The talent pipeline for the online safety workforce

REVEALING REALITY

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Table of Contents

Executive summary

Background

This research was commissioned by the Department for Digital, Culture, Media & Sport (DCMS). It aims to build knowledge and uncover opportunities for improving the talent pipeline of skilled individuals into trust and safety roles within the technology industry.

This report follows a previous report, published by Foundry4, which outlined the ways in which online safety tech companies currently access the talent they need. Building on Foundry4's research, this report looks to provide a broader understanding of the challenges involved in recruiting for user safety related roles and the implications for the talent pipeline, both within specific online safety tech companies and wider tech companies, such as social media platforms, that are seeking to improve user safety. Findings from this report were informed by more than 100 interviews with industry bodies, online safety tech and wider tech senior leadership, course leaders, employees and students, as well as a survey with 1,500 young people. It looks at the skills pipeline into online safety tech and user safety roles and explores the opportunities for developing this pipeline.

The current landscape

The tech sector anticipates a change in culture and working practices

Larger tech firms talk about their fast-growing trust and safety, policy and compliance teams as a response to regulatory responsibilities, harsher external scrutiny in terms of user safety (e.g. from the press and public), and shifts in societal attitudes towards online harm. They anticipate moving from a reactive, compliance-focused approach to online safety towards more top-down strategically led teams that interface with regulators and government and understand the impact that digital design has on people and society, rather than primarily being led by engineers.

The tech sector's workforce needs are at a 'tipping point'

Industry bodies and senior leaders within the tech sector note the high demand for technical roles, with particular competition for developers and engineers driving up salaries. However, some experts recognise that there is likely to be a shift towards greater requirement for people with more of a behavioural science based background and ethics-related skills to meet the demands of the sector to design digital products differently. These experts predict a tipping point whereby these more diverse mindsets and skills will be more highly prized and fought over than purely technical roles. The 'tipping point' of the sector is going to lead to an increased need – both in safety tech and user safety teams within wider tech – for more and increasingly varied types of talent.

Now: The current pipeline for online safety

This **section of the report** focuses on the '**now**' of the pipeline for online safety. It focuses predominantly on the needs and experiences of the safety tech sector, where there is more demand and challenge in terms of the talent pipeline.

Competition to attract developers is fierce and expensive, and some safety tech firms struggle to compete

Many respondents in senior leadership and human resources roles reported a shortage of developers across the whole of the tech sector. Leaders across safety tech organisations reported they were competing in an increasingly international market and were struggling to offer competitive salaries compared with other tech sectors, such as fintech.

Foundry4's previous interviews identified that current employees of safety tech companies were often driven by the mission of having a positive social impact, and in many cases were happy to take pay cuts to work in a sector they felt passionately about. The present research also heard from some current employees at safety tech firms who felt similarly.

However, outside of safety tech, tech workers and students in the talent pipeline were primarily motivated by salary. The quantitative research with young people identified that those who wanted to work in the tech sector often prioritised salary to a greater degree than those seeking to work in other sectors and prioritised positive social impact significantly less than those looking to work in other sectors[i].

This was mirrored by the challenges faced by safety tech companies in attracting sufficient technical talent: while few reported issues with staff retention once people are in roles, many felt that they were unable to offer competitive salaries and therefore lost out to the wider tech sector when trying to recruit people into vacant roles.

The more established safety tech companies, and those hiring from abroad, face fewer recruitment challenges

Not all organisations struggled as much as others in terms of recruitment. This was often the case for more established organisations who were putting in place strategies to mitigate recruitment challenges.

Some organisations were recruiting or outsourcing work abroad. For these organisations, international recruitment was seen as an opportunity to attract and retain talent at a lower cost.

Other organisations were actively engaging with universities and education routes to engage a young talent pool, offering apprenticeships, delivering talks in educational institutions and hiring graduates straight out of boot camps and universities.

Some safety tech firms struggle to recruit a diverse workforce

Senior leadership in safety firms described how challenges recruiting technical employees created further challenges for recruiting a diverse workforce. They were quick to discuss the lack of diversity in software development roles already and that the competition meant that they could struggle to hire a diverse workforce.

The challenge of recruiting a diverse workforce into safety tech organisations is not new and was recently outlined in Foundry4's report on the sector. Course leaders interviewed in this research emphasised the fact that issues in diversity extended beyond the recruitment process itself, with challenges in attracting diverse cohorts of students on to relevant courses.

The label 'safety tech' is seen as helpful for building industry credibility but might not be optimal for developing the talent pipeline

Senior leadership figures within the sector described how the term 'safety tech' was helpful in defining the sector, building connections with government and industry credibility. However, when used to attract talent, some were concerned that the term might not adequately convey the diversity and appeal of some of the roles available in the sector. It was felt that the connotations of 'compliance' linked to the term 'safety' might give potential candidates an inaccurate impression of the sector and the types of roles available.

Employees and students interviewed had generally not heard of the term 'safety tech' and did not initially think it presented roles that were suitable and of interest to them. However, when they learned more about the type of work and the challenges involved, they were far more interested in the sector.

Safety tech senior leadership figures were generally of the view that a company's individual mission should take precedence when it comes to attracting the best talent pool, rather than relying on the term 'safety tech' to attract candidates.

Future: What lies ahead for user safety in the tech sector

Experts recognised that the tech sector will need to refine its culture to attract more socially minded, passionate people

Some anticipated a change in culture and working practice as the tech sector meets regulation, along with wider societal shifts in attitude. To meet these challenges, companies recognised they will need more diverse workforces – particularly in terms of perspective, thinking style, and skills. Experts felt that the sector needed to attract more people with a passion for positive social impact.

Young people felt strongly that there are problems that need solving in the online world, but few currently see a role for themselves in doing this

Young people consulted as part of this work were aware that there were problems that need to be solved in the online world.

However, the young people who cared most about social impact were less likely to see tech as a relevant sector to work in. Some were cynical of there being ways to change and improve the online environment. Some were unaware that there was a sector working on these issues and that they could move into it themselves.

Current higher and further educational routes do not do enough to inspire students to work in online safety nor put these issues on the map

The majority of students consulted as part of this work had not encountered issues of online harms and online safety in their courses and were unaware of ways to work within the sector and improve the online world. Course leaders spoke about struggling to incorporate issues of user safety into their design courses and to sell the value of this to students and parents.

When young people understood the challenges being worked on within user safety, they were excited by the opportunity

While some young people had negative preconceptions of the potential to make the online world a better place, and others were unaware of anything being done in this space, when young people learned more about user safety and the challenges of the work, many became excited by the idea of it as a work prospect.

Opportunity areas

The research identified several opportunity areas to improve the talent pipeline for user safety roles, both within safety tech organisations and within wider tech. Some of these opportunity areas were shorter term – tackling the immediate recruitment challenges, particularly for safety tech organisations where most of the current demand lies.

Others were longer term in nature, looking to earlier stages in the talent pipeline, where aspiration for working in user safety can be cultivated in a diverse talent pool that will be needed within the sector in the future. This should include:

- Building awareness that those with non-technical backgrounds *can* work in tech
- Planting seeds earlier on in education routes. There are opportunities to embed the topic of user safety in a wide range of higher and further education courses and careers activities. Additionally, there are opportunities to raise awareness of user safety topics at a younger age, as other sub-sectors, such as cyber security, have done
- Tackling negative preconceptions of work within user safety and highlighting the types of work and missions which young people find appealing.

Background and introduction

There is an increasing need for safer online services and products

This research was commissioned by DCMS to support this effort to explore:

- The education, training and employment routes (or skills pipelines) for the key roles that will build in user safety to online products and services
- The requirements of both safety tech and wider tech companies in terms of workforce: what types of roles do they need to fill, what skills are they in need of, what types of mindset or motives are they seeking
- The challenges and barriers facing both safety tech and wider tech firms in attracting a skilled and diverse workforce to these roles

This report presents findings from more than 100 interviews and a survey of 1,500 young people

This research explored the challenges of a strong user safety workforce from a number of angles and from top to bottom – from chief execs and industry leaders to school leavers and graduates. Interviews were conducted with:

- **13 Industry body leaders**: professionals representing online safety and safety tech industry bodies and professional associations, both in the UK and US
- **7 Senior leaders** within leading tech platforms
- **13 Senior leaders** and chief execs from safety tech companies
- **5 HR managers** within safety tech companies
- **26 Employees** currently working in tech and safety tech companies (including software engineers and developers, design and user experience (UX) roles, business development, marketing and sales)
- **2 Recruiters** specialised in the tech sector
- **30 Students**, i.e. students in tech-related degrees (covering computer science, software development, machine learning, digital design, UX, human–computer interaction [HCI])
- **9 Course leaders**, i.e. directors of studies and lecturers across computer science and design degrees across the UK, as well as a leader of a computer programming boot camp

Note: This report includes verbatim quotes from these interviews to illustrate the research findings. These quotes represent the individuals' experiences, opinions and perspectives, and are not necessarily representative of DCMS's views on these topics.

In addition, a **quantitative** survey was conducted with more than **1,500 young people,** ages 16–24, to understand what young people think about different concepts and ideas relevant to safety tech and safety by design. The survey also captured information about what young people think they want from work.

The sample was composed of 1,051 young people broadly representative of this age group in the UK with a spread across each age, gender, region and ethnicity.

A supplementary sample of 545 additional science, technology, engineering and mathematics (STEM) students, predominantly current undergraduates, was also included to provide insight into a group who are currently more likely to be learning relevant technical skills, such as programming.

The landscape of user safety in the tech sector

Many anticipate a change in culture and working practice in the tech sector

The larger tech firms interviewed for this report indicated that their firms were on a journey towards a different culture and working style. Senior leaders described a historic culture of relatively autonomous

product teams that quickly developed, tested and iterated without many barriers in the form of regulatory compliance. A lack of top-down strategic oversight meant that teams worked organically, looking at what was working well in the market and what users seemed to like, and delivered products that maximised engagement metrics.

These larger firms talked about their fast-growing trust and safety, policy and compliance teams as a response to regulatory responsibilities, harsher external scrutiny (e.g. from the press and public) and shifts in societal attitudes towards online harm. They anticipated moving towards more top-down strategically led teams that interface with regulators and government and understand the impact that digital design has on people and society, rather than primarily being led by engineers.

> *"It's very much driven by public opinion, by the press, government and policy-makers increasingly getting on board with it, and by investors in some of these companies seeing the harms they're doing and not being happy supporting that."*

Industry body leader

While engineers have historically been in high demand within the tech sector, it seemed that the sector is at a 'tipping point' – in which those with a wider diversity of skills, from backgrounds including design, social sciences, ethics and philosophy will be increasingly valuable. Experts recognised there is likely to be a greater requirement for people with more of a behavioural science based background and ethics-related skills to meet the demands of the sector to design digital products differently and that these more diverse mindsets and skills will be more highly prized and fought over than purely technical roles in the future.

