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# Public Engagement in a Global Pandemic

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# Agenda

1. PE Before COVID-19 & COVID-19 in the UK
2. Remote Public Engagement
3. Benefits, Challenges and Learned Best Practice
4. Future



# PE before COVID-19

SCD has a long and rich history of delivering face to face PE and outreach, as part of the wider STFC programme.

In 2019, SCD engaged with over 4000 people.

One of the core strengths of the programme is that the public can see and experience “big science” for themselves by visiting an STFC site.

This can limit engagement to those with the means to travel to an STFC site.

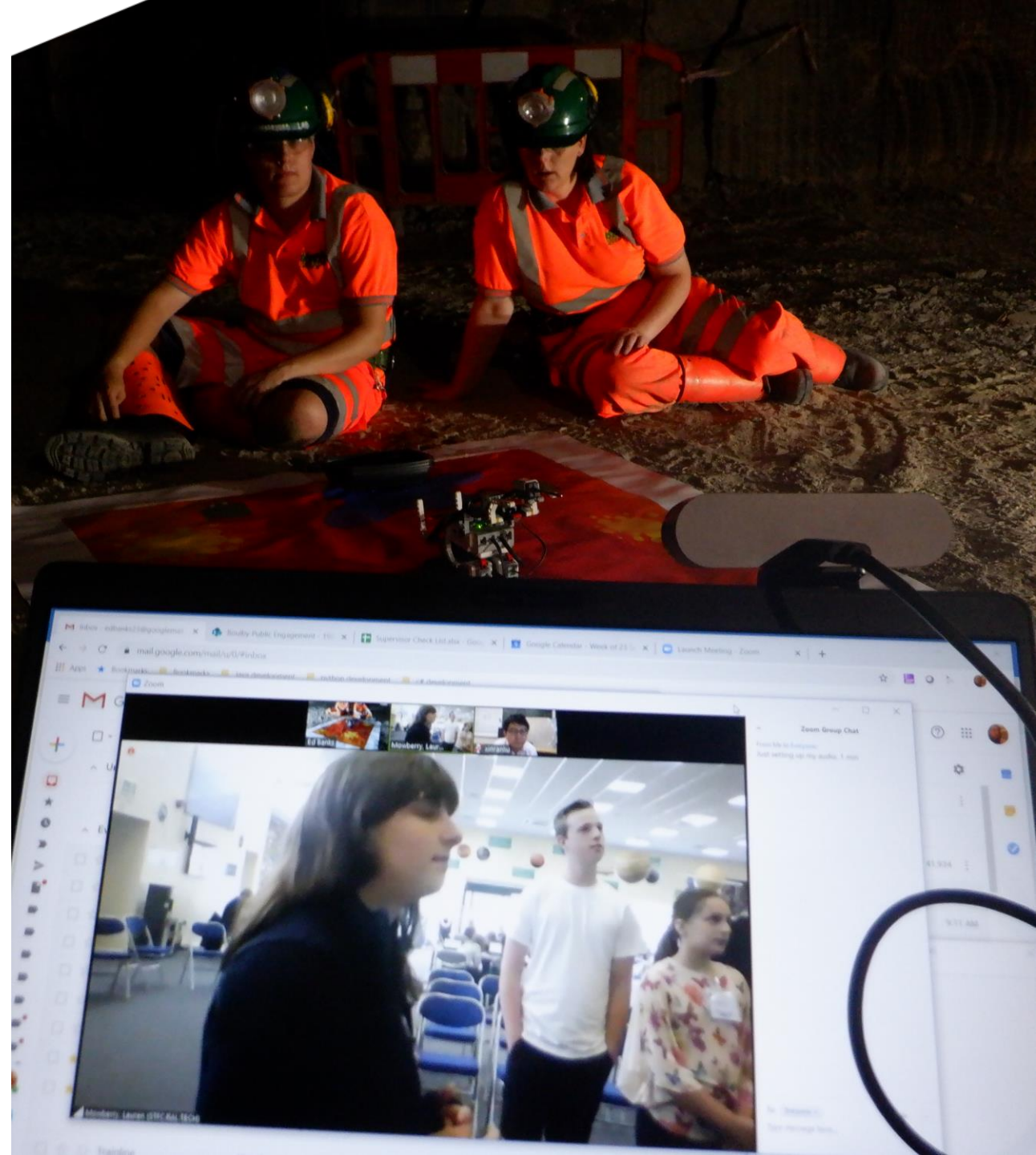


# PE before COVID-19

STFC has long had a strategic aim do more with remote audiences.

