Active Cyber Defence Alliance

2023-2030 Cyber Security Strategy Horizon 2 Consultation

Active Cyber Defence Alliance (ACDA) Submission

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Authors and Contributors

1 Executive Summary

At the Active Cyber Defence Alliance, we welcome the opportunity to contribute to the continued expansion of the 2023-2030 Cyber Security Strategy through this Horizon 2 process. We recognise the strategy covers a vast array of cyber security topics, but we wish to clearly focus this response on the use of active defence measures to help secure the Australian cyber security eco-system.

The Active Cyber Defence Alliance Inc is a think tank whose aim is to foster awareness, adoption and capability in Active Cyber Defence practices across Australia with the goal of lifting Australia's cyber resilience. Our intention is to draw together professionals from both the supply and demand side along with academic, legal and regulatory stakeholders who will jointly act to support active cyber defence initiatives and to influence policy and practices for the benefit of our community rather than the explicit interests of their organisation.

The definition of "Active Cyber Defence" (ACD) that we use is:

> *a cyber defence approach that employs cyber intelligence, deception, active threat hunting and lawful countermeasures to expose, elicit and disrupt malicious actors before they impact data and operational capability.*

An active approach to cyber security is one that complements the current static defences which incorporate security practices such as network hygiene, firewalls, malware filters, identity & access controls, good user behaviour etc. ACD can also provide personalised pre-emptive intelligence to inform effective static defences. ACD is an intelligence discipline and should not be thought of as a toolset to be implemented in a technical platform.

ACD also explicitly excludes "offensive" cyber actions, i.e., "hacking back", which is the sole domain of authorised government agencies (although it can include mechanisms to incorporate and coordinate responses of such agencies by private sector actors).

Our research highlights legal ambiguities and questionable legal definitions which obstruct active cyber defence. Experienced practitioners know that tools such as honeypots and trackers provide a decisive advantage to defenders: taking away the initiative from, and increasing risk and expense for, cyber-attackers. Unfortunately, practitioners are often blocked from using these tools due to uncertainty on the legal boundaries of these practices.

In this submission we provide several recommendations on policy initiatives, communication improvements, and law reform to empower more robust defence against threats to the Australian cyber security eco-system. Putting the spines back on the echidna, if you like.

We look forward to working with government agencies in providing legal and cyber security expertise on this topic.

2 Embed

This section is to provide some context for our submission and lays the groundwork for the strategy to support organisations by being able to gather tactical intelligence through legal active defence measures. It addresses Shields 1, 2 and 5 in the Discussion Paper.

Cybersecurity threats are becoming more sophisticated and frequent, making cybersecurity awareness more important than ever for organisations as they build their operational maturity. However, one of the critical limitations in relation to awareness of active cyber defence is a lack of Governmental leadership in providing messaging (and from there, a policy framework) regarding the responsible and ethical use of ACD tactics, techniques and procedures (TTPs). Australia lacks a concise policy position on ACD and has missed several opportunities to do so, including successive defence White Papers[1] as well as the recent *2023–2030 Cyber Security Strategy*[2] and *Cyber Security Act 2024* (Cth).[3]

The Horizon 2 Discussion Paper and associated consultation offers the Australian Government the opportunity to correct this clear and overwhelming deficiency by providing clear and consistent messaging across government – but particularly from the Department of Home Affairs (Home Affairs) and the Australian Cyber Security Centre (ACSC) – on the legal and ethical boundaries of ACD.

It is important to remember that the literature identifies a distinct difference between acts which identify and/or expose a cyber-attacker (i.e., ACD) from all other forms of cyber defence that are necessarily 'passive', i.e., firewalls, antivirus software, network resilience, cyber hygiene.[4] The ACSC makes this clear in their definition:[5]

> *The principle of proactively implementing a spectrum of security measures to strengthen a network or system to make it more robust against attack. Active defence is separate from offensive cyber operations, as well as passive defence or network hardening.*

In the absence of a fully articulated governmental position, numerous actors in the private sphere have attempted to delineate ACD as involving 'offer[ing] a diversion tactic that makes the cyber-

[1] *Ball, D and Waters, G (2013), 'Cyber defence and warfare', Security Challenges, 9(2), 91-98.*

[2] *Department of Home Affairs (2023), 2023–2030 Australian Cyber Security Strategy, available at: https://www.homeaffairs.gov.au/cyber-security-subsite/files/2023-cyber-security-strategy.pdf*

[3] *Consisting of the Intelligence Services and Other Legislation Amendment (Cyber Security) Act 2024 (Cth) and Security of Critical Infrastructure and Other Legislation Amendment (Enhanced Response and Prevention) Act 2024 (Cth), which received Assent on 29 November 2024.*

[4] *Curry, J (2012), 'Active defence', ITNOW, 54(4), 26–27, https://doi.org/10.1093/itnow/bws103; McGee, S, Sabett, RV and Shah, A (2013), 'Adequate attribution: A framework for developing a national policy for private sector use of active defense', Journal of Business & Technology Law, 8(1), 206; Dewar, RS (2014), 'The triptych of cyber security: A classification of active cyber defence', in Brangetto, P, Maybaum, M and Stinissen, J (Eds.), Proceedings of the 2014 6th international conference on cyber conflict, Tallinn, CCDCOE, 7-21; Creado, Y and Ramteke, V 2020, 'Active cyber defence strategies and techniques for banks and financial institutions', Journal of Financial Crime, 27(3), 771-780.*

[5] *ACSC (2025) Active cyber defence, available at: https://www.cyber.gov.au/glossary/active-defence*

criminal think they're on to something of value'[6] or alternately 'the use of countermeasures by businesses and corporations to identify, slow down or hinder hackers in executing cyber-attacks and malicious cyber activities'.[7] Others in industry have constructed positions which attempt to align ACD either with existing Australian law,[8] or with industry guidance produced or provided by the government.[9] There remains no formalised public position on the activities of ACD, other than those undertaken under the imprimatur of its intelligence services.[10]

> *Recommendation 1* Home Affairs should, under the ambit of its *2023–2030 Cyber Security Strategy* and specifically Horizon 2, engage in the development of a Policy Consultation or White Paper on the implications of ACD for Australian businesses and government partners.

Once the Australian Government is clear on what its policy priorities are in relation to ACD, it can then consider what messages it can formulate and promulgate to cybersecurity practitioners, businesses and industry, and wider public. Australia could in essence become a global first mover in establishing an ACD policy framework, covering the following non-exhaustive list of ACD tools:

- Tracers: Cookies or similar programs attached to genuine trading information, which periodically transmit back to the incident response team network transmission and movement information, including IP addresses and/or physical locations of potential attackers' systems or networks, if the data are exfiltrated from the host system.[11]
- Honey objects, honey tokens, honeywords and honey encryption: Falsified files, databases and user credentials which appear genuine to an external actor but alert the incident response team when accessed. As the files and/or credentials themselves are falsified, there is no genuine need for those files to be accessed.[12]
- Honeypot: A broader term referring to an entire system (e.g. a web server) or system resource (e.g. a network) that is designed to be attractive to potential intruders, which is configured to alert when an attempt is made to access it. Typically, these are deployed within the boundaries of an organisation.[13]

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[6] *Powell, J and Dolan, A (2021), Active cyber defence tips the scales back in favour of the enterprise, available at: https://purple.telstra.com.au/insights/thought-leadership/active-cyber-defence-tips.*

[7] *Walker-Munro, B and Dov Bachmann, S-D (2024), When cyber defence involves attack: Issues for Australia, available at: https://www.lowyinstitute.org/the-interpreter/when-cyber-defence-involves-attack-issues-australia*

[8] *Shackelford, SJ, Charoen, D, Waite, T and Zhang, N (2019), 'Rethinking active defense: Comparative analysis of proactive cybersecurity policymaking', University of Pennsylvania Journal of International Law, 41(2), 377-428.*

[9] *Powell, J (2021), Deception in the Essential Eight, available at: https://acda.group/articles/*

[10] *Hanson, F and Uren, T (2018), Australia's offensive cyber capability, available at: https://www.aspi.org.au/report/australias-offensive-cyber-capability*

[11] *Zhang, L and Thing, VL (2021), 'Three decades of deception techniques in active cyber defense: Retrospect and outlook', Computers & Security 106, 102288-102307.*

[12] *Juels, A and Rivest, RL (2013), 'Honeywords: Making password-cracking detectable', Proceedings of the 2013 ACM SIGSAC conference on computer & communications security; Juels, A and Ristenpart, T (2014), 'Honey encryption: Security beyond the brute-force bound', Annual international conference on the theory and applications of cryptographic techniques.*

[13] *Han, X, Kheir, N and Balzarotti, D (2018), 'Deception techniques in computer security: A research perspective', ACM Computing Surveys (CSUR), 51(4), 1-36.*

- Deception networks/systems/operations: While nominally aligned with honey resources, deception activities generally rely upon the creation and maintenance of false (but realistic) networks and system resources intended to permit real-time monitoring of cyber-attackers. Given there is no legitimate need for users to be in a deception network, generally any activity in such locations will be unauthorised.[14]

The importance of clear policy messaging cannot be underestimated. Make no mistake – ACD is a flourishing global industry, with numerous offerings from companies like Penten, Fortinet, Zscaler, and SentinelOne.[15] However, some of these offerings may push beyond Australian law as it stands, where private entities seek to gather information from entities beyond the geographical boundaries of their own computer networks.[16] There needs to be drawn a clear line in the sand as to what the private sector can do in accordance with these emerging technological offerings, and beyond that point some form of authority (such as a court order, or involvement of a government agency) is required to take action that is further along the active defence spectrum.

