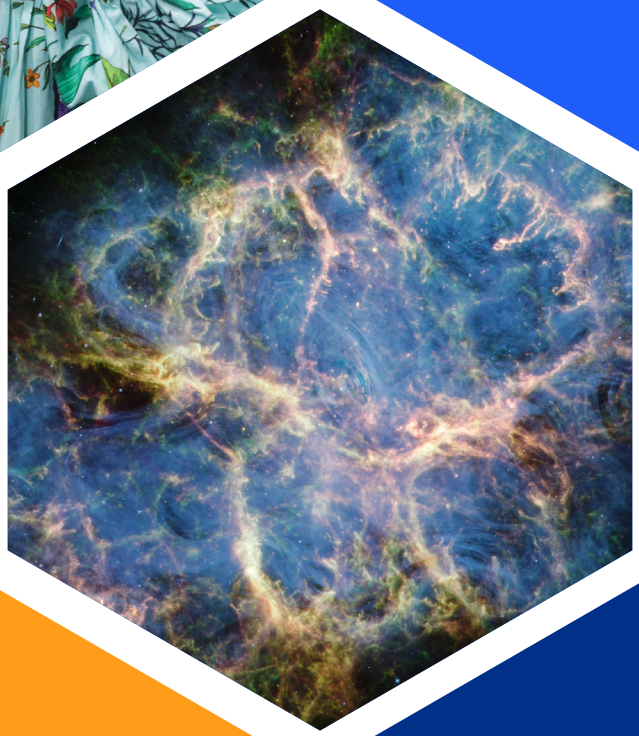
Science and Technology Facilities Council

STFC Public Engagement Evaluation Framework

2024 – 2028



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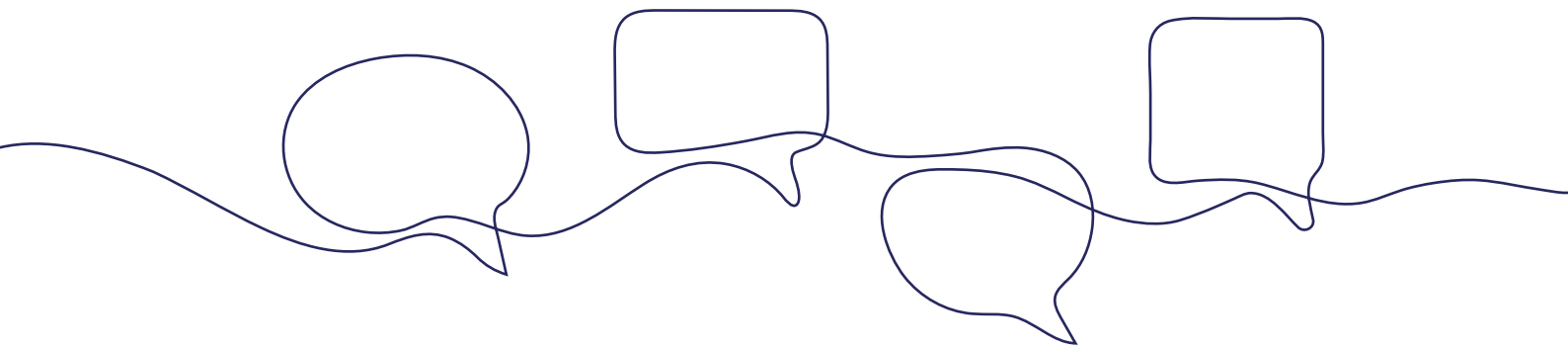


Foreword

The development of our refreshed public engagement strategy has marked an evolution of our public engagement programming and an opportunity to reflect and review how we evaluate and report on our activity. A core part of this reflective exercise was the development of a Theory of Change, led by MB Associates, and crafted in collaboration with our Advisory Panel for Public Engagement (APPE) and wider Public Engagement teams. This process enabled us to clearly articulate our vision and the ambition for our public engagement work.

