Your response

Question	Your response
Question 2.1: How do you see developments in the international context impacting the provision of cloud services in the UK?	*Is this response confidential? – No* ***Digital Sovereignty*** *Globally, digital sovereignty is becoming more and more significant. Both the US and China contend with it, yet they are engaged in conflict to protect it. Through Gaia-X and kindred projects, it is increasingly high on the agenda for Europe and many other nation states.* *Data will be the foundation of businesses in the twenty-first century and beyond, and governments are already starting to prioritise regaining control over their digital infrastructures in an uncertain geopolitical environment where battlefields are increasingly becoming both digital and physical.* ***Data localism versus data colonialism*** *The Information Technology and Innovation Foundation (an American trade organisation fighting for the interests of Silicon Valley's tech giants) made this argument in a paper published in 2017:* "Some policymakers believe that, if they restrict data flows, their countries will gain a net economic advantage from companies that will be forced to relocate data-related jobs to their nations. These supposed benefits of data-localization policies are misunderstood. Data centers have become more automated, meaning that the number of jobs associated with each facility, especially for technical staff, has decreased. While data centers contain expensive hardware (which is usually imported) and create some temporary construction jobs, they employ relatively few full-time staff"[1] *This declaration, made on behalf of ITIF members (mostly Silicon Valley digital behemoths), suggests that there are greater financial ad-*

[1] https://www2.itif.org/2017-cross-border-data-flows.pdf?_ga=2.161552892.1971882626.1578319817-376069940.1574166797 (page 5)

vantages for ITIF members in keeping customer data domestically in the US.
The ITIF developed its argument in 2021, equating data localism to data protectionism (despite the fact that its own thesis could be read as data colonialism), and arguing that data localism is practised as an overt or covert form of authoritarianism to facilitate domestic surveillance (conveniently forgetting that many data localization initiatives were motivated by Snowden's revelations about US surveillance of its own citizens).

Geopolitics

Russia's invasion of Ukraine highlights the growing geopolitical unrest in the world and shows that Europe cannot become complacent about its economic dependence on non-European nations or even about maintaining peace and security within its own borders.

As it is everywhere, populism is growing in Europe. Populism and wars are fed by digital technology. Digital technology has the potential to be both a force for good and for harm.

As Donald Trump's supporters were silenced by Apple, Google, and AWS through the removal of Parler from their various app stores and servers, the world's growing uneasiness about the huge power wielded by the global online platforms erupted into shock and awe.

*Parler attempted to sue Amazon for violating US anti-trust law, stating that their behaviour was motivated by "political animus." and it was "*like pulling the plug on a hospital patient on life support*".*

For years, hyperscale cloud vendors and other online platforms have asserted that they serve as neutral venues for people to express themselves and are not responsible for creating content themselves.

The Parler case refutes the idea that these platforms are merely products. Global hyperscalers and online platforms now operate at a scale and complexity that forces them firmly out of

	the "just a commodity" sector and make them too powerful to be considered "just a platform." Our future relationship with the US or any other dominant country must be structured so that we maintain our independence and capacity for negotiation in a period of rising geopolitical unpredictability. An analogy to data is Europe's dependence on Russian gas. This is why Europe is investing in GAIA-X – to develop a strong European industry that supports data sovereignty, independence & resilience. ***The UK's position*** *The UK already stores a huge amount of data with foreign companies (CEPS recently estimated that 92% of the western world's data resides on US owned servers) which risks exposing the data to foreign jurisdiction.* *The UK government, having drunk the commoditisation Kool-Aid[2] is now awarding multi-million long term contracts to the hyperscale cloud vendors which involve enormous upfront payments in return for discounts in an attempt to control costs. This is not because government chose cloud, rather because it chose to choose cloud vendors instead.* *There is a very real threat to the UK's ability to achieve digital sovereignty if cloud provision in the country keeps concentrating on hyperscalers (and there is no evidence to suggest that this trend will change). At the very least, this threat applies to data and digital services that the UK might want to protect due to their value and/or sensitivity.* *This threat will be made worse by the Data Protection and Digital Information Bill's proposed "risk-based" assessment for international data transfers. This is a gift to the hyperscalers who will easily create tools to help cloud users assess risk in a way that favours hyperscale off-shore hosting where any "residual risks" are offset by lower hosting costs.*

[2] "In two or three years' time what we now call IT, the delivery of those disaggregated services like hosting, networking, end user devices, support, all of those, will become core commodity services" and will be bought "like stationery"