Experts also noted that user safety was at the beginning of its journey in terms of the talent pipeline and awareness-building about the sector. Some compared it to other sub-sectors, such as cyber security, which have undergone similar challenges and are seen as further along in this journey of establishing themselves as a known sector and building a strong workforce.

> *"There is a parallel of safety-by-design within cyber … There's a whole branch of work on secure by design … looking to understand how you can make things secure from the start."*

Industry body leader

> *"The safety tech sector is at a fairly early stage of its development. If you talk to people about fintech or cybersecurity or marketing technology start-ups … they understand there's a global market for it, they understand [its] potential. A lot of people we employ … had never heard or thought about safety tech before."*

Industry body leader

This report looked at a range of roles involved in the tech sector and user safety. These were broadly separated into two groupings. The first of these is referred to in the report as **'technical roles'**, including roles such as software engineers, developers and specialists in particular technologies.

This report also explored those involved in wider roles relating to user safety. This includes those working in **design, strategy, policy and sales.**

The research was carried out from March to September 2022.

This report explored those working in user safety roles within big tech firms, such as those within their trust and safety or policy teams, as well as those working within safety tech firms.

What roles are involved in user safety?

Roles that are currently in high demand across safety tech and the tech sector

As outlined in Foundry4's report, *Safety Tech in the UK: Skills and Capabilities*, on both the safety tech sector and wider tech, there is demand for experienced and capable software developers and software engineers, including those specialised in machine learning technologies, such as natural language processing, computer vision and computational neural networks. These employees are typically responsible for developing software that is able to automatically and accurately detect and respond to harmful online content.

Other more technical roles desired across this area include data scientists, data engineers and analysts. These employees are involved in the processing and analysis of large data sets and the development of measurement methods to understand and manage the kinds of data that safety-related software handles.

Additional roles within user safety

In addition to these technical roles, both product managers and project managers are in demand across safety tech companies and trust and safety teams in tech companies. Where product managers work with multiple stakeholders (e.g. software developers, designers, data engineers, policy managers) to ensure the overall quality of a particular product (be it a policy or a software function), project managers oversee the tactical and strategic coordination of a project.

In online platforms, trust and safety teams also contain several additional roles involved in legal governance, which are less common in safety tech companies. These are roles managing, creating and articulating responses to requests from law enforcement, regulatory bodies and government agencies (e.g. general counsel, subject matter experts) and reviewing and assessing legal requests in compliance with applicable laws and escalating issues where necessary (e.g. law enforcement response analyst, investigations analyst).

Specific roles also exist in trust and safety teams to support the development and implementation of site policies. These roles include those involved in developing and communicating content policies (e.g. content policy manager, policy analyst); developing and refining policies specific to a particular product and advising internal teams (e.g. product policy manager); and building and maintaining partnerships with key external stakeholders, such as NGOs, government and regulatory bodies (e.g. public policy manager).

Trust and safety teams may also employ investigators and moderators. Where investigators are responsible for investigating and analysing networks of abuse, moderators screen for harmful content according to platform policies. The decisions made by moderators may also feed into the machine learning algorithms used to detect or respond to harmful content.

Finally, designers, including product designers, UX designers and related roles (such as UX researchers), may also contribute to facilitating safer online experiences through incorporating user safety into the design of applications and websites.

There is a nascent and growing safety tech sector in the UK

The UK is a leader in developing safety technology solutions to protect users online, particularly through detecting and removing illegal and harmful online content. The UK's safety tech sector is one of the fastest growing parts of the UK's tech industry and saw a 40% increase in revenues in 2020, now reaching £314 million, as described in the report from DCMS, *The UK Safety Tech Sector: 2021 Analysis* published in May 2021.

> *"Investors believe in safety tech, otherwise they wouldn't be in it. For those who are involved, everybody sees the opportunity, the excitement and the expectation of what's going to happen and the financial projections."*

Industry body leader

> *"We grew exponentially last year … We hired a lot of people with specialist development skills … We've hired salespeople and account management teams because we've grown with our client base as well."*

HR lead at safety tech company

Often safety tech firms who struggled the most with hiring also faced challenges in selling

Previous DCMS-commissioned research presented in *Safety Tech in the UK: Skills & Capabilities* by Foundry4 found that the safety tech sector faces challenges in recruiting a suitably skilled and diverse workforce. Many of the safety tech companies interviewed for this report described the difficulty in attracting skilled and passionate people to their organisation.

While some of these challenges were specific to the safety tech sector itself, it is worth noting upfront that many safety tech organisations are start-ups and this can also bring with it recruitment challenges: safety tech organisations share some of the challenges that many start-ups face in terms of workforce requirements, for example being seen by potential candidates as more of a 'risky' employment option.

In addition to challenges in recruitment, this research also identified some challenges for safety tech companies in finding their place in the market and selling their product to the wider tech sector.

> *"I don't think staffing is the main thing to be worried about…at the end of the day, if you've got the demand, people will find the staff ... If you ask me what keeps me up at night, it's mostly can we get the deals and can we sell the products?"*

> **Safety tech senior leadership**

There was some sense that safety is 'a sector waiting for a market'; nearly all safety tech firms that were interviewed were anticipating a huge growth in requirements for their services, especially in response to the introduction of new regulatory responsibilities in the Online Safety Bill.

> *"The longevity of the sector is dependent on regulation – things can change overnight, dependent on what legislation can come into force. It could create an immediate need for a huge workforce, or damage it. This has led to a sector in waiting."*

> **Industry body leader**

But, senior experts agreed that legislation will not change things overnight and, meanwhile, many large tech companies are developing their own solutions in-house and growing their own trust and safety workforces.

The safety tech companies who tended to be larger, more established, and more successful in attracting talent were often those who were more market-focused (starting from an identified market need), as opposed to more product-focused (built around product innovation).

Those who had been able to successfully pitch to large tech companies tended to be those who had a clear understanding of the company's business requirements, what the platform's in-house capabilities were likely to be and an understanding that they would need to be able to deliver at scale, potentially at a global level.

> *"It's a huge uphill battle to pitch to big tech organisations because they have their own product teams ... You're selling to someone who has probably already built a version of the products that you're trying to sell them."*

> **Safety tech company senior leadership**

The current skills shortage in user safety is predominantly within technical roles

The current skills shortage spoken about by experts and companies lies within technical roles, such as software developers and engineers. This disproportionately impacts safety tech firms, given the focus on developing technical solutions for user safety and the relative difficulty in attracting those with technical skills in comparison with big tech firms.

Indeed, safety tech companies described their need for technical workers, such as engineers, and reported having greater difficulties in recruiting this technical workforce compared with other big tech organisations.

The **first section of this report** will focus on 'the **now'** of the pipeline for online safety. It will focus predominantly on the needs and experiences of the safety tech sector, where there is more demand and challenge in terms of talent pipeline.

In the future, there will likely be a greater need within user safety for a workforce with different skills and disciplines

Experts and senior leadership who saw user safety as being at a 'tipping point' argued that it will soon require a much larger and more diverse workforce who are involved in all stages of product development, particularly in the initial product design. They argued that this will require a new type of workforce, particularly in terms of perspective, thinking style and skills, who understand the impact that digital design has on people and society and look to create more positive user experiences.

Bringing this new and more diverse workforce into user safety will have its own different set of challenges. These challenges will be outlined in **the second section of this report** '**Future**: What lies ahead for user safety in the tech sector'.

In each section, 'now' and 'future', there is a distinction between two perspectives:

- **The tech sector's perspective** refers to that of senior leaders (employers) within safety tech, wider tech companies and industry body leaders
- **The workforce perspective** refers to that of students, employees and young people
- Perspectives of course leaders, recruiters and HR managers informed both sections – and are identified where relevant

Now: The current pipeline for online safety

Summary: The tech sector is currently predominantly seen by prospective and current employees as a way to earn good money. It was often not the obvious choice for those in this research who seek to have a positive social impact on the world. Many of the people currently attracted to it are likely to be those who place salary above any other factor.

Perspectives of employers and experts

Competition for attracting developers and other technical roles is fierce and expensive

Some safety tech organisations described struggling to hire technical talent

A common theme across interviews with senior leadership and HR in safety tech was the struggle to hire developers. This shortage of developers was not new and was a key challenge outlined in the Foundry4 report. This challenge was well-known and was not unique to safety tech organisations. In general, software developers were in high demand across all parts of the tech sector – such as cybersecurity and fintech.

> *"We're looking for talent in the same pool as all sorts of other tech companies, from the Facebooks and Googles of this world right down to any start-up in any domain. In fintech, there are fintech specialists; in cybersecurity, there are cybersecurity specialists, so you've got a slightly smaller pool to fish in … more likely you're competing with other cybersecurity companies. We're fishing in quite a general pool; it's a very competitive marketplace."*

Industry body leader

> *"If you look at safety tech, all of those businesses are, broadly speaking, technology businesses, and the war for talent is around development resource. We find it very hard."*

Safety tech senior leader

> *"One of the issues we've had is raising our brand profile in the local marketplace, because we have competitors who hire lots of developers. One of them moved to our location and hired hundreds of software engineers. They mopped up all of the talent and were offering silly salaries to people."*

HR lead at safety tech company

Some safety tech companies struggled to offer competitive salaries

Leaders across safety tech organisations reported that they were competing in an increasingly international market and described often being unable to pay candidates the competitive salaries that were being offered in larger, better known organisations in wider tech. It was suggested that this was changing the dynamics of the UK market and contributing to the skills shortage in software developers. There were other factors that could influence a potential candidate's decision and attract them to a company, but pay weighed heavily on choosing a job.

For instance, companies in North America were able to offer salaries almost twice the size of the competitive salaries safety tech organisations could offer. The shift to remote working and the ease with which employees could change companies seemed only to heighten this existing competition.

> *"The fight in the war for talent at the moment is impacting every company within tech and every industry within technology … I'd probably say the larger percentage of talent aren't particularly concerned about whether it's safety tech or [other areas of] tech. They just want a good job with good money, good benefits and good working conditions that they enjoy doing."*

Tech recruiter

> *"It's obvious there are certain industries that have more money than others. If I'm a developer and I want to put money in my pocket … I'm not going to care about safety tech … It's not well-paid comparing to fintech."*

Industry body leader

The competition in salary between safety tech organisations and other larger organisations in wider tech was documented in the Foundry4 report *Safety Tech in the UK: Skills & Capabilities*. Analysis in the report of job vacancy data over the last three years found that average advertised salaries for technical safety tech roles

tended to be in the region of 70%–80% of that offered to employees in similar roles in wider tech organisations.

Such discrepancy in pay was mirrored in interviews with employees in this research, particularly when comparing career trajectories over time.

Taking an example of two data engineers at the start of their careers, one in safety tech and one in a five-year-old tech start-up, both learned data engineering in short specialised courses, or 'boot camps'. Both employees received similar salaries at the start of their jobs – the employee in safety tech received £27,000 per annum, while the other in the wider tech start-up received £26,000 per annum. However, shortly into their roles, the latter received a sharp pay increase to £48,000, while the safety tech employee was still on a salary of £27,000 six months into their posting.

