DIGITAL TECH & MEDIA INDUSTRY RESPONSE TO THE SOUTH YORKSHIRE SKILLS ACCELERATOR PROGRAMME

CONTENTS

BACKGROUND

This document presents a summary of the themes and challenges raised by employers in the local digital technology and media industries, and by skills providers operating in this space. The summary consists of a number of key challenges with descriptions as to the nature of these challenges, followed by suggested interventions and/or approaches to address these challenges. It has been compiled by Sheffield Digital under the management of co-director Chris Dymond, and brings together input and feedback from a range of employers and skills providers covering the core professional digital skill areas, as well as being influenced by conversations that have taken place over the last 7 years, since the founding of Sheffield Digital, and longer. The summary was synthesised from the contents of an open document which has been visibly to the wider community for their comment and contribution since early January, and it constitutes the output from the consultation with the local digital tech and media industries undertaken as part of the South Yorkshire Skills Accelerator, and is the industry's formal contribution to the Local Skills Improvement Plan.

If you have any questions about this document and its contents, please address them to Chris Dymond: chris@sheffield.digital

KEY SKILLS CHALLENGES FOR THE DIGITAL TECHNOLOGY AND MEDIA INDUSTRIES:

(Please not that the order does not represent any kind of priority)

Defining and Describing Professional Digital Skills

There is a great deal of confusion surrounding 'digital skills', generally, and what kinds of skills are classed as professional digital skills and who requires them. There is a tendency to pull focus away from core professional skills in two directions, on the one hand towards more general digital skills and literacies for employment, and on the other towards highly specialised skills and skills for 'professions that don't exist yet'. This can distract from the provision of core skills across the design, development and management at each tier of the 'stack' - network, hardware, software and content - which is locally still poor in several areas and entirely missing in others. This is not to say that specialist sub-sectoral skills are not also extremely important, however the demand for these is often met by people cross-training from proficiency in a core 'stack' skillset. There are now a vast number of core skills across design, development, deployment, data science, artificial intelligence, cyber security, content & media production, and business management, that we need to nurture across the region as a priority.

> *We recommend the development of a comprehensive Professional Digital Skills Framework that properly describes these core skills as well as specialisms that are of particular significance to our local industry's major vertical strengths such as Digital Manufacturing, Educational Technologies, Movement and Mobility Technologies, Cultural and Creative Technologies and Health & Wellbeing (particularly for children), the Internet of Things, next generation networking, etc. This framework should also be connected to key local employers who are at the forefront of practice development, several of whom have already created internal academies for cross-training and upskilling.*

> *The work to develop such a framework and connect it to local needs (see below) could form part of the permanent "Employer Skills Forum" that has been proposed as part of the Institute of Technology bid.*

"Non Technical" Professional Digital Skills

Much of the focus on Professional Digital Skills education surrounds technical skills involved in the design, development, deployment and maintenance of digital products and services, as well as technical capabilities in networking, electronics, digital manufacturing, cybersecurity and digital media production, etc. However, the industry also needs people who are proficient in a range of related 'non-technical' skills which are just as important, including user research, design, business & systems analysis, project management, product management, team leadership, business development, legal compliance, digital business administration, digital entrepreneurship, etc. Many of these are particular to the digital tech industry, or have significant aspects that are particular to the industry. Training provision for these skills is

currently lacking or non-existent across South Yorkshire, and should form an important strand of provision mapping work.

(These are in addition to the 'soft-skills' covered in the section on The Gap Between Theory and Practice, below).

> *These should be factored into any provision and demand mapping that is carried out.*

> *There is an opportunity for industry to work together to aggregate demand on a case by case basis and engage training in specific areas where it is currently lacking.*

Skills Contention

There is a significant, and well known, shortage of people with core professional digital skills, not just in South Yorkshire but nationwide, which has a number of causes. Some of these causes relate to the skills pipeline and the number of people acquiring appropriate skills, which are covered below. Others relate to the continued rapid growth of the industry which has been accelerated by the Covid-19 pandemic, (an additional effect of which has been to further normalise remote working across the industry, which in turn has pushed salaries up locally, in particular for experienced people). A major factor related to this is that skills that were previously required mainly by technology firms, ICT consultancies and digital agencies, are now also in increasing demand by employers across all economic sectors who realise that an increasing proportion of their value lies in their digital offering and they can no longer leave the design, development and management of these assets to 3rd party providers. They are therefore increasingly building internal teams in order to take ownership and design control of their end-to-end digital user experiences and machine-to-machine interfaces. As this digital transformation proceeds, more 'traditional' businesses will become technology businesses, adapting their business models and competing with other technology employers for talent. In response to this the number of trained people leaving our learning centres will need to increase substantially, and we will need to do more to retain them in the region.

