

## Future Trends Report

Based on Analysis of the Team's Chosen Community / Organization in Mid-Term and Final Evaluation

Community / Organization Studied: Singapore Legal Sector, Singapore Academy of Law, Singapore Management University Law Faculty, Lex Quanta (legal tech startup)

### STEP 1. Identify Challenges

Read the Future Scene carefully and generate ideas for challenges, concerns, and possible related problems. Choose the 5 most important challenges and write them in the space provided. Include applicable research with appropriate in-text citations.

#### Challenge #1: Job Losses

##### Observation:

New legal technologies in IR 4.0 such as AI and machine learning will have a negative impact on the jobs in Singapore's legal sector. AI and computers are able to perform a high number of tasks junior lawyers or paralegals are able to do. With the use of AI in drafting contracts and performing legal research (e.g. using legal AI platforms such as ROSS, CARA, KIRA), the sector will increasingly see the loss of many legal jobs, especially repetitive and menial ones.

##### Problem:

Many trained lawyers, especially junior lawyers and paralegal personnel will be replaced by AI and legal technologies. This will result in a waste of both financial and economic resources as the legal training for such lawyers are not maximized and fully utilized.

Singapore's legal sector is already facing a glut of lawyers due to a spurt in the number of Singaporeans studying to be lawyers overseas and the slower economic growth during the last few years. With the increased use of AI and new legal technologies, Singapore's legal sector will face a double whammy of job loss and replacement.

Small and medium local law firms (< 30 lawyers per firm) will be increasingly challenged to recruit highly skilled lawyers to join them as these skilled lawyers are highly sought after by larger firms. Lowly skilled lawyers, who are mostly involved in low skill lawyering and menial jobs, will be in low demand as their jobs are easily replaced by AI.

**Research:**

1. Singapore's Chief Justice cited a research by the Boston Consulting Group which states that legal technology solutions could eventually perform as much as 30-50% of the tasks carried out by junior lawyers today.

Menon, S., Chief Justice. (2018, October 11). The Singapore Academy of Law: An essential dedication to hour and service. Lecture presented at Singapore Academy of Law Annual Lecture 2018 in Singapore. Singapore.

2. According to a Deloitte Insight report, the advent of technology has already contributed to a reduction of around 31,000 jobs in the UK legal sector, and it is thought that another 39% of the legal jobs are at "high risk" of being made redundant over the next two decades. Singapore's legal sector will face the same situation if no further actions are taken to mitigate the impact of technological changes.

Deloitte Legal. (2016, June). Global research study: future trends for legal service. *Deloitte Legal*. USA

3. According to Today Online, "the supply of lawyers came under the spotlight at the end of 2016, after Chief Justice Sundaresh Menon spoke about the issue in his speech at the Mass Call ceremony." He also announced that a "committee would be set up to tackle the oversupply of lawyers" and while measures have been taken by Singapore to address the oversupply, "the slowing economy meant that Singapore should be prepared that the situation for fresh law graduates and job-seekers is likely to remain difficult before it gets better."

Siau, M, E., (2016, September 10). The Big Read: As supply of lawyers lurches from shortage to glut, spotlight falls on policies. Retrieved from <https://www.todayonline.com/singapore/big-read-supply-lawyers-lurches-shortage-glut-spotlight-falls-policies>

4. As of 31 August 2018, there are 922 law practices and 5,336 law practitioners in Singapore. Of the 922 law practices, most practices (751 or 81%) comprise one to five lawyers, 151 (16%) practices comprise six to 30 lawyers and 20 comprise more than 31 lawyers. The small and medium law firms are defined as having less than 30 lawyers per firm.

The Law Society of Singapore. (2019). General Statistics. Retrieved from <https://www.lawsociety.org.sg/About-Us/General-Statistics>

## Challenge 2: Increase in Cyber Threats and Attacks

### Observation:

The use of AI and big data in the legal sector will lead to most of the legal and client data being stored and available in the cloud. The data are stored by law firms to enhance their research, online dispute resolution and outcome prediction. The security and privacy of these data are crucial for law firms and clients to share and collaborate effectively.

However, only 16% of decision makers in Singapore law firms have implemented more stringent measures against security issues related to legal tech in Singapore.

### Problem:

As the trend toward cloud-based data storage continues, the threat of devastating cyber-attacks is increasing. Even where firms have the resources for in-house data storage systems, finessed hackers can find ways around firewalls, passwords, and encryption of all types. Protecting firm and client data should be a top priority for firms of all sizes.

However, Singapore's small and medium law firms are not fully equipped to handle cybersecurity issues as they lack the training and resources to further secure their data. With the onset of AI and big data, their ability to handle even more data securely will be severely tested.

As the threat of cybersecurity worries the small and medium law firms, it prevents them from adopting cloud-based legal technologies and AI solutions.

### Research:

1. According to research done by America Bar Association in its 2017 Legal Technology Survey, in 2017 alone, 22 percent of law firms in the US experienced a cyberattack or data breach, which is up 14 percent from the previous year. Cyberattacks are increasing globally and the legal sector is not spared.

Ries, D, G. (2017, December 1). Security 2017. *American Bar Association Tech Report 2017*. Retrieved from [https://www.americanbar.org/groups/law\\_practice/publications/techreport/2017/security/](https://www.americanbar.org/groups/law_practice/publications/techreport/2017/security/)

2. According to Settle (2017), Jordan McQuown, CIO of leading law firm cyber security firm LogicForce said, “These attacks (cyber attack) have proven to have a low cost to execute and return a quick high dollar payout. The biggest threat that concerns me in 2018 is an attack that alters the integrity of data maintained by law firms. The reason this concerns me is most organizations are not adequately staffed, trained, and would be unable to detect these alterations.”

Settle, J. (2017, December 12). 10 law firm cyber-attacks of 2017. *Disruptor Daily*. Retrieved from <https://www.disruptordaily.com/top-10-law-firm-cyber-attacks/>

3. According to Settle (2017), LogicForce released a 2017 report on law firm cybersecurity that revealed over 200 U.S. law firms faced hacking attempts between 2016 and 2017, and 40 percent of the firms didn’t even know the attack had occurred.

Settle, J. (2017, December 12). 10 law firm cyber-attacks of 2017. *Disruptor Daily*. Retrieved from <https://www.disruptordaily.com/top-10-law-firm-cyber-attacks/>

4. According to Law Society of Singapore’s 2018 Legal Tech Survey in Singapore, “only 16% of decision makers in Singapore law firms have implemented more stringent and major measures against security issues related to legal tech in Singapore”. The rest either made incremental updates or no changes at all to their data security. This is a major concern for Singapore’s legal sector, especially for small and medium law firms which lack the IT or cybersecurity resources to implement more robust measures.

The Law Society of Singapore (2018). Legal technology in Singapore. Retrieved from [https://www.lawsociety.org.sg/portals/0/eblasts/pdf/LawSociety\\_LegalTech\\_Summary\\_Report.pdf](https://www.lawsociety.org.sg/portals/0/eblasts/pdf/LawSociety_LegalTech_Summary_Report.pdf)

### Challenge 3: Slow Adoption of Legal Tech in Small & Medium Law Firms

#### Observation:

According to the Law Society of Singapore's 2018 Survey of Legal Practitioners, legal technology is beginning to have an impact on the global legal sector, though Singapore law firms are still in the early stages of responding to this disruptive force.

Based on the survey, for the small and medium law firms, the legal tech solutions need to be affordable for them and also better suited for the Singapore market. The law firms indicate that part of their reluctance to invest more in legal tech stems from a sense that the products are expensive and not always well suited to local legal practice.

The survey noted that it is also vital that small and medium law firms' legal tech effort be supported in their endeavours through government and industry assistance or sponsored programs and platforms.

#### Problem:

Due to the limited budget to acquire/purchase the new technologies and software, small and medium law firms are reluctant to adopt legal tech solutions to improve its productivity and efficiency. The concerns about the costs of maintaining and operating these legal tech solutions are also obstacles for the small and medium law firms to adopt legal tech. In addition to the cost concerns mentioned above, the small and medium law firms do not have enough IT and technology expertise to decide which legal tech solutions to implement.

As a result, the small and medium law firms are slow to adopt legal tech solutions that can benefit their business now and in the future.

#### Research:

1. According to Law Society of Singapore's 2018 Legal Tech Survey in Singapore, the Singapore legal sector has mixed views about legal technology at the moment where 68% of decision makers view legal tech as an opportunity and a threat at the same time. The top challenges for law firms adopting legal tech are:
  - a. Lack of financial resources
  - b. Uncertain about costs and maintenance of technologies
  - c. Do not know which legal tech solution is most suitable to implement
  - d. Undecided on how much investment is required

The Law Society of Singapore (2018). Legal technology in Singapore. Retrieved from [https://www.lawsociety.org.sg/portals/0/eblasts/pdf/LawSociety\\_LegalTech\\_Summary\\_Report.pdf](https://www.lawsociety.org.sg/portals/0/eblasts/pdf/LawSociety_LegalTech_Summary_Report.pdf)

- According to Thomson Reuters, legal technology tools are levelling the playing field for all law firms. In the past, “larger pools of support staff and lawyers were necessary to accomplish or finish tasks” but now “medium law firms can also be prolific producers when it comes to traditional legal services”. There are legal tools which can automate documents and agreements in many areas. Such tools “essentially allow for more scale that smaller sized law firms could not handle previously”. These tools can aid smaller sized law firms in Singapore to be more productive and efficient.