Comparisons in safety tech starting salaries were particularly stark when set against those offered by big tech organisations. For example, a graduate machine learning engineer was offered a starting salary at a well-known big tech company of £46,000 per year plus bonuses, which could be up to £15,000 a year.

Recruiting developers from abroad helped some organisations to attract and retain talent at a lower cost

Both recruiters and senior leadership professionals in safety tech organisations pointed out the relatively narrow talent pool of software developers and related specialists within the UK, whose salaries were elevated compared with the global market.

Because of this, a few safety tech organisations we spoke to looked to recruit overseas to attract talented software developers, even with the additional cost of sponsoring visas.

In other cases, companies hired overseas and avoided the need to support residency status by allowing their employees to work remotely, from their home countries and for a much more affordable cost. One company, for example, employed a senior software engineer based in Egypt for £36,000 a year. They reported that a software engineer at the same seniority level in the UK would likely demand more than £120,000.

> *"A lot of our software engineers are international … It allows us to get the talent without the high salaries."*

> **Safety tech senior leadership**

Larger companies also relied on recruiting overseas. For instance, one company with its central office in the UK employed teams of developers in satellite offices around the world, such as in Malaysia, Israel and Turkey, where developers were equally qualified as those in the UK, were easier to recruit and had lower salary expectations. While whole teams might be outside the UK, recruiting software developers from Eastern Europe and India, for instance, could also be an effective workaround for avoiding the competitive market in the UK. This could also be challenging.

> *"It would be good to make the regime to bring people from outside the UK as straightforward as possible. If you can't find these people in the UK, can they come in from outside?"*

> **Safety tech senior leadership**

One company reported a strategy of benchmarking salaries to local rates. In this way, they were able to offer competitive salaries in different places by offering opportunities for remote work.

In addition to being able to offer locally competitive salaries, hiring overseas also helped support organisations in achieving a more diverse workforce. By expanding the pool of talent they could draw on, it was easier to recruit a workforce with a variety of experiences, with different backgrounds and lived experiences.

The shift to remote working due to Covid was perceived as a trend that was likely to stay and was often the preferred mode of working for those doing technical roles. While the opportunity to work remotely increased competition for technical roles, as people were not restricted to applying for jobs geographically near to them, it also opened up opportunities for hiring abroad.

Others engaged with universities and education routes to engage a younger candidate pool

For many students in computer science, their year in industry provided a much appreciated opportunity to learn about working in the tech sector. It was not uncommon for these students to plan on returning to the

employers that had supported them in their year in industry, either with an interest in the company's product or a sense of commitment to the company thanks to the positive experience they'd had there as a student.

> *"My manager liked me … so they've extended my offer to a full-time offer. I like that the organisation likes to nurture a lot of skills [and] help you develop. I'm still open in terms of what I can do in the tech industry; I just want to learn as much as I can."*

Sameer, maths and economics graduate

Some safety tech organisations took this as an opportunity and hired graduates from universities or boot camps, offering them support and the chance to develop their skills and work with new technologies. Others offered apprenticeships and internships. While this was difficult for smaller organisations, it was something they aspired to achieve as their company grew.

> *"Hiring good people is very difficult, and as we get bigger, we want to think of our pipeline much more systematically. So, we are going to offer internships, accreditations and talks at events, just trying to make students and more junior people aware that we exist because inbound contact is the best thing that we can have."*

Safety tech senior leadership

> *"It used to be challenging to hire the right workforce, particularly with technical skills … but we've focused a lot on apprenticeships and have had a lot of success there."*

Safety tech senior leadership

We also learnt of times where safety tech organisations engaged more directly with students through delivering talks about their expertise in relevant courses. For instance, guest speakers from one safety tech firm delivered lectures at one university's course in social computing. This provided an opportunity for this organisation to increase its visibility among early-career software developers.

Safety tech firms also spoke about ensuring there is a pipeline for those who can *sell*

Beyond technical roles, several safety tech companies talked about the challenge in recruiting people able to support business development, marketing and sales aspects of the business. Finding people who can bridge the divide between detailed technical knowledge and market sales acumen was seen as a particular difficulty.

Where firms had greater sales skills and ability to identify market need, there tended to be fewer challenges attracting technical talent (for example, being able to offer higher salaries and increasing potential candidates' perceptions of how successful the business is). Therefore, it is important that the pipeline includes both those who have technical expertise as well as those who are able to sell and understand the market.

> *"It can be quite a challenge to find the right people in terms of commerce and marketing teams. There's lots of exciting sectors for people that have got [these] skills … It takes somebody quite special to take the complexity out of the things that happen in the safety tech sector and share that in a way that's engaging for audiences."*

HR lead at safety tech company

There are challenges in obtaining a diverse workforce in some areas of user safety, particularly safety tech

Challenges recruiting technical employees created further challenges for recruiting a diverse workforce

Previous studies have argued the importance of a diverse workforce in safety tech organisations. Foundry4's reporting on the sector, for example, argued that minority groups suffered disproportionately from online harms and that to build products which properly tackle these, safety tech's workforce needs to be diverse and represent the users it serves. The Foundry4 report outlined current challenges in recruiting this workforce:

while safety tech firms often overall had relatively representative gender balances, there was a high imbalance in technical teams, where the workforce was heavily weighted to men.

Such challenges were mirrored in this qualitative research. While hiring developers was the common priority across safety tech organisations, many organisations explained that hiring a diverse workforce was also important to them. During interviews with senior leadership roles, respondents were quick to discuss the underrepresentation of women in software development roles. Across organisations it was felt that there was not enough being done to attract a diverse selection of students to relevant courses at university level (e.g. computer science courses), leading to a lack of diversity in the workforce later down the line.

For some of these organisations, diversity was seen to have a direct impact on the quality of the product they were developing. In some organisations, diversity was valued particularly due to the nature of the product or service they provided (e.g. technologies to detect toxic/harmful content). Indeed, in one safety tech firm, to compensate for the relative lack of diversity in their team, they hired people with more 'diverse' backgrounds in an advisory-like capacity in order to obtain a wider perspective on the kind of problems they were approaching.

Other organisations wanted to increase diversity in their workplace, not necessarily for the purposes of ensuring product quality, but rather because they felt a responsibility or believed that it would improve their organisational culture.

For smaller safety tech companies, the pool of people applying was limited in its diversity such that these organisations felt they had to prioritise filling roles at the expense of achieving the level of workforce diversity they would ideally like.

> *"In my recent recruitment drive, we got roughly maybe 50 CVs. Over 40 were male. Data science is very male dominated without a doubt …"*

Safety tech senior leadership

> *"Unfortunately, we just have practical constraints. If we have to hire someone and if we find a really good person, and that's another white man … we're going to hire them."*

Safety tech senior leadership

This was also reflected in the pool of qualified software developers applying to available roles, which was also weighted towards men. In general, safety tech organisations struggled to attract applications from women due to women's general underrepresentation across the industry.

This gender disparity was also reflected in the survey of 16–24-year-olds, where twice as many male respondents (37%) as female (17%) reported being 'very interested' in working in technology and computing. This disparity was even greater among current or previous STEM students, which is likely due to computer science and technology generally being a male-dominated field: among current STEM students in our sample, male students were nearly five times as likely to report studying computer science than female students, while the inverse was true for psychology for example.

Technical course leaders similarly cited challenges in attracting a diverse student cohort, particularly in terms of gender

Challenges in preparing a diverse pipeline of future workers for the tech industry were noted by numerous course leaders (those running university courses or further education courses) interviewed as part of this work.

These challenges appeared to be particularly prevalent within computer science specialisms. While a spread of ethnicity was not always an issue, with some courses receiving a high intake of foreign national students, for example, course leaders described how they often struggled to attract female applicants to their courses.

> *"I think ours is probably fairly typical or slightly better than average for computer science, i.e. pretty bad. We have roughly 20% females [female students]."*

Computer science course leader

Some universities proactively attempted to tackle their gender imbalance and spoke of successful attempts to increase their female student population. For example, one university spoke about a programme in which final

year female students went into secondary schools to give lessons on programming and tell pupils about what they were studying at university. The programme aimed to give pupils a female role model to relate to, as well as introduce them to programming before pupils had made decisions about which subject to study in further education.

Rebalancing the gender split in their course was viewed by one course leader as an important step in ensuring a sustainable talent pipeline for tech organisations with more of a social purpose. He observed that within his student population, female students seemed to be more attracted to organisations with a social purpose compared with men.

> *"We're trying to take in more female students because we've got a historically male-dominated course … A couple of years ago, we managed to double the intake of female students … As more female students have come, we've observed that they're a bit more open to going into workplaces based on the feeling they get, the fact that they're doing good and that they might be protecting somebody down the line; whereas, not all, but more boys think more about salary progression."*

Computer science course leader

Those running design courses at universities also spoke of some, comparatively less severe, challenges in terms of diversity. Course leaders in digital design spoke of a relatively 50:50 split in terms of gender, sometimes even being skewed in favour of women.

Design course leaders did, however, speak of challenges in attracting people from minority ethnic backgrounds: while all design courses had some students from these backgrounds, it was seen as something that could be improved. One course leader suggested that one way to tackle this would be to have more lines of communication with parents from backgrounds where certain professions might be more highly regarded than others to encourage them to support their children moving into different fields, such as design.

> *"In some cultures, computer science is considered a well-paid job, whereas design is considered more of a hobby. There is a gap here. We need to attempt to educate these parents."*

Design course leader

Having a defined sector was seen as helpful in building credibility

Many appreciated the work done by DCMS and industry bodies to support the safety tech sector. Particularly, labelling the 'safety tech' sector was seen as helpful for defining the sector and building industry credibility. Senior leadership figures described how having a defined sector gave greater opportunity for creating connections across the sector and with government, to help establish a known and trusted industry image. It was remarked by several that the safety tech sector was notably more collaborative across organisations than other tech industries.

> *"One aspect I like of safety tech and what they're trying to do is to try and create a route in [to the tech sector] at a UK level, an ecosystem of mutually supportive business."*

Trust and safety lead at tech company

> *"… The [safety tech] industry is way more cooperative … There's a willingness to express a certain amount of vulnerability in the space that I think comes from the mutual understanding that this is an immensely hard problem. No single studio or tool can solve this problem on its own."*

Safety tech senior leadership

Some felt the label 'safety tech' may not fully convey the diversity and appeal of the roles available

The organisations listed in the [Directory of UK Safety Tech Providers](#), published by the DCMS in January 2022, widely varied in terms of size, type of organisation, client, technology and service provided.

Some organisations consulted as part of the work used cutting-edge technologies and drew on recent developments in machine learning, natural language processing and other techniques to build their solutions. Other organisations applied existing technology and intelligence to tackling online harms.

The clients and audiences of the organisations likewise varied. Clients ranged from crime and policing institutions to the educational sector, public health, corporate brands, advertisers, games companies and social media platforms.

