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How Technology Disrupts Private Law: An Exploratory Study of California and Switzerland as Innovative Jurisdictions

Catalina Goanta

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Abstract

Disruptive technologies displace established industries by creating innovative products that lead to completely new markets. Developments such as e-commerce or social media have had a profound impact on society. Law generally reacts to such developments only if there are circumstances (e.g. case law) showing how existing legal categories might not adequately accommodate these technological developments. While legal scholarship has contributed to the debates surrounding law and technology, most research found at this confluence deals with isolated questions. Consequently, there is a gap in the literature when it comes to the impact that technological disruptions have on private law as a whole. This research aims to fill this gap and to contribute to the current debate with a broader perspective regarding the role that regulation should play in accommodating disruptions. In doing so, it pursues the following question from a law, technology, and regulatory theory perspective: What is the impact of technology disruption on private law regulation and how can the resulting patterns be used to improve the legal response to technology?

The goal of this research project is twofold. First, to understand how technology disruptions from different decades (consumer goods platforms, social networks, and blockchain) have been accommodated by innovative jurisdictions. Second, to outline best practices and complement this discussion with a normative reflection on what the role of private law should be in tackling the issues as well as the promises of disruptive technologies.

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1. Introduction

1.1. Digitalization in the 21st century

2018 is the first year in history when more than half of the world's population is online.[1] Ever since the early 90's, when it started being available to individuals around the world, the Internet has changed a lot of aspects of daily life. The first wave saw the change in communication: the use of e-mails and the rise of internet browsers facilitated online transactions, and marked the beginning of unprecedented, global access to goods.[2] Then came the services, in what is by now called the 'gig' economy: internet platforms started matching demand and supply in sectors such as transportation, tourism and even entertainment.[3] More

[1] O. Solon, 'Tim Berners-Lee: we must regulate tech firms to prevent 'weaponised' web', The Guardian, 12 March 2018, last visited on 21 August 2018.

[2] See for instance L. I. Rotman, 'The Fiduciary Regulation of E-Commerce', 29 *Queen's L.J.* 739 (2003-2004); E. Amatong *et al.*, 'E-Commerce Act: Straining to Fit In', 78 *Phil. L.J.* 309 (2003-2004); W.P. Gardella, 'E-commerce in Real Estate Transactions', 15 *Prob. & Prop.* 45 (2001); W. Sunu, *et al.*, 'Recent Developments in E-Commerce Law', 39 *Tort Trial & Ins. Prac. L.J.* 281 (2003-2004).

[3] See for instance A. Mandagere, 'Examining Worker Status in the Gig Economy', 4 *J. Int'l & Comp. L.* 389 (2017); A.G. Malik, 'Worker Classification and the Gig-Economy', 69 *Rutgers U.L. Rev.* 1729 (2017); L. Feingold, 'The Gig Economy: Making It Available to Everyone', *SciTech Lawyer*, Vol. 13, Issue 2 (Winter 2017), pp. 8-11; A. Renan Barzilay & A. Ben-David, 'Platform Inequality: Gender in the Gig-Economy', 47 *Seton Hall L. Rev.* 393 (2017); S.O. Minter, 'The Gig Economy, the Proliferation of Telemedicine, and the Millennials', 16 *Minority Trial Law* 12 (2017-2018); C. Thomas, 'Ride Oversharing: Privacy Regulation within the Gig Economy', 36 *Cardozo Arts & Ent. L.J.* 247 (2018); C. Garden, 'Disrupting Work Law: Arbitration in the Gig Economy', 2017 *U. Chi. Legal F.* 205 (2017); O. Lobel, 'The Gig Economy & the Future of Employment and Labor Law', 51 *U.S.F. L. Rev.* 51 (2017); M.A. Cherry; A. Aloisi, 'Dependent Contractors in the Gig Economy: A Comparative Approach', 66 *Am. U. L. Rev.* 635 (2017); B.Z. Steinberger, 'Redefining Employee in the Gig Economy: Shielding Workers from the Uber Model', 23 *Fordham J. Corp. & Fin. L.* 577 (2017-2018); E.C. Atmore, 'Killing the Goose That Laid the Golden Egg: Outdated Employment Laws Are Destroying the Gig Economy', 102 *Minn. L. Rev. 887* (2017-2018); J. Pinsof, 'A New Take on an Old Problem: Employee Misclassification in the Modern Gig-Economy', 22 *Mich. Telecomm. & Tech. L. Rev.* 341 (2015-2016); M.L. Nadler, 'Independent Employees: A New Category of Workers for the Gig Economy', 19 *N.C. J.L. & Tech.* 443 (2017-2018); R. Childers, 'Arbitration Class Waivers, Independent Contractor Classification, and the Blockade of Workers' Rights in the Gig Economy', 69 *Ala. L. Rev.* 533 (2017-2018).

recently, narrow artificial intelligence[4] and blockchain[5] are challenging established legal practices, or in other words disrupting the law.

In the initial definition coined by Harvard's Clayton Christensen, disruptive technologies are business initiatives that *dis*place established industries by creating innovative products leading to entirely new markets.[6] Disruption of an established market does not necessarily mean that the established market is *re*placed: disruption certainly presents a competitive threat to the established industry but also unlocks demand for a service or product that previously did not exist. However, disruption is not just about markets, as its effects trickle down through other levels of society as well: the political (e.g. policy-makers need to weight the costs and benefits of innovation); the social (e.g. wide-spread adoption of technology affects human behaviour); and finally, the legal (e.g. the very nature and role of law in governing the future are put into question). The way in which I define the process of disruption in this paper deals with its effects on the law. This entails a phenomenon through which law becomes decrepit in the face of modernity. Not all innovations are disruptive from a legal perspective, but legal disruptions require a high adoption rate of specific technologies by society. An example in this respect is virtual reality.[7] Although the technology has been

[4] See for instance B.L. W. Sobel, 'Artificial Intelligence's Fair Use Crisis', 41 *Colum. J.L. & Arts* 45 (2017-2018); S. Semmler & Zeeve Rose, 'Artificial Intelligence: Application Today and Implications Tomorrow', 16 *Duke L. & Tech. Rev.* 85 (2017-2018); R. Calo, 'Artificial Intelligence Policy: A Primer and Roadmap', 51 *U.C.D. L. Rev.* 399 (2017-2018); M. Guihot *et al.*, 'Nudging Robots: Innovative Solutions to Regulate Artificial Intelligence', 20 *Vand. J. Ent. & Tech. L.* 385 (2017-2018); M.U. Scherer, 'Regulating Artificial Intelligence Systems: Risks, Challenges, Competencies, and Strategies', 29 *Harv. J. L. & Tech.* 353 (2015-2016).

