reinventure.

Global Data Wars:

Building a Thriving Data
Economy for Australia

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The open data opportunity, while in its nascent stages globally, is already predicted to generate in excess of $3 trillion in economic value annually across major sectors, from healthcare to transportation to consumer finance1, solely based on the impact of availability of data alone. This is to say nothing of the thousands of new companies and tens of thousands of new economy jobs that will be stimulated as a result of this burgeoning opportunity.

Over the last four years, Reinventure has worked at the centre of Australia's fintech community, investing in the likes of Data Republic, HyperAnna and Basiq. As a result of these experiences, we have formed a deeply held belief that data is the single biggest lever for microeconomic and social reform in the next two decade, and needs to be a material part of policy and trade consideration at all levels of thinking in the public and private sector.

We define the data economy as the trade in data between organisations and/or governments, domestically or internationally, and the derivative data products (algorithms, insights, applications) that arise from that previously unavailable flow of data. This economy is comprised of organisations and governments that are able to provide personalisation of services through data and new insights and solutions to old (and new) problems. It deals with productivity issues in the private sector (personalisation, risk, identity, supply chain efficiency, decisioning, development of artificial intelligence [AI] applications) and social reform issues across the public sector (policy reform, allocation of resources, programme efficiency etc).

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[1] Source:
https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/open-data-unlocking-innovation-and-performance-with-liquid-information

Private sector examples include:

- Next-generation credit decisioning models based on non-banking data which enable fintech growth in emerging economies (e.g. fintech in China)

- Retail site selection for development and optimising store mix – through access to bank transaction data in developed markets (e.g. Westfield in Australia)

- Insurance claim data sharing to materially reduce fraud.

- Availability of real world data for training AI/machine learning applications

Public sector examples include:

- Utilising bank transaction data to inform and optimise future route decisioning for mobile immunisation vans in order to improve immunisation rates. (e.g. Westpac and Victorian Department of Health Datathon)[2]

- Utilising telecommunications company (telco) calling/messaging pattern data to identify people in immediate risk of a domestic violence incident;

- Utilising grocery shopping basket data to inform policy decisions around childhood obesity

Importantly, the above definition of the data economy does not cover the core elements of the existing "Big Data" industry, including cloud infrastructure, enterprise data warehouses, internal analytical platforms and applications. These are all examples of important pre-requisite infrastructure that enable the data economy and that are maturing rapidly.

The data economy represents a significant global economic, political and social opportunity, however the enabling environment plays a critical role in ensuring how well this opportunity is leveraged for local and regional economies. This report provides an insight into the current landscape of activity in key markets around the world, and the extent to which they are harnessing the potential of the data economy. It highlights the significant regional opportunities and challenges in the Australian context, and finally lays out an ideal policy and design framework to maximise the scale of this once-in-a-generation industry transformation.

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[2] https://mbs.edu/news/immunisation-boosting-idea-wins-first-annual-melbo

Case Study: Westpac accelerates data sharing with Data Republic

Challenge

Westpac, a major Australian bank, identified that they were missing out on opportunities to drive growth through data collaborations. The problem was that data sharing was too legally complicated, risky and time-consuming. Concerns around how data would be used, stored, shared and destroyed resulted in uncertainty and inaction. The bank needed a way to give authorised parties access to data without releasing it and have confidence any data shared was used for intended purposes only.

Beyond the scalable management of risk, legal terms, privacy and information security as it relates to data sharing, there were also the technical challenges associated with provisioning data to parties beyond the bank's environment. The bank needed to ensure that they could retain visibility, control and revoke access to datasets. And, they needed a solution that wouldn't further burden or drive up costs for internal IT team.

Solution

Westpac identified the strategic potential of data innovation and sought to find fundamentally better ways to manage data sharing opportunity and risk. They partnered with Data Republic to deploy the Senate platform to govern data collaboration and commercialisation activities with external parties.

Deployment of Senate has transformed the way Westpac collaborates with data; accelerating outcomes for internal analytics projects, generating scalable revenue from data assets, and supporting innovation through new partnerships, while ensuring that customer privacy is protected at all times.

No Westpac customer personal information (PII) is ever seen by Data Republic users: only anonymized and aggregated data is uploaded or exchanged via the Senate Platform and Westpac retains complete control of what data is shared, for what permitted use and timeframe.

In 12 months of deploying the Senate platform, Westpac has achieved the following:

12+	**300+**	**8**
New data partnerships created	Analytics Workspace environments containing bank data provisioned for analysis	new startups launched via [Fueld accelerator](#) to solve bank problems with data

In addition, risk management capabilities are stronger. Senate provides a data sharing control centre with an approved process for requesting data, and a comprehensive audit trail for all data licensing. The simplified legal framework boosted productivity, with new requests being processed in days, not months. This has resulted in a reduction of man hours and increase in new data driven value creation being explored.

"The data that Westpac has is important to many of our customers to help them make better decisions and we want to support that. The privacy and security of that data for our customers is equally important. Good governance and technology are the keys to helping us achieve this balance."

Gary Thursby,
Group Executive, Strategy and Enterprise Services at Westpac

Beyond the financial sector:

- 30+ organisations from a range of industries have benefited from insights gained via analysis of the bank's data.

- 15 data products have been developed and launched via 12+ new partnerships forged on the Senate platform.

- 4 Government insight projects using licensed bank transaction data for modelling and policy.

