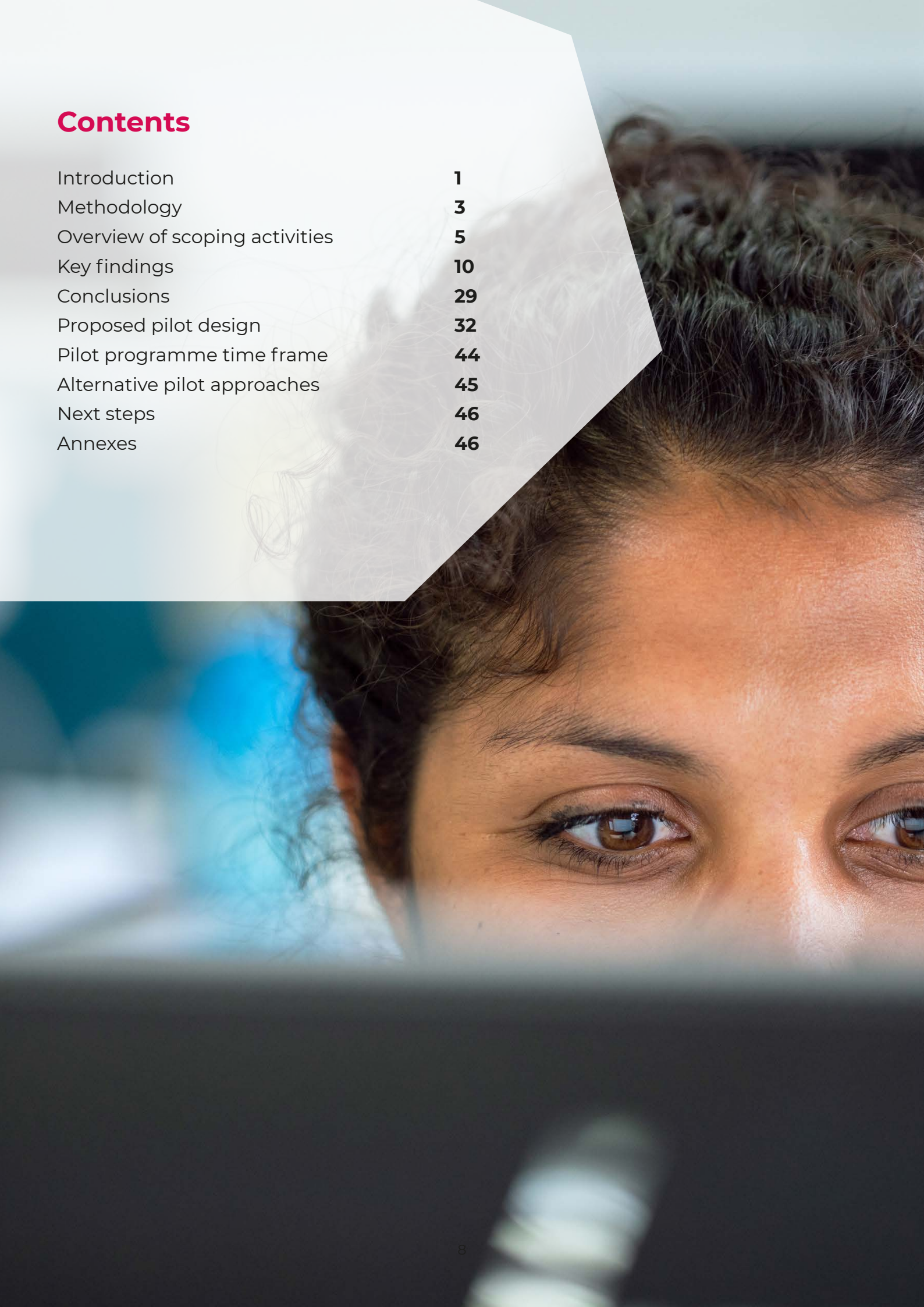
Royal Academy of Engineering

Inclusive Leadership Programme

Scoping and consultation phase summary report

Contents



Introduction

We know that the engineering industry is not sufficiently inclusive. It is also well understood that an organisation's leadership has an instrumental role to play in its culture.

The Royal Academy of Engineering's (the Academy) first inclusive cultures report, *Creating cultures where all engineers thrive*, identified that:

i. leaders have a critical role to play in creating inclusive cultures as employees will look to the most senior levels as an indication of what is acceptable and what is the norm.

ii. leadership must take action (for example, clear strategy and responsibilities, sufficient resourcing, data-driven organisational structures and processes, positive action programmes) to promote inclusion and bring everyone along with them.

While the inclusive cultures report was not focused on leadership, it made clear that more widespread inclusive leadership is a key part of addressing the inclusion deficit in engineering. As part of our commitment to address this, the Academy is currently developing a new and ambitious inclusive leadership programme that will support engineering leaders to increase inclusion in industry. With funding from the UK government, the Academy will launch a pilot in early 2023 and then iterate and refine the approach, with the support of our awardees, to maximise our impact.

To ensure the pilot is evidence-led and meets the needs of the engineering community, the Academy carried out an in-depth four-month period of scoping and consultation between June and September 2022.

This report outlines that scoping exercise and the key findings which we have used to shape the programme.

At the Academy we are committed to:

- excellence and innovation in our programming – being evidence-led and trying new things
- gathering and sharing evidence of what works and what doesn't work in respect of diversity and inclusion.

For these reasons, we are publishing this summary report of our scoping and consultation phase. We invite our stakeholders to explore the basis upon which we designed our inclusive leadership programme and consider whether any of the findings of this scoping may assist them in their own efforts to increase inclusion in engineering. The report is structured as follows:

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- **Methodology**
- **Overview of scoping activities**
- **Further insights to support rationale**
- **Key findings that emerged from the scoping activities**
- **Enablers and blockers**
- **Recommendations**
- **Recommended approach to pilot**

> Leaders have a critical role to play in creating inclusive cultures as employees will look to the most senior levels as an indication of what is acceptable and what is the norm

Methodology

Through a mixed-methods approach to our scoping – comprising a literature review, semi-structured interviews and a participatory systems mapping workshop – we sought to establish:

- What is impactful in developing inclusive leaders and what provision is already available that may be applicable to the engineering industry?
- What does inclusive leadership look like in an engineering context and are there any barriers and enablers to inclusive leadership that are specific to the industry?
- Where can and should the Academy intervene to leverage the greatest impact?

The scoping phase consisted of the following activities:

Impact-focused literature review

The Academy commissioned delivery partners, Stirling Learning Solutions and the Institute for Educational and Social Equity, to explore 'what is the impact of different interventions on increasing inclusive practice and behaviours of leaders?' through a systematic literature review.

The report was guided by Hallinger's (2014) conceptual framework for 'reviewing reviews of research' and asked:

- What are the central topics of interest, guiding questions, and goals?
- What conceptual perspective guides the review's selection, evaluation and interpretation of the studies?
- What are the sources and types of data employed in the review?
- What is the nature of the data evaluation and analysis employed in the review?
- What are the major results of the review?

The review identified studies that focused on inclusive leadership as a critical variable or subject area. It then examined these studies to identify evidence of how and where leadership programmes have made a demonstrable difference in leaders' inclusive behaviours and practice.

The authors searched several databases, including EBSCOhost, Emerald, Google Scholar, Science Direct, and ProQuest, using keywords such as inclusive leadership; inclusive leadership practices; inclusive leadership practice and professional development; leadership performance and inclusive leadership; organisational change and inclusive leadership; and organisational development and inclusive leadership.

The authors went further to conduct a targeted search for selected peer-reviewed leadership journals, including The Leadership Quarterly, Leadership & Organization Development Journal, Leadership, and Journal of Leadership Studies. Moreover, given the interdisciplinary nature of leadership, the authors searched for inclusive leadership literature among other selected non-leadership journals (for example, the Academy of Management Journal, British Journal of Management and Human Resource Management Journal) and reports.

Semi-structured interviews

The Academy conducted 35 one-to-one stakeholder interviews. The interviews explored the following themes, all within the context of engineering industry:

- Experiences of inclusion
- Defining inclusive leadership in practice
- Case for inclusive leadership
- Leaders and their support needs
- Identifying enablers and blockers to inclusive leadership
- Evidencing lasting impact on culture change

The interviews were conducted based on a semi-structured set of questions. For example:

"Please describe a time where you experienced non-inclusive leadership and what was the impact?"

Different sets of questions were developed for different audiences (for example, leaders, employee network representatives and human resources professionals).

Due to the openness of interviewees, the interviews were incredibly rich and highlighted a broad range of inclusion challenges and opportunities within engineering. The Academy undertook a qualitative analysis of the interviews to draw out key findings that could inform our approach to this pilot programme.

Participatory systems mapping

The Academy commissioned delivery partner, Perspectivity, to run a participatory systems mapping process, resulting in a systems map, to seek new insights into the complex dynamics of diversity and inclusion in the engineering industry. It also aimed to provide a different view of potentially impactful ways to approach an inclusive leadership initiative.

To develop and iterate the thinking, Perspectivity delivered two systems mapping workshops. The workshops engaged 64 stakeholders from industry, academia, non-profit organisations and government and most people attended both workshops.

The first workshop was held online for a half-day on 15 August 2022. Participants were invited to share personal experiences of inclusivity in engineering. The workshop approach was inspired by the principles of Appreciative Inquiry, which seeks what is "right" in an organisation, its success, or its life-giving forces.

Following the workshop, Perspectivity identified emergent aspects of the map for further discussion in the second workshop.

The second workshop was held in person on 5 September 2022 and prompted participants to consider the following:

- What is the role of leadership in creating more inclusive cultures within engineering?

- What are the crucial ingredients needed for an impactful inclusive leadership programme?

The outputs of workshop discussions were overlaid with systems thinking theory on leverage points - *Thinking in System by Donella Meadows* - to demonstrate the interventions that have the potential to be most impactful on increasing inclusion in engineering industry.

The outcomes of both workshops and the interview process were used to create a comprehensive systems map, showing the relationships between the key variables in the system and indicating where in the system actors, with a focus on leadership, can intervene to enable a more diverse and inclusive engineering industry.

Research participants

Throughout the scoping phase, considerable efforts were taken to ensure a diverse range of perspectives were consulted. Four key stakeholder groups were engaged through this process:

i. Current leaders in the engineering profession at all levels, including role model individuals who are displaying best practice.

ii. Employees from underrepresented groups in engineering, including chairs of employee networks in engineering companies and organisations that represent underrepresented groups within engineering.

