cts

Combined Technical Solutions

Tackling the engineering
skills shortage
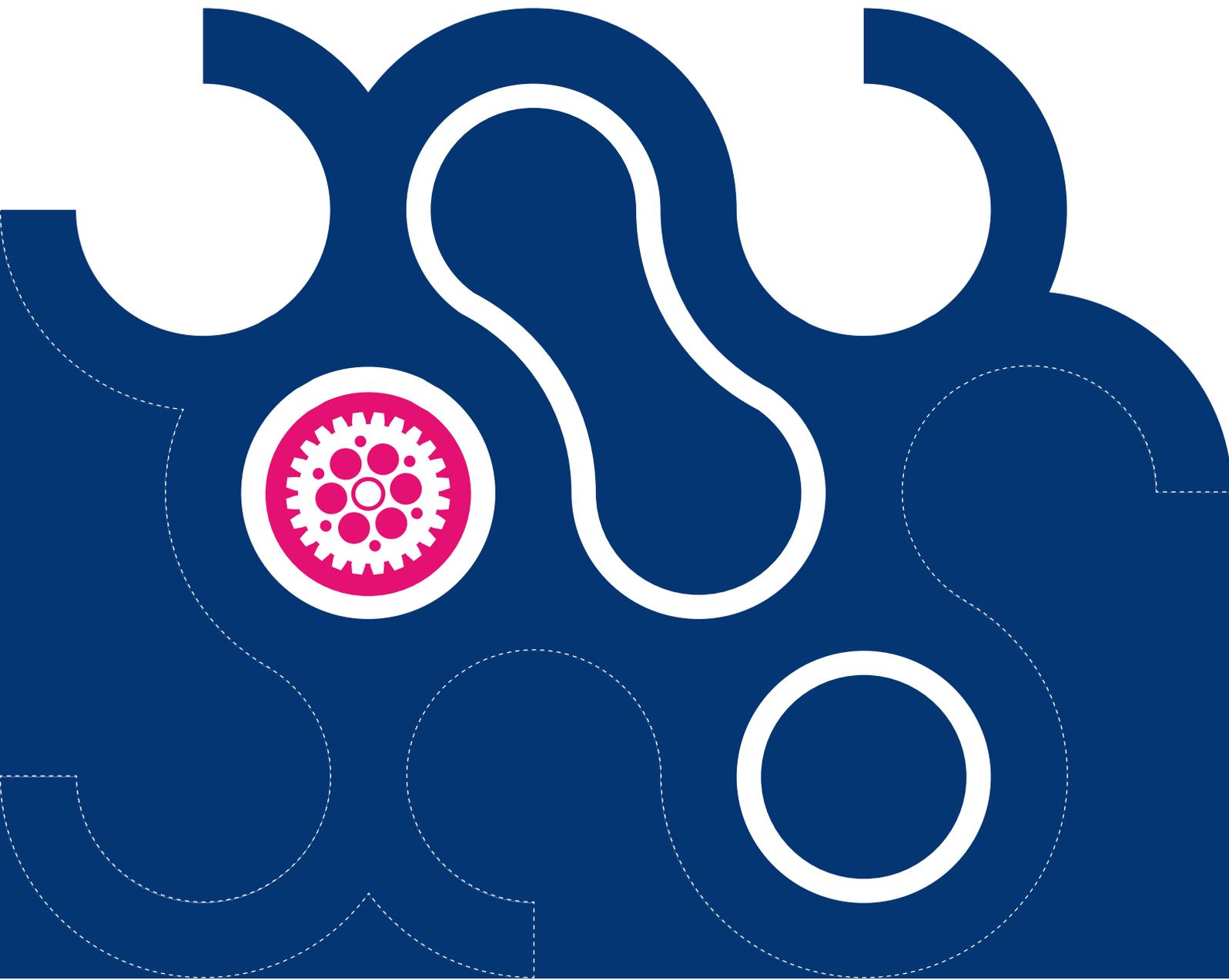
EXECUTIVE SUMMARY

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The UK's skilled labour shortage in engineering and other technical trades is a growing concern for both businesses and the UK government. As a sector which contributes significantly to the nation's economic output – as well as employing millions – it is an issue which cannot be ignored. When factoring in the current political climate, it would not be an overstatement to suggest that the sector is now at a critical juncture. Something needs to be done.

A large part of the problem, however, is knowing where to direct our efforts and attention. With both the UK government and private sector searching for solutions, the risk of inconsistent strategy remains ever present. Now more than ever, a clear plan is needed which factors in all invested bodies. In this white paper report, CTS looks to do just that.

The first chapter examines current and future demand within the UK engineering sector by looking at how today's skills will evolve over time with emerging technologies and changes to the global economy. In the second chapter of this report, attentions will turn towards the roles and responsibilities of both the government and the UK's private sector, and their capacity to tackle the problem.

Finally, this report discusses practical action. Having analysed the complexity of the skills gap, while also looking at the obligations of all invested bodies, CTS looks at how these problems can be met with realistic solutions in both the long— and short term. This strategy is drafted with the aim of mitigating immediate pressures while also proposing how to bridge the gap over longer peroids of time. It is structured so that all parties can work collaboratively to finally conquer this problem once and for all.

