

Promoting Public Deliberation in Low Trust Environments: Australian Use Cases

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Abstract. A vacuum of public trust in Australia has met with the maturation of technologically competent constituents. Changing sociopolitical attitudes and perceived government corruption and inefficiency have effected demands for accountability and transparency. Two responses are visible: the digitisation of government services and original models of digital democracy. This paper discusses the role distributed ledger technology plays in decentralised governance in Australia.

Keywords: Trust, blockchain, distributed ledger, technology, democracy, open data, government.

1 Introduction

'A sense of the future is behind all good politics. Unless we have it, we can give nothing - either wise, or decent to the world.' [4]

There are notable trends becoming visible to even the casual Australian observer: the widening of class structures, deepening mistrust in authority, the increasing penetration of more complex technology and living services that provide design solutions for operational or governance-related problems. The concurrent development of secure transmission architecture on accessible platforms creates a solutions environment that begins to address the primary obstacle to public engagement with authority and artefacts thus far: trust.

Increased voter cynicism, symptomatic of the politics of trust,¹ changing patterns of media consumption, the heightened exposure of political actors to public scrutiny and poor performance in economic policy, have eroded the capacity of elected representatives to govern. [20] [9] [3] In Australia, declining levels of trust are concomitant

¹ According to sociologist John Thompson, the electoral success of governments and political parties has become increasingly bound to the perceived credibility and integrity of their leaders. Within the politics of trust, campaigning on the moral failings of partisan opponents has become a strategic means of differentiating political parties in the absence of significant policy divergence based on class or ideology.

with the emergence of numerous electoral phenomena such as: poor civic engagement (particularly among young people)², declining political party membership³ and reduced satisfaction with representative democracy, government, major political parties and the performance of politicians [2] [10]. This trend is not unique to Australia, of course. Trust levels are falling internationally [18], [24], however, there have been significant evolutions and variations to traditional Australian democracy therefore. These include government reform agendas, policy developments that place community trust at the centre of implementation [11], the government commission of new communication technologies and blossoming entrepreneurial endeavours into new forms of democracy.

Somewhat geographically isolated, alternative models to the traditional representative democracy have only recently touched Australian shores. Liquid, participatory, deliberative, direct and crowdsourced democracy have been designed, tested and implemented in Europe for many years now –with varying degrees of success. However, liquid democracy is relatively new to Australia. Following in the footsteps of global open-source successes such as Democracy Earth,⁴ vTaiwan,⁵ (g0v),⁶ Pol.is,⁷

² A 2004 study commissioned by the Australian Electoral Commission has revealed that only one in four young people perceive politicians can be honest and fewer than half believe that politicians can be trusted to do what is right for the country [53].

³ As few as one percent of Australia's adult population are registered members of political parties, mirroring similar declines throughout European democracies [3].

⁴ Democracy Earth (<http://democracy.earth/#about>) is building an open source and decentralised democratic governance protocol called Sovereign backed by Y-Combinator. Their open source platform held a pilot during the Columbian referendum, allowing ex-patriots to vote when the government decided not to reopen voter registration during the referendum. Crucially, appealing to the importance of the liquid democracy model, Sovereign allowed voters to both delegate votes and vote separately on specific parts of the referendum. Instead of absolute approval or rejection, the majority of Columbians voted yes to the referendum, but no to allowing the guerrillas to participate politically. This option was a nuance that the vote, which rejected the peace deal, lacked [16].

⁵ vTaiwan (virtual Taiwan) is a direct consequence of the Sunflower student demonstration demanding the rejection of a Beijing trade deal, legislation permitting the monitoring of Chinese agreements and citizen conferences discussing constitutional amendment. They use Pol.is distribute social media adverts and broadcast a public meeting where scholars and officials respond to issues that emerged in the conversation. This is followed by an in-person stakeholder meeting co-facilitated by civil society and the government, and broadcast to remote participants for the Government to bind its action to consensus, or provide a detailed explanation of why those consensus points are not (yet) feasible.

