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Executive Summary

1. Over the coming decades, the UK will be challenged by the sheer pace of technological change, the growing need to engage with international networks of public and private sector actors and the increased vulnerability – as well as increased opportunity – that technological progress brings.

2. The FCDO needs to develop sufficient expertise to enable it to benefit from new technologies while ensuring tech tools support its core objectives without supplanting them. It will need to collaborate even more closely with stakeholders across and beyond government to ensure a coherent UK approach.

3. The UK can play an important role in the development of new regulatory regimes to govern the use of emerging technologies, but doing so will mean resisting the US impulse toward deregulation. Somewhat awkwardly, that probably means a focus on shaping the EU approach – something the UK may be able to do through careful diplomacy *if* it understands and emphasizes the public's willingness to trust technology, and leverages its wider relationships to promote mutual understanding among the world's different regulatory blocs.

4. There is a clear risk that the focus on technology in the Integrated Review will see spending directed towards kit and away from personnel. That would be a strategic mistake with particular implications for the FCDO, which could find itself further hollowed out. In particular, the FCDO will have to fight to make the case for the value of human relationships in an increasingly technologically mediated age. That will not be straightforward.

5. There is also a risk, seen most vividly in the UK's relatively poor response to Covid-19, that the UK will discount lessons learned elsewhere in the world in the mistaken belief that it knows best. The FCDO has an important role to play in translating overseas expertise into domestic debates, and in ensuring that successful models developed elsewhere – wherever that may be – get taken seriously at home.

What are the key technological challenges the UK is likely to face in the coming decade?

6. The greatest technological challenge the UK will face in the coming decade is the accelerating pace of change. Simply keeping up means doing more, and knowing what to do more of is difficult. It is increasingly difficult to predict where new technological developments will come from, which in turn makes identifying coming technological shifts difficult.

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7. The FCDO has a potential role to play in monitoring technological developments around the world, recognising where both private and public sector actors are investing, and supporting cross-government horizon-scanning work.

8. As both the Covid-19 vaccine procurement process, and the ongoing issue of the use of Chinese technology in the UK's 5G network indicates, the UK has a strategic interest in both developing and manufacturing new technologies domestically. That strategic interest must be considered alongside more traditional cost-benefit analyses when the government makes investment and procurement decisions. In particular, the government must recognise and actively consider the trade-offs involved between the risks associated with investing in untested technologies, and the risks of being left behind when new technologies emerge.

9. In the case of Covid-19, a lack of domestic production capacity slowed the UK's otherwise highly successful vaccine roll-out, and limited its ability to export vaccine doses in ways that would have supported its broader diplomatic and development goals. China's aggressive vaccine diplomacy will have won it more friends than the more nationalistic approaches preferred by the US, UK and (to a lesser extent) EU.

10. In the case of 5G, a lack of domestic development capacity left the UK reliant on companies operating from a potentially hostile state to deliver an essential upgrade to its critical national infrastructure. In part, this was a story about the difficulties involved in geopolitical 'hedging' – in the absence of clear strategic signals suggesting otherwise, and against a backdrop of diplomatic instability in the United States, the UK has attempted both to bandwagon with and to balance against an increasingly powerful China. Yet it is also, in part, a story about over-reliance on market forces to deliver public goods.

11. Beyond the immediate near-term context, the greatest technological challenge we foresee is the growing use of Artificial Intelligence (AI) in the security and military domain – and beyond. It is immensely difficult to strike an appropriate balance between harnessing what AI technologies are good at and resisting the impulse to engage in more speculative, less effective and perhaps counter-productive AI-driven activities – not least because rapid technological development inevitably involves a level of speculation and experimentation.

12. The FCDO needs a clear understanding of the considerable risks and limitations associated with a greater reliance on AI technologies, alongside the opportunities and benefits they offer. At present we are not convinced the FCDO possesses sufficient technical expertise to develop and maintain this understanding. In particular, we are concerned that the language around 'tech' in the UK, and in particular in the Integrated Review, emphasises only the benefits while downplaying the risks.

