

inspiring success

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ACS SUBMISSION: Federal Senate Select Committee on Inquiry on Financial Technology and Regulatory Technology

Question A - The size and scope of the opportunity for Australian consumers and business arising from financial technology (FinTech) and regulatory technology (RegTech);

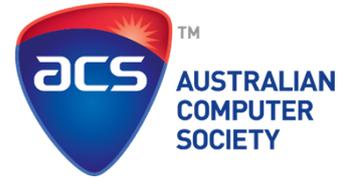
- For the past decade, the Heritage Foundation, which considers itself "Washington's number one think tank," in partnership with the *Wall Street Journal*, has published its annual [Index of Economic Freedom](#). The index draws its inspiration from economist [Adam Smith](#) and references his book "The Wealth of Nations" to try and measure his theories concerning "liberty, prosperity and economic freedom."
- Australia accrued a total 2012 score of 83.1, landing in third place on the esteemed annual ranking. The key strengths of strong property rights, high freedom from corruption, low government spending and high levels of business, labor and monetary freedom all apply to Australia. More specific factors cited include an independent judiciary and low government debt levels. This last factor stands in stark contrast to other [developed economies](#) in the world that are currently laboring under heavy [debt loads](#) and precarious fiscal positions. Australia has been [deregulating](#) since the 1980s and has worked hard to reduce regulations in its economy, as well as encourage [free trade](#) with neighbors such as China.
- This might suggest that there is less need for work to be done in Australia although may alternatively suggest that Australia could 'export' its experience of doing it well to other countries.
- Australia's effective size and relative simplicity to other 'older', more established countries e.g. European countries may limit the 'learnings' that it can have compared to these other countries e.g. far fewer large M&A in Australia is possible compared to Europe or US since there isn't that many large companies.

Question B - Barriers to the uptake of new technologies in the financial sector;

- Banks tend to spend huge amounts of money to attempt to risk manage the delivery of technology solutions and normally this increases hugely in the delivery of new technologies i.e. discovery an assessment processes, proof of concepts, procurement and selection processes as well as project delivery processes.
- In Australia, post Royal Commission, there is more of a need to find more modern, efficient and effective ways to control banks (and other financial institutions) without adding bureaucracy e.g. leverage AI techniques.

Question C - The progress of FinTech facilitation reform and the benchmarking of comparable global regimes;

- The UK post-GFC has moved quickly to de-regulate the Retail banks with a huge number of nimble, fintech challengers operating in that space. The large Institutional and Corporate banks have progressed through M&A and investment to battle competition.
- One interesting aspect of Regulation driving collaboration is in Scandinavia where a number of Institutions have got together to effectively create a shared platform in response to Banking Reg:
 1. <https://sebgroupp.com/press/press-releases/2019/the-collaboration-of-six-nordic-banks-results-in-a-joint-kyc-company> - Collaboration with each other to deliver KYC changes
 2. <https://www.computerweekly.com/news/252441026/Nordic-banks-plan-major-digital-transformation-of-operations> - Collaboration with startups



Question D - Current RegTech practices and the opportunities for the RegTech industry to strengthen compliance but also reduce costs;

- Most Reg Tech practices have been developed over years. The opportunity for organisations to re-think what risk the compliance is trying to mitigate and the available technology to enable that to happen in a more 'frictionless' way suggests there must be opportunities.
- One issue is understanding the baseline, benchmark cost to effectively base business case from investment or demonstrate benefit from subsequent change. Often existing system cost is not really understood or measured and secondly change often is 'add on' and not 'replacement' hence actually adds complexity and cost not simplifies and reduces cost.

Question E - The effectiveness of current initiatives in promoting a positive environment for FinTech and RegTech start-ups; and

- If you mean making banks more 'friendly' to customers, then certainly challenger banks try to tailor their processes (including reg components) to the target client base through app UX/CX as example.

Question F - Any related matters.

- One issue regarding progress being made particularly with RegTech is that it's not a 'sexy' topic. Hence doesn't get the interest in research, start-up or investment. It needs to find its mojo!

1. ACS Research:

1.1. 2019 Digital Pulse Report – (Extract - Economy and Jobs Growth Forecasts)¹

In July 2019 the ACS released its annual ACS Digital Pulse report detailing Australia’s digital economy growth and potential. The report highlighted Australia’s technology workforce is forecast to grow by 100,000 workers in trend terms between 2018 and 2024, at an average annual growth rate of 2.3% (exceeding overall workforce growth of 1.3% p.a.).