> *There should be more collaboration between local industry sectors to understand the implications of digital transformation, exchange best practice and work together to increase skills pipelines.*

The Gap Between Theory and Practice

In many core professional digital skills there is still a significant gap between the capabilities of those entering the industry (most often graduates) and productive professionals. A common assessment from employers is that there's a roughly two year lead time before a graduate recruit becomes proficient enough to be a fully productive team member, particularly in software development but the same is true for other core roles. There are three distinct sets of reasons for this: firstly these graduates lack certain important skills particularly around communicating, working within teams and to particular processes; secondly there are practises and knowledge that are specific to the employer and role which take time to learn; and thirdly it takes a good deal of experience (including the making of mistakes) in order to confidently know what to do in most given situations. Across the industry, and at all levels of the 'stack', the work is extremely

variable, teams must continuously develop new approaches, continual learning is normal and imposter syndrome is common until sufficient experience has been gained. Work placements and employer engagements go only some of the way towards addressing these factors, currently, and the required investment in staff development is often extremely hard to justify and perform for the micro-businesses that account for the majority of employment in the digital technology and media industries - for example degree apprenticeships are an excellent way of bridging the gap between theory and practice, however present too high a risk for small businesses as they cannot commit to a three year process and do not want to let the learner down.

> *We recommend further work to identify and describe the specific soft skills that are found to be lacking, along with approaches to address their development in learners. This is likely a literature review, rather than a new piece of local research, however it should be disseminated and evaluated by local employers and educators.*

> *We recommend working with training providers, particularly in higher and further education, to identify opportunities to practise the soft skills that are lacking and learn from some of the excellent programmes that already exist. We expect a combination of approaches including enhancing existing group working and assessment models, and providing opportunities for short but intensive innovation and rapid design and development sprints to embed practices.*

> *We recommend developing a deeper understanding of existing private sector and employer operated academies and in-work training, and the aggregation and dissemination of best practice across the sector in South Yorkshire.*

> *We also recommend the provision of entirely new learning experiences that prioritise working in multi-disciplinary teams (see Interdisciplinarity, below).*

> *The digital sector has a disproportionate number of small and medium sized businesses, or individuals working remotely. Therefore there is a gap for a "market-maker" organisation which provides continuity from the perspective of learners and education providers, while increasing the leverage of smaller businesses (and de-risking longer term commitments) in their involvement with education. This extends to placements, employer stakeholder groups, and direct interventions in schools or colleges.*

Mapping Provision against Demand

There is currently no comprehensive map of the provision of Professional Digital Skills across South Yorkshire. An initial map was compiled as part of this consultation which was received very well by employers, despite being incomplete and providing no information on the detail of curricula or how topics are being taught. Nor is there currently any detailed data on specific skills demand across the region.

> *We recommend the creation and maintenance of such a Skills Provision Map, expanding on the work that has already been carried out. This should then be updated regularly,*

disseminated to employers and skills providers and compared against the Professional Digital Skills Framework described above.

> We further recommend that work be carried out to better understand demand across South Yorkshire, using a range of local data sources and with reference to the Professional Digital Skills Framework.

Mindset & Modalities

The challenge that is arguably holding the industry (and by extension the economy at large) back the most, and which would create the most significant long term change, is a shift away from industrial era modes of learning and work, towards digital or information-era modes. This is a very multi-faceted topic, but in simple terms we might say that 20th century education was characterised by the requirement to prepare people for industrial work where they would perform roles within linear processes, and which therefore prioritised reliability, consistency, repetition and compliance, while the 21st century requires people who can work together flexibly to solve problems, often over distances and across boundaries, act autonomously, be accountable and take responsibility for their own learning and productivity. These values and behaviours are hard to instil within learning environments that were designed to take place in fixed physical places and that privilege industrial era requirements. This shift in mindset and modalities extends beyond education to business and policy as well, of course.

> We recommend that more work be done to describe and communicate modern production processes for digital products and services, particularly Agile software design and development, and how these practises can be applied to learning across all key stages. This work should also be tailored and disseminated to business and policy communities.

> We also recommend evaluating ways to enhance learner autonomy, self-direction and flexibility, such as offering individual modules within FE and HE courses separately (unbundling) and addressing the way certain subjects are taught (see also under Inclusion and Aspiration).

> We also recommend evaluating existing approaches to education that are organised around collaborative problem solving rather than canonical learning, including some that are based in South Yorkshire such as the XP School in Doncaster, and engaging with local authorities, academy trusts and learning companies to gauge willingness to change and identify opportunities to do so.