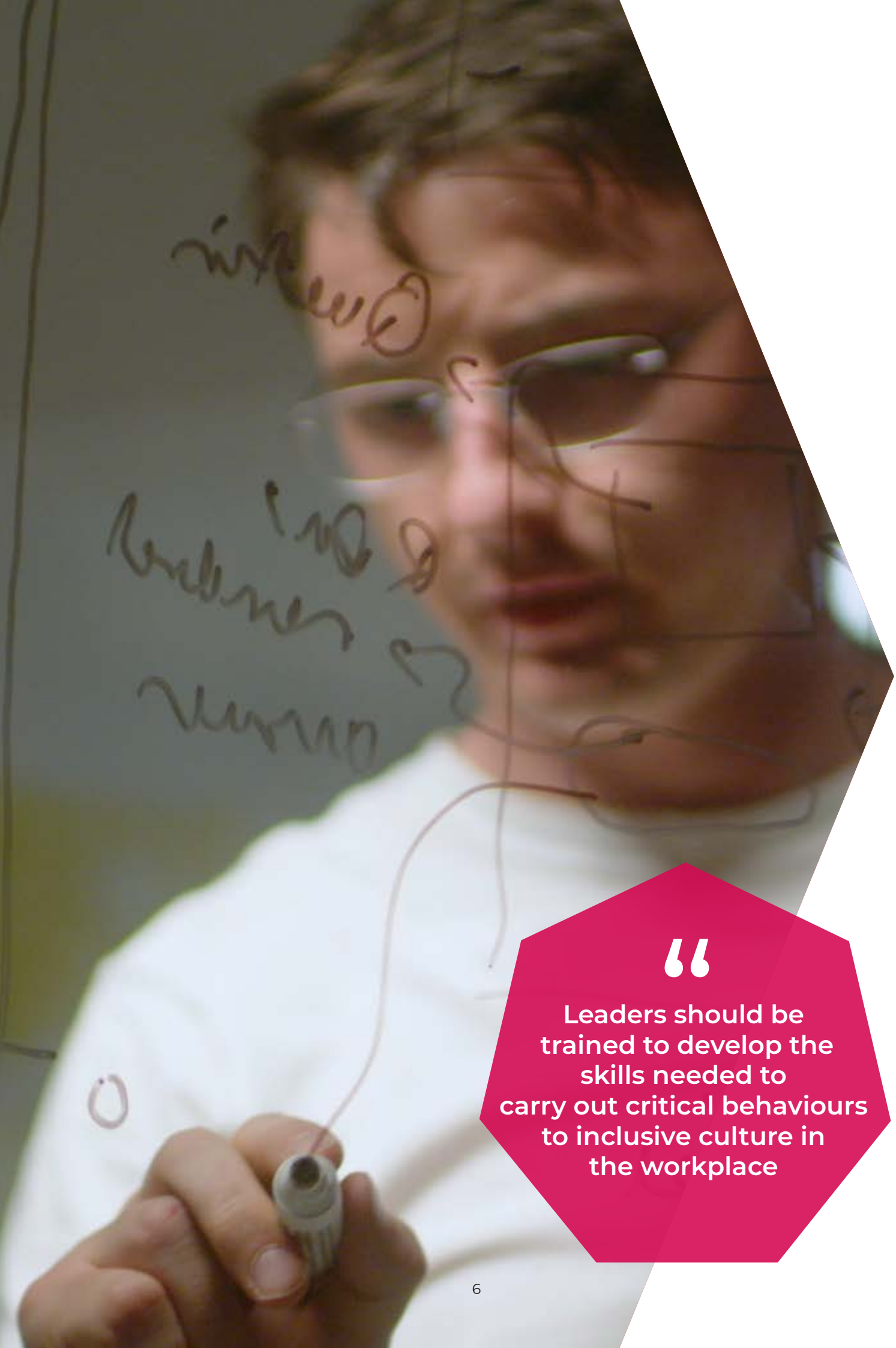
iii. Human resources (HR) and equality, diversity and inclusion (EDI) professionals.

iv. Knowledge partners, including academic institutions with research on leadership and/or inclusion, providers of inclusive leadership services, and role model organisations who are demonstrating progression leadership on EDI.

Across these four stakeholder groups we aimed for a balance on the following:

- organisation size
- organisation type
- sector
- discipline
- UK region
- career level
- select diversity characteristics (age, gender, ethnicity, sexual orientation, disability, religion/belief, military background).

We believe that these efforts allowed us to represent the 'whole system' in this process and to gain a holistic view of how engineering leaders can enable inclusion for all.



> **Leaders should be trained to develop the skills needed to carry out critical behaviours to inclusive culture in the workplace**

Overview of scoping activities

What follows is a high-level summary of the key findings from each of the scoping activities, as they relate to the inclusive leadership programme pilot.

It is important to note that the scoping process resulted in a richness and depth of information, some of which extends beyond the core decisions in respect of the pilot design and, therefore, beyond the scope of this report.

The wider insights gathered will inform:
(a) the finer detail of the pilot programme content and format; and

(b) the Academy's other diversity and inclusion programmes and activities where relevant.

Impact-focused literature review

The review identified that, despite the significant number of interventions which purport to develop inclusive leaders, there is very little evidence that their impact is being measured. There is a corresponding dearth of information on whether and how different interventions increase inclusive practice and behaviours of leaders in organisations.

That said, there are a few helpful findings and recommendations relevant to this pilot programme:

- The majority of the training programmes within and for organisations have minimal impact on inclusive leadership behaviours and practices. Leaders should be trained to develop the skills needed to carry out critical behaviours to inclusive culture in the workplace.

- It is effective to use coaching and mentoring interventions to facilitate inclusive behaviours for the long term, however both must have pre-determined aims and objectives. Specialised training and mentorship programmes with a clear path to promotion need to be in place for individuals from underrepresented groups to help retain employees and change the makeup at the top of the organisation.

- The case for EDI in engineering can be used to drive inclusive mindsets; *"the capability of individuals to recognise the value of workplace diversity and to use this information to guide thinking and behaviour"*.

- It is important to remember that inclusion is a multi-layered construct which is assessed and practised at an individual, group, organisational, or societal level, and inclusion can be created and sustained at all these levels. Tied to this, the concept of inclusion should be driven both by top-down leadership and bottom-up engagement.

Participatory systems mapping workshops

In order to map the system in a useful way, the discussion and resulting outcomes of this participation were multi-layered. Some of what emerged was a new way of representing aspects of the wider relevance of diversity and inclusion in the engineering industry. Accordingly, there is much from this process which will inform the Academy's work more broadly, beyond the pilot.

Key findings for the pilot include:

- **The systems map** that emerged from this participatory research process is based on the "pipeline of engineers," which visualises how individuals navigate in, through and sometimes out of the engineering industry. This approach highlights that there are many reasons why individuals who are currently underrepresented in the engineering industry are less likely to choose to study, work, or stay in engineering. Inclusion is experienced at the individual level and leaders need to be aware of and able to address the multitude of reasons for a diversity and inclusion deficit.
- **Shifting the mindsets of leaders** and the people around them is the highest-potential leverage point for enabling change within a system.
- **Senior leaders are important role models** and well positioned to make the business case for inclusive engineering explicit and appealing to take others along. Employees are likely to look at the most senior colleagues in their organisation as an indication of what is acceptable and what is the norm. If senior leaders don't show inclusive behaviour, employees may not feel compelled to do so either.

Semi-structured interviews

As with the participatory systems mapping, thanks to the generosity of the stakeholders we spoke to, the interviews produced a richness of information with value beyond the design of the pilot. As outlined in the introduction to this section, this report does not capture the full extent of that information but rather focuses on the key findings and recommendations relevant to this pilot programme.

Key among these:

- **Leadership takes many different forms and shapes** – it does not only exist at the top of organisations but can be found at all levels. Inclusive leadership skills can and should be developed at different levels within organisations.
- **The engineering industry has a crucial role to play in ensuring inclusion in wider society.** Future engineering leaders must consider the societal and stakeholder perspective, not just the shareholders perspective. They need the capacity and willingness to focus on engineering inclusive outcomes and inclusive decision making about the work that engineers do.
- **Leaders can build an inclusive culture within industry beyond their organisation** by influencing through partnerships and their supply chain. The Academy can offer support to companies in this area to maximise impact across the industry and to make its offering distinct from internal inclusive leadership initiatives in engineering companies
- **Mentoring, sponsorship and coaching are considered useful mechanisms of support** for different leadership needs but they need to be set up well in order to be effective.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Key findings

The key findings that have emerged from all scoping activities are summarised below. The findings are separated into six categories:

1. **Positioning the initiative within the wider context**
2. **What does inclusive leadership look like in the engineering industry?**
3. **Inclusion challenges at play in engineering**
4. **Changemakers – who to engage to catalyse change**
5. **How to maximise our impact**
6. **What should we do? Pilot format and content**

1. Positioning the initiative within the wider context

Society

The inclusion challenges at play in engineering organisations are intrinsically linked to systemic inequality in wider society. During our scoping, the most mentioned inclusion issues were transgender inclusion, systemic racism, the impact of COVID-19, neurodiversity, and the cost-of-living crisis. Discrimination behind some of these is more visible than others, but all are important. Employees affected by these issues outside of organisational walls carry the impact of these pressures with them when they are at work. Furthermore, some employees who are not affected by these issues want to develop their understanding to be able to discuss them with confidence and act as effective allies to their underrepresented colleagues.

Additional complexity and challenge comes from the turbulence of current times. It is a time of significant systemic flux at the political, economic and technological levels from Brexit to COVID-19 and the war in Ukraine. There is increasing intergenerational tension as expectations of the workplace post-pandemic differ and consternation grows among younger generations, including in respect of the climate crisis. Businesses are also dealing with ambiguity post-Brexit in regards to the future of legal frameworks. As a result of the turbulence of recent and current times, some businesses have faced and continue to face existential threats. As a result, leaders are having frequent conversations around resilience, preparedness, and sustainability.

This wider societal dynamic has several implications for engineering leadership and our pilot:

- Leaders need to acknowledge the societal inequality outside of the workplace and understand how it can impact their employees at work. Efforts to create a 'utopian' organisational culture within this wider context of systemic inequality can seem jarring for underrepresented groups. Inequality should be recognised, challenged and support offered to affected staff where needed.

- To provide high quality engineering solutions for society, many engineering companies want to increase the diversity of their staff so they can draw on the different perspectives, experiences, and ways of thinking that can bring. At the societal level, a more diverse and inclusive engineering industry can increase the ability to address big issues. Leaders need to be able to factor in different perspectives, values, and beliefs into the safe running of an engineering environment.

- Employees working in partner or supply chain organisations will face some similar inclusion challenges, which offers a possible opportunity to collaborate and influence.
- Leaders should be approached and engaged with compassion.
- Inclusion is part of the solution for navigating complex problems and non-inclusion is a barrier to resilience in the current context.
- The current state of flux can be seen as an opportunity for disruptive change.

Industry

There was a general consensus that inclusion has improved a lot in recent years. It was broadly believed that some examples of non-inclusion from 10 to 20 years ago wouldn't happen today.

Despite improvements, however, there are still instances of serious discrimination, such as women having reported sexual assault and harassment. For example, several scoping participants reported examples of this conduct still occurring on construction sites. There is also evidence of a significant difference in the level of EDI maturity among different organisations across the industry. In some instances, there is a need to sort out basic rights-based inclusion issues before tackling more nuanced aspects of inclusive culture.

> **"I think the first thing I would say is we've made a lot of progress. It sometimes doesn't feel like it, because there's still a long way to go. But when I look back and when I talk to people about some of the things I experienced early in my career - it is a very different world now, and a very different experience, I think, for people entering the workplace. But as I said, that doesn't mean to say it's all fixed, by any means."**

The diversity deficit in engineering was seen by many as a key barrier to developing a more inclusive culture, as well as a symptom of the lack of inclusion. Many people noted that engineering faces a particularly acute challenge in addressing this.

> **" When you study engineering as a woman it's like being in an abusive relationship."**

People noted that engineering is perceived to be an industry that is better suited to men and not well-suited to women. It was also highlighted that, in some minority communities, engineering is not seen as a desirable or appropriate profession for children to aspire to join. Numerous participants also voiced the concern that a ceiling on progression for women and minority ethnic engineers put people off joining the profession. It is also seen as a dirty and labour-intensive industry that is not well paid. The breadth of engineering and the artistic, creative elements of engineering are not realised.

