Horizon Scanning Series

The Effective and Ethical Development of Artificial Intelligence: An Opportunity to Improve Our Wellbeing

Legal Services

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Horizon Scanning Report on AI and Legal Services for the Australian Commonwealth Science Council

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A. Introduction

Artificial Intelligence ("AI") in the legal services context focuses on the use of computer systems to perform tasks of research, legal analysis and decision-making normally undertaken by humans.[5] This paper provides an overview of current developments and offers an assessment of future prospects and risks in the legal services sector.

B. Overview of the sector and the role artificial intelligence may have on automated legal services and sentencing

1. Automation

Computers and automated services have assisted the legal industry for decades, using techniques such as Boolean keyword searching and simple hand-coded expert systems. However, modern AI is changing the topography of the legal landscape, and the ways in which many suppliers and purchasers view the provision of legal services. In the legal industry today AI is being used or developed to enable a range of automated solutions, including[6]

(a) intelligent search of primary sources of law and precedents

(b) automated document review using predictive coding or statistical pattern analysis for, eg, contract analysis and e-discovery

(c) smart forms that tailor legal information and advice to individual circumstances (eg to draft a will, or settling financial arrangements following relationship breakdown or divorce)

(d) legal data analytics for practice and judicial decision-support

(e) online dispute resolution

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[5] This paper therefore broadly distinguishes intelligent automation software from more generic collaboration and project management tools that are also being widely adopted in the sector, though a number of the latter have, or are developing, AI tool add-ons and integrations, (such as HighQ's integration with legal AI platforms built by RAVN and Neota Logic).

[6] See, eg, John O. McGinnis and Russell J Pearce, 'The Great Disruption: How Machine Intelligence Will Transform the Role of Lawyers in the Delivery of Legal Services' (2014) 82 *Fordham Law Review* 3041-66; Judith Bennet, Tim Miller, Julian Webb, Rachelle Bosua, Adam Lodders and Scott Chamberlain, 'Current State of Automated Legal Advice Tools' (RALAT Research Discussion Paper 1, Networked Society Institute, University of Melbourne, April 2018), hereafter "RALAT".

At this stage, take-up and deployment of technology appears still to be very unevenly distributed within and across legal services markets. This likely reflects differences in market scale, patterns of both internal and external investment in the sector, and restrictions on deployment flowing from legal services regulation.

2. General and specific AI distribution in the Australian legal services market

Overall the industry has focused on utilising AI tools to automate routine tasks thereby improving efficiency. However technological advances are creating opportunities for more collaborative and sophisticated interactions between lawyers and technology which have the potential to improve quality and range of service provision.

(i) BigLaw

Many large and middle-sized law firms, including the "Big Four" accounting firms,[7] are employing systems which deploy at least some AI for routine or commoditised work, a trend primarily driven by pressures from clients for greater efficiency and reduced costs.[8] A majority of the largest firms have developed their own law-tech hubs, for example Allens Linklaters' Law Lab,[9] Herbert Smith Freehills' Alternative Legal Services,[10] and Corrs' Legal Technology Solutions.[11] Such hubs require new skills sets, and hybrid employee roles, typically referred to as 'legal knowledge engineer', 'legal technologist' or 'legal analyst' are emerging.[12]

(ii) Small firms

Small firms (a term which conventionally incorporates sole practitioners, up to 4 partner firms) still constitute about 92% of legal businesses.[13] The greatest gap between actuality and the potential offered by new technologies probably exists in this segment of the market. AI-assisted information, advice and research services have the potential to dramatically reduce the cost of legal services for SMEs and middle-income individuals. Yet the rate of change in this sector appears very uneven, being dependent on the proclivities, and investment decisions[14] of the lawyers involved. The small firm

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[7] The "Big Four" comprises of Ernst & Young - https://www.ey.com/au/en/home; KPMG - https://home.kpmg.com/au/en/home.html; Pricewaterhousecoopers - https://www.pwc.com.au/ and Deloitte - https://www2.deloitte.com/au/en.html. Legal teams within the Big Four are seen in some quarters as a growing threat to traditional legal service providers by virtue of their scale and geographical reach, ability to offer end-to-end solutions and potential capacity for innovation. See, eg, Agnes King and Katie Walsh, 'Big four accounting firms push into legal services', *Australian Financial Review,* 21 July 2015, at www.afr.com/business/accounting/afr8acclawyers-vs-accountants-20150617-ghq715; Jamie Levy, *Disrupting the law: will technology supercharge the traditional operating model?* (24 July 2018) KPMG Newsroom < http://newsroom.kpmg.com.au/disrupting-the-law-will-technology-supercharge-the-traditional-operating- model/>

[8] Richard Susskind and Daniel Susskind, *The Future of the Professions: How Technology Will Transform the Work of Human Experts,* (Oxford University Press, 2015), 108-9

[9] Allens Law Lab, accessible at: https://www.allens.com.au/services/alternative/lawlab.htm.

[10] Herbert Smith Freehills' Alternative Legal Services, accessible at: https://www.herbertsmithfreehills.com/our-expertise/services/alternative-legal-services.

[11] Corrs Chambers Westgarth legal Technology Solutions, accessible at: http://www.corrs.com.au/careers/legal- support-services/legal-technology-solutions/

[12] See eg Richard Susskind, *Tomorrow's Lawyers: An Introduction to Your Future'* (2nd ed, Oxford University Press, 2017), chap. 13; Michael de Rozario and Roshan Kumaragamage, *Why Legal Technologists are becoming the 'New* Normal' (4 September 2017) Corrs Chambers Westgarth < http://www.corrs.com.au/thinking/elsewhere/why-legal-technologists-are-becoming-the-new-normal/>.