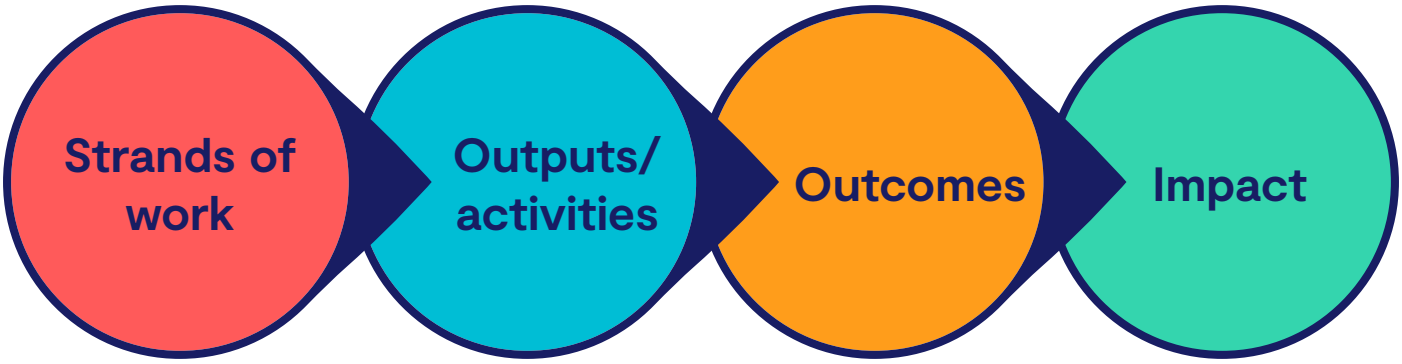
This framework builds upon the solid foundation of its predecessor, addressing the lessons learned and feedback provided by our grant holders and partners. As we move forward, we've worked to ensure that this new framework is reflective of our diverse portfolio, which spans a broad spectrum of public engagement activities and initiatives. The goals of this framework are:

1. **Clearer and more efficient reporting requirements:** We aim to streamline the evaluation process, ensuring that reporting is straightforward, concise, and aligned with our strategic objectives.
2. **A concise set of outcomes and metrics:** We have refined our outcomes and metrics, reducing complexity and concentrating on what truly matters to the success of our strategy.
3. **Incorporation of more qualitative reporting:** Recognising that numbers alone do not tell the full story, this framework integrates qualitative data to provide richer insights into our activities and their impact on our communities and partners.
4. **Defining how we will report and celebrate our findings:** We will establish clear processes for sharing evaluation results, ensuring that success is celebrated and key learnings are disseminated.
5. **Encouraging reflection and evolution informed by data:** We encourage practitioners to be evidence driven, using evaluation and data not only for reporting but as a springboard for reflection and programme evolution.

Through these goals, our evaluation framework will provide a clearer, more rounded view of our public engagement efforts while fostering a culture of learning, adaptation, and continuous improvement. We feel this framework will not only support our strategy but also inspire new ways of thinking about how we evaluate, learn from, and celebrate our achievements.

Introduction

The STFC Public Engagement is structured around three main strands: Public Engagement grants, National partnerships, and National Labs Public Engagement. These strands represent the core of our public engagement efforts, supporting a wide range of initiatives that contribute to our vision of a society in which all people are able to engage with STEM, research and innovation. Figure 1 illustrates how these different strands of work lead to our desired impact. This framework will detail how we will evaluate the outputs and outcomes from these activities.



- Public Engagement grant holder projects
- National Labs Public Engagement
- National partnerships

- Partnerships
- Public and community events
- Resource production
- School events
- Training

- Short term outcomes
- Long term goals

- A society in which all people are able to engage with STEM, research and innovation

Figure 1: STFC funded strands of work in scope for the evaluation framework

This evaluation framework is specifically designed for STFC-funded work within these three strands. However, we recognise that there are additional public engagement activities involving STFC science and technology, often led by STFC-funded researchers and staff. Whilst these individuals are not required to report on their activities using this framework, we encourage them to explore how the outcomes and metrics outlined here could enhance their understanding of the impact of their efforts.