	Without valuing and promoting its own cloud and hosting sector, the UK will lag behind the US and Europe, the market will further concentrate around a small number of hyperscalers, and the UK will run the risk of losing any remaining control over digital sovereignty it presently possesses.
Question 4.1: Do you agree with the scope of the market study?	*Is this response confidential? – No* *The Ofcom market study is welcomed and long overdue. While the study understandably places a lot of emphasis on consumers, hyperscale cloud is a massive and intricate sector that forms the backbone of a lot of 21st century industries and societies.* *As a result, it is important to consider how hyperscale cloud will affect society and economies. In particular I recommend that the issues covered in para 1.19 of the "Call for inputs" document are given more prominence.*
Question 4.2: Are there other ways to those listed in paragraphs 4.11 to 4.14 in which customers use cloud services, and factors which determine their cloud usage, that we should examine?	*Is this response confidential? – No* *Customers frequently pursue multi-cloud strategies in addition to the uses of cloud that Ofcom has recognised' in order to increase operational and cyber resilience by reducing reliance on a single vendor.* *The problem of cloud concentration has been briefly discussed in my answer to question 2.1, but it is becoming a bigger concern for many cloud users.* *A small number of cloud suppliers control enormous amounts of data (AWS, Microsoft, Google and Alibaba). The dangers are widely understood:* • *a lack of competition and choice in the market is not in the best interests of cloud users who will deprived of real technical innovation* • it is a seller's market when it comes to *value for money* • *switching vendors will become increasingly difficult and expensive, perpetuating both lock-in and concentration* • outages *can and do happen and are becoming increasingly impactful and expensive as the scale of the outages increase*

- concentrated data *is an attractive prospect for bad actors and increases the risk of cyber attack*
- *rapid evolution and expansion of cloud services creates new vulnerabilities*

The Treasury issues a policy paper, in June 2022, proposing a new regulatory framework to provide the Bank of England and the Financial Conduct Authority with new powers to oversee technology firms that provide critical services to the financial industry.

Concerns over the lack of vendor diversity and banks' increasing reliance on the cloud were the driving forces behind this. According to a Treasury statement, over 65% of banks employed the same four cloud service providers in 2020[3].

*Recently, the Bank of International Settlements noted that growing reliance among financial institutions on cloud supplied by only a handful of companies could have "systemic implications for the financial system". The paper "**Big tech interdependencies – a key policy blind spot**" observed that the market for cloud computing software is dominated by four players accounting for around 70% of the global cloud market.*

Both the Bank of England and the Bank of International Settlements rightly acknowledge that the issue does not specifically lie with cloud services. There are effective rivals to the major companies, rivals that can actually compete on price, quality, and functionality. The fast-rising resilience issues may be addressed if the alternatives were given the opportunity to compete on an even playing field, with acknowledgment and backing from the government.

Cloud services are susceptible to cyberattacks and disruptions, and with so much data and so many users gathered on one platform, these events do occur and the consequences can be catastrophic . This risk appears to be lost on the UK government, which is gravitating predominantly towards AWS at pace.

[3] Ironic, given government's dependence on one cloud vendor.

	It is worth noting that Lloyds of London has costed a significant cloud outage in the US at $19bn with the vast majority of that cost uninsured and most hyper-scaler cloud vendors taking little if any liability for any consequent data loss or damage[4].
Question 4.3: Do you agree that the features set out in paragraph 4.15 are the most important features for customers when choosing cloud services?	*Is this response confidential? – N* A customer's choice of cloud services may well involve many of the features that Ofcom has set out in paragraph 4.15 but in my opinion these features are an over-simplification of a set of complex and fundamentally anti-competitive behaviours on the part of the hyperscale cloud vendors. The decision on which cloud vendor to choose will also be influenced by all of the behaviours listed in my response to question 4.9 (revolving doors, undue influence, predatory pricing, and lock-in). These behaviours are underpinned by hyperscale hype that promulgates groupthink amongst cloud customers that a) the cloud market is far narrower than it actually is and b) migration to the cloud is an automatic route to significant cost reductions and better business outcomes. The former point stifles competition and innovation and is a sign that the UK cloud market is in very poor health. The latter point has been disproven on multiple occasions and elimination of cloud bill shock (see response to question 4.9) has become an industry in its own right.
Question 4.4: Is our characterisation of how cloud services are sold and buying patterns correct at paragraphs 4.16 to 4.18? Are there other methods?	*Is this response confidential? – No* *I agree with Ofcom's summary within paragraphs 4.16 to 4.18. Most cloud vendors will not negotiate terms or services – multi-tenant public cloud platforms are simply not manageable*

