SFI Education and Public Engagement Framework and Impact

An SFI guide for the design and implementation of an effective Education and Public Engagement programme and how such a programme contributes to the delivery of overall impact in the context of large-scale SFI awards.

Introduction

This summary has been prepared primarily to provide an overview of SFI's vision and expectations for Education and Public Engagement (EPE) within large-scale research awards such as SFI Research Centres and Strategic Partnerships[1].

Why we promote Education and Public Engagement (EPE)

Science Foundation Ireland funds research and public engagement in the areas of science, technology, engineering, and mathematics (STEM). The outcomes of this research and public engagement promote and assist in the development and competitiveness of industry, enterprise and employment in Ireland, delivering tangible impact for society.

EPE is a core objective of SFI large-scale research awards and, as set out in the SFI Strategy 2025[2]; we are committed to further developing programmes to support engagement with, and participation of, a broader range of civil society and community groups across SFI's research awards. This commitment is strongly supported by the public, with research showing that 84% of the population hold the view that *"scientists have a professional responsibility to talk about research findings with the public"* [3]. SFI also aims to build people's confidence and aspirations to pursue skills development and career choices in the STEM fields. This is to ensure that, as a nation, we will be well-placed to respond to future opportunities or challenges. Consequently, SFI expects its award holders to stimulate public understanding, interest and involvement in research and STEM, through relevant, inclusive and accessible activities. Ultimately, this will lead to the creation of a diverse scientific, research and innovation ecosystem which is welcoming to all and which places emphasis on active engagement and co-creation with the Irish public.

In summary, SFI supports large-scale award holders to carry out EPE activities which aim to:

▸ Work with stakeholders, beneficiaries and end-users in the co-creation of research activities with outcomes that are meaningful, relevant and implementable. This process helps to add value to the research, ensures that the outcomes are for the public good and builds trust between researchers and stakeholders

▸ Address STEM talent pipeline deficiencies through inspiration and skills development

▸ Raise awareness and heighten the public(s)' engagement with STEM, STEM research and other related areas of research

▸ Conduct engaged research by working with members of the public, for example, through dissemination of findings, consultation or participation in research activities (e.g., citizen science)

▸ Promote a culture and practice of evidence-based policy formation

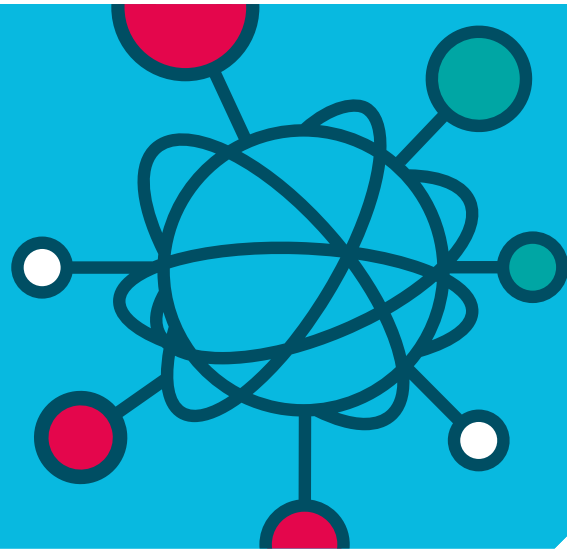▸ Engage with diverse, underrepresented, and underserved communities.

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1   See Glossary of Terms for details.
2   Shaping Our Future. SFI Strategy 2025.
3   2020 SFI Barometer. Final Research Report (Phase II). 2021.

SFI's Vision and Mission for Education and Public Engagement

Vision for EPE in large-scale awards:

That public engagement, in its varied manifestations, is embedded in the fabric and culture of the large-scale award such as a Research Centre or Strategic Partnership Award.

Meaningful engagement is undertaken because of its added value to the research, the researchers and all those associated with the award, and ultimately because of its recognised benefit for public good.

Mission for EPE in large-scale awards:

SFI supports and enables its funded researchers to deliver education and public engagement activities as a core element of its large-scale awards.