13. AI technologies work best and most efficiently when they are integrated within a wider AI technology stack. To facilitate the desired efficiency and speed of AI, and to maintain interoperability with key allies, especially the US, the UK will need to develop appropriate support domains, facilities and services. This will mean putting in place extensive infrastructure, including data, cloud computing and networking capabilities.

14. This will, in turn, further increase the UK's reliance on foreign private sector partners, raising additional tricky questions similar to those associated with the roll-out of 5G. The UK is working to develop its domestic capabilities, but its investment – especially in the acquisition, development and maintenance of talent and expertise – lags behind the speed of global advancements. Private interests – especially *foreign* private interests – will shape how vital multi-level national (and international) networks develop. The UK's capacity to influence these processes will remain limited. Private companies will do what appears to benefit them commercially, though the UK can have an impact through targeted early investment in a diverse range of projects – as with the Covid-19 vaccine initiative. Moreover, the UK will remain reliant on international supply chains for the material parts that constitute these networks – microchip technology, for example. This will accelerate the process – already well underway – whereby the simple division between domestic and foreign policy breaks down. It will also increase the UK's exposure to more complex networked infrastructures, raising its vulnerability to errors and attacks targeting vital services.

15. It is clearly in the interests of private sector technology companies for the UK to roll out AI faster and more widely, including in the areas covered by the FCDO. Whether it is in the interests of the UK in general, or of the FCDO in particular, remains less clear. The FCDO needs to be ready to identify and adopt useful technological innovations as they emerge, especially to the extent they can be harnessed to pursue clearly-defined national and organisational priorities. But it also needs sufficient expertise to know when *not* to jump on a technological bandwagon. We advise against following the example of the US's enthusiasm for widespread use of AI technologies – encapsulated in the NSCAI, for example – which heavily discounts the risks these technologies create.

16. There are no simple answers to these issues. There probably is more the FCDO can do to support horizon-scanning in government, and we would recommend investing in technological expertise to enable the FCDO to spot emerging trends. But the UK's longer-term success will depend on its ability to recognise and respond to the trade-offs involved in rapid technological development in a competitive globalised world.

How will technological developments change the everyday business of the FCDO?

17. New technologies clearly further blur the boundaries between domestic and international politics, and between war and peace. Technological change will affect not only what the FCDO does and how it does it, but at a deeper level can shape its role and responsibilities in government and the wider world.

18. To meet these challenges, the FCDO will need to further strengthen its capacity to work across departments, both in Whitehall and in missions around the world. That will in part involve building effective bureaucratic structures, reducing the frictions inherent in working across distinct institutional approaches and cultures. It will also involve making greater use of new technology to facilitate collaboration.

19. There is a risk that departments will follow a silo-driven approach to developing their own technological capabilities that will exacerbate rather than improving cross-departmental collaboration and co-ordination.

20. There is an opportunity here for the FCDO, still young in its merger, to consider where new technologies might help it achieving its goals and where they might hinder what the FCDO is otherwise good at, such as the development of strong interpersonal diplomatic relations. The FCDO should consider carefully how new technologies, such as cyber-capabilities or AI tools, can support its efforts to establish, develop and maintain strong international relations, and where these tools are limited by their impersonal nature.

What prospects are there for the development of new regulatory regimes to govern emerging technologies? How well-placed is the UK to play a leading or key role in these regimes?

21. Given the requirements for networked systems and interoperability, aligning visions for governance is likely going to be an important but challenging diplomatic task.

22. The UK can potentially play a crucial role in the governance of new technologies, specifically autonomous technologies. With a strong technology sector and organisations such as the Alan Turing Institute and the Ada Lovelace Institute, the UK is well-placed to take a leadership role in building domestic and international alliances – with both private sector actors and international organisations - toward the responsible development and use of new technologies.

23. It will need, however, to resist pressure from the US to adopt a regulation-light stance, which is primarily driven by a dominant private sector. Understanding and taking seriously the risks that will emerge with a greater roll-out of autonomous technologies is a strategic decision which, we believe, will pay off in the long-term.