Raczynski, J. (2018, August 10), How medium sized law firms can use legal tech to compete with the big industry players. Retrieved from <https://blogs.thomsonreuters.com/legal-uk/2018/08/10/how-medium-sized-law-firms-can-use-legal-tech-to-compete-with-the-big-industry-players/>

- The Ministry of Law (MinLaw), the Law Society of Singapore (LawSoc), Enterprise Singapore and the Infocomm Media Development Authority (IMDA) announced the launch of a new \$3.68m scheme to help Singapore Law Practices adopt technology. The new Tech-celerate for Law Programme aims to accelerate Singapore lawyers’ advancement of the technology journey especially for the smaller law firms.

Ministry of Law Singapore. (2019, May 10). Government steps up support to help Singapore law practices adopt technology. Retrieved from <https://www.mlaw.gov.sg/content/minlaw/en/news/press-releases/govt-steps-up-support-to-help-singapore-law-practices-adopt-tech.html>

- According to Dam (2018), while law firms in Hong Kong and Singapore are definitely more aware of legal technology and its uses compared to a few years ago, actual take-up is still quite low. “There are a number of ongoing initiatives to encourage the take-up of baseline technology solutions but overall, the level of adoption among law firms remains fairly low, particularly among the small and medium law firms,” says Noemie Alintissar, manager of the Singapore Academy of Law’s (SAL) Future Law Innovation Programme (FLIP), a legal innovation incubator accelerator programme.

Dam, R. (2018, June 13). Taking up Tech. Retrieved from <https://www.legalbusinessonline.com/features/taking-tech/75879>

### Challenge 4: Pressure from New Legal Service Model

#### Observation:

With the use of legal technologies such as AI, there is a proliferation of self-service law advisories on the Internet that focus on serving clients online. These consumer-centric virtual lawyers, online dispute resolution, AI judge and self-service legal platform that provide advice or law services will put tremendous pressure on traditional law firms to adopt legal technologies, innovate new legal solutions or service models and evolve its existing business.

Many of these traditional law firms, especially the smaller law firms, are not trained in business strategy and management in order for them to innovate and they also lack the business expertise, financial resources, and technical expertise to introduce new service models such as online lawyers. Subsequently, they are not ready to embrace the changing legal business model with innovations and changes.

#### Problem:

Due to their slow rate of adoption of legal tech and their lack of innovation, smaller law firms would become increasingly irrelevant and slow in terms of service speed. Clients would find going to the new and innovative law firms more convenient as minor tasks such as dispute resolution could be done online, and personal data on the cloud could be easily accessed. This would result in a complete obliteration of the need for smaller, technologically backward law firms which are not able to provide a new legal service model.

#### Research:

1. According to research, in his 2019 opening of the legal year speech on Jan 7, Chief Justice Sundaresh Menon warned that the competition to provide legal services will intensify in the near future, as technological trends start to make their impact felt. Online dispute resolution systems, adopted by e-commerce platforms, are helping to resolve simple and low-value consumer disputes, he pointed out.

Menon, S., Chief Justice. (2019, January 7). Chief Justice Sundaresh Menon: Address at the Opening of The Legal Year 2019. Retrieved from <https://www.supremecourt.gov.sg/Data/Editor/Documents/chief-justice-sundaresh-menon--address-at-the-opening-of-the-legal-year-2019.pdf>

2. According to a 2017 study by the Law Society, it was found that just 9% of small and medium Singapore laws firms used technology-enabled productivity tools, let alone AI software. To address this delayed adoption, Chief Justice challenged Singapore lawyers to “embark on a mindset shift to embrace, rather than resist, technology”. The main reason for this dismal situation is the perceived cost of adoption. Other reasons include the Singapore law practices’ lack of awareness as well as lack of urgency to improve their practices.

Menon, S., Chief Justice. (2018, October 11). The Singapore Academy of Law: An essential dedication to hour and service. Lecture presented at Singapore Academy of Law Annual Lecture 2018 in Singapore. Singapore.

3. According to Mr. Paul Neo (Straits Times, Jan 31, 2019), executive director of the Singapore Academy of Law Ventures, which runs the Future Law Innovation Programme (FLIP), “it is no longer enough for lawyers and legal professionals to be well-versed in the law, as there is an increasing need for them to think like tech entrepreneurs and use the skill to find new solutions to problems they encounter in their practice”. As not all lawyers are business management-trained, lawyers need to be taught the basis of business strategy in order for them to innovate new service models. FLIP is a two-year pilot program launched in Jan 2018 by Chief Justice to prepare the legal sector for technology disruption

Wong, C. (2019, January 31). New innovation modules for lawyers to launch next month. Retrieved from <https://www.straitstimes.com/singapore/new-innovation-modules-for-lawyers-to-launch-next-month>

## Challenge 5: Competition from Alternative Legal Service Providers

### Observation:

By leveraging AI and new legal technologies, new alternative legal service providers (ALSP) or non-traditional legal service providers, which offer a wider range of professional services such as business and technology consulting/ accounting services, will start to gain market share from the traditional law firms.

According to a Thomson Reuters Legal Executive Institute report in January 2019, the ALSP market grew from about US\$8.4 billion in 2015 to nearly US\$10.7 billion in 2017, with US\$1.2 billion going to the Big Four accounting firms. One of the Big Four, Ernst & Young, acquired a well-known ALSP in the UK last year, as it seeks to establish itself as a leading disruptor of legal services.

The Big Four accounting firms leverage their vast networks and comprehensive client service packages to service clients across different jurisdictions, different geographical boundaries and different time zones.

These alternative law service providers are changing the way that legal services are being charged and provisioned (e.g. fixed price for legal services VS individually agreed hourly rate). For example, some ALSPs offer document preparation services such as simple employment contracts or other agreements at considerably lower costs, cutting out the traditional lawyers.

### Problem:

Traditional law firms, especially small and medium law firms, often find it difficult to compete with such alternative legal providers as they lack the multi-disciplinary expertise, financial resources, technological expertise and geographical coverage to offer a more comprehensive client service.

More and more law firms are forced to offer lower prices or offer fixed prices and they might need to invest in digital innovations, due to pressure from their clients and increased competition from these new alternative legal providers.

### Research:

1. According to Deloitte Legal Consulting in a June 2016 survey with 234 in house legal service purchasers, 52% of the interviewees are considering buying

legal services from non-traditional law firms. More than 30% of the interviewees wanted their legal service providers to bring industry, commercial and non-legal expertise, which they currently do not.

Deloitte Legal. (2016, June). Global research study: future trends for legal service. *Deloitte Legal*. USA

2. According to a 2019 Thomson Reuters study, the total revenue for alternative legal service providers was estimated to be around US\$10.7 billion in 2017. The study notes that the demand for their legal service is growing very fast and it was just some years ago the revenues of these providers were zero. The study also showed more than 60% of the companies' law department interviewed were using alternative legal service providers for at least one type of service.

Legal Executive Institute & Thomson Reuters. (2019). Alternative legal service providers 2019: Fast growth, expanding use and increasing opportunity. *Thomson Reuters*. USA

3. According to a speech by Mr Edwin Tong, Senior Minister of State for Law and Health, at the 5<sup>th</sup> International Bar Association Asia Law Firm Management Conference, the adoption of AI has forced law firms to confront the existing pricing models of law firms. He mentioned that in the IBA Global Employment Institute's report on "Artificial intelligence and robotics and their impact on the workplace", it is reported that more and more law firms are forced to offer fixed prices and to invest in digital innovations because of the pressure from their clients and increased competition from new alternative legal providers.

Tong, E. (2019, January 19). Speech by Mr Edwin Tong, senior minister of state for law & health, at the 5th International Bar Association Asia law firm management conference. Retrieved from <https://www.mlaw.gov.sg/content/minlaw/en/news/speeches/speech-by-sms-edwin-tong-5th-IBA-asia-law-firm-management-conference.html>

**STEP 2. Craft the Underlying Problem**

Using the challenges listed in Step 1, identify a problem of major importance to the chosen community / organization in the future. Write your Underlying Problem making sure your question clearly explains the action that will be taken and the desired results/goal of that action.

**Incorporating Challenges 2, 3, 4, and 5****Underlying Problem:**

Given the changes that IR 4.0 and AI are bringing into Singapore's legal sector and the tremendous benefits they provide to Singapore's law firms, it is advisable that small and medium law firms adapt to these technological changes and disruptions in order to sustain growth in the year 2030 (Condition Phrase). Therefore, what possible solutions can we introduce to these small and medium law firms to accelerate the adoption of legal tech and AI in these firms (Key Verb Phrase), such that they can benefit and thrive (Purpose) in Singapore in the year 2030 and beyond (Future Scene Parameters)?

**STEP 3. Produce Solution Ideas**

Generate solution ideas to the Underlying Problem in Step 2. Choose the 5 most effective solutions and write the elaborated ideas in the space provided. Include applicable research with appropriate in-text citations.

**Solution 1: Legal AI Chatbot for Small & Medium Law Firm**

We, the 21<sup>st</sup> Centurists, would recommend the Ministry of Law, Law Society of Singapore, Singapore Academy of Law, and Infocomm Media Development Authority (“IMDA”) to create Singapore’s first legal AI chatbot by 2024 that directly caters to the small and medium law firms and connects individual clients with relevant small and medium law firms. The development cost of the chatbot will be borne by the government agencies to lower the cost of entry for the small and medium law firms.