Expectations of Education and Public Engagement in large-scale awards
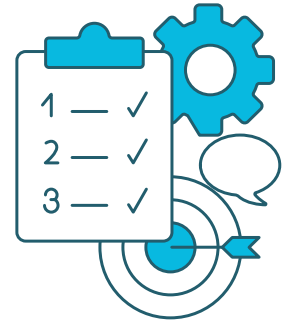
Fostering a culture of Public Engagement

SFI expects the same rigour and approach to best practice, ethics and integrity to be applied to EPE activity, as would be applied to the scientific research programme. To achieve this, SFI recognises the need for research leaders to work to develop a strong culture of engagement within an individual large-scale award. Engagement should be an integral part of being a researcher and researchers should be encouraged and facilitated to participate in EPE-related work. To facilitate this, it is important that researchers and other staff can avail of skills development opportunities and experiences to build capacity in EPE. It is also important that participation in EPE activities is recognised and promoted by the leadership team. In particular, "EPE champions" should be acknowledged and rewarded (see "EPE leadership" section for further details).

SFI has in the past provided, and plans to continue to provide, a suite of skills development opportunities for researchers (such as engaged research skills development, science communications, developing public engagement activities, evaluation of EPE activities etc). New programmes may include topics such as theory of change, stakeholder mapping, and policymaker engagement. In addition, SFI will develop and deliver in-depth orientation and skills development to senior leadership teams of large-scale awards to ensure a strong and vibrant culture of EPE is embedded within the award. This will be delivered early in the life cycle of relevant large-scale awards.

Stakeholders

In the context of large-scale SFI research awards, EPE refers to engagements with **non-academic audiences.** Examples of stakeholder and audience groups may include, but are not limited to, community groups, non-governmental organisations (NGOs), advocacy groups, social enterprises, industry and representative bodies, local authorities, regional or national government, cultural and educational communities from pre-school through to primary and secondary. However, it is essential to carefully identify and map the target audience(s) and to note that there is no requirement to "have something for everyone". When considering appropriate stakeholders, award holders should be informed by the EPE strategy and will also be expected to contribute towards improving diversity and inclusion, by broadening participation, both geographically and amongst less represented voices.

Types of education and engagement activity

SFI, and our international reviewers, expect that large-scale research award holders will develop a varied and balanced portfolio of engagement activities with a clearly defined target audience(s). SFI expects that all large-scale awards include some elements of deep public engagement and/or engaged research that have the potential to inform and shape the delivery of aspects of the research programme. Examples of this type of activity include – public/patient involvement, stakeholder engagement in defining research problems and solutions, Government engagement to inform policy or regulations, and community engagement to inform research direction.

Lighter touch or more traditional "outreach" activities are also valuable, as they can create awareness and help to build capacity in engagement work. To illustrate the wide spectrum of potential education and engagement activities, SFI has adapted the model originally devised by Wellcome (see Figure 1 below).

Activity types should be carefully chosen to match both the stakeholder and the research focus. The features of both effective public engagement and EPE portfolios in large-scale SFI awards are set out below.