Adjusting this perception would help attract the right and more diverse talent.
In the engineering industry, as well as more broadly in society, there is increased pressure on leaders to act on EDI and a stronger recognition of importance of EDI. It is rarer for leaders to refuse to engage altogether because more and more of them understand why EDI is important. That said, our scoping identified a common problem of leadership agreeing with the importance of EDI but not taking action.

Key findings

Within the broad spectrum of diversity, people in the engineering industry appear most comfortable talking about gender and LGBTQ+ issues (except for transgender inclusion). There has been a significant growth in LGBTQ+ employee networks and higher identification rates of LGBTQ+ staff in recent years. However, scoping participants felt the engineering industry was less comfortable talking about ethnicity and that this conversation is considered more awkward for employees, less advanced and less coordinated than other areas of diversity.

Given the pressure on leaders to act on EDI, it is perhaps unsurprising that many inclusive leadership initiatives have been created by learning and development providers in recent years. Furthermore, many large engineering companies already have their own internal inclusive leadership initiatives in place (for example, large scale mandatory e-learning on inclusion for all staff, or a more in depth leadership development programme for senior leaders with inclusion embedded).

However, as identified by the literature review, there is little robust evidence of the impact of existing initiatives. Furthermore, our scoping identified a gap in how well-tailored some of these offerings are to the engineering context.

This wider industry context has a number of potential implications for the pilot:

- A need to support leaders to translate their knowledge of the importance of EDI into taking action.
- Ensure that leaders are able and willing to have more difficult conversations and are confident in addressing a wide range of diversity characteristics.
- Meet organisations where they are in terms of their EDI maturity – sort the basics out first if needed.
- Consider some specific focus on tackling sexual assault and harassment on work sites.

The Academy's unique position

The scoping revealed that the Academy has something valuable and unique to offer amongst the inclusive leadership initiatives that already exist.

The Academy is a convenor in the engineering space, a role which is extremely valuable and should be maximised. Morally, inclusion is not a space to be competitive in and there are many organisations working on inclusive leadership within engineering and beyond. Through this initiative, the Academy could help to bring together different providers and engineering organisations, to strengthen collective knowledge and expertise, and to avoid duplication of work.

There is value in leaders learning from other leaders outside of their organisation who can bring new perspectives.
Many inclusion challenges are similar across different contexts, however strategies to manage these can vary. The Academy's programme could add value by connecting engineers operating in different contexts (for example, organisation size, disciplines, sector) to share knowledge and learn from one another.

The Academy is funded to deliver a transformational strategy, which sees systemic change across the industry.
This enables us to pursue innovative programming, which combines targeting outcomes for individual leaders and their organisations with maximising learning through practice and sharing lessons across the industry. Inclusive leadership courses and programmes are, all too often, seen as operational matters within an individual company, where there is little to no incentive in sharing what has not worked, as well as what has, outside the company.

The Academy can test solutions and share the full breadth of lessons, be they positive or negative, in a neutral way.

The Academy's knowledge of and connections within the engineering industry, combined with our expertise in the area of diversity and inclusion, make it well placed to develop a programme which:

(a) is tailored to the needs of the engineering industry and its leaders; and
(b) considers what inclusive leadership means in practice in an engineering context. Some suggested facets of engineering that would make this programme distinctive included: neurodivergence, mental health, working in safety-critical industries, and delivering work that directly serves society.

The Academy can leverage its position as an EDI thought leader within engineering to amplify role models and share best practice for engineering industry. The Academy can also leverage its Fellowship and wider networks of engineering organisations of all sizes to be ambassadors for this programme and to test approaches in different organisational contexts.

One participant felt the Academy's uniqueness was linked to ethics, sustainability and EDI agendas within one organisation and a combination of these factors could be integrated into the inclusive leadership goals and objectives.

Key findings

2. What does inclusive leadership look like in the engineering industry?

Unsurprisingly, stakeholders in the scoping noted that inclusive leadership is critical to being an effective engineering leader in the modern world.

They identified many different qualities, characteristics and behaviours that define what is it to be an inclusive leader in the engineering industry, and these perspectives will help the Academy to guide leaders on how to role model inclusion within the workplace and beyond.

> **"If you're not being inclusive, you're not doing your job properly."**

Being inclusive is critical to being an effective engineering leader. One participant suggested that the term 'inclusive leadership' is outdated as it presents inclusion as an add-on or an optional leadership style rather than the reality that good leadership means being inclusive in the way that you lead.

> **"If you're going to be a leader today, we have to recognise we are operating in an increasingly diverse and complex and ambiguous environment. And that means that these skills are skills that all leaders need - inclusive leadership is not an add-on, it's part of the job."**

At a very high level, the scoping identified two key aspects of inclusive leadership in engineering:

i. Inclusive leaders help to build and maintain inclusive cultures both in their organisations and, through partnership, beyond

As identified above, there are many reasons why individuals who are currently underrepresented in the engineering industry are less likely to choose to study, work, or stay in engineering. Inclusion is experienced at the individual level.

To increase and fully benefit from that diversity, companies need to be able to hire and retain diverse talent, make everyone feel included, and provide conditions that allow everyone to perform at their best.

The scoping also identified the inter-connectedness of companies across the industry (and beyond). Inclusive leaders are those who not only focus on building and maintaining an inclusive culture within their organisation, but also influence the practices of other organisations through partnership and supply chain.

ii. Inclusive leaders drive inclusive engineering outcomes

Engineers serve the wider society. The problems engineers choose to focus their resources on tackling and the solutions they engineer can shape and have the power to transform this unequal society. In order for engineers to serve all members of our diverse society, there is a need for awareness of the varying needs of different stakeholders and the engineering of inclusive outcomes to meet these needs. Accordingly, engineering inclusive outcomes is a critical component of being an inclusive engineering leader.

To achieve this, future engineering leaders must consider the societal and stakeholder perspective, not just the shareholders perspective, and the impact that the engineering industry has on the wider world.

To be most effective in its performance and develop better products and services for all, the engineering workforce needs to be representative of the society and the work delivered by engineers needs to consider the needs of all groups in decision making, especially those who are most vulnerable in society.

3. What does inclusive leadership look like in the engineering industry?

Through our scoping, we identified several challenges within the engineering industry that leaders must be aware of and able to address in order to be inclusive.

Many of these are not unique to the industry but provide important context for any programme content. What follows is not an all-encompassing list, rather the most often-mentioned challenges. These insights will inform the content for this initiative.

i. There is a lack of awareness and knowledge about the barriers facing underrepresented groups in engineering and a lack of strategies in place to support these employees effectively.

In some cases, there was even a lack of understanding of the rationale for protected characteristics or why there was a need to collect data on socioeconomic background. Awareness and knowledge building is required for all identities, however the following areas in particular were considered to be misunderstood: transgender inclusion; neurodiversity and hidden disabilities; menopause; and the workplace experience of armed forces reservists and veterans.

Neurodiversity was flagged as an issue that is particularly relevant to engineering as engineering roles attract neurodiverse talent. Armed forces reservists and veterans are commonly found in the defence sector within engineering, however the way their skills and experience as reservists and veterans interact with their job is not yet well understood. In addition, as military background is not a data point in diversity monitoring forms, the number of people impacted is unknown.

ii. There is a huge underrepresentation of engineers who are women, minority ethnic and/or from lower socioeconomic groups

This underrepresentation is particularly acute at senior leadership level. There is also a lack of data in respect of representation of other groups. These problems have been understood for a while. Numerous participants also highlighted the following concerns:

- There is inadequate focus on inclusion of trans and non-binary people in the industry. Their identities and needs, therefore, often remain hidden and they are not well represented by their organisations.
- Underrepresented groups frequently have to adapt their behaviour in order to progress (for example, adopt more typically masculine traits; masking gender identity).

> **“ From our perspective, there are no feminine females in strong leadership roles, because those that are slightly older, that have got to the leadership roles, have had to adjust their behaviour and become more masculine and aggressive.”**

iii. There is overdependence on under-represented groups to deliver action and this work is not recognised or rewarded fairly

Whilst engineering companies are getting much better at listening to the voices of underrepresented groups (for example, through employee networks), many under-represented groups felt the onus was on them to drive forward inclusion for themselves and for others. There is a tension where majority leaders want the work to be shaped by those affected by the barriers, but underrepresented groups want leaders to be taking more ownership and responsibility for the delivery of this work.

Internal work to promote inclusion is critical for improving company culture, however the efforts of underrepresented groups are often not recognised or rewarded. Furthermore, this work to drive forward inclusion can also be emotionally exhausting for underrepresented groups if they continually face barriers and micro-aggressions in the workplace and wider society.

Underrepresented groups who are delivering this work, often voluntarily, can sometimes see a negative impact on their progression as less of their time is spent on profit-making work. In contrast, staff who focus solely of profit-driven work and do not contribute to culture through voluntary roles can progress more quickly as reward systems are set up to value profit in some engineering environments. This raises the question of how companies can alter their talent management systems to place greater value on this kind of work and share the responsibility.

iv. Diversity of skillsets and experience is not sufficiently valued in the engineering industry

The scoping phase demonstrated how the transfer of skills and expertise from one engineering context to another (for example, between disciplines, sectors or industries; between academia and industry) can bring great value to the engineering industry. This transfer can lead to sharing of best practice approaches and new innovations that raise profits and produce better engineering outcomes for society.

Valuing the input of expertise traditionally considered to be non-engineering expertise (for example, social sciences, business skills and language skills) can improve international working across different cultures and produce engineering solutions that are better suited to their societal context. It was suggested that bringing in a greater diversity of skillsets into middle management level could be an effective way to diversify the engineering industry at a higher pace than the current talent pool can provide.

Other skills-based inclusion challenges include the following:

- Chartership/fellowship competency frameworks are outdated and do not reflect the skillsets required for engineering in modern society.
- Academia do not authentically value industry experience and vice versa, which affects the commercialising of academic work that could benefit society.
- There is discrimination towards an engineer moving from one sector to another (for example, from rail to energy) and the value of their multisector experience is not recognised.
- Military skills and responsibilities are not recognised or well understood in the civilian world and more support is needed to support hiring managers in this area.

- Inclusion challenges can show up when technical specialists and non-specialists work together on a project.
- Engineering industry needs to develop better ways of recognising and quantifying experience.

v. Parenting and caring responsibilities are not accommodated

Not so long ago, many parents in engineering – as in most professions – were forced to make a choice between having a family and keeping their career: flexible or part-time working was not available to them. Given the entrenched expectation that women carry out childcare, this predominantly affected women.

> **" We decided no children. Otherwise, no career."**

The situation has improved somewhat, in part due to shifts in societal views and a move towards marginally more equitable parental leave policies. However, participants felt it is still difficult for women who have taken breaks from engineering for caring responsibilities to re-join the profession.

Many women still leave engineering around parenting age and do not return to the engineering industry. If they do, participants suggested it often affects their rate of progression due to discriminatory work allocation or because the level of expertise in engineering is often measured in number of years of experience.

Engineering leaders need to recognise the valuable skills and perspectives gained from caring responsibilities and career breaks, rather than seeing it as a deficit to someone's experience and capability.

vi. There are significant mental health and wellbeing challenges, particularly for white men[2]

The suicide rates in engineering are the highest of any sector for white men. There is work to be done to tackle poor mental health and wellbeing, low psychological and physical safety, and toxic masculinity. Participants in this study suggested that overworking, which was presented as common in start-up company culture and client-facing organisations, and ever-evolving set of skills requirements for engineers can contribute to stress. Further stress is reportedly due to engineering failures (for example, Boeing 373 Max) being in full public view and engineering errors can be catastrophic in safety-critical industries.

