

# Building More Than Robots

**Draft Strategy**  
**2022-25**

**Open for consultation**  
**Not to be shared publicly**

# Foreword

In 2018, we established a new charity with an energetic team in pursuit of a well-defined mission, to make STEM less intimidating and more inclusive using robots, competitions, and role models from industry. We benefited from 30 years of programmatic efficacy and significant financial backing. The future was tangibly bright.

We made solid progress in our first two years. Brands were built, websites launched and operating models developed. Content was mapped, learning management systems and CRMs implemented. Hard-won relationships with schools were established. Partners were generous with their funding and their people. A series of explosive events were delivered. We became clear on the problem we were seeking to address and the impact we could achieve.

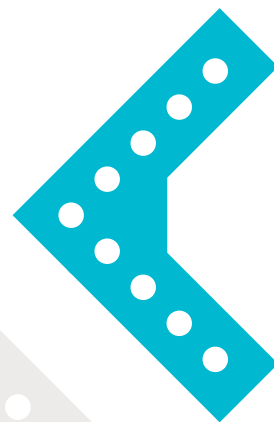
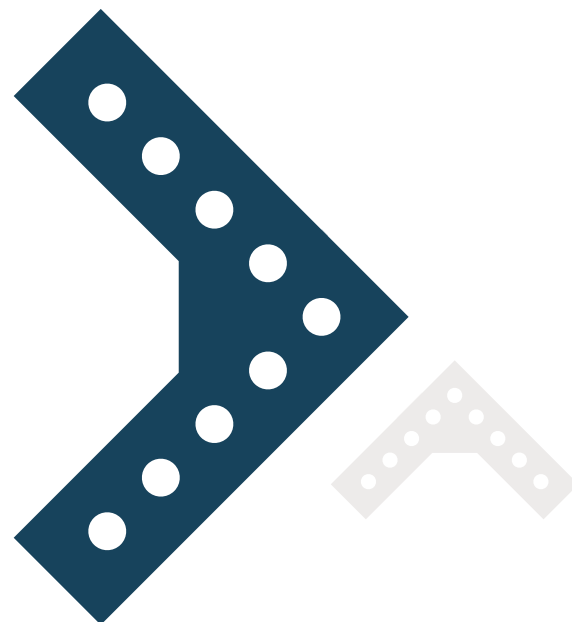
## Learn. Adapt. Repeat.

Like countless others, our charity was brought to a grinding halt in March 2020. This has not diminished the mission nor our resolve in achieving it. We have reflected hard on lessons learned and refined our approach. Now is the time to implement a strategy focusing our resources to maximise impact.

This is not about a grand vision for transformative change over decades. It's a tractable framework to take us forward into a new period of sustainable, intentional growth. Over the next three years, we will embed a well-targeted, quality, and scalable provision. Ensuring our programmes reach those who will benefit most. Being clear on what we are seeking to achieve, what we are accountable for and how we measure our impact. We will collaborate to achieve more, better, and sooner.

"I wish I had this when I was at school", is a statement I hear time and again from the teachers, mentors and volunteers who come into contact with our programme. **We're building more than a strategy. We're investing in the young people who will own their future.**

Ed Cervantes-Watson, CEO



"How better to explain what a career in STEM may be like than to set an exacting STEM challenge.

*FIRST* Tech Challenge UK has everything from engineering, building to coding. But above all, seeing the students work together, help each other and support each other has been a very rewarding experience. And not just the students; this challenge has helped the Computing and Design Technology departments to work together as part of a broader STEM initiative within the school."

**Sally Smart, Former Design & Technology Teacher,  
St. Philomena's Catholic High School for Girls**



# Where we are

**Automation, data, artificial intelligence and digital technology is driving change at an unprecedented rate.**

However, we are not evolving how we educate young people at the same pace. As the STEM skills gap continues, we risk leaving young people unequipped to take on tomorrow's challenges.



**62%**  
of young people doubt their ability to succeed in STEM<sup>1</sup>

**35%**  
of women are STEM undergraduate students, but...<sup>2</sup>

...women represent **24%** of the STEM workforce<sup>3</sup>

**1/3**  
young people are not confident in their next steps in education<sup>4</sup>

**More ethnic minority undergrads are studying STEM, however...**<sup>5</sup>

...they are less likely to complete than their white counterparts<sup>5</sup>

“These students come from areas where there are not a lot of opportunities, but this challenge gives them life experience. They get to do things here that they’d only do at university, and this experience is also inspiring many of them to pursue further studies at a university.”

**Karl Mahon, Teacher, Chiswick School**

**People with disabilities studying STEM has doubled, but they occupy...**<sup>6</sup>

... **75%** fewer roles in STEM than other industries<sup>7</sup>

on average **10** unfulfilled STEM roles per business<sup>8</sup>

each year **£1.5bn** of economic value is lost to STEM skills gap<sup>8</sup>

<sup>1</sup> Educational pathways into engineering, Engineering UK, 2020  
<sup>2</sup> Women in STEM Statistics, STEM Women, 2022  
<sup>3</sup> 2019 Workforce Statistics, Wise, 2019  
<sup>4</sup> Paving the Way, Sutton Trust, 2022  
<sup>5</sup> Baselines for Improving STEM Participation, Royal Society, 2020  
<sup>6</sup> Disability STEM data for students and academic staff in higher education, Royal Society, 2021  
<sup>7</sup> How Disability Can Help Close the STEM Gap, FE News, 2021  
<sup>8</sup> STEM Skills Indicator, STEM Learning, 2018

