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Coláiste na hOllscoile Corcaigh

Complex Leadership Challenges in the AI Age

Executive Summary

The business landscape is being reshaped by digital transformation, automation and the integration of Artificial Intelligence (AI) tools and solutions. Less explored is how this paradigm shift brings forth new opportunities and challenges for leaders, and how the role of leadership is evolving. Leaders are not only tasked with driving their organisations through technological adoption, but also meeting the changing needs of an evolving workforce, overcoming ever-increasing skills and capability gaps, and trying to innovate amidst complex regulatory challenges. AI is not the cause of these challenges, but the 2023 explosion of AI into the global business consciousness adds great additional complexity to already complex issues and accelerates the need to find solutions.

In the *introductory* section of this paper, we summarise why AI has been called the defining technology of our time, with the potential to free us from digital debt, fuel innovation and transform how organisations operate and interact with their employees. The remainder of this paper lays out the complex leadership challenges at the organisational, national and international level, which must be urgently addressed if AI's potential as a key driver of human flourishing is to be realised.

In *section 2* of this paper, we look at challenges and opportunities at the organisational level, specifically focusing on the relationship between AI and workplace culture. It's important to note many of the cultural challenges discussed are not directly caused by AI, e.g. the growing divide between leaders and workers, lack of alignment between personal values and organisational behaviours (particularly around sustainability measures), talent retention issues, and continuing hybrid challenges with workers feeling increasingly burned out, overwhelmed and disillusioned with leadership, etc. Nevertheless, the hope is that AI will play a key role not only in addressing productivity pressure points and enhancing talent capabilities, but also helping to improve the overall workplace experience and even forge greater connections between leaders and workers.

In *section 3* we look at the need for upskilling and capability development at the wider national level, with particular focus on Ireland's vulnerability to AI and automation. The OECD has raised urgent concerns about the readiness of Irish adults to adapt to changes in the world of work, with a lack of essential upskilling and participation in lifelong learning placing many Irish workers at risk of falling behind. Not only is there a significant disparity in participation rates in lifelong learning between Ireland and top-performing EU countries, but a lack of essential skills among the Irish workforce poses a serious challenge for leaders and organisation seeking to keep pace with rapid technological advancements and evolving market demands. Despite Ireland's significant economic growth in recent decades and the relatively high level of adults holding a tertiary degree, the concern is that many adults won't have the skills to succeed in a rapidly changing world and future economy where certain skills may become obsolete.

In *section 4*, we look at international regulatory challenges, specifically around producing regulation that drives innovation while protecting the rights of individuals and societies. It's a balancing act the EU has struggled with. While business leaders endeavour to keep their organisations competitive by attempting to bridge skills gap

and cultural challenges, Europe lags far behind the US and China when it comes to AI. While business leaders try to promote a culture of innovation within their organisations, no such innovation culture has been promoted by the EU throughout Europe.

To what extent the EU's approach to regulation – with its commitment to "ethical" and "trustworthy" AI – has hindered innovation is explored. Likewise why appeals to regulation as surely enabling innovation in the future, almost inferring a direct casual link, are unhelpful and lacking in evidence. In fact, the correlation observed so far may lead one to the opposite conclusion, though doing so would be a gross oversimplification.

The challenge is producing a regulatory framework that maximises the upsides of innovation while minimising the potential downsides and protects the rights of individuals and societies. Any appeal to doing away with regulation entirely is dangerous, if not potentially catastrophic. Technology like AI moves at a much faster pace than regulators and finding the right way to regulate this technology is difficult, especially when there is no joined-up approach taken by the various stakeholders involved. Sandboxes, such as the UK's Fintech sandbox and Singapore's autonomous vehicle sandbox, may provide lessons around how to ensure consumer safety doesn't come at the expense of innovation.

In the *fifth and concluding* part of this paper, we offer a potential way forward for what the AI future workplace might look like – offering evidence from one leading tech firm's digital transformation journey. AI serves in this example as a tool to assist human decision-makers, who make the final decision but are freed from countless hours of repetitive tasks, offering a real-life example of how AI can augment our capabilities rather than replace us. Those who understand how to effectively utilise technology while harnessing their people skills should thrive in this new environment, especially when there are clear limits to AI replaceability, e.g. accents, sarcasm, jokes, metaphors etc – all of which take huge amounts of emotional intelligence to figure out – cause logic-driven AI systems immense difficulty. Overlooked may be a widespread misunderstanding of the properties of language and communication, and how these reinforce our uniqueness and humanity. While the "relationship of presence" that's established between conversing humans is worthy of further research, mastering complex people skills has never been more important for leaders.

1. Introduction: the defining Technology of Our Time?

Although it's common for business leaders to take inspiration from successful sports coaches, former Arsenal manager Arsène Wenger – himself a regular speaker on the corporate circuit – believes lessons from sport aren't easily transferable to regular organisations.

"Players have to be as close as possible to 100 per cent of their potential to be efficient," Wenger is quoted as saying. *"That is not the case in daily life."*

Indeed, the role of talent separates sports teams from banks or law firms or even startups. Not least because the hierarchy of compensation is flipped, with many players earning in a week what their coach earns in a month, or what the club directors earn in a year. But Wenger is getting at something deeper, a point taken up by Financial Times journalist Simon Kuper.

"Sport isn't a useful model for business," Kuper writes. *"Corporations are based on the concept of replaceability. (Employees) don't need to be highly talented. They just need to be good enough. A corporation succeeds thanks to efficient processes, not extraordinary talent. In most jobs, creativity and extraordinary talent only cause trouble."*

Kuper's emphasis on process and replaceability chimes with common fears around AI and automation, with many digital transformation initiatives encountering resistance and scepticism from employees fearing job displacement – often justified. By 2030, McKinsey predicts automation will euphemistically 'impact' 375m jobs worldwide at minimum, while the recent OECD Skills Strategy Report notes Irish workers are particularly at risk of falling behind as workplaces and technology evolve faster than skills and capabilities. If we accept Kuper's version of a corporation, surely more AI and automation will lead to increased organisational downsizing and even less emphasis on creativity and extraordinary talent?

Thankfully no. Or at least, not entirely. While the process-over-people organisation Kuper describes may have been common in the past – and still exists to an extent – IMI research shows top organisations are committed to their people, with AI and automation an enhancer of their creativity rather than a replacement.

After studying the digital transformation efforts of multiple organisations, IMI found the biggest enabler of project success was not the technology itself, but the organisational and leadership structures. Empowered by supportive leadership, agile and cross-functional teams utilised cutting-edge project management techniques to test and iterate in an environment of psychological safety, with creativity and innovation at the forefront. The most successful teams were not necessarily AI or technology experts, but their organisations placed a strong emphasis on continuous learning and upskilling, allowing them to adapt more easily to new technology and ways of working. Crucially, rather than being processed-obsessed, these teams were output-orientated, customer-centric and focused on high performance.

Tony Moroney, programme director for IMI's Digital Leadership Diploma and AI for Senior Leaders programme, believes the biggest challenge to be overcome when it comes to technology and digital is mindset. *"When people hear digital transformation they tend to focus on the digital side rather than the transformation side, when really it's just using digital tools to deliver this transformation and provide a better experience for customers. But it's vital to look at digital transformation as a strategic imperative, and not just as a technology project."*

Colonel John Boyd, the US Air Force pilot and military strategist, would routinely bark: "People, ideas, machines – in that order!" Boyd believed project success with technology came from the intersection between people and technology, and the ideas of those people, not from the technology itself. In other words, instilling a culture of innovation.