[2] Masculinity in Engineering Research 2022, *EqualEngineers*

vii. There are significant mental health and wellbeing challenges, particularly for white men

Participants reported a lack of clarity around how underrepresented groups can access the support they need (for example, reasonable adjustments for employees with disabilities; healthcare and sick leave for transgender employees wishing to have gender-affirming surgery; and flexible working for employees with caring responsibilities or following religious practices). It is imperative that leaders ensure that organisational policies are clear in what they offer/cover, without any grey areas, and that all staff know what support they are eligible for without having to ask for themselves and disclose personal information unnecessarily.

viii. There is a narrow focus on recruitment and representation of diversity talent, and not on developing an inclusive culture

Participants suggested that in recent years there has been an overfocus on quotas and targets in recruitment to improve representation of underrepresented groups in industry. Whilst the increased focus on opportunities for diverse talent is important, participants suggested that engineering leaders need to switch the primary focus to building inclusive cultures as this is critical for the retainment of diverse talent and to avoid causing harm to these groups by bringing them into a non-inclusive environment.

> **"I think up until recently there's been a massive drive for diversity, "let's just get more diverse people into the sector". And now actually there's been a bit of a realisation that there's no point getting them into the sector if you can't keep them because your culture is toxic, or because you've not got the right provisions in place for people who are different from the standard norm."**

4. Changemakers – who to engage to catalyse change

i. Leaders exist at all levels in an organisation and different levels of leader can influence in different ways

Leaders exist as all levels within an organisation; there are leaders at the bottom of the company just as much as the top. During this scoping phase, leadership was defined as visible, influential role modelling – leaders should inspire people through their actions and behaviour. A leader isn't a leader unless someone thinks they are and leaders have to have people who want to follow them.

> **"I was mid-level and there were graduates coming up to *me* saying "I am so inspired by the work that you do". They weren't saying me, but the work I do, the work I promote. They were like, "I'm so inspired by you. How can I help? What can I do?" Now how can you say that's not leadership? Because these people are feeling led by what I'm doing, they're inspired by it, they were trying to follow, they were like, "How can I get involved?" I had no title that made me a leader, but I was leading."**

Leaders at different levels can influence in different ways. There's a very different skillset between setting an agenda and building the structures in an organisation that actually drive that agenda all the way through every layer of that organisation. This initiative will consider how to maximise the spheres of influence of each level of leadership and aim to provide clear guidance on how they can practically drive forward inclusion.

A common challenge is that employees with many years of technical experience are often promoted into leadership positions when they were not well-suited to lead. Just because someone's job title contains the word 'leader' doesn't mean they are one. There's a difference between what people are called institutionally (what their title is) and what leadership looks like in practice.

The research also provided some interesting distinctions between the ways that leaders and managers influence culture, which will inform the eligibility of awardees and our expectations of different levels of leaders on this initiative.

Key elements relating to the way that senior leadership can influence:

- Empowering future leaders and creating space/autonomy for them and empowering the team (for example, HR) to act within a framework.
- Role modelling inclusion.
- Making the vision and ambition for the engineering industry clearer and more visible.
- Explaining why people should follow the vision by making the case (ethical, business, moral) for EDI in engineering industry and how this benefits the organisation.
- Setting tone and communicating key messages to organisation so people take more notice.
- Securing resourcing and signing off on projects to improve inclusion - they have the power to implement disruptive changes (for example, stronger accountability/consequences for non-inclusion).
- Upholding accountability and setting expectations that EDI should be prioritised at all levels.
- Leading and enabling change/ transformation and aligning people towards common goal.
- Acting as STEM ambassadors to improve the perception of engineering and attraction to underrepresented groups.

Key findings

Key elements relating to the way that mid-level leadership can influence:

> **" You quite often get a permafrost at that kind of middle management level, and they shape peoples' day-to-day experiences."**

- Role modelling inclusion for the big teams they manage and influence, which can influence retention of employees on a day-to-day basis.
- They can bridge intergenerational gaps between senior leadership and early career leaders, and harness and communicate fresh perspectives/ expectations from new generations to senior leaders.
- They put in place and uphold structures/ processes/tasks/mechanisms that create inclusive culture (for example, managing people, pay and development; helping with adjustments and accessing help/ support to remove barriers).
- The scoping phase highlighted that it would be a mistake to aim this initiative solely at middle management level as they will come across barriers without broader buy-in.
- Empathising with the experiences, support needs and pressures placed upon middle managers (middle management are often under a lot of pressure to deliver on EDI from early career and senior leadership, but ill equipped to do so)
- They are typically more diverse than senior leadership level so may have lived experience of some inclusion challenges and be able to empathise more with colleagues similarly affected.

Key elements relating to the way that early-career leaders can influence:

- Bring different expectations, knowledge on inclusion and mindsets to engineering industry compared to senior leaders.
- Early career leaders were considered too junior to be the primary awardee for a leadership development programme such as this one as it is too early in their career.
- Early career leaders who hold one or more protected characteristic or who entered engineering via non-traditional routes could offer interesting input.

Key elements relating to the way that HR leaders can influence:

- Organisation structures delivered by HR (for example, inclusive recruitment) are required to support an inclusive culture, along with inclusive behaviour.
- Sponsorship programmes require HR support as they have oversight of recruitment processes, progression and promotion.
- Initiatives open to all leaders within engineering companies are preferred to just those offered to engineers.

Given the potential for leaders at all levels to influence and catalyse change, the pilot should consider how to engage leaders at all levels.

> **" We need to include the wider ecosystem so leaders aren't revved up to drive change and then get nowhere."**

ii. There is a lack of diversity in senior role models in engineering industry

Role models from underrepresented groups play an important role in inspiring a more diverse workforce as diverse role models support underrepresented groups to feel included. There is currently a lack of diversity in senior role models. This can affect the self-belief and belonging of underrepresented groups already in engineering and those considering entering the industry as they feel that they cannot progress to senior roles within an organisation.

An increase in the diversity of leaders likely contributes to an increase in the inclusiveness of the work environment and ways of working, ultimately also increasing the ability of individuals to realise their professional development goals, leading to a further increase in the diversity of leaders. Diversity at senior level can also demonstrate EDI values to external stakeholders.

> **" If you don't have a role model to aspire to or a person you can talk to, then it becomes challenging for you to think about the next step, or how you can get promoted, or whether you feel confident enough in yourself to apply for the promotion or leadership programme."**

We recognise that this diversity will not change overnight and that there are other programmes which more directly focus on increasing this number. However, it is important to design the programme with this finding in mind and aim for the programme to support an increase in this diversity over time.

iii. Senior leadership buy-in is critical to success

Without senior leadership buy-in and support, an inclusion initiative will likely fail. Senior buy-in improves prioritisation of an initiative within an organisation and increases the potential to scale and alter mindsets. Senior leadership are often taken more seriously when they challenge on EDI.

> **" No one setting is the same but a common theme is that unless you have the support and buy-in at the top, these initiatives fail."**

Unless the people at the top of the organisation are supportive, the teams underneath them hit a wall when they try to drive change. Bottom-up ideas stop with middle management unless senior leadership are setting the tone from above. The suggested ideal approach was to start at the top of an organisation to get senior buy-in and then cascade the change through the organisation. In any case, senior leadership buy-in should be a critical component of the pilot.

iv. Majority allies are critical in driving forward change

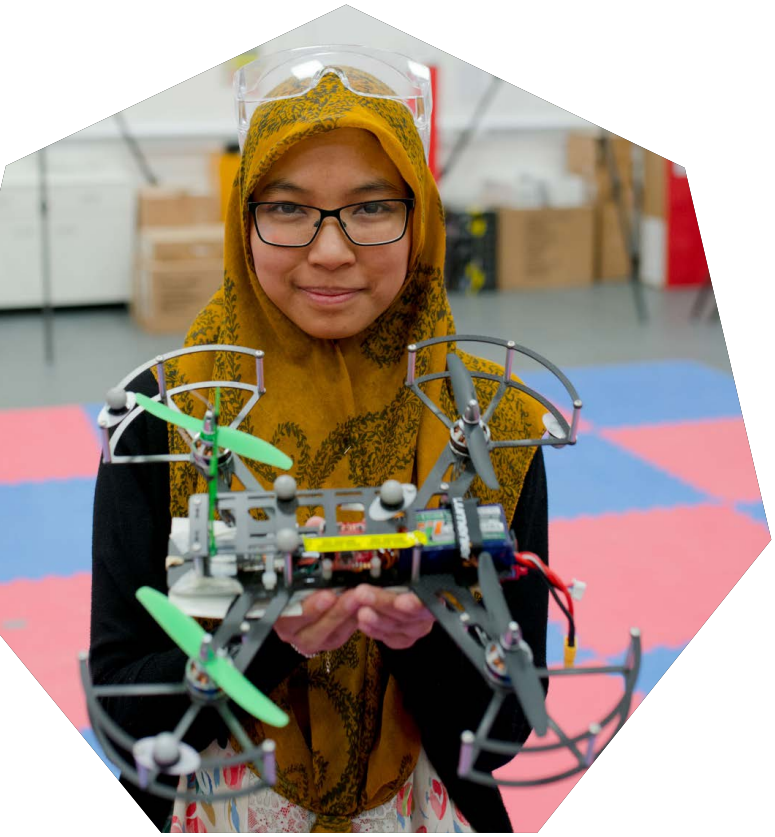
The Academy's *Creating cultures where all engineers thrive* report stated that buy-in from majority white men allies, particularly those at senior leadership level, is vital for building inclusive cultures. This was affirmed through this scoping phase.

v. There is an increasing need to manage intergenerational value differences

Those entering the workforce now are having very different expectations compared to 20 to 30 years ago. Values change with new generations of employees and this can lead to a lack of understanding between younger and older generations.

It was suggested that democratising of the organisational agenda and strategies with all employees, including early career leaders, can help to bridge a difference in values across the generational gap and harness the values of early career engineering. Any work with leaders should recognise the intergenerational dynamic.

> **" The higher up you go in an organisation, the more distant you become from the reality of the people who work for you."**



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5. How to maximise our impact

The scoping identified several focuses which, if incorporated into project design and delivery approaches, can help to maximise impact:

i. Harnessing the power of role models – role models have a significant impact on the culture of an organisation and the behaviour of the people around them

The mindset, characteristics and behaviour of leaders have a huge influence on diversity and inclusion within companies and the industry at large. Senior leaders are important role models as employees are likely to look at the most senior levels in their organisation as an indication of what is acceptable and what is the norm. If senior leaders don't show inclusive behaviour, employees may not feel compelled to do so either.

Increased visibility of role models acting as allies and champions for different marginalised groups and employee resource groups in the organisation should be encouraged (for example, sharing personal stories can create a ripple effect and help colleagues to feel comfortable being more open; modelling flexible working in practice supports colleagues to make use of inclusion policies).

> **" Knowing that someone who looks like you has walked down the path that you've been on just helps. It just helps you feel more encouraged."**

Publicly acknowledging inclusive behaviour reinforces the effect of role models so the pilot should amplify the good work that inclusive leaders are already doing and showcase them as strong engineering leaders.

ii. Shifting mindsets is the highest potential leverage point for enabling change within a system

Changing the mindsets of people within a system – in this case the engineering industry – is how the Academy can intervene to create the greatest impact. As such, building inclusive mindsets in industry leaders will be the primary focus of this initiative.

There was huge demand for a 'how to' guide that can support leaders at all levels to embed inclusion in the common engineering tasks they are responsible for at each layer of the organisation. However, some participants felt that it is not practical to provide guidance for every eventuality. By tackling mindsets, the Academy will equip leaders with inclusive principles to support their decision making in a broad range of new and familiar situations.