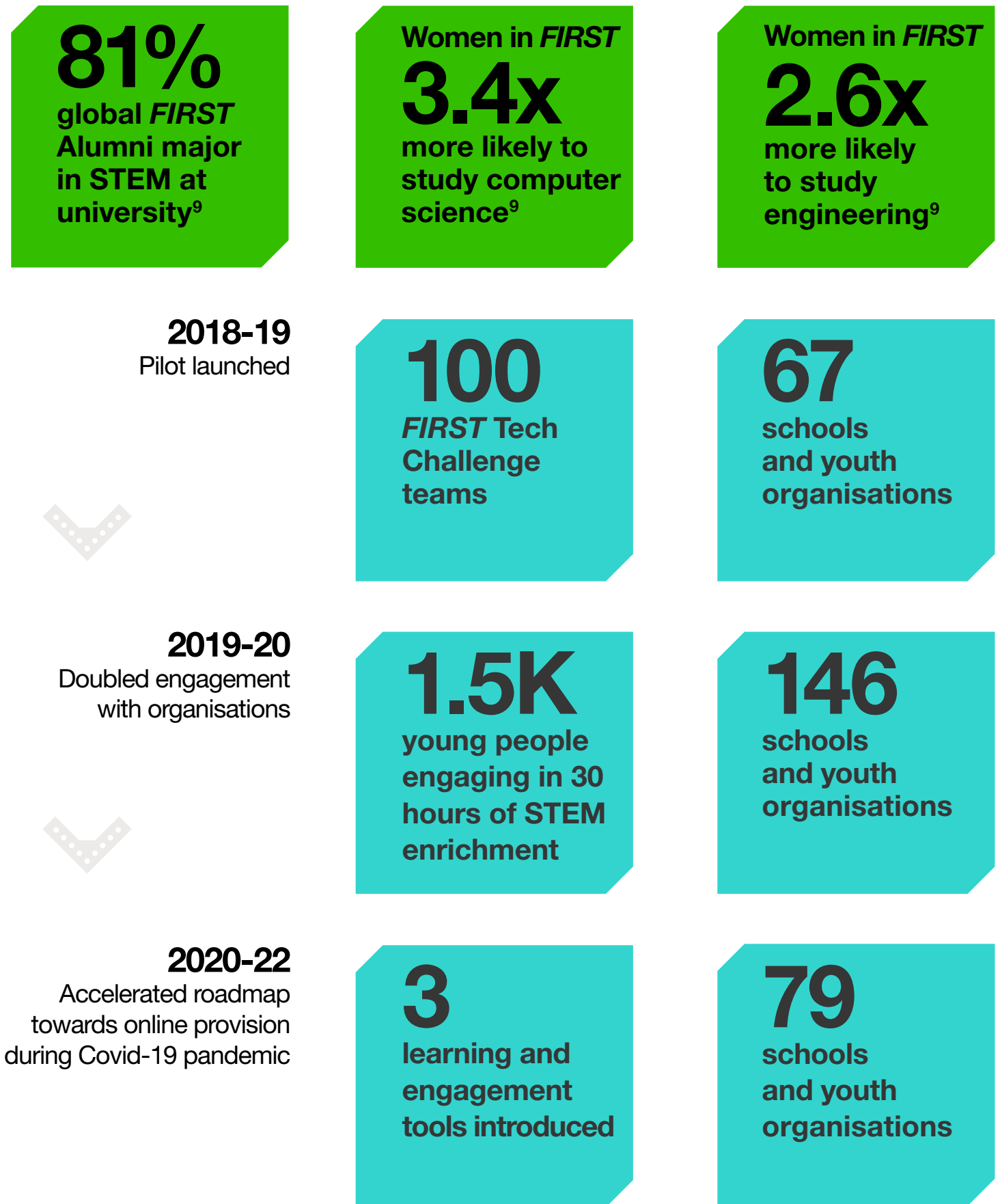
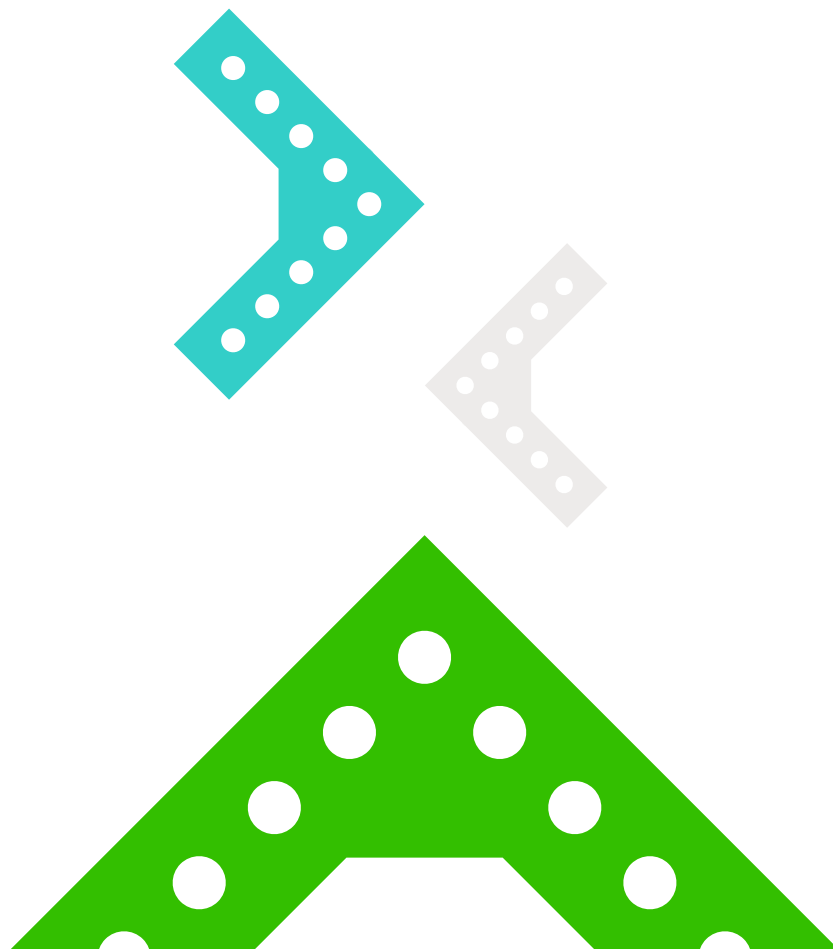
**We are not here to address a single aspect of the crisis, we are equitably investing in the most underserved young people.**

We want to bridge the gap between the classroom and the workplace. We believe an impactful learning environment for young people combines the best of both worlds with confident teachers, relevant resources, inclusive engagement approaches, useful tools and technology, cohesion with industry, real world application, a supportive community and empowered young people.

**As a young charity, we have built strong foundations.**

Our work is informed by 30 years of evidence-base from *FIRST*, a global name in robotics education. We have used this insight, coupled with an agile approach to development, to advance our mission in the UK.

**Now, we look to thrive in the future with this three year strategy, marking a new phase of intentional growth.**



<sup>9</sup> women participants of *FIRST* compared to control group who did not take part in *FIRST* – 2021 Longitudinal Highlights, *FIRST*, 2021

## Our vision

A world where young people are empowered to explore, challenge and grow into innovators, who will take on tomorrow's challenges.

## Our mission

To make STEM less intimidating, more diverse and inclusive, empowering young people to make informed choices about their future.

# Our values

### Learn, adapt, repeat

We continually learn from our experiences and others, to develop interventions which meet the needs of the young people we serve.

### Collaborate with pioneers

We work with innovative organisations in STEM who want to empower a generation to realise their potential.