However, fostering that environment isn't easy. The business landscape is being reshaped by automation and AI in unprecedented ways. This brings forth new opportunities and challenges for leaders, who are tasked with driving their organisations through technological adoption while meeting the changing needs of an evolving workforce. As discussed later in this paper, a recent Microsoft survey noted over half of Irish workers feel their leadership team is out of touch and that workplace culture has deteriorated in the hybrid environment. Burnout, not enough focus time, and too many tasks and meetings were also cited as challenges. On the flipside, a Deloitte survey noted that C-suite leaders found the main obstacle hindering their organisation's progress towards digital transformation to be lack of workforce skills and capabilities, followed by mindset and cultural shift.

In terms of overcoming these challenges, the adoption of digital solutions like AI should help organisations address the productivity pressure points mentioned above, reduce risk of employee burnout and improve the employee experience. Crucially, leaders must encourage a culture of continuous learning and experimentation, where employees are empowered to embrace change and adapt to emerging tools and trends, along with equipping the workforce with new skills and capabilities. Otherwise workers may get left behind, as the OECD has warned.

While technology should be used to increase productivity rather than a means to replace people, technology can and often does replace people – this is the history of automation. Thus why upskilling and lifelong learning initiatives are so vital: empowering and increasing the capabilities of a hugely diverse group of workers, including leaders themselves. Because automation and AI threaten jobs higher up the food chain than ever before, leaders are also at risk of being left behind unless they equip themselves and their teams with the necessary skills and capabilities to navigate the evolving landscape.

The demand for a better understanding of these implications has led IMI to create its **AI for Senior Leaders** programme, featuring immersive workshops providing scenarios where senior leaders work through the implications and challenges of embedding AI into their businesses. The need for programmes such as these is urgent, considering the growing divide between workers and leaders in many organisations (see section 2 of this paper), the urgent need for upskilling and capability development at the national level and beyond (see section 3), and the importance of creating regulation that drives innovation rather than hinders it (see section 4). Drawing on IMI research, along with research from Microsoft, Deloitte, the OECD, IBM and more, this paper draws out those challenges in unprecedented ways.

AI is likely to be the defining technology of our time, with the potential to free us from digital debt, fuel innovation and transform how organisations operate and interact with their employees. Note the word, *potential*. Now is not the time for naïve certainty or techno-optimism. Only through tackling the short and long-term challenges at the organisational, national and international regulatory level can AI's potential as a key driver of human flourishing be realised. It will **not** happen automatically. Nevertheless, IMI is committed to the view that, rather than diminishing creativity and extraordinary talent, the opposite effect can be achieved. Freed from process obsession and with newly augmented capabilities, talent can finally unleash their potential and perform like high-level athletes, aiming for perfection every day.

2. Organisational Challenges: AI and Workplace Culture

The business landscape is being reshaped by digital transformation, automation and the integration of Artificial Intelligence (AI) solutions and tools. This paradigm shift brings forth new opportunities and challenges for leaders across all industries, with the role of leadership rapidly evolving. Leaders are not only tasked with driving their organisations through technological adoption but also meeting the changing needs of an evolving workforce. While many organisational challenges are not directly caused by AI and predate the 2023 explosion of AI into the global business consciousness, AI is set to play a key role in the Future of Work. While AI adds great additional complexity for organisations and leaders, it also offers huge potential. Good digital leadership is vital, but it's important to first understand the changing needs of that evolving workforce and what challenges they currently face – otherwise AI may exacerbate existing workplace issues.

2.1 Growing Divide

Unfortunately, there appears to be a growing divide between the workforce of many organisations and senior leaders, according to the most recent **Work Trend Index report from Microsoft Ireland.** Although the report indicates 77% of workers are happy at work, with 66% saying they have the right work-life balance, a significant portion of the 700 Irish workers interviewed feel disillusioned by leadership, disconnected from workplace culture and overwhelmed by tasks. A lack of confidence in leadership was the main reason workers switched roles over the last 12 months, followed by wellbeing challenges and lack of professional recognition. 56% of respondents are considering switching roles over the next year.

"There is now a pressing need for leadership to better understand what engages their employees and find ways of bridging the gap between physical and virtual work environments," said Anne Sheehan, General Manager of Microsoft Ireland.

Two things jump out here. Firstly, the hybrid challenge. For the second year in a row, workplace culture remains the number one priority for workers in Ireland, with 67% of all respondents – remote, hybrid and in-office — calling it their top must-have. However, 51% of hybrid workers feel their workplace culture has deteriorated since they began working remotely. Hybrid workers also reported having fewer work friendships (55%), finding it more difficult to build trust (53%) and feeling lonelier at work (45%). Struggling to stay motivated and not being able to keep up with what is happening in their organisation were also listed as concerns and challenges.

Secondly, the need for leadership to better understand what engages their employees. Workplace culture is the single most important priority for workers (for the second year in a row), yet over half of all respondents feel their leadership team is out of touch and that work-place culture has deteriorated in the hybrid working environment. Such poor company culture suggests a serious mismatch between workers' personal value and organisational behaviours, which must be better aligned.

2.2 Mismatch

Deloitte's Spring 2023 CFO Survey makes for a fascinating companion piece here. While most media headlines focused on the 33% of Irish CFOs who describe themselves as "optimistic" or "significantly optimistic" about their company's financial prospects – up 12% from Autumn 2022 – if one digs a little deeper into the data, we may find evidence in the Deloitte report of a potential mismatch between workers' personal values and organisational/senior leadership behaviours and values.

The most glaring example might be that sustainability and climate change is only the 7th biggest risk/concern for Irish CFOs, according to the report (ranking behind talent retention/ attraction, cyber risk, increasing regulations,

and numerous other risks). While Deloitte expects this prioritisation to grow considerably in coming years, with organisations coming under increasing external and regulatory pressure to set and commit to ESG targets, this is potentially a sticking point: for an increasingly climate conscious workforce, increased sustainability and climate concern at the leadership level should not come as a result of external regulatory pressure, but should be borne out of genuine concern for the environment and creating a sustainable future for all. While leaders may consider increasing regulations and supply chain logistics to be a more immediate risk, for many workers this may be hard to justify when the World Economic Forum, the UN Human Rights Office, the World Health Organization, and numerous other bodies have listed climate change as the single greatest threat faced by humanity. CFOs may be justified in feeling other challenges pose more immediate risks on a quarter-by-quarter basis for their business, but many employees will likely want greater, proactive commitment to sustainability and ESG measures.

Around ESG reporting challenges, the CFOs in Deloitte's survey raise some valuable points. 48% of Irish CFOs believe the absence of a global standard for ESG reporting acts as a barrier to unlocking their organisation's ESG reporting strategy, while 52% of Irish CFOs see limited or lack of in-house knowledge, skills and capabilities as their top challenge in unlocking their ESG reporting strategy. Critically, the latter relates back to CFOs' number one challenge overall: talent, specifically retaining and attracting talent, which was listed by 87% of Irish CFOs as a significant risk for the business.

"Consistent with the idea that what we can't measure, we can't improve, ESG reporting is one of the most important tasks facing organisations," said Orla Dunbar, Sustainability Data & Technology Lead with Deloitte. *"It's clear that a skilled workforce is one of the critical steps in enabling ESG reporting so it's vital that businesses foster an environment of continual learning and focus on hiring the right talent."*

However, it's worth noting that six months ago, 96% of Irish CFOs considered retaining and attracting talent to be a significant risk to the business – with no further details or explanations provided, one wonders what factors might lie behind this 9% decrease.