Figure 1 - SFI Education and Public Engagement

Based on original work by Wellcome (formerly The Wellcome Trust)
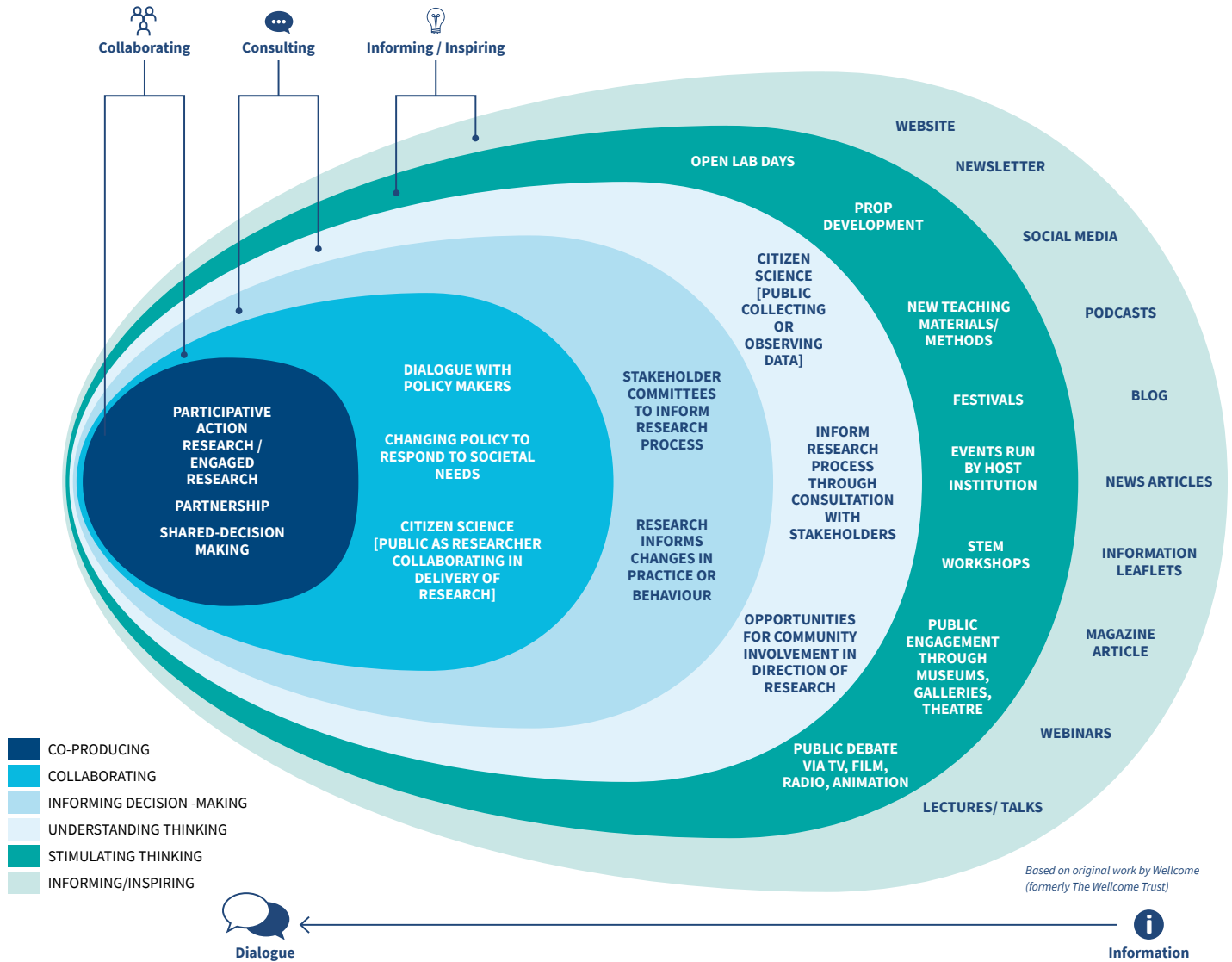
Notes:

1. *It should be noted that the activities outlined in the schematic are not exhaustive. For example, public/patient involvement (PPI) and citizen juries are recognised methods of collaboration and co-production.*

2. *As one moves from the outside of the schematic to the core, the focus moves from awareness raising and informing to two-way dialogue and empowerment in decision-making. While the scale of audience reach may decrease with progression from the outer layers to the inner ones, the depth of engagement and value increases significantly.*

Funding effective public engagement

SFI expects that sufficient funding for a number of key flagships[4] and engaged research activities will be allocated from the main SFI award. SFI funds more general STEM EPE activities and initiatives through mechanisms such as the annual SFI Discover Programme Call and Science Week Festivals and Events Call. In exceptional circumstances, additional funding may be secured through these, or other mechanisms, to complement core activities or to pilot new approaches.

The EPE budget may include, but is not necessarily limited to, staff costs, direct costs of EPE activities, travel related to EPE efforts, costs to engage in collaborative EPE-related partnerships with other organisations, costs related to EPE training and evaluation costs.
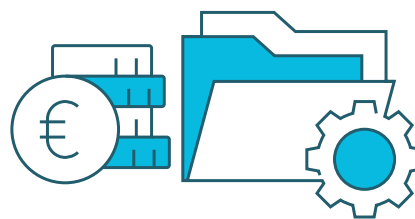
The engagement costs associated with specific engaged research work need not be included in this budget but rather can be included in the overall research budget.

As a guideline, at least 5% of the SFI budget should be allocated to the totality of the EPE programme in the large-scale award, to ensure appropriate resourcing, implementation and evaluation.

Features of EPE portfolio in large-scale SFI awards

SFI expects the EPE portfolio in large-scale awards to include the following features:

▸ Clear alignment with, and relevance to, the relevant research domain

▸ A balanced portfolio of activities

▸ A number of "flagship" projects

▸ Significant involvement of researchers across all career stages

▸ Funding allocation through main award

▸ Clarity of purpose and robust evaluation

Features of effective public engagement

SFI expects EPE in large-scale awards to ensure effectiveness through the following:

▸ The activity must be planned, and should be integrated into the planning of the wider research programme

▸ The activity should have clear target audiences and be geared towards the needs of these audiences

▸ Engagement should be two-way, involving interaction and listening, and should be designed to enhance the programme of research

▸ The activity reflects the specific needs of, and unique opportunities generated by, the relevant research area

▸ Evaluation and performance improvement must be incorporated from the outset. SFI has developed a toolkit and video to support the evaluation process

▸ Approaches employed must be based on best practice. The same rigour and approach to best practice, ethics and integrity should be applied to the EPE activity, as would be applied to the scientific research programme

▸ An appropriate budget must be assigned

▸ Team members with relevant expertise must be included in EPE activities to guide, coach and mentor the broader team.

