

Institution: Queen Mary University of London		
Unit of Assessment: 18 Law		
Title of case study: Cloud Legal Project: Responding to the Challenges of Disruptive Technologies		
Period when the underpinning research was undertaken: 2009-2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Christopher Millard	Professor of Privacy and Information Law	Sept 2008-Present
Ian Walden	Professor of Information and Communications Law	Oct 1992-Present
Chris Reed	Professor of Electronic Commerce Law	Sept 1987-Present
Simon Bradshaw	Project Consultant (2010-2011) and Researcher (2009-2010)	2009-2011
Kuan Hon	Senior Researcher	2010-2016
Elizabeth Kennedy	Researcher	2015-2016
Period when the claimed impact occurred: 2014-2020		
Is this case study continued from a case study submitted in 2014? N		
1. Summary of the impact		
<p>Technologies combining Cloud Computing, Big Data and Artificial Intelligence have disrupted the law and regulation of IT services, leading to much legal uncertainty and inadequate regulatory responses. Queen Mary's Professors Millard, Walden and Reed, experts in information technology law, launched the Cloud Legal Project (CLP) in 2009, with the objective of identifying legal and regulatory issues. This was the first legal research project, funded by <i>inter alia</i> Microsoft, Hewlett Packard and the European Commission, focussing entirely on the Cloud.</p> <p>The CLP's research has had three significant impacts. It has:</p> <ol style="list-style-type: none"> 1. Informed the legal framework applied to Cloud contracts, leading directly to the shaping of law relating to contractual terms and the resulting empowerment of cloud users 2. Drafted legislation enabling law enforcement agencies to access data stored remotely by foreign cloud companies 3. Shaped policy and regulators' approaches to Cloud applications combining big data and artificial intelligence, leading directly to recommendations by the House of Lords AI Committee. <p>The direct beneficiaries of the research include governments, law enforcement agencies, the EU Commission, international bodies (especially the UN Commission for International Trade Law), and leading businesses operating in the Cloud sector including Microsoft. The ultimate beneficiaries are Cloud users in general, namely consumers, businesses and governments, due to increased certainty and fairer regulation.</p>		
2. Underpinning research		
Contracts and Legal Frameworks		
<p>Cloud contracting: In 2011 the Cloud Legal Project (CLP) was the first research team to publish a large quantitative empirical analysis of Cloud contracts [3.1; 3.4 Chapters 3-6], including a qualitative analysis of what provisions were negotiable in such contracts. Key findings show the one-sided nature of these contracts, exposing the industry myth that terms were standard and non-negotiable [3.3].</p>		

Public sector take-up of Cloud: In 2012 the UK Government launched the 'G-Cloud initiative', a series of framework agreements with major Cloud service providers to assist public sector bodies to procure Cloud services. Take-up by the public sector was slow. Identifying this as an opportunity to encourage take-up of the project, the CLP was the first to analyse the legal arrangements that underpinned this initiative and examined the barriers. Government Cloud suppliers needed to understand the legal implications of entering into UK government service agreements, so CLP undertook the first analysis of the legal arrangements that underpinned this initiative, identifying barriers to the up-take of Cloud services. A key finding of the research is the identification of how such barriers should be addressed [3.4 Chapter 5; 3.5].

Data protection: The CLP first published a ground-breaking series of four papers in 2011 that were the first in-depth analysis of how the European regulatory framework affects Cloud service provision [3.4 Chapters 7-10]. These identified what information is regulated, who is responsible under the regulation, which state has regulatory jurisdiction and how data export rules apply to Cloud Computing. Key findings are how to overcome the jurisdictional challenges inherent in cross-border Cloud provision and how responsibility for regulation maps onto the different contractual layers of Cloud Computing [3.4 Chapters 7-10].