The UK's skilled labour shortage in engineering and other technical trades is a growing concern

INTRODUCTION

2
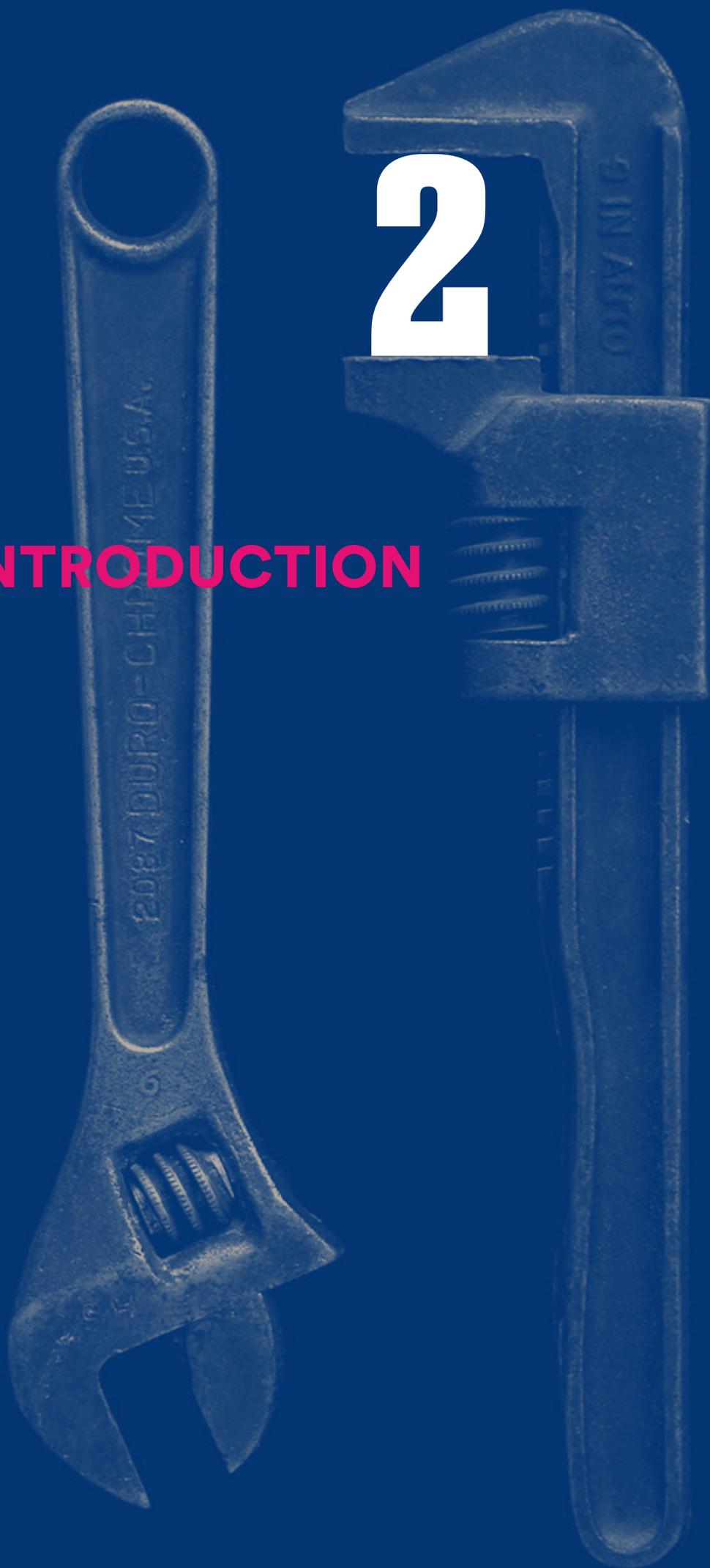
In the UK there is a skills shortage across many industries, but none more so than in engineering. But what exactly is the skills shortage or 'gap', why is it important, and what can be done to tackle it?

What is the skills shortage?

While the UK's population has grown substantially in recent years (it had the fastest growing population in Europe for over a decade),[1] the skills gap has little to do with the amount of available labour to employers but rather the type of labour available to employers. In essence, the skills gap is a phrase used to describe the disparity between the skills that employers want or find most desirable and the skills offered by workers seeking employment.

The issue is, however, somewhat contentious because there does not appear to be consensus on what exact skills are in short supply, leading some to suggest the problem is not as significant as it is made out to be. There is also a high risk of misinterpretation. An OECD report, for example, shows that the UK job market now contains more graduates than non-graduates, yet employers in Finland, Sweden, and Japan are more likely to find higher levels of numeracy and literacy among their domestic labour supply. The UK's higher levels of qualification therefore do not necessarily reflect a higher level of basic competency.[2]

But what about engineering? Irrespective of the debates around what constitutes a skills shortage and where it is felt most, it is widely acknowledged that UK engineers have been a scarce resource for some time, which has meant inflated salaries and increased spending on extra training for workers who should already be qualified enough for the job they are employed to carry out.[3]

Why it matters

Labour shortages in engineering and other construction-based trades have been well documented, often blamed in part for the nation's sluggish productivity and economic growth in recent years.[4] The UK government continues to search for solutions that will have lasting success to this seemingly intractable problem. In fact, the government recently proclaimed 2018 'the year of engineering' in a bid to finally turn the tide. Yet it is now widely recognised that engineering is facing a crisis like never before, with indexes showing the UK's gap between supply and demand worsening year on year.

