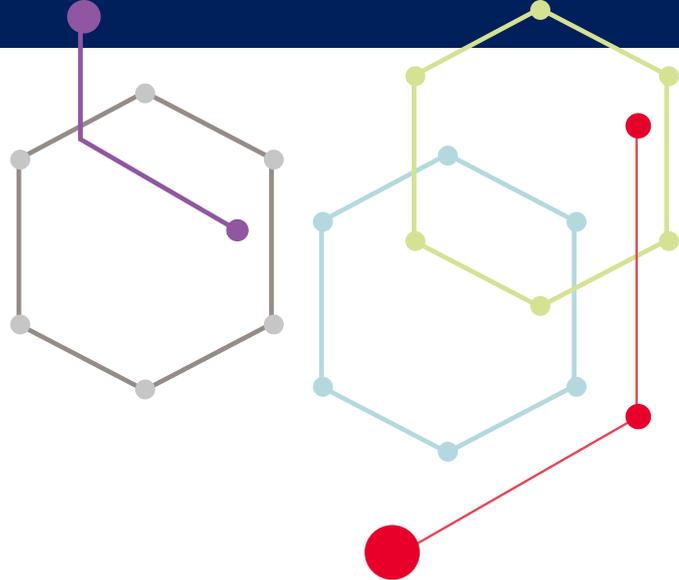# STEM Nation Award

Application guidance

For early learning and childcare settings, primary schools, secondary schools and additional support needs provisions within mainstream and special schools.
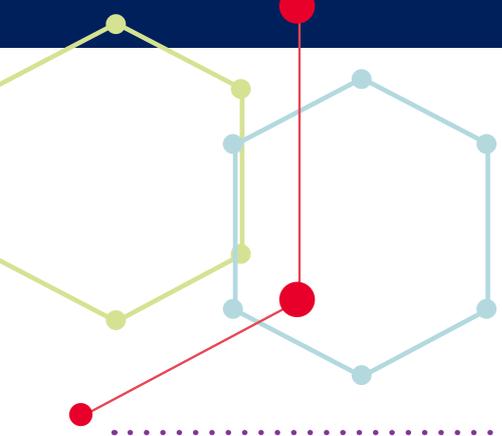
The following terminology is used throughout this guidance:

- For the purposes of this document, 'practitioner' is a single term which encompasses all staff and adults who are qualified and or registered to work with children and young people. This includes childminders, early learning and childcare practitioners, teachers, headteachers, setting managers, school support staff and technical support staff.

- The term 'setting' is used to refer to early learning and childcare settings, primary schools, secondary schools and schools or settings which provide specialist provision for learners with additional support needs.

- The term 'learning community' is used to refer to both structured and informal groups of settings where collaboration and joint working takes place. This may include

school clusters, associated schools groups, local management groups, joint campuses, schools under shared headship and collaboration between childminders, private nurseries and or local authority early learning and childcare settings.

- The term 'STEM partner' is used to refer to industry partners including employers, further and higher education institutions, academic or professional organisations, third sector organisations and also includes parents or carers who are part of the STEM workforce.

- The term 'STEM partnership' is used to refer to planned and sustained engagement between settings and their STEM partner(s). This is unlikely to include one-off site visits, workshops or competitions.

Contents

An overview of STEM in Scotland

In an increasingly fast-paced and technologically-driven world, Scotland's economic and social development is being driven by cutting-edge advancements in the fields of science, technology, engineering and mathematics (STEM). All sectors of education, training and lifelong learning have a key role to play in equipping Scotland's citizens with the specialised STEM skills and capabilities that will allow them to access these exciting opportunities.

The **STEM Education and Training Strategy for Scotland** sets out a vision which strives to improve STEM engagement across our society to boost our economy and enable all people in Scotland to thrive and adapt to our changing world.