[5] See for instance w. Kaal, 'Initial Coin Offerings: The Top 25 Jurisdictions and their Comparative Regulatory Responses', 1 *Stanford J. of Blockchain L. & Pol.* (2018); M. Popielarski, 'Blockchain Research', 47 *Colo. Law.* 10 (2018); C. Leonard, 'Blocking the Blockchain', 35 *Int'l Fin. L. Rev.* 58 (2016-2017); H.M. Botos, 'A Blockchain Intelligence Analysis', 13 *Res. & Sci. Today* 42 (2017); R.T. Svikhart, 'Blockchain's Big Hurdle', 70 *Stan. L. Rev. Online* 100 (2017-2018); S.B. Walsh, 'Blockchain for Blockheads', 28 *Conn. Law.* 16 (2017-2018); A. Gudkov, 'Control on Blockchain Network', 42 *Nova L. Rev.* 353 (2017-2018); T.S. Ng, 'Blockchain and beyond: Smart Contracts', 2017 *Bus. L. Today* 1 (2017); R. Burbidge, 'The Blockchain Is in Fashion', 107 *Trademark Rep.* 1262 (2017); A. Guadamuz, 'New Kids on the Blockchain', *Jotwell: J. Things We Like* 1 (2018).

[6] C.M. Christensen & M.E. Raynor *The Innovator's Solution: Creating and Sustaining Successful Growth* (Harvard Business Press, 2003);

[7] J. Bown, *et al.*, 'Looking for the Ultimate Display: A Brief History of Virtual Reality', *Boundaries of Self and Reality Online* 239 (2017); see also Bruce Sterling, 'Augmented Reality: "The Ultimate Display" by Ivan Sutherland, 1965', Wired, 20 September 2009, last visited on 21 August 2018.

available in labs since the 80s, it was not available to consumers, and therefore any problems which might have arisen out of the use of wearable VR technology at that time did not pose a challenge to the relevant legal frameworks because of the small scale of the operations.

The complexity of innovation represents a great challenge to the legislator. Stringent regulation of emerging industries parallel to established industries can result in major setbacks for technological development. For this reason, governments often refrain from regulating innovative industries in their emerging stage. In the case of digital innovation, this regulatory 'subsidy' has often taken the shape of an exemption from regulations that do apply to offline firms. One example might be the immunity given to online companies in the US and Europe in the late nineties for torts committed trough their services, respectively in the U.S. Communications Decency Act[8] and the European E-commerce Directive.[9] In the case of digital innovation, this regulatory 'subsidy' is reinforced by the idea that the digital world is inherently different from the 'real' world, even though the digital world is part of, and profoundly affects, the 'real' world. When, however, the negative externalities of the aforementioned regulatory 'subsidy' become too great, it is necessary for the legislator to act. To give an example: Airbnb has more rooms on offer than the five biggest hotel chains combined,[10] and in many cities people complain that the service is creating problems on the market for affordable housing. The legislator is faced with the dilemma of how to regulate digital innovation. On the one hand, novel digital industries have created a market that is new and different (Airbnb is not exactly a hotel business and Uber is not exactly a taxi business), but on the other hand, these industries compete with existing fields.

[8] Communications Decency Act of 1996 (CDA).
[9] Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market, OJ L 178, 17.7.2000, p. 1–16.
[10] Avery Hartmans, 'Airbnb now has more listings worldwide than the top five hotel brands combined', Business Insider, 10 August 2017, last visited on 21 August 2018.

Economic research has already nurtured a lot of literature on disruptive innovations,[11] while public policy literature has also contributed to the development of research in this direction by adding the governance narrative.[12] Moreover, general scientific research has been giving increasing attention to the potential of technology disruptions because of investment growth and increasing interest in fields such as fintech,[13] artificial intelligence and machine learning,[14] virtual and augmented reality,[15] AgTech (agricultural technology),[16] industrial drones,[17] or digital healthcare.[18]

Law has mostly been reactive rather than proactive in dealing with such commercial and societal changes. As innovation fastens its pace, legislators around the world are persistently confronted with technology and business models not always going hand in hand with existing legal frameworks, and they are trying to address these challenges by determining how to best regulate Internet technology disruptions. Innovation regulation has been already

[11] A brief Elsevier search on 'disruptive technology' leads to ± 26,444 research outputs on the topic. D. Doloreux & R. Shearmur, 'Collaboration, information and the geography of innovation in knowledge intensive business services', 12 *J. of Ec. Geography* 79 (2012); M.S. Gertler & Y.M. Levitte, 'Local nodes in global networks: the geography of knowledge flows in biotechnology innovation', 12 *Industry Innovation*, 487 (2005); A. Hausman & W. J. Johnston, 'The Role of Innovation in Driving the Economy: Lessons from the Global Financial Crisis', 67(1) *J. Bus. Res.* 2720 (2014); F. Huber, 'Do Clusters Really Matter for Innovation Practices in Information Technology? Questioning the Significance of Technological Knowledge Spillovers', 12 *J. of Ec. Geography*, 107 (2012); H. Schneider, *Creative Destruction and the Sharing Economy: Uber as Disruptive Innovation* (Edward Elgar Publishing, 2017); G. Tappeiner *et al.*, 'Regional Knowledge Spillovers: Fact or Artefact?', 37 *Res. Policy* 861 (2008).