[13] Urbis/Law Society of New South Wales, 'National Profile of Solicitors 2016 Report' (August 2017), p. iii, accessible at www.lawsociety.com.au/sites/default/files/2018-04/NATIONAL%20PROFILE%20OF%20SOLICITORS%202016.compressed.pdf

[14] See further section E, below

sector, of course, is itself not uniform, and includes both small general practices in the suburbs, and in regional and remote Australia, as well as niche 'boutique' (often commercial) and specialist practices that may be better positioned to exploit technological advantages. For example, Cartland Law, a specialist small tax practice in Adelaide has developed Ailira, a natural language processing tool that provides tailored advice for its specialised tax services.[15] Ailira is also being expanded to provide advice on business structures and wills, as well as assisting domestic violence victims with automated risk assessments and documentation.[16]

(iii) NewLaw

The "NewLaw" label was advanced by Chin[17] to encompass a broad range of new (new entrants or re- engineered) business organisations offering conventional legal services by innovative means, including online services, and virtual firms, or innovating in the kinds of services offered. NewLaw firm thus often use technology to decompose ('unbundle') services, or disintermediate or reintermediate in the legal services supply chain.[18] Many of these service providers are competing directly with traditional law firms in the corporate market, focusing particularly on creating tools and services in support of the in-house legal function. However, by embracing a combination of new information technologies, alternative working practices and innovative pricing models, NewLaw firms may also be assisting in closing the "justice gap" that exists for many SMEs and middle and lower income earners.[19] Examples of entrants in Australia include:

- Lexvoco, which provides a range of support to the in-house legal function, including design and deployment of white label and bespoke legal technology, process and workflow (re-
)design, and staffing solutions (secondments, project overflow and outsourcing)[20]
- Plexus, a NewLaw firm that has developed Legal Gateway – a platform that merges automation, custom workflows, eSignatures and end-to-end contract lifecycle management[21]
- LegalVision, which provides an online legal documents business that enables users to build their own documents.[22]

(iv) In-house

Lawyers working in in-house roles are indirectly one of the main beneficiaries of the deployment of new legal tech by both BigLaw and NewLaw providers. In-house legal departments themselves, however, do not appear to be investing in and using legal tech to the same extent as external law

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[15] Cartland Law, accessible at: https://www.cartlandlaw.com/ailira/

[16] Cartland Law, accessible at: https://www.cartlandlaw.com/ailira/

[17] Eric Chin, '2018: The year Axiom becomes the world's largest legal services firm', *Beaton Capital Blog*, 13 September 2013. Retrieved from hhttp://www.beatoncapital.com/2013/09/2018-year-axiom-becomes-worlds- largest-legal-services-firm/

[18] Susskind and Susskind, above n.8, pp.121-2.

[19] Melbourne Law School and Thomson Reuters, 'Australia: State of the Legal Market Report' (September 2017), accessible at http://insight.thomsonreuters.com.au/resources/resource/state-of-the-australian-legal-market- 2017, p.17. See also Coumarelos, C. Macourt, D, People J, Mcdonald, H.M, Wei, Z, Iriana, R & Ramsey, S, *Legal Australia-Wide Survey: Legal Need in Australia.* (2012) Law and Justice Foundation of New South Wales, <www.lawfoundation.net.au/ljf/app/6DDF12F188975AC9CA257A910006089D.html>

[20] Lexvoco, accessible at www.lexvoco.com

[21] Information regarding Plexus' Legal Gateway is accessible at: http://www.plxs.com.au/legal-gateway/

[22] LegalVision, accessible at: legalvision.com.au.

firms.[23] One recent, though small scale survey puts this down to budget constraints, and the limited importance given to specialised legal technology by others within the broader organisation.[24]

(v) Public and community sector

While the public and community legal sector has put a lot of its (limited) resource into developing good online legal information, the take up of AI technologies in the public and community sector has been limited by the relatively high development costs.

Where technology is being deployed it is more likely to be through the use of relatively discrete apps or hand-coded expert system tools than via more sophisticated machine learning platforms. For example, Moonee Valley Legal Service offers FineFixer, a website reasoning tool that provides trailed legal advice to Victorians seeking to appeal fines.[25] Currently, a number of Australian law schools are using 'hackathons' and specialist 'Law Apps' subjects to create such tools for pro bono purposes, for example in 2017 the Melbourne Law School Law App's class donated Apps to JusticeConnect and Legal Aid, among others.[26]

C. Current and recent advances in this area both locally and internationally

1. Uses in Legal Services

The variety of legal services assisted by AI can be broken into five main sections: expertise automation, legal research, document analysis, data analytics and prediction, electronic discovery. In product terms these categories are not always mutually exclusive, not least because they often draw on common or overlapping AI techniques. So far as possible, we offer illustrations of specific tools/platforms that are being used in Australia, as well as some of the leading international comparators. A number of these are not (yet) being used in Australia, eg, because they they do not have enough data on this jurisdiction. The smaller size and fragmentation of the Australian legal market, relative to the US and the UK may itself act as a constraint for some potential market entrants.

(i) Expertise Automation

New techniques in machine learning have fostered the development of expert systems that can solve substantive and procedural questions on demand and provide specific advice or decision-support in respect of a legal problem or compliance process.

Most automated processes act as decision support systems. These programs generally require a human legal expert to provide the conditions which must be fulfilled for a certain conclusion to be drawn (human-in-the-loop).[27] The conditions are usually in the form of decision trees, derived from statute. Such systems are time-efficient, cost-saving and routinely consistent in complex areas of law. Automated decision-making apps have become very popular for social justice areas, for example Helper (Aus) and Picture It Settled (US).[28]

Expertise automation, by contrast, operates at an equivalent or higher level than an expert lawyer and

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[23] Thomson Reuters/*Lawyers Weekly,* 'Technology Trends Within In-house Legal Departments' (May 2018), accessible at http://insight.thomsonreuters.com.au/resources/resource/technology-trends-within-inhouse- legal-departments-report

[24] Thomson Reuters, id.

[25] See: https://finefixer.org.au/about-finefixer/

[26] information regarding Melbourne Law School's LawApps class can be found at: https://law.unimelb.edu.au/students/jd/enrichment/pili/subjects/law-apps.

[27] Kate Lowry, *Artificial Intelligence and the Law* (16 July 2018) Australian Centre for Justice Innovation < https://acjiblog.wordpress.com/2018/07/16/artificial-intelligence-and-the-law>.