### Drive change, don't wait for it

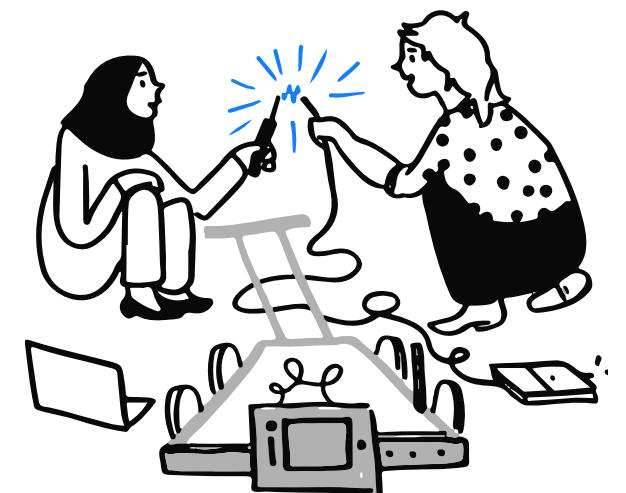
We step up and challenge what isn't working, using our knowledge and network to achieve success.

### Deliver efficiently

We operate in an agile and effective way, trusting in those we work with, to achieve impact at pace.

### Focus on outcomes

We follow an evidence-based pathway to impact, that demonstrates transformative outcomes.





# Our approach

## Flexible, expeditionary learning

We are supporting educators with a best-in-class STEM provision that is empathetic to the pressures they face, such as conflicting priorities, limited support and access to specialist expertise.

Enrichment programmes can often be self-selective, excluding young people who have less interest or motivation to pursue these activities. We aim to couple a flexible delivery approach with precise targeting to ensure we have the strongest potential for impact. Working with educators, our new targeting model will identify and reach those who will most benefit from our provision.



## Pillars of provision

Our educational experiences empower young people to own their future. Through self-directed and structured learning, they develop vital technical and interpersonal skills to apply in the classroom and the workplace. We achieve this through five pillars of provision, applied variably to our delivery methods.

### Content

Our accredited content – co-created with industry, educators and young people – is mapped to the KS3/4 curriculum, Gatsby Benchmarks and other attainment frameworks to suit all confidence levels.

### Technology

We familiarise young people with the tools they will use in their later education and careers. Makerspace, our educational platform, houses content in an easy to navigate format. Our online Engineering Portfolio enable teams to collaborate and document their progress from anywhere. Designed by software engineers at Bloomberg, the robotics simulator builds confidence in basic computer science skills, linked to the Teach Computing curriculum.

### Encounters

Interactions with employers is a key Gatsby Benchmark, but one most schools struggle to achieve. *FIRST* Tech Challenge mentors act as relatable role models from industry, helping to guide young people through the programme, sparking curiosity and challenging perceptions of STEM, while bridging the gap between the classroom and the workplace.

### Competition

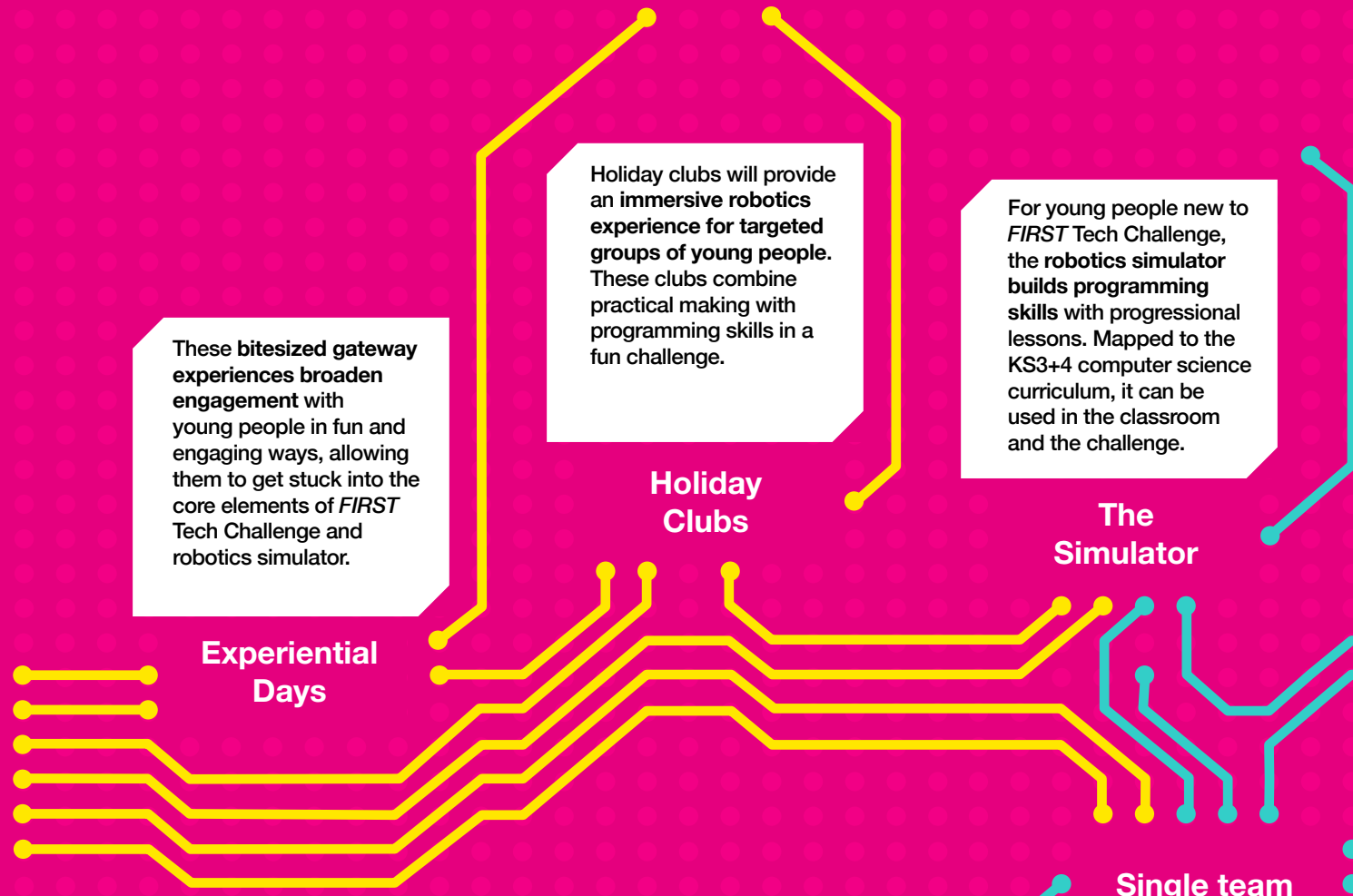
Our events are where STEM meets sport. From local meetups to national tournaments, teams apply everything they've learned to the game field. These events test more than robots; young people learn to overcome challenges together, sharpen their skills, build confidence and resilience.