However, during interviews, providers also shared that they felt that 'safety tech' did not necessarily relay the variety of the work being done and what was significant and important about it. Some commented that while there might be value in using the term to establish the sector and build connections with government, the term, when used in isolation, might be less useful in trying to appeal to a future workforce and motivate them to move into the sector.

> *"I think it's good that we have a term for what this is. And so, in that sense, it's good that the term exists. I don't think it's a great term, but if it gets adopted and we all know what that means, then that's fine."*

Safety tech senior leadership

Some safety tech companies tried hard to distance themselves from 'compliance' or 'health and safety' connotations.

> *"It's not just about compliance; it's about user experience … so, we're trying to situate ourselves at that end of the market."*

Safety tech senior leadership

> *"The performance sell is the way forward. [Compliance] cannot be the selling point. It is an imposition that a government decides to apply … It's like seat belts. You don't sell a car because it has better seat belts … Usually you sell a car because you want to go from point A to point B in the fastest way possible."*

Safety tech senior leadership

Some safety tech companies successfully appealed to candidates based on their 'mission', especially to those with personal relevant experience

The positive social impact of safety tech companies was not found to be enough on its own to attract suitable talent. Yet, promoting the aims and values of the organisation was nevertheless important to safety tech organisations and was recommended as a means of capturing the attention of the right candidates.

While recognising that the mission-focused nature of safety tech businesses is undoubtedly a unique selling point for the sector, one recruiter emphasised that this must also be considered alongside other elements that drive candidates to different roles and organisations.

> *"The mission is really important. It's going to be a big selling point, but don't rely on it … It gets people interested but only to a certain point if the other bits aren't right. You've got to make sure salaries are competitive, that there's an option for remote work, that you've got the right benefits package … [that] the culture and the onboarding is right."*

Tech recruiter

Some senior leadership commented on the importance of communicating a company's individual mission, particularly when it comes to the future talent pipeline – it was described as holding more weight in the eyes of potential candidates compared with a company's affiliation with the safety tech sector. While the term 'safety tech' was seen as being useful for business development and stakeholder engagement, senior leadership figures suggested that, at least when it comes to the talent pipeline, focus on a company's mission should take precedence.

> *"A lot of people that we employ … had never really heard or thought about safety tech before they came here. But, once we got them into an interview process and they understand what we're doing, then that sense of purpose really resonates with people and they get very excited about it."*

Industry body leader

The workforce perspective

The tech sector is primarily perceived as a space to make money, rather than as a place to have a positive social impact

Foundry4's previous interviews identified that current employees of safety tech companies were often driven by the mission of having a positive social impact. These employees were cited as being similar to some other software developers within the wide tech industry who were looking to move into 'tech for good'. The present research also heard from some current employees at safety tech firms who felt similarly.

However, outside of safety tech, tech workers and students in the talent pipeline interviewed as part of this research had perceptions of the tech sector as one that pays very well but did not necessarily see the tech sector as a place to have a positive social impact. For example, some students perceived the sector to have a reputation for creating products that do not always prioritise the end user, for being profit driven and for being associated with large scandals and negative press in the past.
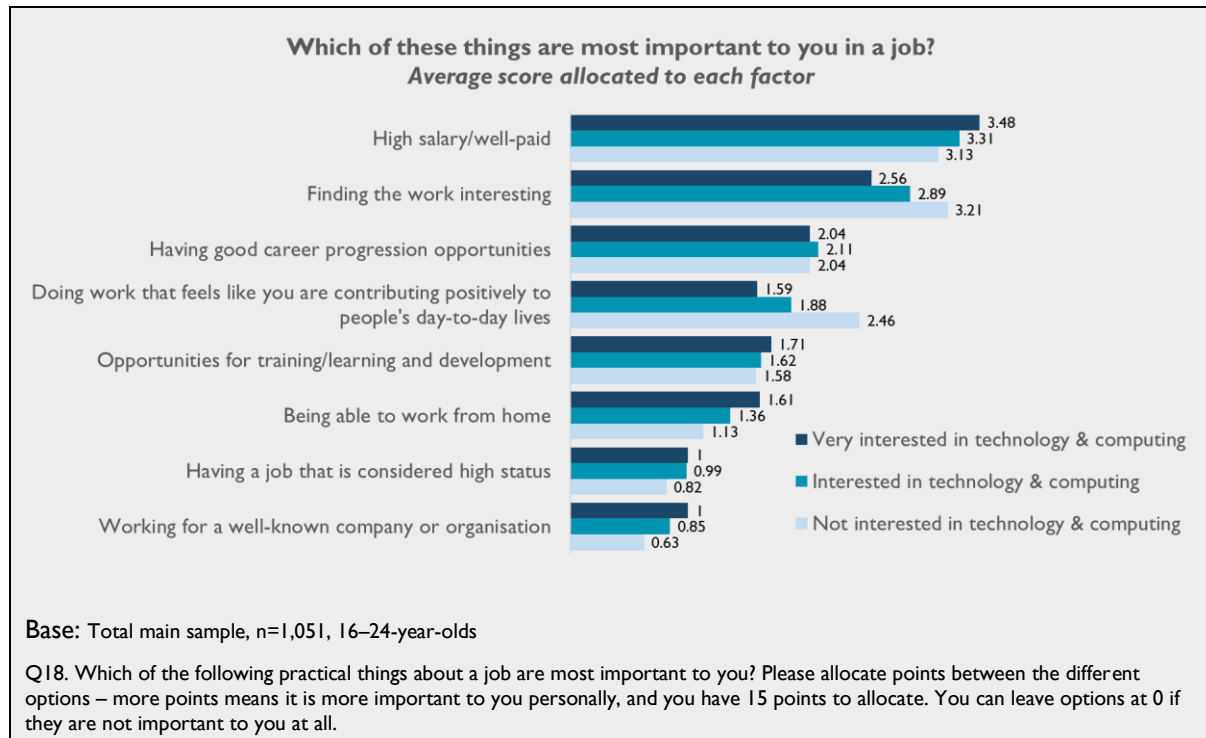
Not surprisingly, when asked to prioritise what they value most in work, most employees and students revealed an emphasis on pay over other values surrounding work. That was especially true for those working in technical roles, such as developers, who were more likely to put it as their most important criterion for a job. This was reflected in the challenges faced by safety tech companies in attracting sufficient technical talent. While few reported issues with retention, many felt that they were unable to offer competitive salaries and, therefore, lost out to the wider tech sector. Designers, in comparison, felt pay was important but would often talk about a range of other values (outlined below).

Quantitative data shows that young people interested in working in technology are less likely to prioritise finding work that does 'social good' compared with those who are not interested in working in technology

The survey of young people aged 16–24 consisted of a nationally representative sample of young people, which included both those who were interested in working in technology and those who were not. While salary was one of the most important considerations for both those who were very interested in working in technology and those who were not, there were differences in how much these two groups prioritised doing work that feels like you are 'contributing positively to people's day-to-day lives'.

Data from the survey showed that those who reported being **most interested in working in the technology and computing sector** considered 'doing work that feels like you are contributing positively to people's day-to-day lives' as significantly **less important** to them (scoring this factor 1.59 on average) than those not interested in working in technology (who scored this factor 2.46 on average). Similarly, those most interested in the tech sector considered a **high salary and status** more important, and the **work being 'interesting' less important** than those who were not interested.

In fact, for those most interested in working in the tech sector, pay was the most important thing in a job. Positive impact came in sixth place. For those not interested in working in the sector, the most important aspect of work was interesting work, pay and, in third place, positive contribution. This suggested that the tech sector is currently less likely to attract those who prioritise doing 'social good', potentially due to the perception that the tech sector is not a place to do this, as identified in the qualitative interviews.

Which of these things are most important to you in a job?
Average score allocated to each factor

Factor	Very interested	Interested	Not interested
High salary/well-paid	3.48	3.31	3.13
Finding the work interesting	2.56	2.89	3.21
Having good career progression opportunities	2.04	2.11	2.04
Doing work that feels like you are contributing positively to people's day-to-day lives	1.59	1.88	2.46
Opportunities for training/learning and development	1.71	1.62	1.58
Being able to work from home	1.61	1.36	1.13
Having a job that is considered high status	1	0.99	0.82
Working for a well-known company or organisation	1	0.85	0.63

■ Very interested in technology & computing
■ Interested in technology & computing
■ Not interested in technology & computing

Base: Total main sample, n=1,051, 16–24-year-olds

Q18. Which of the following practical things about a job are most important to you? Please allocate points between the different options – more points means it is more important to you personally, and you have 15 points to allocate. You can leave options at 0 if they are not important to you at all.

Gender played a role here too. Female respondents in the overall sample consistently rated making a positive contribution as more important than male respondents. However, this was not the case among people who were interested in working in technology and computing – positive contribution was rated lower by both genders.

Additionally, male respondents consistently scored 'having a job considered high status' and 'working for a well-known company' higher than female respondents (whether interested in working in technology or not).

Respondents cited other aspects of work that were important to them

There were also other elements of work that employees mentioned were attractive when looking for work.

Organisational culture:

Most of those we interviewed saw working with colleagues they got along with, in a setting where their work was appreciated and where they were treated with respect, as an essential prerequisite for staying where they worked. This also included employers who accommodated flexible and remote working and respected the autonomy of their employees to get the job done.

Working with new and/or 'cool' tech:

For many working in technical fields, particularly those in software development, it was important to maintain their 'technical edge', ensuring their skills were not out of date with contemporary and emerging technologies. Skills in machine learning and other modern technologies were frequently quoted as important for the future. In addition to this, having the opportunity to work on something new or challenging was preferred over legacy technologies, which for many would be a turn-off to accepting a role.

Having an impact:

The idea of working on a product or service that was used by many was significant for many software developers and designers. Even if that product was a button on a website, if it was to be used by millions of people, the work would be appealing.

Learning and development:

Many of those interviewed preferred work where there was a clear opportunity for continued learning, development and progression. This was particularly so for students and recent graduates, who saw their first few years in the workforce as opportunities to develop professionally and technically.

Social purpose:

Some we interviewed expressed a strong preference for work that was going to do something 'good' or 'meaningful' and would prefer to work for an organisation with an ethical mission or cause. However, often when this was mentioned, it was not a core element of the work that was important to them. Designers were more likely to mention social purpose compared to software developers.

But these were rarely prioritised over pay

As such, the salary incentive available was not the only consideration that was important for those working in the tech sector, but it was rare that respondents would feel the need to sacrifice one of these aspects over another. Where they did, pay would be privileged.

Often in interviews, respondents reported that they did not necessarily need to sacrifice their other preferences for a lower salary. Rather, pay was a filter: they could, in effect, have it all.

For others though, the competitive salaries on offer were enough for them to discount other aspects of work they might otherwise have valued.

