

# WOMEN IN TECH

First report

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June 2022

**TalkTalk**  
For Everyone



University of  
**Salford**  
MANCHESTER

# CONTENTS

03

04

05

07

08

09

10

11

12

13

14

# INTRODUCTION

Tristia Harrison – CEO, TalkTalk and Jennifer Hinsley, The University of Salford

**Manchester is one of the fastest growing tech hubs in Europe. From startups to blue chips, our region is thriving. However, some people feel that more than others. Only 19% of tech workers in the UK are female. There's a big gender pay gap too. We want to do what we can to help change that, to make the North West the best place for women to work in tech.**

A lot has been done, but there's more to do to make sure we are doing everything we can.

We've spoken to a diverse cross-section of women working across tech-focused roles in our region to discuss their experiences and recommendations on ways to improve female representation at all levels.

We kicked this off with a series of roundtable events. 30 women from across the tech scene came together to explore the three themes of attracting and retaining talent, board representation and visibility.

Last year we launched the TalkTalk North West Women in Tech awards – celebrating the truly inspiring work being done by women across the region. Our second awards will take place this November – continuing to shine a light on this amazing talent.

Most recently, we held a Women in Tech summit in partnership with the University of Salford at our Soapworks HQ.

This report documents the conversations had on the day and draws together the recommendations made by all of the groups in attendance. It will act as a catalyst for future events, conversations and interventions.

Our aim is to make Greater Manchester the best place to live and work – and the best place in the UK for a woman to work in tech.

We'll continue this work and these conversations and will forge new relationships throughout 2022. And beyond.

**Tristia Harrison – CEO, TalkTalk**

**It is a privilege to be able to contribute to the introduction of such a fantastic report, generated by so many inspiring women and male allies.**

The partnership between the University of Salford and TalkTalk is an excellent example of how academia and industry coming together can drive change and create opportunity. It is also a perfect example of our vision brought to life, where exceptional industry partnerships lead the way in real world experiences, preparing our students for life.

The Women in Tech summit at Soapworks in March was a tremendous success, which every person there contributed to. We are committed to support and drive the recommendations and outputs of this report, and excited for the next chapter with this incredible community.

**Jennifer Hinsley, Head of Industry Partnerships and Commercial Services, The University of Salford**

# THE WOMEN IN TECH SUMMIT

On 30th March 2022 we hosted a Women in Tech summit, in partnership with The University of Salford, at our Soapworks HQ. The event brought together 100 people including students, SMEs and academics from the University's four schools, female leaders and advocates from across the city region, tech trainers and our own Women in Tech champions. Attendees explored several key themes, including attracting and retaining talent, diversity in the workplace and disruptive technologies. Through deliberative discussions a series of recommendations were identified, which are set out in this report.



# TOPIC 1 | BARRIERS

**There is a general consensus that women experience barriers which prevent them from working in the tech sector. To get more women into tech, we need to understand what's holding them back. This section explores the barriers that prevent women from entering a career in tech and what industry can do to improve female representation.**

The lack of senior role models in the sector, predominately in cyber security and coding, was cited as a key deterrent for women entering the industry. Without vocal leaders to look up to, women can often feel discouraged that jobs in the tech sphere are not there for them.

**Women need to feel a supportive network of mentors and role models, who will help demonstrate a clear career pathway into tech which hasn't been visible in the past. These networks can help break the 'imposter syndrome' Women in Tech often face, by providing safe and encouraging learning communities for women. LinkedIn Women in Tech forums were referenced as vital online support networks.**

To understand the 'imposter syndrome' that many women experience we should look to the education system. Many women argued that from an early age girls are not encouraged to explore STEM subjects, with engineering and other tech roles being seen as 'boys' jobs'. Crucially, education reforms are needed to more proactively educate and encourage girls to pursue careers in digital before they make choices around exam subjects and higher education.

The school curriculum needs to change to explain the job opportunities in technology. There is a lack of guidance in tech career options which often results in a poor understanding of the types of roles available and the desired skillset. This requires a joint up effort with business to demonstrate all opportunities in the tech sector, not just coding, which is a common misconception.