Unlike many large law firm’s own chatbot tool that works with the law firm’s own clients, the recommended AI-enabled chatbot solution will be built to provide individual clients (locally and internationally) with an access to a Singapore network of “legal experts” – competent lawyers from small and medium law firms that have opted to join this chatbot service. The AI chatbot will store data (such as legal data, handled cases, contact details and experiences) of the small and medium law firms so that it can intelligently shift through the data to match the requirements of the clients.

The clients can access this chatbot service via a secured online webpage or through a mobile app built for the platform.

Clients respond to a series of questions from the AI chatbot about their situation, and the AI will provide the answer and suggests further consultation with relevant legal experts registered on the service, when appropriate. Once a match is found, the AI will initiate the connection between the two parties to discuss the relevant cases using secured Internet Protocol calls and chats.

In this way, the AI process will help to connect the legal experts from the small & medium law firms with a customer base in need of counsel at affordable prices. Using AI, the chatbot will also ensure equitable distribution of clients to the relevant lawyers registered in the service.

Through the use of this chatbot service, the small and medium law firms will benefit from getting new clients and businesses (local and international) that they are not able to seek previously. This will help small and medium firms to gain exposure locally and internationally as they do not have the financial and marketing resources to promote its services actively against the larger law firms and alternative legal service providers.

The benefits of getting new clients and businesses locally and internationally will motivate the small and medium law firms to adopt and use this AI-enabled chatbot

(developed at no cost for the small and medium law firms) from 2024, enabling them to familiarise with legal tech solutions and grow beyond 2030.

### Research:

1. According to Straits Time's July 29, 2019 report, "AI in chatbot can simulate human conversions, using natural language processing to, for example, understand a customer's request on websites or mobile apps". Our recommended solution will also include natural language processing and AI in our chatbot to help customers to connect with the lawyers of different small and medium law firms.

Luo, S. (2019, July 29). Adapt to AI as it takes hold at the workplace. Retrieved from <https://www.straitstimes.com/opinion/adapt-to-ai-as-it-takes-hold-at-the-workplace>

2. According to Farkash (2018), law firms usually have multiple attorneys who specialize in different kinds of law and a major component of administrative work at law firms involves putting clients in touch with the right attorneys. Legal chatbots in the law firms can undertake this task with effortless ease. He pointed that "potential clients who arrive at the website of the law practice will be greeted by the chatbot, and directed to a relevant attorney based on the information they furnish about their requirements. The benefits of legal chatbot extend beyond answering basic queries about legal rights and setting up meetings between attorneys and potential clients. Detail-oriented legal chatbot development can give lawyers valuable insights about the legal issues that most of their potential clients are interested in." Our solution uses the same concept mentioned above. However, it instead matches the clients with different small and medium law firms in Singapore.

Farkash, X. (2018, April 24). Legal chatbots- chatbots have the potential to evolutionize law. Retrieved from <https://chatbotlife.com/legal-chatbot-chatbots-have-the-potential-to-revolutionize-law-71e394377ffe>

3. According to the Croft (2018), "Chatbots, which use AI to answer simple questions from people wanting to learn more about a subject, are already being adopted in industries ranging from banking to medicine. Now they are making headway in the legal profession as a way to answer questions from clients and free up lawyers to deal with more complex matters". This growing use of AI chatbots in the legal sector will see more Singapore law firms exploring the use cases. We intend to help the small and medium law firms to start using AI chatbots through our solution.

Croft, Jane. (2018 June 8). Chatbot join the legal conversation. Retrieved from <https://www.ft.com/content/0eabcf44-4c83-11e8-97e4-13afc22d86d4>

## Solution 2: Virtual Reality Enabled Virtual Legal Office Space

We, the 21<sup>st</sup> Centurists, would recommend the Singapore Academy of Law, Ministry of Law, IMDA and a Virtual Reality (“VR”) company to create a virtual law office space enhanced with VR and AI technologies by 2026 that focuses on providing cost effective, efficient and flexible legal office support and practice management to Singapore’s small and medium law firms.

The traditional virtual office gives access to the official use of its address, office space to work and receive clients, receptionist and other administrative services. In the traditional model, small and medium lawyers may decide not to rent an office space but only pay for the use of the virtual office corporate address.

However, with the growth, advancement, and increasing deployment of virtual reality and virtual augmentation technologies (e.g. Amazon’s Sumerian, Linden Lab’s Sansar and Philip Rosedale’s High Fidelity etc), the experience of meeting and interacting with realistic representations of our friends and families in VR has become real for the first time. It is envisioned that many more future clients of legal services may prefer to meet at a VR office rather than travelling to the physical law firm office, especially if they are travelling or based internationally.

The VR enhanced virtual office space will provide the lawyers with entire augmented or virtual law offices – where their colleagues and clients appear as 3-D images.

Our recommended VR enabled virtual office space is specifically catered to small and medium law firms in Singapore which do not want a physical office space and comes bundled with legal tech solutions for running an effective legal practice. The smaller law firms can “rent” their virtual office on this platform and conduct their lawyering without the need of a dedicated team of support staff or worrying about operational issues.

Adopting this VR enabled virtual office space solution will help the small and medium law firms to lower the costs of operations (i.e. no physical office rental, no dedicated support staff). This lower cost of operation acts as an incentive for these firms to accelerate the use of new legal tech for productivity and efficiency such that these firms may continue to thrive in 2030 and beyond.

**Research:**

- 1 Based on an article by Marr (2019), “solutions which allowing humans to explore fully immersive computer-generated worlds (in VR), and overlay computer graphics onto our view of our immediate environment (AR) are both increasingly being adopted in both entertainment and industry”. He also mentioned that “over the next year (i.e. 2020), both VR and AR applications will become increasingly sophisticated, as devices get more powerful and capable of creating higher quality visuals” and “our understanding of how humans can usefully navigate and interact within virtual or augmented environments will also evolve, leading to the creation of more “natural” methods of interacting and exploring virtual space.”

Marr, B. (2019, January 14). 5 important augmented and virtual reality trends for 2019 everyone should read. Retrieved from <https://www.forbes.com/sites/bernardmarr/2019/01/14/5-important-augmented-and-virtual-reality-trends-for-2019-everyone-should-read/#617bb17822e7>

2. According to Shearing (2018), “as many law firms spend up to 50% of the fee dollar on the expenses of running an office, the potential for drastic reductions in those fees/costs is important”. Although some lawyers would prefer the more traditional ‘face-to-face’ working environment, Shearing believes “text-messaging, social media and video-conferencing has shown that people are willing to embrace new technology for the sake of convenience and connectivity”. As the maturing VR technology could significantly reduce costs, raise profits and give an advantage over the competition, it will become compelling to adopt VR for legal practice, especially for the small and medium law firms.

Shearing, M. (2018). The future of legal practice, or, how to stop worrying and embrace change. Retrieved from <https://block-sense.io/the-future-of-legal-practice/>

3. According to Riskin (2017), the use of augmented or virtual reality can be “a real boon” for law offices, even though significant refinements to both hardware and software will be required before the technology will appeal to most people. Riskin (2017) believes “while the VR law office may still be a vision for the future, that vision is certainly within reach, and it is of more than diversionary interest to keep an eye on developments in this field”. Likewise, our VR office space solution is also within reach as the VR technology will advance over the next few years.

Riskin, G. (2017, October 12). Virtual reality and the law firm. Retrieved from <https://www.gerryriskin.com/virtual-reality-and-the-law-firm/>

4. Bhardwaj (2018) cited “the most immediate benefit that traditional companies are deriving is shifting from expensive physical offices to inexpensive virtual workplaces”. An example given is the eXp Realty, a publicly-traded US real estate brokerage company, that runs their entire company in virtual reality using Virtual Reality technology. eXp Realty credits VR for allowing them to nearly double their staff from 6,500 to 12,000 agents. The company’s virtual world allows everyone in the company to attend team meetings, conferences, training and staff functions from anywhere in North America. It is, therefore, not farfetched to envision a Singapore legal sector with VR enabled office spaces in a few years’ time.

Bhardwaj, P. (2018, November 28). This \$610 million real estate company doesn’t have an office for its 13,000 agents and staff — instead, everybody works from this completely virtual island. Retrieved from <https://www.businessinsider.sg/exp-realty-virtual-office-campus-remote-2018-7/?r=US&IR=T>

### Solution 3: Private Blockchain Documentation Platform

We, the 21<sup>st</sup> Centurists, would recommend a blockchain company to create a private (permissible) blockchain platform by 2025 that provides legal agreement/contract drafting and sharing functions using blockchain for the small and medium law firms in Singapore.

As blockchain offers significant opportunities in terms of scalable processing power, high accuracy rates, and security at a significantly reduced cost compared to the traditional systems such as settlement, trading or accounting systems, the use of blockchain in legal applications and legal tech will be extensive in the future.

Our private blockchain platform for legal documentation can be organized and managed by the blockchain company where participants (small/medium firm lawyers) are specified and known. The data of the platform is encrypted and is stored securely within the private blockchain platform (unlike the public blockchain used by Bitcoin or other cryptocurrencies). This helps to remove the law firms' concerns about security and privacy in using the blockchain in an open and public environment.

Small and medium law firms can use the blockchain platform to draft secure legal contracts and agreements for their clients. The agreements are then stored securely on the platform using blockchain and the technology can ensure that agreements are interoperable, and when completed, tamper-proof.

The use of our solution platform will help to lower the cost for the clients and lawyers as legal documents can be prepared at a fast pace and stored very securely. The private blockchain platform for legal documentation also provides the small and medium law firms in Singapore an early avenue to learn, prepare and adapt to blockchain applications for the legal sector before blockchain technologies become more extensive in 2030 and beyond.