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4 Flagship programmes are the key programmes of activity which are the focus of the EPE work and are closely aligned to the research programme. Typically, three flagship programmes are identified and reported on as part of the annual reporting / site review processes.

EPE leadership

LEAD: The vision for EPE should be established at award leadership level – e.g. lead- or Co-PI. EPE leadership should ensure that EPE is a strategic priority and receives appropriate focus and resources, and may work with dedicated EPE management resources to develop and operationalise EPE activities.

MANAGE: Meaningful EPE activity requires strong management and oversight. Dedicated resources should be allocated to this management role – frequently an EPE manager. EPE management will work alongside the PIs and Co-PIs is to develop and implement EPE strategy and to play a pivotal role in enabling and embedding a culture of EPE.

CHAMPION: EPE champions refer to individual team members who participate in five or more EPE activities per year, and who lead, or significantly contribute to, the development and/or delivery of EPE strategy and/or activity. Additionally, they serve as important role models, inspiring and enabling others to participate. EPE champions should be identified and celebrated in annual/progress reports and site reviews.

Review and ongoing evaluation

The review of Education & Public Engagement during site reviews mirrors the approach taken in the evaluation of the research and impact goals of an SFI application or award. SFI only uses international peer review in the evaluation process. For awards of scale, which include an EPE component, reviewers with expertise in EPE that is closely aligned to the focus of the research programme are recruited as both postal and/or panel reviewers, depending on the stage of review.

Applicants and awardees will be expected to:

▸ Outline the vision for EPE including objectives, target audiences, outputs, outcomes and impacts with clear links to the research programme

▸ Consider and justify what they are proposing to do

▸ Consider why the proposed approaches are most appropriate for their area and programme of research

▸ Describe why these approaches will be most impactful to reach the goals

▸ Describe the expertise needed in the team to deliver and implement on the proposed strategy, outlining the expertise of existing team members and partners

▸ Describe how a culture of EPE will be fostered and how researchers will be enabled to participate

▸ Describe how EPE will be monitored and evaluated, including success indicators

▸ Include details on the host research body support for the EPE programme

▸ Outline and justify resourcing and budget requirements for the EPE programme.

It should be noted that guidance and process may vary depending on the specific programme, the stage of the award, the expectations and review criteria. Sample review criteria and sample guidance for reviewers are given in Appendix 1.

Planning and Reporting on EPE

The specific requirements of EPE activity in large-scale awards is communicated with awardees at the start of an award / reporting period. In brief, a detailed **EPE strategy** should be developed which outlines the vision and objectives for the EPE programme and typically sets out three "flagship" initiatives which demonstrate the key strengths of the EPE programme. These flagship activities should form the basis of an annual **operations plan.** The use of detailed logic models[5] is strongly encouraged to ensure that EPE activities planned have a clear link to the EPE strategy. Reporting on implementation of the operations plan will comprise a section of the **annual report** to SFI[6]. These three documents are key elements in the review process for the EPE Programme.

SFI measures the level of participation of team members through its EPE key performance indicator[7] (KPI - see Appendix 2). The is purely a quantitative measure and does not seek to measure quality in any way. Qualitative aspects are assessed through annual/progress reports and site reviews. Details of EPE KPI requirements are set out by SFI on a case-by-case basis.

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5 A logic model is a graphical representation of planned work, it includes the resources (inputs) and activities that will take place, in addition to the outputs and outcomes that are expected. See Glossary of terms for a suggested outline.