The purpose of this framework is to provide a coherent and systematic approach to our evaluation. It aims to capture the breadth and depth of our activities, ensuring that we have a clear understanding of their impact and continuously improve. It is intended to enable us to monitor our work and guide and improve our own programming. Evaluation plays a central role in our strategy, delivering three key objectives:

1. **Report** – demonstrating the value and reach of our work
2. **Improve** – to use lessons learned to improve and adapt future activities
3. **Celebrate** – to recognise and share success with the partners, stakeholders, and the communities we engage with

Sections 7 and 8 in the framework will detail our intentions on how STFC will use evaluation data to report, improve and celebrate.

If you are intending your evaluation to form part of an academic publication, please be aware that data requirements are usually more rigorous than this framework. Please also ensure you follow your institution's guidelines on data protection, ethical considerations and evaluation strategies.

Theory of Change

As a starting point for the evaluation framework, we have developed a Theory of Change (Figure 2) that shows how short term outcomes and long term goals lead to our desired impact. It also contains STFC's Principles and Approaches to high quality public engagement: our values and ways of working which enable the outcomes and goals to be achieved.

Principles and approaches to high quality PE

1

Celebrating STFC stories, people and facilities

2

Removing barriers and building bridges for participation

3

Sustaining collaborative partnerships

4

Creating inspiring and meaningful experiences

5

Evidence-based

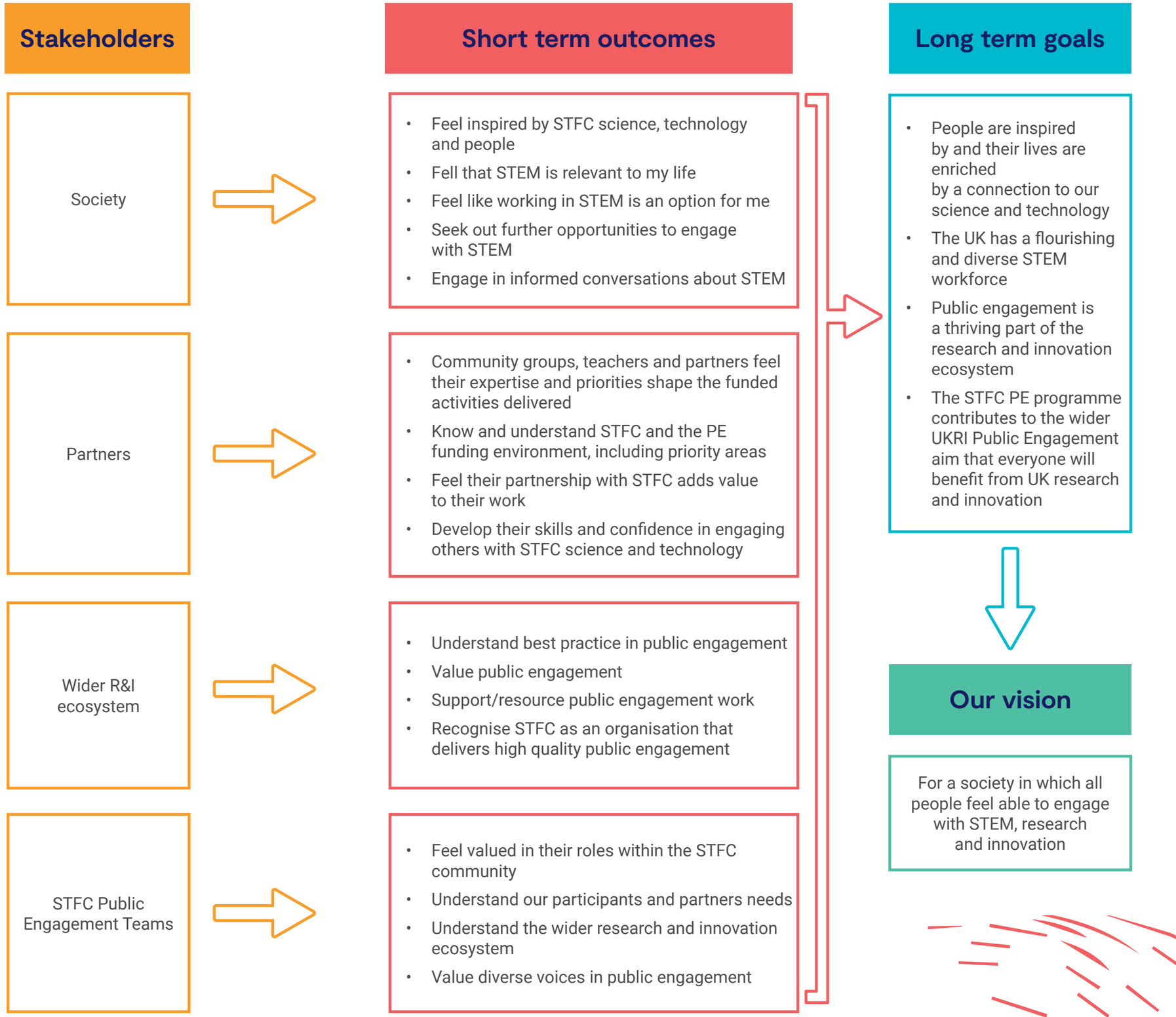


Figure 2: STFC Theory of Change

Activity Metrics

We are interested in reporting on the range and scale of our funded programmes. STFC supports globally impactful science and technology research, and we want our public engagement programming to have impact, both geographically across the UK, and with reach, engaging a range of groups and communities leading to positive outcomes. This reach is reported through activity metrics listed in Table 1. Although reach is a useful indicator of scale, it does not reflect participant outcomes, and smaller scale projects can have substantial impact. Please see Section 5 for details on how we will evaluate activity outcomes and Appendix 1 for full list of data required for reporting.

Activity metrics will be reported annually through online reporting tool and a grant holder spreadsheet sent to the STFC Public Engagement Group. Details on exact reporting requirements can be found in the STFC Public Engagement grant holders reporting guidance document.