- 6+ data-for-good meetups and 2 university datathons have used licensed bank data

Data product creation by Geografia

Geografia's Spendmapp is a prime example of a data product that has been developed via Data Republic's technology and ecosystem. Leveraging aggregate Westpac transaction data and layering it with population data, Spendmapp is a data product that offers accurate economic insight into local economies.
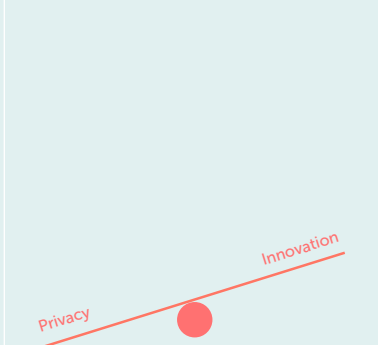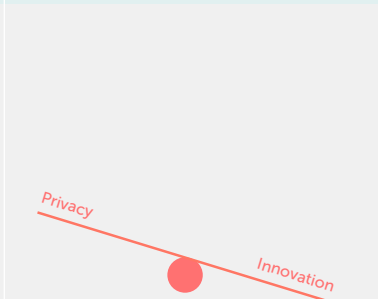
Spendmapp enables local governments to safely and securely access real transaction data to measure the benefits of investments, proving value in support of future projects.

[Find out more about Geografia's Spendmapp](#)

Part 1: The International Context and Geo-political Implications

The core challenge most markets are facing at present is an unconscious trade-off between privacy and innovation. It is generally an unconscious trade-off because the regulation around privacy (as it relates to citizens) is largely disconnected from any policy framework that considered the potential of data driven innovation.

If one imagines privacy and innovation as two ends of a seesaw, markets are determining where the optimal balance point is for both. Through this lens, we can consider the current positioning of each market, key considerations and likely consequences.

Market	Privacy/innovation trade-off	Key Considerations
CHINA		- Extreme end of innovation - China fintech almost entirely a story of cross industry data flows (Ping An uses 350 different external data sources) - Different approach to privacy than most western markets - China AI likely to outpace the world due to access to scaled data across domains - Has the advantages of a highly concentrated data industry, due to concentration of digital giants (Tencent, Alibaba, etc) - Challenges for China model exportability due to limited ability to access data on same basis in other markets - SE Asia tech acquisitions are data-centric ,under-pinning global growth/trade strategy (e.g. ecommerce, transactions etc)
EUROPE		- Extreme end of privacy - General Data Protection Regulations (GDPR) initially pursued to limit power of US tech data giants - Reverse impact likely, as US tech giants first to comply, while domestic companies struggle with the regulatory burden - Although some sound principles, lack of regard for technology developments have yielded a largely un-implementable framework (e.g. right to be forgotten) - Europe likely to head into "data-driven dark ages" and structural lack of competitiveness through lack of liquidity of data and related microeconomic benefits

Market	Privacy/innovation trade-off	Key Considerations
USA	Privacy — Innovation	■ The most developed data economy, however largely concentrated in a few hands (Facebook and Google the two largest "observed" data companies in the world) ■ Has consistently operated in more of a "grey market" in trade of data. That is, stated privacy principles are not well understood or consistently enforced ■ Highly fragmented transactional data market which serves interest of US tech giants and makes broader development challenging
UK	Privacy — Innovation	■ Has a very good balanced perspective on the trade-off, despite proximity to EU and impact of GDPR ■ Original proponents of Open Banking regulatory framework, however implementation not ideal (advocating for the flow of sensitive raw transactional data from high security banks to low security fintechs) ■ Limited perspective on broader data economy (banking-centric) ■ Now focused on exporting Open Banking capability in first cross-border "trade skirmish" to create advantage of UK fintech trade in later adopting markets ■ Has advantages of near-oligopoly market (ability to scale)
AUSTRALIA	Privacy — Innovation	■ Developed its own Open Banking framework as broader, more considered view of data economy ■ Consumer Data Right and Open Data policy reflect balance in trade off ■ Execution of Open Banking and Digital ID initiatives key to translating policy balance to effective technology solutions with global potential ■ Globally leading Open Government executions (NSW Government) ■ Has advantages of near oligopoly market (ability to scale) ■ Key challenges include disjointed regulatory management (fragmented) and lack of market co-ordination ■ Strong advantages include proximity to SE Asia and neutral brand (geo-politically)

Market	Privacy/innovation trade-off	Key Considerations
SINGAPORE	Privacy ———●——— Innovation	▪ Stated ambition to be the "global hub for data exchange" (IMDA – Jan 18) ▪ Highly-functional approach to policy development (industry body responsible for data economy under same executive branch as privacy regulator) ▪ Has advantages of near oligopoly market combined with Singapore Government's ability to co-ordinate their efforts with private industry ▪ Attempting to develop a centralised approach to digital identity ▪ Strong advantages in proximity to SE Asia and Singapore corporations exposure ▪ Low cash economy (data-rich)ch)
INDIA	Privacy ———●——— Innovation	▪ Requires high liquidity of data to enable fintech market development (as per China) but have higher privacy threshold ▪ In process of making active considerations as to how to design data economy ▪ Considering adopting UK Open Banking Implementation Entity (OBIE) model ▪ Very large and active opportunity ▪ Likely to tip scales in favour of innovation slightly ahead of privacy through economic imperative
SEA	Still under development	▪ Many of these nations are earlier in their journey but acknowledge they need to make active choices about how to strike a balance between privacy and innovation

Although the above are largely a reflection of domestic data economy settings, there are significant implications for cross-border activity that have geo-political implications.

China

- China policy makers are renowned for allowing a "thousand flowers bloom" model of technology innovation, preferring to regulate known risks and issues after they have manifested. This policy approach is highly conducive to innovation, but only works where there are limited political repercussions of decisive interventions (i.e. complaints are limited when a new policy shuts down an entire existing industry sector).