6 Templates are available from SFI for each of these three documents.

7 This currently applies to awards of greater than €2.5 million in SFI funding.

Glossary of Terms

Term	Explanation
Capacity building	Providing skills development/training to team members to build capacity to deliver EPE activities. Experiential opportunities are also a good method of developing capacity.
Co-creation	The principle of co-creation is the process of designing and creating new initiatives and solutions **with** people and **not for** them. The key features of co-creation include bringing together stakeholders from all over society, with their respective expertise / experience; has a purpose; is not a finalised thing in itself, but a means to some other end; tackles a "bigger challenge" while helping each stakeholder to achieve their own goal(s); needs structure, yet it should also remain open to individual proposals and approaches; enhances creativity and problem solving and is a non-linear process of thinking and creating[8].
Education	In the context of EPE in large-scale awards – "education" refers to activities, whether formal, non-formal or informal, aimed at primary and secondary school audiences (teachers and/or pupils). Education of third level or post graduate audiences is not included in EPE but rather can be considered part of the overall impact agenda of the large-scale award. **Formal education** – Learning that occurs in an organised and structured education or skills development system. Formal learning is intentional from the learner's point of view. **Non-formal education** – Learning that takes place outside a formal education or skills development system, but still has some organisational structure. Non-formal learning is intentional from the learner's point of view. **Informal education** – Learning resulting from daily activities related to work, family or leisure. Informal learning is usually unintentional from the learner's point of view.
Engaged research	Engaged research describes a wide range of rigorous research approaches and methodologies that share a common interest in collaborative engagement with the community. It aims to improve, understand, or investigate an issue of public interest or concern, including societal challenges. Engaged research is advanced **with** community partners **rather than for** them. "Community" refers to a range of public research stakeholders, including public or professional service and product users, policy makers, civil and civic society organisations and actors (A Framework for _Engaged Research: Society and Higher Education Addressing Grand Societal Challenges Together, Campus Engage, 2017_).
Logic model	A logic model is a graphical representation of planned work, it includes the resources (inputs) and activities that will take place, in addition to the outputs and outcomes that are expected. The use of a logic model approach is strongly recommended in developing EPE programmes in large-scale awards. A suggested approach to developing a logic model is given below.

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8   Taken from ACCOMPLISSH Guide to Co-Creation published as part of H2020 Project ACCOMPLISSH, funded by the European Commission under grant agreement number: 693477.

Term	Explanation
Outreach	Outreach is typically one-way information flow, which communicates with the target audience about STEM research. Some examples of outreach are a website, newsletter or a blog. These are located in the outer layers of the schematic illustrating EPE activities (refer to figure 1).
Public engagement	Public engagement has many manifestations as illustrated in the EPE "onion" diagram (refer to figure 1). It is similar in some cases to informal education – building awareness among a broad range of audiences in a range of settings, for example, festivals, theatre, public debate, art, etc.
SFI Research Centres	SFI **Research Centres** are international beacons of scientific excellence, bringing together a critical mass of outstanding researchers to collaborate at a scale that will yield national and international impact. EPE is a core part of the work of Research Centres.
Strategic Partnerships	**Strategic Partnerships** facilitate the building of research collaborations with key stakeholders such as industry, other funding agencies, charities, philanthropic organisations, higher education institutes, or a combination of any of these. For Strategic Partnership applications of greater than €2.5M, the inclusion of EPE is mandatory, for applications below this amount, EPE is strongly recommended but not mandatory.

Suggested approach to developing a logic model

Inputs	Outputs		Outcome and Impact			Measures of Success
	Activity	**Participation**	**Short Term**	**Medium Term**	**Long Term**	
What we invest	*What we do*	*Who we reach*	*What are the short-term results?*	*What are the medium-term results?*	*What are the ultimate impacts?*	*Metrics*
e.g., team, room hire, catering, consumables	e.g., workshops, training, developing resources	e.g., students, teachers, decision makers	e.g., new learnings or skills for participants	e.g., change in action, behaviour, policies	e.g., social, economic	Outline the metrics and tools that will be used to measure the intervention

Appendix 1

Sample review criteria and guidance for reviewers

Sample Review Criteria

- Quality, significance, and relevance of the vision and high-level plan for Education and Public Engagement
- Clarity of approach to EPE and how it will be a core part of the research programme
- Evidence of how the research programme leadership will embed, support and enable the proposed EPE approach
- Clarity of objectives and vision for impact
- Quality and relevance of plan, appropriateness of target audiences /participants /stakeholders and approaches for engaging them
- Appropriateness of the expertise and resources requested
- Appropriateness of role of co-funder(s) in EPE activities, if applicable.

Sample of Associated Guidance for Reviewers

Vision & Culture

- Clarity of purpose & vision
- Evidence for culture of responsibility across the research team
- Evidence for engagement with EPE programme across the research team
- Evidence for impactful EPE Champions and advocates
- How are the awardees engaging all of the research community/ team in delivering the public engagement plan?