[4] *[✂]*

	or cost effective if key elements of service and terms become atomised and bespoke. *What this has meant in practice is that key elements of government's digital (and other) policies have been changed to accommodate public cloud. Most notably, the Government's current protective marking scheme, where the "OFFICIAL" tier conflates three tiers of its preceding regime and has led to the emergence of a semi-official "OFFICIAL-SENSITIVE" caveat for some data. Liam Maxwell (see response to question 4.9) blogged that this change was a key enabler for government's digital transformation.* *Lack of competition is a key element in the UK cloud market.* *The UK public sectors point of entry for buying public cloud services is generally G-Cloud. The G-Cloud framework operates as a catalogue, where business can only be called off via the "di-rect award" procedure (i.e. without competi-tion), as the Crown Commercial Service's (CCS) own guidance attests[5].* *G-Cloud suppliers have no visibility of incoming requirements until a G-Cloud contract has been awarded and published on Contracts Finder. This lack of transparency provides no opportunity for UK cloud hosting vendors to demonstrate their capabilities, credentials and pricing to the market.* *For cloud hosting the concept of buyer choice is academic given the Public Cloud First policy which, in its application within Government, narrows the field from several hundred cloud hosting vendors within the Digital Marketplace to, at best, two (AWS and Microsoft Azure).* *At UKCloud, the sales team was routinely told by digital teams within the major Government departments such as DWP, MoJ, Home Office, HMRC and Cabinet Office that their CDIO's pol-*

[5] You must not:(see remainder of footnote on page 8)

- combine the results of more than one search to create a shortlist
- hold a competition to decide the winner
- ask suppliers to tender, bid or submit proposals
- unfairly exclude any services without referring back to your requirements

	icy is to migrate to AWS and that only AWS may be used as the "proof-point" for cloud services. *During a recent high profile, high value Home Office tender, one of UKCloud's partners was explicitly told through multiple bidding rounds that the answer for hosting had to be AWS, even though, in the partner's view, AWS did not demonstrate the best technical fit or the best pricing.* *These decisions are not transparent and by definition cannot have been tested with the competitive rigour required by the Public Procurement Regulations. Even the CCS has decided AWS will be its default cloud hosting vendor[6] and the decision appears to be technically led rather than business led.* *The CCS's own guidance on direct award suggests that the procedure is only suitable for low value, low volume commodity products. As it is, AWS has enjoyed direct revenues of at least £649m[7] (and more than twice that through partner and resellers) without having to undertake any form of competitive process.* *Based on the Cabinet Office's own published figures, AWS currently enjoys (at least, as indirect sales are excluded) over 60% of the UK public sector cloud hosting market.[8]* *In 2019 the Home Office awarded AWS a £100m 4 year contract via the G-Cloud direct award procedure, quickly replaced by a further £120m G-Cloud contract in 2020 (another direct award), whilst HMRC and DWP have also very recently awarded AWS multi-million contracts (£20m and $110 respectively) through this procedure. All of these awards featured un-refundable multi-million annual upfront payments.* *In the case of DWP, the contract was awarded in order to replace an existing contract (£18m)*

[6] Decision here...
We use Amazon Web Services (AWS) as the default cloud vendor for newly built services which require Infrastructure as a Service (IaaS) or Platform as a Service (PaaS) hosting.

[7] As of 30/03/23 https://app.powerbi.com/view?r=eyJrIjoiNjhlYmE2M2EtZWFiMy00ZDc4LWE2MWMtOTQ2NDlmZTQ5YjExIiwidCI6IjlmOGMwZDc5LTNlODctNGNkMy05Nzk5LWMzNDQzMTQ2ZWE1ZSIsImMiOjh9

[8] Based on CCS figures (footnote 7) as at 18/01/23

	which "no longer offered value for money". The DWP, Home Office and HMRC intended to take advantage of a discount negotiated with AWS by the CCS under an arrangement that traded off short term discounts for long term lock-in[9] [10].
Question 4.5: Do you agree with our characterisation of competition for different types of services and customers? Are there any other aspects where competition may vary?	*Is this response confidential? - N* *With the exception of this Ofcom market study, there has been little evidence that the UK has any interest in understanding what the impact of hyperscale cloud vendors on its economy, on its ability to achieve digital sovereignty or on the nation's overall cyber-resilience.* *There has been some concern expressed about the dependency of the UK financial services industry on a small number of cloud vendors but this concern does not extend into health, defence, intelligence and national security, communications or the many other market verticals that are dependent on these same few cloud vendors.*
Question 4.6: What are your views on our characterisation of cloud ecosystems?	*Is this response confidential? – No* *Partner ecosystems are a longstanding feature of the technology industry where partners are invariably incentivised to sell its partner's products and services. This is of no consequence in a healthy, competitive market. In unhealthy markets, such as public cloud, extensive ecosystems can be problematic:* • *consultancies and value-added resellers may well be incentivised to offer solutions that are not in the best interests of, or offer the best value to, their own customers creating conflicts of interests* • *the more a partner is incentivised to sell proprietary solutions and tools, the more the partner is pushing its own customers into cloud vendor lock-in. This may be a virtuous circle for the*