- In relation to data, the benefits of free-flowing data, particularly as it relates to fintech enabled economic growth, are considered to vastly outweigh the implications of limited regard for privacy as it is known in western markets.

- However, China has found it difficult to extend this principle beyond its borders. This is because extending these business models into other markets is difficult as access to third-party data is necessary and acts as a limiting factor to cross-border growth (e.g. Alipay and Japan market failure). As a result, Chinese Tech giants are focusing on their SE Asia expansion through acquisition of data-rich ecommerce, payments and transactional platforms.

- The implication is that *deliberate settings of privacy/innovation trade-offs become trade-limiting factors* or a form of technological trade tariff/quota.

UK and Open Banking

- The UK has demonstrated a great ability to identify major trends early and then mobilise policy settings in order to capture them. Fintech is a great example of this initiative, where they were the first market to both identify and orient policy settings around this emerging sector. This has seen them hold out as the leading fintech market globally (outside of China) and aim to become a global leader in open data.

- To this end, the UK pushed for the completion of their Open Banking platform for January 2018 and then immediately began lobbying other markets around the world to adopt both their policy settings and API framework. This would permit them to licence their OBIE technology to deploy Open Banking in their own domestic markets.

- This is a deliberate and well-crafted trade strategy by the UK and a clear form of "technological colonisation". Fintech does not cross borders naturally, given regulation and local data. However, by mandating adoption of UK standards and technology, the earliest of which (say Australia in July 2019) could occur a minimum of 18 months after UK fintechs had perfected their operating models on those UK standards, this effectively lowers the trade barriers to entry for UK fintechs in other markets.

- However, the lack of a broader vision for the data economy beyond Open Banking, the limited success of Government Open Data initiatives (including Digital ID) and the proximity to Europe and associated GDPR implications means that much of the UK market is focused on a compliance-led approach to data, rather than an innovation-led approach.

Singapore as a Global Data Exchange Hub

- Singapore is the best-placed market to take advantage of the emerging data economy and create a high-functioning model that can help them gain a competitive advantage in the global landscape.

- They have a clear top-down strategy and stated ambition to be the global data exchange hub

- They have a highly functional regulatory and industry development framework, with a single government executive agency (IMDA) responsible for both the development of the data economy (Data Innovation Programme Office) and privacy (Privacy Commissioner). This model for bundling the "accelerator" agency alongside the "brake" agency has worked extremely well for Singapore (e.g. Monetary Authority of Singapore [MAS] for fintech), giving it an opportunity to leverage more than its natural share.

- However, Singapore's vision for a global data exchange faces some challenges to the extent it relies upon a world where global multi-national corporations move their data to Singapore, where data products are then developed (difficult given the core principle of data sovereignty).

SE Asia Policy Settings

- The remaining markets in SE Asia are trying to determine where to balance their newly forming policy positions.

- They understand intuitively the powerful potential of a liberated data economy (and most of their markets require a "skip generation" development of a fintech ecosystem built on data (along the lines of China). However, they are operating from a different starting position with regards to their implicit assumptions with citizens around privacy.

- These economies will increasingly look towards the "leading light" economies (UK, Singapore, Australia) that have developed the right balance between innovation and privacy as potential models to follow. SE Asian markets represent significant opportunities over the next decade, particularly to the extent that common infrastructure is able to be developed across markets.

Notwithstanding the above, no one market yet understands the full potential of the emerging global data economy, how to position most effectively to capture global trade in data, or how to design a high functioning domestic data economy. This is a market that McKinsey estimates will be worth $3tn to $5tn annually in terms of economic impact [3]. The market that can respond best will encounter strong flow on effects in all sectors.

[3] Source:
https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/open-data-unlocking-innovation-and-performance-with-liquid-information

Part 2: Opportunities for Australia and Optimal Local Policy Settings

Australia is well-positioned to disproportionately gain from this emerging data economy by virtue of its:

- Balanced perspective on privacy versus innovation

- Oligopoly market structure (which can be harnessed for at-scale execution more easily)

- Relatively mature and sophisticated data market (NSW Government, corporate adoption of data sharing, Open Banking etc)

- Considered approach to policy development (albeit fragmented and unaligned to a cohesive macro strategy)

Localised context in developed economies such as Australia

The key battleground in any localised context in developed economies is the battle between individual versus corporate ownership/control/economic reward as it applies to data. The principles underlying the ideologies of each extreme position are:

Individual extreme:

- Consumers have complete rights over their data (natural ownership)
- Consumers should enjoy access to 100% of the value able to be generated by their data (natural economic right)
- Consumers should be able to erase all traces of their digital footprint from within company databases (right to be forgotten)
- Consumers should hold all of their own data on a fully decentralised network to which they have total control (decentralised utopia)

Corporate extreme:

- The data is an inextricable part of an overall product experience (integration)
- The company is the generator and natural owner of the data and the consumer has relinquished rights to that data and subsequent economic value in terms and conditions (natural ownership and natural economic right)
- Data cannot be erased as it is an essential part of running and managing an operation and meeting legal/compliance/tax regulations and laws (right to be remembered).

There are a few fundamental flaws in each extreme position.

From the individual perspective:

- Consumers do not generate data in and of themselves. They only generate data through interaction with a service/product. There is no natural right to ownership nor an ability to enable a decentralised utopia without a centralised corporate service/product experience.
- Right to be forgotten in relation to all data is both undesirable and almost impossible to achieve. Removing all elements of a customer's interaction with a product/service will undoubtedly risk a company falling afoul of competing regulations/laws (e.g. tax records, Anti-Money Laundering [AML]/Know Your Customer [KYC] requirements, etc.), as well as removing potentially very valuable data which could be utilised to great effect on an anonymised basis (e.g. data for social good). The key element to "right to be forgotten" should be to the extent that personal information (PI) is attached to attribute data. If you sever the PI from the attribute data, then you have effectively delivered against the "right to be forgotten".
- Consumers have no ability to create economic value from their own data in the absence of some kind of managed/organised/facilitated data marketplace dynamics.