[28] See RALAT, Appendix.

can answer legal, policy and regulatory compliance questions 'on demand'.[29] Legal platforms at present may, like Neota Logic operate on a hybrid basis combining 'human-in-the-loop' expert systems with machine intelligence. [30] It is often difficult to assess the extent of expertise automation within the different legal platforms available. The RALAT project analysis suggests (based on public product information rather than independent evaluation), that the majority of current systems are still at the 'less intelligent' end of the automation scale.[31]

(ii) Legal Research

A variety of new platforms have radically changed the way lawyers may conduct legal research. Rather than manually search various legal databases, such as LexisNexis CaseBase or AustLii, in some fields lawyers can simply use an AI programs to conduct the research process for them.

Ailira is Australia's most notable independent legal researcher. Ailira is capable of providing relevant tax documents or cases by instantly searching multiple legal databases, for example legislation, cases, private rulings and commentary.[32]

The United States has a wider range of AI legal research tools. For example, Casetext's CARA A.I. can scan a relevant document (be it a case, submission, brief, memo or pleading) and provide a detailed list of other documents which are relevant to the pertinent facts and legal issues.[33] Conversely, Bad Bot searches for incorrect authorities and warns where a specific citation has been rejected by a Court.[34] IBM's Watson powers ROSS, which is probably the world's most advanced legal research AI to date, providing support through natural language processing. ROSS can generate precision answers to legal questions, provide automatic research updates on existing queries, and draft research memoranda for users.[35]

(iii) Contract and other document analysis

Contract analysis software uses natural language processing techniques to scan and compare documents, and to prepare and update standard contracts tailored to the client's business needs.[36] A growing number of product developers, such as RAVN,[37] Luminance[38] and Leverton[39] are using the same AI techniques to extend analysis to other kinds of legal documents, and/or to e-discovery processes. There are now a significant number of competing products on the market, many of which have been developed by and with large law firms. Thus, eg, Luminance was developed from an initial collaboration between London law firm Slaughter & May and the University of Cambridge, while RAVN is a collaboration between Linklaters and Reed Smith. In 2016, Australian law firm Corrs Chambers Westgarth launched its own contract analysis spin-out, Beagle Asia Pacific Pty Ltd, a joint venture with

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[29] Michael Mills, The AI Robots are (not) Coming (2018) *LawPracticeToday* <lawpracticetoday.org/article/3417>, 2.

[30] Mills, id, 3.

[31] RALAT, above n.6, pp.23-4.

[32] https://www.ailira.com/user-guide.html

[33] https://casetext.com/cara

[34] https://www.fastcase.com/blog/badlawbot/

[35] ROSS

[36] Mills, above n 29, 4.

[37] https://www.legalpracticeintelligence.com.au/reed-smith-experience-with-ravn-and-imanage/

[38] https://www.slaughterandmay.com/news-and-recent-work/news/luminance-launches-with-backing-of- invoke-capital-and-in-collaboration-with-slaughter-and-may/

[39] https://www.artificiallawyer.com/2017/03/29/baker-mckenzie-signs-global-ai-deal-with-leverton/

Canadian analytics company Beagle.[40] Beagle provides analytics in a range of practice areas, including procurement, risk, insurance, and intellectual property.[41]

Systems commonly used in Australasia include[42]

- Kira (CA/US/UK/AUS) users include Ashurst, Clifford Chance and Gilbert + Tobin.
- Luminance (UK/Sing/Aus) including Corrs, Gilbert + Tobin, Chapman Trip (NZ)
- Contract Probe (AUS/UK/US), including Mills Oakley Lawyers[43]

(iv) Data analytics and prediction

Considerable work is ongoing to harness AI techniques to predict the outcomes of litigation, the decisions of appellate judges, and the performance of advocates. While some of the work is not yet of commercial application,[44] a number of commercial systems are already on the market.

In the United States, litigation analytics has become big business, especially for third party litigation funders. DocketAlarm, for example, provides analytics based on indicative factors such as the characteristics of the Judge (decision length, time to decision, tendency to refer parties to mediation), the parties, the law firms and solicitors involved and their win rates. [45] LexisNexis's Lex Machina engages in "moneyball lawyering",[46] specifically analysing legal strategies and convincing arguments to determine what will fair best in front of a particular Judge.

The Australian market is significantly less developed, though there are small number of entrants. LexisNexis Australia has created research tools powered by legal analytics to scan substantial databases and provide greater speed relevance and transparency to legal research. They have also recently developed the High Court Advisor, which easily provides users insights and analytics on all past High Court judgments.[47]

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[40] https://www.beagle.ai/

[41] Glen Taylor, *Corrs Enters Joint Venture with Beagle to Provide Accessible AI Technology in Australia and New Zealand* (25 October 2016) Corrs News < http://www.corrs.com.au/news/corrs-enters-joint-venture-with- beagle-to-provide-accessible-ai-technology-in-australia-and-new-zealand/

[42] For general information on which law firms are investing in AI technologies, see Katie Walsh, 'The $1m web service showing law firms are embracing the AI beast' (1 March 2018) *Australian Financial Review* < https://www.afr.com/business/legal/the-1m-web-service-showing-law-firms-are-embracing-the-ai-beast- 20180225-h0wme4>.

[43] https://www.contractprobe.com/

[44] For example, see Daniel Martin Katz, Michael J Bommarito and Josh Blackman, 'A General Approach for Predicting the Behavior of the Supreme Court of the United States' (2017) 12(4) *PLOS ONE* e0174698. Using a time-evolving random forest classifier that leverages unique feature engineering, the authors have devised a model that outperforms null (baseline) models at both the judge and case level under both parametric and non- parametric tests, achieving 70.2% accuracy at the case outcome level and 71.9% at the justice vote level. In Europe, academics have developed an application to determine the likely outcome of cases before the European Court of Human Rights. Their analytics tool has a success rate of 79%: Nikolaos Alteras, Dimitrios Tsarapatsanis, Daniel Preotiuc-Pietro, and Vasileios Lampos, 'Predicting judicial decisions of the European Court of Human Rights: a Natural Language Processing perspective' (2016) *PeerJ Computer Science* 2:e93 available at: https://doi.org/10.7717/peerj-cs.93

[45] Mills, above n.29, 4.