#### Research:

1. Michael Lew, cofounder of legal tech startup LegalComet, founding board member of ASEAN Legaltech and COO of Rajah & Tann Technologies, said this "Presently, blockchain may be seen as the lesser of the three critical technologies. However, this couldn't be further than the truth. The use of blockchain in legal technology applications has far reaching potential as a universal and trusted platform for the authentication of legal documents with unprecedented speed and cost."

Lew also added that blockchain in legal tech may take three to five more years to mature for its benefits to become visible but “it will come to a point where legal tech applications will heavily rely on blockchain”.

Singapore Business Review. (2019, May 23). How Singapore is bringing the legal industry into the digital age. Retrieved from <https://sbr.com.sg/professional-serviceslegal/in-focus/how-singapore-bringing-legal-industry-digital-age>

2. According to Legal Executive Institute, “there is a wide range of practice areas where blockchain technology can become a major player, from supporting the changing nature of legal work to enabling new lines of business and differentiating service offerings”. Law firms that are facing challenges, such as diminishing demand from corporate clients and stronger competition from non-traditional players, should consider blockchain technology to enhance their operations and client engagements.

Legal Executive Institute. (2019, January 04). The application of blockchain in legal sector. Retrieved from <https://blogs.thomsonreuters.com/legal-uk/2019/01/04/the-application-of-blockchain-in-the-legal-sector/>

3. According to Forbes, new breakthroughs from emerging technologies such as blockchain and distributed ledger (DLT) are creating new legal solutions as well. Blockchain's transparent and immutable record keeping is for legal applications. Blockchain platform can be used in the future to create, record and manage tamper-proof digital agreements.

Aitken, R. (2018, September 1). “I fought the law” & blockchain won: smart contracts for businesses handling legal have conviction. Retrieved from [https://www.forbes.com/sites/rogeraitken/2018/09/01/"i-fought-the-law-blockchain-won-smart-contracts-for-businesses-handling-legal-have-conviction/#ac38ab57f4c3](https://www.forbes.com/sites/rogeraitken/2018/09/01/)

4. Mire, S. (2019, February 1). Blockchain In the legal industry: 15 startups to watch in 2019. Retrieved from <https://www.disruptordaily.com/blockchain-startups-legal-industry/>

#### Solution 4: Legal Software-as-a-Service (SaaS)

We, the 21<sup>st</sup> Centurists, would recommend the various Singapore legal tech vendors, AI vendors and Singapore government agencies (such as Ministry of Law, Singapore Academy of Law, the Law Society of Singapore, Enterprise Singapore and Infocomm Media Development Authority) work together to integrate the legal tech services and solutions on a single cloud platform which will be hosted in Singapore by 2022. The Ministry of Law and IMDA will take the lead in bringing the legal tech and AI vendors together.

The various legal technology and legal AI vendors can be chosen from the new “Tech-celerate for Law” program which has curated a suite of baseline and advanced technology solutions for local law firms. Currently, these solutions are not aggregated on a unified platform.

With IMDA’s help, the services and solutions can be aggregated on a Singapore hosted cloud platform that is based on a Software-as-a-Service (SaaS) model. The small/medium law firms can have access to the whole range of aggregated services and solutions with a monthly subscription fee. This will reduce the different payments to different legal tech vendors to only one payment.

As a subscription model, the law firms do not need to commit upfront payments or money to use the legal tech services. This helps to lower the upfront cost barriers for using these legal tech services.

As the usage data is stored and administered in Singapore, the small/medium law firms can feel secure and safe using the Singapore-based legal SaaS platform.

Through this SaaS model, the small/medium law firms do not need to own and manage an internal IT infrastructure to use these services/solutions which are updated to the most recent, compliant version automatically. Given that cost concerns and lack of IT expertise are major mental obstacles for many of the small/medium law firms in Singapore to adopt legal technologies, the SaaS model offers these law firms a cheaper and fuss free implementation to access advanced legal technologies and solutions.

By removing the various concerns on adopting legal tech solutions (such as lack of budget, maintenance costs, lack of internal IT support persons, and cybersecurity fears), the legal SaaS helps to accelerate the adoption of legal tech solutions in Singapore’s small and medium law firms.

**Research:**

1. According to Kabra (2019), one of the major advancements in computing and technology over the past decade has been the proliferation of cloud, or SaaS, offerings. SaaS (Software-as-a-Service) is defined as a software distribution model in which a third-party provider hosts applications and makes them available to customers over the internet. Kabra said that “moving a law firm to the cloud with various ready legal solutions can be a real game changer” as “it increases the agility a law firm can operate with, cuts costs, and is extremely scalable”. Singapore’s small and medium law firms can benefit from the lower cost and higher scalability of SaaS.

Kabra, Rick. (2019, March 12). How are law firms using cloud and SaaS solutions? Retrieved from <https://dzone.com/articles/how-are-law-firms-using-cloud-amp-saas-solutions>

2. Chin (2019) noted that “for the majority of law firms, licensing legal tech solutions (i.e. buying the software or paying through subscriptions) is the easiest route as the onus is on the legal tech provider to be accountable for the software’s performance”. Law firms can leverage multiple legal tech solutions to better manage their practice and better serve their clients.

Chin, E. (2019, January 19). Build, borrow or buy: Three legaltech strategies for law firms. Retrieved from <https://alphacreates.com/build-borrow-or-buy-three-legaltech-strategies-for-law-firms/>

3. Canon Singapore noted that “with the advent of Software as a Service (SaaS) models, process automation for legal practice will likely be an even bigger trend in 2016 among legal firms” and “SaaS will prove indispensable when it comes to building more robust automated document systems, and firms, both large and small, are expected to begin delivering entire suites of automation and advisory tools built around specific legislation or industry-specific clients”.

Canon Singapore. Top 3 tech trends in the legal industry in 2016. Retrieved from <http://www.canon.com.sg/thinkbig/top-3-tech-trends-in-the-legal-industry-in-2016>

4. According to DirectLaw, “the market for consumer legal solutions is changing in fundamental ways, primarily because of the ascendancy of the Internet” and “SaaS offered in the Cloud is a major step towards innovation in the delivery of legal services in terms of increasing law firm productivity enabling law firms to serve a broader group of consumers at prices that these consumers can afford”.

DirectLaw's research also shows that a "younger generation of clients want to do business with lawyers over the Internet". If solos and small law firms don't respond to this demographic on their terms, they will forever lose this client basis to alternative providers. Hence, Singapore's small law firms should respond to these demographic trends.

DirectLaw. Cloud Computing: solos and small law firms, and consumer access to affordable legal services. Retrieved from <https://www.directlaw.com/cloudcomputing.asp>

5. Ministry of Law, the Law Society of Singapore, Enterprise Singapore and Infocomm Media Development Authority announced on 2 May 2019 the launch of a new S\$3.6m scheme (Tech-celerate for Law program) to help Singapore Law Practices adopt a suite of baseline and advanced legal technologies and solutions.

Ministry of Law of Singapore. Government steps up support to help Singapore Law Practices adopt technology. Retrieved from <https://www.mlaw.gov.sg/content/minlaw/en/news/press-releases/govt-steps-up-support-to-help-singapore-law-practices-adopt-tech.html>

6. According to John Sweeney, President of LogiForce, "Cloud-based services are a crucial leap forward for midsize law firms that cannot afford the capital expenditures of constantly buying new software when their old software becomes obsolete," and "by offering all of the same technology as a service, we help midsize firms scale and remain current with the most modern technology." These benefits of cloud-based services or SaaS will be available for Singapore small and medium law firms.

Charles, J. (2019, January 11). The legal industry is finally fixing its technology problem. Retrieved from <https://smallbiztrends.com/2017/02/legal-technology.html>

### Solution 5: Showcase Legal Tech Role Model Law Firms

We, the 21<sup>st</sup> Centurists, would recommend the Singapore Law Academy and Law Society of Singapore to select a group of 10 small and medium, nimble, technology-driven legal firms by 2021 which are highly willing to be used as role models in order to showcase the benefits of AI and legal technologies. These firms will be equipped with the latest legal technologies to provide a showcase on how adopting AI and advanced technologies can help them to move faster and more likely to pass savings immediately to their clients.

These AI and legal technologies will be heavily subsidized by the Ministry of Law, Singapore Law Academy and Law Society of Singapore to enable them to implement the latest technologies from Day One. They will start with a lean, automated, efficiency-driven approach as they do not have to deal with the massive existing overhead of larger firms.

On a monthly basis, these tech-driven law firms with heavily subsidized legal technologies are required to share and open up their AI and technology driven work processes for other small/medium law firms to explore, learn from, and consult with. They will act as catalysts to drive discussion and exploration of legal technologies in Singapore.

By 2025, about 450 or half of the small medium law firms in Singapore (~900 small medium law firms) will have gone through the AI/Legal tech familiarization and learning experience.

Through the positive demonstration by the role model law firms, the small and medium law firms in Singapore will be educated and motivated to adopt legal tech solutions at a faster pace.

#### Research:

1. The Law Society of Singapore. (2019). General Statistics. Retrieved from <https://www.lawsociety.org.sg/About-Us/General-Statistics>
2. In an OECD 2010 report, "SMEs, Entrepreneurship and Innovation", it identified that "one of the key drivers of SME innovation, adoption and innovative entrepreneurship is knowledge exchange between and among explorers of innovations/technologies and exploiters (who has adopted technologies and innovations), particularly for the exploitation of new, science-based knowledge". The report implies "the need for strong policies for attention to knowledge transfers and overcoming networking problems in innovation systems".