Future demand for technology workers and skills within the Financial and Insurance services industry is estimated to grow at a slightly more modest rate of 1.2%.



Source: Deloitte Access Economics (2019)

Technology workers by industry and CIER occupational grouping 2018

	ICT	ICT	ICT	ICT	Electronic trades	ICT industry	Total

¹ ACS Publication: Australia’s Digital Pulse 2019 <https://www.acs.org.au/insightsandpublications/reports-publications/digital-pulse-2019.html>



	management and operations	technical and professional	sales	trades	and professional	admin and logistics support	technology workers
Financial and insurance services	22,115	24,944	106	4,084	0	0	51,248

1.2. Artificial Intelligence – A Starter Guide to the Future of Business (Extract)²

Artificial intelligence – as the phrase is often used today – is a bit of misnomer. We tend to think of intelligence in human terms: self-awareness, the capacity for independent thought, the capability to reason, and autonomous decision making among other traits. These capabilities are far beyond the implementation of artificial intelligence that we have today, though all indicators point to a future where this will one day be possible.

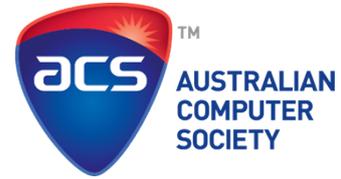
Artificial intelligence is at present confined to narrow, highly focused tasks that leverage computers to do what they do best: process data, and lots of it, very fast. Ultimately most everything can be broken down into data. And not just in the sense of databases of customer details, Word documents and the emails that might make up a business. Data is also voice, images, movies, music, and more. Anything, in fact, that we can digitise is data. And where there is data, there are patterns. Today’s artificial intelligence – for the moment – is heavily built for recognising and learning from patterns in ways that humans never could, to produce results beyond what humans currently can.

Already we have seen the introduction of AI activities development within the FinTech and RegTech sector such as:

- **Fraud Prevention** - Predictive and behavioural analytics built upon AI algorithms allows banks, credit card companies, and financial institutions to detect and track fraud far faster than humans ever could.³ By analysing transactions and matching against the expected behaviour of an individual based on past experience, these algorithms can pluck out irregularities and raise red flags, putting a stop to further transactions and protecting both the institution’s and the customer assets.
- **Assessment of Regulatory Risk** - A recent 2017 contest pitched over 100 lawyers from many of London’s best firms against an AI program called Case Cruncher Alpha. Both the humans and the AI were given the facts of hundreds of PPI (payment protection insurance) cases and asked to predict whether the Financial Ombudsman would allow a claim. Of the 775 predictions submitted, the AI system returned an accuracy rate of 86.6%, compared with 66.3% for the lawyers.

² ACS Publication: Artificial Intelligence – A Starter Guide to the Future of Business
<https://www.acs.org.au/insightsandpublications/reports-publications/artificial-intelligence.html>

³ Cristine F. September 2017. Can AI Really Help Minimize Credit Card Fraud? IBM Community.
https://www.ibm.com/developerworks/community/blogs/ce53fcb5-53da-4efa-90e3-d92a77c52944/entry/Can_AI_Really_Help_Minimize_Credit_Card_Fraud



1.3. ACS 2019 Federal Election Manifesto (Extract)⁴

We are yet to see mass deployment of artificial intelligence. Many current applications of AI start with algorithms that evolve into machine learning. Voluminous amounts of data are required to feed the engines that are powering image and speech recognition, natural language processing, predictive analytics and process optimisation.

It is important to note however that AI is not a vertical, rather a horizontal. AI has the power to transform all industries: AI & medicine, AI & mining, AI & finance, AI & transport and logistics, AI & manufacturing, etc. With the opportunity to become a global leader, Nations have been investing heavily to build their AI capabilities — and Australia is at risk of falling behind in a race that can't be recovered.

Artificial Intelligence today will continue to leverage opportunities to better analyse the ever increasing repositories of data held within industry and government to produce efficiencies in both design - improving the quality of the products and services produced, and the utilisation of resources leading to reduced costs in time and money.

1.4. Blockchain 2030 – A Look at the Future of Blockchain in Australia (Extract)⁵

Blockchain technology is a distributed ledger technology whereby a database is distributed across numerous users, and changes to the database are validated by consensus among the users. While it is best known as the platform for Bitcoin, blockchain technology can be widely applied to improve business processes, increase transparency, and drive the creation of new jobs and industries.