This is far from a trivial issue because a thriving engineering sector is undeniably good for the UK in a socio-economic sense. Research from the Centre of Economics and Business Research (CEBR) shows that the profession not only has a crucial role in wider efforts to improve the nation's level of productivity (which in turn raises the standard of living for citizens) but also has a 'multiplier effect' on the economy. Engineering is understood to generate a further £1.45 of Gross Value Added for every £1 GVA created directly within its industries, with every additional person employed through engineering activity projected to create 1.74 jobs at some point down the supply chain. CEBR's findings concluded that in 2015 the sector contributed some 25 per cent to the UK's entire GDP, amounting to £420.5 billion. In short, the engineering skills problem is too important to ignore.[5]

Key facts and figures (source: Engineering UK)

● The UK's engineering sector employs 5.7 million people, equating to 19 per cent of its entire workforce
● 27 per cent of registered enterprises in the UK are found in the engineering sector
● Engineering generates 23 per cent of the UK's total turnover. That's £1.23 trillion

FOOT NOTE

1 https://www.telegraph.co.uk/news/uknews/immigration/10927865/UK-has-had-fastest-growing-population-in-Europe-for-a-decade-official-figures.html
2 https://www.theguardian.com/education/2013/oct/08/england-young-people-league-table-basic-skills-oecd
3 https://www.cibsejournal.com/news/engineer-wages-up-by-5-on-back-of-skills-shortage/
4 https://www.theguardian.com/higher-education-network/2016/feb/18/uk-skills-shortage-universities-employers-industry
5 Engineering UK 2018 report, Synopsis and recommendations, p.2.

5.7m

The UK's engineering sector employs

FACT

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FACT

27%

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FACT

23%

The amount engineering generates to the UK's total turnover. That equates to...

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£1.23tn

The task at hand

The numbers surrounding the challenge are sobering to say the least. Recent studies have shown that the UK would need – at the very minimum – 186,000 skilled workers every year until 2024 to gain parity with demand.[6] To put that figure in context, it equates to 0.57 per cent of the entire UK workforce moving into an engineering role every year for the next six years.[7]

But where will these workers come from? Many recruiters admit to having difficulties finding the right candidates to fill engineering roles. Job site CV-Library recently reported that almost half of recruiters (49.9 per cent) think that engineering is the toughest sector in which to place candidates. The problem is so severe, in fact, that recruitment websites are now placing engineering in its own category by launching dedicated portals to help employers match with the right applicants.

There are also uncontrollable factors for businesses to contend with. With a tumultuous political climate and the nation's relationship with the European Union still uncertain, a steady supply of the right labour is getting more difficult to procure. It is widely agreed that a 'no deal' Brexit would likely compound the issue, so a robust and coherent strategy is desperately needed, and fast.

Measures that are both practical and imaginative must therefore be implemented to help to fill the roles integral to the future success of the UK. Unfortunately, this is not a simple task, so where do we go from here? Clearly another look at problem is required. In this white paper, CTS examines the engineering skills gap in detail, looking at what immediate and long-term measures can be put in place to solve this issue once and for all.

At CTS we believe that engineering has the potential to make a huge contribution to the nation's current, near and distant future. But the sector needs urgent attention. With many high-value jobs being created through digitisation, we need more young people to see the exciting opportunities that a career in engineering holds. Businesses also need to widen their talent pool and see the benefits that come from a more balanced and diverse workforce.
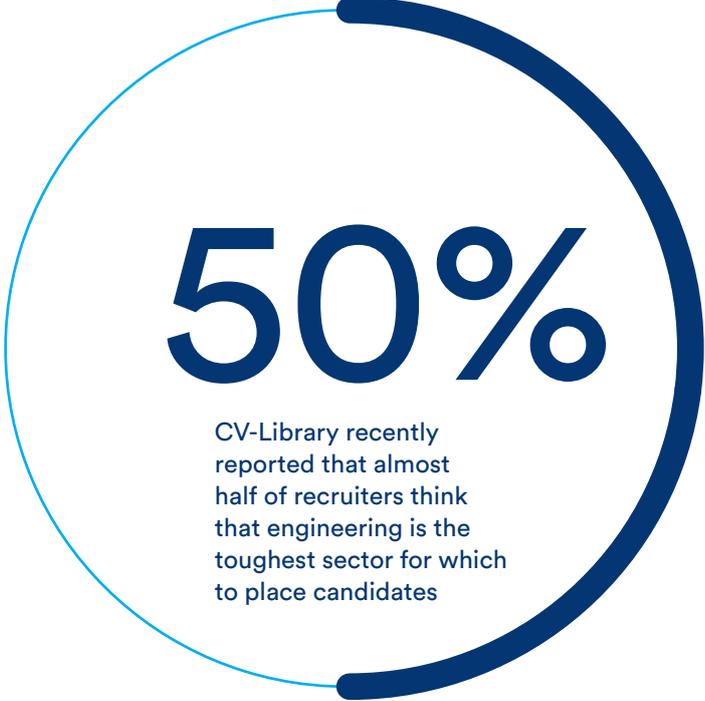
50%

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FOOT / NOTE

6   https://www.randstad.co.uk/job-seeker/career-hub/archives/uk-engineering-facing-a-skills-crisis_1101/

7   ONS report for the UK labour market: August 2018 which states there are 32.39 million people in work. https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/bulletins/uklabourmarket/august2018#main-points-for-april-to-june-2018

CURRENT AND FUTURE GAP ANALYSIS

3

of a digital infrastructure security professional working within central government offices.