[12] Dutch Council for Societal Development (*Raad voor Maatschappelijke Ontwikkeling*), '*De nieuqe regels van het spel: Internet en publiek debat (*The new rules of the game: Internet and public debate), 2011.

[13] R.J. Kauffman & D. Ma 'Special Issue: Contemporary Research on Payments and Cards in the Global Fintech Revolution', 14(5) *Electronic Commerce Research and Applications* 261 (2015).
C. Leong *et al.*, 'Nurturing a FinTech ecosystem: The Case of a Youth Microloan Startup in China', 37(2) *Int'l J. of Info. Management* 92 (2017).

[14] M. Wauters & M. Vanhoucke 'A Nearest Neighbour Extension to Project Duration Forecasting with Artificial Intelligence', 259(3) *Eu. J. of Operational Research* 1097 (2017).

[15] S. Bernhardt, *et al.*, 'The Status of Augmented Reality in Laparoscopic Surgery as of 2016', 37 *Medical Image Analysis* 66 (2017); V. Raja & P. Calvo, 'Augmented Reality: An Ecological Blend', 42 *Cognitive Systems Research* 58 (2017).

[16] M. Eberhardt & D. Vollrath. 'The Effect of Agricultural Technology on the Speed of Development', *World Development* (2016).

[17] D. Hambling, 'A Drone that Learns', 3017 *New Scientist* 20 (2015); B. Rao *et al.*, 'The Societal Impact of Commercial Drones', 45 *Tech. in Society* 83 (2016).

[18] K. Sanders *et al.*, 'Do We Trust and Are We Empowered by "Dr. Google"? Older Spaniards' Uses and Views of Digital Healthcare Communication', 41(5) *Public Relations Review* 794 (2015).

investigated in fields such as environmental law,[19] telecommunications,[20] financial law[21] or trade law.[22] Moreover, innovation law is a self-standing field in its incipient phase, pioneered by scholars who want to explore how to best regulate innovation,[23] bringing together law, technology, innovation and policy into a unique product. Legal aspects are somewhat represented in economic literature on the regulation of innovation,[24] but this literature falls short of expressing all the substantive challenges met by legal systems in the face of technological disruptions. More recently, because of the pace of innovation, the legal community has been giving unprecedented attention to the very issue of regulation.

Still, when it comes to private law as an individual field, legal literature as that indicated above is very specific on legal issues and does not always address the regulatory/policy dimension from a more holistic perspective.[25] Private law can be defined as the body of rules which 'are the ones that touch us most intimately, that mould our contracts, measure our torts, define our private rights, prescribe our private duties, come home to our firesides, enter into our offices, shops and factories and meet us at every turn on our round of daily tasks.'[26] These

[19] J.A. Ford *et al.*, 'How Environmental Regulations Affect Innovation in the Australian Oil and Gas Industry: Going Beyond the Porter Hypothesis', 84 *Journal of Cleaner Production* 204 (2014); S.C. Debnath, 'Environmental Regulations Become Restriction or a Cause for Innovation – A Case Study of Toyota Prius and Nissan Leaf', 195 *Procedia - Social and Behavioral Sciences* 324 (2015); R. Ramanathan *et al.*, 'Environmental Regulations, Innovation and Firm Performance: A Revisit of the Porter Hypothesis', 155(2) *J. of Cleaner Production* 79 (2017).
[20] I. Vogelsang, 'The Role of Competition and Regulation in Stimulating Innovation - Telecommunications', *Telecommunications Policy* (2016).
[21] T. Kim *et al.*, 'Role of Financial Regulation and Innovation in the Financial Crisis', 9(4) *J. of Financial Stability* 662 (2013).
[22] U. Gasser, & J. G. Palfrey Jr., 'Fostering Innovation and Trade in the Global Information Society: The Different Facets and Roles of Interoperability', Berkman Center Research Publication No. 2012-20 (2011).
[23] Ibid. See also A. Butenko & P. Larouche, 'Regulation for Innovativeness or Regulation of Innovation?', TILEC Discussion Paper No. 2015-007 (2015).
[24] D. Awrey, 'Complexity, Innovation and the Regulation of Modern Financial Markets', 2(2) *Harvard Bus. L. Rev.* 235 (2012).

[25] C. Koopman *et al.* 'The Sharing Economy and Consumer Protection Regulation: The Case for Policy Change', 8(2) *J. of Business, Entrepreneurship & L.* 18 (2015); M. De Cock Buning *et al.*, 'Research Exceptions in EU Copyright Law' 20(4) *Eu. Rev. of Private L.* 933 (2012).
[26] J. Rodenbeck, *Anatomy of the Law: A Logical Presentation of the Parts of the Body of the Law* (Little Brown, 1925), p. 174.

dimensions of everyday life for individuals, companies as well as the state, reflect the basic conditions of a healthy free market: we need property law to determine what is ours, contract law to conclude transactions, tort law to account for behaviour outside of these transactions, or labour law to operationalize any activities happening in society.

The question of technology governance will always revolve around a complex narrative, as it involves 'different actors with diverging interests'.[27] On the one hand, technological innovation is said to lead to economic growth,[28] so the commercial space needs protection if it is to deliver more jobs or improve living standards; on the other hand, even if it may be a source of prosperity, innovation can have a negative impact on society as well, be it due to the cost of adaptation, or wider social dislocation.[29]

Private law is an essential sphere where these interests collide. However, civil law and common law treat private law regulation differently. As an example, the English legal tradition in the realm of contract law is well-known for embracing commercial interests, whereas French civil law tends to protect the weaker party.[30] The rationale behind this choice is mostly normative: national lawmakers determine the goals law ought to achieve, either in terms of supporting markets or pursuing more protective regimes for parties with much less bargaining

[27] E. Campanella, 'No Small Change: How to Manage the Costs of Innovation', Foreign Affairs, 15 May 2017, last visited on 21 August 2018.; see also Klaus Schwab, 'The Fourth Industrial Revolution: What It Means and How to Respond', Foreign Affairs, 12 December 2015, last visited on 21 August 2018.