Blockchain technologies and systems have been investigated and trialled in a wide range of industries around the world.^{6,7} There are potential applications in both existing and emerging industries^{8,9} with the majority of global activities to date has being directed towards financial and insurances services.

⁴ <https://www.acs.org.au/insightsandpublications/reports-publications/2019-federal-election-manifesto.html>

⁵ ACS Publication: Blockchain 2030 – A Look at the Future of Blockchain in Australia
<https://www.acs.org.au/insightsandpublications/reports-publications/blockchain-2030.html>

⁶ Carson B, Romanelli G, Walsh P et al. 2018. Blockchain beyond the hype: What is the strategic business value? McKinsey www.Mckinsey.com

⁷ Lange A. 2017. Mapping the decentralized world of tomorrow. Medium (www.medium.com), 1 June 2017.

⁸ Doubleday K. 2018. Blockchain for 2018 and beyond: A (growing) list of blockchain use cases. Medium (www.medium.com), 30 January 2018.

⁹ Mesrobian E. 2017. 30 Non-financial use cases of blockchain technology. Medici (www.gomedici.com), 18 December 2017.



Smart programmable money facilitated by distributed ledger technology (DLT) could open up new horizons for global trade^{10,11} and become the next step in the evolution of monetary systems.¹² Blockchain became a priority topic on the agenda of international forums (e.g. World Economic Forum¹³) and national industry organisations (e.g. Australian Digital Commerce Association¹⁴). The analysis of Australian blockchain activities (see Chapter 3) demonstrates that Australia is home to a number of innovative blockchain developments and has potential to grow its competitive advantage and develop a thriving domestic blockchain industry.

Since 2018, there has been a decline in the blockchain industry, exacerbated by capital flight due to unmet hyped expectations. Companies emerging from the peak of the hype (most notably, financial advisory services for cryptocurrencies) had almost no market left and were forced to either fold or diversify into other markets. Although blockchain failed to meet expectations, its brief hype did have a positive effect on the offerings of traditional institutions. The threat of blockchain disruption forced intermediaries (e.g. banks and insurance companies) to improve their product and service offerings, and offer better cost efficiency, transparency and accountability in their operations.

Blockchain technology is global by nature and it is therefore crucial for Australia to consider its regional positioning and comparative advantages. The Asia-Pacific region is the source of several major opportunities for Australian export of blockchain-related goods and services. For instance, the high prevalence of remittance payments¹⁵ and mobile wallets^{16,17} in the region also indicates a market opportunity for financial technology products using blockchains.

However, the rapid growth in technology investment and skills development within the Asia-Pacific means that Australia also faces significant global competition, including from regional leaders like Singapore, a global FinTech leader.¹⁸ Building on Australia's existing strengths to develop new capabilities will be crucial to realise the potential of blockchain for Australian business, governments and communities. Australia's blockchain industry has a competitive advantage in a number of areas in having:

¹⁰ Commonwealth Bank of Australia. 2018. World-leading 'Smart Money' trial explores potential for blockchain to re-envisage payments: CBA and CSIRO's Data61 trial NDIS prototype app as the first case study. Commonwealth Bank of Australia (www.cba.com), Media release: 9 October 2018.

¹¹ CSIRO. 2018. Making Money Smart: CSIRO's Data61 and Commonwealth Bank collaborated on a research project to explore the potential for blockchain technology to create 'smart money'. Data61 CSIRO: Sydney, Australia.

¹² Lowe P. 2017. An eAUD? Address to the 2017 Australian Payment Summit. Sydney – 13 December 2017 Reserve Bank of Australia (www.rba.gov.au), accessed: December 2017.

¹³ World Economic Forum. 2018. Blockchain beyond the hype: A practical framework for business leaders. World Economic Forum (www.weforum.org), 23 April 2018.

¹⁴ Australian Digital Commerce Association. 2018. Australian Digital Commerce Association: About. Australian Digital Commerce Association (www.adca.asn.au), accessed: November 2018.

¹⁵ World Bank Group. Migration and Remittances. Migration and Development Brief 27. World Bank Group (www.worldbank.org), April 2017

¹⁶ Horton J, Devaraj D, McLaughlin J et al. 2018. Sunrise industries: a snapshot of seven emerging industries in the formative stages of growth within ASEAN and neighbouring nations. CSIRO Data61: Brisbane, Australia.

¹⁷ HV V, Istace F, Kamal R. 2012. Insights from McKinsey's Asia-Pacific payments map. McKinsey & Company: New York, USA.