The scoping phase also highlighted that if EDI support for leaders or other employees is too generic, it is not useful or effective in supporting people to embed EDI in their work, so we will have to balance this as part of the process.

Two possible mindset shifts we may wish to promote through the Pilot include:

- Leaders do not need to have all of the EDI knowledge to deal with unfamiliar situations well, they can draw on their own strengths related to inclusion (for example, authenticity) to support them.
- Everyone is responsible for helping to build inclusion in their culture.
- Calculated risks by leaders in this space open up opportunities.

iii. Achieving systemic change requires collective action through coalitions and partnerships

> **" In terms of activist circles it's something that we're constantly thinking about - how can you make a sustainable difference that doesn't end with an individual?"**

Supporting a small group of individuals has limited impact on a whole system and culture change within an organisation requires buy-in from many teams. As such, individuals that are supported through this process will need to amplify their impact and work together to affect greater change across the engineering industry.

One way this can be brought about is by encouraging leaders at different levels to work together to drive change within their organisation, drawing on the different ways they can influence.

There is also an opportunity to create greater impact by working through partnerships and supply chain. The scoping phase highlighted how client and supply chain partnerships can expose organisational employees to non-inclusive behaviours.

Therefore, partnerships are also an opportunity for inclusive leaders to educate, influence and amplify their impact by challenging non-inclusion in a constructive way. A current challenge in this area is that leaders and employees feel unable to call out non-inclusive behaviours in partners for fear of damaging an important working relationship. Participants felt that non-inclusion is especially difficult to challenge in new clients where relationships aren't as strong or when partners are adding significant value to a business (for example, partners offering funding or pro bono expertise for a start-up company in survival mode).

Key findings

Leaders being consistent with calling out non-inclusive behaviour in meetings, being firm with recruiters to deliver diverse talent lists, and building EDI expectations into procurement processes are all examples of where engineering companies can drive change outside of their own organisation.

However, to truly shift the culture of the industry, engineering leaders need to take collective action on larger systemic changes required to overcome inclusion challenges.

For example, engineering leaders in industry could come together to advocate for:

- improved action on inclusion by regulatory or standards bodies
- professional engineering institutions to embed in chartership competency framework and corporate professional development programme
- universities to teach about the value of EDI in engineering education.

iv. There is a need for increased focus on effective measurement of inclusivity of culture

Initiatives that support leaders to become more inclusive often go without measurement. As such, there is very little evidence available on what interventions have the greatest impact on increasing inclusion in leadership, culture, and engineering outcomes. Information is available on individual effectiveness of training, mentoring, sponsorship and facilitated conversations, however the impact of multi-faceted inclusive leadership initiatives is not well documented.

Attempts to measure impact are often inadequate. Inclusion is a complex thing to measure and quantify and it can be especially difficult to gather causal evidence that links an initiative to greater inclusion when other factors external to the initiative are also pushing towards change.

However, there are measurement approaches which could be better deployed if greater knowledge and focus on measuring impact existed.

The Academy can and should provide leadership in this space. It can develop a robust approach to measuring impact in the pilot and will be transparent with the wider community about what works and what doesn't work.

v. EDI progress is stalled by fear in leaders

Senior leaders are used to being the experts and being expected to have all the answers, however many majority leaders do not have knowledge or understanding of EDI-related issues due to their own privilege, having never faced the barriers for themselves. In the context of cancel culture, leaders are fearful to discuss EDI, which is often firmly out of their comfort zone.

Leaders worry that they may inadvertently use non-inclusive language (for example, around sexual orientation, neurodiversity and ethnicity) and in some places this has stopped EDI conversations taking place altogether.

In addition, some majority leaders fear the loss of opportunities and benefits available to them (for example, job opportunities and pay) that might arise as structural inequalities are corrected. Being mindful of these fears and increasing knowledge and empathy relating to disadvantages felt by others will be important.

If EDI is approached in an accusatory way, leaders can feel threatened and can get defensive around EDI, so it is important to create allies, not enemies through our approach to this work and not blame, shame or vilify anyone.

To make progress, we need to encourage leaders to shift to a different 'lifetime learning' model, which requires vulnerability (as they open themselves up to challenge and making mistakes) and a willingness to learn.

> **" I think leadership training is probably traditionally about pumping up people's egos when in reality it should be about breaking them down."**

Through this initiative, we should create a safe space for leaders to give them the confidence to make the first step without the fear that they will be judged. We should meet them where they are on their level of understanding and to take them on a learning journey where they can move away from an artificial understanding of EDI and move towards it being truly understood and lived.

6. What should we do? Pilot format and content

The scoping provided rich input on the potential impact and relevance of a variety of activities which we could deploy in the pilot. The following are the key findings:

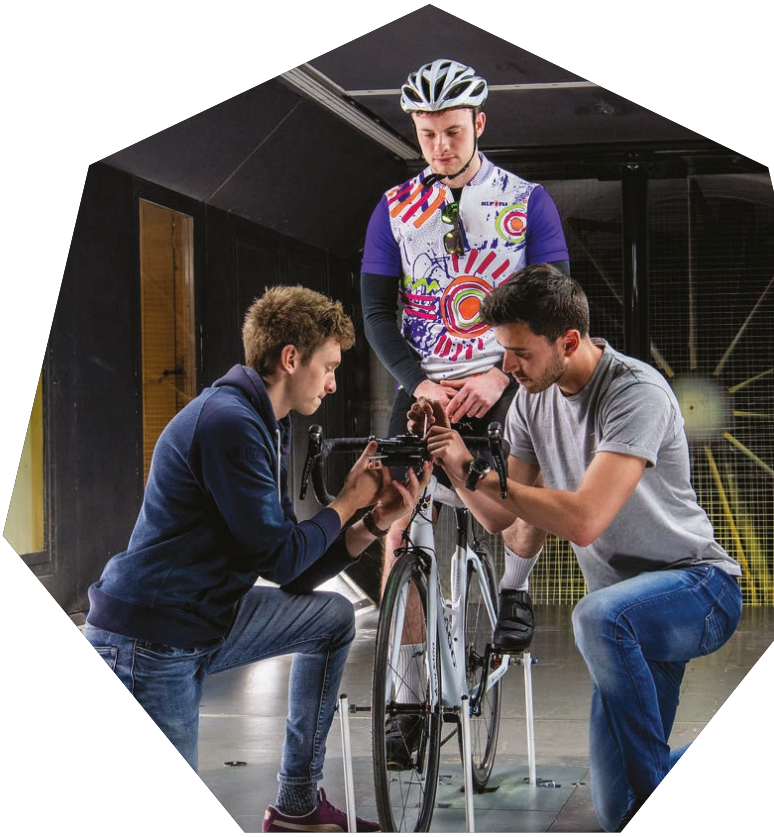
i. Mindset and behaviour change is a long-term process and habits build over time through action and accountability – one-off awareness training is not effective in changing behaviour

Evidence shows that one-off training programmes have minimal impact on inclusive leadership behaviours and practices. Inclusive habits, mindsets and behaviours must be developed over time through putting knowledge and new skills into practice in a real business environment.

> **" I don't think there's a magic wand that can change the dynamics of a group of people immediately. I think it is a question of repetition and continuity."**

Culture change takes time and is helped along by repetition and continuity from the group. As such, leaders should be trained to develop the skills and behaviours that are critical for an inclusive culture in the workplace, and be held accountable for leading on this and encouraging others to follow their example.

Adding small information flows in the form of reminders and nudges helps people to remember to work on changing their behaviour towards inclusion.



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Key findings

ii. Coaching is a helpful support mechanism to offer a safe space for leaders to self-reflect, develop their understanding of EDI, and be held accountable

Coaching can be a useful accountability mechanism and tool to develop self-awareness and self-realisation in leaders. It can help them to reflect on feedback provided by others and unpick the difference between what they are saying and how they are genuinely behaving.

Importantly, coaching can offer leaders a safe confidential space to practice vulnerability and develop their own understanding of EDI without fear of judgement. Having a one-to-one coaching space can also help overcome feelings of loneliness and isolation that can come with a leadership position.

iii. Sponsorship can play a significant role in building the sponsored individual's profile as a leader and creating influencing opportunities for them

The scoping positioned sponsorship as an impactful mechanism for promoting inclusion, but it needs to be set up well in order to be successful. A sponsor can help get someone's name known in ways that they wouldn't be able to do by themselves and is useful for raising someone's profile and creating opportunities to influence.

It was noted in the scoping that sponsorship is especially well-suited to leaders from underrepresented groups as sponsors can champion their progression, leading to increased diversity at more senior levels of leadership. Multiple scoping participants noted that underrepresented groups in mid-to-senior leadership levels are typically over-mentored and under-sponsored.

Scoping participants noted it is useful for a sponsored individual from an under-represented group to be paired with someone with a similar background to themselves as this allows their sponsor to empathise with the barriers they are facing and give advice on how to navigate the engineering industry.

However, there is a balance to strike between having a sponsor with similar experiences and asking underrepresented people to do all the work. Furthermore, building relationships with people who are different to you is an effective way to reduce your own bias so this should be encouraged for majority ally sponsors.

The scoping raised the question of whether a sponsorship relationship can be enforced, or whether it relies on a certain level of 'chemistry' to be successful. This is something we will explore through the pilot.

iv. Reciprocal mentoring (two-way mentoring where both parties are brought together as equals to give to and gain from the relationship) is most appropriate for enabling an inclusive culture

> **" There's something here about how leaders don't have all the answers around this. Nobody does, actually, because we are all part of the culture that we are creating. I think that a co-learning experience can be very powerful because it's a democratisation of this agenda, almost."**

Leaders at all levels found mentoring helpful for different reasons. Lower-level leaders found traditional mentoring useful for their professional development and career progression, whereas leaders at more senior levels found "reverse" mentoring helpful to access new ideas that can develop their own understanding of issues affecting other groups and help mitigate risk.

When a mentor and mentee have shared lived experience, it can create solidarity and the space can be used to learn how to better navigate and challenge non-inclusion in the workplace. When a mentor and mentee have different lived experiences and perspectives, the interaction can make them more aware of the challenges others face and their own privileges and can make them a more effective ally. Reciprocal mentoring was presented as best practice (two-way mentoring where both parties are brought together as equals to give to and gain from the relationship).

> **" One of the most effective ways of supporting senior people in seeing the world through a different lens is reverse mentoring. By empowering the younger person to provide their perspective to that senior person, to say, "That's not how I see it. This is what it looks like for me. This is what it feels like for me." That can be a very powerful process."**

> **While the inclusive cultures report was not focused on leadership, it made clear that more widespread inclusive leadership is a key part of addressing the inclusion deficit in engineering**

Conclusions

Based on the key findings, the Academy concludes that the following should be achieved in the design of a pilot programme:

Positioning the initiative within the wider context

- Support leaders to build their awareness of wider societal inequality and take collective action (through partnerships, supply chain and elsewhere) to tackle inclusion challenges and remove barriers for underrepresented groups.
- Enable different companies to connect and learn from one another within the cohort and encourage pilot delivery partners to collaborate where possible to strengthen overall approach.
- Do not create an initiative that competes with existing offerings in engineering companies.
- Ensure the pilot approach is specific to engineering industry context and the inclusion challenges, enablers and blockers at play there.
- Approach leaders with compassion, position inclusion as a solution for tackling complex problems and harness our current state of flux as an opportunity for disruptive change.