Law enforcement access to the Cloud-enabling criminal investigations in the Cloud across national borders

Further research undertaken in 2013 addressed the enormous challenge faced by national law enforcement agencies (including police, prosecution agencies) when data is controlled by a foreign Cloud service provider (e.g., social media companies) and cannot be accessed using national law powers and/or is encrypted. The research findings explain the options for law enforcement agencies and details safeguards in respect of direct access to foreign Cloud services. The research essentially created the framework conditions for public law enforcement interacting with private sector Cloud providers and social media companies, in order to obtain Cloud data for criminal investigations [3.2].

Machine learning and AI in the Cloud

CLP research into Artificial Intelligence (AI) and Cloud focused on the problem of AI decisions substituting for human decision-making, and how responsibility (and thus liability) and transparency could be achieved in regulation. The key finding relates to government strategy, namely that a general regulatory framework is undesirable because it would stifle technology development. The research details that existing liability laws are adequate to regulate low-risk AI decision-making, but that high-risk AI applications would need technology-specific regulation to allocate responsibility. The research also mandates transparency [3.6, 3.7].

3. References to the research

[3.1] Bradshaw, S., Millard, C., & Walden, I. (2011). Contracts for clouds: Comparison and analysis of the terms and conditions of cloud computing services. *International Journal of Law and Information Technology*, 19(3), 187-223. doi.org/10.1093/ijlit/ear005

[3.2] Walden, I. (2013). Accessing data in the Cloud: The long arm of the Law Enforcement Agent. In *Privacy and Security for Cloud Computing* (pp. 45-71). Springer, London. doi.org/10.1007/978-1-4471-4189-1_2

[3.3] Hon, W. K., Millard, C., & Walden, I. (2012). Negotiating cloud contracts: Looking at clouds from both sides now. *Stan. Tech. L. Rev.*, 16, 79. https://heinonline.org/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/stantlr16§ion=6

[3.4] Walden, I. (2013). Several chapters in Millard, C. (Eds.) *Cloud Computing Law*, OUP. doi.org/10.1093/acprof:oso/9780199671670.001.0001

[3.5] Hon, W. K., Millard, C., & Walden, I. (2012). UK G-Cloud v1 and the impact on cloud contracts—Part I. *Communications law (Haywards Heath)*, 17(3), 78-86. <https://pascal-francis.inist.fr/vibad/index.php?action=getRecordDetail&idt=26419867>

[3.6] Reed, C. (2018). How should we regulate artificial intelligence?. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 376(2128), 20170360. doi.org/10.1098/rsta.2017.0360

[3.7] Reed, C., Kennedy, E., & Silva, S. (2016). Responsibility, autonomy and accountability: legal liability for machine learning. *Queen Mary School of Law Legal Studies Research Paper*, (243). https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2853462

4. Details of the impact

The Cloud Legal Project (CLP) has developed and enabled legal and governance structures for Cloud Computing services to the benefit of providers, regulators and users. CLP's research has also facilitated the drafting of legislation to enable criminal investigations, by allowing access to Cloud data.

Providing effective legal and contractual governance for cloud computing

Cloud Legal Project (CLP) has addressed the legal uncertainties of Cloud Computing and improved the contractual frameworks, including fairer terms negotiated by cloud users.

The President of Microsoft, Brad Smith, who has critical insight of the market for Cloud services states that the book, *Cloud Computing Law* [3.4], was 'an influential resource on legal and regulatory matters' for all Cloud providers. He further says that the CLP research has set a baseline for discussions at Microsoft, both internally and with customers, including Microsoft's government customers set contractual standards throughout the Cloud market. 'We believe that [CLP] research has had a real and significant impact in terms of the governance and commercial practices of cloud service providers [and] the confidence of users to embrace cloud services.' Finally, Smith confirms that the CLP research has contributed to capacity building by positively impacting the ability of policy makers and legislators to develop appropriate and effective legal and contractual governance for cloud computing and that: 'continuing commitment to the research work being carried out at [Queen Mary] is a testament to the impact that we consider that work has been having on the emergence of cloud computing as the new paradigm' and 'over the past 10 years, the scholarly output of the cloud researchers at [Queen Mary] has far exceeded our expectations in terms of scope, quality, quantity, and practical applicability.' [5.7]