The workplaces engineers find themselves in, then, are some of the most varied to be found within the UK's economy. Yet this point is not made to merely demonstrate choice, but rather the possibilities and range of lifestyles that a career in engineering holds for people from all walks of life. The importance of this should not be overlooked. As an Engineering UK brand monitor survey recently revealed, a lot of young people fundamentally misunderstand what a career in engineering actually entails, which may be putting off ideal candidates. Ultimately, more needs to be done to inform emerging generations of workers.

Of course, demand for software engineers will only grow as old infrastructure is replaced, and automation and artificial intelligence become more commonplace in everyday working life. Indeed, this prediction is supported by research from the Association of Professional Staffing Companies, which shows that UK demand for software developers has grown substantially in recent years. In the Greater London area alone, there has been a 6.2 per cent increase year on year, which accounts for roughly half of all UK vacancies. This growth is not just unique to London, however, as the highest record growth was seen in the East Midlands where demand surged by 22.7 per cent.[9]

Yet despite an increasingly digital landscape, it is telling that the majority of the roles listed in the New Engineer article are divisions that are typically considered 'traditional' engineering occupations that predominantly operate in the physical world (for example, civil, biomedical, petroleum, and aerospace). Even at this stage, then, a skills gap strategy must have a renewed focus on core engineering skills that deal with both the digital and physical spaces. As industry prepares for the future, it is equally important not to lose sight of contemporary issues and the expertise required to tackle them.

With the scale of the challenge clear, it is instructive to look at the types of workplaces most in need of engineering talent as doing so gives an indication of where collective focus is needed most in both the short– and long-term.

Current gaps

Unsurprisingly, as an article in the New Engineer from January 2018 shows, there is a high demand for 'core' engineering roles i.e., occupations that require a consistent and thorough application of specialist engineering knowledge.[8] This could include work in nuclear power plants, hospitals, and laboratories.

The understanding of core skills and the environments in which they are applied, however, is changing. The influence of rapidly improving technology (along with its accompanying security risks) and the march of globalisation means that software engineers are now highly sought after, even more so those with experience and knowledge of esoteric coding languages. Think here

A HIGH DEMAND FOR 'CORE' ENGINEERING ROLES IN

NUCLEAR

HOSPITALS

LABORATORIES

FOOT NOTE

8 https://newengineer.com/
insight/5-of-the-most-in-
demand-engineering-jobs-
for-2018-1126177
9 http://www.humancap-
italventures.com/news/
demand-for-software-de-
velopers-engineers-rise-
36-in-the-uk

this is certainly a viable avenue to pursue, it is equally important for the UK to continue focusing its efforts on attracting overseas engineers because, as pointed out, there simply is not enough labour to go around – and the longer this 'immediate gap' persists, the worse the effects will become.

Unfortunately, even attracting overseas talent is proving difficult. The UK is currently experiencing a 'perfect storm' of high employment (a rate of 74.6 per cent – the highest since records began in 1971) [10], a considerable drop in the value of the pound, and ongoing political uncertainty as a result of Brexit. These factors have ultimately inhibited potential overseas engineers from emigrating to the UK, despite the virtual guarantee of a job and handsome salary. The problem persists.

Future demand

So, what about the roles of the future? Creating a robust strategy means consideration of the future is vital, even if the UK's most pressing challenges are in the immediate and short term.

It's clear that new job roles in the digital realm will continue to grow unabated; we know that software developers, algorithm designers, and IT technicians will form a large part of the UK's future labour demographic. But forecasts from a range of figures both in and outside of the engineering field predict a sustained demand for roles that already exist today. After all, structures will still need developing, machines repairing and resources extracting.

This assumption appears well founded when you examine recruitment specialist Micheal Page's global distribution of in-demand professions. Across every major populated continent, the professionals needed most are software engineers or developers, and electrical and mechanical engineers. If the labour requirement for engineers is truly as international as this source indicates then it is safe to say that what is needed today will still be needed tomorrow, no matter how effective our efforts to close the gap. [11]

The UK Shortage Occupation List reflects a similar case to the New Engineer. The government resource details every skilled profession that cannot be filled by residential talent (which is understood as a British national or citizen from the European Economic Area). It is publicly accessible so employers can reach international applicants more easily than they would through other means. The Occupation List also helps to simplify navigation of the visa process for those looking to work in the UK.

Even a cursory glance through the listings shows engineering as the stand-alone sector most in need of labour. Once again, the 'physical' engineering space dominates: civil, mechanical, electrical, chemical, design and development, production and process, planning and quality control; and technical engineers are the categories that sit most prominently on the UK Occupation List.