What does inclusive leadership look like in the engineering industry

- Encourage leaders to strive for more inclusive cultures and engineering outcomes during the pilot and provide practical advice on how this can be achieved.

Conclusions

Inclusion challenges at play in engineering industry

- Ensure that programme content and focus recognises some of the key inclusion challenges in the engineering industry, from severe underrepresentation of certain groups, to a lack of knowledge among some leaders of the impact of systemic inequality on those coming into the industry.

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Changemakers – who to engage to catalyse change

- Take a multitiered approach to support leadership at all levels to drive change by creating an unbroken chain from the top to the bottom of an organisation – from senior to early-career.
- Ensure the participating leaders are diverse to support knowledge sharing and greater collaboration across individual perspectives, sectors, disciplines, and organisation sizes and to support a greater ability to influence as a collective.
- Work closely with different levels of leadership to explore how they can influence change and ensure guidance on actions is tailored to each leadership level.
- Invest in the development of future leaders (particularly mid-level leadership) who can help bridge the intergenerational gap in engineering and who likely have more years left of their career through which they can drive change.
- Support awardees from underrepresented groups (along with majority), with a view to ultimately contribute to the existence of senior role models.
- Leverage the power and influence of senior leadership and make demonstrable senior leadership buy-in an eligibility criterion for pilot programme.
- Leverage the fresh perspectives and vision of early career employees.
- Engage the HR team who can support delivery of organisational structures and processes.
- Academy leadership to take part in pilot to position Academy as an authentic leader in this space.

How to maximise our impact

- Emphasise the importance of role modelling inclusion in order to build inclusive behaviours and actions in others.
- Build inclusive mindsets in engineering leaders and their wider teams.
- Look beyond the impact a participating leader can have as an individual. Focus also on the impact an awardee can make through amplification to teams, partners, and as a cohort.
- Invest in connecting and building a sense of community among the participating leaders to support future collective action to challenge inequality and drive greater inclusion in industry and society.
- Commit to transparency around what works and what doesn't work during the pilot and beyond and share this for the benefit of society.
- Develop a Theory of Change and evaluation framework for programme.
- Seek to evidence a causal link between this inclusive leadership intervention and more inclusive culture and outcomes in engineering industry.
- Gather evidence about what interventions are impactful and showcase impact through individual case studies.

What should we do? Pilot format and content

- Ensure pilot enables participating leaders to put their new skills, behaviours and knowledge into practice.
- Ensure pilot has a strong focus on leadership taking action, and how to hold other colleagues to account effectively for non-inclusive behaviour.
- Provide coaching to provide leaders with a safe space for them to self-reflect in a confidential space.
- Include sponsoring in pilot programme to require senior leadership to use their influence to support future leaders in building their profile and influence in industry to maximise their impact.
- Include reciprocal mentoring in pilot programme to help increase leaders' awareness and bridge intergenerational gap.
- Do not solely rely on training, which has been shown to have limited impact. Rather, pilot a multi-faceted leadership development programme.
- Enable individual or organisational needs to be factored into tailored pilot.
- Provide a safe space for leaders to speak about EDI with their peers and to help leaders to build their knowledge of EDI and use inclusive language with confidence.

Proposed pilot design

Based on the findings of the scoping and consultation activities, the Academy has developed the following preliminary design for pilot delivery.

This design was tested through a rigorous theory of change development process held in November 2022. The logic model and theory of change narrative that emerged from this process have been published on our website and can be read alongside this report to further explain our decision making with regards to the pilot approach.

Pilot aim

To support a community of engineering leaders to develop more inclusive mindsets and produce more inclusive cultures and engineering outcomes through individual and collective action as a cohort.

Pilot awardees

In each organisation, there will be four direct awardees who will receive support from the Academy and will function as a team: a mid-career leader, a senior leader, an early-career leader and a HR leader.

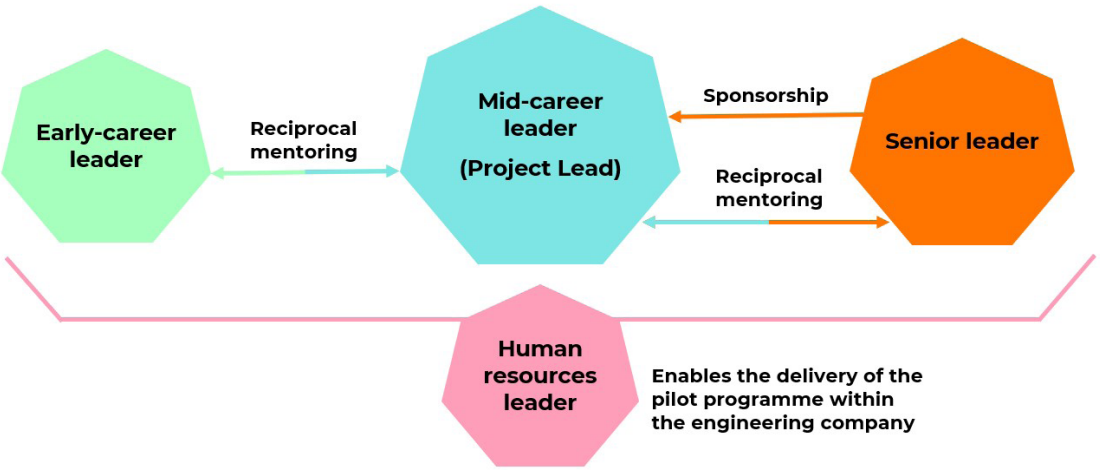
Mid-career leaders are the primary awardee and project lead for this initiative, however by bringing in the wider team of awardees we are able to leverage their power, knowledge and expertise to drive forward change more effectively.

Furthermore, the team approach helps to create an enabling environment for the primary awardee and immediately removes some barriers highlighted during the scoping (for example, a lack of senior buy-in or under resourcing of staff time).

The Academy believes that significant value will come from building a diverse cohort of awardees who can share different perspectives and expertise and learn from one another. The Academy will strive for a diverse cohort at all levels of leadership and diversity of the cohort will be prioritised at the selection stage across several different variables (for example, protected characteristics of applicants, organisation size, sector, and UK region).

Based on current levels of diversity in engineering leadership, it is expected that fewer leaders at more senior levels will be from underrepresented groups in engineering. This programme recognises the importance of engaging majority allies with a strong interest in championing inclusion.

The relationship between the awardee team is laid out in the below diagram:

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Proposed pilot design

1. Mid-career leaders

Mid-career leaders are responsible for coordinating and submitting the pilot bid on behalf of their team. To submit an eligible bid, the mid-career leader will need to evidence appropriate buy-in and commitment from the other three awardees. Mid-career leaders can participate in one bid only, however multiple bids can come from within the same company.

Whilst the importance of senior leadership buy-in and role modelling came through strongly in the scoping phase, the Academy believes that greater value will come from investing in mid-career leaders – tomorrow's senior leaders – most of whom will have more years of their career remaining to role model and drive change, assuming they remain in the industry.

As minority groups are largely under-represented at senior leadership level, the decision to position the mid-career leader as the Project Lead will enable the Academy to support a cohort with greater diversity than if the initiative was solely aimed at senior leadership. This decision also has the potential to create greater diversity amongst senior role models in engineering by supporting mid-career leaders from under-represented groups in engineering. Doing this could have a ripple effect on other engineers from underrepresented groups operating at more junior levels and enable them to see a place for themselves in the engineering industry and particularly at senior leadership level.

Mid-career leaders were highlighted as the tier of leaders who are typically most under supported on how to embed EDI in their work, however they receive a lot of pressure to deliver on EDI from the tiers of leaders above and below them.

It is hoped that creating role models of inclusion within mid-career leadership will help to alleviate this issue, as mid-career leaders are upskilled and role model inclusion to others operating at their level.

Finally, due to their level of seniority, mid-career leaders are uniquely placed to help bridge the intergenerational gap that can form between older generations and new generations of employees as values and societal norms shift over time.

2. Senior leaders

Senior leaders will develop their own understanding of EDI and how to role model inclusion. Senior leaders will mentor mid-career leaders on how to navigate and influence the engineering system, offering hands-on support where they can add unique value.

Senior leaders will act as a sponsor to the mid-career leader. Senior leaders will leverage their own position of power and influence to build the profile of the mid-career leader as an inclusive leader within the industry and their potential to influence others.

3. Early-career leaders

It is expected that early-career leaders will be from an underrepresented group or majority allies who have a strong vision for making the engineering industry more inclusive with regards to its culture and/or engineering outcomes. It is hoped that engaging and championing early-career leaders with a more inclusive vision for the future of the engineering industry will further contribute to greater diversity of senior role models who can model and embed inclusion.

Early-career leaders from underrepresented groups can share their lived experience with more senior leaders and highlight what they believe to be the most pressing inclusion challenges that need to be addressed. We recognise that lived experience is valuable and sharing this – often repeatedly – can be taxing for individuals. The Academy is committed to ensuring each early-career individual gains sufficient value from their participation in this pilot.

4. HR leaders

The Academy will firstly liaise with the HR leaders of engineering companies to promote the opportunity to participate in the Pilot. For those interested, HR leaders will support company onboarding onto the Pilot and will also play an active role in enabling project delivery due to their influence over organisational structures and staff learning and development.

HR leaders are arguably more likely to leave the engineering sector than engineering leaders and so the learning and development investment will be less for them. It is expected that their participation in some training and EDI project delivery under the guidance of an EDI delivery partner will still bring them significant value. The company must evidence buy-in from an appropriate HR leader upon application.

Proposed pilot design

Pilot approach

The preliminary pilot design consists of four elements:

1. Learn

All four awardees will receive some training and support, with the engineering leaders (early, mid and senior level) receiving more support than the HR leader. The learn phase is expected to last for around four months. The mid-career leader training will focus on developing them as a future inclusive senior leader in engineering.

The early-career and senior leaders will focus more on how they can support the mid-career leader to become a more inclusive leader and promote this in the wider industry. The HR leader training will focus on how they can enable the engineering leaders to drive change within their organisation and beyond.

As such, early-career, mid-career and senior leaders will receive training to:

- Increase their understanding of EDI.
- Develop greater self-awareness and understand themselves in an EDI context.
- Develop understanding and skills in role modelling inclusive leadership.
- Better understand the principles and practice of inclusive engineering.
- Understand their own sphere of influence and how to work with others to influence and drive change.
- How to mentor and be mentored effectively.
- How to sponsor and be sponsored effectively.
- How to be coached effectively.

The human resources leader will not receive specific training however they will learn from the engineering leaders and EDI delivery partner in the next stage of the pilot.

The following table shows what support we expect to deliver to each awardee:

	Activity and estimated time commitment	Mid-career leader	Senior leader	Early-career leader	Human resources leader
LEARN	Kick-off and induction (one-off, 1-2 days)	X	X	X	X
	Training sessions (monthly, half day)	X	X	X	–
	Sponsorship, mentoring and coaching training (one-off, half day)	X	X	X	X
	Coaching (6 sessions, 1.5 hours each)	X	X	X	_
ACT	Facilitated peer group workshops (monthly, 2 hours)	X	X	X	_
	Reciprocal mentoring (monthly, 1.5 hours)	X	X	X	_
	Sponsorship (continuous practise as opportunities arise)	X	X	X	–
	Commitment to project delivery and data gathering to support evaluation (monthly, 1-4 days depending on role)	X	X	–	–
	Commitment to build profile of mid-career leader (monthly, 1 day)	X	X	X	X
	End of pilot reflection and learning session (one-off, 1-2 days)	X	X	X	X

2. Act

It is important to note that the learning continues throughout the pilot – it does not stop at the end of the 'learn' phase. The scoping phase indicated that one-off training is not effective; habits are built and sustained behaviour change happens when learning can be put into action in a supported environment. As such, following the initial learning period, awardee teams will take action to reinforce their learning. The Act stage is expected to last for 12 months, including planning time.