- Difficult to devote the necessary time and effort needed to launch a significant remote programme.
- Some reluctance / lack of technical familiarity from key audiences.

By March 2020, SCD had been working with the University of Edinburgh and STFC Boulby Underground Laboratory to launch the Remote<sup>3</sup> project, which aimed to deliver STEM engagement to remote areas of Scotland.



# COVID-19 in the UK

By the end of March 2020, the UK was in its first national lockdown.

This meant:

- Site was inaccessible for the majority of staff.
- Schools were closed to the majority of children.
- The public was told they must stay at home.

STFC cancelled the planned in-person summer PE programme, including a large scale public open week.





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# Remote Public Engagement



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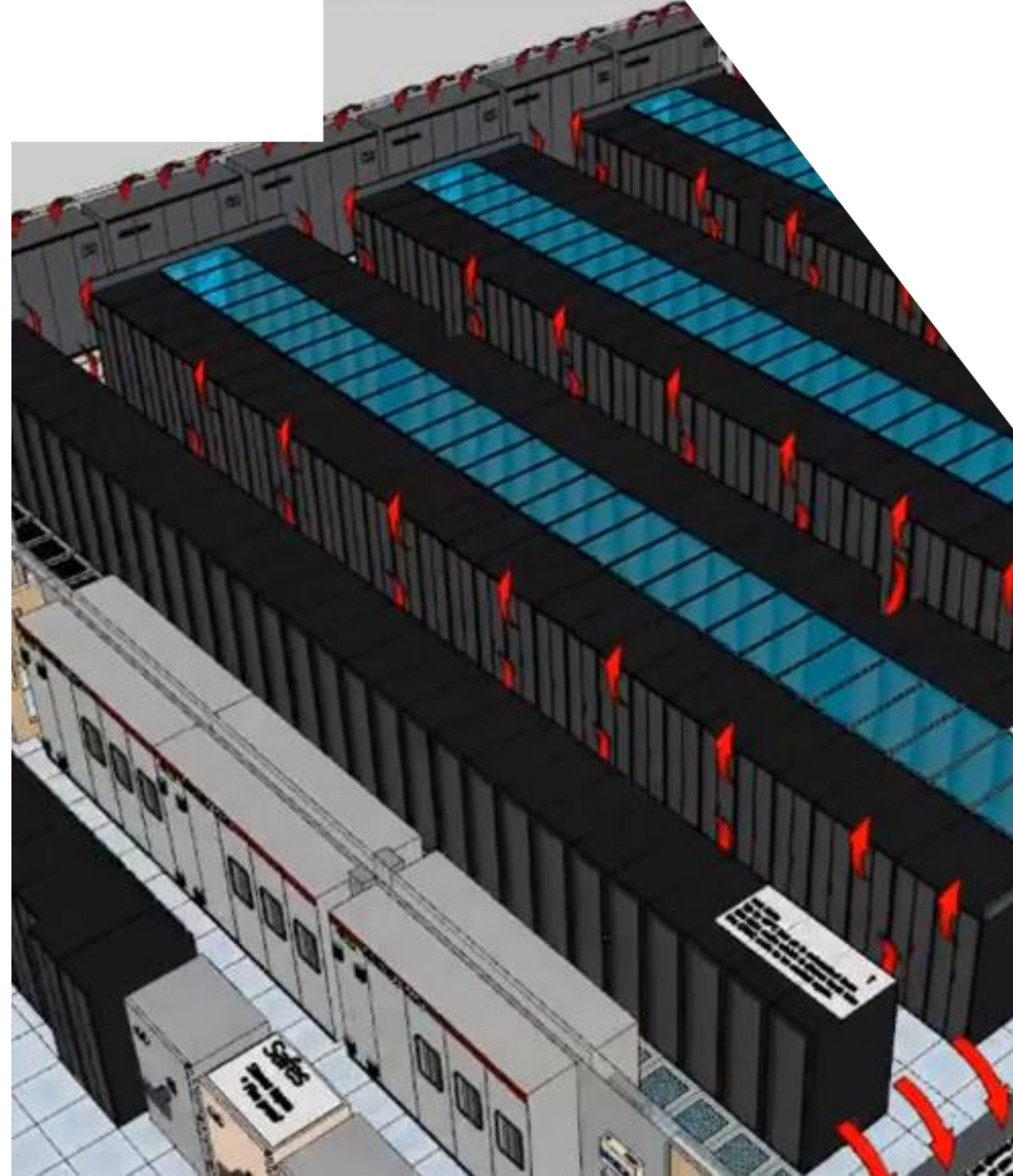
# Initial Remote PE

SCD's initial focus was on promoting existing materials and interacting with the wider efforts of the STFC PE and Social Media teams, as part of STFC's "Science at Home" Campaign.