### Recognition

Judged by industry, our challenge awards recognise all accomplishments in a team's journey, such as innovative design and engineering, collaboration, problem solving and community outreach. Each young person can also earn accredited awards through CREST and Industrial Cadets.



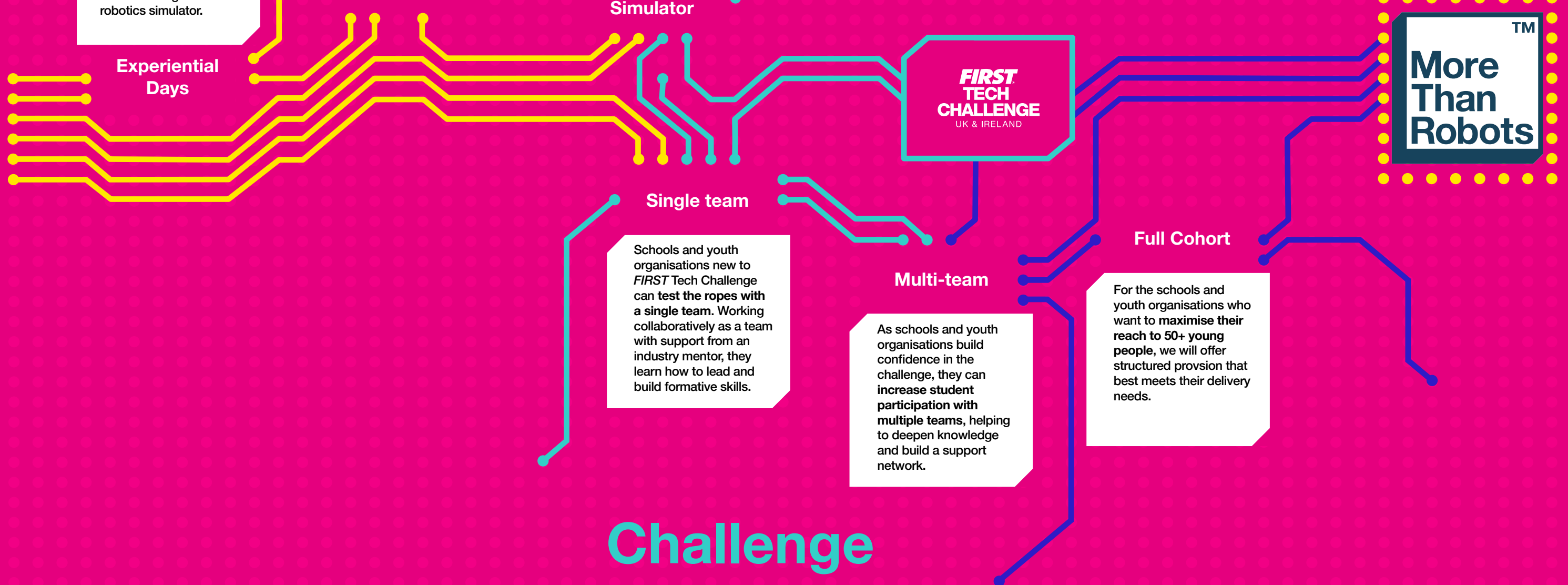
# Explore



# Progressional pathway

Providing organisations with the ability to choose how they enter the programme and progress through it will maximise the likelihood of uptake and continued learning as they become more invested and confident.