Discussions also focused on the need for basic digital literacy skills in early education.

Recruitment processes were seen as a barrier for women. Many women felt from their past experiences that recruitment for tech roles tends to require a STEM degree which (as reflected in discussions) is problematic for women if fewer are encouraged to adopt STEM subjects at a young age.

**Recruitment processes need to adapt to be more inclusive to female applicants. Rather than requiring a STEM degree which may not always be necessary, instead recruiters should look for candidates who are able to demonstrate transferrable skills. Otherwise, recruitment processes will whittle down to box ticking exercises that exclude a large proportion of the population, many of whom are women.**

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**Many women argued that from an early age, girls are not encouraged to explore STEM subjects, with engineering and other tech roles being seen as 'boys' jobs'.**

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# TOPIC 1 | BARRIERS

One student described her experience moving through primary then secondary education as a woman interested in sound engineering – a traditionally male – dominated STEM sector:



*“When I was in high school I taught myself how to use our school’s studio equipment, such as the mixing desk, microphones and software. I found myself on multiple occasions being ushered away from that area by a male teacher – this attitude characterised my experience trying to learn more about this STEM field during school.*

*I have encountered a similar bias in my professional experience to date – where people are surprised that I am a woman interested in music technology and sound/theatre engineering. There was never the opportunity to gain experience in these kinds of fields (particularly as a woman) before leaving school – and I felt pushed and shaped by these biases throughout my primary and secondary education whenever ‘tech’ was brought up.”*

## KEY RECOMMENDATIONS:

1. A review of the curriculum is needed to actively promote and encourage digital skills development in schools, particularly at primary level. Any reforms should also aim to break down stereotypes that exist around STEM subjects
2. A greater awareness of the opportunities in the tech sector should be encouraged and promoted by education and business
3. Organisations need to adopt more inclusive recruitment processes, focusing on transferrable skillsets, rather than rigid hiring systems that place candidates, particularly women, in silos

## TOPIC 2 | DIVERSITY IN THE WORKPLACE

**Despite diversity in the workplace being high on the agenda, there is still considerable work to do. This session focused on why organisations should promote diversity, the benefits associated for employees and businesses, and what measures can be put in place to ensure better representation of all groups in society.**

The discussion started around the importance of diversity. Many respondents in the group expressed that diverse teams allow you to get so many different views, and not just the same way of doing something. This mix of views provides a different input, and ultimately different outputs. That is something that should be celebrated.

However, the discussions argued that managers and hiring processes still do not appreciate the advantages of having a diverse workforce, particularly seen by the tech sector as there is still lots of work to be done. There is still large under-representation of women and neurodiverse individuals in the tech sector, although respondents did acknowledge the strides being taken to improve the representation

Contributors to the session acknowledged that historically the research for neurodiverse characteristics has been baselined against men so women didn't identify with it. New research for this group is currently being developed so we still have little understanding which makes improving diversity and representation of these individuals difficult. As many agreed, a large majority of neurodiverse people will have had a negative experience if they have a neuro diverse way of thinking, and this is likely to prevent them wanting to enter most professions, not just tech. However, with greater understanding of this group of people, and ultimately how they can be an asset to the tech sector, contributors acknowledged that progress is being made.

The discussion also moved to workplace culture in promoting diversity. It was acknowledged that organisational policies can only go so far. Culture was recognised in playing a huge part and crucially, this needs to be set by leadership and hiring managers. Organisations should look to promote work cultures that celebrate inclusivity. For example, workplaces could set a manifesto for the organisation that signs leadership up to driving the culture **set up for a diverse and inclusive workforce.**

Another core element of discussions was the need for people to become 'allies' in the workplace for underrepresented groups. It may be that males do not recognise how meaningful female colleagues find it when they position themselves as 'allies' in the workplace, looking for ways to promote their representation and support them in the workplace. Again, as contributors put it, this largely comes down to workplace culture.

