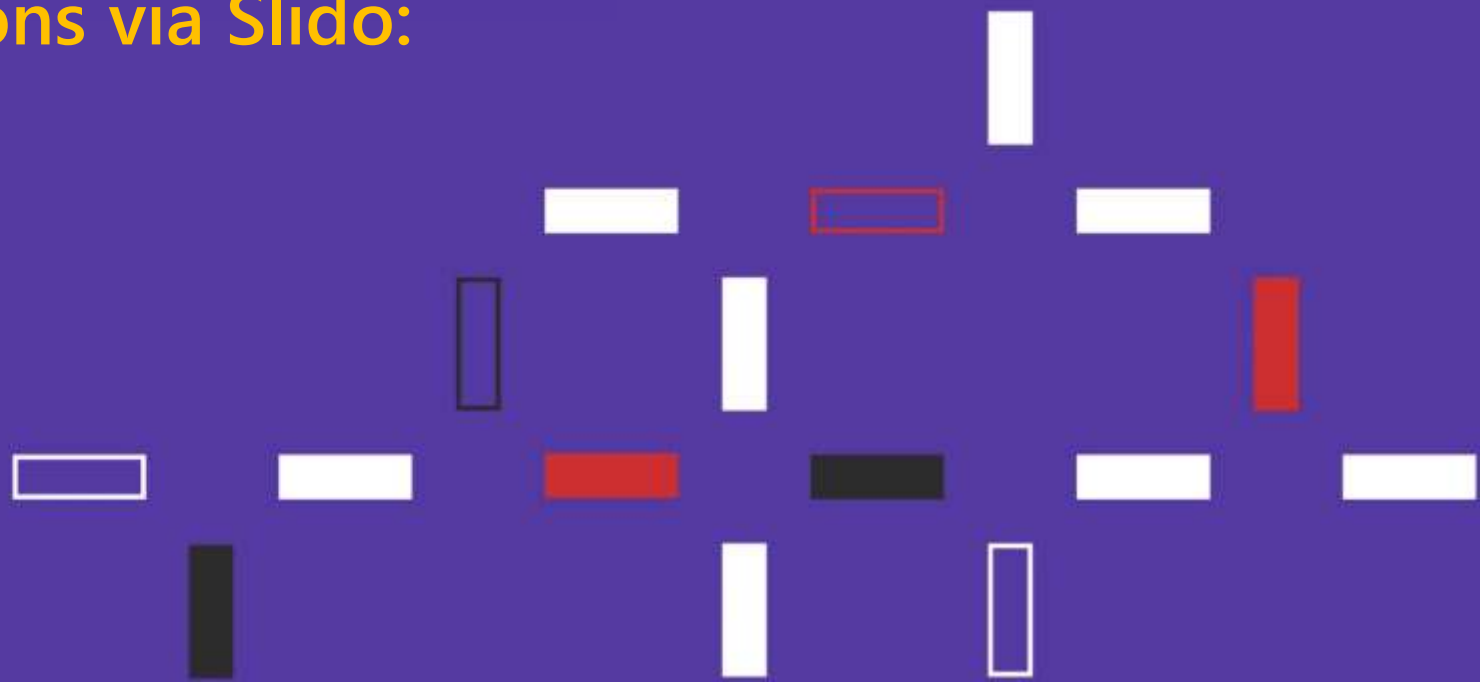


EIC Applicant's Day 2021

19 March 2021