For example, Carol found the work she did for her employer, a large online platform, tedious and boring and did not find the products she was working on to be meaningful to her, yet in the scheme of things, this did not matter so much:

> *"I think [Online Platform] is one of the highest paying employers for software engineers. I'm not sure how many employers can compete with them, compensation wise, so I would probably have to concede some money, and it all depends, right? I mean, anyone would take a 10% pay cut to work on something cool, but when you start talking like tens of thousands of pounds, it's like, well, you know, things aren't so bad here …"*

> **Carol, software engineer, Social Media Platform**

> *"[This data analytics company] paid a significant amount more money than another company could possibly have offered, and it was something I wanted to do anyway, so it was a bit of a no-brainer. If [Security Tech Company] had paid the same amount of money, maybe I'd have gone with them, but the salary was something like £40,000, and the base salary for [Data Analytics Company] was £81,000."*

> **George, computer science student**

Even where employees had moral reservations about the consequences of their work, this would not necessarily be enough to dissuade them from working in the area, so long as it benefited them in other ways.

Kirsty illustrated this; she was developing algorithms to improve user retention on a social media platform:

> *"I don't personally use it that much. I've downloaded the app since starting the job, but before then I didn't have it, and I think people being on their phones for a long time is not a very good thing for the world and for people. I thought from a moral standpoint I wouldn't want to contribute to it, which is why when I applied, I thought, I wouldn't do this job, but it would be good to apply for the experience … and then I got it and I thought, oh well, I'm a new grad. I'm not going to add much; I'm just going to get the experience and then go elsewhere."*

> **Kirsty, software engineer, Social Media Platform**

Experienced candidates were often proactively headhunted into a sector rather than searching and deciding for themselves

Some safety tech companies we spoke to talked about relying on job advert websites for recruitment, but sometimes found it hard to fit into predefined categories.

> *"Job search sites use algorithms based on role descriptions. But, there's no category for us on them"*

> **Safety tech senior leadership**

But, it became clear during interviews with employees that more experienced candidates were more often proactively sought out and contacted by recruitment consultants or in-house head-hunters – both by safety tech and wider tech companies.

> *"My interview with [Big Tech Firm], that was [through] a recruiter reaching out to me on LinkedIn."*

> **Maria, computer science student**

Those with multiple years of experience working in both software development and design roles, reported relying on a stream of messages from recruiters presenting them with opportunities to apply for.

For instance, when Ryan, a software engineer with more than six years professional experience, was asked about his strategy for searching for and finding a new position, he replied:

> *"At first, in one case, I have gone looking [for a new position] … The [last] two [jobs] that have come up have been [through recruiters] coming up to me."*

Ryan, software engineer, Online Events Platform

This was also reflected in the perspective of recruiters within the tech sector.

> *"Once you get them on board, you have to work very hard to keep them engaged because it's so easy for them to find another job, and so retention of that talent is just as hard as actually finding that talent in the first place."*

Tech recruiter

There was no single reason why software developers or designers sought to change employers. For some, changing employers was a strategic way of gaining experience, responsibility and a pay raise. They spoke of tactically changing their roles every year or two. For these employees, regularly changing employers was seen as a way to fast-track their careers.

More often, a change of employers instead reflected either some frustration with their former employer or colleagues – such as feeling undervalued, micromanaged or overworked – or boredom in their current role. It could also be motivated by the appeal of a more challenging and exciting opportunity or one that was more lucrative or offered a better work–life balance. Where employees valued remote working, there was less friction in making this change, such as having to relocate.

Students and employees were unfamiliar with safety tech and user safety as a sector. Many became interested once they understood what it involves

Students and employees within the wider tech sector were unfamiliar with the term 'safety tech', but once they understood it, could see the appeal of some roles involved

None of the students, educators, recruiters or employees outside of the safety tech sector interviewed had previously heard of 'safety tech'.

Across these interviews, the people we spoke to tended not to look for work in particular 'sectors', and when they did search for job opportunities, these searches typically began with job roles and companies rather than sectors. The exceptions to this were among those with specific areas of interests, such as finding a well-paid job in fintech or finding ethical work in 'green tech' or 'climate tech'.

The sub-sectors that most had heard of before were those such as 'health tech' 'fintech' and 'cybersecurity'. Less commonly known were other sub-sectors, such as 'ed tech' and 'climate tech', yet the kind of work being done in these areas was quite intuitive to those who had not heard the terms before.

The term 'safety tech' was not intuitive in the same way as these other terms. When introduced to the term 'safety tech', the reference to 'safety' often created a false impression of the sector and the work being done. In general, students and employees in tech-related disciplines thought that the term referred to digital technologies that supported physical safety or thought it related to issues currently addressed by roles in cybersecurity.

> *"If I had to guess, I'd assume safety tech was related to cybersecurity … or is it like personal security? Like physical security?"*

Nidiya, data science and machine learning student

> *"I don't know about safety tech … I mean, like, that could be everything from protection for workers on oil rigs to, I don't know, baby gates on stairs."*

Amy, HCI design master's

Very rarely did employees and students make the link between 'safety' and 'online safety', but when they did, this was often due to a familiarity with the term 'safety' as a part of 'trust and safety' teams in the organisations where they worked.

In our survey with young people, awareness of 'user safety' as an area where technology is used to create products or solve challenges was reasonably high. However, it was reported as the least appealing area to work in. Sixteen percent thought working in 'user safety' would be "great," compared with 'finance' (27%), 'health' (27%) or 'cybersecurity' (22%).

Similar to the candidates and students participating in qualitative interviews, when survey respondents were presented with more specific examples of what kind of work 'safety tech' might actually encompass, perceptions were much more positive (see page 33 for more data).

A number of students and employees were not immediately attracted to the sound of safety tech when they first encountered the term. Some of these people initially associated the term 'safety tech' with issues of compliance and regulation.

> "*I think, in general, when we think of safety or security or that kind of thing, people are not that 'oh, that's cool'. It seems like boring work, like following regulations and that kind of thing.*"

> **Jaime, software engineer, Robotics Company**

Most of the developers we spoke to saw themselves as creators, makers and problem-solvers and, when introduced to the definition of safety tech, thought that it involved creating technologies that would limit behaviour or restrict privacy or speech.

Employees and students were far more interested in the safety tech sector when they had a better understanding of what it would involve

However, when employees and students learned more about what safety tech involved and the way new technologies were being used to address complex and long-standing issues, they often found it attractive.

While the term did not show what was exciting about safety tech, this did not limit interest in the technologies being used and the problems being addressed.

> "*I mean, it's like more of a mission. Yes, you're keeping people safe, but it's more disruptive than that …*"

> **Mila, design engineering student**

> "*I think maybe the terminology 'safety tech' makes it sound a bit boring, for want of a better word, but actually the area, I'd say, is something that is quite interesting to me.*"

> **Val, UX designer, mixed experience**

> "*To be honest, I thought it would be way more boring than this. This is actually quite interesting … Safer online experiences, tackling harmful content, it's so important in this day and age. And, I think having a technology that would actually bring all this together and actually help people is extremely important.*"

> **Kieran, AI researcher, Health Tech Company**

Summary: The current pipeline for online safety

The current skills shortage in user safety is predominantly within technical roles, such as software developers and engineers. This disproportionately impacts safety tech firms, given the focus on developing technical solutions to user safety and the relative difficulty in attracting those with technical skills in comparison with big tech firms.

Competition for attracting developers and other technical roles is fierce and expensive, leaving some safety tech companies struggling to attract talent. Some were recruiting developers from overseas as a strategy to lower salary costs. Others were engaging with universities and education routes to engage a younger candidate pool. Some safety tech companies successfully appealed to candidates based on their 'mission', especially to those with personal relevant experience, but this was rarely enough to secure talent.

More successful safety tech companies tend to have strong sales and business development skills, highlighting the need for a talent pipeline that includes both those who have technical expertise as well as those who are able to sell and understand the market.

From the perspective of students and employees, the tech sector is presently seen as a way to earn good money but not to have a positive social impact on the world. This means the majority of people currently attracted to it are likely to be those who place salary above any other factor. The label 'safety tech' may conceal the diversity and appeal of some of the roles and challenges available, which potential candidates do recognise once they learn more about the opportunities.

Future: What lies ahead for user safety in the tech sector?

The tech sector needs to attract people with a passion for positive social impact, who are motivated to improve user safety and social issues, with backgrounds in social sciences, ethics and philosophy. But, currently, these people do not see tech as a relevant place to apply their passion and skills.

Perspectives of employers and experts

The tech sector will need to change its culture by attracting more socially minded, passionate people

To meet these challenges, companies recognised they will need more diverse workforces – particularly in terms of perspective, thinking style and skills

Interviews with senior leaders who were focused on trust and safety, especially in the US, were quick to talk about the greater diversity needed in the tech sector to change working practices and build safer products, particularly in mindset, attitude and thinking styles.

> *"Mindset diversity is hugely valuable … You need to put together people who think differently, regardless of their background … I would say that this is probably the most powerful tool that helped us in building the organisation we have today."*

Safety tech senior leadership

These individuals talked about the wider range of academic and professional backgrounds needed to bring a greater understanding of human behaviour and psychology, social dynamics and social issues. This, combined with an empathic mindset, was seen as crucial for trust and safety roles.

> *"Usually someone rises to the top as the most empathic, holistic person, and they get put in charge of the well-being/harm problems of the company – people who think about social problems in not a totally technical sense. We often hire people with philosophy or sociology backgrounds. You need the brain of a philosopher, the gut of a police officer and the heart of a caregiver."*

US-based trust and safety industry body leader

Experts felt that the tech sector needed to attract more people with a passion for positive social impact

The senior interviewees all agreed that to make a significant change to the culture of tech, the sector needed more people committed to positive social goals and impact in their work.

> *"You've really got to be deeply committed to what you do … you have to come into the business with some kind of deep passion."*

Trust and safety lead at tech company

> *"Whether it's senior people who have a very deep experience of the operations side or people who are more junior who are just interested in getting involved in tech, I think there's an underpinning for [everyone] on our team: you have to be passionate about keeping our users safe and make sure that you have that underlying altruism … Part of our job is operations and safety. The other part is customer advocacy. What we look for in people we're hiring is … that skill of relating to our users and understanding the harms that potentially can be inflicted as part of the tech world."*

Director of operations at tech company

The workforce perspective

Young people and those entering the workforce felt strongly that there are problems that need solving in the online world, but few currently see a role for themselves in doing this work

People who cared about social impact were less likely to see tech as a relevant sector to work in

The survey with 1,500 young people showed that those who reported that a positive social impact was important to them were less likely to see tech as an appealing sector than those who prioritised it less highly.

Among this group, 15% reported being very interested in working in technology and computing. Twenty-nine percent reported being very interested in working in education, 38% in healthcare and 45% in design and arts.[ii]

This was also reflected in some of the expert interviews; several thought that people with the right kinds of backgrounds did not look towards the tech sector as a relevant space to apply their skills and passions.