### KEY RECOMMENDATIONS:

- 1. Organisations should look to support people to feel as though they belong rather than being coerced into fitting in**
- 2. Businesses need to lay the groundwork internally for diversity - you can't just recruit, it's about getting the leadership and the colleagues bought into the ethos too**
- 3. Businesses need to be upfront and 'set their stall out' to potential new talent. Being open and honest about who you are ensures that those who want to join will stay with you**

## TOPIC 3 | THE WOMEN IN TECH COMMUNITY

In assessing the current state of TalkTalk's Women in Tech network and the wider Women in Tech community, the group looked to answer why the phrase 'Women in Tech' continues to be used; shared direct experiences from being involved in the network and discussed the power of this community across the North West.

The discussion was framed from the outset by the acknowledgement that Manchester's Women in Tech community is not representative of the rest of the UK. Current figures demonstrate that 19% of the UK-wide tech workforce are women. According to a recent [Manchester Digital Skills Audit](#) there is a stable gender balance issue in the sector with 32% of women accounting for all digital roles and only 16% of technical roles. In addition, the sector as a whole is heavily influenced by men, meaning the product being produced isn't made with women in mind.

The stereotype of what a "woman in tech" looks like was discussed – and how this stereotype often derives from a male interpretation of the roles women can play in the sector – not just in coding. These stereotypes can damage any interest in the sector as it doesn't look appealing to women, or prospective participants may feel that they don't fit into this stereotype.

It was acknowledged that male advocates are important to make lasting change to the makeup of the sector: ***"There is a need for mixed communities, women can't solve this issue on their own as everyone's perspective needs to change – allyship is vital."***

The silo-ing of tech careers as a male-dominated sector happens from an early age. The group highlighted how women are more likely to self-select out of science subjects in GCSE and A-Level, which affects the workforce in the long run. **The presence of female STEM role models at this level is vital to help deal with this 'drop out'. There is a need to sell the tech sector to all, it was argued, and that touch points to encourage girls to engage in STEM subjects should happen from as young as possible.**



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## TOPIC 3 | THE WOMEN IN TECH COMMUNITY

It was agreed that there needs to be a consideration of other responsibilities and commitments women have. Although childcare isn't solely women's responsibility, it disproportionately affects them. **Offering flexible working is key to help facilitate the uptake of Women in Tech roles.** COVID-19 has helped make a case for flexible, remote working that has had a positive effect on women's lives (in the experiences of the group). There now needs to be a purposeful response to build on this momentum.

**Technological solutions to combat the 'tech job imposter syndrome' that women can feel do exist – such as closed LinkedIn groups – but these need to be expanded and formalised as part of the broad solution, it was argued.**

The discussion concluded by highlighting that the pandemic actually served as an enabler for some women to get involved in tech – an opportunity to pivot careers and retrain, whilst also being able to juggle other responsibilities. A continued commitment to flexible working is vital for the tech sector to offer to women – and other solutions such as part-time or job sharing always need to be on the table.

### KEY RECOMMENDATIONS:

1. **Mentoring and engagement with role models is key to encourage women to pursue tech careers. Everyone has a role to play in this and engagement from all communities should be encouraged from a young age to make tech diverse**
2. **We need to empower women to go for tech roles. This can be done two-fold; through the adoption of flexible working environments and mentoring to overcome feelings of imposter syndrome**
3. **Educating male allies on the mental cloud and some of the barriers that are preventing women from progressing in tech is vital. There also needs to be an effort to empower women to ask for what they want and encourage the move to flexible working**



## TOPIC 4 | TECHNOLOGY AND ETHICS

In this session, participants discussed the broad ethical considerations that need to be taken when dealing with emerging technologies such as artificial intelligence, machine learning and cloud-based data platforms.