⁶ G0v.tw (<http://g0v.tw/en-US/about.html>) is an online community that focuses on information transparency, freedom of speech and open data. They publish open-source code and develop information platforms and tools for citizens to participate in society. G0v 'rethinks the role that government plays in a digital native generation'. They believe transparency of information can help citizens better understand how government works to understand issues faster so they can hold government accountable and deepen the quality of democracy.

⁷ Pol.is (<https://pol.is>) is a mobile platform that uses AI and machine learning to build tools that offering transparency through decentralisation and insights.

Democracy OS,⁸ and D-Cent⁹ (who launched Finland's Open Ministry and Iceland's Better Reykjavik programme), Australia is beginning to host their own entrepreneurs, designing the future of liquid democracy.

2 The Future of Democracy

Futurists and technologists have been alert for changes to democracy since Alvin Toffler wrote in *Future Shock* (1970) that representative government was the political technology of the industrial era. It was Toffler's vision that the electorate would be sufficiently proactively informed of likely outcomes of prospective policy to be engaged in strategic decision-making. This future-oriented, participatory, approach to policy design could have such political impact as to 'be the salvation of representative politics - a system now in crisis' [21]. Toffler's editor, Clem Bezold, wrote in *Anticipatory Democracy* in 1978 that cyber democracy would be comprised of: cyber administration, cyber voting, cyber participation, cyber agenda-setting and cyber infrastructure. In drawing attention to Australia's emerging actors in participatory democracy, this paper will briefly discuss existing and evolving global platforms that enable the automated administration of executive function, the engagement of policy makers and crowdsourcing of legislation as well as cloud and distributed ledger digital voting platforms.

Australia began to see Toffler's vision realised in 2016. Not formally - in amendments to the traditional federal electoral format; the Australian Electoral Commission is bound by the regulations of the Electoral Act, 1918. Instead, alternative direct methods of voting are becoming known with rising numbers of minor parties such as Vote Flux¹⁰ and the Pirate Party (Australia)¹¹ as well as movements such as Online Direct Democracy (Senator Online, of old),¹² MiVote,¹³ The Fourth Group¹⁴ and or-

⁸ DemocracyOS (<http://democracyos.org/>) is an online space for deliberation and voting on political proposals, using software that aims to stimulate better arguments and come to better ruling through peer collaboration. It is a platform for a open and participatory government.

⁹ D-CENT (Decentralised Citizens ENGagement Technologies, <https://dcentproject.eu>) was a Europe-wide project joining citizen-led organisations that have transformed democracy in the past years, and helping them develop the next generation of open source, distributed, and privacy-aware tools for direct democracy and economic empowerment. The EU-funded project started in October 2013 and ended in May 2016. D-CENT tools inform and deliver real-time notifications about issues that matter, they propose and draft solutions and policy collaboratively; decide and vote on solutions and collective municipal budgeting; and finally implement and reward people with blockchain reward schemes. The tools can be combined in ways to support democratic processes.

¹⁰ www.voteflux.org

¹¹ The Pirate Party campaigns for a free society, civil liberty, and trust in the rule of law. They believe in the right to privacy and transparency in government and organisations. Pirate Party Australia was founded by Rodney Serkowski in 2008 and has grown from a small group of activists to a fledgling political party.

¹² Online Direct Democracy (<https://www.onlinedirectdemocracy.org/>) is a not-for-profit, entering candidates for the upcoming federal election. They claim to be Australia's first internet-based registered political party aiming to provide everyone listed on the electoral roll with a

ganisations such as Our Say.¹⁵ Advancements in technology have made it possible for these groups to cost-effectively overcome barriers to entry - each designing for trust proactively or iteratively, using such technology as the blockchain to overcome lows in public confidence and initiate participatory forms of democracy.