> *"Trust and safety as a sector needs to grow and needs to gain people who wouldn't have seen themselves joining a trust and safety team. What we need to do is to persuade people who are attracted to ethical thinking to applying that to tech."*

US-based trust and safety industry body leader

> *"We need to, early on, help them visualise themselves in that career. We need to say, 'So, you like solving problems? You like having a positive impact? Working in trust and safety enables you to have an impact at scale, which is pretty unique.'"*

US-based trust and safety industry body leader

This has significant implications for the future talent pipeline for user safety. If current perceptions of the tech sector persist, then user safety teams are likely to struggle to attract the talent with a passion for user safety that leaders expect will be needed.

Students and employees were often cynical about the tech sector and the potential for making it better

Some of the students in tech-related disciplines and employees interviewed as part of the project were unaware that there were ways to tackle current issues of online harms and to make the internet a safer place for users in the future. Some were cynical and fatalistic about the issue, reflecting that the companies who had shaped the internet to be how it is now had too much power for there to be any meaningful change. There was a sense that it was 'too late' for safety and a concern for the user to be designed into the online world.

> *"We had a module that was more theoretical … One lecturer talked about our interactions with social media and how we're being manipulated in some aspects, how there's no regulation … It's not ethically right … but it's too late now; it's gone too far… it's the social media companies who I feel are the big problem because of the power and influence that they have over people."*

Lee, digital design student

This was mirrored in conversations with some senior leadership figures working in tech, who reflected on current feelings of 'burn-out' in the mission of making the internet better for users. One senior leader suggested that more needed to be done in promoting the success stories and achievements of the user safety sector to combat this pessimism.

"There's a general exhaustion around the world … I think too many people have that impression in their mind: there's nothing you can do, it's just going to be bad, so they're not as excited … which is one of the reasons I'm very passionate about telling success stories in the space and not just highlighting more stats about how toxic it is online."

Safety tech company senior leadership

For the young people whose priority was to have a positive social impact through their work, they were currently unlikely to devote their career to user safety if they did not believe they could make meaningful change in this space.

Non-technical students and employees often struggled to see tech as a place for them

Some employees in non-technical roles consulted as part of this work, for example in marketing and product management, described how they had initially assumed that they would not be able to work in the tech sector. There was an assumption that employees in this sector had to be highly technical. These employees described how they would not have thought to apply to the jobs in the sector and only made it into their current roles through being directly approached by recruiters or people in the company who assured them that they had relevant skills for the job.

"People in marketing might be worried that they don't have enough knowledge about the tech sector … I don't know if I would have applied off my own back if I hadn't been approached."

Rebecca, marketing manager

"I didn't really think to look specifically at tech roles or anything computer related … I was approached by the CEO, who said I had relevant experience … It's going to be important to make improvements in the sector on diversity. It does put off a lot of brilliant people from coming into the workforce."

Carry, product manager

This hesitancy of non-technical people to move into tech is likely to have significant implications for user safety in the future. Experts and leaders have described how safety tech firms will need more talent from sales, marketing and business development backgrounds as they grow and pitch their products to big tech, while trust and safety teams within big tech will need more talent from non-traditionally technical backgrounds so that new perspectives and ethical priorities feed into product design. New initiatives and communication convincing non-technical candidates that there is a place in tech for them will be necessary to ensure that the user safety sector can attract the full workforce it needs.

Young people, students and employees outside of safety tech all felt there were problems that needed to be solved in the online world

Despite a general lack of awareness of how online platforms might effectively be designed differently in a way to promote user safety, young people were very aware of the negatives that result from engaging with the online world in the way it currently exists/is designed.

In the survey:

- Just under half (45%) felt the internet, social media and the time people spend online had a negative impact on 'the way people talk to each other'.[iii]
- Two thirds (65%) felt it had had a negative impact on 'people's attention spans'
- Half (52%) felt it had had a negative impact on 'how people spend their time' (only 20% felt it had a positive impact)
- A quarter (26%) even said it had a negative impact on 'what people think are important personal values'

Survey respondents consistently reported that it was important the online world is designed in a way which promotes well-being and prevents harm. In many cases they showed large levels of support for principles that are counter to the way many online services are currently designed. For example, three quarters (77%) said it is important to ensure 'people are always seeing a variety of information online, not just things they already agree with'.

- 83% said creating a safer and more positive online environment for children was important
- 87% said that ensuring people always have access to true/correct information was important
- 79% said that it is important to hold companies and organisations accountable for what happens on their websites/apps

Regardless of their existing interest in working in technology, large numbers of young people reported being interested in having a job where they worked on making these things happen.

Thinking about what people do online, how important, if at all, do you think the following things are?

	Extremely important	Quite important	Neither	Not particularly important	Not important at all
Creating a safer and more positive online environment for children	47%	36%	12%	4%	
Ensuring people always have access to true/ correct information	46%	39%	12%	3%	
Making the online world a place that promotes good mental health and wellbeing	43%	40%	13%	2%	
Reducing the likelihood of dangerous or risky behaviours occurring online	42%	41%	13%	3%	
Preventing people from upsetting or harming others online	38%	40%	17%	4%	
Holding companies and organisations accountable for what happens on their apps/ websites	36%	43%	17%	4%	
Preventing people from developing unhealthy relationships with technology (e.g. impulsively checking social media)	36%	46%	13%	4%	
Designing online media platforms in a way that encourages people to be more tolerant/ respectful of each other	35%	46%	14%	4%	
Catching and punishing people who break community guidelines or other formal rules	30%	48%	15%	5%	
Ensuring people are always seeing a variety of information online, not just things they already agree with	29%	48%	17%	4%	
Ensuring that the online world continues to enable/ encourage free speech	27%	48%	20%	4%	
Making technology that focuses on improving people's skills and knowledge	26%	55%	16%	3%	
Giving people more freedom to access the type of content they want, when they want it	20%	47%	23%	7%	2%
Removing regulation from the internet	9%	24%	35%	18%	14%

People may not have been aware of how to address these challenges, but they were acutely aware they exist, and this is an important foundation.

This was reflected in interviews with students and employees in tech-related disciplines who also focused on the technical challenges of addressing these bigger societal impacts.

Some students and employees had initial concerns about working within user safety

While the young people who participated in this research were generally aware of problems about user safety online and thought it was important that they were addressed, some were initially apprehensive about working in the sector themselves.

Some were unaware of the variety of roles in the sector and initially thought that working in user safety would mean working within moderation. Prior knowledge of what this type of work involved created concerns about working in the user safety sector as a whole.

Some were concerned about being exposed to potential harms themselves

While students and employees saw the act of trying to tackle potential online harm as a valiant one, some expressed concern that this kind of work would expose them to potential harm themselves.

In the survey, when prompted with potential negatives of working in user safety, 60% of respondents said they'd be concerned about being exposed to the more harmful and distressing content that exists online if they were to work with making the internet a safer place.

"I feel like I would be a tiny bit concerned about the type of content that I might be exposed to. I'm aware of stories of people working at [social media companies] who have to check things that have been flagged and how that can be quite a traumatic job."

Menna, UX design student

"I know people who worked as moderators. Many had a really bad time; it affected their mental health."

Carol, software engineer, Social Media Platform

We spoke to some moderators whose role is to vet content which is being flagged as harmful as part of this work. One moderator we spoke to found their exposure to harmful content disturbing and described how effects on mental health led people to leave the role.

"Eight colleagues quit for mental health issues … if you see that kind of video, you need a break, you need support. [But instead] you have to continue working to reach your target … You can see a counsellor online for up to ten hours, maximum; that's what we can have. If you want more, you go to your GP."

Ron, trust and safety professional, Social Media Platform

Some assumed that their creative freedom and scope would be curtailed

Some were initially concerned that working within user safety and healthier online communities could be limiting in terms of the type of work and creative freedom on offer before they learned of the scope of work that could be offered in the sector. This was particularly the case for students in design courses or roles, for whom creativity and visual work was important. They assumed that work within user safety would not give them the same opportunities as other sectors, such as e-commerce, even if some struggled to articulate why that might be.

"I feel like you might be very restricted in a lot of things, that you might not get the scope that you may want as a designer … I'm not necessarily sure how … but there may be conflicts."

Lee, digital design student

When people better understood the variety of challenges being worked on within user safety, they were excited by the opportunity

When points about the negative implications of the online world were discussed in interviews, employees and students were often able to reflect and discuss the complexities of the challenges, for example referencing the tension between privacy and safety, the importance of a diverse workforce when developing technologies and a concern about how the internet affects its users.

However, students and young people were generally unaware that this kind of thinking might be reflected in career opportunities. Several computer science students interviewed wanted to find work where they could use both the technological skills they were developing as well as their ability to reflect on social problems and issues but had a limited understanding of where in the tech sector this was valued.

When students learned about the type of work that could be done in the sector, particularly that which went beyond a focus on 'safety' and moderation, they were often excited by it. This finding was mirrored in Foundry4's report *Safety Tech in the UK: Skills & Capabilities,* which found that current employees of safety tech companies were often driven by the mission of having a positive social impact, and in many cases prioritised this over other values, such as pay.

For some people the social good aspect to the work was particularly significant. They were excited by the prospect of doing something good for the future of the internet. This meant different things to different people – some were motivated to reduce current levels of toxicity online, while others were excited by the idea of developing an online world that better supports the development of young people.

> *"I am quite passionate about child safety on the internet. It's very important. Not even just child safety, but also the more grey area of how do you protect a child's 'childness' when they grow up looking at screens all the time? … All boys of my generation basically had their minds destroyed by pornography."*

Jack, junior data engineer, Health Tech Company

Others, particularly those who were interested in problem-solving, were attracted by the scale and challenge of making the internet work better for users. It was seen as a large and important problem, with lots of issues to be addressed that were unlike those anywhere else in the tech sector and where they could have a positive impact with their work.

> *"Challenge and impact are the important things for me in work. I like working on new things, whether it's a new problem, new technology, or on something I haven't done before … [User safety] seems meaningful, and you could have a lot of impact with it … It feels like it's solving a real problem, which is appealing."*

Charlie, designer, E-Commerce Company

Working on new and emerging challenges with new technologies was particularly important to some employees and students. In many cases, working on making the internet a better place for users was seen as being able to provide this. Some found the idea of user safety being an emergent sector exciting. Particularly, technical participants were attracted to the potential of using cutting-edge technology and AI.

> *"I find this interesting, as I see a lot of NLP [natural language processing] in this – like summarising text data, and even visual data."*

Daksha, AI and machine learning student

In the survey, 'safety tech' or 'safety by design' challenges were framed in various ways to determine how appealing they were to different people. One in three young people (37%) said they 'really like the idea of' working on 'stopping children from seeing content that is inappropriate for their age', and a quarter (27%) really liked the idea of 'designing apps, websites and platforms in a way that promotes more positive behaviour and interactions'. Among those already interested in working in technology and computing, this idea of positive design was actually the most popular concept.

There were certain areas of safety tech and certain missions that students and employees found most attractive

The range of online harms and methods to address them is vast – from age verification technologies to technologies for detecting the spread of misinformation.