[46] Jason Koebler, 'Is Artificial Intelligence Making Lawyers a Disappearing Profession?' *Australian Financial Review* (25 April 2017) <https://www.afr.com/business/legal/is-artificial-intelligence-making-lawyers-a-disappearing- profession-20170418-gvmzbs>.

[47] https://www.lexisnexis.com.au/en/insights-and-analysis/practice-intelligence/2018/Lawyer-vs-AI-A-legal- revolution

Veriluma is a NSW based analytics company that provides predictions on outcomes based on data, facts subjective views and experience. It then advises the user on best decision-making.[48] Veriluma has been trialled by Gilbert + Tobin since early 2017.[49]

Premonition is a US-based legal analytics company that entered the Australian market in 2016.[50] It claims to have the largest litigation database in the world and specializes in using AI to assess lawyer performance ('win rate') and likely case outcomes based on multi-variate analysis, including performance of opposing counsel and trend data on judicial decisions.

(v) Electronic Discovery

Using similar techniques to legal research and contract analysis, "ediscovery" can analyse massive amounts of documentary evidence to search for key people, phrases or events relevant to the legal or factual issue at hand.

It is common for many large and medium law firms to use ediscovery programs in their litigation teams. With many jurisdictions focusing on electronic registries and eCourt rooms, national providers such as Law In Order provide eDiscovery services, including reducing risk associated with collecting and analysing electronic data, and catering for all stages from forensic analysis to evidence presentation (provided in court approved formats).[51] Law in Order is compatible with other ediscovery providers, for example US-based Relativity, a data organising platform based on advanced searching and analytics, machine learning, and visualisations.[52] Many of the largest law firms use their own in- house technology teams to organise discovery processes. Norton Rose Fulbright, for example, has a global eDiscovery team which covers numerous practice areas, including litigation, data remediation, data protection and privacy, risk advisory and predictive coding.[53]

2. Courts

AI at present is being utilised primarily for different purposes within each of the criminal and civil justice systems.

(i) Criminal court decision-making

Australia is more conservative than other countries in adopting AI technologies in judicial settings for criminal law, although there are some who advocate its use.[54] The United States, in contrast, has used automated sentencing since the early 2000s.[55] Northpointe's COMPAS has been used to assist US judges in the pretrial (bail), parole and sentencing stages of decision making.[56] COMPAS relies on 137

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[48] http://www.veriluma.com/

[49] Staff Writers, *Aussie Law Firm Gilbert + Tobin Turns To Analytics To Predict Outcomes* (14 February 2017)
Which 50 <https://which-50.com/aussie-law-firm-gilbert-tobin-turns-analytics-help-predict-outcomes/>.

[50] Premonition, accessible at https://premonition.ai/

[51] https://www.lawinorder.com.au/our-services/ediscovery-services/ediscovery?utm_source=google&utm_medium=cpc&utm_campaign={campaign}&utm_term=ediscov ery&gclid=CjwKCAjw-dXaBRAEEiwAbwCi5reDHH1Oh4sadR4FH3cOICvtAsKn0HyDsAJGcJrcZ0HCegaAJD9zoxoCQX8QA vD_BwE

[52] https://www.relativity.com/ediscovery-software/

[53] http://www.nortonrosefulbright.com/au/our-services/dispute-resolution-and-litigation/ediscovery/

[54] Id, 261.

[55] Julia Dressel and Hany Farid, 'The Accuracy, Fairness, and Limits of Predicting Recidivism' (2018) *Science Advances*, available at: <http://advances.sciencemag.org/content/4/1/eaao5580>.

[56] Id.

inputs such as age, race, education, sex and criminal history to determine outcomes.[57] Similarly, in China, 'robo-judges' have been used since 2016 to determine nearly 15,000 cases for criminal sentencing.[58]

Criminal bail and sentencing are technically amenable to automated decision making,[59] but there remain critical questions about how such technology is to be used. The sentencing stage of trail requires the analysis of past sentencing decisions against the balancing of key factors such as the maximum penalty, offence tariffs (if one exists for the offence in question), sentencing objectives and aggravating and mitigating considerations. Programs can also build-in risk profiling and assessment factors that 'assist' in determining whether a defendant is more likely (eg) to be a flight risk, or to re- offend.[60] Supporters of the approach argue that once these key factors are weighed, the result is quicker, and more consistent than human decision-making.

On the other hand, critics express concerns over using big data analytics predictively to create such *individualised* assessments. Debate over the use of COMPAS in the US specifically highlights design risks and uncertainties, and the negative consequences of (unintended) algorithmic bias in such high stakes decision-making. [61] There is judicial recognition in the US that, at present, such tools should be no more than part of the material used in making a determination.[62] Scholars have also stressed the importance of policymakers focusing on standards of "fairness, accountability, and transparency" when deciding whether and how to deploy such tools.[63]

(ii) Civil Disputes

Internationally there is considerable interest in the development of virtual courts and online dispute resolution in civil justice. Much innovation can be achieved without the necessity of AI tools, however AI is also starting to be deployed both in supporting litigants and in diverting generally smaller claims from the traditional court system. Developments outside Australia include British Columbia's use of Solution Explorer in the Civil Resolution Tribunal, a system which automates small claims and condominium disputes. Solution Explorer is also referable to arbitration if the users are not satisfied.[64] China has recently employed a range of AI technologies in their civil sphere, including providing simple language tools to assist litigants, and informing them of their case risks prior to trial. Since 2017, AI assistants have been used in the Shanghai Higher People's Court to assist judges with their decision making.[65]

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[57] See Michael Legg, 'The Future of Dispute Resolution: Online ADR and Online Courts' [2016] *University of New South Wales Law Research Series* 71

[58] Neil Connor, Legal Robots Deployed in China to Help Decide Thousands of Cases (4 August 2017) The Telegraph
<https://www.telegraph.co.uk/news/2017/08/04/legal-robotos-deployed-china-help-decide-thousands-cases/>.

[59] Nigel Stobbs, Dan Hunter and Mirko Bagaric, 'Can Sentencing Be Enhanced by the Use of Artificial Intelligence?' (2017) 41 *Criminal Law Journal* 261, 1.