Some might argue that in the face of an exit from the European Union it is most important to begin directing all our energy on culturing homegrown talent. Surely it makes most sense to initiate a nationwide campaign that will attract workers (both those that could be trained from the 'ground up' and those with rudimentary engineering knowledge) that already live and work in the UK? Yes and no. While

FOOT NOTE

11   https://www.michaelpage.
     co.uk/minisite/most-in-de-
     mand-professions/
12   http://reports.weforum.
     org/future-of-jobs-2016/
     chapter-1-the-future-of-
     jobs-and-skills/

That said, caution should be applied at this point. The idea of 'roles that already exist today' doesn't necessarily mean that the tasks which engineers carry out now will be identical to those of the future, but rather that they will evolve as economies and technologies change over time. A future civil engineer, for example, will likely find that they won't just be designing roads, hospitals, and water systems, but also how to integrate these amenities with intelligent devices (the so-called 'Internet of Things'). With more sensors around, there will be a higher demand for skilled people that can help make these devices 'talk' with one another. As this kind of monitoring technology becomes commonplace, it is not unfeasible to also predict that certain types of data analysis will form a large portion of the future engineer's remit, in proactive and reactive capacities.

Increased connectivity, however, will not be the only factor affecting the future. Artificial intelligence, autonomous vehicles, nanotechnology, quantum computing, biotechnology, 3D printing, and augmented/virtual reality are just some of the capabilities that will inevitably shift the scope of the future engineer's role. These new developments are the pillars of what's being called the Fourth Industrial Revolution, where technology begins to embed itself within the fabric of societies and even the human body.

It would be understandable to regard this type of future gazing as unhelpful speculation, after all there are a vast

65%

of children entering primary school today will eventually work in completely new careers that do not exist today

array of variables that will affect the future and therefore what a future engineer might look like or be doing. But there is good reason for this conjecture. As the World Economic Forum points out: "In many countries, the most in-demand occupations did not exist five to ten years ago. By one popular estimate, 65 per cent of children entering primary school today will eventually work in completely new careers that do not exist today."[12] These careers will of course not be completely unknown to us; some resemblance will always remain. As discussed, they will likely be natural 'successors'

to current roles. In this sense it will be vital that engineers still acquire the rudimentary knowledge in their respective fields, but also have the capacity (and necessary support) to develop new skillsets as working conditions change.

Even though there is an unknowable element to the future, we can safely assume that the problems of today will relate to ones encountered over the coming years. As such, we must factor these assumptions into any strategy which looks to permanently close the skills gap, both now and in the future.
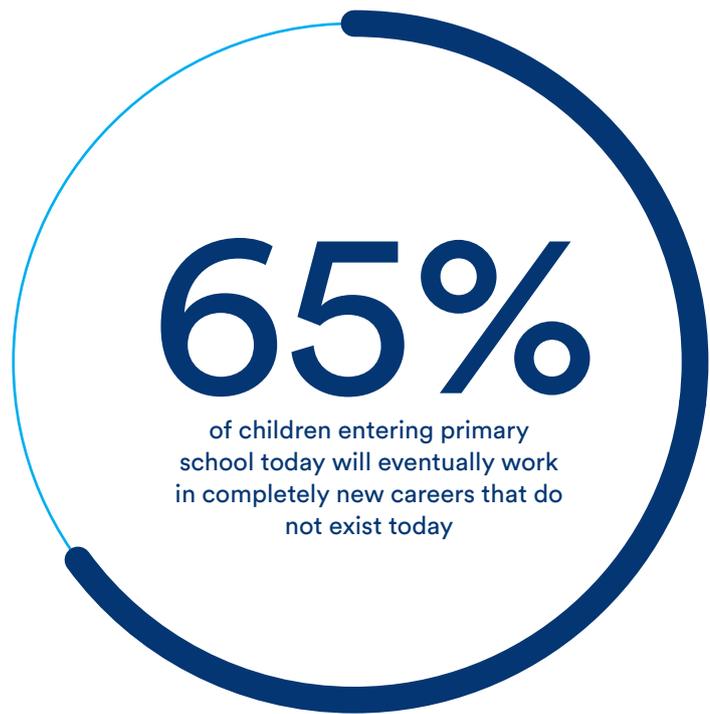
The Fourth Industrial Revolution, where technology begins to embed itself within the fabric of society…

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THE ROLE OF GOVERNMENT AND THE PRIVATE SECTOR

One possible reason that the skills shortage persists is down to mismatched approaches between the government and private sector.

Few, if anyone, could be accused of deliberately obstructing efforts to bridge the gap, as everyone ultimately wants UK businesses to have access to the skilled people they need. But there are certainly conflicting opinions about what exactly needs to be done and by which body or organisation. This chapter explores both the public and private sector's capacity to tackle the issue and if there is a need for more joined-up thinking.

The role of government

With businesses continually voicing their concerns about a lack of accessible talent, it might be considered fair to place the lion's share of responsibility at the government's doorstep. Why should businesses have to rely on the government to provide a pipeline of candidates? Is this not just an unnecessary burden on the treasury, and by extension the taxpayer? Surely, it is employers that decide whether to hire or not, and which also have the capital required to train individuals to the desired standard?