The issues discussed in 2.1 and 2.2 are not directly caused by AI, but it is impossible to discuss AI's impact on the workplace without first addressing them. Otherwise AI may exacerbate them, rather than helping to overcome them.

2.3 AI and Digital Transformation

There is an appetite for AI and digital transformation among both leaders and workers. According to the Work Trends Index, one-fifth of workers are currently using AI tools within their role, while a quarter of those not using AI would like to. Similarly, fewer than one in four CFOs said securing funding for digital transformation would be an issue, while 71% of Irish CFOs see increased use of digital tools as a strategic enabler. But like skills shortages supposedly hindering organisational ESG reporting, 67% of Irish CFOs identified lack of workforce skills and capabilities as the main obstacle hindering their organisation's progress toward finance transformation, followed by mindset and cultural shift (51%).

"CFOs are increasingly recognising the importance of digital transformation for their organisations," said Xiomara Sanchez, Digital Finance Lead with Deloitte. *"By investing in digital competencies and capabilities, they can harness the potential of digital tools for both Finance and the broader organisation. This will maximise the return on investment and ensure the organisation remains competitive in the digital era."*

Microsoft Ireland echoes similar sentiments. *"At Microsoft, we believe that through the adoption of new solutions such as AI, organisations can address the pressure points being highlighted by workers in Ireland and improve the cultural experience for leaders and employees across all sectors,"* said GM Anne Sheehan.

Beyond the challenges already mentioned,

productivity pressure points include workers not having enough time to complete their work (55%), not enough focus time (49%), being assessed on number of tasks completed rather than their impact (43%), too many meetings (35%), and spending too much time searching for the right data (42%). As Microsoft point out, using next-gen technology to find more efficient ways to source and manage information should help productivity, reduce the risk of burnout, and improve the employee experience.

Indeed, Microsoft is likely right to call AI the defining technology of our time, with the potential to transform the way organisations operate and interact with their employees. But the keyword is potential. Whether AI does free us from digital debt and fuels innovation, as Microsoft predict, remains to be seen. As adoption grows and workplace tools become more sophisticated, Microsoft notes digital solutions can play a key role in supporting greater efficiencies, focus time and even forging greater connections between leaders and workers – but there is a lot of work to be done to reach that point, specifically at the leadership level.

2.4 Skills Gap

Leaders must encourage a culture of continuous learning and experimentation, where employees are empowered to embrace change and adapt to emerging tools and trends. This requires shifting from traditional hierarchies to more agile, cross-functional teams that can respond to market demands and leverage the benefits of digitisation. Crucially, this entails embracing new technologies, processes, and mindsets, along with equipping the workforce with the necessary skills and capabilities, which both Deloitte and Microsoft in their reports seem to recognise.

However, the scale of the skills gap may be overlooked. As will be discussed later in this paper, McKinsey predict at least 375m workers will be impacted by automation by 2030, while the 2023 **OECD Skills Strategy Report** notes that Irish workers are at risk of falling behind as workplaces and technology evolves. Although the share of young adults with a tertiary degree is significantly above the OECD average, many Irish workers do not have the right skills to thrive in their current employment and are unprepared for changes in the work, while participation in lifelong learning is behind top EU performers like Sweden and Finland.

"Technological change can help drive productivity and overcome skills shortages," says the report. *"However, it also means that many people will need to develop skills for new jobs or upgrade their skills for existing ones."*

"The change in our professional and personal lives is not going to cease," adds Simon Harris, Minister for Further and Higher Education, Research, Innovation and Science. *"The pace of transformation will only increase. We have a short window of opportunity to ensure that these transformations lead to a new age of good work, good jobs, and improved quality of life for all."*

2.5 Growth Opportunities but Unprecedented Challenges

Unlike the somewhat Utopian predictions coming from Microsoft and Deloitte, the history of automation tells a different story when it comes to worker impacts. **In a recent interview with the Financial Times**, MIT economics professor Daron Acemoglu notes how major technological disruption – such as the Industrial Revolution – can flatten wages for an entire class of working people. "You got progress, but you also had costs that were huge and long and very long-lasting (from the Industrial Revolution). A hundred years of much harsher conditions for working people, lower real wages, much worse health and living conditions, less autonomy, greater hierarchy."

Acemoglu adds that unions, progressive politics, better institutions, and a redirection of technological change away from pure automation were key to stopping that trajectory. With McKinsey predicting at least 375m workers may be impacted by automation by 2030 as noted, similar intervention and collaboration between leaders and stakeholders from multiple industries – public, private, governmental, and educational – will be necessary for the incoming Fourth Industrial Revolution.

"Technological progress is the most important driver of human flourishing," Acemoglu adds, *"But we tend to forget the process is not automatic."*

Technology can create growth but not necessarily for everyone – at least not immediately and without intervention and collaboration. Rather than a means to replace people, technology should be used to increase productivity by giving people better tools, better information, and better organisation – as Microsoft and Deloitte note in their reports. However, technology can and often does replace people – this is the history of automation. Thus why upskilling and lifelong learning initiatives are so vital: empowering and increasing the capabilities of a hugely diverse group of workers, many of whom have been either left behind – or will be left behind in the future – by decades of technology-driven worker displacement.

What makes the challenge for leaders more complex than at any point in the past: automation and artificial intelligence (AI) threaten jobs much higher up the food chain than ever before. Potentially for the first time in history, leaders are also at risk of being left behind, which makes it so critical they equip themselves and their teams with the necessary skills and capabilities to navigate the evolving landscape. By investing in their workforce and fostering a learning culture, leaders are giving their organisations a fighting chance of remaining competitive and surviving – even thriving.

Despite the seeming openness to using these tools as noted in the reports, digital transformation and AI implementation often encounter resistance and scepticism from employees who fear job displacement – often justified. It's naïve to pretend that increased productivity because of technological advances won't lead to a certain amount of downsizing (even if long-term it leads to new roles and further job creation). This will be an extremely complex challenge with multiple ethical questions leaders must deal with as they attempt to manage change effectively. However, by fostering open communication and promoting a clear vision, while involving employees in the change process and providing necessary supports during the transition, leaders can hopefully inspire a positive attitude towards these technologies and drive successful adoption throughout their organisation.

2.6 Other Ethical Challenges

And there will be other ethical challenges for leaders to deal with, i.e. the complexities of data management and privacy concerns with increased AI usage and data driven decision-making. While collecting and analysing vast amounts of data can yield valuable insights, it also raises ethical considerations surrounding privacy, security and data protection. Establishing robust data governance frameworks, operating in a transparent manner, and ensuring compliance with relevant regulations will be key to building trust with customers and stakeholders. Encouragingly, cyber risk came

out as the third largest risk for CFOs in the Deloitte survey – although the drop from 76% of CFOs considering it a major risk six months ago to 69% in the most recent survey is peculiar, considering cyber risk is only increasing. One hopes this 7% drop is the result of increased cyber security investment, giving leadership 7% more peace of mind and confidence in their organisation being able to handle cyber-attacks.