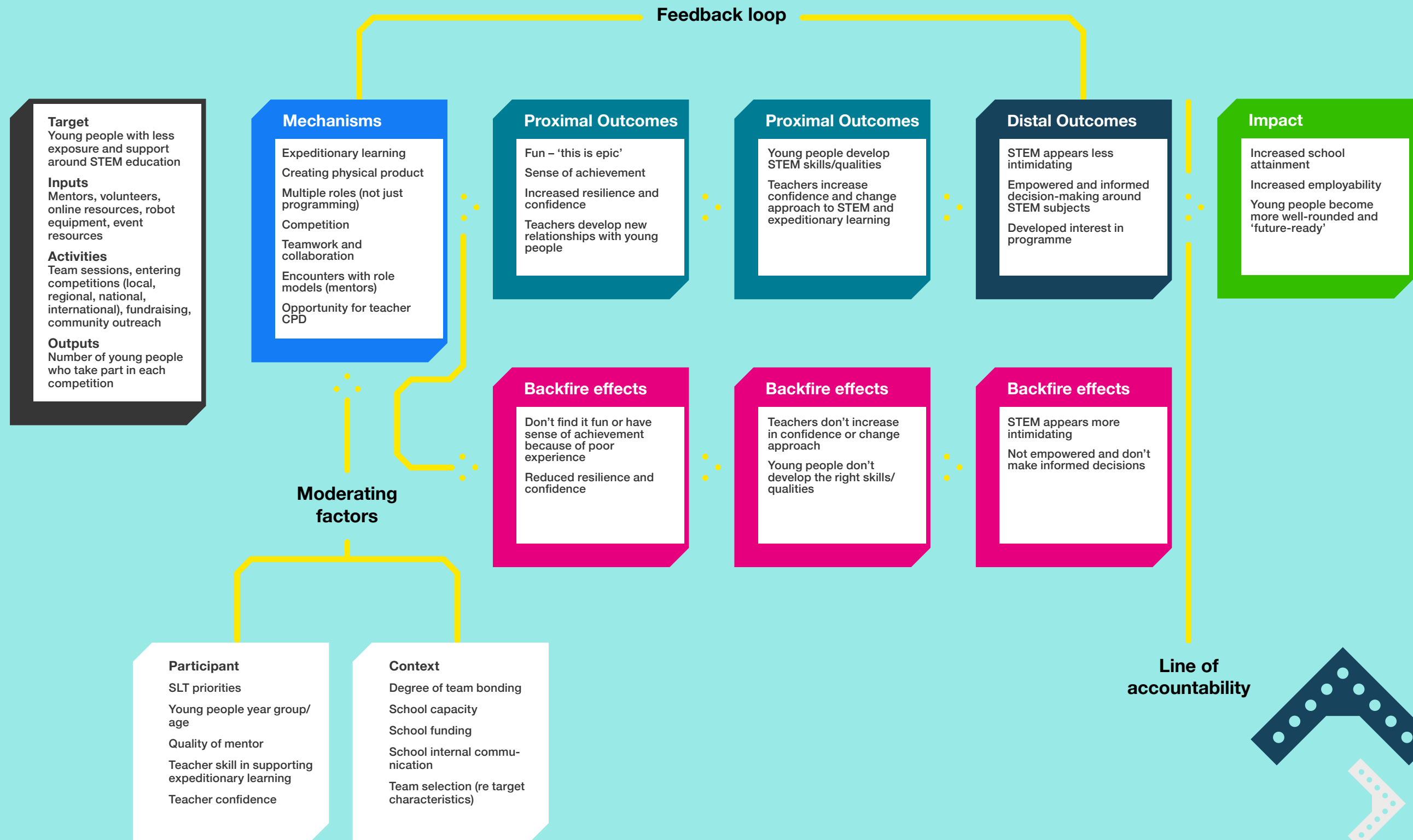
# Accelerate



# Challenge

# Theory of change

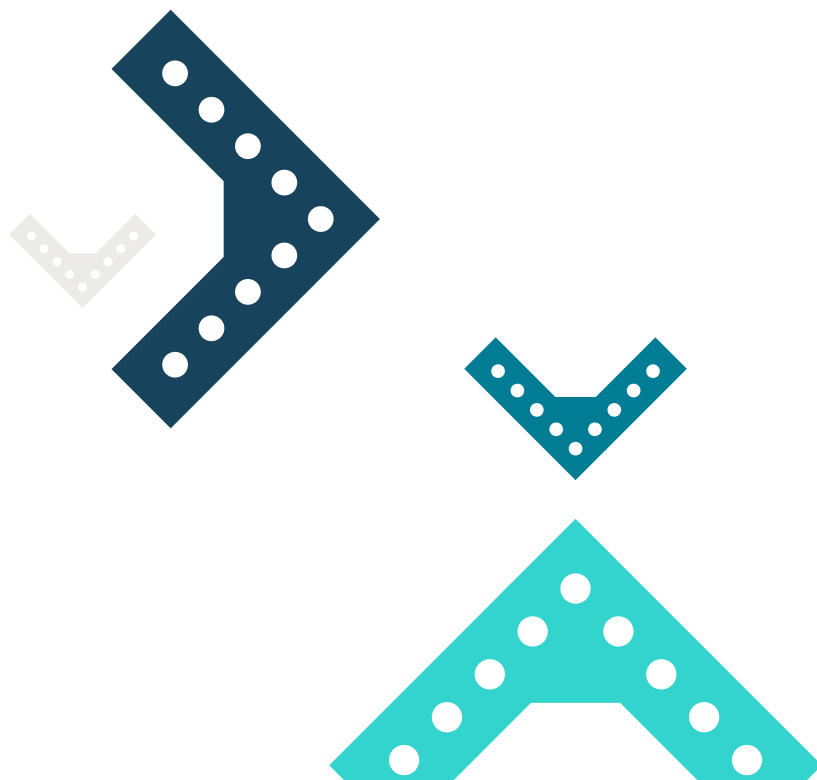
Our impact model was developed in 2020 with the Behavioural Insights Team, articulating a pathway to impact via *FIRST* Tech Challenge. It will continue to evolve as we further define our intended outcomes, areas of accountability and how our provision will adapt to meet demand.





# How we'll get there

**In three years, we have established a strong foundation. The next three years will enable us to validate what works and implement new approaches to target and scale our impact.**



## Our strategic goals

**Empower young people who are less engaged in STEM through accessible, quality provision.**



**Implement best-practice delivery that is well-targeted and sustainable.**



**Build a proactive and collaborative network to help achieve our mission.**



**Establish a transparent evaluation strategy to target, learn from, report on and respond to outcomes.**





**Empower young people who are less engaged in STEM through accessible, quality provision.**

### Instil confidence in programme facilitators

- We will provide comprehensive training and support for those who deliver the programme, with CPD for educators, mentor onboarding and volunteer training
- We will enlist a network of regional delivery partners to sustainably scale our operations

### Develop and maintain accredited educational content

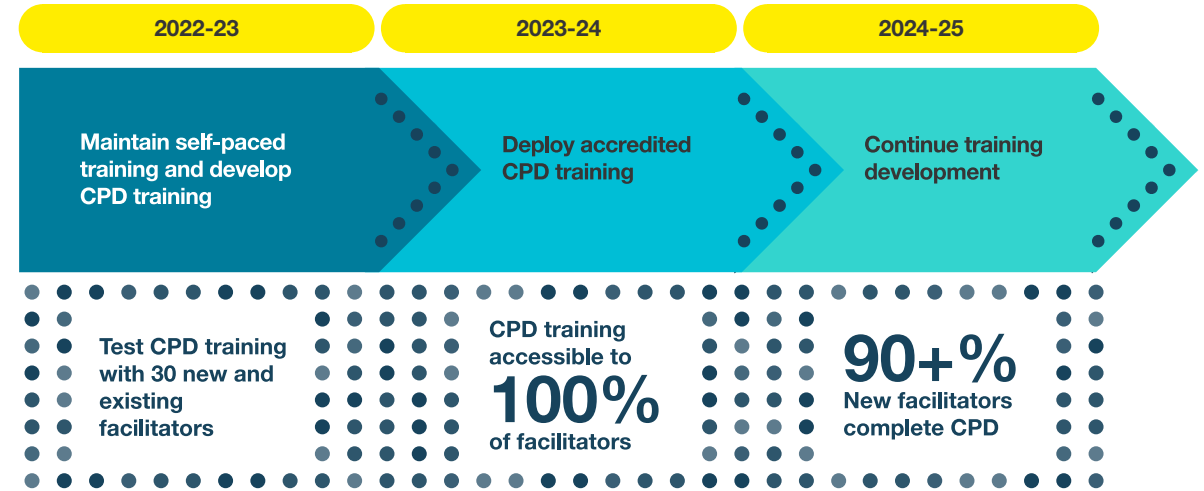
- We will ensure our content remains relevant and useful – mapped to the curriculum, Gatsby benchmarks and other quality frameworks
- We will continue to develop resources that support complementary delivery methods, including full cohort, in-curricular and extracurricular provision

