

# Written evidence submitted by CompTIA (ADM0022)

## Delivering the UK's future through AI skills

The Government estimates that Artificial intelligence (AI) could add an additional USD \$814 billion (£630bn) to the UK economy by 2035, increasing the annual growth rate of GVA from 2.5 to 3.9%<sup>1</sup>. Central to unlocking this potential of AI are the skills that underpin AI development and delivery. This submission explores three solutions to boost the uptake of skills that will underpin the UK's AI revolution, including for those that will design and deliver algorithms in public and business decision making.

- Weaving existing private sector training solutions into government measures to boost AI skills.
- Facilitating the work of an AI Council through best practice schemes for AI skill training.
- The importance of government acting as a coordinating hub for existing diversity schemes to boost diversity in the AI workforce.

### 1.) Weaving existing private sector training solutions into government measures to boost AI skills.

To unlock the massive potential of AI to transform the UK's society and economy, developing the right range of skills and skill pipelines to produce an AI ready and effective workforce will be critical.

In its recent industry led report into AI 'GROWING THE ARTIFICIAL INTELLIGENCE INDUSTRY IN THE UK'<sup>2</sup> (GTAIUK) the government acknowledged this importance of skills to AI. The report set out the creation of a greater supply of AI skills as one of three core fundamentals alongside enabling better access to data and promoting the uptake of data; as the means to ensuring and boosting the future of AI in the UK.

CompTIA welcomes this fact, alongside the six recommendations the GTAIUK report has outlined to boost AI related skills. These include government, industry and academia working to embrace the value and importance of a diverse workforce for AI; 300 initial industry sponsored AI Master level courses; one year conversion AI Masters courses for those from subjects other than computing or data science; at least an additional 200 PhD places dedicated to AI at leading universities; the development of advanced credit-bearing AI Massive Online Open Courses (MOOCs) and online Continuing Professional Development courses leading to MScs for people with STEM qualifications; and International fellowship programme for AI in the UK.

But the challenges to achieving this AI skills goal for the UK workforce remains large. The UK's ongoing digital skills gap has been reported for a number of years now. 12.6 million of the adult UK population lack basic digital skills. An estimated 5.8 million people have never used the internet at all.<sup>3</sup> As of 2015, research from CompTIA showed that only 17% of the IT workforce is comprised of women.<sup>4</sup>

Recent work by the Government Office for Science into the future of skills and lifelong learning<sup>5</sup> has further highlighted these skill problems. They outlined 5 main issues: lower levels of numeracy and literacy in UK young adults; employers reporting that people leaving education are not work-ready; people with skills frequently not using these skills; certain UK regions and sectors having a low supply of and demand for skills, leading to low productivity and slow growth: and people being less likely to participate in learning as they age. Such issues explain the problems facing business around ensuring their workforce is ready and effective for digital areas revolutionising the UK, such as AI. An IBM and CBI survey of 160 businesses on AI readiness (cited in the GTAIUK report above) showed that only a third feel their business has the skills to adopt data-driven technologies.<sup>6</sup>

A solution to tackling these skill gap challenges and boosting UK AI skill uptake is to weave in existing private sector training solutions to measures to boost AI skill uptake. Such approaches could help with the delivery of recommended areas to boost AI skill uptake, such as the development of advanced credit-

<sup>1</sup> 'Growing The Artificial Intelligence Industry In The UK, DCMS, October 2017; <https://www.gov.uk/government/publications/growing-the-artificial-intelligence-industry-in-the-uk>

<sup>2</sup> Ibid.

<sup>3</sup> 'Digital Skills Crisis', House of Commons Science and Technology Committee Report, June 7 2016; <http://www.publications.parliament.uk/pa/cm201617/cmselect/cmsctech/270/270.pdf>

<sup>4</sup> CompTIA 2015 International Technology and Workforce Study

<sup>5</sup> 'Future of skills and lifelong learning', Government Office for Science, August 2017: <https://www.gov.uk/government/collections/future-of-skills-and-lifelong-learning>

<sup>6</sup> 'Growing The Artificial Intelligence Industry In The UK, DCMS, October 2017; <https://www.gov.uk/government/publications/growing-the-artificial-intelligence-industry-in-the-uk>

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bearing AI MOOCs and online Continuing Professional Development courses leading to MScs for people with STEM qualifications.