[28] E. Kvochko, 'Five ways technology can help the economy', World Economic Forum, 11 April 2013, last visited on 21 August 2018; see also V. Grossmann, 'Entrepreneurial Innovation and Economic Growth', 31(4) *J. of Macroec.* 602 (2009); H. Kesici Çalışkan, 'Technological Change and Economic Growth', 195 *Procedia - Social and Behavioral Sciences* 653 (2015); R.E. Ball, 'The Impact of Technology on Economic Growth', 16(3) *The Am. J. of Ec. and Soc.* 281 (1957); K.I. Carlaw & R.G. Lipsey, 'Productivity, Technology and Economic Growth: What Is the Relationship?', 17(3) *J. Of Ec. Surveys* 457 (2018); B. Verspagen, 'Economic Growth and Technological Change An Evolutionary Interpretation', STI Working Papers; Vol. 2001/1 (2001).

[29] See for instance C. Juma, *Innovation and Its Enemies: Why People Resist New Technologies* (Oxford University Press, 2016); E. Brynjolfsson & A. McAfee, 'Will Humans Go the Way of Horses? Labor in the Second Machine Age', Foreign Affairs, July/August 2015, last visited on 21 August 2018; M. Wolf, 'Same as It Ever Was: Why the Techno-optimists Are Wrong', Foreign Affairs, July/August 2015, last visited on 21 August 2018.

[30] See for instance C. Valcke, 'Divergence and Convergence among English, French, and German Conceptions of Contract', 16 *Eu. Rev. of Private L.* 29 (2008).

power. These goals are traditions enshrined in legal cultures, where private law is rarely seen as a type of regulation that needs any evidence as to how it works in practice.

It is therefore important to reflect on the role of private law as a whole in the governance of technology innovation, for three reasons: (i) to map the types of regulation existing in private law with respect to technology innovation; (ii) to understand how this regulation has reacted to disruptions; and (iii) to contribute to the debate on how technology can be best regulated.

This paper aims to touch upon these three goals in the following structure. The first part continues to highlight the research question and methodological choices, such as jurisdictions and legal issues. The second part covers a mapping exercise done for Californian and Swiss law with respect to private law and disruptive Internet technologies. Finally, the third part clusters the findings and analyses them according to an adapted version of Stiglitz' taxonomy of instruments of regulation, while raising some questions regarding the optimal private law regulation of disruptive Internet technologies.

1.2. A methodological approach to researching disruptive technology

In terms of technology available directly to individuals, the past two decades have been transformative for the way in which we perceive the world. The invention of the World Wide Web in 1989 and its subsequent public adoption around early 2000s have enabled immense changes as well as challenges to commerce and society: e-commerce, social media creative gig work, and more recently blockchain-based smart contracts. I consider all these technologies to be disruptive Internet innovations.[31] These disruptive technologies represent the foundation of the research questions tackled in this paper, as it explores the nature of three digital disruptions

[31] Once more, as far as the legal sphere is concerned, disruption deals with the pressing need for the law to address new technological realities, when considering high adoption of said technologies by society, and the diffusion of legal risks in this respect.

and maps the way in which legislators in 'innovative jurisdictions' have dealt with these disruptions so far, in order to provide insight into how innovation is and should be regulated.

1.2.1. The questions

One of the unexplored angles in tackling the topic of innovation regulation centers on the regulatory activity of innovative jurisdictions, namely countries or states that are globally acknowledged for nurturing innovation and delivering it to markets and society. The Organization for Economic Cooperation and Development (OECD) is only one of the many international organizations highlighting the relationship between regulation and innovation: regulation has an impact on technology just as much as technology has an impact on regulation.[32] A jurisdiction leading in innovation is one that excels in fields such as education, research (both publicly and privately funded) or intellectual property assets.[33] Current innovation metrics may be criticized for not directly taking into account more subjective factors such as culture or public interest. However, what such metrics do take into account are aspects such as open-source knowledge generation, or levels of education in society, which can be said to represent societal needs in the measurement of innovation levels. Being an innovation leader potentially signals a very innovation-friendly regulatory policy, so an assumption can be made that innovative jurisdictions use desirable frameworks for the regulation of digital disruptions. Analyzing how such states tackle the challenges of technology can inspire other legislators around the world.

In the light of this unique perspective, this study aims to answer the following research question: *How do innovative jurisdictions deal with the private law regulation of Internet*

[32] OECD, 'Regulatory Reform and Innovation', last visited on 21 August 2018.
[33] See for instance the European Innovation Scoreboard, last visited on 21 August 2018.

disruptions, and what taxonomy of regulatory responses can be drawn from this? This research question touches upon three different sub-questions as highlighted below:

(a) How long does it take for private law regulation to react to technological disruptions in these jurisdictions? What is the nature of these interventions? What patterns can be observed in such interventions?

(b) What are the regulatory tools developed so far by law-makers in innovative jurisdictions to respond to technological disruptions affecting private law? What are the similarities and differences between these tools, in the light of the legal systems?

(c) In the light of above, how can the collected tools be classified, critically assessed and presented as best practices, and what contribution can they make to a normative framework on private law regulation dealing with technological disruptions?

1.2.2. The research matrix: innovations and legal issues

In addressing these questions, this paper follows three case studies selected to reflect different types of digital disruptions and their relevant selected platforms and jurisdictions around the world: Switzerland and California (see Figures 1 & 2 below).

Mapping different areas of private law allows for a broad understanding of how this field of law as a whole deals with technology disruptions. When dealing with the types of disruptions and relevant platforms, there are three main reasons justifying the selections made for this study.