Current data by Edelman suggests that public confidence in government functioning and satisfaction with democracy is so low as to pose a challenge to the legitimacy of government [5]. Long perceived as perpetuating a culture of cronyism and corrupt behaviour, Australians have gradually invested less trust in their elected political representatives with only one in four Australians now believing politicians can be trusted [14]. The most recent report of the Australian Election Study indicated only 60% of Australians were satisfied with democracy and only 12% of the population believed the nation was governed with the interests of all Australians in mind [2].

A similar sentiment is represented in many Western democracies, where public confidence in political leadership and representative democracy has steadily eroded since the 1970s. Attributed to social, political, technological and economic factors associated with globalisation, contemporary neo-liberal political outcomes and the changing distribution of labour, a concurrent belief that the system is failing is raising individual and community fear, exciting the rise of populist parties and movements [5]. Existing political trust research has examined the execution of civic responsibility as a function of trust [23] and found that civic participation does affect trust in two pathways: ethical behaviours and service competence. Ethical behaviour is defined as operating when officials transcend self-interest or agency priorities to pursue public needs and service competence is defined as an ability to develop goods and services that achieve sustained public satisfaction. Findings in Wang and Van Wart's study suggest that the public trusts the administration more when demand and response for services is well met during the participation process, and the public perceives a high level of satisfaction with the services provided. This met need results in greater horizontal trust, driving participation in civic duty that results in greater vertical trust [23]. First, service must be delivered to the public's standards and ethically.

Results of Australian empirical studies [7] suggest the cause of democratic entropy in Australia is increasingly ascribed to the performance and behaviour of political officials and division between representative democracy and participatory democracy functions reinforcing a national culture of anti-politics. Findings by Evans *et al.* demonstrate that if politicians support participatory politics with the objective of reinforcing the function of representative democracy to ultimately develop a more integrated, inclusive and responsive democratic system, Australians may trust and engage

direct voice in parliament. Once elected, Online Direct Democracy MPs are bound by their agreement with the party to act on behalf of their constituents and all Australians.

¹⁵ www.mivote.com.au

¹⁴ www.thefourthgroup.org

¹⁵ Founded in Melbourne in 2010, Our Say is a collaborative platform that connects community leaders with members of the public. Designed to build trust and authenticity in public communication and decision making it has been used by high profile politicians such as Julia Gillard who describe the platform as "...modern democracy and modern technology at work" (<https://www.oursay.org>).

more with the process of democracy [7]. Accordingly, this paper discusses the use of nascent technologies, such as distributed ledger technology, and the potential impact on public trust in democracy through the case studies of MiVote and Vote Flux; two fledgling Australian direct democracy start-ups, operating on blockchain platforms.

3 The Potential Blockchain Offers Democracy

The blockchain underpins distributed ledger technology; the first use case for which was Bitcoin. It operates in a decentralised peer-to-peer network using cryptographic algorithms to verify, validate and distribute transactions across millions of nodes, enabling the secure, auditable, transmission of assets without intervention by central authority. I.e., the function of decentralised trust (or trust-by-computation) facilitates the automation of instructions (also known as smart contracts), which may obviate the role of third parties and reduce administration and management costs.

Since, theoretically, anything of value can be stored on the distributed ledger: contracts, certifications, music, art, identities, policies, bills and votes, for example, governments are beginning to invest in blockchain for improved efficiencies and performance in regulatory compliance, contract and identity management and civic services [12].

Concurrently, we see increasing numbers of use cases both designed with the intent to mediate distrust by instilling transparency into process and circumvent trust entirely by disintermediating the relationship between voter and representative (or consumer and supplier). Top-down applications include movements towards open government and the prevalence of open-data and the bottom-up use of blockchain technology to store and transmit data securely.

Notwithstanding policy makers' concessions to the public's call for transparency, the mechanics of government have remained largely unchanged since federation. Empirical studies have hitherto indicated poorly designed or implemented democratic innovations risk greater mistrust and the Australian government is acutely aware of, and commercially sensitive to, mistrust 'choking the use and value of Australia's data...' To that end, the government believes 'improving trust community-wide is a key objective'. [11] The Australian Government's report *Ahead of the Game—the 2010 blueprint for the reform of the Australian Public Service (APS)*—is cast in this light.