The strategy aims to:
- build the capacity of the education and training system to deliver **excellent** STEM learning so that employers have access to the workforce they need;
- close **equity** gaps in participation and attainment in STEM so that everyone has the opportunity to fulfil their potential and contribute to Scotland's economic prosperity;
- **inspire** children, young people and adults to study STEM and to continue their studies to obtain more specialist skills; and
- **connect** the STEM education and training offer with labour market need – both now and in the future – to support improved productivity and inclusive economic growth.

Education Scotland has played a central role in delivering many of the STEM Strategy actions. One of the key actions for our organisation has been to develop a STEM awards programme to encourage and support whole setting and community approaches to STEM. This has been an exciting development for Education Scotland and we are pleased to now offer schools and early learning and childcare settings the opportunity to gain recognition for their commitment and achievements in relation to STEM. The awards programme will provide opportunities for settings to participate regardless of whether they are just starting out with STEM or already demonstrate aspects of highly effective STEM practice.

STEM Nation Award programme
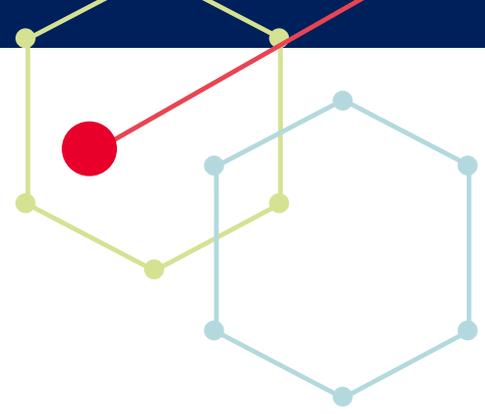
Who is the award for? Why should we apply?

The STEM Nation Award programme celebrates, promotes and builds effective practice in STEM education within and across sectors.

This prestigious national programme from Education Scotland supports a high-quality, cross-curricular, whole setting approach to STEM learning. The programme encourages involvement from staff across all curriculum areas and from leadership, teaching and support roles.

The programme helps settings address the four key themes of the STEM Education and Training Strategy for Scotland – **equity**, **excellence**, **inspiration** and **connection** - and provides national recognition to settings which have demonstrated commitment to STEM learning.

The STEM Nation Award programme has been developed in partnership with teachers and practitioners to provide a supportive framework for using STEM as a context and driver for improvement. The programme aligns with a range of education priorities including:

- Raising attainment in literacy, numeracy and other curriculum areas
- Improving gender balance and equalities
- Promoting equity and social justice
- Learning for Sustainability
- United Nations Sustainable Development Goals
- United Nations Convention on the Rights of the Child
- Developing the Young Workforce
- Skills for the future including digital skills, meta-skills and employability skills relating to STEM and green industries.

The award consists of five elements that you can work towards over time. Settings that achieve all five elements within a three year period will be eligible for the full STEM Nation Award.

The five STEM Nation Award elements are:
- Leadership in STEM
- STEM family learning
- Employability and STEM partnership working
- STEM curriculum and learner pathways
- Equity and equality in STEM

All early learning and childcare settings, primary schools, secondary schools and additional support needs provisions within mainstream and special schools are eligible to apply for the STEM Nation Award.

Support is available from your regional STEM Education Officer: STEM@educationscotland.gov.scot

Applying for award elements

What is the process?

Settings are advised to complete a self-evaluation of current STEM practice prior to applying for the STEM Nation Award. Education Scotland's **STEM self-evaluation framework** guides you through this process.

There are three simple steps involved in the application process:

1. Registration
You should visit **STEMnation.scot** and complete the online registration form.

2. Gather and submit evidence
After registering for the award, you will have a three year time period to gather and submit evidence for all five elements of the STEM Nation Award. You should use the template and guidance available on the **STEMnation. scot** website to help prepare your submission.

3. Action plan and validation
After submitting evidence for all five elements, you will be invited to share details of your STEM action plan with the validation team. Your action plan should clearly explain how you intend to share your STEM journey and successes with others. Further guidance is provided later in this document.