While somewhat out of most leaders' control, AI algorithms and automated decision-making systems can perpetuate biases or create unintended consequences if not carefully monitored and guided. Leaders should champion ethical practices, transparency and fairness in AI development and deployment where possible, along with involving diverse stakeholders – e.g. ethicists, data scientists, if possible. At the very least, fostering open communication with employees is crucial in shaping AI strategies to mitigate risks and ensure AI is used for the benefit of society.

The challenges of digital transformation and AI require leaders to adapt their leadership styles and develop new skills. But equally leaders must address the gap between workers and senior leadership. Without meeting the needs of a changing and often remote workforce, leaders will not be able to drive to organisations forward. By aligning organisational behaviours with workers' personal values, investing in lifelong learning and upskilling/reskilling initiatives, ensuring ethical-first policies and strategies, and effectively managing change, leaders can hopefully ensure their organisations embrace the opportunities brought by AI and digitalisation. This will hopefully keep their organisations innovative, competitive and sustainably growing in the face of ever-increasing complexity.

3. National Challenges: Ireland's Vulnerability to AI and Automation

The OECD Ireland Skills Strategy Report released in May 2023 raised urgent concerns about the readiness of Irish adults to adapt to changes in the world of work, a concern seconded by IMI. Despite a high proportion of adults holding third-level degrees, the report indicates that a lack of essential upskilling and participation in lifelong learning places many Irish workers at risk of falling behind, overall emphasising the urgent need for increased investment in lifelong learning initiatives.

The extensive policy analysis and stakeholder engagement on skills issues facing Ireland yielded four policy priority areas:

- Secure balance in skills availability in Ireland through creating a responsive and diversified supply of skills;
- Foster greater participation in lifelong learning, both within and outside of the workplace;
- Strengthen governance across a joined -up skills ecosystem across the country;
- Leverage skills to drive innovation, and strengthen the performance of firms across all business sectors.

3.1 Lifelong Learning

Of particular concern, the report highlights a significant disparity in participation rates in lifelong learning between Ireland and top-performing EU countries. While Ireland boasts a significantly higher-than-average percentage of adults with third-level degrees as mentioned, only 14% of the adult population (aged 25-64) engaged in education and training in 2021. In comparison, countries like Sweden and Finland reported rates of 35% and 31% respectively, which reveals a deeply concerning gap in Irish adults' pursuit of ongoing education and upskilling opportunities. It should be noted the EU average for lifelong learning is a dismal 11%, so Ireland is slightly above the EU average. Nevertheless, this figure speaks more to the urgency of the matter EU-wide (excluding high-performers like Finland and Sweden).

Faced with globalisation, digital transformation, demographic change, vulnerability to global megatrends (e.g. war in Ukraine, Covid), sustainability concerns and climate change, adults will need a stronger and more well-rounded set of skills (cognitive, social and emotional) plus specialised job-specific skills in order to flourish. Employers are acutely aware their workforce needs to possess the right skills to drive productivity, innovation and competitiveness, and this lack of essential skills among the Irish workforce poses a serious challenge for organisation seeking to keep pace with rapid technological advancements and evolving market demands. Indeed, developing relevant skills and using them effectively is crucial for Ireland's overall ability to thrive in an increasingly interconnected and rapidly changing world.

3.2 Automation

One area of concern is the vulnerability of Irish workers to automation. Driven by rapid technological advancements, automation has the potential to revolutionise industries and ways of working, promising increased efficiency, productivity, and economic growth. Nevertheless, as automation continues to transform industries, the report highlights the urgent need for upskilling initiatives to ensure Ireland's workforce remains competitive and adaptable in an evolving market. Without proactive measures, Irish workers risk falling behind. ***"Technological change can help drive productivity and overcome skills shortages,"*** the report says. ***"However, it also means that many people will need to develop skills for new jobs or upgrade their skills for existing ones."***

While Ireland has experienced significant economic growth in recent decades, with Ireland's relatively high level of skills performance contributing to high levels of innovation, the concern is that many adults won't have the skills to succeed in a rapidly changing world and future economy where certain skills may become obsolete.

3.3 Investment in Skills Development

"A strong focus on skills has been central to Ireland's strong economic performance and improvements in well-being," says OECD Secretary-General Mathias Cormann, noting significant challenges lie ahead with labour shortages, slowing productivity growth, and the need to successfully navigate the skills implications of green and digital transformation, while dealing with the impact of population ageing. ***"Ireland can and must build on its strengths by better balancing skills demand and supply, fostering greater participation in lifelong learning, leveraging skills to drive innovation, and strengthening skills governance."***

The report underscores the need for significant investment in skills development, particularly in developing management capabilities, the adoption of high-performance work practices, and investing in future-orientated skills that are less susceptible to automation and disruption (e.g. critical thinking, creativity, problem-solving, digital literacy, social and emotional intelligence). But to ensure the growth and competitiveness of organisations across Ireland, it is essential to provide adequate support for upskilling and reskilling initiatives. By empowering employees with the right skills, businesses can enhance their productivity, foster innovation, and address prevailing skills gaps. Upskilling can also empower workers to navigate the evolving job market and ensure a smoother transition into new roles.

IMI welcomes the call for a comprehensive approach involving both businesses and the government in fostering a culture of lifelong learning and providing access to quality programmes. Lifelong learning is not only crucial for individual career advancement but also for the overall economic development of the nation. Continuous learning enables workers to adapt to evolving job requirements, stay ahead of technological disruptions, and unlock new opportunities. It helps foster a culture of innovation, resilience and adaptability, which are vital attributes in an ever-changing world of work. By embracing lifelong learning, Irish adults can enhance their employability, remain competitive and contribute to the long-term success of the Irish economy.

3.4 Spotlight on Skills

As highlighted in the report, the programme receiving the most attention and praise for helping employers identify their skills needs was Enterprise Ireland's Spotlight on Skills programme. Spotlight on Skills is part of the Skills for Growth initiative led by DFHERIS and carried out by Enterprise Ireland (EI) in partnership with DFHERIS, IMI, and RSF managers. The programme takes enterprises along a comprehensive process in which they define company aspirations, state company goals, success factors, clarify strategic priorities, identify strategic capabilities, diagnose the skills gaps to build organisational capabilities and create a skills plan to address skills gaps.

Noting the very positive feedback to the programme, the report asks how the programme can be scaled to reach more employers beyond the Enterprise Ireland client base with a strategic growth plan already in place, with stakeholders highlighting EI's Spotlight on Skills programme as an innovative model that could be usefully applied to other management training and development programmes. The report calls for a review of Ireland's portfolio of management development opportunities to strengthen focus on workplace transformation and high-performance work practices (HPWPs). As recommended in the report, governmental bodies should work with wider organisations to examine scope to scale-up existing initiatives that develop the skills required to drive improvements in organisational practices, adapt the competency frameworks or content of programmes to include work organisation and job design; or advance new pilots, taking well-established, innovative programmes, such as Skillnet Business Networks or EI's Spotlight on Skills and apply them to improving work organisation within smaller firms.

Overall, addressing the skills gap requires collaboration between the government, educational institutions, employers, and

individuals themselves. The government must allocate resources and create supportive policies to encourage lifelong learning and upskilling. Educational institutions should offer flexible and accessible learning opportunities that cater to the diverse needs of working professionals. Employers must actively invest in training and development programs, recognising the importance of a skilled and agile workforce. Lastly, individuals should embrace a growth mindset, taking personal responsibility for their professional development and seeking out opportunities for continuous learning, and contribute to the long-term success of the Irish economy.