From the outset it was acknowledged that the tech sector needs to do much more in working with consumers and being accountable when it comes to the ethical applications of the technology it creates. This accountability was particularly important when it comes to the introduction of technologies that are still a long way short of their final level of potential, and we don't yet know the long-term impacts of, such as AI. **A greater role for governance was called for – be this from national governments, on a supra-national level or standards bodies – to ensure that tech firms were compelled to consider ethical implications of their products.**

This accountability should also extend (in just as strict a fashion, it was argued) to the gathering and usage of data. **Even with measures like GDPR, there was still much to do for governments in ensuring that users data is used by large tech firms in a responsible manner.**

Given the rise of technological ethical issues – particularly as we move into an era of artificial intelligence – **it was suggested that ethics teaching (with a focus on tech) should be introduced to primary, secondary and further education, taught alongside digital literacy and IT courses – in order to help equip young people to comprehend the issues society will face in this area going forward.**

The discussion concluded by highlighting that on a macro level, **there needs to be a more open (and louder) dialogue between tech firms, government and regulators and the general public around ethical issues in technology.** Consumers should have easier mechanisms to feedback to companies on technologies; policy makers should be doing more to compel industry to factor in ethical considerations; and those in the sector should be proactively educating others.

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**Even with measures like GDPR, there was still much to do for governments in ensuring that users data is used by large tech firms in a responsible manner.**

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### KEY RECOMMENDATIONS:

1. **With the large number of ethical dilemmas we face in relation to technology in the future, a basic understanding of how to think about such issues should be more widely taught in schools as part of digital literacy programmes**
2. **Tech companies, small and large, should be required to set out 'guard rail' guidelines as to the ethical application of the technologies they produce**

## TOPIC 5 | DISRUPTIVE TECHNOLOGIES

**The discussion around disruptive technologies looked to explore three questions: How students and universities can maximise their influence and voice in the development of disruptive technologies; how can industry and academics collaborate in this space, and how can we stay engaged in a very fast-moving environment.**

Central to the discussion was how individuals in the sector, be that academics or students, can be responsible for bottom-up innovation – rather than just passively working with new technologies. There is a need, it was argued, for the sector to be more vocal in feeding back to innovative companies during the industry collaboration process, to help ensure that the benefits of emerging technologies are felt as broadly across society as possible.

Questions were raised around the ethics and regulation of new technologies such as artificial intelligence and machine learning – there remains a public ‘trust gap’ when it comes to many emerging technologies and inspiring trust and understanding in this tech will be crucial to maximising its benefits across society. **The ability of new technology to support sustainable and green practices (such as smart meters) was suggested as one way that practical benefits could be demonstrated to the public in order to increase trust and adoption rates.**

Innovation hubs, such as HOST Salford, were highlighted as an important way to encourage rapid development of emerging technologies and the SMEs that create them – along with the innovation clusters often referred to as part of the Government’s Levelling Up programme. The sticking point with initiatives such as these, it was highlighted, comes with the number of participants. Members of the group pointed out that it is sometimes difficult to attract organisations to base themselves at a hub like HOST – and **more incentives should be offered by regional and national policymakers to boost SME membership and participation.**

Education, both at the primary, secondary and higher levels, was highlighted as critical to ensuring that young people are not only properly equipped to utilise new technologies as consumers, but also develop the necessary STEM skills that will drive their careers. **Further collaboration between industry and young people is needed here**, it was argued – not just with universities but also colleges, high schools and even primary level. Teachers themselves also need to receive a continued level of re-training and lifelong learning, to ensure that they are equipped with the necessary knowledge of new technologies to effectively pass it on.

The discussion concluded with an acknowledgement that underpinning all the measures discussed, there needs to be a **commitment by Government to bring down levels of digital exclusion and digital poverty** – through measures such as accelerated rollout of high-speed broadband along with accessible data and devices – so no one will be left behind by the rate of change.



## TOPIC 5 | DISRUPTIVE TECHNOLOGIES

A pharmaceutical science student who had relatively recently moved to the UK discussed the value she had found from completing a placement year in industry:



*“Being unsure as to exactly what I wanted to do following my studies, and being one of the only women on my course, I found my placement year was transformative in helping me to develop independence and confidence in my work. Working in labs with PhD students and senior scientists gave me a much clearer picture as to how I should be executing my work to a professional standard – particularly as I had recently moved to the country.*

*The overarching effect of exposure to industry while studying not only gave me transferable workplace skills but also a specific practical experience I was lacking. Something that became apparent to me was the overlap in this sector between academic study and industry – I know I want to work across these lines in the future as the possibility for collaboration really excites me.*