Participant diversity

Improving our reach with diverse audiences is a key driver in our public engagement programming. Working with Wonder communities, those from the 40% most deprived areas of the UK, continues to be our priority and we will monitor our progress in reaching these communities. In addition, as part of the Wonder initiative, we encourage grant holders to engage individuals aged 8-14 years old as we know this is a key point in young people's lives where they make decisions about whether science, technology, engineering and maths (STEM) is an option for them. We therefore ask all grant holders to report on the percentage of the whole group from Wonder demographics as well as the number of participants who are aged 8-14 years. For training events, we ask for you to share if your participants work with groups from Wonder areas. This data is captured in the grant holder reporting spreadsheet.

We recognise there are other underserved and underrepresented groups in STEM and public engagement events may engage with communities that are from these groups. We encourage grant holders to share details of their communities with us when reporting through the online reporting portal.

Identifying Wonder communities

STFC defines Wonder communities as those individuals from the 40% most deprived areas of the UK. We advise using the Indices of Multiple Deprivation (IMD), or similar government index, as a way to identify areas of deprivation from participant postcode. These are publicly available online for all areas in the UK. Please be aware, when collecting personal data such as participant postcode, it is important for grant holders to follow data protection guidelines and be compliant with legislation.

For school events, grant holders can identify Wonder schools either through the IMD decile of the school postcode or from the percentage of pupils eligible for free school meal at the school. In areas of the UK where free school meals is a universal provision, local government still identifies and reports on pupils who would be eligible for free school meals based on their circumstances. Free school meal eligibility data is publicly available online for individual schools in England, Scotland and Wales.

We recognise that using whole school level data does not necessarily reflect the group of pupils involved in the funded activity. However, as collecting individual postcode data for children and young people in a school setting is a challenge and presents data protection issues, we accept this shortcoming in our data collection.