Following successful validation, your STEM Nation Award will be valid for three years. Any setting looking to renew their award after this period should prepare a revised STEM action plan and submit evidence demonstrating STEM practice which has been maintained, improved and introduced following the original application.

Self-evaluate and register online

Gather evidence

Submit evidence
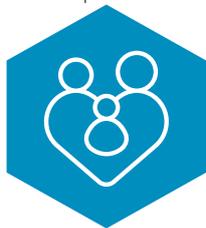
Action plan and validation
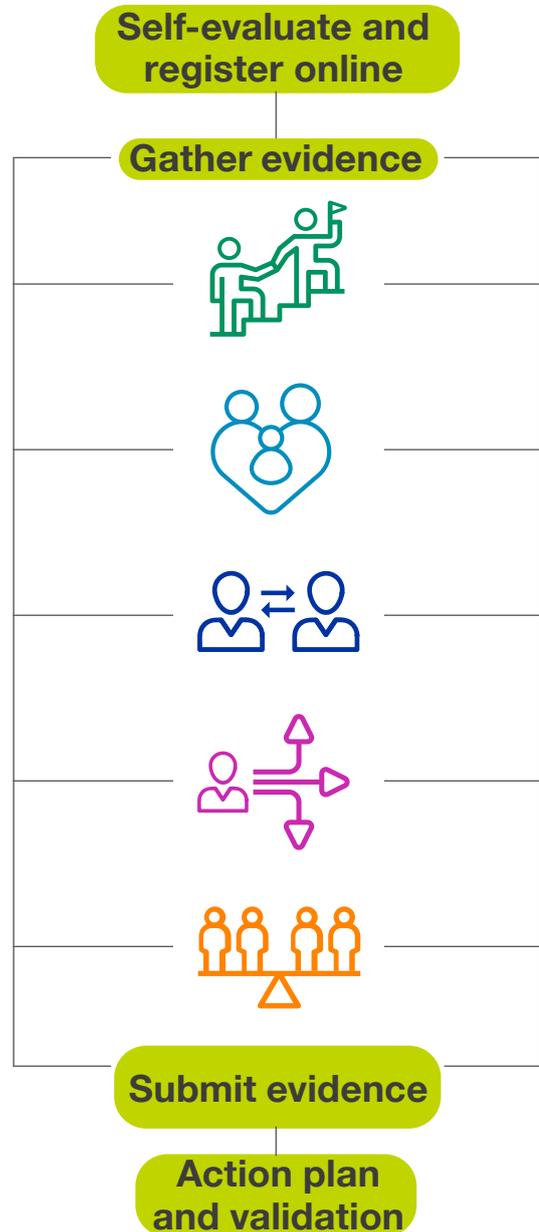
Useful links
- **STEM self-evaluation and improvement framework**
- Your regional STEM Education Officer can offer guidance and support with your application. You may wish to contact them via email: **STEM@educationscotland.gov.scot**

The five elements

Self-evaluate using the STEM self-evaluation framework
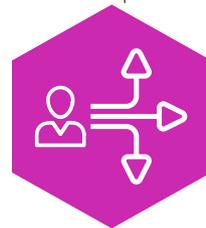
| Leadership in STEM	STEM family learning	Employability and STEM partnership working	STEM curriculum and learner pathways	Equity and equality in STEM
This element celebrates effective leadership at all levels including children and young people leading STEM learning.	This element recognises commitment to family learning and practice which is helping to build the STEM capital of learners and their families.	This element celebrates sustained collaboration between settings and their STEM partner(s) to develop learners' STEM and employability skills.	This element recognises the work of settings in developing an inspiring STEM curriculum and associated learner pathways.	This element celebrates the work settings are undertaking to address the issues of equity and equality in STEM.

STEM Nation Award
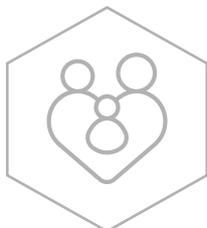
Leadership in STEM

Who is this for?