Pertinent to the argument in favour of blockchain technology's application to centralised services is the consensus algorithm that is fundamental to achieving trust. Unlike traditional human service-related transactions, such as depositing money, sending a parcel or achieving settlement on a property, where we trust an unknown person to conduct the transaction with integrity; a blockchain transaction does not require trust. An information sender does not need to trust the peer network; valid transactions are automatically verified (or rejected) on confirmation of the appropriate cryptographic code (proof-of-work) and further distributed throughout the network until the transaction has reached every node on the network. The proof-of-work algo-

rithm requires miners to resolve a time-consuming and complex mathematical puzzle for the network nodes to achieve consensus and deem the transaction reliable.

This consensus model of governance reduces the risk of fraud; enables the automated processing of smart contracts, creates economies and efficiencies and the open network instills trust in the transparency and auditability of ledgers. This shift from trusting people to trusting maths offers numerous opportunities for blockchain technology in low-trust environments.

For governments, distributed ledger technology is an ideal infrastructure for the digital storage or publication of central records and smart contracts permit the reliable administration of routine government functions. As part of the Delaware Blockchain Initiative, the Governor of the State of Delaware asked the state's Bar Association to consider clarifying Delaware corporate law to authorise, track and transfer shares on a distributed ledger. The first milestone on the Initiative's rollout plan has passed at the Delaware Public Archives; using smart contracts to automate compliance with laws regarding the retention and destruction of archival documents. The second milestone is to be completed in late 2017: smart Universal Commercial Code (UCC) filings. The current process is paper-based, slow and error-prone, UCC filings on a distributed ledger automate the release and renewal of UCC filings, reduce mistakes, fraud and cut cost.

In local civic functions blockchain technology could be applied to the democratic process to increase trust and engagement given the public perception of governments as "somewhat of an encumbrance – too slow, too corrupt, too lacking in innovation, and benefiting too few". [1] However, state and federal blockchain-based electoral voting is considered too novel for Australian application.

Further to a call for submissions into e-voting by the Victorian Parliament's Electoral Matters Committee in 2017, the committee decided in favour of electronic ballot paper scanning at the 2018 Victorian state election despite Australia Post's submission of a blockchain voting architecture. For, the committee were not satisfied that the interconnectivity between government and citizenry was foolproof; citing technology failures experienced during the Census website crash and Centrelink data hacking as a 'salutory lesson'.¹⁶ In addition to security, a significant contributor to the VEC's decision to preference electronic ballot paper scanning was cost. The cost per vote for the vVote electronic voting system at the 2014 Victorian state election was \$2,261.85 per vote (gross). Excluding capital implementation costs, the cost of a

¹⁶ The committee received 34 submissions from organisations including, but not limited to, Australia Post, Elections ACT, Electoral Commission Queensland, Electoral Council of Australia and New Zealand, Australian Electoral Commission, Tasmanian Electoral Commission, New South Wales (NSW) Premier and Cabinet, the Research School of Computer Science, the Australian National University and Computing and Information Systems department at the University of Melbourne. The committee were informed of the risks associated with e-voting in lower security and verifiability of the NSW iVote and Victorian vVote system compared to the scrutineering of paper ballots; the technology especially vulnerability to a 'man in the middle' attack. Accordingly, working with the Australian Electoral Commission (AEC) the committee recommended '...an Electronic Voting Board oversee scrutiny...' of the '...most rigorous security standards available...'. The committee were not, however, satisfied the interconnectivity between government and citizenry was foolproof [15].

vVote at the 2014 Victorian state election was \$396.46, the New South Wales iVote system cost approximately \$9.50 per vote, and around \$10.60 at the 2015 NSW state election [15]. In contrast, excluding capital costs, a blockchain vote costs approximately \$1.