¹⁸ Shetty A. 2017. How Singapore is primed to build fintech talent. TechInAsia (www.techinasia.com), 24 January 2017.



- Access to a fairly decentralised, fully dematerialised set of capital markets, making it easier to implement blockchain solutions relative to places like the US or EU.¹⁹
- Government funding for research into blockchain uses in the public sector.²⁰
- A strong financial services industry that weathered the global financial crisis better than almost anywhere else in the world.
- Research leadership in blockchain technology innovation, combined with an active start-up community. Australia is home to a number of leading blockchain initiatives, including the Australian National Blockchain, Melbourne's Blockchain Centre, PowerLedger, the Commonwealth Bank blockchain bonds, Civic Ledger, Everledger and AgriDigital.
- Global leadership in blockchain governance. Australia is chairing the International Standards Organisation group developing standards for blockchains and other distributed ledgers.²¹
- Relatively strong institutional adoption and collaboration, either between companies or public–private sector partnerships. For instance, Australian banks are working with distributed ledger start-up Ripple²² the Australian Government has partnered with IBM to develop blockchain solutions²³, the Queensland Government is working with TravelbyBit to open the market for digital currency tourism,²⁴ and Australian Securities Exchange is adopting DLT in collaboration with Digital Asset.²⁵

1.5. Blockchain Challenges for Australia (Extract)

Blockchain emerged only a decade ago with the release of the Bitcoin system, but it builds upon much older research areas, including cryptography and distributed systems. Despite being in its infancy, blockchain already allows individuals to transact between one another through a distributed system of computers, bypassing traditional intermediaries, automating processes, and reducing time as well as financial costs. Half a century ago, nobody predicted that networking individuals through a distributed system of computers would allow dissidents to bypass censorship in expressing themselves, or producers to bypass distributors to reach their consumers directly. Yet, the US military funded project ARPANET, which became the internet, has facilitated these types of disruptions. One could thus reasonably expect that blockchain will experience the same network effect as the internet in the near future.

¹⁹ Deloitte. 2016. Opportunities and implications of blockchain in Australia: workshop playback. Deloitte Access Economics: Sydney, Australia.

²⁰ Digital Transformation Agency. Budget 2018-19 for the DTA. Digital Transformation Agency (www.dta.gov.au), accessed: December 2018

²¹ Eyers J. 2018. Australia in driving seat as global blockchain standards take shape. Australian Financial Review (www.afr.com), 9 September 2018

²² Eyers J. 2016. NAB, Westpac part of Ripple's new global payments network. Australian Financial Review (www.afr.com), 15 September 2016

²³ IBM. 2018. Australian Federal Government signs a \$1B five-year agreement with IBM. IBM (www.ibm.com), September 2018

²⁴ OQCE. 2018. TravelbyBit: Facilitating digital currency tourism for Australia. Office of the Queensland Chief Entrepreneur (www.chiefentrepreneur.qld.gov.au), accessed: September 2018.

²⁵ ASX. CHESS replacement. ASX (www.asx.com.au), accessed: December 2018



The first generation of blockchain systems proposed in 2008 in the seminal bitcoin white paper.²⁶ These blockchain systems allow users to issue transactions written in a restricted scripting language to transfer digital assets between participants. New transactions are encapsulated into blocks appended to the chain by miners. The blockchain forks when miners append different blocks at the same index, requiring the miners to reach a consensus later on. A second generation of blockchain supporting 'smart contracts' was proposed with Ethereum in 2014. Smart contracts are general programs that offer more expressiveness to users than transactions, and users can upload smart contracts to the blockchain and invoke them. The development of smart contracts led to the generic notion of decentralised applications (DApps) interacting with the blockchain data structure and whose interface can typically run within a browser. Newer blockchain systems that aim at improving scalability, interoperability, governance, privacy or sustainability are often considered part of a third generation of blockchains. This generation includes blockchains that better integrate with an interactive version of the web.