*I really want to see more opportunities for women to ‘try and test’ roles in STEM fields outside of a formal placement year like mine – the more chances to get the experience I had the better.”*

### KEY RECOMMENDATIONS:

- 1. Continued collaboration between industry and academia will result in relevant skills being introduced to the curriculum, along with a better customer experience**
- 2. It is imperative that a commitment is made on a national and regional level to address digital poverty (skills, infrastructure, funding, innovation, mentorship) to drive innovation**
- 3. Work should take place to fully understand the social and environmental impact of disruptive technologies**

**This discussion examined the benefits that the mindful use of artificial intelligence can have for maintaining and increasing happiness at work – and how firms can avoid the pitfalls of AI use.**

The conversation began with a focus on what a well-thought out artificial intelligence HR process can offer organisations. The most obviously beneficial of these benefits for HR professionals comes with the automation of ‘back-office’ tasks – which will allow managers to devote more time to tackling individual issues with a personal, empathetic touch. It was highlighted that AI also possesses the potential to transform the recruitment process, measure productivity, create efficiencies and capacity, and give time back to all members of an organisation to focus on less menial tasks.

A short discussion followed as to what other potential HR-related AI use cases could exist – for example, could AI be used to predict and signal early intervention in workplace stress and potential mental health issues?

One of the main criticisms of AI across many of its use cases is the inability to offer a human touch to services when needed – this was raised as a concern during the session – particularly in relation to how crucial discretion and empathy can be during some situations that arise at work. Crucial to ensuring that it retains this human touch, it was agreed, will always be to aim to create a **‘human-centred AI’** – with humans involved at every stage of the implementation process, and regular monitoring.

Also vital will be ensuring full transparency around the usage of personal data and bias – particularly during the implementation of artificial intelligence in the recruitment process. There was a concern, shared by multiple participants, that because only a limited number of firms use AI today as part of their recruitment process, an unequal process could be created due to lack of standardisation, with candidates being unfairly evaluated differently by different AI models.

**KEY RECOMMENDATIONS:**

1. **Keep the use of AI human-centred:**
  - **Use for targeted “back-office” tasks. This will free managers up to deal with more complex personal issues**
  - **Collect data with the intention of answering relevant questions to the business, rather than trying to interpret masses of data which could be open to bias**



## TOPIC 7 | CREATIVE TECHNOLOGIES

**The discussion around creative technologies looked to explore how we can use technology creatively in order to encourage and support more women to explore careers in the tech sector.**

From the outset, the discussion focused on how educational settings can play a role in either cementing or disrupting stereotypes around what tech is, how it can be used and who tech careers are suitable for. In particular, concerns were raised that whilst skills such as coding have now entered the curriculum, this centres young people's understanding on particular aspects of technology without showing them the broad range of opportunities and specialisms that tech embraces. Several participants argued that being more creative in our use and application of tech in schools – for example, folding the use of tech into how we teach art and creative subjects – could give young women a more holistic understanding of how they might use tech in their future careers in a way that standalone tech infrastructure skills may not.

This theme – **of using tech creatively in order to demonstrate its utility to a wide range of subjects and interests** – led participants to talk about how tech can be used to break down stereotypes around what tech actually is. Several participants expressed the concern that a focus on 'chips and wires and the engineering side' gave a reductive impression and led to limited appeal. In parallel, perceptions around young people's engagement with technology – from both parents and teachers – may be getting in the way of teachable moments that engage young people with the opportunities of tech through their pre-existing interests. Several participants worried that the mantra of 'young people spend too much time in front of screens' creates a false dichotomy between tech engagement and learning. Identifying innovative ways of teaching via the tech young people use – from Minecraft to social media platforms – was identified as an opportunity to broaden the appeal of careers in tech.

The discussion concluded with a call for action to **overturn stereotypes on both sides of this issue**. First, it was acknowledged that more work must be done to eliminate the perception that tech is an area that holds more inherent appeal for men than for women. But just as importantly, a reductive sense of tech careers as being simply concerned with engineering and technical infrastructure must be overcome – by demonstrating to young people the creative roles within tech and the creative applications for tech that are a significant part of the employment landscape.