The **Leadership in STEM** element celebrates effective leadership at all levels including children and young people leading learning.

Senior leaders, practitioners and learners in settings applying for this element will all be contributing to the planning for and delivery of **excellence** and **inspiration** in STEM learning.

What does this look like?

- Our shared vision and rationale for STEM was developed in collaboration with a range of stakeholders.
- Where appropriate, a core team of staff provide effective planning, coordination and leadership for STEM.
- We make time for professional dialogue, collegiate learning and self-evaluation to support and inform improvements in STEM.
- Ongoing collaborative and collegiate working helps to build our STEM practice and develop our pedagogy.
- Practitioners demonstrate leadership in STEM learning and are helping to motivate, inspire and support others.
- We use data and evidence of learners' progress in STEM to help us meet the needs of our learners and promote equity and equality.
- Learners are empowered to take on STEM leadership roles and, in line with the United Nations Convention on the Rights of the Child (UNCRC), have a say in decisions that affect them, including their STEM learning.

Links to key documents and resources:

- **STEM self-evaluation framework**
- **How good is our school? (Fourth edition)**
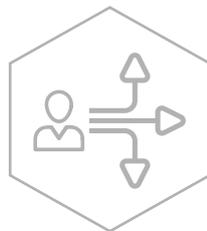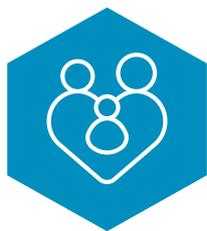- **How good is our early learning and childcare?**

- **Education Scotland: Professional learning and leadership**
- **Education Scotland: Raising Aspirations in Science Education**
- **GTCS Professional Standards**
- **Young STEM Leader programme**
- **United Nations Sustainable Development Goals**
- **United Nations Convention on the Rights of the Child (UNCRC)**

The online directory and research pages on **STEMnation.scot** provide further links to professional reading materials, resources and organisations offering professional learning opportunities.

Your evidence may include:

- A statement of your setting's STEM vision.
- Screenshots of your STEM self-evaluation.
- School, setting or faculty improvement plans featuring STEM.
- Feedback from practitioners after engaging with STEM professional learning activities.
- Photographs or links to videos of children and young people leading STEM learning, including as Young STEM Leaders.
- Samples of learner evidence from the Young STEM Leaders programme.

STEM family learning

Who is this for?
The **STEM family learning** element recognises practice and commitment to family learning within early learning and childcare settings and schools.

Settings applying for this element will be using STEM to make **connections** with the local community. This work will be helping to deliver **equity** in STEM by building STEM capital to support all learners and their families.

What does this look like?
- We are taking action to make a difference to where we live through community-based STEM and Learning for Sustainability projects. We work in partnership with relevant agencies, including community learning and development, third sector and further education partners, to develop and deliver relevant, fun and engaging STEM family learning opportunities.
- Parents and families are actively and meaningfully involved in STEM family learning programmes and activities.
- Practitioners work with parents and families to identify and reduce barriers to participation. Parents' own learning journeys are negotiated, valued and supported.
- STEM education is a regular feature in our school or setting events and communications with parents and families.
- Our parents and families are gaining an understanding of the importance of STEM skills, careers and pathways.

Links to key documents and resources:
- **STEM self-evaluation framework**
- **How good is our school? (Fourth edition)**
- **How good is our early learning and childcare?**

- **Learning together: national action plan**
- **Parentzone Scotland**
- **Education Scotland: Community learning and development**
- **What is family learning?**
- **Family Learning Framework**
- **Engaging parents and families – A toolkit for practitioners**

The online directory at **STEMnation.scot** provides further links to organisations and resources that offer professional learning opportunities and support in this area.