### Implement a scalable events model

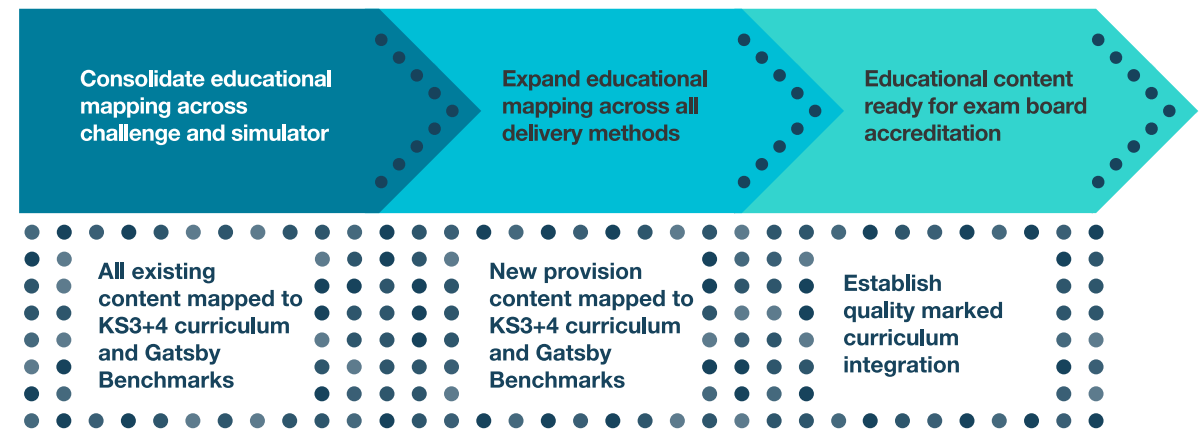
- We will enable local delivery partners to produce quality assured challenge events
- We will train local event coordinators to manage challenge events independently



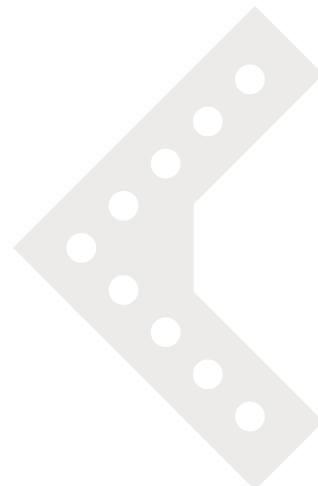
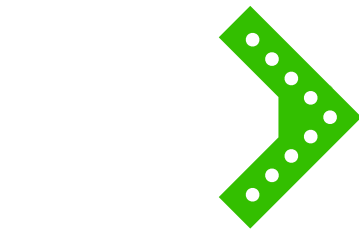
Instil confidence in programme facilitators



Develop and maintain accredited educational content



Implement a scalable events model





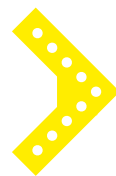
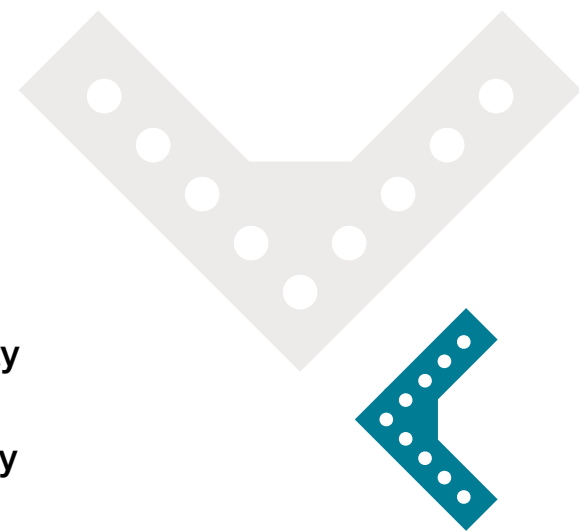
## Implement best-practice delivery that is well-targeted and sustainable.

### Define flexible delivery methods, which maximise accessibility and participation

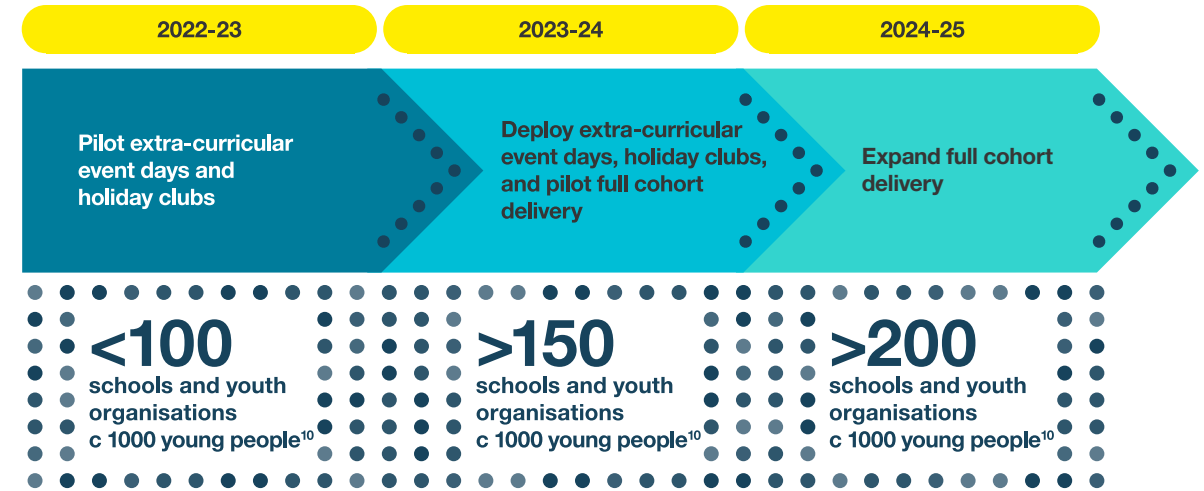
- We will test and refine a suite of in-curricular and extracurricular delivery models to provide schools and youth organisations with flexible participation routes
- We will make it easier to engage with the programme, using gateway experiences to build confidence and maximise uptake