Examples of relevant policy approaches include creation of science parks and business incubators, and facilitating knowledge exploitation between firms, and shared foresight and strategy development activities. Our solution of legal tech role models will encourage knowledge exchange between those law firms which are exploring legal technologies, and those which have already adopted them.

OECD (2010). SMEs, entrepreneurship and innovation. OECD: Germany

3. Emerj CEO Daniel Faggella believes that “broad adoption of AI in law may begin with an ecosystem of small, nimble legal firms will emerge – a group of firms focused from day one on maximal automation and efficiency”. As a result, the pressure to adopt AI will likely come from peer pressure. He also believes “legal firms who adopt AI and are able to move faster may be more likely to pass those savings immediately on to their clients, and firms with no ability to automate may find themselves relatively overpriced for legal services that other firms have largely automated away”. Similarly, a small group of tech-savvy small or medium law firms in Singapore can start the adoption of AI and legal tech to create peer pressure for others.

Ravo, E, A. (2019, May 20). AI in law and legal practice – A comprehensive view of 35 current applications. Retrieved from <https://emerj.com/ai-sector-overviews/ai-in-law-legal-practice-current-applications/>

4. Recently, researchers discovered that the single best predictor of whether people will install solar panels on their roofs is whether their neighbors have done so. By investing resources in legal innovation and technology training, organizations can not only develop talent to work on existing matters; they can seed their workplace with “neighbors” who encourage others to change their own mindsets.

Teninbaum, G. (2019, February 14). Law firms either keep up with tech or get left behind. Retrieved from <http://www.abajournal.com/voice/article/time-for-a-hard-reset-to-the-legal-industrys-approach-to-innovation-technology>

### STEP 4a. Select Criteria

Generate criteria to determine which solution idea does the best job of solving your Underlying Problem and/or addressing the Future Scene situation. Select the 5 most important criteria for measuring solution ideas and write them in the spaces provided.

**Criterion #1:**

Which solution is the least expensive to implement in the small and medium law firms such that upfront and maintenance cost concerns do not delay the fast adoption of the legal tech solution in these firms?

**Criterion #2:**

Which solution is the fastest to implement in the small and medium law firms such that the time taken for these firms to enjoy the benefits of legal tech and AI is the shortest?

**Criterion #3:**

Which solution will cause the least disruption to the operation of the small and medium law firms such that these firms will be less resistant to adopt the new legal tech solutions?

**Criterion #4:**

Which solution requires the minimum number of in-house IT expertise to deploy, operate and maintain for the small and medium law firms such that these firms can maintain minimum number of IT specialists in the firm so as to save on overhead cost?

**Criterion #5:**

Which solution will bring the greatest revenues improvement over the small and medium law firms' current businesses such that these firms are willing to accelerate the adoption of the legal tech and AI solution?

**STEP 4b. Apply Criteria**

List the solution ideas from Step 3 on the grid. Use each criterion to rank the solutions on a scale from 1 (poorest) to 5 (best). The weighting for one important criterion may be doubled if necessary.

Step 3 Sol'n #	Solution Idea	Criteria					Total
		1	2	3	4	5	
#1	<b>Solution 1: Legal Chatbot for Small &amp; Medium Law Firm</b>	3	3	4	4	5	19
#2	<b>Solution 2: Virtual Reality Enabled Virtual Legal Office Space</b>	1	1	1	5	3	11
#3	<b>Solution 3: Private Blockchain Documentation Platform</b>	2	2	2	1	4	11
#4	<b>Solution 4: Legal Software-as-a-Service (SaaS)</b>	5	4	5	3	1	18
#5	<b>Solution 5: Role Model</b>	4	5	3	2	2	16

**Best Solution Based on Decision Grid:**

**Solution 1: Legal Chatbot for Small & Medium Law Firm**

## STEP 5. Develop an Action Plan and Evaluate its Feasibility

Develop your top-scoring solution idea into an Action Plan. Thoroughly explain how the Underlying Problem is solved, how the plan will be implemented, and how the community / organisation will be affected. Explain how this Action Plan is feasible with secondary research consulted, preferably also with primary research (feedback from chosen community / organization)

### Action Plan derived from Solution 1

We, the 21<sup>st</sup> Centurists, in consultation with our industry partners, would recommend the Ministry of Law, Law Society of Singapore, Singapore Academy of Law, and Infocomm Media Development Authority (“IMDA”) to create Singapore’s first legal AI chatbot service by 2024 that directly caters to the small and medium law firms and can connect individual clients with relevant small and medium law firms. The development cost of the chatbot platform will be borne by the government agencies such as Ministry of Law and IMDA to reduce the cost of entry for the small and medium law firms.

The chatbot service is powered by AI to do the following things:

- a. Uses natural language processing to interact with the legal clients (both locally and internationally) in real time and in plain English.
- b. Has the ability to predict the possible legal outcome of prospective clients so that the clients can decide if they would like to proceed with the case
- c. In the event that the client has responded to a series of questions from the AI chatbot about their situation and decided to proceed with their legal case after the outcome assessment, the AI chatbot will suggest further consultation with relevant legal experts from Singapore’s small and medium law firms registered on the chatbot platform.
- d. Provides advice, recommendations and outcome assessment based on the local legal context.
- e. For more complex law cases, the AI chatbot service can recommend and bring to the clients a panel of legal experts in various legal fields to address the complex requirements of the clients.
- f. Based on the past recommendations and matching history, the AI will determine the most equitable distribution of clients to the relevant lawyers registered in the service so that a wider spread of lawyers can reap the benefits of more clients.

This small and medium law firm AI enabled chatbot is unlike other chatbots created by individual law firms (usually larger law firms with the resources and expertise) for their own uses and for their own clients. The proposed solution will be built for Singapore small and medium law firms (<30 lawyers per firm) that will automatically include lawyers from these firms at no charge.

For lawyers from larger firms (>30 lawyers per firm) who want to join this chatbot service, a monthly subscription will be imposed on the lawyers.

The AI chatbot will store data (such as areas of interest/expertise, handled cases, contact details, and experiences) of the small and medium law firms so that it can intelligently shift through the data to match the requirements of the clients. These data are provided by the lawyers when they first registered with the chatbot service and will be stored securely in Singapore.

To access the service, the clients can access this chatbot service via a secured online webpage or through a mobile app with the chat bot built for the platform. Once a match is found, the AI will initiate the connection between the two parties to discuss the relevant cases using secured Internet Protocol calls and chat.

### Implementation Timeline

Based on our industry partner's comments, current AI chatbot technology is improving but may not be mature enough to be deployed now. Therefore, the AI chatbot platform should be launched in a later stage after further development and advancement of the AI and chatbot technology in the next 2 years. Accordingly, our launch date for the AI chatbot is moved to year 2024 after the trial run in 2022 and 2023. This trial run can help to improve and refine the chatbot solution.

In addition, the trial run will involve selected small and medium law firms that will not only test the chatbot system but will also share their experience and learning from the use of the AI chatbot solutions. Our industry partner commented that these firms can act as catalysts for further discussions and exploration of the chatbot solution.

Year	Steps
2020	<ul style="list-style-type: none"> <li>Plans for the AI Chatbot service to be approved by Ministry of Law, Law Society of Singapore, Singapore Academy of Law, and IMDA</li> </ul>
2021	<ul style="list-style-type: none"> <li>Registration of small and medium law firms' lawyers on platform and collection of data sets for AI chatbot service.</li> <li>IMDA experts works with chatbot technology and AI companies to create the necessary online platform, communications tools and mobile app</li> </ul>
2022	<ul style="list-style-type: none"> <li>Initial trial run by Ministry of Law, Law Society of Singapore, Singapore Academy of Law, IMDA, and selected small &amp; medium law firms to test the AI behind the chatbot platform.</li> </ul>
2023	<ul style="list-style-type: none"> <li>Improvement is made on the platform and AI based on feedback from the trial run.</li> </ul>
2024	<ul style="list-style-type: none"> <li>Launch of the AI-enabled chatbot with its related online website and mobile app.</li> <li>Marketing and launch promotion to be carried out by The Law Society and Singapore Academy of Law in Singapore and by Enterprise Singapore in other countries to increase awareness of the platform.</li> </ul>
2025 – 2030	<ul style="list-style-type: none"> <li>Further refinement of AI used in the chatbot to improve accuracy and relevance of matching and outcome assessment</li> <li>Introduction of Virtual Reality technology to facilitate the discussion between the clients and lawyers</li> </ul>

### Addressing the Underlying Problem

To tackle our underlying problem, we want to introduce solutions to small and medium law firms that will help to accelerate the adoption of legal tech and AI in these firms (Key Verb Phrase) such that they can benefit and thrive (Purpose) in Singapore in the year 2030 and beyond (Future Scene Parameters).

We believe our solution and action plan address the Key Verb Phrase and meet the Purpose for the following reasons.