Awareness

There is a significant lack of awareness of digital professions and production processes across the population: Potential learners are not aware of the available roles and professions, the skills options and progression, how their devices and applications work and are made. Employers are not aware of what skills are taught and where, or what engagement options there are. Schools, teachers and careers advisors are not aware of roles, professions and pathways. Parents are not aware of these either, and indeed some aspects of digital production and creativity are actively

suppressed in young people by way of screen time limits and a lack of parental understanding to promote positive engagement with devices, etc.

> *A wide range of remedies have been proposed to address this issue, including supporting existing initiatives such as See It Be It Sheffield and Sheffield Digital's 'Insights' interview series; enhancing industry engagement with careers advisors; providing parental advice to foster positive engagement with technology and devices; and promoting digital careers in communities with the least connection to the industry and from which the industry has been least successful in recruiting from. These should be evaluated, expanded on and combined into a comprehensive strategy with the support of regional and local anchor institutions as well as industry.*

> *Employer engagement is piecemeal and driven by the needs of individual institutions or bids over time. A permanent, public repository of insights from this process is missing, and would provide employers with more leverage for the time they invest. This could be combined with information about engagement opportunities and ultimately even a brokerage and coordination service for work placements.*

> *There should be closer engagement between related agencies, such as Sheffield City Council's Employment and Skills Service ("Opportunity Sheffield") and its equivalents in Barnsley, Rotherham and DOncaster, and employer bodies such as Sheffield Digital and Team SY to evaluate messaging and pathways into the industry, as well as with potential entry points such as Customer Service Centres. (The intention would be to address Inclusion and Aspiration as well, as described below).*

Inclusion and Aspiration

There is not enough diversity in the digital tech and media industries, particularly in software development and other engineering professions. This has long been a fact, and there have been a wide range of initiatives that have sought to address this situation, some of which have been very successful such as the funded programmes run by The Developer Academy to train women and people from under-represented backgrounds; the highly supportive work of groups such as Sheffield Women in Tech; and grassroots efforts from a range of community providers such as Access Space, Aalfy, Sheffield Hack Space, Bright Box and many others across South Yorkshire, some of which go back decades and should be far more widely celebrated. In addition to minorities, there is also a lack of white working class young people entering the profession, and encouragement from authorities to 'learn to code' as a route out of deprivation has become something of a cliché. Many young people are further dissuaded from pursuing a career in the industry as coding is seen as difficult and boring, instead of fun and creative, a perception that is far too often confirmed in the classroom. This is also related to the lack of awareness described in the previous section.

> *There is a lot of excellent work underway to address this shortfall, but it is disconnected and perennially lacks support. There should be a South Yorkshire wide strategy that addresses the complexity of this issue and that builds on the mapping work that has been suggested previously.*

> *South Yorkshire has a storied history of good work in this area with programmes such as Cafe (Coding as a Family Experience), Code Make Win, DigiFest and the Digital Champions programme, none of which achieved sustainability beyond their initial (European) funding. These assets could be resurrected and supplemented with new programmes such as a cross-regional digital skills week to introduce digital production to school learners via engagements and in-school workshops.*

> *Besides a lack of specialist teachers, there is also a critical shortage in training and continuous development offered to teachers from other specialisms who end up teaching the relevant subjects. Can local industry provide teacher training and CPD in collaboration with the Institute for Education at Sheffield Hallam University?*

> *There is more generally an opportunity for industry to engage with teaching provision to address the perception of computing as difficult and boring, and to redesign curricula to make them creative, fun and exciting (it was these characteristics of digital technology and media that attracted the majority of people who work in the industry to it, after all!)*

> *Also, curriculum, syllabus, and assessment of digital subjects doesn't reflect the creative and collaborative nature of these subjects very well. Too often the focus is on how to do something, and not why. Without the 'why' it is difficult to sustain the motivation and build aspiration.*

Interdisciplinarity

Many of the skills involved in actually creating new digital products and services are still siloed in different training providers, curricula or departments within universities and colleges. As a result, learners rarely (if ever) get a chance to experience working in a multi-functional team to design, develop and deliver something real. They are used to working either individually, or in groups with other people who are learning the same thing. Sometimes this is done with input from employers, such as setting a brief, but due to the limitations these are usually only a small part of what would be a full process, and are of a short duration.

> *Employers and skills providers should work together to identify opportunities to engage in interdisciplinary projects, initially within institutions (such as across UTC specialisms, or between University departments, etc). An engagement forum should be created for this purpose.*

> *There is an opportunity to be more ambitious in this area, and create a new form of agency, staffed by learners seconded from specialist courses across the region and supervised by industry mentors, that take over the design, development and operation of real digital properties for periods of time, working in and across teams applying their effort where it is required, making decisions and mistakes, handing over their work and the keys at the end of their tenure to the next learners. Such a scheme would also provide the resources to operate platforms that provide benefit to the city, provided they fulfil appropriate risk criteria.*