[60] Stobbs, Hunter and Bagaric, above n 13, 272.

[61] Matthias Spielkamp, Inspecting Algorithms for Bias (12 June 2017) *MIT Technology Review* < https://www.technologyreview.com/s/607955/inspecting-algorithms-for-bias/>.

[62] *State of Wisconsin v Loomis* 881 NW 2d 749 (2016) at 757

[63] Danielle Kehl, Priscilla Guo and Samuel Kessler, 'Algorithms in the Criminal Justice System: Assessing the Use of Risk Assessments in Sentencing' (July 2017). Responsive Communities. Accessible at https://dash.harvard.edu/bitstream/handle/1/33746041/2017-07_responsivecommunities_2.pdf?sequence=1 [64] Id, 7.

[65] Peng Shen, *Adoption of AI in Chinese Courts Paves the Way for Greater Efficiencies and Judicial* Consistency (28 February 2018) Baker McKenzie
<https://www.bakermckenzie.com/en/insight/publications/2018/02/adoption-ai-chinese-courts>.

One of the most ambitious schemes has been the Dutch Rechtwijzer ('signpost') project, which ran for over three years as a collaboration between the Hague Institute for the Internationalisation of Law (HIIL), the Dutch Legal Aid Board and the US tech firm, Modria.[66] Rechtwijzer was designed in two versions to assist couples in navigating the process of family separation and its financial consequences. The first version used guided pathways to provide users with information, advice, and referral tailored to their needs. Version 2.0 sought to extend the platform by adding-in online dispute resolution. However, despite hopes that the platform would have global appeal, and that version 2.0 could become largely self-financing, the project collapsed in 2017. This was not because of technical flaws, but primarly because of (i) difficulties encountered in integrating with traditional justice systems, and (ii), more fundamentally, because the public subsidy the project was relying on to transition from version 1.0 to 2.0 was withdrawn following insufficient early take-up, when measured against a relatively ambitious project target. A more modest version of Rechtwijzer, 'Justice42' is being developed by a new partnership, focused exclusively on the Dutch divorce market.[67]

Autonomous systems providing dispute resolution are being tested in Australia. For example, the Victorian Civil and Administrative Tribunal has recently approved an AI pilot that will resolve simple civil claims.[68] The Family Court of Australia uses Split Up, a hybrid system which combines rule-based reasoning with neural network artifacts, to assist with the distribution of property during a divorce.[69] In 2016 National Legal Aid received up to $341,000 to further automate family court proceedings using Rechtwijzer, and expertise behind e-bay's online dispute resolution centre.[70] The project is to be trialed in South Australia, though it is not clear at present whether the collapse of Rechtwijzer in the Netherlands has had any impact on the progress of the Australian project.

3. Smart Contracts

There is significant hype around the development of smart contracts. Smart contracts are automated computer programs that self-execute based upon a specific input, made possible by blockchain technology.[71] Accordingly, they are not AI as they act on pre-coded human demands and not autonomously. There are, however, many Australian firms investing in smart contracting, for example Corrs Chambers Westgarth has recently announced the development of an end-to-end real estate transaction blockchain using Ethereum for property transactions.[72]

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[66] See Roger Smith and Alan Paterson, 'Face to Face Legal Services and their Alternatives: Global Lessons from the Digital Revolution' (University of Strathclyde/Nuffield Foundation, 2014), 59ff. Accessible at https://strathprints.strath.ac.uk/56496/

[67] Justice42 accessible at http://justice42.nl/en/home-3/

[68] Monash University, *AI May Decide the Outcome in Civil Disputes* (14 March 2018) Lens <https://lens.monash.edu/2018/03/14/1331365/ai-may-decide-civil-disputes>.

[69] Davide Carneiro, Paulo Novais, Francisco Andrade, John Zeleznikow, José Neves, 'Online Dispute Resolution: An Artificial Intelligence Perspective' (2014) 41(2) *Artificial Intelligence Review* 211, 219.

[70] Tony Yoo, 'E-Divorce: How Artificial Intelligence Could Help Australian Couples Break Up Quickly and Cheaply' (8 August 2017) *Business Insider* < https://www.businessinsider.com.au/e-divorce-how-artificial-intelligence- could-help-australian-couples-break-up-quickly-and-cheaply-2017-8>.

[71] RALAT, above n.6, p.28.

[72] The OpenLaw Team, *The Purchase and Sale of Real Property on Ethereum* (24 April 2018) Consensys < https://media.consensys.net/the-purchase-and-sale-of-real-property-on-ethereum-55bdc289a7b5>.

D. What are the current gaps in Australia/New Zealand (e.g. around skills, training, infrastructure, regulation) as it relates to AI (and how this may compare internationally);

1. Skills and Training

There are no mandatory trainings or skill-set requirements around AI for legal professionals or law students in Australia or New Zealand.[73] However a number of law schools are seeking to close the gap by offering legal technology related subjects for students. For example, the University of Technology, Sydney now offers a major in 'legal futures and technology', and Melbourne Law School offers a small suite of legal tech subjects - LawApps, New Technology Law and Start Up Law - as well as a legal research stream in this area.

This reflects a growing trend across jurisdictions, with increasing numbers of law schools offering students some hands-on AI experience. For example Harvard offers courses in legal innovation and programming for lawyers,[74] while Stanford's Law and Design Schools have developed a highly innovative and influential Legal Design Lab.[75] University-based hackathons are also becoming common, such as Georgetown Law's Iron Tech Lawyer (US), and the Breaking Law series in Australia.

There has also been growth in Continuing Professional Development panels and conferences, aimed at teaching lawyers about the practice and ethical applications of AI. LexisNexis, for example, holds a yearly seminar on the topic, as well as providing publications.[76] Such developments are relatively ad hoc and market-driven, and at present there are few professional initiatives that institutionalise the importance of technological awareness and associated competencies.[77]

2. Regulation

There are currently no specific regulations or standards which regulate the use of AI in the Australian legal services market. Whether there ought to be is an important question, with significant ramifications for the development of the legal services market, and for access to justice.[78]

We highlight four key issues here:

(i) Restriction on the use of automated legal information and advice.