The first event SCD held was a virtual version of the monthly coding club, used to help formulate what a remote event should look like.

- Due to SCD's strong and recurrent interactions with the cohort, two-way communication was enabled – meaning feedback and improvement was quick.

SCD also delivered virtual tours of the data centre, using a 3D model produced before the pandemic.

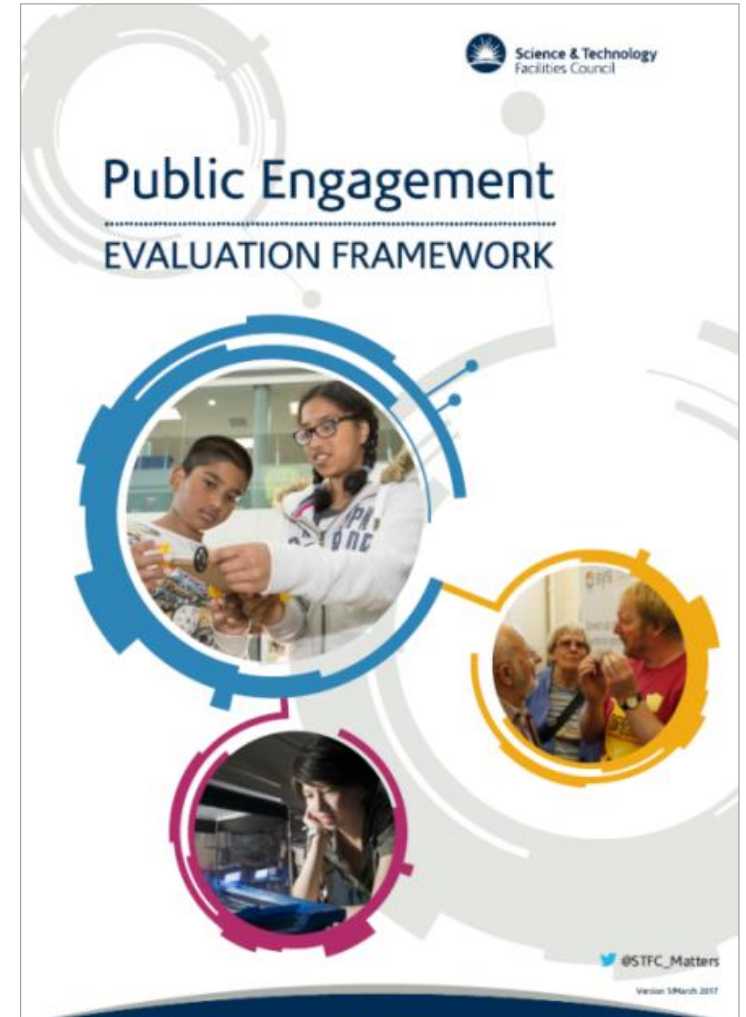


# Moving Beyond Improvisation

Whilst these initial efforts were ongoing, SCD worked to plan and develop an effective autumn programme of public engagement events that could be delivered remotely.

SCD had previously produced “Generic Learning Outcomes” (GLOs) for each activity, as per STFC’s Public Engagement Evaluation Framework.

These GLOs guided the adaptation / creation of activities for a remote audience, ensuring that the aims of the in-person equivalent were continued to be met.





# Python Workshop

SCD usually runs a 3-day, face-to-face, introduction to python workshop, hosted on site.

A three-month project was commissioned to rework the existing material into a remote pilot event in August.

The workshop was delivered via JupyterHub Notebooks hosted on the STFC Cloud, which meant participants only needed a web browser.

Schools were still closed, so the workshop was delivered as a webinar and two-way video/audio communication was disabled – code was debugged via the chat and Q&A functions.

A screenshot of a Jupyter Notebook interface. The browser tabs at the top show 'Launcher', 'Python Lesson 1.ipynb', and 'Instructions.md'. The notebook content includes a title 'Python, Lesson One!', a list of learning objectives, and a section titled 'What is Python?'.