While true in some respects, this would be a premature judgement. It is undeniable that the majority of executive power to tackle this issue lies with central government – the treasury controls the flow of funding towards skills gap initiatives at every level, while senior policy makers decide on what issues are most important to the nation. Ultimately, it is the government's duty to assure the social and fiscal health of the nation – which as we know a fully resourced engineering sector would provide – so

FOOT/NOTE

13 https://www.telegraph.co.uk/education/further-education/11753892/The-skills-gap-who-should-be-taking-responsibility.html

there is above all a moral obligation for it to put measures in place that have lasting effect. Failure to do so would not only have serious consequences for the nation's economy and social mobility but would also be considered a dereliction of duty.

Pointing this out, however, is not to suggest that the government is dragging its heels, but rather to show that the issue is anything but one dimensional. In fact, it is well known that the skills gap has been a top priority for decades, but the efficacy of different government initiatives has varied. Going on current forecasts it would not be unreasonable to argue these efforts have missed the mark by some way.

Education, education, education

What about the here and now? In November 2017, the government published its industrial strategy which emphasised the role of education to meet its key objectives (equipping citizens with skills, driving economic growth, and improving productivity). As part of this it has invested heavily in a number of policy initiatives that look to increase the uptake of STEM (Science, Technology, Engineering, Mathematics) subjects, particularly among women. It also recently reappraised the status of technical education and supply of key skills, which has been well received by the engineering industry and its invested bodies.

Beyond this, the government has established the Post-16 skills plan. This is a higher education framework that intends to demystify the differences between technical and academic qualifications so that employers can assess applicants more easily. The Post-16 skills plan allows students to study for A levels or T levels, with apprentices being able to transition between the two. Again, this has been widely regarded as a positive step forward.

The most significant measure, however, has been the introduction of the Apprenticeship Levy in April 2017. This requires any company with a wage bill exceeding £3 million to fund apprenticeships, in part to help

the government achieve its target of 3 million apprenticeship starts by 2020. While initially well received, many have expressed concerns that the levy might compromise the quality of training on offer. Others have pointed out that there is scope for a 'relabelling' of existing training to claim back on levy spend. Sadly, despite industry willingness in principle the number of apprentices continues to fall year on year.[13] As a result of these concerns, the government has now turned its attention towards apprenticeships at higher qualification levels which blend academic and vocational study. These opportunities are becoming increasingly common at universities, with many institutions devoting considerable resource to improve their provision. These opportunities are believed to be most attractive for prospective employers, with some funding students to study on the agreement that they will join the organisation post-graduation.

It is clear though that some still find the government's efforts lacking. A recent poll conducted by The Engineer which asked over 600 industry figures for their opinion on the government's role produced some insightful results. It revealed that:

● 67 per cent of UK manufacturers are worried about the future availability of skilled staff for their business
● 72 per cent don't believe the government is doing enough to promote skills training
● 83 per cent believe there are not enough young people working in UK manufacturing and engineering
● Just 54 per cent currently train apprentices
● 40 per cent do not know whether the Apprenticeship Levy is a good thing

Yet the survey also found that:

● 88 per cent claim engineering is a good career choice for young people
● 90 per cent claim the industry would benefit from more young people working within it

In light of these views, then, what exactly is the private sector doing to meet the government in the middle on this issue?

A recent poll conducted by The Engineer[14] asked over 600 industry figures for their opinion on the government's role produced some insightful results. It revealed that:

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72%
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83%
believe there are not enough young people working in UK manufacturing and engineering

54%
currently train apprentices

40%
do not know whether the Apprenticeship Levy is a good thing

Yet the survey also found that:

88%
claim engineering is a good career choice for young people

90%
claim the industry would benefit from more young people working within it

VIEW/POINT

CTS believes the Apprenticeship Levy is a chance to connect with young people who are eager to develop in a practical working environment. We find that the candidates are typically self-starters – humble and entrepreneurial individuals who have weighed up their options and decided to head straight for the world of work. While not without its challenges, CTS believes this piece of legislation will ultimately prove beneficial in the long run.

Bryan McLaggan

VIEW/POINT

At CTS we feel a joined-up strategic approach is vital. The engineering skills gap not only stifles economic growth but also social mobility; it is crucial that both the government and private sector work collaboratively, as doing so will ensure prosperity for both the sector and the nation.

Steve Robins

The role of the private sector

While central government efforts are believed to be falling short, in many respects it can only do so much under its own steam. Education reform will certainly help, but there is also impetus for employers to make their own 'stalls' as attractive as possible for both emerging labour and existing workers. There must be a common ground from which all parties can battle the skills shortage together. John Allen, national chairman for the Federation of Small Businesses, agrees, recently stating that employers "will always have a responsibility to train staff to meet the needs of their specific business" but that there is also "a clear case for the education system to get better at preparing young people for life beyond the classroom". [15]

Currently though it seems aspirations and reality are moving in different directions.

According to a report from Lloyd's Bank, 44 per cent of business leaders polled said they are planning to grow their headcount over the next 18 months.[16] Though as detailed, the UK is now approaching an unprecedented level of employment, with free movement from EU27 nations expected to end as of March 2019. Thus, the plan to expand workforces looks optimistic at best in the current climate. We know that a sole focus on homegrown talent is untenable in the short term – in fact, it is a matter of urgency that EU labour is secured for UK businesses before 'deadline day' – but a strategic reengagement with the public, particularly among young people, can certainly help to turn the tide over a medium- to long-term period.