Currently legal services regulation draws a distinction between unregulated 'legal information' and regulated 'legal advice'.[79] The distinction between information and advice is both critical and opaque. So long as services are delivered by a regulated lawyer, the distinction does not matter, but any service

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[73] One UK professional regulatory body, the Chartered Institute of Legal Executives, is currently reviewing its educational pathways and curriculum in the context of technological changes to legal service delivery. The review process, however, is not yet complete.

[74] Erin Winick, *Lawyer-Bots Are Shaking Up Jobs* (12 December 2017) Technology Review <https://www.technologyreview.com/s/609556/lawyer-bots-are-shaking-up-jobs/>.

[75] https://law.stanford.edu/organizations/pages/legal-design-lab/. For a similar initiative outside the US, see the University of Helsinki's Legal Tech Lab at www.helsinki.fi/en/networks/legal-tech-lab

[76] LexisNexis, *Lawyers and Robots: Conversations Around the Future of the Legal Industry* (2017) <https://www.lexisnexis.com.au/_ data/assets/pdf_file/0003/187644/Lawyers_and_Robots_Whitepaper.pdf >.

[77] By way of exception, see the Singapore Academy of Law's LIFTED initiative at www.sal.org.sg/Resources- Tools/Legal-Education/LIFTED/Essentials. In Australia, the 'FLIP Stream' initiative at UNSW between the Allen's Hub for Law Technology & Innovation, and the Law Society of NSW provides some potential linkages between research and training in legal technology, its applications and regulation: see http://www.allenshub.unsw.edu.au/flip-stream.

[78] RALAT, above n 6, section 5, *seriatim.*

[79] Id, pp, 18-20, 30-1.

delivered by an unregulated person or entity must not step over the (grey) line from legal information into legal advice. One solution would be to remove the distinction and make the giving of legal information and advice regulated activities, but this is problematic in public interest and public education terms, and could have significant implications for access to justice in areas of the market that are fundamentally under-serviced by the established legal profession.

A more radical approach involves questioning, in the context of emerging AI technologies, whether the existing reservation of legal advice to the established legal profession is itself justifiable in the longer term. If automated legal advice tools are able significantly to reduce the risks to consumers associated with non-lawyer advisors, how legitimate is it to continue restricting consumer choice to traditional service providers? Does automation of itself require us to think more carefully about the need for risk-based regulation, rather than the current 'one size fits all' approach? These could be game-changing questions for both access to justice and the legal profession.

(ii) Quality and competence issues

If automated tools can deliver some legal services more accurately and more efficiently than humans, what implications does this have for the quality threshold of competent legal advice? Should we anticipate a point in the future when not using a given technology itself constitutes a failure of professional responsibility? Moreover, what should the duty to deliver legal advice competently now substantively require? For example, does a lawyer who provides a legal service supported by AI need to understand the workings of the algorithm and the integrity of the data used? [80] So far as we can assess, these issues have not yet been addressed (or at least not definitively) by those responsible for legal services regulation in Australia

(iii) Transparency and explainability standards for legal AI?

The ability to give clear reasons is central to sophisticated advice-giving by human lawyers; it is also critical in the context of judicial decision making.

Given the intricate array of reasoning structures used in advanced AI systems, trying to decipher the logical flows can be incredibly difficult. This lack of transparency and the unexplainable nature of more sophisticated autonomous AI is known as the "black box" problem. While not unique to law, it may create particular problems for law.[81]

Machine learning treats individuals as representatives of a cluster with similar traits (or 'features' in AI terms); as noted already in the context of criminal sentencing, there is a careful balancing that may be required here between the benefits of consistency, and a potential loss of individualisation and proper due process.

Considerable work in AI research is being undertaken to find technological solutions to the explainability and associated transparency problems,[82] but the need for regulation through

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[80] In 2012, the American Bar Association changed its guidance on the Model Rules of Professional Conduct to recommend that a lawyer's duty of competence include staying up-to-date with changes in relevant technologies. At least 25 states have adopted that amendment, with many also mandating technology-specific learning in continuing professional development: see the NSW FLIP Inquiry, above n.6 at 41.

[81] See Kehl et al, above; Finale Doshi-Velez, Mason Kortz, 'Accountaibility of AI Under the Law: The Role of Explanation' (Working Paper, Explanation and the Law, Berkman Klein Center for Internet & Society, November 2017), accessible at: https://dash.harvard.edu/bitstream/handle/1/34372584/2017-11_aiexplainability- 1.pdf?sequence=3;

[82] See, eg, Derek Doran, Sarah Schulz, Tarek R Besold, 'What Does Explainable AI Really Mean? A New Conceptualization of Perspectives' (2 October 2017) arXiv:1710.00794; Tim Miller, Piers Howe and Liz Sonenberg, 'Explainable AI: Beware of Inmates Running the Asylum Or: How I Learnt to Stop Worrying and Love the Social and Behavioural Sciences' (5 December 2017) arXiv: 1712.00547

transparency and explainability standards might also need to be considered. Of note in this context is the European Union's *General Data Protection Regulation* (2016) which provides for *'meaningful information about the logic involved'*[83] and a right 'not to be subject to a decision based solely on automated processing, including profiling, which produces legal effects…'.[84]

(iv) A regulatory 'sandbox'?

Innovative tools and platforms may require innovative regulation. There may be regulatory advantages to both regulators and regulatees to creating a safe space or regulatory 'sandbox' where innovation can be permitted and tested, notwithstanding that it falls outside or on the boundaries of existing regulation. Such approaches are increasingly used in financial services and specifically 'fintech' regulation.[85] The model is potentially transposable to the legal services space.[86]

E. What will the next 10 years bring for Australia?

The speed of growth and development in legal AI applications since the early 2010s makes prediction difficult. There is, moreover, still considerable hype about what AI may achieve, both positively and negatively; we tend to adopt a relatively conservative view regarding the extent of transformation in the next 10 years.[87] The opportunities are nonetheless considerable; whether they are achieved will likely depend on how both government and the sector itself addresses a number of fundamental risks/challenges

1. Opportunities

- Ubiquity: AI is likely to become increasingly ubiquitous across the range of functions and applications discussed in this paper. Ubiquity of itself should assist in reducing the costs of the technology and (perhaps) enhancing the range and quality of applications

- Access and cost reduction: Expertise and higher level process automation should further reduce the cost of legal services; these effects are likely to be felt initially in the commercial legal services sector. The potential to provide greater access to legal and dispute resolution services to middle and low income earners also exists, but may depend more upon the extent to which conditions (cp risks, below) enable AI technologies to enter the consumer legal services market in this period.