> *Recommendation 2* Home Affairs should, in collaboration with the ACSC, identify and circulate consistent messaging about the benefits and risks inherent in conducting ACD activities.

This messaging in turn, needs to reflect the notion that ACD is about information-gathering and intelligence development, not "attacking" or "retaliating" against a cyber-attack. For this purpose, the ACDA has developed a "Holistic Cyber Threat Intelligence" model that fully represents the lifecycle of information-gathering and intelligence development contemplated in ACD.

[14] *Bushby, A (2019), 'How deception can change cyber security defences', Computer Fraud & Security, 2019(1), 12-14; Steingartner, W, Galinec, D and Kozina, A (2021), 'Threat defense: Cyber deception approach and education for resilience in hybrid threats model', Symmetry, 13(4), 597-622.*

[15] *Fortinet (2024), What is Active Defense?, available at: https://www.fortinet.com/resources/cyberglossary/active-defense; Ghashah, L (2024) Cyber Deception And Active Defence: The Future of Australian Cyber Security, available at: https://www.spartanssec.com/post/cyber-deception-and-active-defence*

[16] *Broeders, D (2021), 'Private active cyber defense and (international) cyber security: Pushing the line?', Journal of Cybersecurity, 7(1), tyab010.*

Figure 1 Holistic Cyber Threat Intelligence.

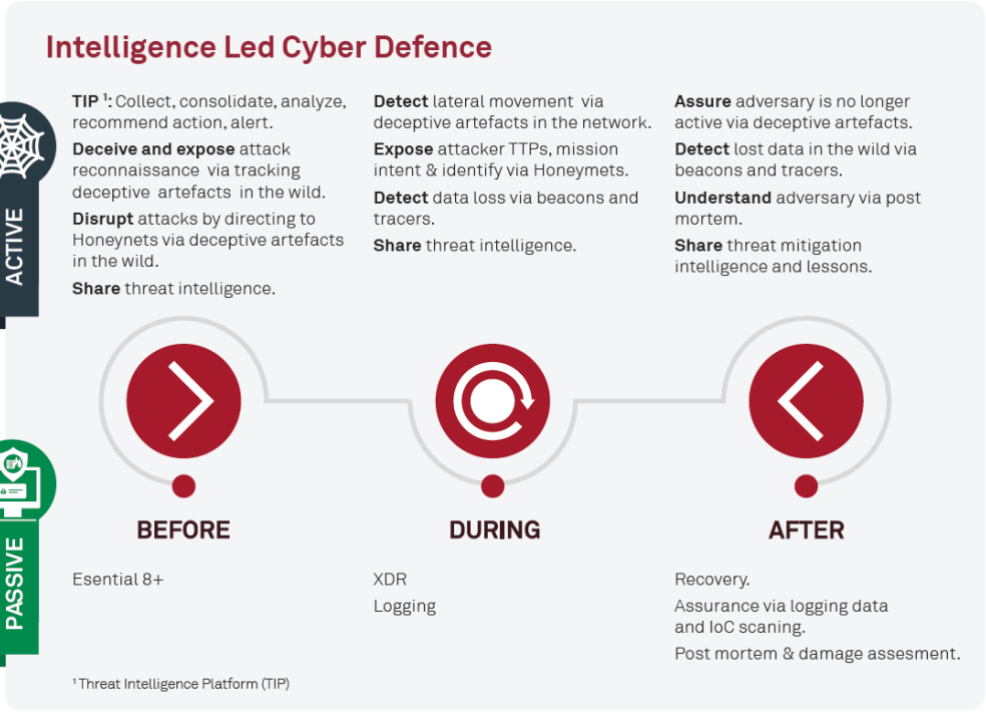


Figure 1 clearly demonstrates that ACD is an information-gathering and intelligence development activity that seeks to:

- Deceive a cyber-attacker as to the true size, scale and nature of a network, and/or the type, position, content or access controls of relevant assets within that network.
- Detect a cyber-attacker during reconnaissance or "step-up" activities, during which an attacker is seeking vulnerabilities or attempting to establish a foothold in the network.
- Delay a cyber-attacker from accessing important, critical or vulnerable data assets on a network whilst other forms of cybersecurity – including law enforcement or government assistance – can be deployed in support.

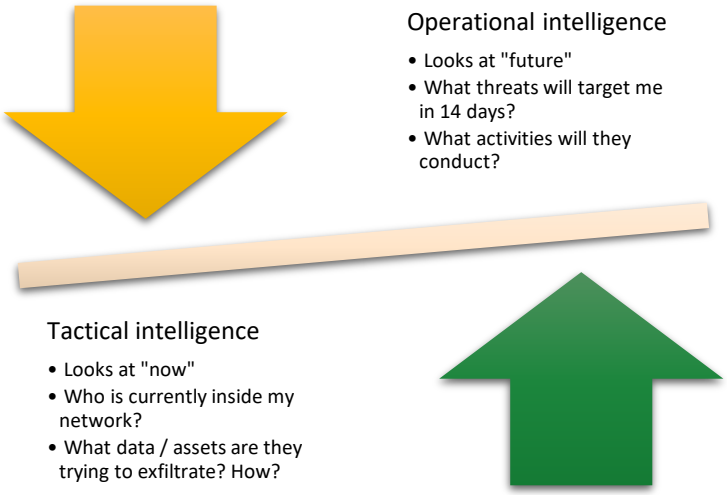
Information gathered by ACD activities can then be either shared with other private sector actors as to the TTPs of cyber-attackers, and/or provided to Australia's law enforcement and intelligence agencies to support the disruption or prosecution of cyber-criminals. However, this level of information-gathering and intelligence development cannot proceed in a vacuum – it requires governmental leadership in consulting on and developing cornerstone ACD policy.

> *Recommendation 3* Home Affairs should, in collaboration with the Critical Infrastructure Security Centre and establish within the Cyber Policy & Programs Division (operating under the Head of National Security), develop a policy paper that fully articulates the Commonwealth government's position on private sector ACD.

Finally, the intelligence products derived from ACD need to be discussed with a common language. Common delineations around notions of "strategic" intelligence can be difficult to square with

cybersecurity practitioners, whose focus is often very much on the here and now.[17] If these professionals are going to reduce the impact of our current threat landscape, defenders have an urgent need for intelligence in the days and weeks before an attack enabling them to neutralise the attack before it happens.

Figure 2 Differences between operational and tactical cyber intelligence.



As a result, the ACDA has previously published a discussion paper (Figure 2) on threat intelligence sharing, in which it separates "operational" intelligence from "tactical" intelligence on the basis of whether the focus is on current or future threats, is in response to an existing incident (or merely a hypothetical one), and the types of actors and the TTPs they may utilise in relation to any such attacks.

As part of the Horizon 2 consultation, the Australian Government should clearly acknowledge the differences and delineations of these different types of intelligence in adopting the messaging around legal and ethical use of ACD in protection of Australian businesses.

> *Recommendation 4* Home Affairs should determine, in any Policy Consultation or White Paper, the key differences between operational and tactical intelligence products, the necessary information required to develop or inform each, and how (and with who) they can be shared.

3 Empower

This section forms the basis for the problem we are suggesting a fix for. It will draw on our recent research and make the argument for legislative change.