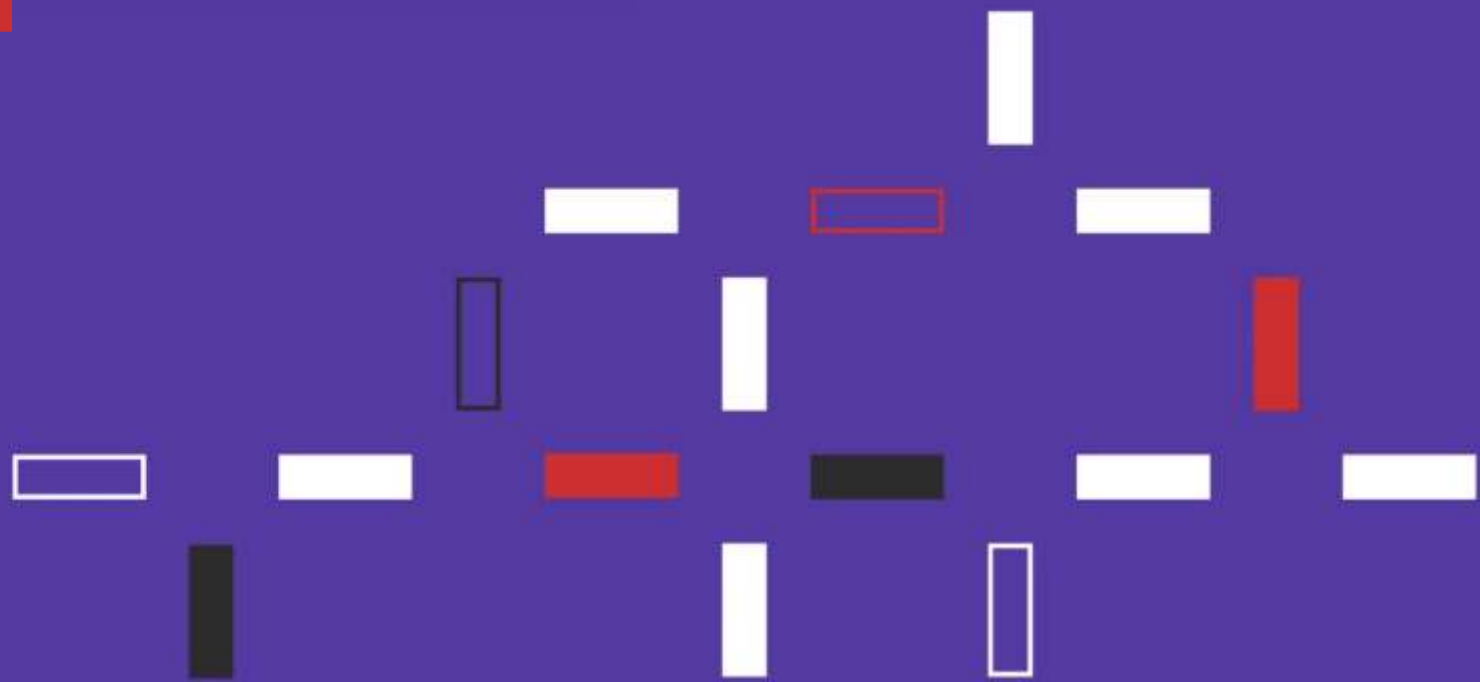
Please send your questions via Slido:

#eicday





EIC Pathfinder Calls 2021



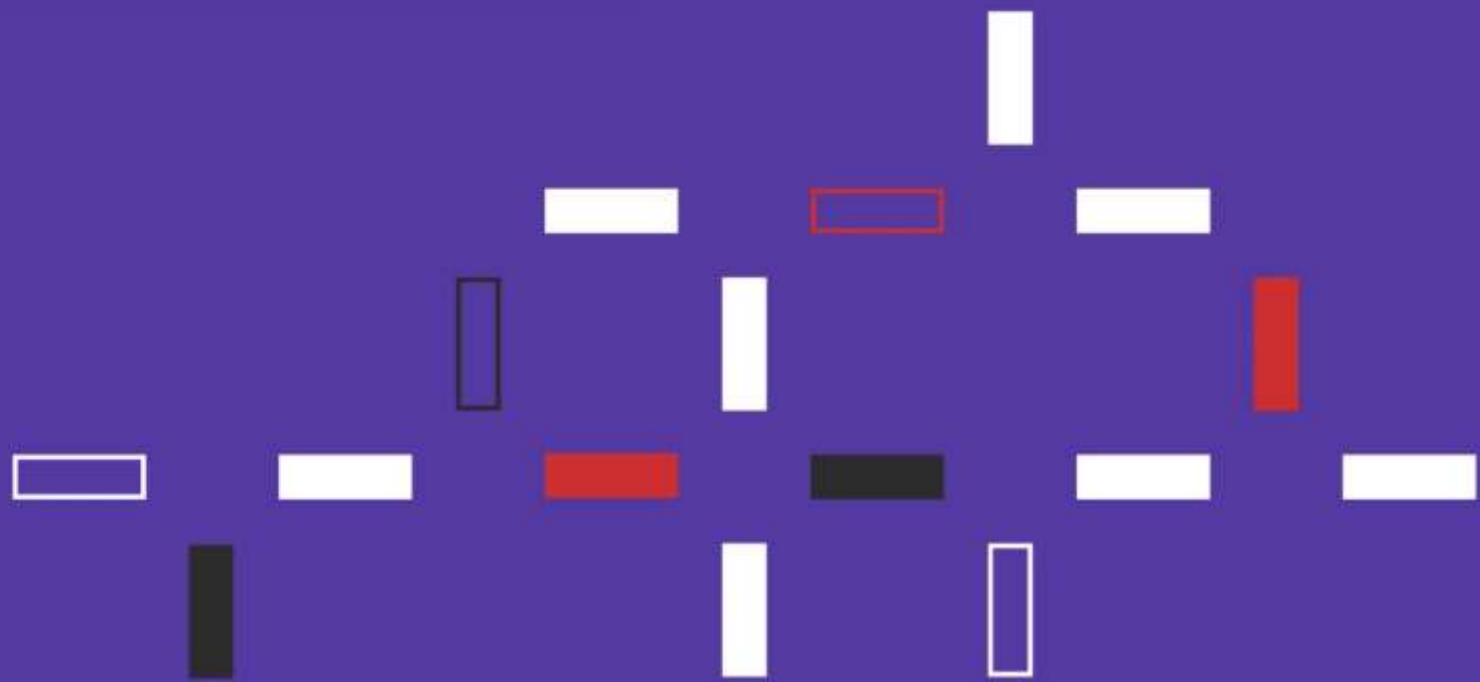


Calls 2021 – Summary table for all funding opportunities

	Pathfinder Open	Pathfinder Challenges	Ad hoc grant
Total budget	€168 million	€132 million	Max. 1% of Pathfinder call budget
Proposals (indicative)	Up to €3 Mio	Up to €4 million	Up to €50000
Funding rate	100% of eligible costs	100% of eligible costs	100% of eligible costs
Opening		15 June 2021	-
Deadline		27 October 2021 at 17.00 CET	Not applicable
Length of proposal	17-page proposal – Section 1 to 3	25-page proposal	Not applicable
Applicants	<p>Consortia: Min. 3 partners from 3 different MS/AC (of which at least 1 partner in a MS)</p> <p>Legal entities: all types are eligible</p>	<p>1. Single legal entities in a MS/AC (conditions apply)</p> <p>2. Consortia:</p> <ul style="list-style-type: none"> - 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) <p>(unless differently stated in the Challenge chapter)</p>	No specific requirement: either an individual grant holder or a group of grant holders.



EIC Pathfinder Backup Slides





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:
 - Call opening: **15 June 2021**
 - Deadline: **27 October 2021 at 17.00.00 CET.**
- 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 call deadline** (indicative).



Pathfinder Challenges for 2021

Pathfinder Challenges	Programme Managers
1. Awareness inside	Walter VAN DE VELDE (Acting)
2. Tools to measure & stimulate activity in brain tissue	Enrique CLAVEROL-TINTURE
3. Emerging Technologies in Cell & Gene Therapy	Iordanis ARZIMANOGLU
4. Novel routes to green hydrogen production	Francesco MATTEUCCI Antonio Marco PANTALEO
5. Engineered living materials	Barbara GERRATANA (Acting)



1. Awareness inside (1/2)

Background

Awareness and consciousness has been high on research agendas for decades. Most researches would agree though that we do not have any truly aware artificial system yet, that awareness is much more than a sensorial sophistication, and that it is much more than any Artificial Intelligence as we know it. What is it then that a user would expect from a service or device that has 'awareness inside'?