Type of funded activity	Metrics
Partnership	• Name of partner • Postcode of partner • Number of STFC funded staff/researchers involved* • Number of hours STFC funded staff/researchers contributed to project
Public and community events	• Type of event • Duration of event • Number of events delivered • Number of participants • Number of groups who attended • Number of children aged 8-14 • Postcode of event Please note: participant demographic information is captured in the section below
Resource production	• Type of resource • Number developed • Number of resources distributed / downloaded / viewed / visited • Link to resources (if applicable)
School events	• Type of event • Duration of event • Number of events delivered • Number of pupils • Number of pupils from upper primary, lower primary and upper secondary • Number of schools who attended • Postcode of event • Name of school(s) • Postcode of school(s), if different than event location Please note: participant demographic information is captured in the section below.
Training events	• Number of events delivered • Number of participants • Number of groups/schools who attended • Postcode of event • Name of school or organisation (if applicable) • Postcode of school or organisation (if applicable)

Table 1: Activity metrics required for reporting

Key Outcomes

Our Theory of Change describes the short-term outcomes that lead to the long-term goals that in turn contribute to our vision of a society in which all people are empowered to engage with STEM, research and innovation. We have selected six short term outcomes from our Theory of Change which we will monitor and evaluate as part of this framework. The six outcomes were chosen as they are:

- Linked to the aims in the STFC Public Engagement strategy
- Identified as important outcomes for public engagement work from STFC Council
- Points of continuity with Association of Science Discovery Centre evaluation framework

Some outcomes should be evaluated across all activity, whilst others are specific to certain activities (e.g. training) and therefore are optional for grant holders to evaluate depending on the nature of their project. More details on how these outcomes can be incorporated into evaluation, in particular survey design, can be found in Appendix 2.

Table 2 opposite summarises the key outcomes for evaluation, who is evaluated and how the data is collected. See Appendix 1 for strategy aim titles and complete list of metrics and outcomes linked to each aim. It is designed for summative evaluation at the end of an event, activity or a project; however, if grant holders are interested in formative evaluation, then evaluation data may be collected differently. Grant holders should reflect on the aims and objectives of their project to determine what evaluation approach is most suitable. Both quantitative and qualitative data is collected in outcomes evaluating participants; in other outcomes, one or both data collection method may be used.

Outcome	Strategy aim	Who is evaluated	How data is collected
Essential: Feel inspired by STFC science, technology and people	Aim 1	Participants	Quantitatively through survey or similar methodologies for participants Qualitatively through open ended questions, interviews or observations of participants
Essential: Feel that STEM is relevant to my life	Aim 1	Participants	Quantitatively through survey or similar methodologies for participants Qualitatively through open ended questions, interviews or observations of participants
Essential: Seek out further opportunities to engage with STEM	Aim 1	Participants	Quantitatively through survey or similar methodologies for participants Qualitatively through open ended questions, interviews or observations of participants
Essential: Feel their partnership with STFC adds value to their work	Aim 2	Public Engagement grant holders and National Labs Public Engagement partners	Quantitatively through survey or similar methodologies for participants Qualitatively through open ended questions and grant holder interviews
Optional: Community groups, teachers and partners feel their expertise and priorities shape the funded activities delivered	Aim 2	Public Engagement grant holders and National Labs Public Engagement partners	Quantitatively through survey or similar methodologies for participants Qualitatively through open ended questions and grant holder interviews
Optional: Develop skills and confidence in engaging others with STFC science and technology	Aim 3	Staff, teachers and group leaders	Quantitatively through survey or similar methodologies for participants Qualitatively through open ended questions, interviews or observations of participants

Table 2: List of key evaluation outcomes

Evaluation Tools

We encourage STFC grant holders to use a variety of tools to collect quantitative and qualitative data. The tools selected should be appropriate for the activity and the group, considering participants' access needs, and feasible for the grant holder to facilitate. Below are examples of quantitative data collection methodologies that are being used by National Labs Public Engagement Group:

- Paper and electronic surveys
- Sticker charts
- Token boxes
- Raise of hands
- Movement questions (e.g. move to side of the room if you agree, disagree or neutral about a statement)
- Observational tools

We have developed a series of possible evaluation statements linked to the key outcomes found in Appendix 2. These statements can be used to assist with survey design and can be adapted to open-ended questions for surveys or interviews.