- a. The AI chatbot will be developed by the related government agencies and legal stakeholders at no cost to the small and medium law firms. In addition, the lawyers from these firms do not have to pay subscription fees to be registered and to use the chatbot service. As cost is a major consideration for small and medium law firms, these law firms will be willing to adopt the virtually free AI chatbot service.
- b. Through the use of this chatbot service, the small and medium law firms will benefit from receiving new clients and businesses (local and international) that they are not able to seek previously. This new way of serving clients and getting new business allow the small and medium law firms to continue to thrive in the year 2030.
- c. The service will help small and medium firms to gain exposure locally and internationally as they do not have the financial and marketing resources to promote its services actively against the larger law firms and alternative legal service providers.
- d. Through the AI chatbot platform, a panel of legal experts (selected from the registered small and medium law firms) can be created to handle complex law cases for clients. This helps the lawyers in these firms to compete against larger law firms and alternative legal service providers (who are able to bring their own experts for complex cases), thus, giving the small and medium law firms a better chance to thrive in 2030 and beyond.
- e. The benefit of getting new clients and businesses locally and internationally and competing against larger firms will motivate the small and medium law firm to adopt and use this AI-enabled chatbot from 2024, enabling them to familiarise with new legal tech solutions and grow in 2030 and beyond.
- f. After the launch of the chatbot platform in 2024, the platform can be enhanced with further features such as virtual reality meeting and blockchain enabled legal documentation. The introduction of VR and blockchain technologies as part of the AI chatbot platform can help the small and medium law firms to be less resistant to these technologies used in future legal tech solutions.

### Potential Assistors

We have identified 4 potential assistors to our solutions:

- a. **Universities in Singapore:** More technology-related courses such as AI, Information Science & Law, Privacy and Data Protection Law and IT Law are now being offered to law undergraduates in local universities. New joint programmes (e.g. Law and Info Com) are also being launched by the universities to prepare a new generation of law graduates who are able to appreciate and utilize technology in law practices. Our solution can seek help and guidance from the local universities' relevant departments (given their local expertise in law and info communications technologies) in building the AI chatbot platform that will be based on the local context.
- b. **AI Singapore (AISG):** National Research Foundation set up AI Singapore (AISG) to bring research institutions and start-ups in this field together back in 2017. We can seek their help in building our AI Chatbot solution. To scale development efforts, Minister-in-charge of Smart Nation Initiative Vivian Balakrishnan said that the government is looking to open up access to data and AI tools so everyone can experiment. "We want to support SMEs to adopt AI and work on Government use cases," he said. This is a positive development
- c. **Enterprise Singapore:** The agency is responsible for helping Singapore enterprises to grow locally and internationally. As the chatbot platform is also for international legal clients, International Enterprise Singapore can help to promote our AI chatbot service to potential legal clients in other countries.
- d. **Technology savvy small and medium law firms:** We can seek a group of small and medium sized, nimble, technology-driven legal firms to volunteer working with us throughout the implementation plan. This will help in identifying the potential issues early before the launch of the AI chatbot service.

### **Potential Resistors**

We have identified 3 potential resistors to our solutions:

- a. **Senior lawyers in small and medium law firms:** Some senior lawyers in these firms may be resistant to any form of legal tech and AI as they are not tech savvy unlike the younger generation of lawyers. They may question the ability of the AI chatbot and whether the solution will fairly determine the best lawyers to handle the clients' cases. As a result, they may not want to sign up for the service themselves.
- b. **Government agencies:** Given that we are building the AI chatbot service specifically for the small and medium law firms, there may be objections from government agencies that the service should not be free or even heavily subsidized. These agencies may question why government funds should be spent helping the small and medium law firms at all and not on other things.
- c. **Big local law firms:** As the big firms are not direct beneficiary to the AI chatbot service, they may voice their displeasure that public funds are being used to create a platform that will eventually compete with them for businesses.

## Potential Obstacles and Solutions

We have identified some potential obstacles and solutions in the table below:

### Potential Obstacle #1

AI and machine learning solutions, before they can predict or suggest outcomes, require training. Data scientists and programmers must feed AI algorithms, huge data sets to breakdown and digest in order to spot trends and patterns in the language, imagery or sound of those data sets. As a result, the programmers' bias may creep into the AI algorithms and may potentially create unethical, immoral and sometimes unfair results. The consequence is that the lawyers and clients will not want to use the AI chatbot service.

### Solutions to Obstacle #1

The solution can seek the help and collaboration from AI Singapore from the beginning to implement the right checks and balances for our AI data sets.

We will also involve the identified assisters (i.e. the group of small and medium sized, nimble, technology-driven legal firms) from the beginning to collaborate with the AI programmers on the algorithms to ensure fairness and accuracy.

Given that there will be a trial run before the actual launch in 2024, there is time to fine-tune the accuracy and relevance of the AI algorithms

### Potential Obstacle #2

Currently, there are existing local online lawyer listings/directories (commercial/public) that help clients to search for relevant lawyers in Singapore.

Some of these online listings and directories provide limited interactions with the potential clients using simple Q&A format. These listings/directories may upgrade in the future using chatbots and may compete with our solution.

### Solutions to Obstacle #2

Many legal online listings and directories do not provide immediate legal responses to the clients as they rely on human lawyers to answer the questions. As our solution is enabled with AI chatbot, it is more interactive and can provide immediate legal response to the client. This will be more attractive for the end users to use.

Given that we are also adding legal outcome assessment as a feature to the AI chatbot service, we have an added advantage here compare to the existing online listing services which do not provide any assessment.

We can also invite these existing online listing websites to partner with our AI chatbot by allowing us to use their data sets.

**Potential Obstacle #3**

As clients will have to disclose some of the details/information relating to their litigations, the clients may be wary that their data and information is being processed by the AI. As a result, clients may be reluctant to use the AI chatbot for their enquiries.

**Solutions to Obstacle #3**

IMDA and Ministry of Law can store the data sets and host the AI chatbot solution in secured data centres in Singapore. This will ensure that no data will be leaked outside Singapore and the AI chatbot is under controlled in Singapore with our government oversight.

This arrangement will provide the clients with the assurance of stringent data protection and privacy.

**Research for Action Plan:**

1. According to Straits Time's July 29, 2019 report, "AI in chatbots can simulate human conversions, using natural language processing to, for example, understand a customer's request on websites or mobile apps".

In addition, the article also mentioned that "while big corporations may have the means and expertise to drive the adoption of AI technologies, small-and-medium-sized businesses need to look for funding to help them, such as through government grants and industry schemes". Our action plan calls for the participation of relevant agencies in Singapore to provide funding support for our AI chatbot solution.

Luo, S. (2019, July 29). Adapt to AI as its takes hold at the workplace. Retrieved from <https://www.straitstimes.com/opinion/adapt-to-ai-as-it-takes-hold-at-the-workplace>

2. According to the report by The Law Society of Singapore, it is vital that small and medium law firms to be supported in their technological effort through government and industry assistance programmes. The Law Society, together with the Ministry of Law and Enterprise Singapore, are already working together to secure more funding and support for these law firms. The three organizations mentioned here are important assistors to our AI chatbot solution.

The Law Society of Singapore (2018). Legal technology in Singapore. Retrieved from [https://www.lawsociety.org.sg/portals/0/eblasts/pdf/LawSociety\\_LegalTech\\_Summary\\_Report.pdf](https://www.lawsociety.org.sg/portals/0/eblasts/pdf/LawSociety_LegalTech_Summary_Report.pdf)

3. According to Law Practice today, the "legal sector should consider the possibilities of deep learning Natural Language Processing (NLP) to support firm operations and enrich automate client interactions" and "it is now time to recognize AI and NLP as essential tools and think about applications for every component in the business of law". Our AI chatbot incorporates these two key tools.

Wafapoor, V. (2018, October 12). Natural language processing: an essential tool for attorneys. Retrieved from <https://www.lawpracticetoday.org/article/natural-language-processing-tool-attorneys/>

4. According Singapore Academy of Law's Legal Technology Vision, "the ability to predict the outcome of prospective litigation has far-reaching benefits for not only the lawyers and their clients but also the whole justice system". This is because it is important for the lawyers to dissuade their clients from undertaking litigation which is unlikely to succeed but it is also important to protect the courts from taking too many unnecessary and potentially unmeritorious litigation cases. Our AI chatbot not only helps clients to connect to the relevant small and medium law firms in Singapore, it also possesses an outcome assessment ability to help clients to decide if the litigation is desirable.

Legal Technology Cluster Committee. Singapore Academy of Law. (2017). *Legal Technology Vision*. Singapore: Singapore Academy of Law.

5. According to Law Society of Singapore's 2018 Legal Tech Survey in Singapore, for the small and medium law firms to invest and use legal tech solutions, the solutions should be well suited to the local legal practice and market.

The Law Society of Singapore (2018). Legal technology in Singapore. Retrieved from [https://www.lawsociety.org.sg/portals/0/eblasts/pdf/LawSociety\\_LegalTech\\_Summary\\_Report.pdf](https://www.lawsociety.org.sg/portals/0/eblasts/pdf/LawSociety_LegalTech_Summary_Report.pdf)

6. According to Randolph K. Adler, a partner at RK ADLER LLP, a New York-based law firm, many boutiques law firms have a specific legal focus and/or specialization. As a result, "there is a need to round out the firm's service offerings to compete with traditional 'one-stop shopping' firms". Very often, this is "achieved through collaborations with other lawyers or law firms". Accordingly, he believes "these collaborative relationships can shift according to client needs" and "rather than building a 100-person law firm, independent lawyers and small firms can forge short-term relationships or a panel of experts on a case-by-case basis to respond to market needs". Our AI Chatbot is built with the ability to recommend a panel of legal experts for clients with complex legal cases.

Law Bank. (2017, October 18). Independent lawyer collaboration and the modern law firm. Retrieved from <https://law-bank.com/independent-lawyer-collaboration/>

7. According to a Channel News Asia report on Feb 2019, Minister-in-charge of Smart Nation Initiative Vivian Balakrishnan said Singapore will “double down” on its efforts to build up its artificial intelligence (AI) sector, and equip its workforce to use these tools to “participate meaningfully” in a future where the economy is driven by technology.