**Python, Lesson One!**

In this lesson we will:

- Learn about Python, a scripting language
- Learn about Jupyter Notebooks
- Use Python as a calculator
- Store information
- Get input from the user
- Use functions
- Use Python to make decisions
- Use loops and branches in programs
- Make games: guess the number, hangman

I've put any important or common computing terms in **bold**. Words that look like this are code, and will be examples, or things you need to do to work along with me! Importantly, Jupyter Notebooks are just a way of writing and presenting Python, so if I type 'Jupyter' I'm talking about the notebook, and if I type 'Python' I'm talking about the programming language.

### What is Python?

Python is a scripting language.

Think of a script for a play, or film!

169.15 MB Mode: Command Ln 1, Col 1 Python Lesson 1.ipynb



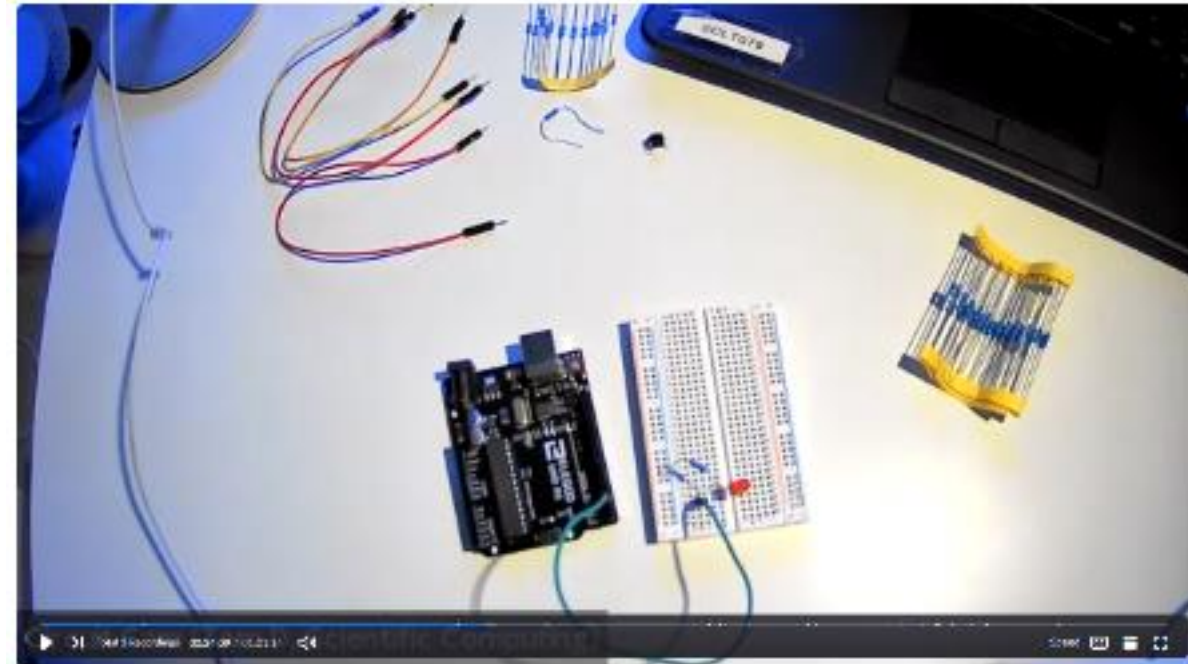
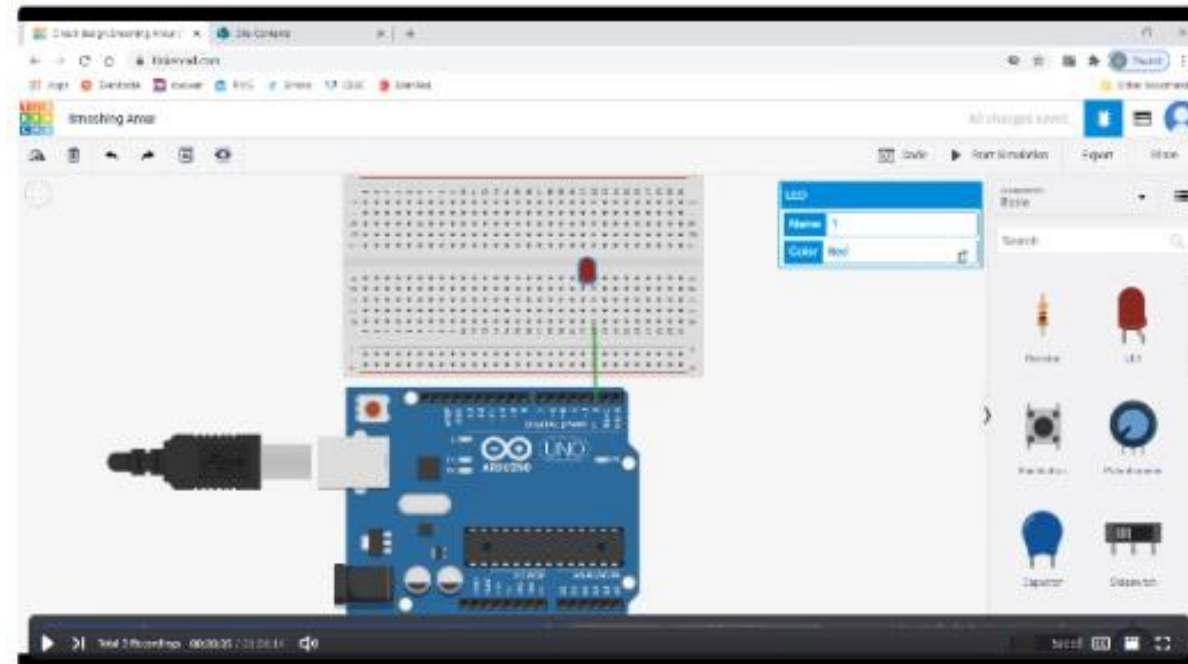
# Arduino Challenge Day