From a corporate point of view:

- Consumers have a very strong sense of inequity in relation to how observed data companies (e.g. Facebook, Google) make money using data gathered on their users. Consumer engagement outside of generic terms and conditions will be required.

- Those organisations for whom commercialisation of data is not a primary business model (e.g. banks, insurers, telcos), but for whom a vibrant data sharing economy is critical to the development and micro-economic reform of their own industries, have a strong incentive to share the direct benefits of data commercialisation with their customers.benefits of data commercialisation with their customers.

- There is limited understanding of how right to be forgotten and right to be remembered can be simultaneously achieved through technology.

There are several other factors worth considering in the Australian context:

POLICY FRAMEWORK

Australia has a rapidly evolving and sophisticated approach to policy development with regard to data, including:

Consumer Data Right – a fundamental and foundational principle which underpins the increased liquidity of data and is a key enabler of a data economy;

Open Banking – the first practical implementation of a Consumer Data Right (CDR) to an industry vertical. It seeks to address core issues including authentication, security, technical standards and data standards and is framed as a model for application to future industry verticals;

Data sovereignty – APRA has additional oversight of data being stored offshore[4]

Open government data – Productivity Commission recommendations of formalising an approach to opening up of government data[5]

Digital ID – Digital Transformation Agency (DTA)-driven framework for federated digital identity models which have the potential to be adopted across both the public and private sectors. Draft legislation addressing liability limitations of Digital ID for KYC also lay down the framework for a more liquid and efficient data economy. Digital ID is one of the foundational capabilities for it.

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[4] Source:
https://www.morganmckinley.com.au/article/moving-cloud-apras-requirements-are-simply-good-practice

[5] Source:
https://www.pc.gov.au/inquiries/completed/data-access/report/data-access.pdf

Australia's regulatory framework for data is largely legacy and lacks co-ordination. There is no clear accountability for either the constructive development of a domestic data economy (accelerator) or regulation (brake) of a domestic data economy. Regulatory responsibility for all relevant elements of the data economy are split across multiple different bodies or government departments, including:

Australian Securities and Investment Commission (ASIC) – appears to hold responsibility for regulatory sandbox initiatives and cross border regulatory harmonisation relating to data.

Australian Competition and Consumer Commission (ACCC) – newly-introduced agency with responsibility for oversight and enforcement of the Consumer Data Right and Open Banking regulation;

Austrac – data driven policing of KYC and AML (both of which are data sharing and digital identity problems);

Digital Transformation Agency (DTA) – under Department of Prime Minister & Cabinet, holds the policy framework for Digital identity and federal Open Data strategy;

Office of the Australian Information Commissioner (OAIC) – responsible for privacy regulation and enforcement of APP's;

Home Affairs – responsible for cyber-security, which is inextricably linked to the design, development and regulation of a data economy, as illustrated in Part III.

Contrasted approach - Singapore

Both this policy development and regulatory fragmentation should be contrasted with a model like Singapore which has evolved rapidly to a single executive branch for the data economy which has a paired model of accelerator (innovation, industry development) and brake (privacy, sovereignty etc).

The IMDA is a statutory board in the Singapore government, that seeks to deepen regulatory capabilities for a converged info-communications media sector (i.e. data) while safeguarding the interests of consumers and fostering pro-enterprise regulations. Its vision is to create a "Vibrant, World-class Info-Communications Media Sector that Drives the Economy, Bonds Communities and Powers a Smart Nation". It is chaired by the Permanent Secretary of the Ministry for Defence, which demonstrates the strong linkages between cybersecurity and a data economy.

Within the IMDA, the paired brake/accelerator models reporting under a single statutory authority (separate sub-branches) allow for nuanced decisions to be made that might require consideration of trade-offs between privacy and innovation. These two sub-branches are:

1. Personal Data Protection Commission (PDPC)

The PDPC's mission is to "promote and enforce personal data protection so as to foster an environment of trust among businesses and consumers, contributing to a vibrant Singapore economy.

2. Data Innovation Programme Office (DIPO)

Stated ambitions of the DIPO include facilitating data-driven innovation projects, and the development of Singapore's data ecosystem.

These capabilities have been organised to deliver on Singapore's stated ambition *"to build the world's first "global data exchange", based in Singapore"* [6]. Given a co-ordinated and comprehensive top down data strategy, the ability to organise industry and Singapore's status as a progressive yet privacy-centric country, they are well-placed to achieve this vision.

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[6] https://govinsider.asia/security/tan-kiat-how-imda-ceo-regulatory-sandboxes

Enabling cross border trade in data

Singapore's stated ambition to be the global hub for data exchange is bold and directionally correct. However, the Singapore government 's perspective that multi-national corporations would move their raw data to a domestic market from where they would each engage in data-sharing is highly unlikely to become reality, given the strong anchoring of data sovereignty and evolving global legislation (such as GDPR).

What is much more probable is the construction of infrastructure between markets, permitting data exchange/sharing to occur without PI leaving an organisation, nor attribute data leaving a regulated market (and therefore being compliant with data sovereignty). This approach would allow the development of an analytical data product to be developed in one market which could then easily be transferred to another market where the same data sets are made available on the same common infrastructure. So cross-border trade in data then happens at the algorithmic level on common infrastructure, not at the raw data level. The best parallel for this is SWIFT in banking, being a common infrastructure/approach to enabling cross-border flows in money/payments.