At a grassroots level, there are multiple examples of community efforts in designing innovative models of democracy and democratic processes that have been tested in Scandinavia,¹⁷ Europe and the United States of America¹⁸ - on distributed ledger technology and cloud platforms. While some projects have failed to achieve social scale, governments have adopted some; Iceland's Your Priorities and Spain's Decide Madrid were the result of community collaboration following the 2008 global financial crisis. New models of democracy are not only the result of crisis, however, but declining trust in politicians and democratic institutions. A political donations crisis preceded the inception of the Estonian Citizens' Assembly, the work of the President and civil society organisations that ultimately proposed democratic reform.¹⁹ Innovation in Australian democracy could similarly be attributed. The following case studies offered in MiVote and Vote Flux are the consequence of dissatisfaction with political financing, perceived corruption and the influence national and international political donors have in the formation of public policy.

4 The Future of Australian Democracy

Toffler worried humans were racing blindly into the future without reflection or consultation. His vision for the future of democracy was inclusive; imagining that the public could more effectively steer legislation: "We need to, quite literally, go to the people with a question that is almost never asked of them: What kind of a world do you want ten, twenty or thirty years from now? We need to initiate, in short, a continuing plebiscite on the future...backed with technical staff to provide data on the social and economic costs of goals, the trade-offs so that participants may make reasonably informed choices among alternative futures...not merely expressed as vaguely expressed, disjointed hopes, but coherent statements of priorities for tomorrow" [21].

This vision is realised in our case studies, MiVote and Vote Flux, which use blockchain to invite consultation on the formulation of policy, and in the founding princi-

¹⁷ Direktdemokraterna is a Swedish party that uses cloud-based voting for referenda in a liquid democracy model. <https://direktdemokraterna.se/hur-ska-det-ga-till/>

¹⁸ Collaborative and co-design approaches have been applied to democratic decision-making on e-democracy platforms such as Germany's Adhocracy (<https://adhocracy.de/>), America's Challenge.gov (<https://www.challenge.gov/list>), Decide Madrid (<https://decide.madrid.es/?locale=en>), Estonia's Rahvaalgatus (<https://rahvaalgatus.ee/>), Iceland's Your Priorities (<https://yrpri.org/domain/3>). Some of these tools are gaining traction: Your Priorities has been used in Romania, the UK and Estonia. Decide Madrid is being used by municipal governments in Barcelona, A Coruña and Oviedo.

¹⁹ The Estonian Citizens' Assembly Process (2013) was the direct result of a legitimacy crisis involving Estonian political parties and representative institutions caused by illegal political financing. Government responded using democratic innovation: eliciting public support in crowdsourcing and deliberative mini-publics.

ples of Online Direct Democracy (ODD). All three Australian organisations are united in motivation: engendering the inclusive participation in non-partisan politics free of influence. Like Toffler, these organisations believe the constituency contains the inherent skills and wisdom necessary to make ethical and appropriate choices for the benefit of their community but they use technology to bridge the divide between the constituency and representatives. Their approaches are broadly similar: inform the public of tabled issues before parliament and the consequences of the bill, seek the opinion of the constituency and feed this information directly to Flux, MiVote or ODD parliamentary representative to vote in accordance with the majority opinion. There are fundamental differences, however.

Online Direct Democracy is a registered political party that crowdfunded and built PollyWeb as a secure voting platform on similar security principles as banking systems, with three-step authentication. Their platform enables Australians to discuss, rate and vote on bills and amendments as they are tabled in parliament. PollyWeb engages the public in political dialogue by undertaking research into tabled issues before parliament, providing relevant resources and then polling the public on their opinion regarding the issue. This opinion poll is then communicated to the ODD party representative to consider in their vote. ODD ran two candidates in the 2016 federal election and received 11,133 votes or 0.09% with the highest vote achieved in the state of Queensland with 0.23% of the total votes going to the party.²⁰