He mentioned how Singapore has already started its AI journey in 2017 with the setting up of the AI Singapore (AISG) to bring research institutions and start-ups in this field together. Our solution proposes the partnership with AISG as one of the assistors.

Kwang, K. (2019, February 8). Singapore to ‘double down’ on artificial intelligence efforts, says Vivian Balakrishnan. Retrieved from <https://www.channelnewsasia.com/news/singapore/singapore-double-artificial-intelligence-efforts-balakrishnan-11298028>

8. According to Singapore Academy of Law’s report, many innovative education modules are currently being carried out by the law schools in Singapore to prepare the law students for a legal technological world. The courses include Artificial Intelligence, Information Science & Law and IT Law in NUS; and Introduction to Law & Technology, and Privacy & Data Protection Law in SMU. Joint programmes are also being launched brining IT and Law together. For example, SMU Law is planning to launch a joint degree in 2020 with its School of Information Systems. The universities mentioned above can be great assistors for our solution.

Singapore Academy of Law Ventures. (2019, April 9). 2019: State of legal innovation report Asia Pacific. Retrieved from [https://www.sal.org.sg/Portals/0/PDF%20Files/State of Legal Innovation APAC 2019.pdf?ver=2019-04-09-133830-127](https://www.sal.org.sg/Portals/0/PDF%20Files/State%20of%20Legal%20Innovation%20APAC%202019.pdf?ver=2019-04-09-133830-127)

9. Emerj CEO Daniel Faggella believes that “broad adoption of AI in law may begin with an ecosystem of small, nimble legal firms will emerge – a group of firms focused from day one on maximal automation and efficiency”. As a result, the pressure to adopt AI will likely come from peer pressure. He also believes “legal firms who adopt AI and are able to move faster may be more likely to pass those savings immediately on to their clients, and firms with no ability to automate may find themselves relatively overpriced for legal services that other firms have largely automated away”. Similarly, a small group of tech-savvy small and medium law firms in Singapore can start the adoption of AI and legal tech to create peer pressure for others.

Ravo, E, A. (2019, May 20). AI in law and legal practice – A comprehensive view of 35 current applications. Retrieved from <https://emerj.com/ai-sector-overviews/ai-in-law-legal-practice-current-applications/>

10. According to Thomson Reuters’ *Legal Executive Institute*’s March 2018 report, Dr Paola Cecchi-Dimeglio, a behavioural scientist and senior research fellow for Harvard Law School’s Center on the Legal Profession and the Harvard Kennedy School, he says that AI, machine learning and deep learning can be biased and that the industry is only now becoming aware of it. We are proposing to work with our assistors including the universities, AISG, and IMDA to ensure objectivity in our AI.

Thomson Reuters Legal Insights Europe (2018, March 1). Is it possible for AI to be biased? *Legal Insights Europe*. Retrieved from <https://blogs.thomsonreuters.com/legal-uk/2018/03/01/possible-ai-biased/>

11. According to Shearing (2018), “as many law firms spend up to 50% of the fee dollar on the expenses of running an office, the potential for drastic reductions in those fees/costs is important”. Although some lawyers would prefer the more traditional ‘*face-to-face*’ working environment, Shearing believes “text-messaging, social media and video-conferencing has shown that people are willing to embrace new technology for the sake of convenience and connectivity”. As the maturing VR technology could significantly reduce costs, raise profits and give an advantage over the competition, it will become compelling to adopt VR for legal practice, especially for small and medium law firms.

Shearing, M. (2018). The future of legal practice, or, how to stop worrying and embrace change. Retrieved from <https://block-sense.io/the-future-of-legal-practice/>

## Bibliography

Cite the resources you consulted using the APA format.

### List of References:

- Aitken, R. (2018, September 1). "I fought the law" & blockchain won: smart contracts for businesses handling legal have conviction. Retrieved from [https://www.forbes.com/sites/rogeraitken/2018/09/01/"i-fought-the-law-blockchain-won-smart-contracts-for-businesses-handling-legal-have-conviction/#ac38ab57f4c3](https://www.forbes.com/sites/rogeraitken/2018/09/01/)
- Bhardwaj, P. (2018, November 28). This \$610 million real estate company doesn't have an office for its 13,000 agents and staff — instead, everybody works from this completely virtual island. Retrieved from <https://www.businessinsider.sg/exp-realty-virtual-office-campus-remote-2018-7/?r=US&IR=T>
- Canon Singapore. Top 3 tech trends in the legal industry in 2016. Retrieved from <http://www.canon.com.sg/thinkbig/top-3-tech-trends-in-the-legal-industry-in-2016>
- Casato, G. (2018, October 16). Singapore's role in the fourth industrial revolution. Retrieved from <https://www.businesstimes.com.sg/opinion/singapores-role-in-the-fourth-industrial-revolution>
- Chan, T, J. (2018, April 26). What Industry 4.0 means to Singapore and why its workers must upskill and lose their sense of entitlement. Retrieved from <https://www.scmp.com/lifestyle/article/2143239/what-industry-40-means-singapore-and-why-its-workers-must-upskill-and-lose>
- Charles, J. (2019, January 11). The legal industry is finally fixing its technology problem. Retrieved from <https://smallbiztrends.com/2017/02/legal-technology.html>
- Chettiar, K. (2018, January). Legal industry to embrace industry 4.0. Retrieved from <https://lawgazette.com.sg/practice/practice-support/legal-industry-to-embrace-industry-4-0/>
- Chew, A., Lim, J., Lee, J., & Koh, T. (2018, October 21). Legal technology in Singapore. Retrieved from <https://lawtech.asia/legal-technology-in-singapore/>
- Chin, E. (2019, January 19). Build, borrow or buy: Three legaltech strategies for law firms. Retrieved from <https://alphacreates.com/build-borrow-or-buy-three-legaltech-strategies-for-law-firms/>

Chong, C. (2018, September 6). Here are the 5 fastest-growing jobs in Singapore, says a LinkedIn survey. Retrieved from <https://www.straitstimes.com/business/economy/here-are-the-5-fastest-growing-jobs-in-singapore-and-why-many-are-filled-by-foreign>

Chua, A. (2019, January 19). The big read: rise of the machine – how technology is disrupting Singapore’s law firms. Retrieved from <https://www.todayonline.com/big-read/big-read-rise-machine-how-technology-disrupting-singapores-law-firms>

Cotteleer, M., Sniderman, B. (2017). Forces of change: industry 4.0. *Deloitte Insights*. USA

Croft, Jane. (2018 June 8). Chatbot join the legal conversation. Retrieved from <https://www.ft.com/content/0eabcf44-4c83-11e8-97e4-13afc22d86d4>

Dam, R. (2018, June 13). Taking up Tech. Retrieved from <https://www.legalbusinessonline.com/features/taking-tech/75879>

Delgado, A. (2018, June 13). Three impacts of AI on society. Retrieved from <https://www.forbes.com/sites/forbestechcouncil/2018/06/13/three-impacts-of-artificial-intelligence-on-society/#d2f188c6ec04>

Deloitte Legal. (2016, June). Global research study: future trends for legal service. *Deloitte Legal*. USA

Digital economy and the 4<sup>th</sup> industrial revolution. (2017). Retrieved from [http://www.nlb.gov.sg/sure/wp-content/uploads/2017/03/NLB\\_CHEATSHEET\\_DigitalEconomy.pdf](http://www.nlb.gov.sg/sure/wp-content/uploads/2017/03/NLB_CHEATSHEET_DigitalEconomy.pdf)

DirectLaw. "Cloud Computing", solos and small law firms, and consumer access to affordable legal services. Retrieved from <https://www.directlaw.com/cloudcomputing.asp>

Donahue, L. (2018, January 3). *A Primer on Using Artificial Intelligence in the Legal Profession*. Retrieved from <https://jolt.law.harvard.edu/digest/a-primer-on-using-artificial-intelligence-in-the-legal-profession>

Extracts from Heng Swee Keat’s budget 2018 speech: preparing Singapore for future challenge. (2018, February 20). Retrieved from <https://www.straitstimes.com/singapore/preparing-singapore-for-future-challenges>

Farkash, X. (2018, April 24). Legal chatbots- chatbots have the potential to evolutionize law. Retrieved from <https://chatbotslife.com/legal-chatbot-chatbots-have-the-potential-to-revolutionize-law-71e394377ffe>

Geissabauer, R., Vedso, J., & Schrauf, S. (2016). A Strategist's guide to industry 4.0. *Strategy+Business*, 83.

Hichman, E. (2018, August 2). What to Know When Building Artificial Intelligence in the Law Firm. Retrieved from <https://www.law.com/2018/08/02/building-artificial-intelligence-in-the-law-firm/>

Kabra, Rick. (2019, March 12). How are law firms using cloud and SaaS solutions? Retrieved from <https://dzone.com/articles/how-are-law-firms-using-cloud-amp-saas-solutions>

Koh, F. (2018 January 7). NUS law and economics student, along with three peers, creates case outcome simulator. Retrieved from <https://www.straitstimes.com/singapore/nus-law-and-economics-student-along-with-three-peers-creates-case-outcome-simulator>

Kwang, K. (2019, February 8). Singapore to 'double down' on artificial intelligence efforts, says Vivian Balakrishnan. Retrieved from <https://www.channelnewsasia.com/news/singapore/singapore-double-artificial-intelligence-efforts-balakrishnan-11298028>

Law Bank. (2017, October 18). Independent lawyer collaboration and the modern law firm. Retrieved from <https://law-bank.com/independent-lawyer-collaboration/>

Legal Executive Institute. (2019, January 04). The application of blockchain in legal sector. Retrieved from <https://blogs.thomsonreuters.com/legal-uk/2019/01/04/the-application-of-blockchain-in-the-legal-sector/>

Legal Executive Institute & Thomson Reuters. (2019). Alternative legal service providers 2019: Fast growth, expanding use and increasing opportunity. *Thomson Reuters*. USA

Legal Technology Cluster Committee. Singapore Academy of Law. (2017). *Legal Technology Vision*. Singapore: Singapore Academy of Law.