In interviews with employees and students, there was no single area of the safety tech sector that was more appealing than others. However, there were areas and framings that tended to pique people's interest and others that were less compelling or instead provoked concern rather than inspiration.

Many of those interviewed were aware of debates surrounding online safety and online freedoms. Given these tensions, most were more attracted to framings of the safety tech sector that emphasised how technologies could enable users to thrive online. This was preferred over framing technologies that instead hinted at the way they might limit users. For instance, *'protecting users from online harms'* was a less popular proposition in interviews, whereas *'creating online spaces where users can thrive'* was viewed as a more aspirational and positive way of contributing to building a better internet for users.

However, when discussing particular topics or strands of work that a safety tech firm may do, work on 'protecting' users was viewed as particularly compelling when in relation to children. Many of those interviewed reflected on their own, their siblings' or their children's experiences and felt that this was an important area to create change. For this reason, *'protecting children from harm'* was also seen as an attractive and important mission to contribute to.

There were particular areas of user safety that consistently appealed more than others. Detecting toxic content and behaviour, delivering child-safe online experiences and identifying and mitigating disinformation all held particular appeal to employees and students, relating to issues that they felt were negatively impacting society and required intervention. Blocking illegal content and protecting devices and networks held less appeal and did not necessarily speak to respondents' own experiences or interest in the issues that online harms relate to.

Another proposition that resonated with students and employees was *'using AI and machine learning to tackle online harms'*. This was particularly popular among computer science students, many of whom felt that these technologies had the potential to do significant good in the future and had not previously considered their use to facilitate safer online experiences. For many of the students interviewed, applying machine learning to this problem seemed like an interesting challenge they would like to find out more about.

Some young people also cited impact as being important to them. Some of those interviewed were attracted to big tech companies and their ability to contribute to online safety given the belief that these platforms had the scale, technologies and capital necessary to create a significant difference. Where respondents felt that safety tech companies could create impact at scale, this was also a compelling reason to work there. For one employee in safety tech, this ability to make change at a large scale was an important motivation for working where they did.

> *"It's amazing; it's like you're a superhero … With a lot of things, like social media platforms, nowadays people live on these things, and it can be such a dark place … we're trying to help the internet and trying to help people online. To be able to do that, it's huge."*

Jake, safety tech employee

Educational routes into tech-related roles rarely included an emphasis on user safety

Among interviews with students, employees in the tech sector and course educators, there was very little evidence that issues related to online harms or online safety were being taught at universities.

Students in computer science courses described a technical education, one which equipped them with the skills necessary to understand and use computer technologies and programming languages. For many, these 'hard skills' were valued given their importance in the job market.

Often, computer science courses included content on certain elements of ethical consideration. For instance, most computer science students reported learning about data ethics and the issues of privacy, security and surveillance. Less commonly, there were lectures or discussions about the societal risks and benefits of developing AI technologies, including the risks of discrimination and bias in machine learning algorithms.

As far as online harms and user safety were concerned, none of the interviewees who were either currently studying or, who had studied computer sciences, or those who had a master's in related fields, had been taught about this area of ethical consideration in the development of web-based technologies. When computer science students described online harms or online safety technologies, this was based on personal experiences or things they had read in the news, not on their education.

"[In] my degree, we've gone over a lot of cybersecurity stuff, protecting data … you would have thought ethics and online safety would have come up more, but it hasn't. You read about it all the time though – kids getting catfished and, next thing you know, they're having their pictures put everywhere and blackmailed, stuff like that."

James, computer science student

These societal and ethical considerations that were featured in computer science courses were not always taught as separate modules. Instead, they were areas for reflection that students might be encouraged to think about during project work or when developing their own research proposals and projects.

One student made reference to the 'ACM (Association for Computing Machinery) Code of Conduct', but otherwise felt that students were not really encouraged to think critically about the unintended side effects and online harms that web-based technologies could cause. Instead, he suggested that the ethical considerations included in his course were meant to ensure students were compliant with laws that may affect their work:

"I think the fact that I'm not familiar with it very much would indicate we don't talk about ethics enough. I think, from a university standpoint, they're not too bothered about it since it doesn't affect them. There's much more of a focus on the law than ethics; it's like, 'we teach you how to make sure you're not imprisoned by looking after your data, but in terms of ethics, do your thing.'"

Will, computer science student

Students in design courses were more likely to learn about issues related to online user safety, but this was not always a part of their formal education

Students in design courses – such as digital media design, UX design and design engineering – also described a technical education but one that often had a greater emphasis on understanding the different needs of product and service users. The ethical implications that were commonly learned in design courses included accessibility, inclusivity, sustainability and the ethics related to research and data protection.

At times, digital design courses could include more conceptual or theoretical considerations about platform design, including reference to 'algorithmic harms' and 'dark design patterns', but this was rarely accompanied by teaching about proactively designing online services and products with user safety in mind. While some students learned about 'ethical design' in their courses, no one interviewed had encountered the term 'safety by design' before.

Among those interviewed, no one had learned explicitly about online user safety and ways of designing safety into products.

As with students and graduates in computer science, those studying digital design and related disciplines were also practice-oriented and often viewed their choice of degree as an opportunity to learn skills that were seen as desirable in the job market. These skills often included the ability to use particular software to create products, which they thought future employers across industries would expect them to be able to use. Many expected they would work for companies with digital services as well as creative agencies.

Course leaders spoke about the lack of modules and courses related to user safety

Those running undergraduate courses in university design departments spoke about the challenges of including topics relating to safety by design or user safety in their courses.

A few course leaders spoke about a perception that students wanted more 'practical', as opposed to 'theoretical', courses to learn skills they believe will increase their employability in the short term – such as being able to use different types of software or design tools.

This was compounded by a perceived focus on STEM skills and increased funding related to STEM subjects, which some course leaders felt led parents, students and employers to undervalue skills with more of a humanities focus, which were felt to be crucial for safety and ethics conversations.

One design professor had tried to set up a master's course in 'human-centred design' but was unable to run it due to a lack of uptake. The professor observed that while they had a good number of applications, they saw a big drop-off in the number accepting their place, paying fees and starting the course. When speaking to those who declined the offer, they heard that the students' parents had often been unsure about how employable the course would leave their children and were reluctant to financially support them.

> "People read about a lack of engineers; they don't read about a lack of ethical designers."

Educator, School of Design

Similarly, other professors felt that university courses were 'playing catch-up' – teaching for the skills that students and employers needed today but not thinking ahead to the future.

Current further and higher educational options do not inspire students to work in online safety nor put these issues on the map

Students and employees outside of safety tech and trust and safety teams were rarely aware that online safety was a space they could work in. The interviews were often the first time respondents had heard about companies developing technologies to tackle misinformation, hate speech and other online harms.

> "To be totally honest, I didn't know anything about safety tech beforehand, so that's quite interesting to know about that. And, yeah, it is good to think about a lot of these things actually. Even from just a uni perspective, you do get into a bit of a bubble sometimes just thinking about coursework to coursework."

Jake, computer science student

There is little in existing university courses that teaches students that there is either a need or opportunity to address the issue of positive social impact in tech. Students described how when the subject was covered, it was only very 'lightly' and rarely referenced online harms and safety.

> "[The social impact of technology] was only lightly talked about. In website design, we got taught accessibility, but it was limited to things such as using special colours and tags for blind people. We were never taught to question why things are the way they are, whether there could be better systems and why social media is the way it is."

Luke, UX design student

This was common for students across computer science and design courses: where the social implications of technology or ethics came up, it was with reference to data security, research ethics, accessibility or the ethical use of AI. **No one that was interviewed who was studying or had studied computer science had learned about online harms or online safety in their education**.

> "In my entire four years of undergrad, there was one subject, one module that talked about ethics, and in my master's, to date, I haven't encountered any. They expect us to be grown-ups … to already understand it thoroughly … which is a sad thing honestly, because if people at an early age don't realise this is an issue, then when you grow up, you will never acknowledge that it's an issue."

Nikhul, computer science student

Those students who had taken computing or IT at A-level or in GCSEs also reported a similarly small amount of ethics incorporated into the curriculum and no exposure to issues related to online safety or online harms.

Educators reported that degrees in design and computer science typically prepared students with the technical skills necessary for the workforce and did not necessarily prime them to think critically about the psychological and social consequences of different technologies.

> "Academics see it as a tick box exercise; they've grown up thinking that health and safety are bad things that are impediments to growth and human progress."

Educator, School of Design

With the changing online safety landscape, educational routes could be improved to prepare the future workforce

In both design and computer science courses, there was room for further education on the potential for improving knowledge of online safety, safety by design and fostering the ethical mindsets that the trust and safety sector may require.

> *"We talk about the challenges of cybersecurity in the relevant courses. Why not something about online safety? Engineers aren't being exposed to the potential for [unsafe] situations."*

Industry body leader

Both industry body leaders and those in senior leadership positions felt that more could be done in education to plant seeds about the potential for designing and developing online technologies with human well-being and safety in mind as well as making it clear that these issues will be important for the workforce of tomorrow. Some spoke of initiatives that had been successfully implemented in the past to raise awareness of other sub-sectors, such as youth programmes and after-school sessions to teach children about cyber security or advanced skills programs for master's students' AI skills.

> *"If we have to wait for the industry to be enormous for the education provision to kick in, then it will be a very painful process growing to that size."*

Industry body leader

Some industry body leaders argued that more needs to be done to obtain a wider audience of students interested in tech more broadly. For this to happen, they argued the importance of collaboration and a joint approach between representatives of different sub-areas of tech: a student might be introduced to the sector via a cybersecurity intervention but then move into another field, such as safety or AI and vice versa.

Based on desk research, interviews with students and course leaders in higher education courses, the following table summarises different kinds of courses this research came across and areas currently covered which may be related to user safety where there may be opportunities to embed safety into these courses. Desk research also demonstrated [existing courses in 'Engineering for Trust & Safety' at Stanford University](#), which might also be taken as a model for the further development and inclusion of safety into computer science courses. *Note: The scope of this desk research was to reach participants from a range of courses and better understand their experiences – it was not a comprehensive review of the landscape of relevant courses.*

Type of course		
Computer sciences	Degrees that teach both the theoretical foundations of information and computation combined with developing the practical skills for computation, information processing and its applications.	Evidence that courses feature discussions and lessons on ethics typically focused on privacy, data protection and security, research ethics and occasionally AI. May feature discussions and guidance from ACM Code of Ethics and Professional Conduct.