As a signatory to the Commonwealth Cyber Declaration at the Commonwealth Heads of Government Meeting in London in 2018, Australia committed to establishing common standards,

[17] *Jebril, I, Almaslmani, R, Jarah, B, Mugableh, M, & Zaqeeba, N (2023), 'The impact of strategic intelligence and asset management on enhancing competitive advantage: The mediating role of cybersecurity', Uncertain Supply Chain Management, 11(3), 1041-1046.*

harmonised legal approaches and improved interoperability including 'through the use of Commonwealth model laws'.[18] Unfortunately, despite signing the Declaration in 2018 Australia still has no Commonwealth model law that adequately addresses ACD.

The legal problems associated with ACD can be grouped into three major themes:

- Employing certain ACD techniques may be viewed as an unacceptable act or aggressive intrusion by foreign nations, where those ACD techniques result in information-gathering involving a foreign computer network.
- Australia's criminal law environment does not exempt or immunise actions taken to legitimately protect business or industrial data from penal sanctions designed to criminalise hacking.
- The legal doctrine of "self-defence" does not apply to the protection of property in the cyber domain.

At the level of international law, it can be observed that proper attribution of a cyber-attack can take months or even years.[19] Further, attribution is largely a political or foreign policy decision made by government and not private actors.[20] There is also the risk that an ACD response by a private sector actor might result in an intrusion of a foreign computer network which may invoke that foreign nation to respond in kind.[21] This is especially the case if the foreign nation is likely to, or even keen to, take offence to such an intrusion.[22] As the Global Commission on the Stability of Cyberspace warned '[s]ome states do not control or may actively ignore these practices… However, in many states such practices would be unlawful, if not criminalized, while in other states they appear to be neither prohibited nor explicitly authorized'.[23] Anecdotally, some of the reluctance in Australian policy and governmental circles appears to have arisen because of the potential for escalation to a kinetic conflict.

> *Recommendation 5* The Department of Foreign Affairs and Trade should consider whether it would be worthwhile pursuing an international legal instrument that articulates cyber attribution in a way that respects Australia's foreign policy interests.

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[18] *Commonwealth (2018), Commonwealth Cyber Declaration, available at: https://thecommonwealth.org/commonwealth-cyber-declaration-2018*

[19] *Berghel, H (2017), 'On the problem of (cyber) attribution', Computer, 50(3), 84-89; Tran, D (2018), 'The law of attribution: Rules for attribution the source of a cyber-attack', Yale Journal of Law & Technology, 20, 376-441.*

[20] *Rid, T and Buchanan, B (2015), 'Attributing cyber attacks', Journal of Strategic Studies, 38(1–2), 4–37; Wanner, B and Ghernaouti, S (2019), 'Conceptualizing active cyber defence in cyber operations', St Antony's International Law Review, 15(1), 58-82.*

[21] *Waxman, MC (2011), 'Cyber-attacks and the use of force: Back to the future of article 2(4)', Yale Journal of International Law, 36, 421-460; Halberstam, M (2013), 'Hacking back: Re-evaluating the legality of retaliatory cyberattacks', George Washington International Law Review, 46(1), 199-238; Corn, G and Jensen, E (2018), 'The use of force and cyber countermeasures', Temple International & Comparative Law Journal, 32(2), 127-134; Gallagher, H (2022), 'Recognising a right to hack back: Tom and Jerry in cyberspace?', Trinity College Law Review, 25, 56-82.*

[22] *Broeders (n X) 3.*

[23] *Global Commission on the Stability of Cyberspace (2019), Advancing cyberstability, p. 45, available at: https://cyberstability.org/assets/images/report/GCSC-Advancing-Cyberstability.pdf*

Under Australian criminal law, access to any computer system or network that is unauthorised (even one engaging in *prima facie* hostile activity) will be considered unlawful.[24] These provisions include:

- *Criminal Code* (Cth) section 477.3(1): where a person causes any unauthorised 'impairment' of communication to or from a computer, and that impairment is unauthorised.
- Criminal Code (Cth) section 478.1(1): unauthorised access to, or modification of, restricted data, where such data are restricted by an access control system.

The use of tracers, deception networks or honey objects could conceivably cause modification in an attacker's data which impairs their ability to access the network; after all, one of the purposes of ACD is to preclude the attacker from ongoing access to corporate information. The other section of the *Criminal Code* could apply if a private corporation employing ACD were to gain intelligence about a cyber-attacker behind a firewall or password-protected file. Without an immunity (which government agencies enjoy), private corporations could face the very real prospect of criminal charges and conviction.

> *Recommendation 6* The Australian Government should consider amending the *Criminal Code* (Cth) to provide a defence to computer-based offences for private sector actors who, acting appropriately and in good faith, inadvertently commit a computer-related criminal offence in the protection of their lawful rights or property (or the lawful rights or property that it is their responsibility to defend, i.e., as a condition of their employment as a cybersecurity practitioner).

In this same vein, the legal doctrine of "self-defence" permits a person to use force against an attacker 'provided it was necessary to defend one's own interests.[25] Yet there can be legal challenges to this doctrine in the cyber realm. In some cases, 'data' or 'information' are not recognised as a tangible form of "property".[26] For example, computer data and information are not defined as 'property' under either the *Criminal Code* (Cth) or the *Corporations Act 2001* (Cth) and so cannot be subject to the doctrine of self-defence. Whilst it might be possible for a person accused of a computer offence to claim other types of defences – such as 'state of emergency',[27]

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[24] *Walker-Munro, B, Mount, D and Ioannou, R (2022), 'The hacker strikes back: Examining the lawfulness of "offensive cyber" under the laws of Australia', Computers & Law, 94, 5.*

[25] *Stevens, S (2020), 'A framework for ethical cyber-defence for companies', in Christen, M, Gordijn, B and Loi, M (Eds.), The ethics of cybersecurity, Springer, Cham, 317-330, 320.*

[26] *Rosenzweig, P (2014), 'International law and private actor active cyber defensive measures'. Stanford Journal of International Law, 50(1), 103-118; Hoffman, W and Nyikos, S (2018), Governing private sector self-help in cyberspace: Analogies from the physical world, available at: https://carnegieendowment.org/research/2018/12/governing-private-sector-self-help-in-cyberspace-analogies-from-the-physical-world.*

[27] *Asking "what would a reasonable man in the position of the accused have considered that he had any alternative to doing what he did to avoid the peril?": R v Loughnan [1981] VR 443. See also 'sudden or extraordinary emergency' in the Criminal Code (Cth) s 10.3 and Ackerman, B (2003), 'The emergency constitution', Yale Law Journal, 113(5), 1029-1092; Jakab, A 2006, 'German constitutional law and doctrine on state of emergency: Paradigms and dilemmas of a traditional (continental) discourse', German Law Journal, 7(5), 453-477; Crusto, MF (2015), 'State of emergency: An emergency constitution revisited', Loyola Law Review, 61(3), 471-524.*

'necessity',[28] or 'provocation'[29] – the lack of legal clarity is a massive limitation to the proper and accountable use of ACD TTPs in Australia.

> *Recommendation 7* The Australian Government should consider amending the *Criminal Code* (Cth) or the *Corporations Act 2001* (Cth) to explicitly include computer data, information or assets as 'property', thereby allowing the doctrine of self-defence to apply to potential criminal offences that might arise in the conduct of ACD.

There are other elements of Australia's law that also require clarification in the context of ACD. For example, the collection of information about a potential or actual cyber-attacker may reveal the attacker/s name/s, physical address/es or IP address/es. Because this information 'could reasonably lead to identifying a person', it must be treated as 'personal information' under the *Privacy Act 1988* (Cth), and private sector entities may be prohibited from collection, use or disclosure of that information unless the person to whom that information relates gives free and informed consent.[30]

Commercial and consumer protection laws may also apply to ACD. This is because "deception" is a key plan in many ACD strategies and involves the creation of various digital items and assets that may display one type of digital appearance or characteristics (i.e., a file containing revenue information), but that actually conceals a secondary appearance or characteristics (i.e., a tracker or beacon). A private sector actor which, while otherwise providing its goods or services as an entity 'in trade or commerce', deploys a deception network or honey objects, may fall foul of those misleading conduct provisions.[31]

> *Recommendation 8* The Australian Government should consider requesting the Australian Law Reform Commission conduct an inquiry into the legal issues that may arise in the conduct of ACD, with a view to recommending reforms of Australia's legal frameworks to better permit, sanction and regulate ACD in the protection of Australian cybersecurity.

Lastly, the Government may – subject to its position on ACD more broadly – wish to consider whether ACD could be incentivised across Australian society through a range of measures. The first would involve the offering of ACD in particular to small to medium enterprises (SMEs) through the provision of targeted tax relief or incentives for ACD implementation initiatives. These organisations and entities are the most likely to be targeted by cybercriminals and the most pressed to recover from a cyber-attack, resulting in the best "bang for buck" from ACD deployment.