Both quantitative and qualitative data are useful in understanding the impact of public engagement activities. Qualitative data in particular can provide a deeper understanding of participant outcomes. Qualitative data collection methodologies could include:

- Open ended questions on surveys
- Interviews
- Focus groups
- Observations

We encourage grant holders to plan for evaluation at the start of a project. To assist grant holders, we have included a sample evaluation plan which can be found in Appendix 3. It is important to consider the scale of your project when planning evaluation. Smaller scale projects such as Spark Awards could use one tool when collecting data, whereas a Nucleus Award may collect data on outcomes in multiple ways. It is also important to consider size and frequency of the activity. For example, all participants could be involved in evaluation of a small workshop, whereas only a selection of participants could be needed for a large-scale event like a festival. For multiple intervention projects, evaluation could be done at the beginning and end of the project instead of at every session.

Data collection, reporting and dissemination

PE grant holders, National Labs Public Engagement and National Partnerships should collect data throughout the course of their project. When collecting evaluation data, it is important to consider your ethical and legal responsibilities for the collection, storing and processing of this information. Please ensure you are compliant with legislation and your organisation's ethical guidelines.

Annually, PE grant holders will report activity metrics and key outcomes data to STFC through an online portal and a grant holder metrics spreadsheet. STFC will collate and analyse data to present for discussion with our Advisory Panel for Public Engagement (APPE), identifying any trends and recommendations. These recommendations will then be used to inform programme planning, creating an iterative process of plan, do and review illustrated in Figure 3. STFC will produce a report annually, sharing and celebrating the work of our public engagement.

Review

- STFC to collate and review data
- STFC will review data with APPE in June and make programme recommendations
- STFC will publish an annual report in Autumn

Plan

- Implement programme recommendations
- Plan for the upcoming year

Do

- Deliver public engagement activities
- Collect data January – December
- PE grant holders submit data during the submission window in January – March

Figure 3: STFC evaluation cycle: plan, do, review

In addition to the annual report, STFC will seek to commission case studies that will explore the delivery of key aims and outcomes throughout the course of the strategy. This will add to the body of qualitative evidence of the impact of our funded activities.

Continuous improvement and sector sharing

As part of the public engagement strategy, STFC is committed to understanding the impact of our programming and supporting the wider community to learn from evaluation through sharing successes and good practice and reflecting candidly on the challenges faced. We also encourage reflection happen on individual project level through reflective practice and activity-specific evaluation.

On a portfolio level, we will reflect on the effectiveness of our funded activity in meeting strategy aims and desired outcomes. We will endeavour to do this regularly through annual reports and comprehensively at the end of the strategy period. Where possible, learnings from these reviews will be introduced into programming and embedded into future strategy work.

We will share its findings with the wider sector through publications, conferences and events.

Appendix 1: Metrics and outcomes linked to aims

Aim 1: Celebrating STFC science, technology, people and careers

- Number of STFC funded researcher and staff involved in programming, including job title, organisation and their role in the project
- Number of events
- Type of event
- Duration of the event
- Number of participants / Number of students
- Number of groups who attended
- Number of resources and type of resources produced
- Number of resources distributed/viewed/downloaded/visited, including web link if applicable
- Essential: Feel inspired by STFC science, technology and people
- Essential: Feel that STEM is relevant to my life
- Essential: Seek out further opportunities to engage with STEM

Aim 2: Working in partnership

- Name of partner
- Postcode of partners
- Nature and shared goals of partnership
- Essential Feel their partnership with STFC adds value to their work
- Optional: Community groups, teachers and partners feel their expertise and priorities shape the funded activities delivered

Aim 3: Building capacity

- Number of training sessions delivered
- Number of hours STFC funded staff contribute to PE activity
- Number of people trained
- No groups/schools attended the training
- Number of teachers trained
- Optional: Develop skills and confidence in engaging others with STFC science and technology

Aim 4: Improving our connections with diverse audience

- Postcode of event venues (including schools)
- Name of schools attending an event
- Postcode of schools attending an event
- Percentage share of Wonder participants within the group
- Number of students from each age range (upper primary, lower secondary, upper secondary)
- Number of 8-14 year olds attending public events
- Number of in person events
- Number of online events

Aim 5: Delivering high quality public engagement activities and evaluating outcomes

- The outcomes and metrics above will provide evidence of high quality public engagement activity.

Appendix 2: Possible evaluation statements

For participant outcome, we have identified possible evaluation statements which could be used determine to the extent which the outcome has been achieved. The evaluation statements below are taken from National Labs Public Engagement team surveys and published question banks from the Ogden Trust, Tomorrow's Engineers and ASDC. The first three outcomes are essential, and the last outcome is optional and should be asked if it is relevant to the activity.