4.1 Flux

The classical definition of democracy is an idealised principle of government whereby the rule of society is derived from the popular will of the people [14]. Vote Flux was founded in 2015 and they operate a custom Issue Based Direct Democracy (IBDD) model founded on *Deutschian Fallibilism*, an evolution of Popperian Fallibilism and David Deutsch's book *The Beginning of Infinity*. IBDD preferences problem-solving over representing "the will of the people."²¹ Their policy position evolves as a consequence of a voting auction market where a neutral central liquidity token allows voters to move their political capital to issues of most immediate subjective importance. In forcing an opportunity cost to voter choice, IBDD interrupts 'tyranny of the majority' in the search for good policy,²² achieved by the trading of votes to subject matter experts.²³

²⁰ <https://www.onlinedirectdemocracy.org/>

²¹ <https://voteflux.org/2017/05/26/an-overview-of-flux-and-ibdd/>

²² <https://voteflux.org/2017/05/26/an-overview-of-flux-and-ibdd/>

²³ In practice, each Flux member receives one vote for each bill before parliament. This vote may be traded for a credit in the case of low interest issues or conserved for a later vote of greater interest. Additional liquidity tokens can be collected and distributed for issues voters consider of particular importance that are designed to be inflationary in value. Thus, a more contested piece of legislation will cost more to gain more votes; a less contested piece of legislation extra votes will cost less. In so doing, IBDD seeks to engage apathetic constituents that may otherwise waste their vote in the representative system, by providing a mechanism to trade their vote with someone more knowledgeable or energised by the outcome of the issue.

Vote Flux is a registered political party with 6269 members (as at 12/7/17 but are growing at an average growth rate of 30.4% per month) and branches in each state. They ran candidates in the 2017 Western Australian state elections, unsuccessfully. Co-founded by a software developer, the Flux application is designed on their SecureVote blockchain platform, which can support in excess of 1 million votes a minute, or 1.5 billion votes in 24 hours. Using a private audit log an independent third party can verify a personal identity against a blockchain identity but a patented two-step process of “oblivious shuffle” means no one else will be able to link the two. This ensures each vote comes from an anonymised registered voter [25].

4.2 MiVote

MiVote employs a model of destinal democracy - almost precisely as Toffler imagined in 1970 [21]: “...a continuing plebiscite on the future...”. With founding principles of neutrality, transparency, representation and equality, their approach is inclusive and participatory in nature. After rigorous research of a pertinent issue, four strategic directions are applied for the constituency to consider and vote on. Written accessibly, with basic, intermediate and advanced cascading levels of information, the research serves to inform the public of the facts and impact of the issue and asks them how they would prefer their representatives vote on their behalf.²⁴

MiVote is a movement with 2765 members - it is not yet a registered political party. Currently, their blockchain voting platform consults the membership base gathering data points regarding sentiment. Their intent is not to run in state elections but to propose candidates for the next federal election, using the platform as a direct communication between the voter and their MiVote representative. The objective is to direct parliamentary action in favour of the majority opinion.

5 Limitations: Why Change Will Be Slow

The relationship between citizen and state hereafter may be shaped by the influence of emerging technology but this will not be strictly limited to the blockchain. Advancements in distributed ledger technology and machine learning will disintermediate processes on ever more grand scales at the grassroots level, growth in the use of cloud-based platforms are encouraging collaboration and internal hacking of government processes indicate democracy in Australia is changing - distributed ledger technology is only one indicator of which.

²⁴ This might be represented, for example, as reform made to the Political Donations Bill, framed as: increased public funding, removal of public funding, donations made to candidates or no change to the bill at all - maintenance of the status quo. MiVote’s ranking system, similar to the Single Transferable Vote, means constituents vote for what is most acceptable. Their consent-based decision making approach is reinforced by intermittent polling of the constituents, enquiring of issues most important to them; this forms part of the research agenda.

Sociopolitical behaviour in Australia indicates favourable responses to participatory platforms. Evans, Halupka and Stoker found in their 2016 study that investments made into projects that would enhance trust in the political system and elected representatives would be well received. Their primary finding included justification for a national democratic audit to answer three questions: how do Australians imagine their ideal democracy? What do they expect from politicians within it? How is the present system failing? [7].