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[28] *Where 'he or she carries out the conduct constituting the offence in response to an emergency which forced him to ward off immediately an immediate peril against himself or his property or against another person or his property': Al Qudat, MM (2009), 'Corporate criminal liability under the criminal laws of Jordan and Australia: A comparative analysis', Journal Sharia and Law, 37(8), 27-88. See also 'duress' in the Criminal Code (Cth) s 10.2.*

[29] *Generally only recognised in murder cases, this requires that 'the accused [acted] during a sudden loss of self-control caused by provocation which was enough to make a reasonable man do as he did': Ashworth, AJ (2009), 'The doctrine of provocation', Cambridge Law Journal, 35(2), 292-320.*

[30] *Miraglia, A and Casenove, M (2016), 'Fight fire with fire: The ultimate active defence', Information & Computer Security, 24(3), 288-296. Note that in the United States, the Supreme Court has ruled that a person does not have a right to privacy when engaging in illegal activities, like hacking into a network or system: Simonato, M, (2014), 'Defence rights and the use of information technology in criminal procedure', Revue Internationale de Droit Penal, 85(1), 261-310.*

[31] *Competition and Consumer Act 2010 (Cth), sch 1, s 18. See also van Wyk, W (2015), 'Deception by omission: A warning about lawyers' duty to the court', Bulletin (Law Society of South Australia), 37(5), 37.*

The Government may also wish to consider offering specific grant funding for university or industry actors to develop or deploy new technologies in ACD like deception platforms, threat hunting tools, and automated response systems, that meet the Government's stringent security and privacy guidelines.

Thirdly, incentives for training programs in ACD-specific skillsets will be required. ACD is – whether the Government forms a policy position on it – an emerging and established line of offerings in private sector cybersecurity. Therefore, it only makes logical sense to drive workforce upskilling in the identification, deployment and delivery of ACD TTPs more generally as part of a stronger, more accomplished, and more resilient cyber workforce. This work could be undertaken in conjunction with leading universities (i.e., UNSW, RMIT) or TAFEs and be supported by a range of qualifications that recognise ACD as an important tool in the cybersecurity arsenal.

> *Recommendation 9* The Australian Government should consider incentivising ACD across industry, academia and society, by offering:
>
> 1. Targeted tax relief or incentives for ACD implementation initiatives.
> 2. Grant funding for development or deployment of new technologies in ACD.
> 3. Increased funding for universities and TAFEs to deliver ACD training to cybersecurity students and professionals.

4 Enhance

This section is taking the opportunity to dig a bit deeper regarding government agencies getting involved in a breach and using the network and system that have been compromised to engage the adversary.

Enhancing cybersecurity from the perspective of ACD will require that the Government also articulate how the "governmental interventions" provisions in the *Security of Critical Infrastructure Act 2018* (Cth) (SOCI Act) will operate in a practical sense in the context of ACD. For example, the SOCI Act permits the Minister – in response to a 'serious incident', i.e., 'that has had, is having, or is likely to have, one or more relevant impacts on one or more critical infrastructure assets'[32] – to authorise the Secretary to:

- Give an 'information-gathering direction' for an entity to supply 'information that may assist with determining whether a power under this Act should be exercised in relation to the incident and the asset' to the Secretary.[33]
- Give an 'action direction' for an entity that 'directs the entity to do, or refrain from doing, a specified act or thing within the period specified in the direction'.[34]

[32] *SOCI Act ss 35AA and 35AB(2).*

[33] *Ibid s 35K(2).*

[34] *Ibid ss 35AQ(1) and 35AR(1)-(4).*

- Give an 'intervention request' to the Australian Signals Directorate (as 'authorised agency'[35]) to 'do one or more specified acts or things within the period specified in the request'.[36]

These powers are admittedly only exercisable in the worst-case scenarios. However, the exercise of a Secretarial power to issue such directions that encompass acts of ACD – or even "hacking back", noting that ASD is permitted to engage in such conduct under the *Intelligence Services Act 2001* (Cth) – needs to be accompanied with policy guidance on the rights and responsibilities of private sector actors that need to comply with, or facilitate, such directions.

For example, to what extent are private sector actors liable for civil claims of loss or damage occasioned by ASD interventions on or using their networks or assets? Do private sector actors have the option of seeking compensation from the Commonwealth for any loss or damage occasioned by the intervention of ASD subject to a Ministerial authorisation?

> *Recommendation 10* The Australian Government should consider publishing a Q&A document relating to the rights and responsibilities of private sector actors who are the subject of a Ministerial authorisation and/or Secretarial power under Part 3 of the SOCI Act.

The enhancement of cybersecurity under Horizon 2 will also see an increased need in shared intelligence from industry partners to better counter emerging and established threats to information, data and networks. This could be facilitated by upgrading the ACSC's cyber-threat intelligence sharing (CTIS) platform to support automated, better machine-readable feeds (such as STIX and/or TAXII). This would enable the private sector to better automate and integrate new technologies in the pursuit of threat sharing vertically (i.e., industry-to-government) and horizontally (i.e., industry-to-industry).

This could also involve a closer linkage between, and an enhanced operating model of, the Critical Infrastructure Information Sharing & Analysis Centres (CI-ISACs). By strengthening the position of CI-ISACs in the formal and informal intelligence sharing arrangements, the Government could look to establish sector-specific intelligence hubs for critical infrastructure – another world-leading initiative in which Australia could demonstrate strong policy leadership.

> *Recommendation 11* The Australian Government should consider uplifting the CI-ISACs in critical infrastructure sectors to a formalised network of sharing entities for the benefit of private sector threat intelligence (this may involve some targeted reform of the *Privacy Act 1988* (Cth) to permit the sharing of such information).

The final domain of enhancement that may be required would be an expansion of the ACSC's Protective DNS to SMEs and non-critical sectors. Originally touted in 2019 and then established in 2021,[37] the AUPDNS has been protecting Federal, State and Territory agencies that provide critical infrastructure services since that time. However, the system does not protect SMEs which – as outlined above – are the most vulnerable to cyber-attack and the most difficult to remediate after a cyber incident.

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[35] *Ibid s 5.*

[36] *Ibid s 35AX(1). Any act or thing done by the authorised agency in compliance with an intervention request is 'taken to be done in the performance of the function conferred on the authorised agency by paragraph 7(1)(f) of the Intelligence Services Act 2001': Ibid s 35AZ(2).*

[37] *Department of Defence (2021) New Cyber Guard for Government Data, available at: https://www.minister.defence.gov.au/media-releases/2021-10-14/new-cyber-guard-government-data*

The AUPDNS could be applied at Internet traffic hotspots such as Internet Service Providers (ISPs) and Managed Security Service Providers (MSSPs), initially on an "opt-in" basis, to provide potential for more holistic protection from hostile and malicious actors, websites and entities.

> *Recommendation 12* The Australian Government should consider expanding the AUPDNS to SMEs via ISPs and MSSPs to provide better threat blocking for the Australian public.

5 Conclusion

This concludes our initial written submission for Horizon 2 of the Australian Cyber Security Strategy, but we trust that it does not conclude our involvement in the discussion around this important topic of ACD. It is our hope to be able to contribute further to this discussion and the development of ACD strategy, policy, and application.

We have taken the liberty of attaching our recent research paper on the use and legality of honeypots, tracers and trackers in ACD that was published in the April 2025 edition of the Commonwealth Cyber Journal. This article has direct relevance to Recommendation 6 and Recommendation 7.

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The Use and Legality of Honeypots, Tracers and Trackers in Active Cyber Defence

Brendan Walker-Munro[1], Andrew Cox[2], Grant Haroway[3], Joe Otway[4], Duncan Unwin[5] and Sascha Dov Bachmann[6]

Abstract

Australia, as an open market economy and democracy, is both dependent and reliant on the internet and online security for its prosperity, way of life and the functioning of our democracy. Cybersecurity, as a prerequisite for ever-increasing interconnectivity, is under assault from cyber-attacks and malicious cyber activity being conducted by states and 'hybrid actors', such as cybercriminals and syndicates.