Machine learning/AI	Master's degree specialising in the principles underlying the development and application of machine learning technologies and the development of skills necessary to design, develop and evaluate algorithms and methods for problems and applications.	May include content on the ethical development and application of AI, data protection and security and research ethics.
Design engineering	Degrees that integrate different engineering disciplines with computer technology, design processes and market awareness skills to bridge the gap between traditional engineering and design, from problem-solving, prototyping to product creation.	Evidence that some courses contain user-focused modules that emphasise different needs. Incorporation of ethical considerations into design and engineering processes, including user needs in design considerations, human-centred design, safety in manufacturing processes and research ethics. Focus on needs of the different, including vulnerable audiences, such as children.
Digital media design	Degrees that combine digital technology and creative design to equip students with skills to create, design and develop interactive digital products, services and experiences.	May feature ethical considerations related to design, including ethical design. Emphasis on accessibility and inclusivity in design.
UX design	Degrees focused on providing the skills necessary for students to create digital products, which explore end-user behaviour in order to optimise user experience.	Evidence that some master's courses may feature social scientific literature about 'algorithmic harms', 'ethical design' and 'dark design patterns' (UX interactions designed to trick users into doing things they do not want to do). Commonly a focus on issues of accessibility and inclusivity in design. Ethics surrounding research and information governance. Focus on user needs and behaviours.

HCI design	Master's degrees that combine computer, behavioural and social sciences to equip students with the skills necessary to design and create effective human–technology interfaces.	Commonly a focus on issues of accessibility and inclusivity in design. May feature a greater emphasis on human psychology in technology use. Research ethics and reference to ACM Code of Ethics and Professional Conduct.

In addition to these areas of study, which most directly prepare students for careers in the tech sector, elements of online safety and an awareness of the careers available in this sector could also be embedded into other non-technical courses.

Experts and senior leaders within tech platforms mentioned the opportunity for this to be promoted in courses such as journalism, psychology, philosophy, politics, criminology, sociology, English literature and law.

Summary: The future of user safety in the tech sector

Experts anticipate the tech sector will need to change its working culture in order to meet changing societal expectations and regulatory requirements. Greater strategic oversight led by people with a passion and understanding of social issues will need to replace relatively autonomous engineer-led product teams. Companies recognise they will need more diverse workforces – particularly in terms of perspective, thinking style, skills.

The talent pipeline of young people strongly feel there are problems that need solving in the online world, but few currently see a role for themselves in doing so. People who care the most about social impact are less likely to see tech as a relevant sector to work in. Students and employees in tech-related disciplines are often cynical about the tech sector and the potential for making it better, and current educational routes do not typically make reference to online harms nor the different ways software and design skills might be applied to make the online world safer. Some had limited preconceptions of the type of work involved in user safety and were concerned that, if they moved into it, it could undermine their personal well-being and enjoyment of work. However, when students and employees then learned more about the breadth of challenges being worked on and the roles that will be needed in the sector, they were more positive and excited by the opportunity.

This research has highlighted a number of opportunities in attracting more young people into user safety. More can be done to make tech feel accessible to people from a range of disciplines beyond just the technical. There is space within educational routes to raise awareness of user safety as a concept and as a field of work. Awareness-building should tackle erroneous preconceptions about the scope and variety of work that user safety is able to offer candidates.

Conclusion

The landscape for user safety

User safety, in its current form, is made up of several different types of roles and work. Wider tech organisations have their own 'trust and safety' teams, including those working in moderation roles, those working in user safety policy and in product teams where user safety is a consideration. The UK is also a leader in developing safety technology solutions to protect users online, particularly through detecting and removing illegal and harmful online content. The UK's safety tech sector is one of the fastest growing parts of the UK's tech industry.

The tech sector is at a tipping point in how it deals with user safety. Experts expect that changes in legislation and public pressure will force the sector from being 'engineer-led' to prioritising user safety. Experts expect that the safety tech sector will soon take greater hold, and in the long term, there will be increased focus on safety by design within wider tech.

This has significant implications on the talent pipeline requirements for user safety. Some senior leadership within safety tech already report difficulties in attracting the full workforce they require. These companies are currently focused on recruiting for technical roles, and competition for these types of employees throughout the tech sector is acute.

These challenges in attracting the right talent are likely to increase in the future. The user safety sector will need more talent overall and more people with an increasingly diverse set of skills and priorities.

Now: The current pipeline for online safety

Competition for attracting developers and other technical roles is fierce and expensive, leaving some safety tech companies struggling to attract talent. Some use innovative methods to ensure they are successful in recruiting candidates, for example recruiting developers from overseas as a strategy to lower salary costs and engaging with universities and education routes to engage a younger candidate pool. Some successfully appeal to candidates based on their 'mission', especially to those with personal relevant experience, but this is rarely enough to secure talent. In addition to technical roles, some also find it difficult to find the right people to fill business development, marketing and sales roles.

Although the Foundry4 report documented the social motivation of the technical workforce in the safety tech sector, this report suggests that achieving a positive social impact is rarely a strong motivator in the employment choices made by those outside of safety tech, who work in or seek to work in the tech sector. The quantitative research with young people identified that those who want to work in the tech sector tend to prioritise salary to a greater degree than those seeking to work in other sectors and prioritise positive social impact significantly less than those looking to work in other sectors. This issue is compounded by the disparate salaries offered by some technology companies versus smaller safety tech firms.

The label 'safety tech' was described by several senior leaders as being helpful in building industry credibility. However, there are concerns that it may conceal the diversity and appeal of some of the roles and challenges available, which potential candidates do recognise once they learn more about the opportunities. Leaders believe that, while the sector's label might be helpful for building credibility, other things, such as companies' individual missions, should take precedence when it comes to attracting the best talent pool.

Future: What lies ahead for user safety in the tech sector

Experts that we spoke to anticipated the tech sector will need to change its working culture in order to meet changing societal expectations and regulatory requirements. They expect that greater strategic oversight led by people with a passion and understanding of social issues will need to replace relatively autonomous engineer-led product teams. The companies interviewed for this project recognise they will need more diverse workforces – particularly in terms of perspective, thinking style and skills.

There is a large talent pool of young people who feel strongly that there are problems that need solving in the online world and who want to make a difference in their work. While there is a growing market for people who want to work on social good within tech, with a growing 'Tech for Good' industry, the survey with young

people conducted for this report found that the people who care the most about social impact are still less likely to see tech as a sector that they could or would like to work in.

Students and employees were often cynical about the tech sector and the potential for making it better. When considering user safety as a sector to work in, some were concerned about the potential impact on their personal well-being and enjoyment of work. However, many of these concerns were dispelled when young people understood the variety and scope of work within user safety. Many were motivated by the idea of facilitating safer and more positive online experiences. To develop the talent pipeline and make this motivation more widespread, more needs to be done within educational routes to promote user safety and its mission.

Opportunity areas

The research identified several opportunity areas for improving the talent pipeline for user safety roles, both within safety tech organisations and wider tech. Some of these opportunity areas were shorter term – tackling the immediate recruitment challenges, particularly for safety tech organisations where most of the current demand lies. Others were longer term in nature, looking to earlier stages in the talent pipeline, where aspiration for working in user safety could be cultivated in a diverse talent pool that will be needed within the sector in the future.

To address current demand, particularly for technical roles, several strategies were identified in the research. There are things that safety tech and tech firms can do themselves, for example recruiting or outsourcing work abroad or engaging with education routes.

On a broader level, the challenge of raising awareness of the user safety sector, and the type of work that it encompasses, was identified. Interviews with senior leadership and potential candidates (employees in the wider tech sector and students in tech-related courses) outlined that it might not be enough to simply raise awareness of 'safety tech' and 'user safety' as a whole; rather, there is a need to **illustrate the diversity of work and missions within the sector**, which candidates find more compelling.

This research has outlined that, in the future, user safety will need more than just technical employees. It will need people who want to have a positive impact on the world and who have a diverse range of skills and attitudes, but these people do not currently see tech as a space for them. The research identified several potential opportunity areas earlier in the talent pipeline, which might help make tech more attractive to the future workforce it needs.

1. **Building awareness that non-technical people *can* work in tech**, that there is a place for them in the field and that they can have impact in their work. Experts spoke of the need for initiatives which encourage people to move into tech as a whole rather than just those which promote particular sub-sectors. Non-technical employees described how targeted communication, explaining what they can do in tech and the value that they can bring to the sector, is necessary to build confidence and motivation to move into the sector. Explicitly stating that jobs welcome those from a diverse range of non-technical backgrounds may also encourage those without technical skills or qualifications to apply for roles.

2. **Planting seeds earlier in education routes** to give students a better understanding of the problems that exist in relation to online safety and well-being, the type of work that it is and that this work can improve user safety. There are opportunities for the topic of user safety, and the philosophy and ethics behind online user experience, to be embedded in a range of **higher and further education courses**. This could take the form of specific modules or projects covered during the course as well as during wider careers talks or activities, such as having talks from employees or companies involved in user safety. The courses mentioned during interviews with experts, employers and course leaders included:
   - **Social sciences,** such as sociology, psychology, politics, law, criminology
   - **Technical courses,** such as software engineering, computer science, data science
   - **Design courses,** such as UX design, digital design, human-centred design
   - **Humanities and other relevant courses,** such as journalism, philosophy and English literature

   There may also be opportunities to raise awareness outside of formal education routes at a younger age. Similar work is already being done in other sub-sectors of tech, for example cyber security,

where a range of initiatives are being implemented to inspire young people from the age of five years old to work in the field and learn relevant skills. These initiatives include after-school coding clubs, networking events allowing young people to interact with those in the industry and information online about career pathways into cybersecurity. In general, initiatives seemed to focus on four key outcomes:

- o **Awareness:** Building awareness of the sector as a career option, including the range of roles and workplaces that exist within it
- o **Inspiration:** Increasing motivation to get involved in the sector
- o **Affinity:** Ensuring young people view it as a field they can see themselves working in and one which is relevant to their interests, skill sets and backgrounds
- o **Knowledge and skills:** Young people build the technical or complementary skills they would need to work in the sector[iv]

3. **Tackling negative preconceptions** of work within user safety, such as the preconception that it is about compliance or necessitates having to view unpleasant content. These preconceptions can in part be tackled by providing a more comprehensive understanding of the variety and scope of work that is involved in user safety by embedding this into relevant education routes as discussed above. Highlighting those aspects of the sector and its mission, such as potential for healthy social impact and enabling more positive online experiences, which this research shows is particularly compelling for potential candidates, might also be helpful in building motivation to work in the sector and to dispel concerns.

Endnotes

[i] Survey carried out with 1,051 young people (aged 16-24) broadly representative of this age group in the UK. Those who reported being 'very interested in working in technology and computing' ranked 'doing work that feels like you are contributing positively to people's day to day lives' as a relatively less important factor to have in a job than those who reported being 'not interested in working in technology and computing'

[ii] Percentages based on n=240 giving the highest relative scores to 'doing work that feels like you are contributing positively to people's day-to-day lives' (the fourth (highest-scoring) quartile for this option). Data are unweighted. For reference, the total survey sample is n=1,596 – including core sample of n=1,051 16–24-year-olds (broadly representative of this age cohort in the population), plus boost sample of n=545 current or recent STEM university students.

[iii] BASE: Total main sample, n=1,051 16–24-year-olds, weighted. Q28. Overall, do you think the internet, social media and the time people spend online has had a positive or negative impact (or neither) on the following things?

[iv] DCMS, Mapping informal cyber security initiatives for young people aged 5-19, 2022