The increasing number of social organisations in Australia that provide tools and strategies to increase citizen engagement, political participation and trust is testament to this. There are at least twenty-five organisations undertaking deliberative decision-making or process design making deep strides into reforming public engagement at a community and structural level [8].

Accordingly, we find two trends that will influence the expression of Australian democracy that mirror European precedent: the integration of open-source participatory platforms by government agencies that promote transparency and encourage public trust and the exponential growth of secure, decentralised platforms that attract early adopters to digital democracy. The following reasons indicate why blockchain technology is unlikely to be a feature of government's participatory platforms:

- **Blockchain is slow:** continued development in open-source distributed platforms such as Ethereum, Omni Layer,²⁵ the lightning network,²⁶ and Hyperledger²⁷ already suggest the imminent faster processing of data and more scalable databases. Increasing numbers of interoperability protocols and off-chain transactions will also eventually obviate performance concerns. For, the fundamental limitation to faster adoption is directly tied to the primary benefit of blockchain technology: the trade-off made between security and speed. The process of data mining means that blockchain cannot deliver speed and security simultaneously without compromising on the number of nodes on the network. Vote Flux may have their permissioned blockchain network finalised in time for the next federal election, which would advance the processing of votes from 1-3 per second to millions per minute, but this may cause public criticism with regards security.
- **Distributed ledger technology is new:** until rigorous testing of a novel technology has proved consistently reliable by international governments it is improbable we will see the adoption of distributed ledger technology for large-scale government functions in the short-term. This means the proving ground for liquid democracy models in Australia is the start-up enterprise and minor political parties.
- **Scale:** the novelty of the technology means there is currently limited available empirical data and academic studies in wide-ranging implementation and achieving social change; this titrates investment which impacts product awareness and viability. As demonstrated in Europe and with changing funding approaches by Flux, MiVote and ODD, it is famously difficult to achieve social scale within resource

²⁵ <http://www.omnilayer.org/>

²⁶ The Lightning Network: <https://lightning.network/>

²⁷ <https://www.hyperledger.org/>

allocation for civic technology organisations. Unless organisations are inclined to partner and share resources there are risks of reduced impact and public weariness.

- ***The matter of the digital divide:*** creators of blockchain-enabled democracy platforms are regularly asked about accessibility. If representative democracy is progressively becoming elitist how does introducing novel technology designed on premium platforms reduce this? Social research into political participation identifies that the deeper the vein of socio-economic inequality and more prevalent the social complaints, the more people participate in the political process [2]. To encourage participation and social cohesion, platforms need to be considered as accessible as possible or we compromise political equality and fracturing democracy into a greater number of off-shoots.

6 Conclusion

Society's most historic structures are undergoing challenge by the equalising, unrelenting forces of technology and globalisation. This paper described the two primary responses by governments and entrepreneurs: the publication of open data to increase transparency and public trust and the use of blockchain technology to disintermediate the mistrusted process.

Using Alvin Toffler's prescient vision of an inclusive, consultative society utilising a participatory democracy model, we briefly discussed three Australian organisations realising this vision. Two of which are using distributed ledger technology to defend against the primary criticism e-voting has endured so far: security. While the Australian government is reticent to apply untested technology to federal functions it is researching the implications of blockchain, as are nine in ten governments [12].

Per Evans, Halupka & Stoker's findings [7], supported by politicians, a combination of cloud-based and decentralised technologies that support the public in engaging with participatory decision-making may ultimately enable society to reorganise around principles of horizontal trust, enhancing social capital and decreasing class stratification; but this is a long-term view. What is clear from the research is that technology is not a panacea for increasing public engagement or trust. A multi-faceted response is required that engages with community action groups, technologists, civil technology firms and industry to design bespoke engagement mechanisms until more direct alternatives are deemed suitable.

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