### Embed the programme within the fabric of schools and youth organisations

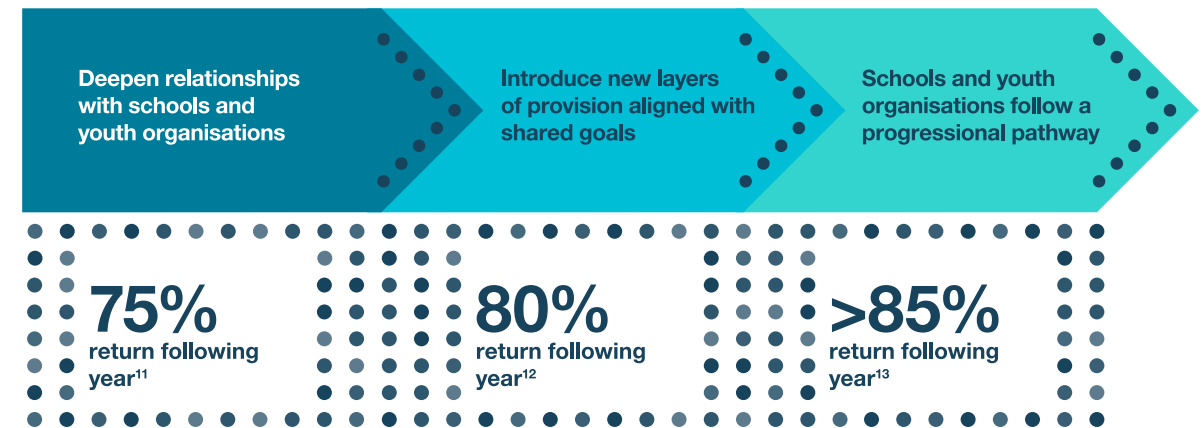
- We will develop strong relationships with schools and youth organisations, utilising a partnerships and outreach function to foster internal advocacy and trust within the Senior Leadership Team and wider school community including parents
- We will partner with organisations who already support the young people we seek to serve



Define flexible delivery methods, which maximise accessibility and participation



Embed programmes within the fabric of schools and youth organisations



"FIRST Tech Challenge UK enables our academies to deliver an engaging enrichment programme, career development opportunities and supports the STEM curriculum. The quality and reach of their programme is excellent."

**Jemima, Enrichment Manager,  
National Enrichment Lead,  
Ormiston Academies Trust**

<sup>10</sup> number of young people completing FIRST Tech Challenge, excluding all other programmes  
<sup>11</sup> Schools and youth organisations returning to a FIRST UK programme in 2023-24  
<sup>12</sup> Schools and youth organisations returning to a FIRST UK programme in 2024-25  
<sup>13</sup> Schools and youth organisations returning to a FIRST UK programme in 2025-26

## Build a proactive and collaborative network to help achieve our mission.

### Secure sustainable investment from sources with clearly aligned motivations

- We will invest in our income generation activities by expanding our fundraising function
- We will develop a new funding model, targeting diverse, sustainable income from individuals and organisations explicitly aligned with our mission
- We will create a value proposition which we can monetise

### Expand our delivery partner network to reach and empower underserved young people

- We will grow our Champion network of schools, youth organisations, colleges and universities, equipped to foster engagement
- We will work with industry partners, volunteering networks and local organisations to ensure every challenge team has access to an engaged industry mentor
- We will mobilise a community of volunteers to become long-term mentors, event staff and advocates

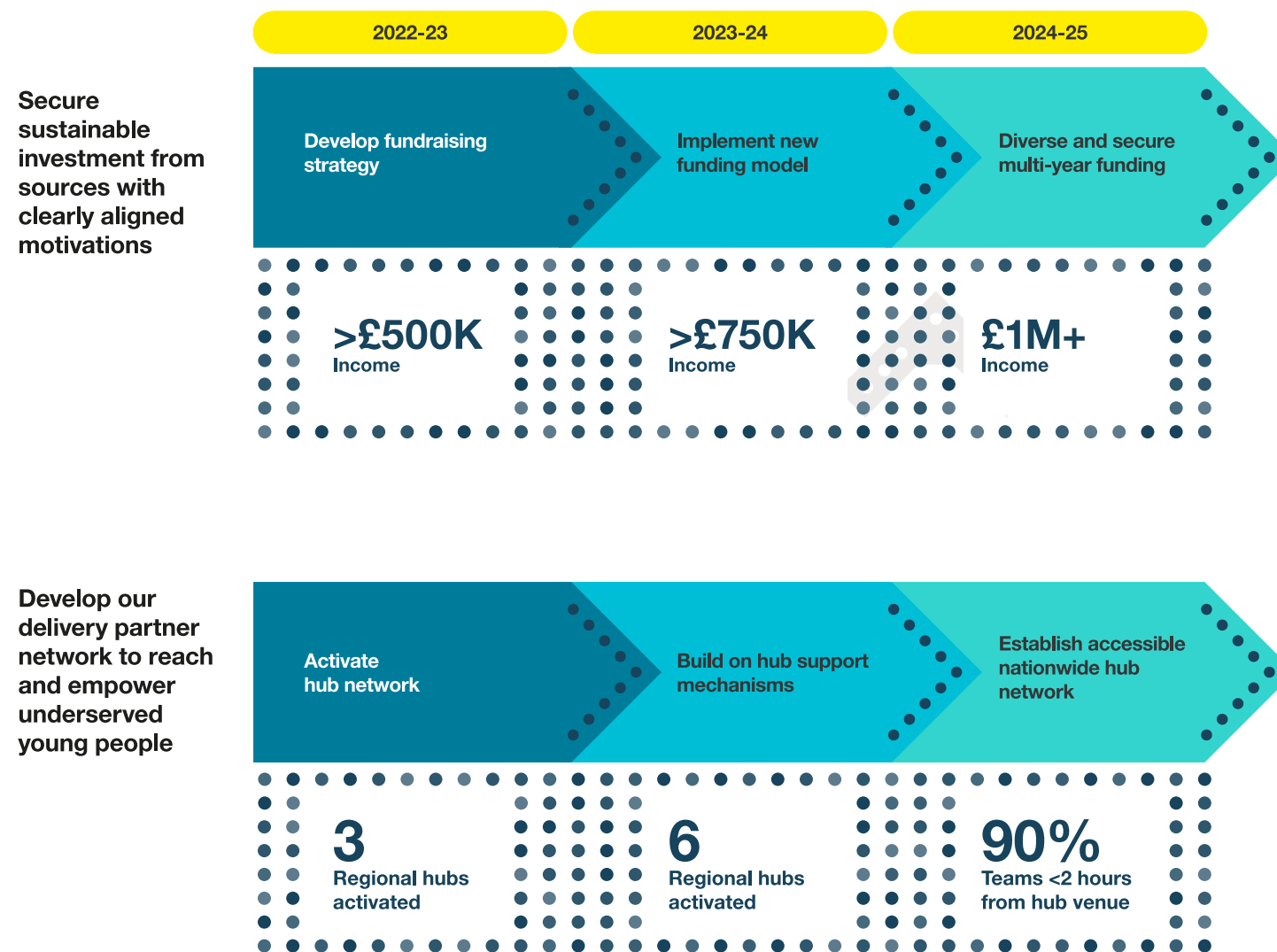
“When the pandemic began, Arm transitioned our employee volunteering programme to virtual overnight. Our colleagues remained as enthusiastic as ever to continue engaging with our charitable partners and I was blown away by how quickly *FIRST* UK was able to switch to a virtual delivery model for both schools and industry.