### **A student studying digital media discusses the metaverse and how she is excited by the flexibility a career in tech will offer her:**

*"As someone who likes to code and create with technology, while I'm unsure about the overall societal implications of the metaverse, I'm incredibly excited about being able to create the virtual environments that people will experience it in – be that in augmented or virtual reality, or in a more traditional way via the computer. I have enjoyed the flexibility offered to me through the rise of virtual working – and I would like to put my skills to use later in my career in helping to create environments that give people such flexibility.*

*The speed at which the idea of Web3 and the metaverse has become a reality, even during my time studying, has made me realise that if this is the field I want to pursue a career in I will really need opportunities to tap into lifelong learning – to retrain, learn new skills and have access to the newest concepts in the field."*

### **KEY RECOMMENDATIONS:**

- 1. Materials and guides for teachers in non-tech subjects identifying how they might fold tech into their curriculum and demonstrate the fuller range of tech applications that are available as careers**
- 2. A campaign to show young people the full range of careers in tech and the extent to which creativity is valued in the sector beyond coding and engineering**

## TOPIC 8 | ATTRACTING AND RETAINING TALENT

**This session focused on how businesses should be looking to attract and retain female talent in the sector. As discussed in previous sessions, this chapter explores the balance between looking to increase the number of women in the sector, whilst placing an importance on retaining the female talent that currently exists.**

To attract the right talent, the existing talent lays the foundation for success. Discussions focused around the idea that ‘good people employ other good people’. Therefore, if we want to improve the numbers of women in the tech sector, we need to ensure that there are women already there to make those key hires. As one respondent put it, **we should think of attracting and retaining talent as a ‘chain reaction’.**

One popular idea suggested in discussions was the need for flexible working environments as this would encourage re-joiners to the workforce, largely women who have taken a few years out of work due to childcare commitments to re-enter the workforce. This is not to say that this would only be benefitted from by women, but also men. After all, childcare is only one external interest to employees. A desirable offering for businesses to retract talent should be **promoting a work life balance where all colleagues can enjoy hobbies or other things that are important to them.**

It was suggested that more should be done by TalkTalk to showcase how it values its employees on external channels – for example, the sharing of benefits and rewards information. There is the potential for the Talent teams – at TalkTalk but also as a beneficial exercise across the sector – to re-write and broaden job specifications when people leave the business to attract candidates that may not meet the traditional criteria but have a more diverse range of experiences to bring to the role.

There was agreement that across the board, **women need to be better represented in external presentations of the business** – particularly when showcasing business capabilities that are traditionally male-dominated, to help create female tech role models for potential applicants. **A women-only mentor system** should also be implemented across all teams, with particular focus on those male-dominated sectors – to encourage the sharing of experiences and best practice.

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**If we want to improve the numbers of women in the tech sector, we need to ensure that there are women already there to make those key hires.**

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### KEY RECOMMENDATIONS:

- 1. Include case studies of successful females in tech positions on external channels – including the TalkTalk website and social channels – so prospective candidates can see that we are an inclusive and pro-women workforce**
- 2. Continue to allow flexible working to support colleagues with external commitments – not just children – but those with hobbies or other things that are important to them**

# LOOKING FORWARD

**Clearly there is a lot to reflect upon and this report will act as the foundation on which to build.**

Our planned activity, which has been driven by the report, will include engaging schools across Salford and Greater Manchester, and creating a network for Women in Tech across the city region.

We are delighted to announce the launch of the [TalkTalk Women in Tech LinkedIn network](#).

The network will be a supportive community for Women in Tech – a place to share experience, publicise events and activities and advertise job opportunities. It will be your space, designed for you.

As we look forward to the 2022 TalkTalk Women in Tech awards, we would love you to stay in touch, to nominate inspirational people in this space and to come together again to celebrate them on the 2nd November. Details will be shared on the TalkTalk Women in Tech network and our social channels.

We will be publishing a set of considered actions based on the recommendations within this report.