3.5 Knowing/Doing Gap

The findings of the OECD Ireland Skills Strategy Report serve as an overdue wake-up call for the nation. Irish adults must recognise the pressing need for lifelong learning and upskilling to remain competitive in the workforce and adapt to the ever-changing job landscape. With increased investment, collaboration between stakeholders, and a renewed commitment to ongoing education, Ireland can bridge the skills gap, drive economic growth, and position itself as a leader in the global knowledge economy. The time to act is now to secure a brighter future for Irish workers and businesses alike, before it's too late.

As far back as 2017, McKinsey was predicting that **375m workers (14% of the global workforce) may need to switch occupational categories** by 2030, as digitisation, automation and advances in AI disrupt the world of work. A 2018 McKinsey report **deemed investing in training and upskilling to be an urgent priority**, with the magnitude of the challenge compared to the largescale shift from agricultural work to manufacturing that occurred in early 20th century Europe and North America. However, those earlier workforce transformations took place over many decades, allowing older workers to retire and new workforce entrants to transition to growing industries. But the speed of change today is faster, meaning there will be a need to retrain and redeploy tens of millions of mid-career, middle-aged workers. As McKinsey noted over five years ago, ***"growing awareness of the scale of the task ahead has yet to translate into action."*** With only 14% of the Irish workforce engaged in education and training, and the EU average for lifelong learning at 11%, that knowing/doing gap has yet to be overcome, though hopefully the OECD Skills Strategy Report acts as an overdue wakeup call to the urgency of increased lifelong learning and upskilling investment.

3.6 Delivery of Learning Content

But even if this recognition turns into action, there are still challenges to be overcome. For example, delivery of learning content is key, with the executive education and L&D market evolving rapidly in recent years. With the rise of borderless digital providers and global business schools offering remote and online programmes, participants are no longer limited to in-person delivery over a fixed period with an Irish executive education provider.

Indeed, IMI research shows an increasing demand for traditionally longer-term courses to be delivered in bite-sized chunks alongside a growing popularity for blended or stackable learning, while **2018 Carrington Crisp research** showed three-quarters of firms believed short bursts of learning, delivered flexibly and providing micro-credentials were valuable in meeting developmental needs.

However, despite the rise of non-traditional remote & digital-first learning, face-to-face learning and peer learning is seen as increasingly vital by business leaders and organisations: it facilitates relationship building, networking, creates a shared learning experience, and allows participants to engage in real-time discussions and receive immediate feedback from faculty and peers, none of which the aforementioned non-traditional players and new market entrants can provide as of yet. In a recent IMI focus group, numerous ICT leaders echoed a significant skills and knowledge transfer loss in their organisations due to remote working, with new hires and recent graduates not developing as fast as previous cohorts due to that lack of learning by osmosis. Developing emotional intelligence, trust, empathy, creating a sense of ownership and belonging, and going from being an individual contributor to a people manager – with the requisite communication skills – were all echoed as skills challenges made more complicated by remote conditions, and which requires a learning provider that facilitates face-to-face peer learning.

Beyond peer learning, there are other factors around delivery that government, educational institutions, employers and individuals must take note of. IMI research shows that all leaders – be it senior leaders or developing/emerging leaders at the beginning of their career – are more time poor than ever, with short bursts of impactful and flexible learning delivered by world class faculty seen as vital. Coaching needs and time for reflection are also paramount, with younger entrants to the workforce often requiring more support and coaching than previous generations. IMI research shows that individual participants are prioritising cost, flexibility, programme content and brand reputation, while the top learning providers are building flexible offerings and leveraging their content, pedagogy, and extensive network of connections to meet changing learner needs.

3.7 Social Factors and Inequality

There are also social factors that must be addressed at the national and international policy level. Although the need to upskill an educated but aging workforce is urgent, traditionally white-collar worker with third-level degrees are not those most affected by automation and technological changes – in that, while they may need to switch roles or upskill, they have opportunities other socio-economic groups do not have. **In a recent interview with the Financial Times**, MIT economics professor Daron Acemoglu notes how major technological disruption – such as the Industrial Revolution – can flatten wages for an entire class of working people. ***"You got progress, but you also had costs that were huge and long and very long-lasting (from the Industrial Revolution). A hundred years of much harsher conditions for working people, lower real wages, much worse health and living conditions, less autonomy, greater hierarchy."*** Acemoglu adds that unions, progressive politics, better institutions, and a redirection of technological change away from pure automation were key to stopping that trajectory. Similar intervention and collaboration between multiple stakeholders will be necessary for the incoming Fourth Industrial Revolution.

Time Magazine notes that companies often claim deploying automation and AI allows them to create new jobs. For example, ATMs didn't immediately decrease the number of bank tellers; rather advances in technologies in that sector created more teller jobs. Lured by the convenience of cash machines, consumers began visiting the bank more frequently which led banks to open more branches and hire tellers to handle tasks beyond the capacity of ATMs. But Time notes the number of new jobs is often minuscule compared with the number of jobs lost overall. Approximately 400,000

jobs were lost to automation in US factories from 1990 to 2007, while one group of economists has estimated that 42% of jobs lost due to the pandemic will never come back, primarily low-wage roles often held by Black and Latino American/Hispanic workers without the same access to upskilling and lifelong learning initiatives as white collar workers, who gain access to skills training and upskilling initiatives either through their organisation or else are in a better financial position to cover the costs themselves. Kristen Broady, professor of financial economics at Dillard University, **co-authored a study** which showed black workers are overrepresented in 11 of 30 jobs at high risk of being automated, while Hispanic workers are overrepresented in 13 of the 30. A 2019 Forbes article – focusing on how **workforce automation exacerbates the racial wealth gap** – stated that 4.5 million African Americans may lose their job in the next ten years due to automation, which further demonstrates that automation and technology advances unevenly impact different sectors of the population, and is perhaps the key challenge to overcome.

3.8 Intervention and Collaboration

Because, while employers must prioritise investment in upskilling and lifelong learning initiatives for their workforce, there must also be collaboration between governments, educational institutions and other organisations to create access for those most affected by automation-related job loss, which as the above data shows hurts certain segments of the population more than others. In the past, when automation eliminated jobs, companies tended to create new ones (as in the previous banking example), plus there was far more investment in education at the government policy level: for example, when automation changed farm jobs in the late 1800s and the 1900s, the US government expanded access to public schools, while access to college expanded after World War II with the GI Bill. But Time notes that, since then, U.S. investment in education has stalled, putting the burden on workers to pay for it themselves, with the country currently spending 0.1% of GDP to help workers navigate job transitions, less than half what it spent even 30 years ago. Not only does automation allow companies to do more with fewer people (in 1964, the most valuable US company AT&T had nearly 759,000 workers; the most valuable company today, Apple, has approximately 137,000), but the US government actively incentives companies to automate by giving tax breaks for buying machinery and software.

Thus, it's unsurprising that the US alone shed 40 million jobs at the peak of the pandemic – with many of those laid off having no time to retrain and left on their own to find new ways of developing new skills, practically exiled from re-entering the rapidly-changing labour market or being involved in the so-called "Future of Work." Or that in more recent months, Big Tech has been laying off workers in record numbers after their pandemic-related hiring bubble burst, and seeing huge increases in their stock price as a result of these layoffs (another problematic incentivisation).