First, selling goods to consumers with the help of the Internet is something that Ebay has been promoting as of its inception in 1995, while home-casting started with the launch of Youtube in 2005, and the on-demand economy started to take off with AirBnB and Uber between 2008-2011. On the other hand, blockchain is a recent technology that has only been

highlighted in the past few years. Following the legal developments brought about by these disruptions and mapping them across a timeline contributes to the understanding of what patterns of regulatory reactions can be identified in relation to technology. This way, Internet history can serve to identify trends in terms of the legal response to the different private law facets of innovation.

Second, each of the selected platforms are market leaders in their respective trade, and more importantly, have amassed a considerable number of followers (e.g. Youtube has around 1 billion users as of its setup back in 2005;[34] Instagram is reported to have doubled its user base in two years, reaching 700 million in 2017[35]). For this reason, taking them as examples for a specific industry sector seamlessly fits in the framework of the research, especially given that some of the issues included in the study have exploded into scandals around the world that named the relevant companies (e.g. the role of Uber drivers, etc.). Also to keep in mind is the fact that these platforms operate world-wide, so different jurisdictions around the world will experience similar issues.

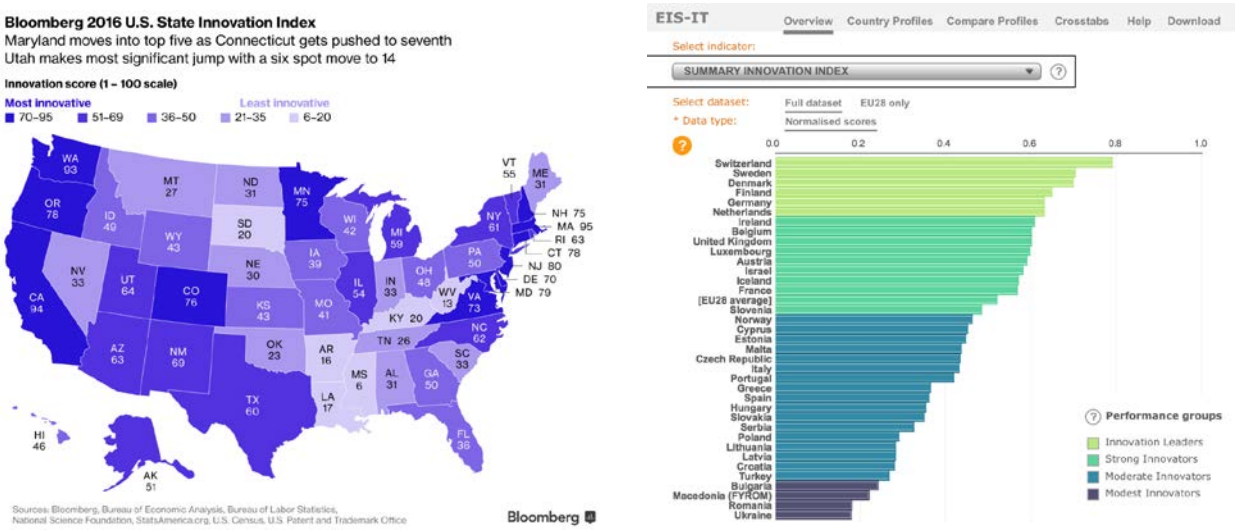
Third, this paper aims to follow different sub-fields of private law. To achieve this goal, different legal issues were selected for the framework of this research, and linked to different fields of private law. The selected legal issues narrow down the ambit of the research question, making it feasible, while still representative for the significant discussions around technology and law.

In justifying the choice of jurisdictions, California and Switzerland have been selected according to the European Innovation Scoreboard and the Bloomberg U.S. State Innovation Index: Switzerland and California are innovation leaders in their respective regions, and according to available metrics, in the case of Switzerland also at global level.[36] The reason for

[34] Youtube statistics, last visited on 21 August 2018.
[35] Instagram statistics, last visited on 21 August 2018.
[36] See Cornell University, INSEAD & WIPO, 'The Global Innovation Index' (2016).

not choosing the United States and instead focusing on one particular state is because speaking about Californian law may still touch upon applicable federal law, whereas addressing federal law solely does not take into account states that are truly innovative (see Figure 1 below – states such as Mississippi are considered least innovative in the US), but policies that need to fit every individual state.

Given their undisputed leadership in innovation, California and Switzerland can serve as examples and analyzing their regulatory responses can lead to showcasing best practices in a time when all other jurisdictions around the world face the challenge of successfully integrating technology in society through the means of law. What is more, California is a common law jurisdiction, while Switzerland belongs to the civil law tradition; since legal origins have been at the core of a lot of literature trying to determine which one is better, comparisons on this topic always bring more context to a given legal issue.



Figures 1 & 2 – Bloomberg 2016 U.S. State Innovation Index & The 2017 European Innovation Scoreboard

Understanding how technology is perceived from the perspective of the regulatory framework, as well as drafting recommendations for how technology *should* be accommodated

by the law is not a task for only one discipline. By harnessing the potential of public policy literature in part 3 of the paper, the complex issues arising out of this discussion can be expressed and observed using an equally complex framework. There are many other methods that could have been interesting for this study, such as economic regulation theory. However, while law and economics can indeed be a matching method, it would have not met the specific goals of this research, which do not deal with the creation of an economic theoretical framework for the understanding of technology, but for an overarching mapping exercised designed to showcase how innovative jurisdictions regulate digital disruptions.

Most studies currently dealing with law and technology zoom into various legal issues and try to determine how existing legal categories fit technological developments. These issues indeed require a lot of finesse when it comes to the interpretation of the legal standards that are in force. However, when trying to understand the big picture of how technology impacts private law and what lessons can be learned from these patterns to allow lawmakers, disruptors and societies at large to derive more utility from technological advancements, a policy overview regarding the interaction of private law and technology is lacking.

This is also the case when it comes to the pairing of two jurisdictions that are an ocean apart but have one main aspect in common: their innovation leadership. Shedding light on the regulatory experiences in California and Switzerland can play a vital role in creating best practices which can inspire law-makers around the world.