We've worked closely to trial a brand new, virtual model of mentorship and have also been able to actively engaged in the end-of- season competition through virtual judging this year; all thanks to *FIRST*'s determination to continue providing support to school teams irrespective of a global pandemic!”

**Anna Malan, Manager, Community and Inclusion, Arm**

### Implement governance that adds value and hold us to account

- We will recruit a diverse and experienced board of trustees proactive in developing relationships and advancing our strategy
- We will seek expertise and external input through specialist advisory groups to further inform our work







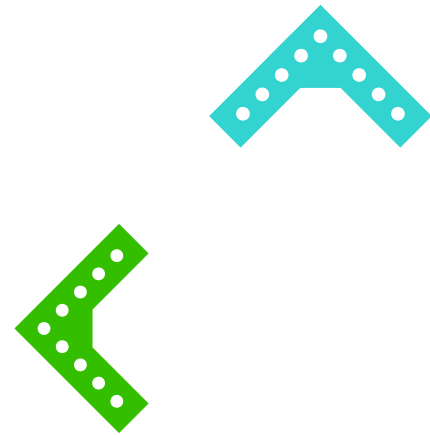
## Establish a transparent evaluation strategy to target, learn from, report on and respond to outcomes.

### Develop a precise mechanism for targeting young people

- We will implement a diversity and inclusion framework that enables us to target and develop our provision with consistency
- We will test new methods for driving participation amongst underserved groups

### Define a data strategy to monitor progress and evidence impact

- We will continue to refine and validate our Theory of Change as we expand our provision, defining what we are accountable for and how we measure impact over time
- We will implement a data strategy to monitor progress and evidence impact against our strategic goals
- We will build upon our evaluation practices with specialist expertise to determine the efficacy of our interventions



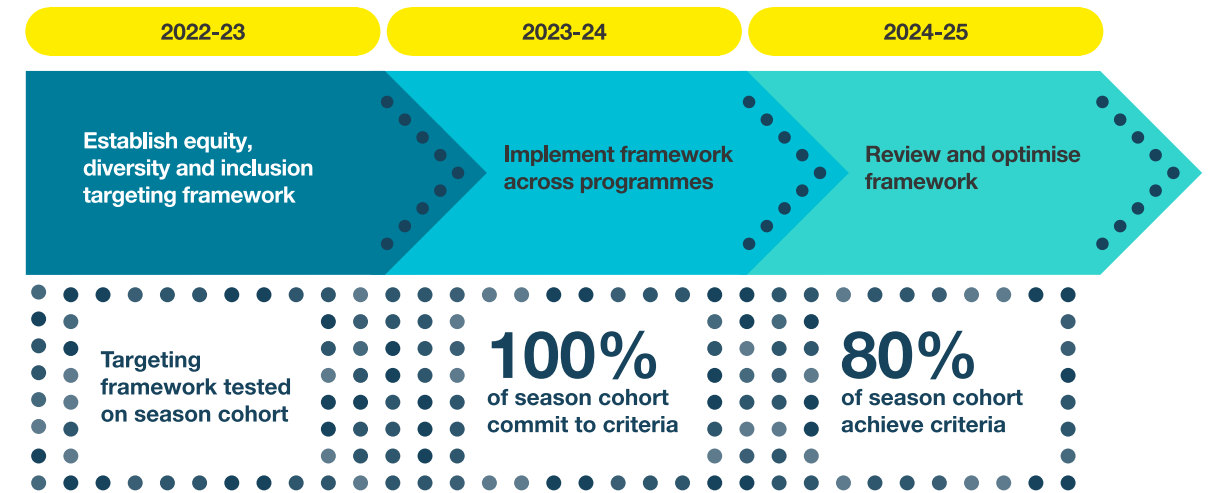
"I witnessed how a competition that has a primary focus of STEM, does so much more than that. It develops creativity, teamwork, confidence, resilience, inclusivity, humility and so much more. What a great programme! If you're not involved you're missing out!"

**Ben Barnes, Director of Computer Science, Outwood Grange Academies Trust**

## Continually gather clear insights to inform more effective outcomes

- We will trust in the voice of our network, using advisory groups to keep us informed and stress-test ideas
- We will facilitate effective reporting on participation experiences and outcomes within our community
- We will lay the foundations for a longitudinal study following a young person's outcomes from programme entry to early career

Develop a precise mechanism for targeting young people



Define a data strategy to monitor progress and evidence impact



Help us achieve our mission

# Help us achieve mission our

This strategy signifies a shift towards targeted interventions that maximise our impact. It reflects our understanding of the problem and confidence in achieving sustainable and ambitious growth.

## Thanks to our partners

To the pioneers who continue to invest in us and who have paved the way, thank you for catapulting our mission and elevating young people to achieve the unimaginable.

WE ARE BUILDING  
THE FUTURE

**VEDDIS**

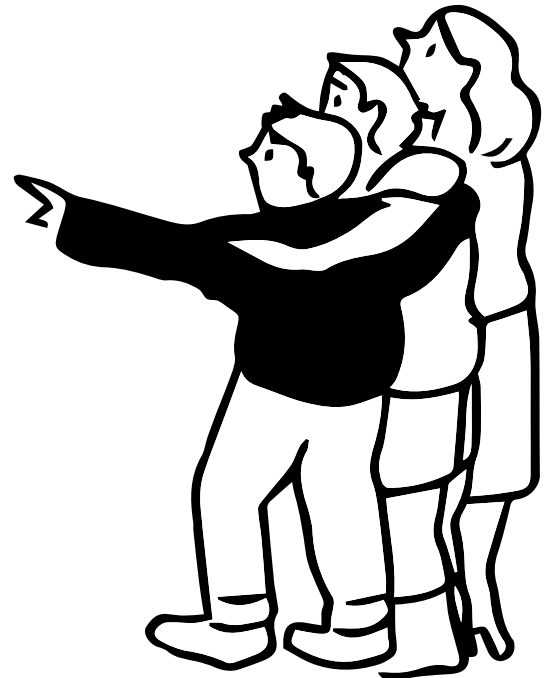


**arm**

**Qualcomm**



**Bloomberg**



## Help us build more than robots

If you share our mission and can help us get there, we'd love to hear from you.  
[hello@firstuk.org](mailto:hello@firstuk.org) @ftc\_uk