24. Working with a wide range of international organisations and international stakeholders, including the private sector, will be key for this. This is particularly pertinent, for example, for the ongoing debates on autonomous weapons systems with the UN CCW Group of Governmental Experts (GGE). The UK position on lethal autonomous weapons systems (LAWS) is clearly in favour of developing such systems, with the aim to improve compliance with IHL. The ability of LAWS to support compliance with IHL remains highly contested on technological grounds and in legal terms. The UK should work with a wider range of international stakeholders to assess where the strategic and tactical limitations of LAWS reside. Here again, the UK can play a leadership role in considering different alliances to help forge a globally coherent set of rules and norms that do not jeopardise peace and security.

25. Studies suggest that there is a threshold among the wider public to which degree autonomous systems can and will be trusted and beyond which they will likely be rejected and become obsolete. The UK government should take steps to understand this threshold, and use this understanding to inform its approach to international negotiations. Given the UK's strong social science sector, established expertise in the measurement of public attitudes, and relative absence of the sort of political polarisation that characterises debates around governance in the US, for example, there is an opportunity here for the UK to do something other states might struggle to do.

26. The Integrated Review frames international politics, broadly speaking, as a bipolar competition between the US and China, with the EU potentially acting as a third 'pole' and the UK attempting to work with all three in different circumstances. This model works better in some areas than in others. In particular, and being mindful of the political sensitivities involved, we would advise against downplaying the significance of the EU as a regulatory superpower, and against assuming that the UK's departure from the EU means it either does not need to or is unable to influence the EU approach. We believe the FCDO's focus in this area should be on shaping how the EU's regulatory regime develops, and that the UK is uniquely placed to play the part of friendly outsider in EU discussions. Moreover, given the UK's established relationships with the US and desire – repeated in the Integrated Review – to broaden and deepen its partnerships in Asia, it may be able to play a bridging role of sorts.

27. The EU has recently release draft guidelines on the regulation of Artificial Intelligence which focuses on trusted autonomous systems with a human-centric approach. To this end, the EU AI Act specifies different risk levels which autonomous systems might pose for the general public. The risk taxonomy is a useful lens through which systems can be assessed from conception to use without compromising trust in, and therefore adoption of, the system in question. This is done with human values, sustainability, security and trustworthiness in mind. The UK needs to take these developments seriously, and always ask what it can learn from other states and jurisdictions, as well as what it can teach them.

What risks will the FCDO face in playing its part in implementing the Integrated Review?

28. We are concerned that the heavy focus on investment in tech in the Integrated Review risks hollowing out the UK's diplomatic capabilities. If investment in tech comes at the cost of investment in people, the FCDO might wind up with lots of shiny kit but not enough people – or enough people with the right skills – to use it.

29. In particular, the FCDO needs to ensure it has sufficient personnel with sufficient technological expertise to understand and assess emerging technologies, while retaining a clear sense of the limitations of technology, the importance of ensuring technology supports the mission rather than defining it and the enduring importance of human judgement and interpersonal contact in an increasingly technologically mediated age.

30. We are also concerned that the FCDO might become the forgotten child of the Integrated Review – in which regard we note that the commitment to expand the FCDO estate overseas is the *only* unspecified spending commitment made in the document. If the focus is too heavily on tech, the FCDO might be left behind by a shift in investment to departments better able to spend money on expensive kit.

Conclusions and recommendations

31. We welcome the Integrated Review's heavy focus on technology as a context for future strategic policymaking, as a threat to national interests and as a tool for pursuing those interests.

32. The FCDO should work closely and collaboratively with other departments to build deep cross-departmental working practices and a shared cross-government approach to procuring and deploying new technology.

33. While embracing and adapting to technological change, the FCDO should remain mindful of the need to keep investing in people as well as in technology. That process should ensure that policy specialists develop technological understanding, and that technology specialists develop policy understanding, to ensure the FCDO's use of technology always supports its efforts to develop effective international interpersonal relationships rather than supplanting them.

34. The FCDO should press for greater clarity about the scale of the proposed investment in its overseas estate.

35. The FCDO should seek to influence the EU's emerging technology regulatory regimes, drawing on the UK's established expertise in public opinion and leveraging its relationships in the US and Asia.

36. The FCDO should ensure the UK learns from developments – technological and regulatory – elsewhere in the world.

May 2021