For example, private sector solutions such as CompTIA's IT entry level A+ certification<sup>7</sup> (internationally acknowledged by business for over 20 years and held by over 1 million digital professionals) is updated to include technologies such as AI. Incorporating such solutions into acknowledged training provision around AI skill development, would help business to easily understand and map skill requirements to their needs. This is an important point, as concerns were raised recently from the IT sector in relation to the government's broader approach to digital technical education. This was seen to advocate a narrow 'one size fits all' approach that risked confusion and longer-term lack of relevance for business.<sup>8</sup>

Learning from innovation underway in learning environments due to advances in the use of AI in existing digital training methods can also help government to better deliver its AI skills boost initiatives. For example, CompTIA is adopting artificial intelligence as part of its assessment programme to provide a more authentic real-world test of candidates' ability. Utilising technology from CrushBank<sup>9</sup>, this new learning environment will be utilised from mid-2018.

### **2.) Facilitating the work of an AI council through best practice schemes for AI skill training.**

A key recommendation from the GTAIUK on ways to boost AI skill uptake and provision is for the creation of an AI Council to promote growth and coordination in the sector.<sup>10</sup> This council comprised of industry, academia and the public sector would operate as a strategic oversight group for areas including AI skills. For example, the AI council would ensure that skills deficits are identified early and addressed. CompTIA welcomes such a recommendation seeing it as a means for facilitating best practice schemes for industry that CompTIA would feed into on behalf of the IT industry. For example, CompTIA sees the benefit of adapting schemes such as CyberSeek<sup>11</sup> (a map that provides detailed, actionable UK regional data about supply and demand in the cybersecurity job market) to illuminate the landscape for AI skills improvement.

### **3.) The importance of government acting as a coordinating hub for existing diversity schemes to boost diversity in the AI workforce.**

CompTIA welcomes the importance placed by government on getting talent into AI by boosting diversity. For example, AI roles, as well as wider digital roles, are often well suited to individuals with neuro-diverse conditions such as Autistic Spectrum Conditions. The recommendation in the GTAIUK report for Government, industry and academia to embrace the value and importance of a diverse workforce for AI, working together to break down stereotypes and broaden participation; is a belief that CompTIA strongly endorses for all areas of digital and IT therefore. There are already a plethora of existing schemes doing good work in the diversity area, such as CompTIA's 'Advancing Women in Technology' scheme<sup>12</sup>. But the importance of Government taking a coordinating role as a hub to link up such schemes to maximise their effectiveness nationally is paramount. Whether through the proposed AI Council or another mechanism, boosting diversity is key to tackling the wider digital skills gap and any gap specific to AI skills.

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<sup>7</sup> <https://certification.comptia.org/certifications/a>

<sup>8</sup> The Sainsbury Review which outlined the process for technical education called for "only one approved tech level qualification for each occupation or cluster of occupations within a route" (Pg.24, The Post-16 skills plan and independent report on technical education, July 2016). This moved away from the acknowledged digital training solutions that business understood and used internationally, raising extra administration and take-up concerns for potential employees with these qualification from employers. It contrasted to other international examples, like the US Defence Department which accepted a suite of potential training solutions which fit their requirements. (<https://certification.comptia.org/why-certify/government>).

<sup>9</sup> <http://www.crushbank.com/>

<sup>10</sup> 'Growing The Artificial Intelligence Industry In The UK, DCMS, October 2017; <https://www.gov.uk/government/publications/growing-the-artificial-intelligence-industry-in-the-uk>

<sup>11</sup> <http://cyberseek.org/>

<sup>12</sup> <https://www.comptia.org/communities/advancing-women-in-it>