In October 2020, SCD hosted a virtual version of their Arduino Challenge Day activity.

Schools were open at this point meaning:

- SCD sent physical Arduinos and a set of electronic components when requested, virtual Arduinos were used otherwise.
- Each school had a dedicated breakout room with a teacher and two members of STFC staff present at all times.
- 2-way video/audio communication was enabled in breakout rooms

The challenges were reworked to exclude any components that might overheat.



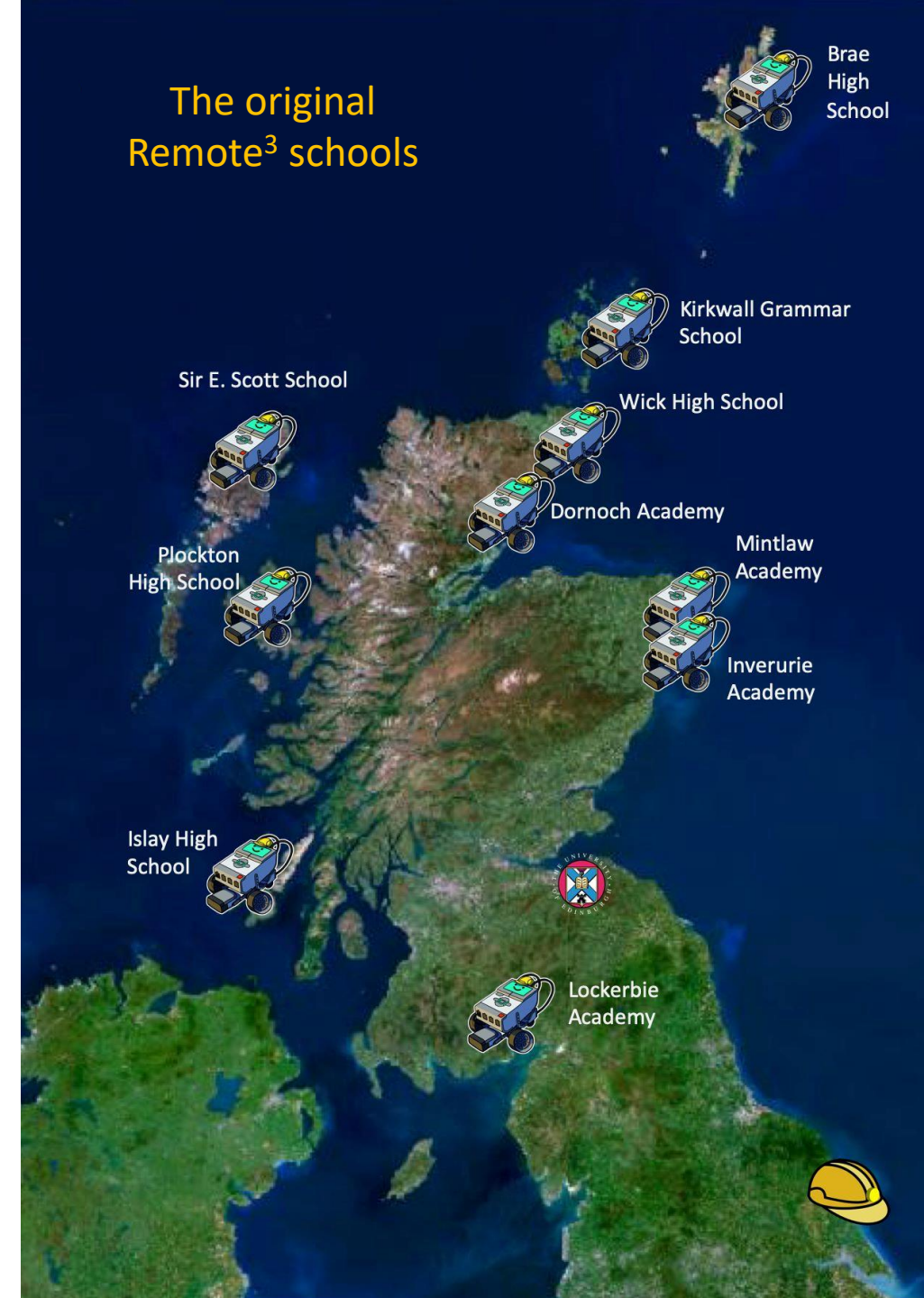
# Remote<sup>3</sup>

The original plan was for the school teams to design, build and program Lego Mindstorm™ rovers to complete a series of challenges set up at the Mars Yard at the STFC Boulby Mine, over a kilometre underground.

The school closures meant the teams did not have access to physical Mindstorm robots.

A series of online coding events, which captured the core objectives of Remote<sup>3</sup>, were delivered weekly over 10 weeks. Each event also featured a short talk highlighting science in remote environments.

The initial audience was expanded from 60 participants to over 150.





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# Benefits, Challenges and Learned Best Practice



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# Benefits

The pandemic changed the way remote PE could be delivered.

- Video conferencing is much more ubiquitous in work and everyday life, and more feature-full, which makes remote PE easier.
- SCD had to create new remote activities, which will still be used after the pandemic.
- Lack of geographical distinctions has facilitated more interaction between the PE efforts of STFC two largest sites, the Rutherford Appleton and Daresbury Laboratories.



# Benefits

Remote PE brings its own benefits, which SCD will incorporate into a blended approach to PE going forward.

Engaging more people.

- Not limited by physical constraints of an STFC site, nor is access to it limited by geography.
- Many of our events have seen a x10 increase in the number of participants.

Less staff time required.

- The remote activities require a comparable amount of staff effort to their in-person equivalents, if not less.

Impact of a single event can be much longer lived.

- Events are recorded so they can be used as standalone resources in future.