Cyber-attacks pose a serious threat to the security and integrity of entities, especially when they involve trusted insiders who have access to sensitive data and systems. To counter this threat, this paper proposes that use of active cyber defence (ACD) – such as fake files and credentials that alert the security team when accessed by unauthorised users or tracking devices that report the network activity and location of genuine trading information – can deter and detect malicious actors, often more efficiently and effectively than other methods alone. By using these ACD techniques, organisations can increase their chances of preventing and identifying cyber-attacks, as well as of collecting evidence for potential legal action. However, this paper also acknowledges that there are some challenges and risks associated with the use of ACD, particularly in, though not limited to, the private sectors, such as ethical, privacy and regulatory issues. Therefore, this paper provides a legal analysis of the implications of using teasers and tracers in different jurisdictions, and highlights the following points:

1 Senior Lecturer (Law), Faculty of Business, Law and the Arts, Southern Cross University, Australia. Email: brendan.walker-munro@scu.edu.au
2 President, Active Cyber Defence Alliance Inc.; Principal Consultant, Avantgard
3 Managing Director, SiegeBrake Cyber Incident Readiness
4 Cyber Security Architect
5 Practice Manager, Business Aspect
6 Professor in Law, Canberra Law School, University of Canberra

- The use of ACD may constitute entrapment, deception or fraud depending on the legal definition and interpretation of these terms in different countries.
- The use of ACD may violate the privacy and data protection rights of the employees and customers of the financial institutions, as well as the third parties who may be affected by the cyber-attacks.
- The use of ACD may conflict with the contractual obligations and fiduciary duties of organisations, as well as industry standards and best practices.

This paper offers some recommendations and future directions for research, such as developing a clear and transparent policy for the use of teasers and tracers, obtaining the consent and co-operation of the relevant stakeholders, and conducting a risk assessment and evaluation of the effectiveness and impact of the techniques.

1. Introduction

> *'Ignorance of the law excuses no man; not that all men know the law, but because 'tis an excuse every man will plead, and no man can tell how to refute him.'*
>
> John Selden (1584–1654), English jurist, scholar and polymath

It is an unsurprising truism that in a field as thorny as cybersecurity, the use of inconsistent terminology and ill-defined concepts has created a storm of unnecessary complexity and confusion. Nowhere is that confusion more apparent than in the field of 'active cyber defence' (ACD). In one sense, the term ACD has arisen out of a desire for public policy to recognise that private actors 'are not allowed to retaliate or gather evidence beyond the perimeter of their own networks' (Broeders 2021: 1). Thus, a private actor can protect their own network but cannot – and never can be – authorised to 'hack back' a cyber-attacker, even in the direst of circumstances (Walker-Munro et al. 2022: 5). However, this has created a legal position across numerous jurisdictions that the cybercriminals (both organised and opportunistic) and foreign intelligence actors who engage in cyber-attacks are at less legal risk than the organisations who set out to protect against those attacks (Walker-Munro and Dov Bachmann 2024).

In another sense, the term ACD has arisen to provide a dichotomy between acts which identify and/or expose a cyber-attacker from all other forms of cyber defence, which are necessarily 'passive'. Indeed, it is on this basis that numerous analyses have suggested that firewalls, antivirus software, network resilience and good 'cyber hygiene' would occupy this latter category (Curry 2012; McGee et al. 2013; Dewar 2014; Creado and Ramteke 2020).

The US Department of Defense is widely regarded as having coined the term ACD, defining it as using military systems or capabilities 'to discover, detect, analyze, and mitigate threats and vulnerabilities' (United States Department of Defense 2011). Rosenzweig (2013: 2) then added that ACD must also 'operate at network speed using sensors, software and intelligence to detect and stop malicious activity ideally before it can affect networks and systems'. Dewar went further, proposing that ACD was in fact 'an approach to achieving cyber security predicated upon the deployment of measures to detect, analyse, identify and mitigate threats to and from communications systems and networks in real-time, combined with the capability and resources to take proactive or offensive action against threats and threat entities including action in those entities' home networks' (Dewar 2013: 10).

Then, in 2017, the National Institute for Science and Technology (NIST) defined ACD holistically to describe *any* capability, tool or technique which offers '[s]ynchronized, real-time capability to discover, detect, analyze, and mitigate threats and vulnerabilities' (NIST 2024), with a particular emphasis on the production of cyber-threat intelligence. ACD was then provided with some additional nuance through the work of Lin, Harknett and Smeets, who suggested a delineation between ACD which involved an 'attack' on a system (with the intention of damage or destruction) and 'exploitation' (with the intention of gathering information or intelligence about the attacker/s or their network/s and system/s) (Lin 2010; Lin 2016; Harknett and Smeets 2022).

This paper proposes a synthesised definition which subsumes that nuanced approach to suggest ACD involves the use of 'sensors, software and intelligence to actively – rather than passively – detect, expose and potentially disrupt a cyber-attacker during a cybersecurity incident'. Therefore, one aim of this paper is to socialise that definition of ACD in the literature on cybersecurity.

A second aim is to provide a brief overview of the evolution and development of technologies and related concepts in ACD, often referred to as the 'honey world' because of references to technologies like honey tokens and honeypots (because they appear to be legitimate system resources, and are thus attractive to potential cyber-attackers like honey is attractive to bears (Juels and Ristenpart 2014)). These are techniques that intentionally expose vulnerabilities or false information (also referred to as faux data) to lure, deceive or confuse potential attackers, while monitoring their activities and collecting evidence.

The third aim is to examine and discuss the legal implications and challenges (using Australia as a contextual case study, but with international examples where appropriate) when private companies seek to use honey tokens, honeypots and related techniques. These issues can involve the possible violation of privacy rights, data protection laws, computer misuse statutes or entrapment doctrines. The paper concludes by identifying the areas where the use of ACD-related techniques remains controversial and which require further legal and regulatory clarity.

2. Context

At the Commonwealth Heads of Government Meeting in London in 2018, the Commonwealth Cyber Declaration was signed, which emphasised a strong commitment to common standards, harmonised legal approaches and improved interoperability, including 'through the use of Commonwealth model laws' (The Commonwealth 2018). However specific legal approaches to ACD across the Commonwealth are fragmented and nascent, to the extent that they exist at all.

In Canada, criminal laws still prohibit the use of 'hacking' as a defensive capacity, even despite recognition of ACD in Canadian cybersecurity policy since at least 2017 (Government of Canada 2017). Indeed, even the laws supporting both Canadian intelligence and military forces to engage in ACD have been criticised for undermining interoperability with NATO and US allies, as well as the 'lethargic' pace in establishing the necessary military and civilian capabilities (Rudolph 2021). Malaysia, Singapore and New Zealand permit their national intelligence and police forces to engage in limited forms of ACD, usually under the imprimatur of broad enabling legal authorities (Walters 2023). A study by Thinvane and Christine (2020: 8) that included numerous Commonwealth nations found:

> *'Almost half of Asia-Pacific states have no national cybersecurity strategies yet. Some instead have master plans that cover aspects of cybersecurity in the form of national digital policy (e.g., Pakistan, Brunei, Lao People's Democratic Republic), ICT masterplans (e.g., Cambodia, Solomon Island, Micronesia), and e-governance masterplans (e.g., Myanmar). Countries such as Indonesia, Mongolia, and Pakistan have laws and programmes related to cybersecurity, including cybersecurity centres and national computer emergency/incident response team (CERT/CIRT), but do not have a cybersecurity strategy yet. Meanwhile, some countries, such as Nepal and Fiji, are still in the process of drafting their strategies.'*

African nations fare even more poorly. A study by Ajayi (2016) showed that of the 54 nations making up the continent, only four have laws that explicitly deal with countering cybercrime. Thus, much of the emerging debate on ACD in the private sector in the Commonwealth has come by way of research in the United Kingdom (which in turn has been informed by debate in the US) so the paper reviews those jurisdictions before examining the contextual case study of Australia.

In the US, ACD and 'hacking back' have been interwoven into public debate for many years. Private companies – indeed, many of the major technology companies like Google/Alphabet, Meta and Apple – are headquartered in the continental US, and are prohibited from hack-backs by title 18 of the US code (section 1030), also known as the 1986 Computer Fraud and Abuse Act or CFAA. In addition, numerous US federal statutes positively prohibit the use of certain ACD tools and techniques (Cook 2018). Attempts by Congress in 2017 and again in 2019 to resolve this dilemma using the appropriately titled Active Cyber Defence Certainty Act failed to receive support and has never been

resurrected (Broeders 2021: 2). However, it seems widely regarded that the use of 'tarpits and honeypots, denial and deception, and beaconing on your own network' are acceptable forms of ACD conduct by US entities (Center for Cyber and Homeland Security 2016).