It is not as if young people are difficult to find or even represent a small portion of the UK's demographic – in fact it's anticipated that the number of secondary school age children will grow dramatically over the next 20 years. So, what are UK businesses actually doing to engage these individuals, especially as the government rolls out its reforms and a 'year of engineering' campaign to inspire the next generation?

Engagement, engagement, engagement

Some are taking matters into their own hands and going direct. Rolls Royce, for example, has established over 1,000 STEM ambassadors worldwide, with company employees spending at least 60,000 hours a year delivering STEM programmes to local communities. A spokesperson for the company added: "it is the responsibility of both government and business to solve this skills gap and inspire the next generation of talented scientists, engineers and mathematicians entering the UK workforce. This means helping schools to provide high quality teaching in regards to STEM subjects as well as providing more accessible routes into STEM-based careers through apprenticeship and other programmes."

Miguel Milano, European president of cloud computing business Salesforce, holds a similar position. Writing in Management Today in March 2018, he said that the next industrial revolution is an incredible opportunity to close the skills gap but that "no individual company, government or politician can solve a societal challenge of this scale on their own, so we must take collective action". Salesforce has now partnered with Steinbis, Germany's largest private university, to offer a job-integrated bachelor's degree with a focus on digitisation and transformation. It is hoped that this programme will impart the theoretical know-how while at the same time give graduates the opportunity to gain hands-on experience within the digital engineering economy.[17]

Yet for smaller businesses in the UK devoting time and money in this way will be considerably more difficult, if not impossible. Large organisations will often have the cashflow to devote resource to longer-term training and engagement at every level – this is simply not financially viable for smaller enterprises. Larger businesses are also capable of covering gaps in manpower, due to greater numbers of existing workers and the variety of seniority found throughout their ranks. This is a significant problem because small engineering

enterprises numerically dominate the UK economy – in 2017 80 per cent of registered engineering enterprises had fewer than four employees.[18] Clearly, then, there is a need for the government to reach out to these SMEs (often said to be the 'backbone of the economy') and help them to engage with education institutions and the wider student body.

Joined-up thinking

Having examined the responsibilities, efforts, and capacity of both the government and private sector, it is clear that more joined-up thinking is needed. Action which orchestrates business, government, and industry efforts will certainly produce more favourable results, because the problem is too entrenched to be overseen by one party alone. Despite the possible risk of complicating matters further, 'siloed' planning and action will inevitably see differing rates of success, meaning wasted time and potentially a much larger problem to deal with at some point down the line. Care must be taken not to create an adversarial environment where invested parties are pulling in different directions. If this were to happen, the nation runs the risk of a difficult challenge turning into something far more complex.

FOOT/NOTE

14 Lloyds Bank report: Building the workforce of the future, March 2018, p.12. https://www.londonfirst.co.uk/sites/default/files/documents/2018-05/LFL-loydsBuildingWorkforce.pdf

15 https://www.telegraph.co.uk/education/further-education/11753892/The-skills-gap-who-should-be-taking-responsibility.html

16 Lloyds Bank report: Building the workforce of the future, March 2018, p.12. https://www.londonfirst.co.uk/sites/default/files/documents/2018-05/LFL-loydsBuildingWorkforce.pdf

17 https://www.managementtoday.co.uk/business-responsibility-bridge-skills-gap/future-business/article/1463755

18 Engineering UK 2018 report, Synopsis and recommendations, p.3.

PUTTING STRATEGY INTO ACTION

5

With a clearer understanding of the roles and responsibilities laid out, it is appropriate to now look at what practical action can be taken.

This chapter has been separated into short- and long-term views, as we believe this will help invested parties to prioritise actions accordingly. Short-term points should be regarded as things which can be actioned today, while the long-term points should be read as measures that need developing over the coming years.

In the interests of promoting more joined-up thinking, the list provided below does not intend to discriminate one single party or organisation, but simply offer much to consider for everyone moving forward. Therefore, the following points should not be framed solely in the context of government, private enterprise or education. Rather, it should be used as a framework in which to collectively meet these objectives. CTS would also like to take this opportunity to include some of its own strategy and recommendations based upon its experience working with engineers in the M&E sector.

Short-term action

Improving staff retention through company culture

A paucity of the right type of labour makes holding on to existing engineering talent more important than ever. Staff retention is a common challenge faced by businesses of all types, but none more so than within today's engineering sector. With sky-high salaries and handsome bonuses on offer to new starters, it is becoming increasingly difficult to not only maintain a full complement of staff, but a full complement of good staff. However, firms that create strong bonds through an inclusive, diverse and supportive working culture will typically hold on to colleagues longer than those that do not. As Gallup shows, a strong working culture will also help to attract the top 20 per cent of candidates.[19]

Corporate engagement in STEM education

As we have seen, collaborations between educational establishments and corporate enterprise are proving productive. These arrangements not only give students the support and flexibility they need to graduate into a skilled profession but are also helping to engage young people with the idea of a career in engineering at a formative stage in their lives. The presence of an employer (especially one with a supportive working culture) at school or on campus drives home the idea that engineering is a prosperous and exciting career to pursue. It also shows students that engineering is a profession which provides financial security and the ability to continually learn after formal education. More efforts of this type – especially in line with similar government campaigns – will only sharpen the uptake from able students.