Your evidence may include:
- Survey feedback from parents and families.
- A calendar or outline of STEM family learning opportunities.
- Communication with parents and families regarding STEM such as newsletters, website information or social media feeds.
- Data showing the number of parents and families engaging with STEM family learning activities.
- Photographs or links to videos from family learning events.
- A supporting statement from a community partner that has benefitted from a STEM activity led by the school or setting.
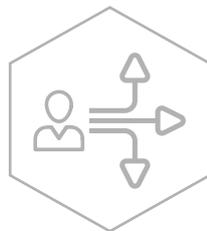
Employability and STEM partnership working

Who is this for?
The **Employability and STEM partnership working** element celebrates sustained collaboration between settings and their STEM partner(s).

Settings applying for this element will have developed structured and sustainable partnerships with employers and or STEM stakeholders. These partnerships will be helping to **inspire** learners and will be making **connections** to the world of work.

What does this look like?
- Our partnerships with employers, our regional college and or other STEM stakeholders enable us to deliver a wide range of STEM activities.
- Our partnership work supports professional learning and helps to build practitioner's leadership capacity and understanding of green industries, STEM workplaces and associated pathways and training opportunities.
- Employability skills, as outlined in the Career Education Standard (3-18), are being developed equitably through STEM and Learning for Sustainability contexts and are helping to support Scotland's transition to a Net Zero Nation.
- We work with our partners to promote positive perceptions of STEM that challenge stereotypes and preconceptions, plan a range of learning pathways in STEM and inspire learners and their families.

### Links to key documents and resources:
- STEM self-evaluation framework
- How good is our school? (Fourth edition)
- How good is our early learning and childcare?

- **Building the Curriculum 4: Skills for learning, life and work**
- **Education Scotland: Developing the Young Workforce (DYW)**
- **Education-Employer Partnerships: Key documents and tools**
- **Work Placements Standard**
- **Career Education Standard (3-18)**
- **My World of Work**
- **STEM Ambassadors Network**

The online directory at **STEMnation.scot** provides further links to organisations and resources that offer professional learning opportunities and support in this area.

Your evidence may include:
- Supporting statement from your STEM partner(s).
- Partnership agreement(s).
- Details of activities and events that have been co-designed and planned with your STEM partner(s).
- Feedback from learners, families or STEM partners following on from their engagement with a STEM partnership activity.
- Learner profiles showing development of employability skills.
- Photographs or links to videos of learners working with your STEM partner(s).
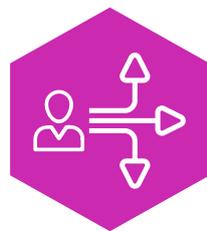
STEM curriculum and learner pathways

Who is this for?

The **STEM curriculum and learner pathways** element recognises the work of settings in developing an **inspiring** STEM curriculum.

Settings applying for this element will have considered the needs of all learners when designing their STEM learner pathways. The STEM curriculum will be delivered through the four contexts of learning: curriculum areas, interdisciplinary learning, personal achievement and the wider life of the school or setting.

What does this look like?

- STEM is helping us deliver literacy, numeracy and digital learning across the four contexts of learning: curriculum areas, interdisciplinary learning, personal achievement and the wider life of the school/setting. Our approach strongly supports Learning for Sustainability and the United Nations Sustainable Development Goals including learning about the climate emergency and threats to biodiversity, and reflects the articles of the UNCRC.
- We are using creative approaches in STEM to promote curiosity, open-mindedness, imagination, problem solving and diversity.
- Collaboration with learning community colleagues is helping us to improve continuity and progression in STEM learning.
- We are helping learners develop a belief in their own abilities. The support we provide to learners and their families helps learners make informed choices about STEM learner pathways, not limited by stereotypes.
- We encourage all learners to develop a wide range of skills and take account of labour market needs when planning the curriculum to prepare learners for a variety of STEM careers, including green jobs.