The UK, on the other hand, has taken more of an enablement approach towards ACD, in that the private sector would provide such capabilities to government under the close inspection and supervision of the Crown. Former Prime Minister David Cameron made clear in the 2015 *National Security Strategy* that ACD tools – including a full spectrum of capabilities to detect, analyse and track cyber-attacks pre-emptively – would be considered as 'national capabilities, developed and operated by the private sector' (Cameron 2015). However, like many other jurisdictions, the UK seems mired in policy limbo, lacking a specific definition of the term and clear operational guidance as to how ACD will actually be done. Sexton, for example, wrote that relying on the private sector to provide any form of security for government was not only paradoxical but risked legitimising the use of cyberweapons for corporate interests (Sexton 2016).

In Australia, a concise policy position remains largely elusive. There is no federal (Commonwealth) policy on ACD, having failed to address it in successive defence White Papers (Ball and Waters 2013) as well as the recent 2023–2030 *Cyber Security Strategy* (Department of Home Affairs 2023) and *Cyber Security Bill* (Department of Home Affairs 2024). This is not without industry consistently raising ACD as a matter for policy and legal clarification. In the absence of that position, numerous actors in the private sphere have attempted to delineate a position that ACD involves 'offer[ing] a diversion tactic that makes the cyber-criminal think they're on to something of value' (Powell and Dolan 2021) or 'the use of countermeasures by businesses and corporations to identify, slow down or hinder hackers in executing cyber attacks and malicious cyber activities' (Walker-Munro and Dov Bachmann 2024). At the same time, others in industry have constructed positions which attempt to align ACD either with existing Australian law (Shackelford et al. 2019), or with industry guidance produced or provided by the government (Powell 2021). Yet it appears from the literature that the Australian government has no formalised public position on the activities of ACD (other than those undertaken under the imprimatur of its intelligence services (Hanson and Uren 2018)).

Taking a broad and generalist approach to the various jurisdictions, one could, therefore, surmise that the law struggles to recognise the concept of ACD. From that above examination of the literature, it is generally considered that the internal network of a trading corporation is that corporation's *domaine réservé*, such that engagement in limited forms of deception in the pursuance of ACD is legally acceptable. There are several edge cases which the next section deals with: specifically, where the potential exists for internal networks utilising deception methodologies to still be customer-facing in some aspect and thus potentially incurring a claim against misleading trade practices or prohibitions against 'passing off'. Depending on the jurisdiction, such claims can be offset

by a broad statement in corporate documentation – such as a privacy policy or terms-of-use statement – that discloses to customers that their use of a particular network or system may involve the use of ACD.

3. Case for using ACD

The various methodologies or practices of ACD can be difficult to precisely define or formulate. However, the following is a non-exhaustive list of common ACD techniques or tools.

- **Tracers:** Cookies or similar programs attached to genuine trading information, which periodically transmit back to the incident response team network transmission and movement information, including IP addresses and/or physical locations of potential attackers' systems or networks, if the data are exfiltrated from the host system (Zhang and Thing 2021).
- **Honey objects, honey tokens, honeywords and honey encryption:** Falsified files, databases and user credentials which appear genuine to an external actor but alert the incident response team when accessed. As the files and/or credentials themselves are falsified, there is no genuine need for those files to be accessed (Juels and Rivest 2013; Juels and Ristenpart 2014).
- **Honeypot:** A broader term referring to an entire system (e.g. a web server) or system resource (e.g. a network) that is designed to be attractive to potential intruders, which is configured to alert when an attempt is made to access it. Typically, these are deployed within the boundaries of an organisation (Han et al. 2018).
- **Deception networks/systems/operations:** While nominally aligned with honey resources, deception activities generally rely upon the creation and maintenance of false (but realistic) networks and system resources intended to permit real-time monitoring of cyber-attackers. Given there is no legitimate need for users to be in a deception network, generally any activity in such locations will be unauthorised (Bushby 2019; Steingartner et al. 2021).

As a broad generalisation, the use of deception and 'honey' objects in ACD is considered legally permissible. This is because there is no legitimate need for a customer or other authorised user to ever need to access a 'honey' object – as the object is known by the business to be false, and managed accordingly, there is no way a customer or authorised user would ever find their way to that object. The result is that, by exclusion, any access of that file must be with malicious intent. Equally, the use of 'tracing' technology, such as a piece of code or software which captures an IP address or physical address of the person accessing the system, is legally fraught. In almost every case, consent must be provided, even if that consent is constructive in the sense that it forms part of the standard contractual obligations of persons accessing a given network or resource.

Thought must also be given to internal staff, i.e. employees and contractors. These individuals must be notified (either through employment contracts and/or organisational policies) that the corporation employs ACD, and given sufficient details about those programs to ensure the employee or contractor gives their informed consent to operate in a monitored environment. Generally, specific details are unnecessary. But there must be sufficient and cogent reasoning governing the recording of employee activity to avoid lawsuits later on, i.e. that network monitoring occurs 'for security and acceptable use'.

Even though honeypots can be useful for detecting and analysing cyber-attacks, they also pose some legal challenges that cybersecurity practitioners need to be aware of, in part due to the lack of policy and legal clarity. Depending on the jurisdiction, the use of honeypots may violate laws related to privacy, data protection, computer misuse, entrapment or unauthorised access. Moreover, the interaction between the honeypot operator and the attacker may create liabilities or obligations that are not clearly defined or regulated.

4. Legal issues

There are several interconnected but discrete issues associated with the use of ACD. This paper separates these issues into two categories: those related to international law, and those arising under domestic legal restrictions.

4.1 International law

This paper deals briefly with limitations arising under international law as these are largely beyond its scope. Numerous scholars have done an excellent job of enumerating these international legal problems, including that attribution during a cyber event can be nearly impossible even months afterwards (Berghel 2017; Tran 2018) and that attribution is a sovereign political decision that private companies are usually not authorised to make (Rid and Buchanan 2015; Wanner and Ghernaouti 2019). Such responses might be ruled 'use of force' under international law (Waxman 2011; Halberstam 2013; Corn and Jensen 2018) or even encourage endless cycles of 'Tom and Jerry' retaliatory actions (Gallagher 2022). Although scholars are generally in agreement that the level of permissiveness for ACD will not specifically cross a use of force threshold at international law, this is not always the case with some of the higher-end uses of ACD, and may not actually implicate states that seek to respond even to the mildest provocation (Van Dine 2019). Broeders (2021: 3) described it this way:

> *'If a company follows an attacker down the rabbit hole of the global internet there is no* a priori *telling in which country and jurisdiction it is going to resurface. If private parties conduct disruptive [ACD] operations on foreign, perhaps even state operated or affiliated networks, this can easily have an escalatory effect as foreign actors are likely, and may*

> *even be keen, to take offense. Especially in the current times of heightened geopolitical tensions some states will not look kindly on private companies that are legally licensed by the American government to conduct intrusive and disruptive cyber operations.'*

Looking at domestic legal restrictions, there appear to be several concise domains where ACD can cause private companies a degree of legitimate caution.

4.2 Criminal law

The first and most prominent domain generally relates to the common criminal prohibitions against unauthorised access to computer resources, i.e. hacking. Given that numerous states are signatories to the *Budapest Convention on Cybercrime*, most jurisdictions will have criminalised computer infiltration, data theft and similar acts as part of their ratification processes, which can include some techniques of ACD (Basu and Hickok 2020).

Many western states do have prohibitions against actions by private corporations which would allow unauthorised access to *any* system, even that of a cyber-attacker during a live incident. Canada (Gerke 2021), Japan (Jun 2023), Singapore (Housen-Couriel 2021), the US (Dewar 2014; Broeders 2021) and the UK (Sexton 2016; Montasari 2023) stand out as exemplars of legislative regimes where gaining unauthorised access to any form of computer resource is a crime, irrespective of the nature of the actor and/or the nature of any provocation such an actor may be facing.

However, the specifics of each jurisdiction are patchy and largely unexplored. As the Global Commission on the Stability of Cyberspace (2019: 45) warned in 2019, '[s]ome states do not control or may actively ignore these practices... However, in many states such practices would be unlawful, if not criminalized, while in other states they appear to be neither prohibited nor explicitly authorized'.

Australia's position is likewise that access to any computer that is unauthorised will be unlawful (Walker-Munro et al. 2022). The *Criminal Code* (Commonwealth of Australia) creates, for example, an offence (section 477.3(1)) where a person causes any unauthorised 'impairment' of communication to or from a computer, and that impairment is unauthorised. The use of tracers, deception networks or honey objects could conceivably cause modification in an attacker's data which impairs their ability to access the network; after all, one of the purposes of ACD is to preclude the attacker from ongoing access to corporate information. Another section of the *Criminal Code* (Commonwealth of Australia) creates an offence (section 478.1(1)) for 'unauthorised access to, or modification of, restricted data', where such data are restricted by an access control system. If a private corporation employing ACD were to gain intelligence about a cyber-attacker, behind, for example, a firewall or password-protected file, this could also lead to the commission of an offence for engaging in ACD. Without an immunity (which government agencies enjoy), private corporations could face the very real prospect of criminal charges and conviction.