The CLP research has also enabled users to obtain better terms from Cloud service providers. It has allowed the Joint Information Systems Committee (JISC), the not-for-profit company supporting universities and other educational and research institutions in respect of their digital infrastructure and information systems, to re-negotiate standard terms so that they better reflect the needs of the organisations involved. According to the Chief Regulatory Advisor of JISC: 'on behalf of around a thousand UK tertiary education and research institutions, to broker better contractual arrangements with cloud providers, the [research] analysis and comparison of existing contracts was extremely helpful in identifying areas where adjustments might be possible'. This research 'enabled many more UK organisations to benefit from using cloud services sooner, and with more assurance of legal compliance, than would otherwise have been the case.' [5.6]

The research also directly shaped and informed the EU Digital Content and Services Directive 2019/770, a consumer protection law that protects consumers from unfair Cloud terms across the EU. In 2012 the European Commission commissioned the CLP team to write a Report on Cloud contract terms, based on the team's comparative analysis of the terms of Cloud computing contracts [3.1, 3.3] and in October 2013, Professor Walden was

appointed a member of the Commission's Expert Group on Cloud Computing Contracts. The terms of reference were 'to assist [...] in the identification of safe and fair contract terms and conditions for cloud computing services for consumers and small firms.' The Expert Group met during 2013-2015 in a number of working groups to examine specific issues. Walden led a working group on data disclosure and data integrity, whose conclusions were directly fed into the draft set of clauses prepared by the European Commission. Crucially Walden's recommendations on the handling of personal data on termination of a contract was reflected in Article 16 of Directive 2019/770 headed 'Obligations of the trader in the event of termination'. The European Commission has written to Walden confirming the contribution of the CLP research to the drafting process of the Directive [5.1].

The United Nations Commission on International Trade Law (UNCITRAL) is the UN Agency to promote the modernisation of commercial law and has been enormously influential on countries' laws, through its promulgation Guidance Notes inter alia, used by governments and industry world-wide. In particular, the UNCITRAL Working Group on E-commerce has drafted a number of instruments in the technology sector, including the Notes on the Main Issues of Cloud Computing Contracts in 2019 [5.4]. Their purpose is to help the parties to understand the potential legal obligations, identifying the risks Cloud users face, and explain the drafting options for Cloud Contracts. Recent technological developments mean that many commercial entities across the world are forced to enter into such contracts without understanding the risks or long-term implications. The significance of the Notes is that they enable businesses globally to consider these risks and governments to draft laws. Following closely the key findings of this research, Walden was approached by UNCITRAL in 2015 to write a 'Scoping Paper' on Cloud Computing Contracts, identifying the issues and to facilitate discussion within the E-commerce Working Group, which CLP provided in October 2015. In November 2017, Walden was invited to participate in an expert group drafting a checklist for drafting Cloud contracts in Vienna. This checklist was then circulated for comments in January 2018 and discussed at the 56th Session of the UNCITRAL E-commerce Working Group, 16-20 April 2018. The outcome of this drafting process was the 2019 Notes. The Scoping Paper and the draft Checklist were based on the CLP research [3.1, 3.3, 3.4] and follow the research findings. Secretary of the UNCITRAL Working Group on E-commerce confirmed that the research carried out has shaped the UNCITRAL Notes: 'the researchers working at the Cloud Legal Project have produced world-class publications that have significantly influenced [the Notes]' development at UNCITRAL [...] The Cloud Legal Project is definitely one of the top sources of information in the field [...]' [5.2].