Links to key documents and resources:

- **STEM self-evaluation framework**
- **How good is our school? (Fourth edition)**
- **How good is our early learning and childcare?**

- **Building the Curriculum 3: A framework for learning and teaching**
- **Scotland's Curriculum**
- **Planning for and evaluating creativity**
- **Learning for Sustainability resources**
- **Outdoor learning resources**
- **Digital Learning and Teaching Strategy**
- **United Nations Convention on the Rights of the Child (UNCRC)**

The online directory at **STEMnation.scot** provides further links to organisations and resources that offer professional learning opportunities and support in this area.

Your evidence may include:

- An overview of your STEM curriculum and learner pathways.
- Details of your BGE and senior phase STEM offer and curriculum model (for secondary schools only).
- Collaborative planning documents from relevant stages, departments or settings within the learning community
- Samples of learner's work. demonstrating STEM skills including creativity, innovation and understanding of diversity.
- Photographs or links to videos of STEM-themed transition days or Learning for Sustainability and outdoor learning activities.
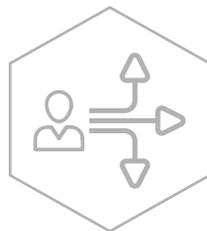
Equity and equality in STEM

Who is this for?
The **Equity and equality in STEM** element celebrates the work settings are undertaking to address the issues of equity and equality in STEM.

Settings applying for this element will have placed **equity** and inclusion at the heart of their STEM curriculum.

What does this look like?
- We are taking steps to improve gender balance, equality of opportunity, equity, diversity and inclusion through STEM.
- Sustained action challenges gender stereotypes and addresses practitioners' own unconscious bias.
- All learners across our setting are given opportunities for personal achievement in STEM.
- Preconceptions about career and learning pathways are being challenged. We actively seek opportunities to celebrate diversity in the STEM workforce with learners, parents and families.
- Our tracking and monitoring process helps us plan interventions to ensure progress and effective skills development, particularly for learners who face additional barriers.
- STEM learning has a positive impact on attainment and achievement in literacy, numeracy, health and wellbeing and across STEM curricular areas.

Links to key documents and resources:
- **Improving Gender Balance Self-Evaluation Framework**
- **STEM self-evaluation framework**
- **How good is our school? (Fourth edition)**
- **How good is our early learning and childcare?**

- **Education Scotland: Improving gender balance and equalities 3-18**
- **Gender equal play in early learning and childcare**

The online directory at **STEMnation.scot** provides further links to organisations and resources that offer professional learning opportunities and support in this area.

Your evidence may include:
- Improvement plans showing a whole-setting approach to tackling stereotypes, unconscious bias and inequity in STEM.
- Plans showing how learning about equity and equality is being embedded in the curriculum for all learners.
- Planning documents, resources and or evidence of interventions which tackle preconceptions about career and learning pathways.
- Tracking data or surveys that show changes in engagement and attitudes or improvements in attainment over time.
- Evidence of practitioners engaging with professional learning and research.

Action plan and validation

What happens next?

The STEM Nation Award programme has been designed to help individual settings improve their STEM practice. It also seeks to build the capacity of all schools and settings across Scotland to deliver excellent STEM learning experiences for our children and young people. The STEM Nation Award application process involves settings sharing details of their STEM action plan with the validation team.

The **appendix** includes an action plan template that you may wish to use. The template encourages you to outline the strengths of your setting and to identify next steps to support continuous improvement. It also prompts you to explain how you will share your learning and successes with others in your learning community, authority and or region. The task breakdown asks you to consider which staff and stakeholders are responsible for, accountable for, consulted on and informed of each action.

Although this guidance includes an action plan template there is no expectation that all settings will use this tool. You may already have an existing action plan for a STEM working group or a STEM section on your school or setting improvement plan. We encourage settings with existing STEM action plans to submit these rather than completing additional paperwork. We do, however, ask that your plan includes explicit details of how you intend to share your STEM practice. This may feature as part of the plan itself or as a supplementary document.