So, what conclusions can we draw? As Daron Acemoglu notes, ***"Technological progress is the most important driver of human flourishing, but we tend to forget the process is not automatic."*** Namely, technology can create growth but not necessarily for everyone – at least not immediately and without intervention and collaboration. Rather than a means to replace people, Acemoglu notes technology should be used to increase productivity by giving people better tools, better information and better organisation. Upskilling is vital: empowering and increasing the capabilities of a hugely diverse group of workers, many of whom have been either left behind – or will be left behind in the future – by decades of technology-driven worker displacement.

3.9 Wakeup Call

The OECD Skills Strategy Report must act as a wakeup call on three levels: at the organisational level, increased investment and prioritising of upskilling and lifelong learning initiatives; for educators and learning institutions, offering impactful programme content that meets changing learner needs; finally at the government level, ensuring access to upskilling and lifelong learning initiatives for a diverse workforce of various demographics and socio-economic backgrounds, many of whom have been and will continue to be hit hardest by automation and advances in technology – otherwise, governments will be forced to deal with a potentially crippling welfare state made up of workers who cannot compete in the modern labour market or find employment.

Only through meeting these challenges, and collaboration between all, can technological advances in automation and artificial intelligence reach their full potential to benefit humanity: freeing up people from repetitive or dangerous tasks so they can take up more sophisticated and intellectually stimulating tasks, leading to increased productivity, higher worker wages and better bottom-line business returns.

4. International Challenges: Regulation That Enables Innovation

In June 2023, the EU took a **major step towards passing** one of the world's first laws governing artificial intelligence, after its European Parliament approved a draft legislation with rules on facial recognition technology, drones, deepfakes, bots, automated medical diagnoses and more.

"AI raises a lot of questions socially, ethically, economically. But now is not the time to hit any 'pause button'. On the contrary, it is about acting fast and taking responsibility," said Thierry Breton, the European commissioner for the internal market.

In December 2023, EU Member states and the European Parliament reached a **preliminary deal** on the AI Act. Much debate centred around whether state authorities should be allowed to deploy AI-powered biometric systems that can identify and categorise people based on sensitive characteristics such as gender, race, ethnicity, religion and political affiliation, as well as systems of emotion recognition and predictive policy. Once the legal text is rewritten and finalised, final votes are set to take place in early 2024, followed by a "gradual" period before the law becomes fully applicable.

Unlike **the proposed legislation coming out of the UK**, there was little mention of what impact the EU AI Act will have on innovation. Which isn't to say the EU is not committed to innovation. Ever since the beginning of its "ethical AI" project, there has been a belief that regulation will somehow lead to greater innovation.

"I am personally convinced that ethical guidelines will be enablers of innovation for artificial intelligence," said then-Digital Commissioner Mariya Gabriel in 2019.

Why this will be the case isn't elaborated on, nor has it been in the nearly five years since Gabriel made these comments.

4.1 A Complex Relationship

While few doubt the need for better regulation around AI, inferring a direct causal link – as Gabriel and many experts have done – between regulation and innovation is problematic. Looking at the evidence, the US is the absolute global leader when it comes to generative AI, with China a distant second and Europe lagging even further behind. More generally, the US remains the global leader in AI, although China is making progress at reducing this gap, with Europe again lagging far behind. Thus comparing innovation-high/regulation-low US to regulation-high/innovation-low Europe could lead someone to conclude the opposite point: that higher regulation leads to lower innovation, and vice versa.

Of course, attributing such direct causality would be a gross oversimplification, plus regulation is a necessity. Technology, particularly AI, is accelerating at an exponential rate and the consequences may be severe if we don't get the regulation question right. But managing the risks and rewards of emerging technologies like AI is a balancing act.

4.2 Grave Consequences

While some believe regulation should be avoided in case it hinders innovation, and certainly too much regulation can stifle innovation (think here of wind energy projects, where only 19-21% of planned projects are under construction, with most wind farms remaining stuck in the permitting process, according to **Deloitte**) – AI regulation is essential. Too little regulation may lead to extremely negative consequences that far outweigh the consequences of too much regulation. The consequences of the former include current issues around privacy (i.e. facial recognition technology, mass surveillance) and self-contained tragic accidents (i.e. fatalities resulting from self-driving autonomous vehicle

accidents), to the potentially apocalyptic: Turing award winner Judea Pearl **believes** ***"we're going to have robots with free will, absolutely,"*** while computer scientist Steve Omohundro **argues** autonomous systems are likely to behave in anti-social ways, and DeepMind co-founder Shane Legg **expects** that ***"human extinction will probably occur."***

But while regulation is essential, a priori appeals to increased regulation automatically leading to increased innovation are unhelpful, considering no empirical evidence exists to support this assertion. Equally, appeals to less regulation – or no regulation – as leading to increased innovation are dangerous and potentially catastrophic. Beyond apocalyptic futures, at the most basic level regulation provides the necessary preconditions to enable market access for innovation, provides firms considering major investment with certainty, and can be used to articulate ambitious visions for development. Regulation also establishes the conditions and context of innovation, as regards labour, capital, and competition, etc.

The challenge is producing a regulatory framework that maximises the upsides of innovation while minimising the potential downsides and protects the rights of individuals and societies.

4.3 Regulating the Pace of Change

New technology always brings unexpected consequences and the potential to be used in unanticipated ways, some of which could be good and some harmful, which is where regulators step in. Most key technologies, like cars, aviation, healthcare and finance are heavily regulated, but the difficulty lies in the fact that technology, particularly AI, moves at a much faster pace than regulators do and finding the right way to regulate this technology becomes difficult.

Regulators traditionally aimed to mitigate social, economic, safety and environmental risks for consumers while ensuring fair markets, but sweeping changes in technology are altering the regulatory environment. According to **Deloitte**, regulatory agencies are increasingly being called upon to not only protect consumers from the negative effects of technology, but also to help catalyse innovation, effectively protecting consumers and citizens through regulation while ensuring regulations don't discourage innovation and growth.

To ensure consumer safety doesn't come at the expense of innovation, regulators are deploying tools like sandboxes, which are safe testing environments in which innovators can see their inventions play out with certain regulatory leeway and appropriate consumer protections. According to **Deloitte**, firms in the UK's FinTech regulatory sandbox saw a 15% increase in capital raised, as the sandbox reduced regulatory uncertainty, helped firms bake in appropriate safeguards, and reduced expenditures on regulatory consulting. Singapore's regulatory sandbox which aims to mitigate risks around autonomous vehicles (AV) has been attracting investment to the city-nation since 2015.

Apart from clarifying risks to encourage investment, Deloitte also recommends regulatory agencies incentivise innovation, streamline regulation, and set standards that promote industry leading practices. Effective regulation doesn't necessarily require years of drafting regulations, as soft law instruments – such as guidelines and standards – can rapidly adapt to new business models, while a customer experience lens could improve the relationship between businesses and regulators. Digital technologies can streamline the regulatory process while regulators can proactively engage with regulated entities to develop standards and guidelines that protect consumers from risks without putting an unnecessary burden on regulated entities.

4.4 Moving in Different Directions

The UK's Department for Science, Innovation and Technology **recently published** a whitepaper focusing on taking 'a pro-innovation approach to AI regulation,' with a proposed regulatory framework made up of the following tenets:

"Enabling rather than stifling responsible innovation; avoiding unnecessary or disproportionate burdens for businesses and regulators; addressing real risks and fostering public trust in AI in order to promote and encourage its uptake; adapting quickly and effectively to keep pace with emergent opportunities and risks as AI technologies evolve; making it easy for actors in the AI life cycle, including businesses using AI, to know what the rules are, who they apply to, who enforces them, and how to comply with them; encouraging government, regulators, and industry to work together to facilitate AI innovation, build trust and ensure that the voice of the public is heard and considered."