As blockchain technology matures, its security strengthens, its performance improves, and standardisation efforts multiply. Yet, there remain key challenges that every country must address in order to embrace the promises that blockchain offers to the economy and society:

- **Scalability** - The scalability challenge is to ensure that blockchains and distributed ledger technologies are capable of interconnecting individuals at unprecedented scale. The growth in the number of computational devices and the geographical dispersion of their data poses a new challenge to maintaining integrity at unprecedented scale. Australia's connection to the rest of the internet is sometimes impaired by natural disasters or human misconfigurations, but reliable connectivity is necessary for blockchain systems to benefit Australia at a large scale. In addition, traditional blockchain systems, whose performance is capped regardless of the amount of participating resources, consume an amount of storage and energy that grows dramatically with the number of participants. This lack of scalability poses a threat to the sustainability of these blockchain systems.
- **Security** - Blockchain aims at providing security guarantees, both through cryptography and consensus among participants, to alleviate the need for a central trusted authority. Defining the appropriate prerequisites for a blockchain system to be secure depending on its context (public, consortium, private) is important to protect the users. Unfortunately, most existing blockchains do not offer accountability, as they do not allow users to identify responsible actors and initiate recovery processes in case of losses. Accountability is required to provide blockchain users with some guarantee as to the security of their transactions. Blockchain systems are frequently attacked through various means. These attacks clearly threaten the privacy and assets of users. Implementing standards that deal with these vulnerabilities is needed for the protection of blockchain users. Australia has an important role to play through its organisations that are already actively engaged in blockchain standardisation.

²⁶ Bitcoin: A Peer-to-Peer Electronic Cash System. Satoshi Nakamoto, 2008. <https://bitcoin.org/bitcoin.pdf>



- **Regulation** - Governance and oversight typically progresses at a slower pace than technology. As a result, regulation efforts can become outdated by the time they are in place and may prove ineffectual. There is currently a lack of clear governance, not only in terms of rules for compliance with legislation and regulation processes, but also to provide clear guarantees to users, regarding issues such as privacy and ownership. This is especially true in Australia where privacy is governed by the Privacy Act 1988 (Cth)²⁷ rather than being a general right. Measuring the extent to which 'code' can be considered a legal agreement between parties remains unclear and untested in court.
- **Education and Employment** - As one of the largest exporters of education, Australia would benefit from more education in blockchain. The growing demand for engineering and technical skills includes the blockchain sector.

The challenges are diverse in nature and typically span different regions of the operation–strategy spectrum. As an example, an education challenge is more strategic than a scalability challenge, as it typically focuses on the long-term goal of adequately preparing new generations to become experts in blockchain technology; whereas the scalability challenge aims at optimising blockchain software to perform well when the number of the blockchain users increases.

Some challenges are very industry focused while others are mainly technology focused. For example the regulation of blockchains has implications for the way businesses will make use of blockchain technology and offer blockchain services; whereas the security challenge will likely be met with solutions that are technical, for example a software update to the latest encryption scheme that does not yet have any known vulnerabilities.

2. Advisory Positions:

2.1. Rules as Code

A major opportunity for reform is the implementation of Rules as Code which seeks to formalize language of legislation and policy, into formats that are machine readable. Once implemented these platforms could serve to create a more consistent regulatory framework for the delivery of services thus increasing efficiency leading to reduce costs and resources whilst also serving to increase customer satisfaction.

Benefits include:

- Provides an operational single source of truth at any one time
- Ability to better understand the impacts of individual changes through better change management practices and the ability to roll back
- Creating more consistency through the removal of unnecessary judgement-based process, replaced by logical statements

²⁷ Privacy Act. <https://www.oaic.gov.au/privacy-law/privacy-act/>



- Highlights inconsistencies in policy / regulation and highlights ambiguity in policy / regulation.

Some regulation is very transactional, does not require much context and is not ambiguous (does not require high levels of judgement) to use results.

Some regulation deliberately includes the need for judgement and so has an acknowledged level of ambiguity. Regulation related to privacy frameworks are included in this category and use ambiguous terms such as “reasonable” which is a human judgement consideration.

Currently this program is being piloted by the NSW State Government.

2.2. Regulatory Enforcement

The major application of RegTech in financial services is as a tool for regulatory compliance, rather than for regulatory enforcement. However, machine learning techniques can be applied by Treasury portfolio regulators in enforcement. Examples that have been modelled include the detection of resale price maintenance in competition law and data interoperability and portability in prudential regulation. Members of the ACS are currently working on the application of machine learning in the RegTech environment and the ways in which existing application programming interfaces could be used as an enforcement tool. The effect is that government initiatives, such as the consumer data right, create not just FinTech opportunities, but also RegTech opportunities in both compliance and enforcement.

2.3. Open Banking and the Sharing of Data

The challenge of Opening Banking is essentially a technological problem. With the ever-increasing rise in the amount of personal/business data being collected and held within institutions, coupled with the desire to provide portability and better flexibility of services, knowing and understanding who has access to what is essentially a technology challenge with the opportunity to provide better auditory and governance compliance.