Further, these legal regimes usually do not extend traditional defences into the cyber domain, i.e. self-defence to 'allow for the use of force against an attacker and thus render an otherwise illegal act lawful, provided it was necessary to defend one's own interests' (Stevens 2020: 320). In some cases, the failure to recognise self-defence flows from a legal disconnect where 'data' or 'information' are not recognised as a tangible form of property, the likes of which can be protected by a party engaging in otherwise unlawful conduct (Rosenzweig 2014; Hoffman and Nyikos 2018). In others, the limitations for the application of self-defence doctrines arise because, while data and information can be considered special forms of property, the scope and purview of rights which vest in that digital property (and hence how those rights can be defended) differ markedly from tangible real-world items (Lawrence 2007; Boerding et al. 2018; Grimmelman and Mulligan 2023). Focusing on Australia, computer data and information are not defined as 'property' under the *Criminal Code* (Commonwealth of Australia) or the *Corporations Act 2001* (Commonwealth of Australia),[7] and so cannot be subject to the doctrine of self-defence.

There are other defences worth examining: namely state of emergency, necessity and provocation. 'State of emergency' is a legal doctrine which can excuse certain illegal conduct where it is in response to an 'emergency' in which the illegal conduct was the only reasonable way of escaping or de-escalating that emergency (Ackerman 2003; Jakab 2006; Crusto 2015). 'Necessity' involves a response to a particular threat, described generally as where 'he or she carries out the conduct constituting the offence in response to an emergency which forced him to ward off immediately an immediate peril against himself or his property or against another person or his property' (Al Qudat 2009). 'Provocation' as a doctrine generally operates in English law systems to reduce a charge of murder to manslaughter because 'the accused killed during a sudden loss of self-control caused by provocation which was enough to make a reasonable man do as he did' (Ashworth 2009; Gruber 2015). All three defences have potential applications to using ACD, dependent on the law of the jurisdiction in question.

For example, the use of ACD could be excused if the ACD is a response that is reasonable and proportionate to the circumstances of a cyber incident – where that ACD involves potentially unlawful conduct such as accessing another person's computer or network or modifying or impairing data transmission. If an incident is in real-time or ongoing or involves serious compromise of sensitive or personal information and/or real-world damage or destruction or requires the use of ACD as the only available option of intervention (i.e. all other 'passive' measures have failed), the use of ACD under doctrines of emergency are more likely to be legally excusable. Necessity could also excuse such conduct if a three-element test is met:

7 Where property includes any 'legal or equitable estate or interest (whether present or future and whether vested or contingent) in real or personal property of any description', but does not cover computer data, information or intangible property of that sense: *Corporations Act 2001* (Commonwealth of Australia), section 9.

> *'First, the criminal act or acts must have been done only in order to avoid certain consequences which would have inflicted irreparable evil upon the accused or upon others whom he was bound to protect…The [second] element…[is]…that the accused must honestly believe on reasonable grounds that he was placed in a situation of imminent peril…thus if there is an interval of time between the threat and its expected execution it will be very rarely if ever that a defence of necessity can succeed. The [third] element of proportion simply means that the acts done to avoid the imminent peril must not be out of proportion to the peril to be avoided. Put in another way, the test is: would a reasonable man in the position of the accused have considered that he had any alternative to doing what he did to avoid the peril?'*
>
> R V Loughnan [1981] VR 443: 448

Provocation, as a partial defence to murder only, will likely never apply. But from a legal philosophy perspective, it does have some attraction in ACD because it could be used as a defence to excuse otherwise criminal conduct in response to the 'provocation' of a cyber-attack being conducted on a private organisation.

In Australia, the *Criminal Code* (Commonwealth of Australia) provides for defences of 'duress' (section 10.2) and 'sudden or extraordinary emergency' (section 10.3), but not provocation. In cases of both duress and emergency under Australian law, a person is not criminally responsible for conduct in response to situations of emergency or threats if the illegal conduct is the only reasonable response. Clearly the facts of a given ACD incident will matter. An argument could be easily made for example if a cyber-attack is occurring in real-time, and an ACD technique is immediately required to prevent sensitive data exfiltration or real-world impacts, i.e. the Colonial Pipeline incident which paralysed fuel supplies across the US eastern seaboard (Easterly and Fanning 2023). If the cyber-attackers have had access to the network or servers of a private entity for a period, such as several months, ACD is less likely to be an excusable response. Provocation on the other hand, as a partial defence to murder, is dealt with as a matter of state law in Australia and is slowly being eroded by a greater recognition that it has excused violent conduct in the past (Ramsey 2010). Its application to ACD is, therefore, unlikely to ever arise without a substantial body of law reform.

4.3 Privacy law

For many western states, there are also implications for privacy. Under the General Data Protection Regulation of the European Union (EU) for example, cyber-threat intelligence generated by ACD activities may contain confidential or protected information, which in turn has implications for how that information can be captured, analysed or shared with other entities and bodies to protect against cyber-attacks (Albakri et al. 2019). The collection of data or information, such as name, physical address or IP address, which could lead to identifying a person, may also be treated as 'personal information' subject to privacy statutes, and may be prohibited from collection, use or disclosure unless the

person to whom that information relates gives free and informed consent (Irving 2013; Miraglia and Casanove 2016). These provisions are increasingly being tailored to counter the emergence of behaviour referred to as 'doxing' (a person's real-life identity, address or contact details are made publicly available (Karimi et al. 2022)), a practice that is now *prima facie* illegal under most privacy legislation (Kukul 2023). Of course, the generalisation that privacy will always be an issue in the conduct of ACD can be countered by specific jurisdictional idiosyncrasies, e.g. in the United States, the Supreme Court has ruled that a person does not have a right to privacy when engaging in illegal activities, like hacking into a network or system (Simonato 2014).

In Australia, the *Privacy Act 1988* (Commonwealth of Australia) prohibits 'serious and repeated infringements with privacy' (s 13G), including repeated or sustained conduct which breaches the Australian Privacy Principles (APP) (section 13). These principles include, for example, the need to communicate clearly and transparently the reasons and mechanisms of data collection, processing, use, disclosure and storage (APP1.3 and 1.4) as well as dealing with 'unsolicited' information (APP4) which may arise from the use of ACD. Identification of a cyber-attacker's personal identity, physical or virtual location in cyber-threat intelligence shared with other bodies or entities may also breach APPs if the sharing is not with law enforcement agencies (APP6.1 and 6.3).

4.4 Consumer protection law

The third and final domain within which ACD may cause thorny legal challenges relates to commercial and consumer protection laws. This is because many jurisdictions adopt legislative standards to protect consumers of various goods and services from the predations of those making false or misleading claims as to efficacy, standard, utility or numerous other benefits of their products (Pengilley 2007; Cooper and Shepherd 2016; Willis 2020). Therefore, a private corporation which, while otherwise providing its goods or services as an entity 'in trade or commerce', deploys a deception network or honey objects, may fall foul of those misleading conduct provisions.

The devil is clearly in the detail, and the whole domain itself is woefully under-explored. For example, under the United Kingdom's *Consumer Protection from Unfair Trading Regulations 2008* (sections 5(2) and 5(3)) a business will behave unlawfully if it engages in a 'commercial practice' that 'contains false information' about a product such that it would 'cause the average consumer to take a transactional decision he would not have taken otherwise'. Clearly, an 'average consumer' is never likely to be exposed to an ACD operation unless that consumer is themselves doing something illegal, i.e. breaking into the corporation's network. That position can be contrasted with the US, where section 5(a) of the *Federal Trade Commission Act* (15 USC section 45) prohibits 'unfair or deceptive acts or practices in or affecting commerce'. As the US legislation does not rely on an 'average consumer' standard, there is arguably more room for it to potentially apply to private operators employing ACD.

In Australia, the Australian Consumer Law (ACL) operates as a schedule to the *Competition and Consumer Act 2010* (Commonwealth of Australia). Under the ACL, a bald prohibition exists (section 18) to a person engaging in conduct during 'trade or commerce' that is deceptive or misleading. These provisions clearly apply to 'computer software' and 'any component part of, or accessory to' that software. Conduct is deceptive or misleading if it 'induces or is capable of inducing error' (van Wyk 2015). As in the continental US, a private corporation that engages in ACD – even one entirely ancillary to, and protecting the underlying rationale for, its core business – may breach these provisions if its ACD program incorporates elements of deception.