Most scientific and philosophical accounts of awareness are based on a human subject perspective and at an individual level. This hinders the application of awareness as a measurable feature of any sufficiently complex system. **New awareness concepts and engineering principles** would allow a step-up in engineering artificial systems, making them more resilient, self-developing and human-centric, allowing the coherent and purposeful behaviour, learning, adaptation and self-development of intelligent systems over longer periods of time.

The Challenge is only open to proposals for collaborative projects with at least 3 partners following the standard eligibility conditions.



1. Awareness inside (2/2)

Proposals are expected to address each of the following three expected outcomes:

1. New concepts of awareness that are applicable to systems other than human, with implications of how it can be recognised or measured. This will lead to better approaches for defining aspects of awareness over different temporal, spatial, biological, technological and social scales.
2. Demonstrate and validate the role and added-value of such an awareness in an aware technology, class of artefacts or services. The specific expected outcome is a proof of principle of technologies far beyond the current state of the art or a laboratory-validated prototype.
3. Define an integrative approach for awareness engineering, its technological toolbox, the needs and implications and its limits, including ethical and regulatory requirements, as well as gender dimension, where relevant.

Check the WP for the specific conditions for this challenge, as well as the Topic Guide



2. Tools to measure & stimulate activity in brain tissue (1/2)

Background

- Medical devices to measure and stimulate brain activity are emerging as tremendously powerful therapeutic tools that could revolutionise the treatment of brain diseases.
- Existing devices to restore normal patterns of brain activity by stimulation have limitations.
- Yet today's state-of-the art microelectronics and microfabrication are potentially conducive to novel, more powerful and more efficient, neuro-devices.
- Further, progress can also be achieved by the discovery of new physical principles for activity monitoring (invasive or non-invasive) and activity modulation.

Goal: to explore these opportunities and develop novel neurodevices that can be rapidly accepted by clinicians and patients.



2. Tools to measure & stimulate activity in brain tissue (2/2)

Proposals submitted to this call should tackle at least one of the following two challenges:

- A full device with unique features - miniaturisation, low latency, closed-loop monitoring-stimulation (if necessary), ultra-low power consumption, low/moderate invasiveness, high-resolution, etc.- targeting a currently untreated disorder.
- New or nascent physical principles or methodologies that could be the basis for future brain sensing and/or stimulation technologies, with clear and quantifiable advantages. Focus is on techniques that can offer unprecedented data on brain function or that allow unprecedented modulation of brain activity for therapeutic purposes.

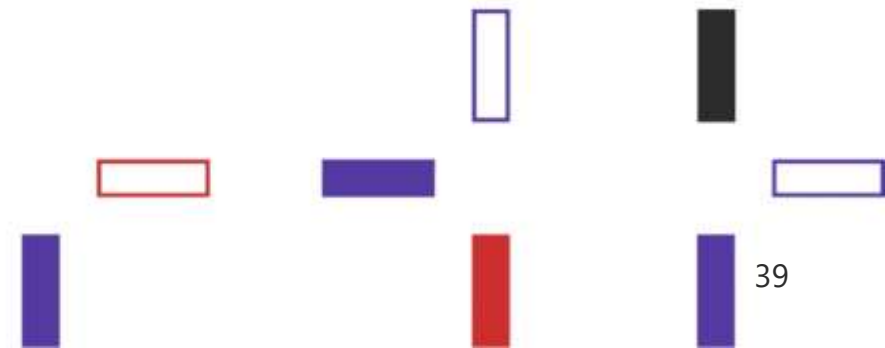
Check the WP for the specific conditions for this challenge, as well as the Topic Guide



3. Emerging Technologies in Cell & Gene Therapy (1/2)

With this Pathfinder Challenge, EIC strategically aims at:

- **Advancing the domain** of the Cell and Gene therapy (CGT) from breakthrough discovery to the manufacturing step towards clinical grade by funding projects that propose **effective novel concept-based** technological solutions that go far beyond the current state-of-the-art.
- **Reinforcing the competitive edge** of critical components of the European cell and gene therapy community, such as **leading** research consortia, start-ups and **spinouts**, in their ability to compete and sustain in this fiercely competitive field.