Research by Austrade indicates that data trading could be one of the most significant global markets by 2030. It is difficult to imagine the value potential of an industry that barely exists. However, some initial examples of value creation include:

1. The relocation of an individual from one market to another:

- KYC/Identity - transferability of one trusted status from one market to another
- Credit – transferability of credit history between markets
- Health – transferability of critical information to inform services
- Attestations – such as qualifications and identity attributes

2. Global and cross-border markets:

- Travel services – connecting data from origin of journey to completion to enable greater personalisation (i.e. Singapore Airlines customers journey preferences in Australia to enable personalisation of full journey's not just the flight)

- Tourism spend – what services to tourists from different markets actually consume within a destination market

3. Cross-border AML – data sharing around transactions and individuals of known risk across jurisdictions

Leveraging Australia's position within the global data economy

Australia is well-positioned to win in the emerging global data economy. This is a similar opportunity to the one that the UK seized with fintech (remaining the No 1 fintech ecosystem globally) and Israel seized in relation to Cybersecurity (0.11% of global population but 16% of global Cybersecurity market).[7]

For Australia to capture a similar win, the following would need to be achieved:

1. Optimally designing a domestic data economy – co-ordination of a top-down strategy, governance, security, regulation and industry development

2. Demonstrating scaled implementations – given the size of the Australian market (natural oligopoly industries), it is one of only a few economies globally which could demonstrate what a scaled, economy-wide data economy might look like, thus delivering a model for larger and/or developing economies that can't readily achieve this organically

3. Demonstrating collaboration between public and private sector – the structure of the Australian market permits effective co-ordination between the public and private sectors. This can materially accelerate the development of a domestic data economy and serve as a model to be followed in larger and/or developing economies

4. Working with peer countries to develop global trade in data – given the complete immaturity of cross border trade in data, specific focus will need to be given to developing initial frameworks and opportunities to develop this trade. Countries with similar privacy/innovation models and close trade ties seem to be the logical starting point (e.g. Singapore and Australia or New Zealand and Australia)

5. Leveraging positions of trust and close working relationships with SE Asia to develop their own innovation/privacy trade-offs and data economy strategies. In particular, aid strategies could use the provision of data economy infrastructure as the basis for supporting local economic development (e.g. fintech), cross-border trade (at the data product layer) and social impact (through application of data products to social reform issues)

A significant opportunity exists for Australia with developing countries. They are grappling with the dilemma of driving innovation through data whilst trying to balance privacy and security. Data infrastructure and aid programmes for these countries could underpin the development of a vibrant fintech market (similar to China) through credit, and provide opportunities for the unbanked which supports material growth.

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[7] Based off percentage of global funding raised, 2017: https://www.timesofisrael.com/israeli-cybersecurity-firms-raised-record-814-5-million-in-2017/

Part 3: Breaking The Privacy/Innovation Seesaw: Designing a Data Economy for Maximum Opportunity

The economy that can break the privacy/innovation seesaw – that is, create the most vibrant, dynamic and connected data economy whilst simultaneously developing the highest standards of privacy and security for their data economy – will emerge as a material winner in the global data economy. Data has a powerful network effect, both within an economy and across borders.

The mature model for citizens

A Data Economy that solves for the balance between privacy and innovation will also solve for the balance between consumer and corporate rights where data is concerned. Well executed, this should result in a data economy that reflects the following foundational principles:

JOINT OWNERSHIP

Neither the consumer nor the corporate has outright ownership of consumer-generated data, creating an asset shared in ownership and commercialisation.

JOINT CONSENT

Blanket, generic consent models will ultimately give way to a more granular, simple language, standard definition, permitted-use methodology over which consumers have an ability to trade up or down their level of consent. This will allow for more bifurcation of the market between those who value privacy more than personalised experience/economics.

JOINT REWARD

Neither the consumer nor the corporate will have sole economic rights to the value of consumer-generated data. Instead, there will need to be an economic model that allocates value transparently, fairly and consistently.

RIGHT TO BE DE-IDENTIFIED

Envisage a world where consumer identity is ultimately tokenised and consumer protections and right to privacy can be enabled through a "de-tokenisation" process. The consumer's individual identity would be completely severed from this data, rendering them unrecognisable to the corporation.

If this model is achieved at scale, then as the digitisation of all sectors of the economy and consumer experience continues, and as process automation from the availability of data for AI occurs, the commercial value of the underlying data as it relates to citizens should be automatically harvested and shared between industry and the citizen. If this is pursued with enough consideration, then there is the potential to create a hedge against disruption to the workforce from data-driven AI, and potentially an organic model for a kind of "universal basic income" that grows as the data economy grows. Citizens could earn an income just by existing and operating in the digital world, through the tacit and explicit permission for their data to be utilised to improve services to themselves and the broader economy.