The final stage of the application process is validation. We will contact you once your element evidence has been reviewed to invite you to participate in the next validation window. Validation will be completed on a regional basis and therefore local arrangements may differ slightly. The most up-to-date information for validation in your region will always be available on **STEMnation.scot**.

The STEM Nation Award is valid for a period of three years. Settings looking to renew their award status at the end of this period will be eligible for fast-track approval. You will be asked to submit a revised STEM action plan and a brief update of element evidence. Your submission should demonstrate STEM practice which has been maintained, improved and introduced following your original application. You may wish to use the action plan template in the appendix. Further guidance on the element evidence required for fast-track approval can be found on **STEMnation.scot**.

Are you interested in becoming a validator?
We are always looking for people to join our validation team in a number of different roles. You may come from an education or STEM industry background. Validators have the opportunity to see some of the most innovative and exciting STEM practice across Scotland. If you are interested, please contact us at this address: **STEM@educationscotland.gov.scot**

Appendix: STEM action plan template

Name of setting	
SEED / CS number	

Staff involved	Key stakeholders

Our current strengths

Start date	Progress review date	Completion date

Successful outcomes What impact do we want to achieve?	Evidence and evaluation How will we gather evidence of impact?
Challenges What might hinder success?	**Solutions** How can we overcome these challenges?

Resources and staff development needs
What will we need to support this?

Sharing learning and supporting others
How will we share our learning with others in our learning community / authority / region / country?

Appendix: STEM action plan template

RACI Who is Responsible, Accountable, Consulted and Informed?		
Breakdown of tasks	**Staff and stakeholders**	**By when?**
e.g. Set up calendar of meetings for STEM working group.	Anne Example – Principal Teacher (**R** & **A**) Working group members (**R**, **A**, **C**) All staff (I)	August 2021
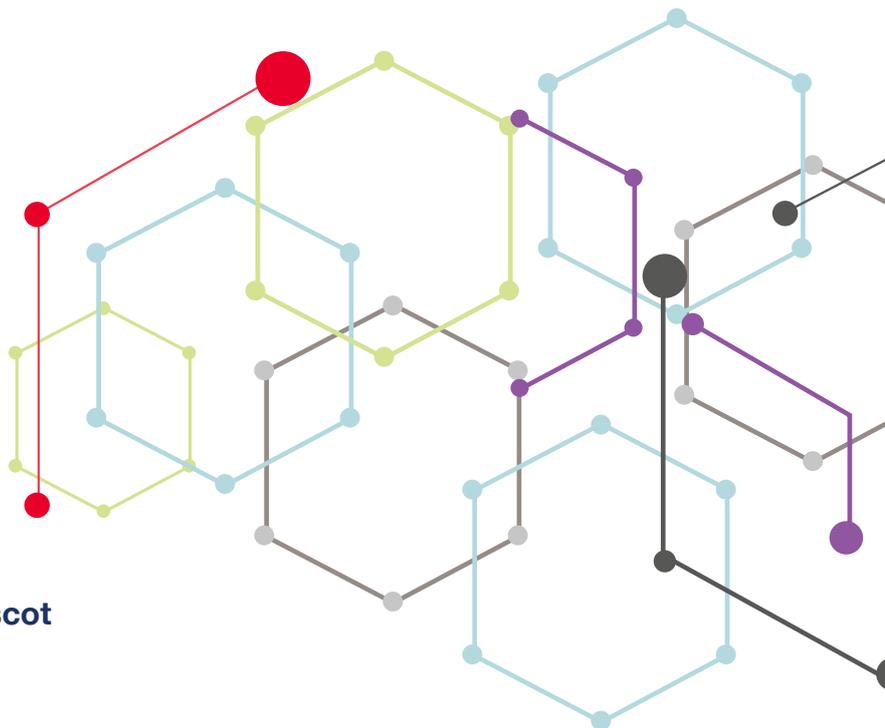
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Version control

Document version	Date of publication	Description of changes
1.0	July 2020	Original version
2.0	May 2022	General Updates
3.0	February 2023	General Updates