Mitigating the risks associated with political uncertainty and the simplification of the visa process

It is evident that the unstable political environment is not conducive to good business and therefore any efforts to bridge the skills gap. Countless industry professionals have voiced their concerns with the lacklustre approach to EU negotiations and the impact it is having on securing talent. This must be addressed immediately. Organisations need a definitive answer to questions on the nation's circumstances as it is only through this clarity that contingencies can be put in place.

In recent years, the government has also been engaged in a battle to cut net migration. As a result of this, it is widely believed that the visa process has been made deliberately more complex to navigate.[20] Critics have voiced reservations with this approach, with some arguing that it compounds the difficulties surrounding supply of skilled labour. It is well known that time is fast running out to attract labour from the EU. If the UK does indeed exit the EU

FOOT / NOTE

19 https://www.yourerc.com/blog/post/5-Proven-Ways-to-Attract-Highly-Skilled-Talent.aspx
20 https://www.theguardian.com/books/2018/aug/21/uk-festival-directors-visa-process-government

without an agreement, sourcing staff will become infinitely more difficult. Mitigating the risks associated with political uncertainty and a simplification of the visa process is therefore of paramount importance in the short term. Failure to do so will mean the nation is 'boxed in' to a talent pool that cannot adequately fill the most urgently needed roles.

Long-term action

Driving diversity in engineering

Diversity has long been a concern for the industry and with good reason. Research shows that in every age group boys are far more likely to consider an engineering career than girls.[21] Other polls have shown that only 15 per cent of organisations make any extra effort to attract and retain women in engineering and technical roles (beyond observing statutory equality requirements). Shockingly, just over one in ten of the UK engineering and technical workforce is female.[22] The UK is missing out on a wealth of potential talent sitting right under its nose. Driving diversity not only makes good business sense, but above all it is also simply the right thing to do.

Placing this issue under long-term action should not indicate that it is lower down on a list of priorities. On the contrary, it should be viewed as an incredibly important issue both in the here and now, as well as the future. Businesses should of course be doing everything they can to improve the rates of diversity among their ranks. But it is only through continual awareness of this issue that positive and lasting changes can be made. This is why it has been designated as something to address over the coming years.

Demystifying engineering

Not enough is being done to clarify what a career in engineering actually involves. Young people, and even existing workers outside of the industry, are not being given the right literature nor the opportunity to explore the breadth of options available to them.[23] This of course makes attracting people to the industry infinitely more difficult – any confusion will dissuade the curious and able candidates. The good news is that this is actually a relatively simple problem to address. Government policy initiatives and corporate engagement with education establishments have put the wheels in motion on this issue, but far more outreach can and should be done. A sustained effort to clarify engineering will likely see numbers improve.

Future training initiatives and renewed focus on soft skills

The first chapter of this report showed that the engineering world is changing in exciting and unforeseen ways. While the same core skills will always be required for a career in the sector, a longer-term view must begin to factor in training that deals with industry disruption. Not only will this kind of proactive development enable the UK to deal with changes, both seen and unforeseen, but also allow it to bid for contracts that are currently unfeasible due to chronic staff shortages.[24]

It should go without saying that technical skills are the fundamental asset to have when considering a career in engineering, yet the need for soft skills is growing in importance. Due to the Fourth Industrial Revolution, engineering is no longer considered a 'nuts and bolts' profession and as such employers now regard the ability to communicate clear and professionally as highly desirable traits. Any future skill gap strategy, then, must be informed by a demand for individuals who can not only solve technical challenges but also verbalise them in a coherent way. Getting this right is incredibly important – if this objective is not met UK engineering runs the risk of becoming obsolete when compared to other nations.

VIEW/POINT

For CTS, the future of engineering within our sector will be driven by its ability to demonstrate both the excellent prospects and wide ranging nature of opportunities within building services, while at the same time having a clearer pathway for school leavers to take up training and apprenticeships.

Brian Venton

FOOT/NOTE

21 https://www.thehrdirector.com/features/skills/engineering-skills-gap/
22 https://www.themanufacturer.com/articles/uks-lack-of-diversity-in-engineering-fueling-skills-shortage/
23 https://www.thehrdirector.com/features/skills/engineering-skills-gap/
24 http://www.constructionenquirer.com/2017/03/30/skills-shortages-force-firms-to-ditch-highways-bids/

CONCLUSION

This paper has shown that the UK's engineering skills gap is a multifaceted problem that needs much more joined-up thinking between government and the private sector. Due to the far-reaching nature of the skills gap – as well as the necessity for short-term action and longer-term planning – the issue can simply not be overseen by one party alone. Invested parties must therefore be cognisant of divergent approaches and instead focus their efforts on reaching a strategic consensus. Ultimately, it is within the interests of everyone to reach a common ground as the gap not only affects industry but also the nation's socio-economic health. A problem shared is a problem halved.

FURTHER READING

Engineering UK – https://www.engineeringuk.com

Office for National Statistics – https://www.ons.gov.uk/employmentandlabourmarket

UK government skills policy portal – https://www.gov.uk/government/topics/further-education-and-skills

Royal Academy of Engineering 'Closing the STEM skills gap' – https://www.raeng.org.uk/publications/responses/closing-the-stem-skills-gap

Women in STEM – https://www.womeninstem.co.uk

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