There are three elements to the 'Act' stage:

i. Plan and deliver a tailored EDI project to promote inclusive cultures/outcomes within the company/industry whilst honing leaders' role modelling and influencing skills.

ii. Deliver activity to build the mid-career leader's reputation as an inclusive leader within the industry whilst honing senior leaders' sponsorship skills.

iii. Deliver ongoing awardee support within cohort to ensure sustained learning.

i. Plan and deliver a tailored EDI project

The awardee team will work together, led by the mid-level leader and supported by an external EDI consultant, to plan and deliver a project tailored to the context of the organisation, which aims to improve organisational culture or engineering outcomes. The Academy is open to supporting awardees to work with other awardee teams on a cross-company project as great value was placed on working with others in different working environments during the scoping phase. The logistics of this will need to be explored with the delivery partner.

Awardees will be expected and encouraged to be bold and ambitious with their project. Initiatives that are known not to be impactful will not be considered, however the Academy wants to hold space for awardees to experiment with new ideas in their working environment.

As part of the planning process, the four awardees should consider how to leverage their own spheres of influence within the organisation and beyond. The Academy's inclusive leadership systems map and summary of leverage points for leaders on our website should also be considered as part of this process where it adds value.

A robust sponsorship mechanism will be put in place between the mid-career leader and senior leader to leverage the power of the senior leader and create more influencing opportunities for the mid-career leader.

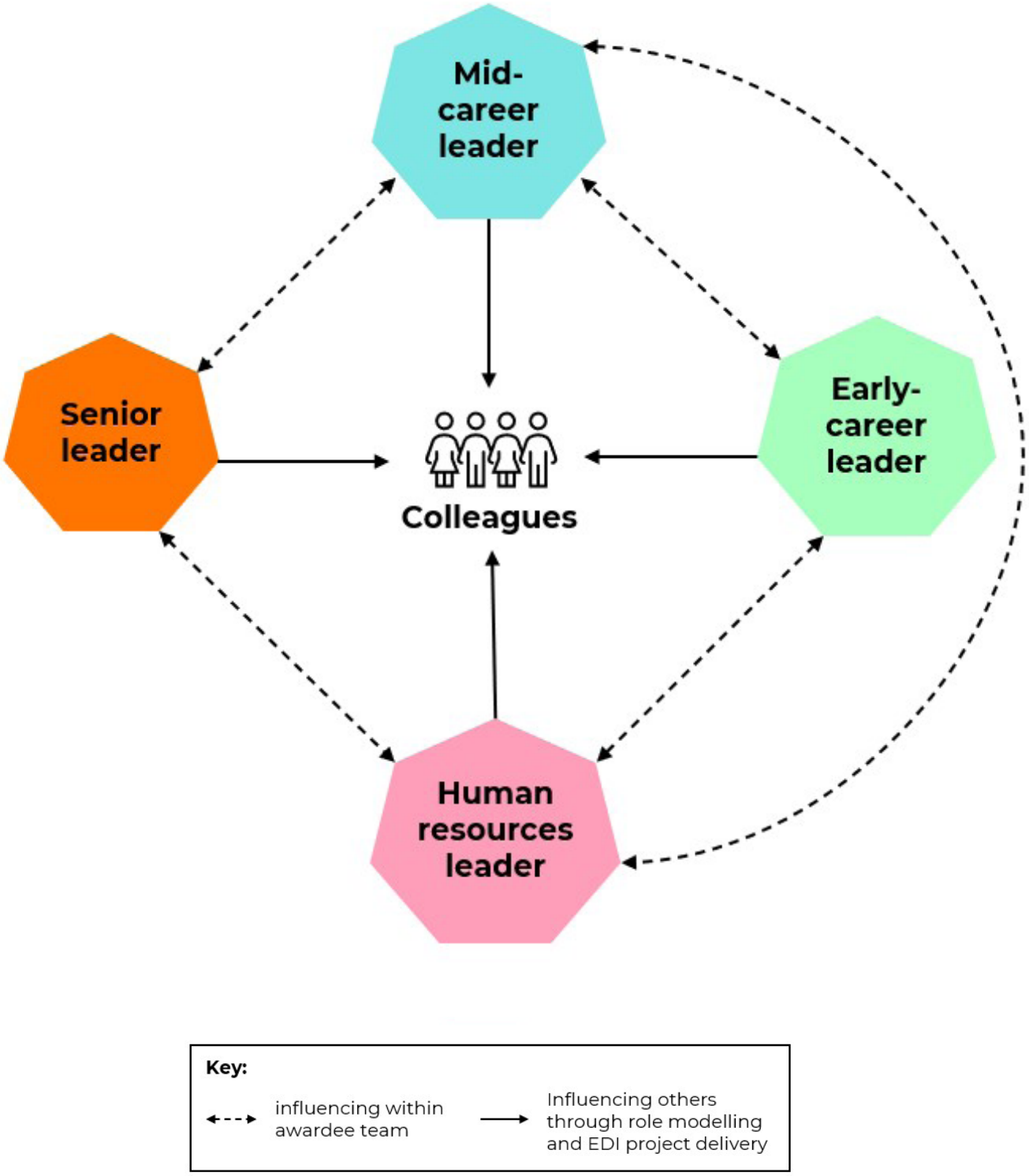
The Academy and delivery partner have the option to suggest initiatives that have emerged during the Scoping phase as a starting point, for example those listed below:

- internal accountability (for example, embedding EDI in performance management)
- external accountability (for example, promoting EDI through partnerships and supply chain)
- adopting strategies to enable more inclusive engineering outcomes
- trialling novel approaches to hiring talent.

In doing this, leaders – led by the mid-career leader – will hone their role modelling and influencing skills as depicted in the graphic overleaf:

Proposed pilot design

Awardees develop their influencing skills and build their visibility as inclusive leaders within their companies and awardee cohort by role modelling inclusion and delivering an EDI project.

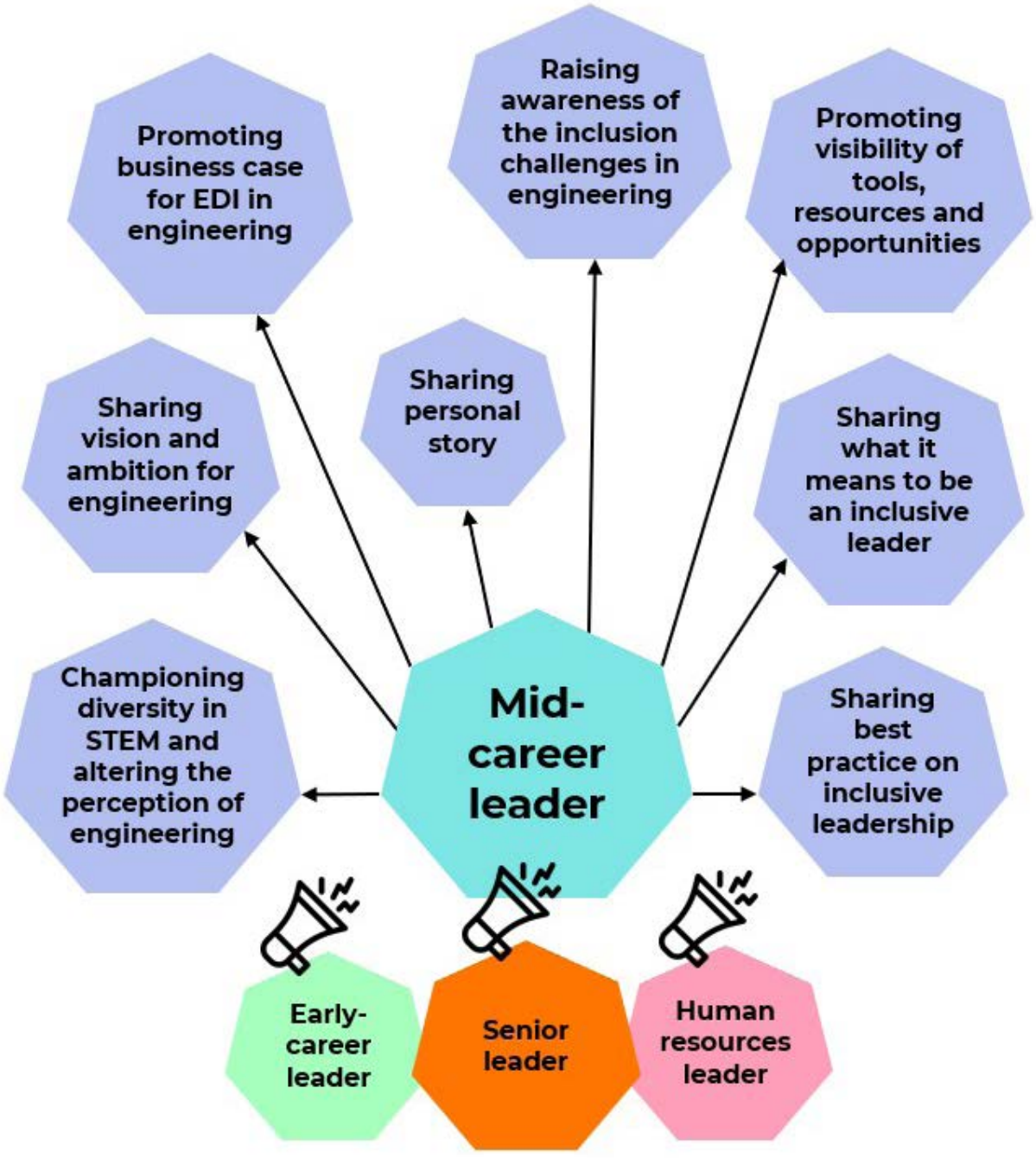


ii. Deliver activity to build the mid-career leader's reputation as an inclusive leader

Paralell to the project delivery, the mid-level leader works to raise their own profile as an inclusive, influencial and progressive leader in engineering through regular communications. Their efforts will be supported by the other awardees and particularly their senior leader sponsor.

The Academy can support this process by generating content, resources and profile-raising opportunities (for example, key findings from new research or panel opportunities).

The following graphic contains ways leaders may do this, which emerged from the scoping phase. The Academy can support this process by generating content, resources and opportunities (for example, key findings from new research, an updated business case for EDI in engineering, or speaker panel invitations).



Proposed pilot design

iii. Deliver ongoing awardee support within cohort to ensure sustained learning

Awardees are further supported to put their learning into practice through facilitated peer group sessions and reciprocal mentoring:

- **Facilitated peer group sessions**
  The Academy recognises that there is much value to be gained from connecting leaders with their peers in different organisations for solidarity, troubleshooting and knowledge sharing. As such, monthly facilitated peer workshops will be held throughout the pilot to build a strong sense of community and create a safe space for leaders to practice guiding and challenging their peers and using inclusive language with confidence. It is hoped that investing in this community during the pilot will encourage awardees to keep in touch post-pilot and continue pushing for wider systemic change together.

- **Reciprocal mentoring**
  This will take place between engineering leaders operating at different levels and will support the growth and development of all leaders by exposing them to new and different perspectives. The mentoring will help bridge the intergenerational gap to connect the values and vision of early-career leaders into senior decision making. Early and mid-career leaders will also learn how to navigate the company and wider engineering system more effectively.