It's a far cry from the EU's approach to AI regulation, which almost pits innovation and regulation against each other in its quest to become world-leader in so-called "trustworthy AI." Although the long-proposed EU AI Act was once hailed by Deloitte as a "a new regulatory paradigm for innovation," so far there has been very little innovation – but multitudes of legislation and proposed legislation, while China and the US continue to pull further and further away in what has become a two-horse innovation race.

Former Digital Commissioner Mariya Gabriel has stated her conviction that "ethical guidelines will be enablers of innovation for artificial intelligence," but there is no supporting evidence to justify this statement yet. In fact, EU guidelines are hampering innovation in at least one area.

4.5 Potentially Stifling Innovation

With the introduction of GDPR in 2018, the EU has some of the strictest rules for the use of personal data in the world. But the more information a deep learning system is given and has access too, the better and 'smarter' it becomes. European tech firms say that a lack of access to data due to GDPR is putting them at a disadvantage to global competitors, according to Politico.

Loubna Bouarfa, CEO and founder of OKRA. AI and former member of the European Union High-Level Expert Group on AI, has said that data barriers between European countries make it "very hard" for entrepreneurs to fully exploit the potential of AI technology. ***"Europe is falling behind on AI, and we do really need to act quickly."***

Ulrike Franke, a senior policy fellow at the European Council on Foreign Relations, has stated that Europe will only be able to push its AI standards globally if its ethical ambitions are accompanied by efforts to boost a top-notch AI industry across the EU. ***"It's absurd to believe you can become a world leader in ethical AI before becoming a world leader in AI first,"*** she is quoted as saying to Politico.

Daniel Castro, VP of the think tank ITIF – which includes board members from Amazon, Apple, Google and Microsoft – dismisses the EU's approach to AI as "naïve" and thinks the EU will continue losing out to US and China because customers don't care about an ethics-first approach by itself without also having a superior product.

"It's like any other race: you can have the more ethical race car driver, but if his car is not faster, you are going to lose," Castro told Politico. *"This is still a market-based economy...you have to create something of more value than your competitors. The European Commission itself has not provided any evidence that customers are actually willing to pay for (what the EU is proposing)." A survey from the Center for Data Innovation found consumers are not willing to pay a premium for products labelled "ethical by design."*

4.6 People and Bias

However, it's important to re-emphasise that although EU regulation has not fostered innovation so far, this does not mean regulation and innovation are incompatible. Indeed, it's important to re-emphasise that regulation is vital.

For example, because algorithms "learn" from real-world data, they are vulnerable to incorporating unconscious biases against minorities and other vulnerable groups. Politico notes that Amazon scrapped an AI-powered recruiting tool that discriminated against women, ProPublica revealed that predictive policing software used by U.S. authorities shows bias against black people, and Google issued an apology after one of its machine-learning applications labelled being Jewish or being gay as negative. Researchers at the Georgia Institute of Technology also found that self-driving cars are more likely to drive into people of colour.

Developments like this are why the EU wants to promote "trustworthy" AI, which respects European values and is engineered in a way that prevents it from causing intentional or unintentional harm. According to Virginia Dignum, professor of social and ethical artificial intelligence at Sweden's Umeå University, it's about what's best for consumers.

"In a sense, 'ethics' isn't the goal," she noted. *"We want (AI) to be ethical and socially responsible because we want AI systems to be trusted, and useful for people."*

So far, the EU has not got the balancing act right, but there's no reason to throw the baby out with the bathwater when it comes to the regulation/innovation question – specifically how to create regulation that fosters innovation while keeping people safe. Dignum also raises a key point: people.

Forbes recently "quoted" ChatGPT as saying, *"I do not have personal beliefs or feelings, including racism. I was programmed to provide responses based on the input I received and the knowledge and language patterns I have been trained on."* Meaning it's people that imbue AI with their own unconscious bias, and that's a serious problem.

But it also goes the opposite way. Diversifying the researchers creating AI systems and the datasets that algorithms use to learn can help teach better habits and ensure more equitable outcomes with AI and machine learning systems. At the end of the day, it's people that will determine the success of AI going forward, be it at the technical level, the regulatory level and the leadership level.

4.7 Leadership, Mindset and Organisational Structure

Project Maven was a US Pentagon program designed to deliver AI technologies to an active combat theatre within six months from when the project received funding. Although somewhat controversial (mainly due to the later involvement of Google), the project was highly successful overall and offers key learnings around AI and digital/technology leadership.

Namely, project success was enabled by its organisational structure: a small, operationally focused, cross-functional team empowered to develop external partnerships, leverage existing infrastructure and platforms, and engage with user communities iteratively during development. The six founding members of Project Maven, though they were assigned to run an AI project, were not experts in AI or even computer science. Rather, their first task was building external partnerships and engaging top talent in the AI

field, which the Department is usually unable to attract on a contracting/project basis. Not only did the Project Maven team/leadership build partnerships with the commercial tech sector, but they modelled Project Maven after project management techniques from that sector, with product prototypes and underlying infrastructure developed iteratively and tested by the user community on an ongoing basis.

Project Maven throws up a host of ethical challenges around AI-powered weapons, but we should not ignore its learnings: it was not the technology itself, but the organisational and leadership structure that made the project a success. Recall the words of Colonel John Boyd, the US Air Force pilot and military strategist, who would routinely bark: "People, ideas, machines – in that order!" Boyd believed project success with technology came from the intersection between people and technology, and the ideas of those people, not from the technology itself. The learnings from Project Maven reinforce that.

Similarly, after studying the digital transformation efforts of multiple organisations, IMI found the biggest enabler of project success was not the technology itself, but the organisational and leadership structures. Empowered by supportive leadership, agile and cross-functional teams utilised cutting-edge project management techniques to test and iterate in an environment of psychological safety, with creativity and innovation at the forefront. The most successful teams were not necessarily AI or technology experts, but their organisations placed a strong emphasis on continuous learning and upskilling, allowing them to adapt more easily to new technology and ways of working. Crucially, rather than being processed-obsessed, these teams were output-orientated, customer-centric and focused on high performance.

Tony Moroney, programme director for IMI's **Digital Leadership** diploma, **Senior Executive Experience** and **AI for Senior Leaders** programmes, believes the biggest challenge to be overcome when it comes to technology and digital is their mindset. "When people hear digital transformation they tend to focus on the digital side rather than the transformation side, when really it's just using digital tools to deliver this transformation and provide a better experience for customers. But it's vital to look at digital transformation as a strategic imperative, and not just as a technology project."

Likewise overcoming mindsets around regulation is imperative. Firstly, overcoming the EU mindset (increased regulation will absolutely enable innovation) and overcoming, loosely, the US mindset (less regulation leads to increased innovation/regulation impedes innovation). It should be noted the Biden administration does not necessarily embody this mindset, as it has shown commitment to promoting "trustworthy AI" by working more closely with the EU and proposing domestic legislation around better AI regulation.

4.8 Buy-in and Alignment

But "showing commitment" to so-called trustworthy AI and proposing more legislation isn't enough, as the situation with the EU proves: too often, politicians and legislators simply don't understand the technology, and thus cannot understand the impacts and potential consequences.