[9] https://aws.amazon.com/blogs/publicsector/one-government-value-agreement-accelerating-cloud-adoption-innovation-across-uk-government/

[10] https://www.crowncommercial.gov.uk/news/crown-commercial-service-and-amazon-web-services-launch-new-mou-for-cloud-computing-services

	cloud vendor but it is not in the consumer's best interests • *There is increasing concern that innovations are being stifled as the hyperscalers develop tools and services that compete with the added value of the partner ecosystem (see also AWS Marketplace in response to question 4.9)* • *Many UK hosting companies have simply given up on their own capabilities and have opted instead to enter the hyperscale ecosystem. Eduserv is the classic example, closing its UK data centres to focus on hyperscale leading to the loss of over 30 jobs. Fordway has its own hosting capability but prefers to position as a Microsoft Azure partner* • The *60% partner profit margin claimed by AWS at its 2022 re:Invent conference may the possible in theory but is in reality very difficult to achieve – particularly for smaller businesses which may not be able to access e.g hyperscale volume discounts.* • *UK businesses will invest in the certifications and qualifications that are required to be a hyperscale partner thus ensuring that their offerings become a solution looking for a problem and perpetuating concentration on too few vendors.*
Question 4.7: Do you agree with our proposed approach for considering the dynamics in cloud infrastructure services competition, and what do you think are the most important issues to examine?	*Is this response confidential? – No* *I would caution Ofcom of making the mistake of believing that the hyperscale cloud (and its ecosystems) represent the start, middle, and finish of the market.* *There is a risk that Ofcom will produce an academic and interesting analysis that will not serve to make any difference to the market.* *I would recommend that Ofcom extends the scope of the competitive dynamic piece to look at how hyperscale cloud interacts with local (e.g UK) competition and then frame that with wider and more strategic questions around economic, societal and national capability impact.*

	A second point is that the hyperscale cloud vendors are not immune to the economic pressures. The hyperscalers have already raised prices by 30% in Europe in response to rising energy costs. *All the US hyperscalers are laying off staff. Profit margins for hyperscale cloud are large and the hyperscalers will be under pressure to sustain those margins which could well be through further price rises as well as staff lay-offs. This is bad news for customers that cannot afford the time, resource and/or costs to move to another vendor.* *Vendor lock-in is an issue now and will become a significantly larger issue as cloud adoption grows.*
Question 4.8: Do you agree we should examine cloud ecosystem competition? How do you see cloud ecosystems currently developing, including around core areas set out in paragraphs 4.40 and 4.45?	*Is this response confidential? – No* *Yes. Please see the points made in response to question 4.6*
Question 4.9: Do you have any concerns regarding any conduct or activities of any vendor(s) that may adversely affect market dynamics now or in the future?	*[✂]*
Question 4.10: Are there any remedies that you believe we should investigate further to mitigate some of the potential risks we've identified in this document or concerns you have with the market?	*Is this response confidential? – No* *Given the hyperscalers' hegemony over the UK cloud industry, there is a chance that any remedy may be too little, too late. Nonetheless, there are some actions that could be made to make things better. The creation of a National Cloud Strategy, which acknowledges that practically everything of national importance in the UK is supported by the cloud:* - *Through a joint government/industry partnership, the UK should at least match the French government's €1.8 billion investment in its cloud industry so we can compete globally in the 21st Century: the UK should be looking at what other national governments are doing to invest in their own cloud computing sector as a model to not just follow, but to exceed.*

	- *Reform public procurement practices: government must reorient its approach to cloud procurement and the Procurement Bill provides the perfect opportunity. Two key changes are needed:* i. *Domestic cloud providers should be the 'provider of first preference' for government cloud contracts* ii. *There should be an end to direct awards in government procurement of cloud services with competition being the default.* - *A legal and regulatory environment should be established that keeps the UK's data in the UK, unable to be accessed by foreign authorities without the lawful consent of British courts. The establishment of a pro-competition regime in the digital markets is welcomed, but for it to be truly effective it must be matched with an appreciation of the importance of retaining data onshore in the 21st Century and ensuring national resilience.* - *Government should ensure that its environmental and corporate responsibility aspirations are baked into all public sector contracting, by increasing 'social value' or 'public good' criteria to a 20% weighting: the publication of the Procurement Bill marked an attempt to broaden the lens through which contracting parties view and assess procurement bids.*