3. Evidence

By its nature, the pilot will be experimental in its approach. Our recommended approach is based on extensive consultation, however the next stage is to test the effectiveness of our model through pilot delivery.

Throughout the pilot, awardees and delivery partners will be expected to demonstrate a commitment to agile, iterative working and ongoing learning. The Academy expects to remain in frequent and regular communication with delivery partners around what is working and what isn't, and to gather regular qualitative evidence from awardees to inform these discussions.

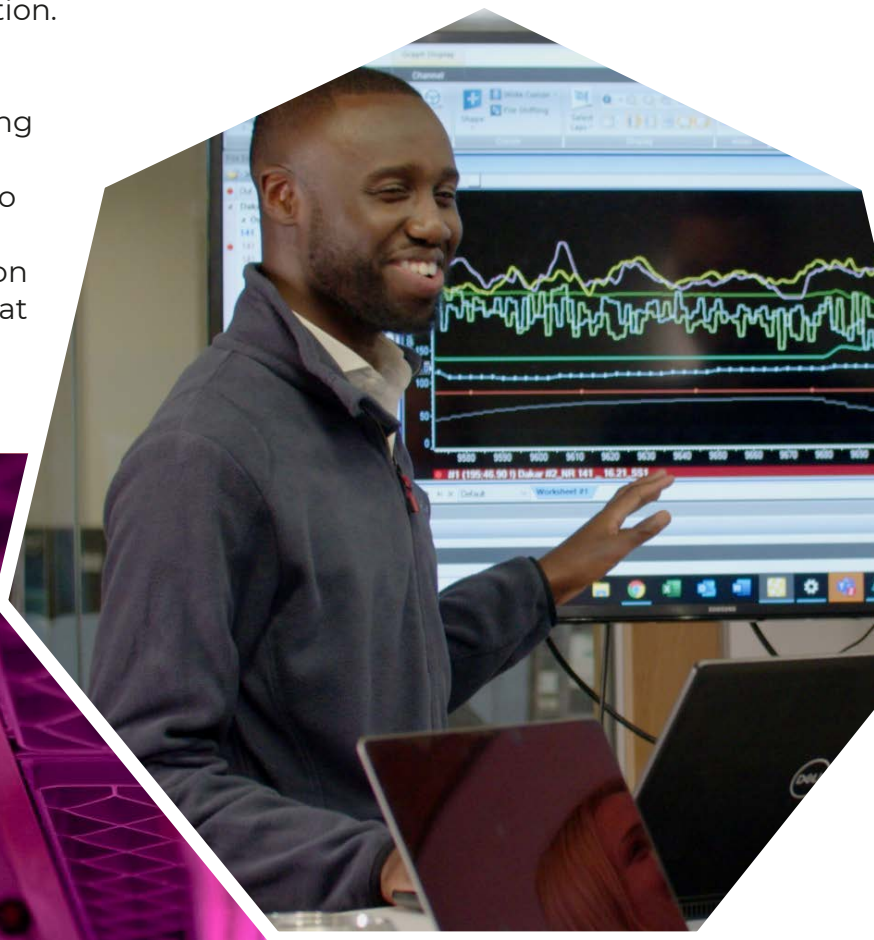
Awardees will need to demonstrate a commitment to providing data against a measurement framework to support ongoing evaluation. The Academy expects that there may be a need to tweak pilot delivery if elements of our approach are shown to be ineffective or impractical. It will be the role of the awardees and delivery partners to monitor the need for any changes and make recommendations to the Academy to guide the ongoing development of the pilot.

Our research highlighted a current gap in evidence on what constitutes an impactful inclusive leadership programme. The Academy will aim to help plug this gap in evidence by being transparent with the engineering industry about what works and what doesn't during the pilot, and by sharing lessons learned with those working on diversity and inclusion in engineering and beyond for the benefit of society.

Data supporting the case for EDI in engineering was described as 'patchy' during the scoping phase, so, if possible, the Academy will try to glean some causal evidence from the awardee projects and engineering culture and outcomes.

Awardees will be expected to attend an end-of-pilot debrief to support our evaluation.

The Academy has demonstrated its commitment to evidence-led programming through extensive consultation, the development of a theory of change prior to pilot launch, its plan to take an iterative approach to pilot delivery, and the intention to commission an independent evaluator at the end of the pilot to review our impact.



Proposed pilot design

4. Amplify (possible post-pilot alumni programme)

Following the completion of the pilot phase, the Academy plans to deliver an alumni programme to maintain a community of practice amongst awardees and encourage further collective action to bring about systemic change. This reflects the intention that the awardees of this programme should be a long-term resource for the Academy and engineering industry – the pilot programme is just the beginning of their leadership journey.

At this stage, awardees will have:

- increased their knowledge and confidence in EDI.
- raised their profiles in the engineering industry.
- evidenced their work on inclusion and showcased it at their graduation event.
- developed hands-on experience of implementing change within their engineering organisation/industry towards more inclusive culture or engineering outcomes.
- improved role modelling, influencing and communication skills.
- increased their understanding of their spheres of influence (both personal and collective).

The alumni programme will enable awardees to take a proactive and reactive approach to tackle systemic issues that affect the inclusion of the engineering industry. The issues for collective action will be jointly identified and selected by the Academy and alumni based on priorities of the day and the cohort's collective ability to influence their networks.

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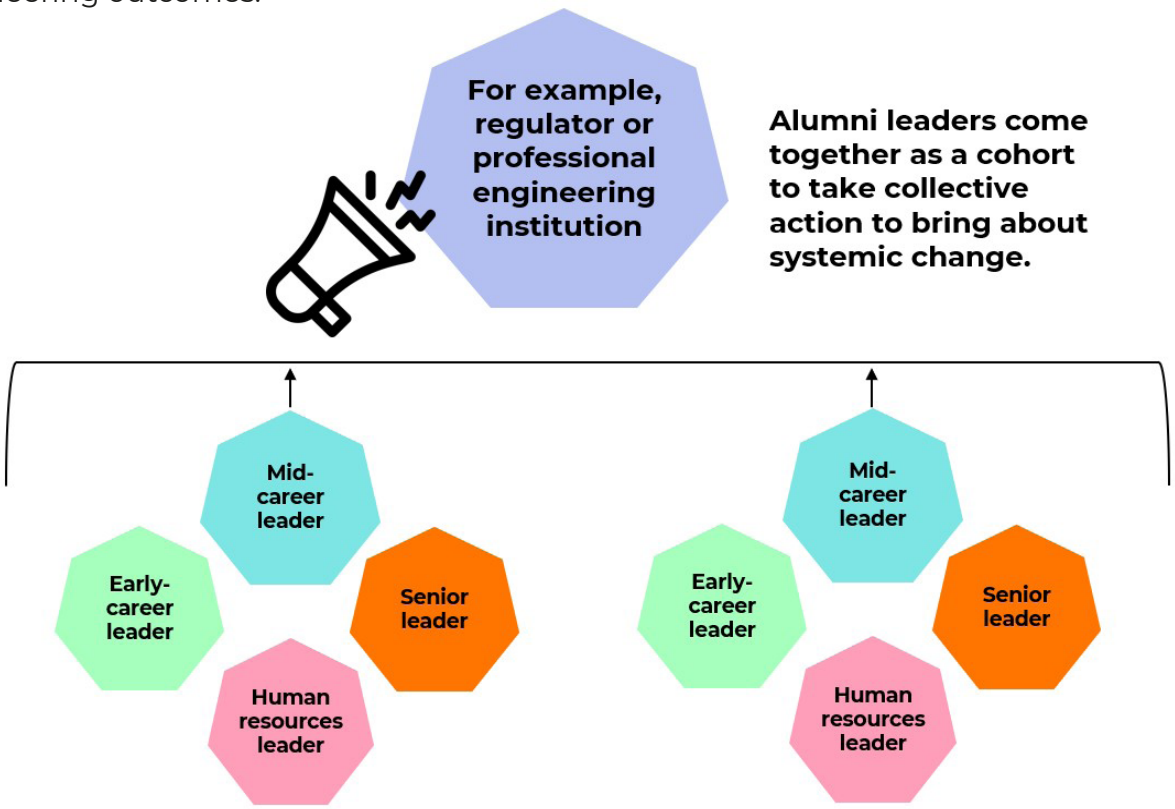

Examples raised in the scoping process included:

- Advocating within professional engineering institutes for changes to the criteria for chartered status.
- Regulators to embed inclusion in their requirements.
- Amplify evidence from pilot, promote good practice and share case for EDI in engineering.

At alumni stage, all awardees will be able to join as individuals irrespective of the commitment of their team members. Senior leaders should offer continued sponsorship to mid-career leaders to enable influencing opportunities where needed.

The alumni programme will be scoped during pilot delivery and it is expected that the delivery partner and awardees will contribute to shaping the initiative by providing necessary evidence and recommendations.

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Pilot programme time frame

The pilot phase is expected to last for three years and in this time frame two cohorts of awardees (80 total awardees across two cohorts) will be supported.

Awardees and their project teams will make an 18-month commitment to partake in the Pilot programme and help to shape and support the alumni programme.

An indicative delivery timeline is below, but is to be discussed with delivery partner:

Pilot phase 2023 to 2026 – an 18-month commitment from awardees and their organisation

Alternative pilot approaches

Several alternative approaches to delivering an inclusive leadership programme emerged during the scoping. The following list of initiatives includes those we have decided not to pursue, however these may be a complement to the programme:

- **A suite of resources and guidance tailored to each level of engineering leaders on how to practically approach everyday activities in an inclusive way**
  To inform this, research would be needed into the top tasks or work habits typically delivered by engineers at each level of an organisation (for example, standards panels, presentation making, chairing meetings, inclusive interviewing, practicalities of inclusive line management, recruitment/hiring, research projects, applying for funds/ grants).

- **A syllabus that engineering companies can deliver internally or EDI organisations can integrate into their services to enable greater scalability and education for engineers**
  The risk associated with this include engineering companies not having sufficient expertise to deliver this inhouse at a suitable quality – external support may be required.

- **An online offering for engineering leaders at all levels to raise awareness of EDI and prompt them on how to be more inclusive**
  The risks associated with this include competing with internal programmes that already exist within some engineering companies. It would need to be accompanied by additional support to build habits and change behaviour as we know one-off training alone isn't effective.

- **A framework for embedding EDI in company culture from founding start-up**
  This is already being developed by the Academy.

An indicative delivery timeline is below, but is to be discussed with delivery partner:

Below are two other activities that the Academy might want to consider when deciding how else it may support inclusive leadership in engineering beyond this pilot:

- Research and prepare a robust business case for EDI in engineering - this is currently under development.
- Develop an inclusive leadership programme for academics in engineering.

Next steps

In late 2022 the Academy will go out to tender for one or more delivery partner(s) to support the design, delivery and ongoing evaluation of the Pilot programme.

It is expected the first cohort of awardees will be recruited in early 2023.

Annexes

Annex 1
Theory of change and logic model for inclusive leadership pilot programme
Produced by our delivery partner Technopolis. *The full report can be found on our website.*

Annex 2
Inclusive leadership in engineering: participatory systems mapping to explore the role of leadership in making the engineering industry more inclusive
Produced by our delivery partner Perspectivity. The report summarises the key findings from the workshops and interviews. *The full report and systems map can be found on our website.*

Annex 3
Literature review: *The impacts of different interventions on increasing inclusive practice and behaviours of leaders in organisations*
The full literature review can be found on our website.

Annex 4
***Creating cultures where all engineers thrive* report (2017)**
The full report can be found here.

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