Foundations of a Data Economy

There are several key legal, technical and commercial foundations that need to sit under the design for a data economy to maximise the opportunity set out in this paper. These include:

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1. A comprehensive, connected and cohesive data sharing and privacy legislative framework:

a. Consumer Data Right – which empowers consumers to direct access to and utilisation of data to enable data-driven services at minimal friction. This right creates the basis for data liquidity and gives the consumer side of the joint ownership/consent/reward equation teeth

b. Privacy Principles – the constraining element on the corporate side in terms of responsibilities for the collection, storage, use and management of personal information and data

c. Support for a common legal framework across the private sector (e.g. KYC liability transferability etc) – a macro enabler for the commercialisation of data with regard to responsibilities, reliance and liability for parties participating in the data economy

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2. Core technological architectural principles:

a. Secure-by-design/private-by-design - Just as technology companies can now be architected to be "private-by-design" and "secure-by-design", it is also possible to design a digital economy that is private and secure by design

b. Tokenisation of PI as the default with protocol-based approach to PI capture and tokenisation

c. Utilisation of the principles of decentralisation, tokenisation, encryption and sharding to create a shared infrastructure to manage an "ether" of PI to fundamentally address the risk associated with honeypot approaches to sensitive data

d. Elimination of "honey pot" approaches to PI and sensitive data stores

e. Minimising replication/flow of raw data from high-security to low-security environments. That is, utilise algorithm-to-data as preferred approach to data liquidity as opposed to replicating the existence of raw data in multiple environments of materially different security

f. Modular approach to development with interoperability key at each layer

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3. Open development ecosystems:

a. Through execution of the approach above, opening up innovation as it relates to data and data products as much as possible

b. Development of "data sandbox" approaches to public and private sector innovation with regard to data to lower the barriers to data-driven innovation

c. Developing infrastructure to support the growth of lean data analytics experimentation and company formation (e.g. data accelerators, industry vertical precincts such as health, transport etc.)

d. Public and private co-operation on open development layer (e.g. universities working on real-world problems whilst developing next generation of data and technical professionals)

e. Material support for the development of "data for social good" infrastructure, such as the Minerva Collective, to ensure that development of the data economy is equally focused on social reform issues that benefit society in the broadest possible sense

These are largely legal, technological and design principles that optimise the ability to drive data driven innovation. However, to be effectively implemented across an economy, they need to be supported with the following critical vehicles, policies and regulations;

☑ A single statutory body responsible for the considered development of the data economy led by a Chief Data Officer for the nation. This body needs to be given a long term, bipartisan mandate and should be considered in the same vein as APRA or the Reserve Bank of Australia in terms of relative importance. It would:

- *Be responsible for a balanced approach to the strategic development of a domestic data economy and connectivity into a global data economy*

- *Have three distinct operating functions – the accelerator (industry development, trade), the brake (privacy, security enforcement, competition) and government open data policy (federal and state interoperability)*

- *Take over the data economy-related functions of all other statutory bodies (in Australia this would mean APRA, ASIC, DTA, the Attorney-General's Department, ACCC etc)*

- *Be responsible for the development and protection of data as a vital and valuable natural resource*

☑ A clearly stated long-term (10 year) strategy for developing a domestic data economy and leveraging that effort into a stated ambition to be the leading data-driven economy globally

☑ A framework for driving collaboration and co-ordination between government actors (both within departments at each level of government and between state and federal governments). Co-ordination is required to ensure amplification of efforts to develop a domestic data economy (and develop a model for other markets) rather than fragmentation of efforts

☑ A framework for driving collaboration within the private sector, and between private and public sectors. To optimise outcomes, it is necessary to capitalise on the network effect of data across the entire economy

☑ A co-ordinated industry development effort which focuses on skills development and talent for the data economy (universities, MOOCs, data accelerators), application layer capability (AI infrastructure, centres of excellence, accelerators, innovation precincts etc). This co-ordination should occur across both federal and state governments (i.e. Jobs for NSW) and the private sector (e.g. Fuel'd at Westpac, the AI Centre of Excellence[8] etc.)

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[8] https://www.afr.com/technology/ed-husics-ai-centre-of-excellence-to-focus-on-ethical-humanist-ai-20180730-h13ay6

Ten Priorities for Winning the Emerging Global Data Opportunity:

01. Develop a national strategy to win

Similar to Singapore with data (or the UK with fintech, Israel with Cybersecurity) a stated ambition to be a global leader in the emerging data economy with a comprehensive national strategy for achieving this goal is essential to aligning the efforts of government, industry, regulators and the startup sector

02. Create the "RBA/APRA for Data"
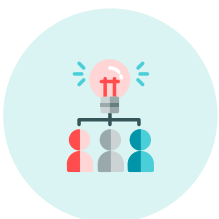
The central, independent, bi-partisan creation of a statutory authority to implement the long-term objectives contained within the national strategy is essential. Sustained investment and co-ordinated policy over a long period of time is required to achieve this goal. Borrowing best practice from Singapore, this entity should be responsible for the "brake" function (regulation, privacy etc) as well as the "accelerator" function (open data, data sharing enablement, industry development)

03. Embed "secure by design/private by design" principles in the architecture of the data economy
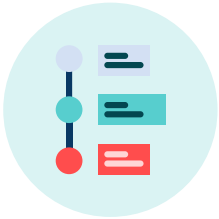
Core architectural principles for the development of the data economy across the public and private sector should work towards to critical goals of:

a. Minimising the amount of Personal Information in the data economy – – through tokenisation, adoption of protocol-based approaches to PI capture and store etc

b. Shared, decentralised security protocols for managing PI access and storage – Tier 1 organisations who are sufficiently secure (e.g. banks, telcos etc) should play a role in validating natural PI against a decentralised, shared architecture that the rest of the economy adopts for managing PI. We should actively discourage the building and deployment of new "honeypot" PI infrastructure.

04. Connect all data-related policy to the national strategy

Seek to align and co-ordinate all of the data-related policy that is currently being developed in siloes to a consistent national strategy which amplifies activity towards the goal of building a world-leading data economy as opposed to fragmenting or replicating efforts (this would include Consumer Data Right, Open Banking (and via reciprocity, Open Data), Open Government, Digital ID, Health records, KYC, etc.)