Using the matrix of disruptions/platforms/fields of law/legal issues, it is possible to create an overview of how private law as a whole has been affected by technology disruptions, and what kind of regulatory responses were triggered by the challenged legal frameworks. These insights can have fundamental implications for the way in which private law is designed and governed at the moment, whether in common law jurisdictions such as California, or in

private law jurisdictions such as Switzerland. Codification as such can be either questioned or strengthened in the light of the findings of this type of research.

2. Mapping Internet disruptions and legal issues

As mentioned in Part 1 above, this research will follow three different case studies (e-commerce; social media advertising; and blockchain) along two jurisdictions (California and Switzerland). In what follows, each of the case studies will be examined according to the following criteria:

a) The development of the Internet disruption;

b) Selected legal issues reflecting the impact of the Internet disruption; and

c) Comparative insights from innovative jurisdictions.

2.1 Case study 1 – E-commerce

2.1.1 The development of consumer goods platforms

The first case study of this research focuses on platforms for consumer goods. The main reason driving the choice for this topic is the booming nature of this industry. Platforms such as eBay and Amazon have been amassing staggering profits since the 90s. Projected to transform the individual shopping experience, online platforms for goods have led to clear-cut benefits for their users, ranging from instant price comparisons possibilities, to lower prices or additional rights.[37] However, they also started posing some questions with respect to the practices they have nurtured.[38]

[37] See for instance, C.A. Primo Braga, 'E-commerce Regulation: New Game, New Rules?', 45(2-3) *The Quarterly Rev. of Ec. and Fin.* 541 (2005).

[38] See for instance the debate surrounding pricing strategies based on demand and third party services such as Camel Camel Camel shaping consumer behaviour vis-à-vis price comparisons, and the reactions of online shopping platforms, J. Useem, 'How Online Shopping Makes Suckers of Us All', The Atlantic, May 2017, retrieved from, last visited on 21 August 2018.

In his book, 'What the Dormouse Said', John Markoff made a snap of the first commercial transaction in the history of the Internet: 'In 1971 or 1972, Stanford students using Arpanet accounts at Stanford University's Artificial Intelligence Laboratory engaged in a commercial transaction with their counterparts at Massachusetts Institute of Technology. Before Amazon, before eBay, the seminal act of e-commerce was a drug deal. The students used the network to quietly arrange the sale of an undetermined amount of marijuana.'[39] This account, recalling the open-minded and innovative nature of a computer-based network that could connect people across the United States, predates the Internet giants we have gotten accustomed to at the confluence of the 20th and 21st century. Even the more orthodox transaction registered by the New York Times several decades later, in 1994, in the form of a Sting CD purchased by a music lover based in Philadelphia, all the way from Nashua, New Hampshire, was somehow buried in the vast history of the Internet.

That is because nowadays, e-commerce is almost synonymous with Amazon and eBay. Surely there have been other companies emerging internationally throughout time, such as JD.com, the Alibaba Group, Zalando, Groupon, Flipkart or Asos. However, Amazon and eBay remain the central references for e-commerce, as well as household names, in search of constant expansion, just like all other Internet companies. As of September 2017, eBay offers anything a consumer may desire, from tech, fashion, home & garden, car parts, and even high-value antique products. Amazon took its business model even further, and developed, among others, Amazon fresh (Amazon's fresh produce and grocery service), Alexa (Amazon's artificially intelligence digital assistant), and even digital content in the form of Amazon Video or Amazon Music.

[39] J. Markoff, *What the Dormouse Said: How the Sixties Counterculture Shaped the Personal Computer Industry* (Penguin, 2006), p. 20; see also J. Bartlett, *The Dark Net* (Melvile House, 2014); E. Katsh & O. Rabinovich, *Digital Justice: Technology and the Internet of Disputes* (Oxford University Press, 2017), p. 58.

As a measure of how successful e-commerce is, due to the increased digitalisation of goods and services, even social networks like Facebook have recently embraced e-commerce and gig-work.[40] Retail e-commerce sales worldwide are expected to increase from $2,842 billion in 2018 to $4,878 billion in 2012.[41]

Table 2. Chronology: The history of online shopping[42]

Year	Notable Event
1994	Mosaic Communications Company founded, changes name to Netscape and releases a beta browser Lou Montulli (Netscape) invents the cookie Jeff Bezos sets up Cadabra Inc, the precursor of Amazon
1995	Launch of Windows 95 Birth of HoTMaiL and 'viral marketing' Start of Internet gold rush Cadabra changes to Amazon Pierre Omidyar sets up eBay
1996	Microsoft starts offering Internet Explorer Start of the dot-com boom
1997	HoTMaiL reaches 12 million users by the end of the year
1998	Larry Page and Sergey Brin establish Google Paypal is founded eBay has 30 employees, ± half a million users and revenues of $4,7million
1999	Internet gold rush reaches height Alibaba Group is established in China Napster is launched
2000	Medium/large businesses near saturation for internet adoption
2001	Wi-Fi becomes available on Windows 80% of internet transactions are B2B Alibaba achieves profitability
2002	eBay aquires PayPal ($1,5 billion)

[40] Sarah Perez, 'Facebook Marketplace expands into home services', TechCrunch, 23 May 2018, last visited on 21 August 2018.

[41] Statista statistics (2018), last visited on 21 August 2018: 'In 2017, retail e-commerce sales worldwide amounted to 2.3 trillion US dollars and e-retail revenues are projected to grow to 4.88 trillion US dollars in 2021. The top 3 online stores' revenue amounted to almost 100 billion US dollars in 2017. Online shopping is one of the most popular online activities worldwide but the usage varies by region - in 2016, an estimated 19 percent of all retail sales in China occurred via internet but in Japan the share was only 6.7 percent. Desktop PCs are still the most popular device for placing online shopping orders but mobile devices, especially smartphones, are catching up.'