Implementation

- Is the operations plan of high quality and effective?
- Are individual activities effective and appropriate?
- Are there gaps and areas for improvement where a shift in focus is needed?
- Consider the balance across the portfolio
- Consider how suited the programme is in the context of the specific sectoral area

Evaluation

- Is there evidence of applying best practise in the component parts of the EPE Programme?
- Is it clear how the EPE programme is evaluated and leads to impact?
- Is there evidence of a logic modelling approach to the EPE plan?
- Is there evidence of applying learning or evaluation from EPE activity to research strands?

Appendix 2

SFI Research Centres

Education and Public Engagement (EPE) KPI Criteria
Revised 2020

Note: The EPE KPI is subject to revision from time to time – this is the current guidance for SFI Research Centres and relevant Strategic Partnerships in place in 2023.

Science Foundation Ireland expects the research community within each of the SFI Research Centres to engage with the public. By education and public engagement, we mean engagement with people outside of the researcher's own academic discipline. Engagement work is two-way, informing others but also enhancing research when collaboration and conversation takes place.

The public is vast, defining who you want to reach is important. The National Centre for Coordinating Public Engagement is a good source for guidance on this.

https://www.publicengagement.ac.uk/explore-it/who-are-public

Where EPE activities are informing policy or practice which ultimately impacts on the public, the stakeholders involved in the engagement may broaden to include public or professional product or service users, industry, civil society organisations and policy makers. It is important to be thoughtful on this. Industry engagement is a significant part of the SFI Research Centres' activities, but this engagement is recognised across other KPIs and reporting mechanisms. Industry engagement under EPE activity should clearly address the criteria below, for example in changing policy or behaviour, and should not include engagement required to further existing or potential research partnerships with industry.

Partnership is key to ensure that expertise is addressed. The same rigour and approach to best practice, ethics and integrity should be applied to EPE activity as would be applied to scientific research areas.

SFI recognises that some people will be champions in EPE activity. The definition of an EPE Champion is broader than just participation. Champions are identified as those who participate in five or more activities, who lead or significantly participate in the development and/or delivery of EPE strategy and/or activity. They often act as role models, inspiring others to participate. In recognition of EPE champions, SFI is now introducing a metric to capture data on EPE champion work, which will be presented to the biennial site review panels (see below). Narratives supporting this data should be captured in annual reports and at site reviews.

Other people may not have explored or be as comfortable in their engagement work. The criteria below have been created to allow a full spectrum of activity for both the novice or experienced practitioner.

In order to be counted towards the Research Centre KPI, researchers, including PhDs, Post Docs, FIs and PIs, and operations staff must complete at least TWO EPE activities per year from the categories below. The minimum threshold is that at least 50% of the relevant staff cohort must achieve the KPI each year. Multiple activities are allowed per category with the exception of training programmes for which only one activity can be counted each year. The list of team members to be counted for the EPE KPI will be taken from the official SESAME team list to ensure parity across the KPIs.

50% of the team complete 2 or more activities in the calendar year to qualify for the EPE KPI

Criteria

- Significant contribution to a website, online portal, online information campaign, or creation of a blog linked to your research (on appropriate channels available to a lay audience)

- Development of online/social media portals, games, apps, websites and/or cross-platform projects

- Participation in training programmes to build the capacity of researchers to communicate to and engage with the public

- Preparation of information leaflets, newsletters or articles for a non-peer/technical audience

- Development of and/or delivery of small-scale interactions and public open days, including resource development

- Creation of teaching materials and/or development of teaching methods to support teachers and students at primary and post primary level

- Collaboration and/or participation in festivals and events run within your research institution

- Collaboration and/or participation in public engagement activities with museums, galleries, public access venues or other public events

- Running citizen science experiments or research

- Contribution to broadcast or media productions including TV, film, animation or radio helping embed research and discovery in the everyday lexicon of Irish culture

- STEM public engagement workshops, events, debates and discussions

- Creation of situations facilitating dialogue with policy makers and wider stakeholders. These interactions should ensure research informs or influences changes in policy and legislation and in turn research responds to policy makers and societal needs

- Provision of opportunities to engage the public and wider stakeholders to ensure research informs or influences changes in behaviour or practice

- Consultation with stakeholders/communities affected by the research to inform the research process

- Building the capacity of stakeholders and communities affected by the research to identify and communicate their needs, with potential to influence the direction of the research and/or support citizen science