The UK government, as a major consumer of IT services, recognised the cost and efficiency benefits of increased public sector Cloud use, leading to the launch of its G-Cloud initiative. The CLP research team reviewed and analysed the UK government's G-Cloud legal arrangements, identifying barriers preventing greater take-up. The Cabinet Office used the research to improve their understanding of the commercial environment for cloud services, thereby better equipping it to implement the G-Cloud initiative. The CLP team took part in the G-Cloud initiative commercial workstreams. The Cabinet Office has stated:

'In developing the G-Cloud Programme we have considered a range of views from different sources. We have [...] gained valuable input and insight from [CLP]. This input has led to us improving G-Cloud understanding of the cloud commercial environment.' [5.3]

Enabling criminal investigations in the Cloud across national borders

As a result of CLP's research in this field [3.2], Walden was invited by DG Home (European Commission) to participate as an expert to help draft legislative instruments to improve criminal investigations 'in cyberspace'. Walden devised drafting which implemented the CLP's key research findings about (1) how law enforcement agencies should be enabled to access data which is stored in the cloud, and (2) the legal basis for disclosure of data in the

context of electronic communications service providers, (3) the distinction between different data categories, (4) the provision of an emergency procedure for urgent cases and (5) safeguards such as oversight and transparency. These were set out in the European Commission proposals on cross-border access to electronic evidence, COM/2018/226 and COM/2018/225. The EU Commission stated:

'the draft proposal submitted by Prof. Walden, in its comprehensive approach, provided the first coherent picture of what a legislative instrument in this area could look like and was instrumental in fostering a specific and meaningful discussion on the various advantages and downsides of different aspects ... [he] had a significant influence on the outcome'. [5.5]

These two Proposals form the core of two pieces of legislation being finalized by the EU Institutions over the coming few months [<https://www.europarl.europa.eu/legislative-train/theme-area-of-justice-and-fundamental-rights/file-cross-border-access-to-e-evidence>]. Once incorporated in the law of EU Member States this will facilitate key cross-border access to data in the Cloud enabling criminal investigations. Without these instruments national police forces are prevented from solving serious crimes if relevant data is stored in the Cloud (e.g. social media).

Informing UK government decisions on the regulation of machine learning and AI in the Cloud

The research key findings here were that a general regulatory framework is undesirable because it would stifle technology development and existing liability laws are adequate to regulate low-risk AI decision-making, but that high-risk AI applications would need specific regulation to allocate responsibility and mandate transparency. This Recommendation has been taken up by the UK Government in its Response to the House of Lords Select Committee in Recommendation xi, p.11 and published by LawTech.Asia [5.9]. Professor Reed presented this research in his oral and written evidence to the House of Lords Select Committee on Artificial Intelligence in September 2017. His evidence was set out extensively in the Report [5.11] and his recommendations were followed in its Conclusions (pp 126 ff) 11, 12, 55, 56, and 68.

5. Sources to corroborate the impact

[5.1] [Testimonial] European Commission, (9 Dec.2015), to the members of the Cloud Contracts Expert Group

[5.2] [Testimonial] UNCITRAL (13. June 2019), signed by the Secretary of the UNCITRAL Working Group on E-commerce [Corroborator 1]

[5.3] [Testimonial] UK Cabinet Office, (20 Nov 2012)

[5.4] [Report] UNCITRAL Notes on the Main Issues of Cloud Computing Contracts (2019) https://uncitral.un.org/sites/uncitral.un.org/files/media-documents/uncitral/en/19-09103_eng.pdf

[5.5] [Testimonial] European Commission signed by Cathrin Bauer-Bulst [Corroborator 2]

[5.6] [Testimonial] Chief Regulatory Advisor, JISC, 7. June 2019 [Corroborator 3]

[5.7] [Testimonial] President of Microsoft, Brad Smith dated 29. October 2019 [Corroborator 4]

[5.8] [Report] Government response to House of Lords Artificial Intelligence Select Committee's Report on AI in the UK: Ready, Willing and Able? (June 2018 CM9645) <https://www.parliament.uk/documents/lords-committees/Artificial-Intelligence/AI-Government-Response2.pdf>

[5.9] [Testimonial] LawTech.Asia

[5.10] [Testimonial] Member of Parliament 8 October 2020 [Corroborator 5]

[5.11] [Report] Session 2017-2019 'AI in the UK: Ready, Willing and Able?' (16. April 2018) in Paragraphs 96, 309, 316, 381 and Notes 123, 506, 519.

<http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/artificial-intelligence-committee/artificial-intelligence/written/69489.html>