05. Create world's best practice policy and legislation

Consideration of material changes to outdated data-related policy and develop new policy and legislation which serves to advance the dual goals of maximising data-driven innovation and minimising systemic risk to security and privacy. These would include:

- Upgrading of current privacy legislation to reflect the value of data as a national asset to be shared, whilst enhancing control and transparency for consumers;

- An Australian version of GDPR that is progressive and functional (i.e. right to be forgotten)

- Re-consideration of the role of data sovereignty in a global data economy – both tightening up application in critical areas and enabling more global license in others

- Policy frameworks designed to discourage the flow of raw data and replication of honeypot risk for PI

- Common framework and basis for enabling consent-driven data-sharing across the public and private sector
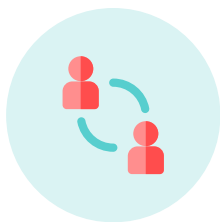
Given the scale of our economy, the greater the collaboration and co-ordination between our government sector (cross-departmental, cross-state and between state and federal) and our private sector (intra-industry and cross-industry), the greater the amplification of our efforts and the more likely we are to succeed on a global stage

Case Study: Social and policy impact of data liquidity

In June 2018, Melbourne Business School partnered with Data Republic, SAS and AWS to host the Melbourne Business Analytics Datathon.

The challenge:

Make recommendations to the Victorian Government which lead to positive outcomes of Victorian citizens
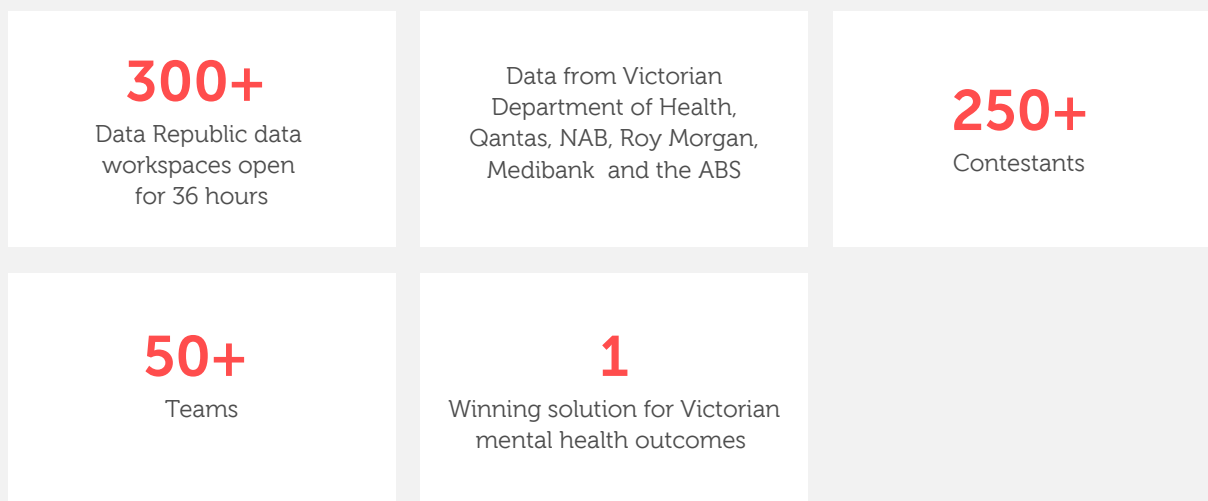
The second annual event saw over 250 contestants in 50 corporate and student teams analyse major private and public sector datasets on the Data Republic platform to develop and compete on data solutions aimed at developing positive outcomes in Victoria. Teams were given access to anonymised, aggregated datasets from the Victorian Department of Health, Qantas, NAB, Roy Morgan, Medibank and the ABS for analysis. Access to this range of data and the ability to combine and analyse it in such a manner was made possible through the secure data sharing infrastructure and ecosystem provided by Data Republic.

The Suncorp team were the winners of the datathon, presenting a solution to use advanced analytics to improve the targeting of mental health programs. The data analysis highlighted demographic groups at risk of mental health issues and the team developed a mobile app concept called 'MentalAid' to increase access to mental health support.

This new type of collaboration between corporates, government and universities, as well as the safe combination of public and private datasets represents a wholly new opportunity for Australia to tackle policy making through the mobilisation of our existing data assets.

What could be possible if this type of program were extended across all sectors and government departments?

Datathon highlights:

|		
300+ Data Republic data workspaces open for 36 hours	Data from Victorian Department of Health, Qantas, NAB, Roy Morgan, Medibank and the ABS	**250+** Contestants
50+ Teams	**1** Winning solution for Victorian mental health outcomes	

07. Development of a vibrant ecosystem of data product developers

Executing on the opportunities above will create enormous opportunity across every industry sector (and public sector portfolio) to develop new data and AI products and services. This capability will be capital-light, new economy skill-oriented. An effective strategy should provide for the training and development of the necessary talent and labour as well as industry development infrastructure that encourages new company formation and industry growth (such as innovation precincts, data sandboxes, data accelerators, public/private collaborations and hackathons etc). There should be strong alignment and linkages to state government innovation programmes, particularly around natural domains of advantage

08. Increase focus on "data for social good"
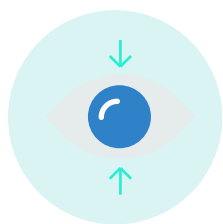
As an important counter-weight to the industry development and micro-economic reform focus of the data economy, it will be important to invest into capability, programmes and skills for the use of data to serve social reform, the not-for-profit sector and address government policy issues associated with citizen well-being. It is critical that emphasis is placed on the importance of data in solving material issues in our society for the greater good.

Case Study: Data for social good

The power of a collective approach

To better solve issues facing society, we need to deepen our understanding of what causes the problems, how they can be improved and who most needs help. Data can unlock this knowledge. However, not-for-profit groups and charities are often hindered by a lack access to the right data and data skills to tackle these social issues.