3. Emerging Technologies in Cell & Gene Therapy (2/2)

The proposals, disease-specific or non-disease-specific, should **focus on emerging technological solutions and/or platforms aimed to overcome the current cell and gene therapy challenges** in one or several the areas:

- Advancing cell therapy manufacturing step towards clinical stage.
- Improving adoptive cell therapies (CAR-T, TCR, TIL) beyond the current state of the art.
- Identifying next-generation effective cell therapies for cancer.
- Applying cell therapy to treat cancer patients in a personalised manner.
- Improving the effectiveness and lowering the risks of gene delivery systems (vectors).
- Improving gene therapy manufacturing processes beyond the current state of the art.

Your project must aim to deliver, by its end, at least one of the specific outcomes defined for this challenge. The gender dimension in research content should be taken into account, where relevant.

Check the WP for the specific conditions for this challenge, as well as the Topic Guide



4. Novel routes to green hydrogen production (1/2)

- **Goal:** to **develop novel processes and technologies to produce Green H₂**, at different scales (from small to large) and with higher flexibility, entirely based on renewable sources and on the use of toxic free, non-critical raw materials. It focuses on the potential of new biological, chemical and physical routes for Green H₂ production adopting process circularity, possibly including the co-production of decarbonized chemicals and the integration with existing technologies at system and process level.
- **Target:** to support the development of innovative technologies and platforms for Green H₂ production, including both centralized and or on-demand generation (i.e. at the premises of the end users and for onsite consumption).



4. Novel routes to green hydrogen production (2/2)

Outcome: a proof of concept or lab-scale validated innovative Green H₂ production technology by biological, chemical or physical routes without the deployment of fossil fuels, potentially including the use of salt or waste water, organic wastes or the co-production of decarbonized chemicals.

Strong recommendations:

- **Multidisciplinary and cross sectorial approaches** are particularly welcome.
- Proposers are strongly encouraged to consider the **recovery and recycling** of by-products and wastes (life cycle thinking and circular approach).
- The **use of toxic-free** and **non-critical raw materials** is requested and the projects should include a full life cycle analysis of the proposed solutions and their impact on Europe's decarbonisation goals.

Check the WP for the specific conditions for this challenge, as well as the Topic Guide



5. Engineered Living Materials (ELMs) – Objectives

ELMs are materials composed, either entirely (biological ELMs) or partly (HLM), of living cells with a unique combination of properties: self-regeneration, adaptation to environmental clues, longevity and environmental sustainability. ELMs have the potential to transform virtually every modern endeavour from healthcare to infrastructures to transportation.

Goal: to position strategically Europe at the forefront of the Engineered living materials (ELMs) field and to overcome the technological challenges of harnessing the engineering potential of nature for materials' production.

- **Objective 1:** support the development of new technologies and platforms enabling the **controlled production of made-on-demand living materials with multiple predictable dynamic functionalities, shapes and scales.**
- **Objective 2:** build a community of researchers and innovators in ELMs.

Team: integration of expertise e.g. in synthetic biology, materials engineering, control engineering, artificial intelligence, synthetic or engineered morphogenesis as well as ethical, legal and social aspects (ELSA).



5. Engineered Living Materials (ELMs) – Expected Outcomes

- **Outcome 1:** a proof of principle of technologies far beyond the current state of the art enabling the production of a minimum of two novel biological ELMs bigger than 1 cm in all dimensions by programmable and controlled synthetic or engineered morphogenesis (whether with eukaryotic or prokaryotic cells); **OR**
- **Outcome 2:** a laboratory validated, automatized and computer-aided design-build-test-learn (DBTL) platform far beyond the current state of the art able to produce a minimum of two novel HLMs in multiple scales with enhanced or unprecedented properties.

Strong Recommendations:

- to consider multi-cellular ELMs;
- to develop technologies that can be easily generalizable and adapted for the production of a broad range of ELMs from different cells.

Expectation: to collaborate and contribute to the wider ethical, societal and regulatory debate.

Check the WP for the specific conditions for this challenge, as well as the Topic Guide