- Increased innovation: technology has itself become a significant vehicle for innovation in service design and delivery. This is likely to continue (though possibly with lower returns on

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[83] *Regulation on the Protection of Natural Persons with Regard to the Processing of Personal Data and on the Free Movement of Such Data, and Repealing Directive 95/46/EC* (entered into force 25 May 2018) L119, arts 13- 15.

[84] Ibid, art 22.

[85] See, eg, Australian Securities and Investment Commission, 'Regulatory Sandbox', accessible at https://asic.gov.au/for-business/your-business/innovation-hub/regulatory-sandbox/; Dirk A Zetzsche, Ross P Buckley, Janos N Barberis and Douglas W Arner, 'Regulating a Revolution: From Regulatory Sandboxes to Smart Regulation' (2017) 23 *Fordham Journal of Corporate & Financial Law* 31.

[86] In what we believe is a world first in legal services, in April 2018, the (UK) Solicitors Regulation Authority announced a 'waiver' scheme creating an innovation safe space which would enable firms to apply for specific rule waivers or relaxations in order to trial new products or business lines without risk of enforcement – see Thomas Allen, 'A "safe space": SRA pushes ahead with innovation agenda' *Legal Business,* 13 April 2018, https://www.legalbusiness.co.uk/blogs/a-safe-space-sra-pushes-ahead-with-innovation-agenda/

[87] RALAT, above n.6, p.12.

investment once more of the 'low hanging fruit' in the market has been plucked), as providers continue to search for competitive advantage.[88]

- Culture change: AI technologies may drive the sector to take technological competences more seriously, and will likely (further) push the development of a service culture. The elements of this latter change may be harder to define: relationship management; ethical reasoning, and commercial awareness are all examples of things that may in fact be more critical than technical legal expertise to the sector's future.

- Quality of work and wellbeing: technology is already and will likely continue to free time up from the traditional "grunt work" that is readily automatable. This may enable lawyers to focus more on their personal lives, and/or engage with more fulfilling, higher level, work.

B *Risks*

- Technological unemployment and de- and re-skilling: the impact of AI on law as an employment sector is difficult to assess. At present, AI is providing more decision support rather than a wholesale substitution effect. We are still a significant way short of the 'robo-lawyer'. Nonetheless, there is little doubt that AI, along with a range of other changes to business process that are already embedded in the legal services sector (process automation, offshoring work, using contract lawyers, greater leveraging of paralegal vs qualified staff) does threaten changes to the scale and structure of the workforce. Longer term, as Susskind and Susskind[89] observe, more likely than not there will be technological unemployment in the professions, but this is likely to be over decades rather than overnight phenomenon.

- A 'digital divide' of growing significance: there are at least two elements to this:
    o Limitations flowing from inequalities in digital infrastructure. By definition this is not a problem unique to law, but it does have ramifications, especially for regional, remote and rural practices, many of whom are under stress, and might be looking to make greater use of technology to reach and expand their client base.
    o AI technologies are not yet ubiquitous. Much of the technology law firms are building is proprietary, and the perceived market advantages associated with new technology are limiting collaboration and, to some extent, interoperability, and contributing to relatively high development costs. Much of the commercial product in this field is also geared to the larger law firms, with pricing to match. This contributes to a potentially substantial innovation gap between the corporate and consumer legal services markets

- Innovation risks: Two particular risks stand out:
    o Risks associated with or 'of' the technology in itself: there is a risk that we will try to 'run before we can walk' and implement AI-based solutions before they are truly capable of doing what they promise. Particularly with more complex and less transparent machine learning designs, it will be hard to determine whether they are 'ready' until they are operating. The risk of adverse effects may be heightened by technology's tendency to 'grow tentacles' throughout socio-

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[88] A good example, likely to be achieved in a short timeframe, is the fusion of AI and blockchain technologies, which may be critical to developing fully automated end-to-end solutions. This would not only support automated performance, but could assist greatly in building the underlying trust conditions for machine- machine interaction, necessary for the automation of high value transactions.
[89] Susskind and Susskind, above n.8, pp.290-5

technical systems that make the technologies very hard to reverse once they are in place. The use of agile and 'fail-fast' design thinking in the tech sector is something that perhaps needs to be adopted with caution in a context such as AI and law.[90]

o There may also be a risk of low take-up, particularly in the context of consumer legal services. Assumptions about consumer behaviour and the willingness to move online, particularly for more high-risk or high personal value legal work, require significant testing. The Rechtwizjer experiment highlights the dangers of over-optimism, and under-estimation of the need to market alternative provision, even in core areas of legal need like divorce and family arrangements. We cannot assume that 'if we build it, they will come'.

- Business risks: particularly within the small firm, consumer legal services sector. These include limited capacity to attract investment, poor succession planning, and the temptation to prioritise partner income (drawings) over future capital investment, may leave a proportion of firms lagging behind in terms of innovation, and vulnerable to substitution effects from tech providers. This may have access to justice implications where tech providers 'cherry-pick' the higher value/more commoditisable work, without substituting for the range of services provided by 'general practice' solicitors.

- Regulatory risks: of both over- and under-regulation. These are discussed in Section E, below.

- Ethical risks: Underlying issues of AI ethics, and questions as to the values that are implicit in the use of AI for a particular function, or in some instances built into the AI itself are important. AI does not (currently or in the foreseable future) have the ability to make ethical decisions that involve human values.[91] This is likely to be critical where AI is used in high-stakes decision support settings, eg, in bail or sentencing decisions or in other instances where it may substitute or supplement human discretion. Where systems must make assumptions based on human value-based reasoning, this should at least be apparent, and open to proper debate before systems are implemented.