5. Recommendations

To overcome legal ambiguities and facilitate responsible ACD adoption, the following amendments to legislation are recommended (an Annex is attached that demonstrates how these changes could be achieved in the context of Australian law):

5.1 Recommendations for the Commonwealth

- Ensure that corporations law, privacy law and crimes/criminal code legislation is amended to clarify that digital information, digitally stored data and information on a computer or network are considered an intangible form of property. This will ensure that private entities can use ACD while availing themselves of the 'self-defence' doctrines present in numerous Commonwealth jurisdictions.
- Ensure that, if private parties are authorised to conduct ACD, they do so within strict boundaries only and that they adhere to all guidelines issued by the national government. This will ensure Commonwealth nations have strong control over where and how private entities can engage in ACD.
- Closely monitor international developments in cybercrime and ACD legality to ensure that national laws do not breach international legal obligations.

5.2 Clarify self-defence, emergency and provocation defences

- The criminal statutes relating to criminal responsibility, excuses and defences (especially computer crimes) could otherwise be amended such that private organisations can take action (i.e. ACD) to protect their proprietary or commercial data, or the data of third parties for which they owe a statutory or common law duty of care, i.e. the personal information of customers.
- Alternately, specific computer crime offences (such as those enacted by parties to the Budapest Convention) need to be redrafted to exclude conduct of ACD by private organisations in response to a cyber-attack or cyber incident. This could

be by the creation of an exclusionary provision or a broader defence of 'acting in good faith'. In any event, private organisations should have the confidence that their position in utilising ACD is legally defensible.

- Alternately, computer crime offences could be subject to a limited defence of either emergency or provocation. In such situations, offence provisions should not apply to the conduct of ACD by persons in a private organisation either because of emergency, i.e. a reasonable and appropriate response to protect information for which the entity has responsibility; or because they are responding to a 'provocation', i.e. a cyber-attack or cyber incident against some asset for which those persons have some responsibility.

5.3 Safeguards

- **Privacy:** The use of ACD (especially tracing) will have serious consequences for privacy law, as it may enable the collection, use and dissemination of information on persons who are not cyber-attackers. There should be strong safeguards that limit the use of information gathered during ACD practices to protect individual privacy rights under both international and domestic law.
- **Anti-consumer practices:** Companies that deploy ACD (especially tracing) should be prohibited from using that information to engage in behaviour which offends consumer protection laws, i.e. by using tracing technology for advertising or marketing. Consumer laws should clearly define prohibited uses of information collected during ACD to prevent collection of excessive data or conduct invasive surveillance that infringes consumer privacy.
- **Oversight and transparency:** If these measures are adopted, judges could be permitted to immunise conduct of ACD by private entities. Relevant safeguards need to be included such as regular audits and public reporting by a competent and independent authority on the issuance and outcomes of such activities.
- **Unintended effects on legitimate users and scams:** While these provisions could empower businesses to combat cyber threats more effectively, there is a risk of collateral damage to innocent parties if compromised systems are mistakenly targeted. Clear safeguards and limitations on the scope of actions permissible under these amendments could help mitigate this risk.
- **Clarity on data usage limitations:** To prevent excessive or unjustified data collection, guidelines should clearly define the limits of what constitutes 'relevant' data that can be collected by ACD actions and how the data should be managed.

6. Conclusion

This paper has examined current ACD measures and the legal defences that may be invoked by individuals or organisations using ACD measures to protect their networks and data from cyber-attacks. It has explained the concepts of intervening conduct or event, sudden or extraordinary emergency, and duress, and how they relate to the use of ACD measures. It has also discussed the limitations and challenges of applying these defences in the context of ACD, such as the uncertainty of the law, the proportionality of the response, the attribution of the attacker and the potential harm to third parties. The paper concludes that the use of ACD measures requires careful assessment of the legal risks and consequences, and that more clarity and guidance from government authorities and the courts are needed to ensure the legitimacy and effectiveness of such measures.

Implementing and receiving the full value of ACD requires legal clarity. The amendments suggested in this paper would remove the current legal ambiguity to businesses, providing legal certainty so they can build and defend their organisations while operating within the bounds of the law. Without such clarity, businesses may inadvertently operate in legal grey areas, compromising their ability to protect themselves and their clients effectively.

In the Australian context, to meet its vision of being a world leader in cybersecurity by 2030, the Australian government needs to promote the use of ACD technologies and techniques to improve understanding of the actions and intent of cyber-attackers and, therefore, of the threats to Australian organisations and citizens. Globally, before we can encourage the use of ACD technologies and techniques, there needs to be legal clarity about the use of ACD. Therefore, this paper should serve as a call to action for legislators, especially in Australia, to make the changes that will remove the legal grey areas and allow private organisations to contribute to their respective jurisdictions' constructions of cybersecurity as part of the Australian government's call for a whole-of-nation effort of shared responsibility across the wider community.

Annex: Proposed Amendments to Commonwealth Criminal Laws

1 Insert:

Self-defence of data, data security or information systems

(1) A person is not criminally responsible for an offence if:

(a) the person believes that the conduct constituting the offence is necessary to defend data, data security or information systems that belong to the person or another person from unlawful injury; and

(b) the conduct is a reasonable response in the circumstances as the person perceives them.

(2) In determining whether the conduct is a reasonable response, regard must be had to:

(a) the nature and extent of the injury to data, data security or information systems that is threatened or inflicted;

(b) the potential or actual consequences of the injury to data, data security or information systems for the person, another person, or the public interest;

(c) the proportionality of the force used to the injury to data, data security or information systems that is threatened or inflicted;

(d) the availability and feasibility of any alternative means of preventing or mitigating the injury to data, data security or information systems;

(e) any relevant laws, policies, standards or codes of conduct that regulate or govern the use, protection or management of data, data security or information systems;

(f) any other relevant factors.

(3) For the purposes of this section:

(a) data means any information that is stored, processed, transmitted, or communicated by any means, whether electronically, digitally, optically, magnetically or otherwise;

(b) data security means the protection of data from unauthorised access, use, disclosure, modification, deletion or destruction;

(c) information system means any system, device, network or infrastructure that is used for the creation, storage, processing, transmission or communication of data;

(d) injury to data, data security or information systems means any act or omission that causes or is likely to cause damage, loss, impairment, disruption, interference or degradation to data, data security or information systems;

(e) unlawful injury means injury to data, data security or information systems that is contrary to law, or that exceeds or violates any lawful authority, consent or permission.

2 Insert:

Liability for certain acts – tracing and information gathering

A person is not subject to civil or criminal liability inside or outside [STATE] if the person causes any unauthorised access to data held in a computer or any compromise of the security system protecting the data held on a computer, if:

(a) the person is, or acts on behalf of, the owner of a computer system that has been subject to unauthorised access or exfiltration of data by another person;

(b) the person deploys software or hardware on the computer system of the other person for the purpose of gathering information about the unauthorised access or exfiltration of data;

(c) the person does not use or disclose any information collected by the software or hardware that is not reasonably considered relevant to identifying the person or system responsible for the unauthorised access or the defence of the person's system; and

(d) the person does not intentionally cause any damage, loss, or harm to the computer system or data of the other person, or any other person, as a result of the deployment of the software or hardware.

Liability for certain acts – damage or impairment to the computer of an attacker

A person is not subject to any civil or criminal liability for engaging in conduct inside or outside [STATE] that causes or is intended to cause computerrelated act, event, circumstance or result on the computer of another person (target computer) if:

(a) the person is, or acts on behalf of, the owner of a computer system that has been subject to unauthorised access or exfiltration of data by another person; and

(b) the person is reasonably satisfied that the target computer is the source of the attack; and

(c) the person is reasonably satisfied that the owner or operator of the target computer caused or permitted the attack to take place; and

(d) the conduct is likely to:

  (i) delete, damage or erase data present on the target computer without authorisation; and/or

  (ii) prevent or disrupt cybercrime; and

(e) the computer related act, event, circumstance or result is authorised by an active defence authority.

Active defence authorities

(1) A person may apply to a judge for an active defence authority.

(2) The application must include the evidence of each of the matters required by above.

(3) An application for an active defence authority must be dealt with in the absence of the public but is otherwise to be dealt with in such manner as is decided by the judge to whom the application is made.

(4) A judge must not issue an active defence authority unless the judge is satisfied that the application for the authority shows that reasonable grounds exist to justify its issue.

(5) When determining whether there are reasonable grounds to issue an active defence authority, a judge must have regard to the seriousness of the unlawful activity with which the application is concerned and the potential benefits of the conduct that would be authorised.

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