- Resources sent to schools allow teachers to redeliver the activity themselves in future.

# Challenges

Remote engagement in a global pandemic brings challenges however.

Remote engagement in general:

- The remote activities can be much shorter and paced much slower than their in-person counterparts, reducing the amount of content covered.
- Remote PE also has its own challenges to safeguarding.
- Evaluating remote PE is inherently a different problem to evaluating in-person engagement.

Remote engagement in a global pandemic:

- Getting new staff involved with the SCD PE programme has been harder during lockdown.
- The sudden shift in the programme from in-person to remote engagement also makes comparisons of the evaluation data from this year to previous years difficult.

# Learned Best Practice

Over a year of delivering remote engagement, SCD and STFC has learnt a lot about how to do effectively.

To schools or other venues:

- Meet with local contacts (i.e. teachers / hosts) in advance to debug any technical / logistical problems.

To homes:

- Reduce the number of devices / screens needed where possible.

General:

- Using breakout rooms makes pacing of activities easier to gauge, but is staff intensive.
- Pre-recorded resources sound great, but participants value the “personal” nature of a live event.





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# Future



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# Future Plans

2021/22 has been planned from the outset to be a year of mostly remote engagement.

SCD will continue to improve the portfolio of remote activities that have been built in the last year.

- Working on lowering as many technological barriers to remote engagement as possible.

STFC plan on:

- An STFC-wide virtual work experience programme in June-August, consisting of intensive one-week virtual project placements for 60 students as well as a webinar series of virtual tours and talks.
- Piloting small in-person events towards the end of the year, to figure out how to do them safely.
- Blended approach of both in-person and remote PE beyond 2021/22.



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# Questions?



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# Thank you



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