- Unintended consequences of both the technology and its regulation: the effects of legal prediction technologies may be particularly profound and, at this stage, difficult to predict and control. Examples might include, eg, effects on human decision-making in sentencing matters; on the behaviour of the market for third party litigation funding, and even in terms of the impact of 'win rate' data on individual lawyers' client selection practices.

F. What resources and actions will be required to realise this potential (e.g. by government, industry, the education sector, and by individuals).

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[90] Cp Joe Tomlinson, The Policy and Politics of Building Tribunals for a Digital Age: How 'Design Thinking' Is Shaping the Future of the Public Law System, *UK Constitutional Law Association Blog* (21 July 2017) https://ukconstitutionallaw.org/2017/07/21/joe-tomlinson-the-policy-and-politics-of-building-tribunals-for-a- digital-age-how-design-thinking-is-shaping-the-future-of-the-public-law-system/

[91] It may be possible to build-in an element of consequentialist/utilitarian ethics, if it is feasible to calculate utilities for some decisions, but that in itself requires a decision to be made regarding the suitability of such a framework.

We are not in a position to be specific, so have framed this more as a set of issues and questions regarding possible action; we also consider steps that might be taken to mitigate the above risks

1. Government

- Appropriate design of professional regulation: in Australia this is increasingly a matter of co- regulation between the States/Territories and the profession. Consideration should be given to the role government has to play in enabling a regulatory regime that:
  - Addresses whether, and if so how, AI platforms may reduce or otherwise change the risks to consumers from unregulated or differently regulated service providers
  - Assesses the extent to which AI tools merit a changing balance between not just individual and entity regulation, but also *platform* regulation
  - Considers the need (if any) for transparency and explainability standards for legal AI.

- Investment and innovation funding to support advanced courtroom and personal litigation support tools: in 2014, the Productivity Commission noted that "investment in [courtroom] information technology has been uneven across jurisdictions and that the availability, quality and use of technology varies widely".[92] While processes like e-discovery are gaining ground, overall there appears still to be a relative absence of resources, including digital information and decision tools to support the growing numbers of self-represented litigants appearing before the courts.[93]

2. Industry and the professional bodies

The legal industry and its representative bodies have a role to play in at least three key areas: regulation; support for innovation, and support for education and training.

Regulation: The legal industry can also play an important role in fostering debate over whether, and is so how, current regulatory models may be inhibiting growth, innovation and access to justice. The Law Institute of Victoria's *Disruption* Report and Law Society of NSW *FLIP Inquiry* are both valuable starting points in that conversation,[94] but there appears (at least publically) to have been little work undertaken in terms of substantive regulatory review.

Support for legal tech start-ups and innovators: Law societies are already playing an educational role in this area, though at present much of the activity relies on tech providers, so that the more objective or critical perspective on what technology can offer may get underplayed. Support through education, advice and consultancy services is also seen as important in enabling innovators to comply with regulation.[95] The 'local' nature of both professional representation and regulatory functions (at State/Territory level) can be seen as a limitation in this context, potentially fragmenting innitiatives for innovation and regulatory reform. Would there be support for a national law incubator program, for examle, and if so, how might it be organised and funded?

Support for legal education and training: If there is an expectation that students are to become more familiar with sophistocated legal technology, then the cost of and issues of acces to that technology

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[92] Productivity Commission, *Access to Justice Arrangements – Overview,* Inquiry Report No 74, (September 2014), p.21, accessible at www.pc.gov.au/inquiries/completed/access-justice/report/access-justice-overview.pdf

[93] See id, Recommendation 17.2.

[94] Law Society of New South Wales, 'Report of the Commission of Inquiry into the Future of Law and Innovation in the Profession' (The Law Society of NSW,

2017)   112
<http://lawsociety.com.au/ForSolictors/Education/ThoughtLeadership/flip/index.htm>.
[95] Katy Miller, *Disruption, Innovation and Change: The future of the legal profession*. Law Institute of Victoria (2015), p.35, accessible at www.liv.asn.au/Flipbooks/Disruption--Innovation-and-Change--The-Future-of-t.aspx

becomes material. Legal tech is expensive. Some, particularly 'elite', law schools in the US and Australia have established individual relationships with legal tech suppliers, or have attracted sponsorship or other support from law firms. This fragmentary approach is unlikely to be a solution for everyone, and mayincrease rather than reduce the risks of digital divide across the industry. Some greater coordination is likely desirable here.

As new, hybrid, professional roles continue to evolve, the industry may need to do more to consider the training and professional status of those (new) lawyers that take graduate roles in tech firms. Are they receiving a sufficient legal training that will allow them to grow and move between law and technology areas later in their careers? Does the present system of continuing education do enough to assure 'hybrid' professional competences?

3. Legal education

Teaching students about legal technology and AI is likely to become more important not less. Whether this should involve a focus on learning specific (eg coding) skills and using specific applications, or developing a good understanding of how advanced ICTs are designed, and how they function is moot. At present much of the focus is on the former. Some degree of each might be the most desirable option.

The questions of where technological competence fits in the curriculum, and what it might need to displace also needs to be addressed, both as a matter of principle and as a matter of training regulation.[96] This is not straightforward, given increasing demands to broaden the curriculum to include a wider range of business and innovation skills more generally.[97] As indicated already, this cannot be considered separately from the issue of law schools access to legal tech.

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[96] This process may be underway: see Law Admissions Consultative Committee, Assuring Professional Competence Committee, 'Assuring Professional Competence: What We Need to Do' (n.d.), https://www.lawcouncil.asn.au/resources/law-admissions-consultative-committee/assuring-professional- competence-committee.

[97] See, eg, Julian Webb, 'Preparing for Practice in the 21st Century: The Role of Legal Education and Its Regulation' in Bernhard Bergmans (ed) *Jahrbuch der Rechtsdidaktik 2017/Yearbook of Legal Education 2017* (Berliner Wissenschafts-Verlag, 2018), 11, 33-34; Miller, above n.93, 33-35; Law Society of Western Australia, 'The Future of the Legal Profession' (December 2017) <https://www.lawsocietywa.asn.au/wp- content/uploads/2015/10/2017DEC12-Law-Society-Future-of-the-Legal-Profession.pdf>