What's required is buy-in and alignment; buy-in from those building AI systems and "doing" innovation (rather than talking about innovation), who are based primarily in Silicon Valley and coastal America, and with whom legislators and regulators should be collaborating and communicating with in order to create regulation and policy that ensures AI systems continue to be aligned with humanity's interests – even if they become smarter than us.

Hypothetically, humans may one day build an AI system with cognitive capacities that far outstrip our own. And its developers and engineers may be building it with the intent of solving scientific problems that have baffled us for decades, curing rare diseases and transforming education, and so on – all humanitarian aims which regulation may get it in the way of, according to these idealistic developers and engineers. But as the Wall

Street Journal recently noted, history is full of powerful entities that caused grave harm in the unchecked pursuit of their goals: logging companies that obliterated rainforests, banks whose complex financial instruments led to a global recession – the rap-sheet of various unregulated worlds is endless. Before we unleash powerful AI on the world, more work needs to be done in the field of AI safety, with the goal of ensuring that these systems pursue their objectives in a way that benefits society and aligns with the interests of their human creators.

But only through a joined-up, multi-stakeholder approach can we hope to get the innovation-regulation balancing act right. This will be key to creating a more transparent, safer yet innovative future – hopefully.

5. A Way Forward?

In a keynote presentation at IMI's National Leadership Conference, IBM Ireland General Manager Deborah Threadgold shared insights around the profound impact of AI in the workplace. Drawing on IBM's own digital transformation journey, Threadgold noted how the integration of self-service solutions and AI technologies like chatbots has allowed IBM to streamline HR processes, such as identifying gaps in employee readiness for promotions or handling out-of-policy expense claims - tasks previously conducted manually at great time expense. Crucially, AI serves in this example as a tool to assist human decision-makers, who make the final decision but are freed from countless hours of repetitive data gathering and paperwork to focus on other areas.

As discussed throughout this paper, conversations around AI tend to go two ways: on one hand, the potential of AI to free people up from repetitive tasks so they can work on more sophisticated and intellectually stimulating tasks. On the other, fears around job loss, replaceability and inequality at the wider societal level. While the latter fears should not be dismissed and the former can sometimes veer towards naïve techno-optimism, IBM offers a real-life example of the potential for AI to augment our capabilities rather than replace us (as some fear).

But fears around replaceability are not going away, and why should they. As groundbreaking as IBM's transformation might be in terms of Future of Work potential, the positive impacts are currently reaped by skilled, educated workers and senior managers with access to critical upskilling initiatives (should they fall behind in certain areas). The negative implications are being felt by a different socio-economic cohort. As discussed earlier in this paper, been estimated that over 400,000 jobs were lost to automation in US factories from 1990 to 2007, while another study estimated that 42% of jobs lost due to the pandemic will never come back, primarily low-wage roles often held by minority groups, with those laid off having no time to retrain and or gain access to crucial upskilling (see part 3 for more detail).

Nevertheless, remember economist Daron Acemoglu: ***"Technological progress is the most important driver of human flourishing, but we tend to forget the process is not automatic."*** Potential job loss does not mean we should not continue to automate repetitive or low-skilled tasks; merely that it highlights the importance of collaboration between governments, educational institutions, employers, and other organisations to ensure access to upskilling and lifelong learning initiatives for a diverse workforce of various demographics and socio-economic backgrounds.

In terms of what skills are needed, Deborah Threadgold noted at the National Leadership Conference that a combination of STEM skills and people skills – such as communication, critical thinking, and **advanced negotiation skills** – are becoming increasingly valued due to the evolving human-machine partnership. Those who understand how to effectively utilise technology while harnessing their people skills should thrive in this new environment.

However, while these are proactive measures to counter replaceability fears around job loss, dystopian concerns at a deeper, more philosophic level remain – that AI is not going to replace merely our job, but us.

In a separate IMI keynote, futurist Gerd Leonhard noted the eight different types of biological intelligence (including emotional, logical, kinaesthetic, etc) that humans exhibit, as compared to AI's one kind of intelligence (logic). This may be evident in AI's continuing difficulty to engage in that most basic of things: a spoken conversation. Accents, sarcasm, jokes, metaphors, non-verbal cues, and numerous other hidden complexities that make up a conversation, which we have no difficulty engaging in, cause AI and Machine Learning systems immense difficulty. And despite the market proliferation of devices like Alexa and

Siri, repeated user uptake (beyond one-off novelty use) remains slow. Some of this may be related to usability issues, but there may be something deeper in play.

For example, when Google released a demo of its Duplex virtual assistant in May 2018, it seemed to mark a revolutionary moment in spoken language technology. Combining deep learning, text-to-speak technology and natural language processing, Duplex effortlessly mimicked human speech and casual interaction without needing to rely on previous tricks that successful chatbots had historically relied on, such as relaying the speaker's words back at them. Yet for this reason, its success at sounding human and engaging in conversation, there was major backlash and Google announced Duplex would announce itself as a bot on future calls.

The backlash to Duplex may be an example of the "Uncanny Valley" effect, whereby a human-seeming artefact triggers feelings of eeriness and repulsion in an observer. As human likeness increases, so affinity increases until a point where artefacts start to become "creepy" and affinity goes negative. Despite numerous explanations offered for this phenomenon, no conclusion has been agreed on. Overlooked may be a misunderstanding of the properties of language and communication.

Language and communication reinforce our uniqueness and humanity. It's partly how we express and display our creativity and ability to think critically. We do this through writing as well to an extent, but whereas written communication tends to lean heavily towards message passing and information sharing, spoken language is a much more dynamic and complex beast with so much to figure out beyond the logical. We don't notice it because we do it every day, but it takes a huge amount of emotional intelligence and intuition to be able to understand an accent or tell a joke, never mind intuiting body language or the unsaid in a high-pressure negotiation situation. Spoken language interaction and communication between humans is grounded through shared experiences, representations and priors - which highlights the inherent difficulty of constructing a technology intended to replace one of the participants, considering the mismatch between partners.

The "relationship of presence" that's established during in-person communication - where two or more participants are not only present to each other as subjective beings, with thoughts, feelings, emotions, beliefs, etc. but also engaged in dynamic and reciprocal push-pull influencing (e.g. step towards one partner quickly, the other is likely to step back) - may partly explain the continued demand for in-person learning programmes and networking events held on the IMI campus. Over Zoom, two participants are still, to an extent, present to each other, but the relationship of presence is lessened through the medium of the digital screen. While digital technologies allow participants to hear and see each other, there can be no reciprocal influencing in the physical sense and any co-presence can be easily ended by exiting the meeting or switching off the laptop.

Getting back to AI, as Gerd Leonhard recently noted, machines cannot feel compassion – at most, they can mimic it (primarily through advances in spoken language technology and Natural Language Processing). Leonhard's statement will either allay or reinforce fears around replaceability, but it highlights the importance of developing advanced people skills and communication skills. Sharing some internal research, IMI has seen a huge uptake in interest for its Advanced Negotiation Skills programme since the start of the generative AI boom in early 2023. The feeling among participants is that as AI and automation automate more menial tasks, the need to master complex people skills – such as the art of negotiation, to be a more confident communicator, to be more strategic – has never been more important and urgent.

As Wittgenstein said, ***"The limits of my language mean the limits of my world."*** The dynamic complexities of language and communication may be the limits of AI replaceability. Now we have drawn the lines, we can continue unleashing AI's potential to augment our capabilities and drive human flourishing.

At least in theory.

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