Evaluation statements can be used to create Likert-scale or open-ended survey questions. They can also be used in other tools such as sticker charts, token boxes or raise of hands questions. An example of how an evaluation statement can be used in these different tools is detailed in the section below.

Please note, when developing survey questions from evaluation statements, the words 'STEM', 'science' and 'technology' should be changed to the subject or topic of the activity (e.g. astronomy).

Outcome	Possible statements
Essential: Participants feel inspired by STFC science, technology or people.	• I am excited about the science and technology I saw today. • I feel inspired by the science and technology I heard about today. • I was excited to learn about [insert activity area] at today's activity.
Essential: Participants feel that STEM is relevant to their lives.	• I feel science and technology I saw today are important to my life • After today's activity, I feel I can use [insert STEM subject area] to understand the world around me • After today's event, I feel [insert STEM subject area] matters more to me or the things I care about • I felt the [topic area] I saw today is useful to know about in my daily life. • After today's event, I see more examples of [insert STEM subject area] in my everyday life.
Essential: Participants seek out further opportunities to engage with STEM.	• I will find out more about what I have seen today. • I would like to take part in [activity] in the future. • I would like to go to other places like this again. • This event made me want to explore some of the things covered here more.
Optional: Participants develop skills and confidence in engaging others with STFC science and technology.	• I feel more confident in talking to others about science and technology • I feel confident in delivering public engagement • I feel my [skill area] have improved because of taking part in this activity

Example use of evaluation statement

Below are examples of how the evaluation statement, “I am excited about the science and technology I saw today”, can be used in different tools.

Likert-scale survey question

I am excited about the science and technology I saw today.

- ☐ **Strongly agree**
- ☐ **Agree**
- ☐ **Neither agree nor disagree**
- ☐ **Disagree**
- ☐ **Strongly disagree**

This could also be adapted to a three-point scale or a visual scale with emoji icons replacing words (smiley to sad face).

Sticker chart question

In a prominent position in the room, display a poster with an evaluation statement, ‘I am excited about the science and technology I saw today’, as a header for a large five-columned table with space for participants to leave a sticker.

Token box question

At an exit point to the activity, five token boxes or buckets can be set up with five emoji icon labels (as pictured), or alternatively three token boxes with ‘yes’, ‘maybe’ and ‘no’ labels on each box. The survey question, ‘I am excited about the science and technology I saw today’, should be clearly displayed near the token boxes.

Raise of hands question

Ask the group to raise their hand if they feel excited about the science and technology they saw today. Count the number of individuals who raised their hands. Please note, it is possible for individuals to be swayed by other’s voting using this method. To reduce this, ask participants to close their eyes.

Open-ended question

How did you feel about the science and technology you saw today?

Appendix 3: Sample evaluation plan

Below is a sample of the monitoring and evaluation plan based off a template used in the National Labs Public Engagement Group. The template is used annually by the Group to plan evaluation over the course of the year.

Sample Project	Year	Activity Metrics	Demographic metrics
School events	2024	Number of participants Number of events delivered Postcode of event/school Name of school	Number of children aged 8-14 Percentage of pupils from Wonder communities (free school meal percentage)

Type of activity	Outcomes	Data collection tool(s)	Audience group	How the tool is administered	When and how often the tool is administered
Primary school workshops	• Feel inspired by STFC science, technology and people • Feel that STEM is relevant to my life • Seek out further opportunities to engage with STEM	Raise of hands question	Children and young people	At the end of the workshop, pupils are asked to close their eyes. The facilitator reads out the evaluation statement and asks the pupils to raise their hand if they agree with the statement. The facilitator counts the number of raised hands.	Once at the end of the session
Family drop-in sessions	• Feel inspired by STFC science, technology and people • Feel that STEM is relevant to my life • Seek out further opportunities to engage with STEM	Electronic survey	General public	Posters with QR codes to the electronic survey are placed around the event space. The survey is also emailed out to all participants after the event.	Once per event

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