[42] Loosely based on S. Greenstein, *How the Internet Became Commercial: Innovation, Privatization, and the Birth of a New Network* (Princeton University Press, 2015), p. 15-20; M. Castells, *The Internet Galaxy: Reflections on the Internet, Business, and Society* (Oxford University Press, 2001), p. 65; T. Bishop, 'Amazon net sales soar 31% to $30.4B, AWS accounts for 56% of operating profits', GeekWire, 28 July 2016, last visited on 21 August 2018; 'The History of eBay', The Telegraph, 15 April 2011, last visited on 21 August 2018.

2003	Google launches AdSense Internet adoption in U.S. households reaches 59,5m (from 19,1m in 1997) Amazon reveals first yearly profit.
2009	Amazon.com acquires Zappos.com ($928 million)
2014	eBay achieves $17.9 billion in net revenue
2015	In the US, Amazon.com accounts for over half of all e-commerce growth
2016	Amazon reaches $135.99 billion in net revenue and 268,908 employees

2.1.2 Selected legal issues reflecting the impact of e-commerce

E-commerce, as an Internet disruption emerging in the early 90s that changed consumer behaviour and business practices, has already led to a wide array of issues including: intellectual property (copyright, trademarks, patent and trade secret issues), antitrust restrictions, security (including payment; encryption and cryptography), privacy, free speech, jurisdiction, property, financial transactions, securities (including fraud), taxation, advertising, tort liability, adult content, website development licensing and hosting, or payment, to name a few.[43] As interesting it may be to approach Internet law from the perspective of business practice – that is to identify any potential field of law that can be of importance for the running of an e-commerce business – this academic exercise singles out some of the core aspects of transacting online: contract formation and consumer rights. These are both issues which can be linked back to the idea of transactional trust: is what I intend to buy real; can I trust the seller? Is the other contracting party who they say they are? Will the buyer actually pay? Etc.

As regards contract formation, this is an issue that sparked attention for e-signatures.[44] For thousands of years, contracts were concluded in material form, with the most

[43] I.C. Ballon, *E-Commerce and Internet Law: Treatise with Forms (2001-2007)* (Glasser LegalWorks, 2007). See also J.C. Poindexter & D.L. Baumer, *Cyberlaw and E-Commerce* (McGraw Hill, 2001); S. Singleton, *Ecommerce: A Practical Guide to the Law* (Gower, 2001); J.K. Winn & B. Wright, *The Law of Electronic Commerce* (Aspen Law & Business, 2000); B.B. Sookman, *Computer, Internet and Electronic Commerce Law* (Carswell, 2000); A. Weeks & D. Smith Frisone, 'E-Commerce: What Legal Issues Does It Present', 14 *Com. L. Bull.* 13 (1999); R.J. Jr. Robertson, 'Electronic Commerce on the Internet and the Statute of Frauds', 49 *S. C. L. Rev.* 787 (1998).

[44] Stephen Mason, 'Electronic signatures in practice', Elektron, April 2006, last visited on 21 August 2018.

straightforward example being the use of pen and paper.[45] Although one of the most essential concepts emerging from the principle of freedom of contract, namely that of freedom of form, individual and businesses around the world have been concluding contracts in writing for more predictability, and to make sure that should their deals fall short of their expectations, they can always prove their rights and obligations. Then the Internet came. With the emergence of e-mail services, people could out of a sudden communicate without writing anything down on a piece of paper, but by clicking buttons and sending computer-generated text to one-another. This has fundamentally changed contract law. One of the vital changes it has brought deals with contract formation, as new models of concluding contracts had emerged: (i) click-wrap: if a user clicks on a button or icon to indicate acceptance of general terms, the contract is concluded; and (ii) browse-wrap: is a user visits or views an Internet website, a contract is concluded.[46]

As for consumer rights, when consumers cannot see the products they buy, in order to assess their quality and condition, they make purchases 'in the dark'.[47] Consumer literature considers this to be a risk for their position, making them more prone to abuse,[48] and asking for more protections either in terms of new mandatory or voluntary rights which should be

[45] R.J. Jr. Robertson, *supra* note 43 at 810.

[46] A third model is 'shrink-wrap': if a user opens the packaging of a software product (plastic shrink-wrap) and starts using the software, a contract is concluded. This is however a contract formation model that does not necessarily reflect intention to be legally bound expressed online. Moreover, shrink-wrap agreements grew in importance because of the fact that as of the early days of personal computers, software purchasing became crucial to the functioning of these machines, and thus this issue became part of the greater debate on licensing and IP rights.

[47] G. Borges & B. Irlenbusch, 'Fairness Crowded Out by Law: An Experimental Study on Withdrawal Rights', 163 *J. of Inst. and Theoretical Ec.* 84 (2007); J. Dickie, 'Consumer Confidence and the EC Directive on Distance Contracts', 21 *J. of Cons. Pol.* 217 (1998); J. Rothchild, 'Making the Market Work: Enhancing Consumer Sovereignty Through the Telemarketing Sales Rule and the Distance Selling Directive', 21 *J. of Cons. Pol.* 279 (1998); see also F. Cafaggi & A. Nicita, 'The Evolution of Consumer Protection in the EU', in T. Eger & H.B. Schäfer (eds.), *Research Handbook on the Economics of European Union Law* (Edward Elgar, 2012), p. 265.

[48] K. Henderson & A. Poulter, 'The Distance Selling Directive: Points for Future Revision', 16(3) *Int'l Rev. of L. Comp. & Tech.* 289 (2002); E. Mik, 'Mistaken Identity, Identity Theft and Problems of Remote Authentication in E-Commerce', 28(4) *Comp. L. & Sec. Rev.* 396 (2012); P. Rekaiti & R. Van den Bergh, 'Cooling-Off Periods in the Consumer Laws of the EC Member States – A Comparative Law and Economics Approach', 23 *J. of Cons. Pol.* 371 (2000).

available to them (e.g. withdrawal rights), or mandatory disclosures to be made available to consumers either before or after the conclusions of the contract.[49]

2.1.3 Comparative insights from innovative jurisdictions

2.1.3.1 CALIFORNIA

California, the home-state of Silicon Valley and a beacon of innovation throughout the United States, and a technology leader that many U.S. states look to for leadership in new technology adoption.

a) Contract formation

As with the vast majority of legal systems, California also sees the consent of the parties as an essential element for the validity of contracts, as long as it is: (1) free; (2) mutual, and (3) communicated by each party to the other.[50] For internet contracting, the latter component has proved to pose issues, because in general, consent may be express or implied;[51] but how can the nature of consent be determined when expressing consent with the help of a computer?