The Minerva Collective, a not-for-profit community, was launched in 2016 to help social impact organizations access and utilize data to help solve social problems. Data is exchanged and analysed using Data Republic's secure data exchange platform on a pro-bono basis. With the support of NGOs, private companies and university groups, The Minerva Collective is bringing data-driven insights to the not-for-profit sector.

The Minerva Collective increases the capacity of social impact organisations to utilise previously inaccessible data and solve issues facing society. They continue to drive social impact projects on Data Republic's platform to give corporates and their employees an opportunity to support not-for-profits through joint data initiatives.

The impact so far:

644 Members of The Minerva Collective community	**5** Corporate Partners donating resource time and data access
10 Charity & NFP partners	**8** Working groups launched since 2017

Find out more about The Minerva Collective

09. Capitalise on Export Opportunities

Effective execution of a national strategy to build a domestic data economy provides a strong platform to win material opportunities in the emerging global data economy.

a. **Aggressively support laying down of "global trade rails for data"** –Common technology infrastructure at the right level adopted across trading nations allows for application layer technologies to be exported effectively from one market to another, enabling trade in data to occur at the algorithmic level. at the algorithmic level.

b. **Focus on proving global trade in data with close, peer economies** – Targeted efforts to prove global trade in data with sophisticated economies that have similar status in terms of privacy/innovation settings could serve as a model for other, emerging economies. Here Singapore, New Zealand and the UK should be considered priority markets (although the UK has a competing strategy with Open Banking underway)

b. **Consider data infrastructure and social reform as "aid" opportunities for developing markets** - supporting developing markets (e.g. SE Asia) through the decision of critical data policy settings and enabling economic development and social reform through data capability could be an effective trade strategy with key partners.

10. Connection to AI
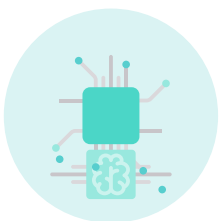
Create linkages from data economy policy, infrastructure and industry development to do the same for the AI Industry, ideally through a common statutory body and policy vehicle.

If a comprehensive data economy strategy is developed, supported by the creation of a dedicated statutory body and appropriate legislation, and economic development aligned between public and private sectors, domestically and internationally, then it is possible that within 10 years it could lead to:

• **Productivity gains and microeconomic reform** – material efficiency created within each sector of the economy, alongside greater public sector efficiency and greater personalisation as a macro outcome for consumers of services. Consumers will also end up with a greater level of trust in the digital economy (through transparency and control) and the digital economy will be more resilient (security).

• **Social Reform** – materially better outcomes can be sought in public policy areas, with data-driven initiatives (public and private sector data-sharing) demonstrating great potential to address a broad range of issues including childhood obesity, mental health, immunisation, domestic violence, holistic healthcare and commercial crime just to name a few.

• **Greater security** – a tokenised, decentralised approach to PI together with standards-based protocols around PI capture and utilisation could materially enhance the security of the overall economy, meaning the minimisation of harm from cybersecurity incidents in the majority of occasions.

• **Industry development** – foundational, modular capability lowers the cost, increases the access and lower the barriers to entry at the application layer of the data economy, which would lead to explosion of data application companies. It is foreseeable that given the breadth of opportunity across all sectors of the economy, that the data economy could be the most material sector within the startup ecosystem within 10 years, with > 2,000 new companies creating 20,000-40,000 new economy jobs.

• **Foundational basis for development of an AI industry** – Having the most progressive data economy allows Australia to capitalise on its strong position in AI research and underpins the ability for Australia to develop a world class AI ecosystem, where access to real world data for training of AI is a critical factor to success.

• **Export growth in technology** – The most valuable data in each economy is inherently local (transactional data from banking, retail, airline, telco etc). As a result, data economies are largely developing independently, with application layer growth across markets slow and cumbersome (requiring replication and localisation of legal, technical and data related capabilities). However, the emergence of common infrastructure across markets (as SWIFT provided for the banking industry) will enable much greater access and transferability of application layer data products across markets (where common data sources exist).

About the Author:

Danny Gilligan

Co-founder and Managing Partner, Reinventure Group, Co-founder, Data Republic

As both a serial entrepreneur and venture capitalist, Danny Gilligan is at the forefront of driving disruptive innovation in Australia's financial services sector. Through Reinventure Group, co-founded with Simon Cant in 2013, he is pioneering a new model of corporate venture capital. The $150 million fund is focused on backing proven entrepreneurs leading disruptive technology ventures whose growth can be accelerated through a strategic relationship with Westpac, the fund's lead investor. Gilligan is also co-founder of Data Republic, a trust platform for secure data exchange between companies that is seeking to lead the transition to a data driven economy, and a founding director of Stone & Chalk, an independent not-for-profit Fintech hub whose overarching objective is to help foster and accelerate the development of world-leading Fintech start-ups in Australia.

About Reinventure Group:

Reinventure is pioneering founder-first corporate venture capital. We champion founders who have the vision, ambition and hustle to transform an industry across Asia-Pacific and beyond, propelling them with the support of a top 20 bank globally.

With $150m to invest in FinTech and adjacent areas, we are uncovering, investing in and nurturing scalable early businesses that will be the future of the industry. We sit at the third horizon of growth, focused on creating options in future businesses through venture investment and a strategic relationship with our largest limited partner, Westpac Banking Corporation.

Over the last four years we have invested in 23 companies across Australia, New Zealand and the US, including Data Republic, Flare HR, Coinbase, Valiant Finance, Basiq, Indebted, Auror, Kasada and Hyper Anna.