Li, V. (2017, June 29). How prepared are law firms for cyber breaches? And how often are firms being attacked? *American Bar Association Journal*. Retrieved from [http://www.abajournal.com/news/article/how\\_prepared\\_are\\_law\\_firms\\_for\\_cyber\\_breaches\\_and\\_how\\_often\\_are\\_they\\_being](http://www.abajournal.com/news/article/how_prepared_are_law_firms_for_cyber_breaches_and_how_often_are_they_being)

Lorica, B., & Loukides, M. (2018). How companies are putting AI to work through deep learning. USA: O'Reilly Media.

Luo, S. (2019, July 29). Adapt to AI as it takes hold at the workplace. Retrieved from <https://www.straitstimes.com/opinion/adapt-to-ai-as-it-takes-hold-at-the-workplace>

Marr, B. (2018, September 2). What is industry 4.0? Here's a super easy explanation for anyone. Retrieved from <https://www.forbes.com/sites/bernardmarr/2018/09/02/what-is-industry-4-0-heres-a-super-easy-explanation-for-anyone/#3302c4399788>

Marr, B. (2018). How AI and machine learning are transforming law firms and the legal sector. Retrieved from <https://bernardmarr.com/default.asp?contentID=1464>

Marr, B. (2019, January 14). 5 important augmented and virtual reality trends for 2019 everyone should read. Retrieved from <https://www.forbes.com/sites/bernardmarr/2019/01/14/5-important-augmented-and-virtual-reality-trends-for-2019-everyone-should-read/#617bb17822e7>

Mangan, D. (2017 February 17). Retrieved from <https://www.cnbc.com/2017/02/17/lawyers-could-be-replaced-by-artificial-intelligence.html>

Mapping global transformation. (2019). Retrieved from <https://www.weforum.org/about/transformation-maps>

Menon, S., Chief Justice. (2018, October 11). The Singapore Academy of Law: An essential dedication to hour and service. Lecture presented at Singapore Academy of Law Annual Lecture 2018 in Singapore. Singapore.

Menon, S., Chief Justice. (2019, January 7). Chief Justice Sundaresh Menon: Address at the Opening of The Legal Year 2019. Retrieved from <https://www.supremecourt.gov.sg/Data/Editor/Documents/chief-justice-sundaresh-menon--address-at-the-opening-of-the-legal-year-2019.pdf>

Ministry of Law Singapore. (2019, May 10). Government steps up support to help Singapore law practices adopt technology. Retrieved from <https://www.mlaw.gov.sg/content/minlaw/en/news/press-releases/govt-steps-up-support-to-help-singapore-law-practices-adopt-tech.html>

Mire, S. (2019, February 1). Blockchain In the legal industry: 15 startups to watch in 2019. Retrieved from <https://www.disruptordaily.com/blockchain-startups-legal-industry/>

Mokhtar, F. (2018, August 30). Training regime for lawyers to be overhauled. Retrieved from <https://www.todayonline.com/singapore/training-regime-lawyers-overhauled>

Ng, H, W. (2017, January 10). New accreditation scheme for lawyers. Retrieved from <https://www.straitstimes.com/singapore/new-accreditation-scheme-for-lawyers>

OECD (2010). SMEs, entrepreneurship and innovation. OECD: Germany

Raczynski, J. (2018, August 10), How medium sized law firms can use legal tech to compete with the big industry players. Retrieved from <https://blogs.thomsonreuters.com/legal-uk/2018/08/10/how-medium-sized-law-firms-can-use-legal-tech-to-compete-with-the-big-industry-players/>

Rajah, I. (2017, May 2017). Tech start for lawyers: A note from Indrance Rajah S.C. Retrieved from <https://www.mlaw.gov.sg/content/dam/minlaw/corp/News/Note%20to%20Legal%20Profession%20On%20Technology.pdf>

Ravo, E, A. (2019, May 20). AI in law and legal practice – A comprehensive view of 35 current applications. Retrieved from <https://emerj.com/ai-sector-overviews/ai-in-law-legal-practice-current-applications/>

Ries, D, G. (2017, December 1). Security 2017. *American Bar Association Tech Report 2017*. Retrieved from [https://www.americanbar.org/groups/law\\_practice/publications/techreport/2017/security/](https://www.americanbar.org/groups/law_practice/publications/techreport/2017/security/)

Riskin, G. (2017, October 12). Virtual reality and the law firm. Retrieved from <https://www.gerryriskin.com/virtual-reality-and-the-law-firm/>

Schwab, K. (2016, January 14). The fourth industrial revolution: what it means, how to respond. Retrieved from <https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>

Settle, J. (2017, December 12). 10 law firm cyber-attacks of 2017. *Disruptor Daily*. Retrieved from <https://www.disruptordaily.com/top-10-law-firm-cyber-attacks/>

Shearing, M. (2018). The future of legal practice, or, how to stop worrying and embrace change. Retrieved from <https://block-sense.io/the-future-of-legal-practice/>

Siau, M, E., (2016, September 10). The Big Read: As supply of lawyers lurches from shortage to glut, spotlight falls on policies. Retrieved from <https://www.todayonline.com/singapore/big-read-supply-lawyers-lurches-shortage-glut-spotlight-falls-policies>

Singapore Academy of Law Ventures. (2019, April 9). 2019: State of legal innovation report Asia Pacific. Retrieved from [https://www.sal.org.sg/Portals/0/PDF%20Files/State\\_of\\_Legal\\_Innovation\\_APAC\\_2019.pdf?ver=2019-04-09-133830-127](https://www.sal.org.sg/Portals/0/PDF%20Files/State_of_Legal_Innovation_APAC_2019.pdf?ver=2019-04-09-133830-127)

Singapore Business Review. (2019, May 23). How Singapore is bringing the legal industry into the digital age. Retrieved from <https://sbr.com.sg/professional-serviceslegal/in-focus/how-singapore-bringing-legal-industry-digital-age>

Tan, T. B., Wu, S. (2017, October). Public policy implications of the fourth industrial revolution for Singapore. *RSIS Policy Report 2017*. Singapore: RSIS

Tanoto, B. (2018, October 16). Creating quality jobs across sectors is key in industry 4.0: Tharma. Retrieved from <https://www.channelnewsasia.com/news/singapore/industry-4-0-creating-quality-jobs-tharman-shanmugaratnam-10832244>

Tay, P, G. (2019, March 2). Legal tech and the law. *The Business Times*, p 9-11.

Teninbaum, G. (2019, February 14). Law firms either keep up with tech or get left behind. Retrieved from <http://www.abajournal.com/voice/article/time-for-a-hard-reset-to-the-legal-industrys-approach-to-innovation-technology>

The Law Society of Singapore (2018). Legal technology in Singapore. Retrieved from [https://www.lawsociety.org.sg/portals/0/eblasts/pdf/LawSociety\\_LegalTech\\_Summary\\_Report.pdf](https://www.lawsociety.org.sg/portals/0/eblasts/pdf/LawSociety_LegalTech_Summary_Report.pdf)

The Law Society of Singapore. (2019). General Statistics. Retrieved from <https://www.lawsociety.org.sg/About-Us/General-Statistics>

Thompson, B. (2019 February 8). How will the judge decide? Law firms look to big data. *The Straits Times*. P A19.

Thomson Reuters. Demystifying AI. Retrieved from <https://legal.thomsonreuters.com/en/insights/white-papers/demystifying-ai>

Thomson Reuters Legal Insights Europe (2018, March 1). Is it possible for AI to be biased? *Legal Insights Europe*. Retrieved from <https://blogs.thomsonreuters.com/legal-uk/2018/03/01/possible-ai-biased/>

Toolan, N. (2018 April 13). 3 ways the fourth industrial revolution is disrupting the law. Retrieved from <https://www.weforum.org/agenda/2018/04/three-ways-the-fourth-industrial-revolution-is-disrupting-law/>

Tong, E. (2019, January 19). Speech by Mr Edwin Tong, senior minister of state for law & health, at the 5th International Bar Association Asia law firm management conference. Retrieved from

<https://www.mlaw.gov.sg/content/minlaw/en/news/speeches/speech-by-sms-edwin-tong-5th-IBA-asia-law-firm-management-conference.html>

Veith, C., Bandlow, M., Harnisch, M., Wenzier, H, Wenzier., Hartung, M., & Hartung, D. (2016, January). How legal technology will change the business of law. *The Boston Consulting Group and Bucerius Law School*. Germany

Wafapoor, V. (2018, October 12). Natural language processing: an essential tool for attorneys. Retrieved from <https://www.lawpracticetoday.org/article/natural-language-processing-tool-attorneys/>

Wong, C. (2019, January 31). New innovation modules for lawyers to launch next month. Retrieved from <https://www.straitstimes.com/singapore/new-innovation-modules-for-lawyers-to-launch-next-month>

Wong, L. (2019, May 19). Law Society encourages firms to adopt new technology. Retrieved from <https://www.straitstimes.com/tech/law-society-encourages-firms-to-adopt-new-technology>