In California, online contracting has been a rich source of case-law as early as 1996. In one of the first cases of its kind, *CompuServe, Inc. v Patterson,*[52] the Sixth Circuit upheld the

[49] M. Loos, 'The Case for a Uniformed and Efficient Right of Withdrawal from Consumer Contracts in European Contract Law', 1 Zeitschrift für Europäisches Privatrecht 5 (2007); M. Loos, 'Rights of Withdrawal', in G. Howells & R. Schulze (eds.), *Modernising and Harmonising Consumer Contract Law* (Sellier, 2009), p. 237; P. Rott, 'Harmonising Different Rights of Withdrawal: Can German Law Serve as an Example for EC Consumer Law?', 7(12) *German L. J.*, 1109 (2006); J. Smits, 'Rethinking the Usefulness of Mandatory Rights of Withdrawal in Consumer Contract Law: The Right to Change Your Mind', 29 *Penn State Int'l L. Rev.* 671 (2011); C. Twigg-Flesner & R. Schulze, 'Protecting Rational Choice: Information and the Right of Withdrawal', in G. Howells *et al.* (eds.), *Handbook of Research on International Consumer Law,* (Edward Elgar, 2010), p. 130.

[50] CC §1565. It is worth mentioning that the Chapter of the Civil Code dealing with consent (§§ 1565-1590) was enacted in 1872. See also G.W. Kuney and D.C. Looper, *California Law of Contracts* (CEB, 2017), §3.2.

[51] J. Chang & F. Alemi, 'Gaming the System: A Critique of Minors' Privilege to Disaffirm Online Contracts', 2 *UC Irvine L. Rev.* 627 (2012), at 648.

[52] *CompuServe, Inc. v Patterson* (6th Cir 1996) 89 F3d 1257. See also *MySpace, Inc. v The Globe.com, Inc.* (CD Cal, Feb. 27, 2007, No. CV 06-3391-RGK (Jx)) 2007 US Dist Lexis 44143 (enforceable MySpace click-wrap agreement); *Koresko v RealNetworks, Inc.* (ED Cal 2003 291 F Supp 2d 1157 ('I agree' box clicked by user, therefore agreement enforced); *Hoffman v Supplements Togo Mgmt., LLC* (NJ Super 2011) 18 A3d 210 (choice of forum clause not enforced because website was structured unfairly); *Caspi v Microsoft Network, LLC* (NJ

validity of a choice of forum clause that required one of the parties to type 'AGREE' at different points in the online document to indicate intention to be legally bound. This case reflects the practice of 'click-wrap'.[53]

In 1999, when California amended its Civil Code to accommodate the Uniform Electronic Transactions Act, click-wrap agreements became regulated through statute.[54] §1633.14 governs automated decisions and acknowledges, in subparagraph (1) that electronic contracts can be concluded even if the users were not aware or did not review the actions of the electronic agents. A more detailed overview of click-wrap agreements was offered in the Uniform Computer Information Transactions Act (UCITA).[55] However, this piece of legislation lobbied for by the software industry has proved to be controversial given its perceived unfairness to consumers and conflicts with federal copyright law, and was only adopted by Virginia and Maryland.[56]

Super 1999) 732 A2d 528 (choice of forum clause enforced, as users had to click 'I agree' or 'I don't agree'); *Forrest v Verizon Communications, Inc.* (DC App 2002) 805 A2d 1011: 'A contract is no less a contract simply because it is entered into via a computer'; American Eyewear Peeper's Sunglasses (ND Tex 2000) 106 F Supp 2d 895; *Hotmail Corp v Van$ Money Pie, Inc.* (ND Cal 1998) 47 USPQ2d 1020 (enforcing Hotmail click-wrap agreement with clause prohibiting users from distributing spam); *A.V. v iParadigms* (ED Va 2008) 544 F Supp 2d 473. See also S.C. Bennett, 'Click-Wrap Arbitration Clauses', 14 *Int'l Rev. L. Computers & Tech.* 397, 410 (2000); M.J. Brady *et al.* 'The New World of the World Wide Web: Internet Liability Issues', 67 *Def. Counsel J.* 47, 53 (2000).

[53] See for instance M.J. Radin, 'Humans, Computers, and Binding Commitment', 75 *Ind. L.J.* 1125, 1162 (2000); M.L. Tuft, 'Internet Communications with Prospective Clients When Disclaimers May Not Be Enough', *Prof. Law. Symp.* 23, 27 (2006); S.Y. Chao, 'Contract Law - Electronic Contract Formation - District Court for the Central District of California Holds That a Web-Wrap Site License Does Not Equate to an Enforceable Contract - Ticketmaster Corp. v. Tickets.com, Inc.', 54 *S.M.U. L. Rev.* 439, 442 (2001).

[54] §1633.14 mentions:
'(a) In an automated transaction, the following rules apply:
(1) A contract may be formed by the interaction of electronic agents of the parties, even if no individual was aware of or reviewed the electronic agents' actions or the resulting terms and agreements.
(2) A contract may be formed by the interaction of an electronic agent and an individual, acting on the individual's own behalf or for another person, including by an interaction in which the individual performs actions that the individual is free to refuse to perform and which the individual knows or has reason to know will cause the electronic agent to complete the transaction or performance.
(b) The terms of the contract are determined by the substantive law applicable to it.'
(Added by Stats. 1999, Ch. 428, Sec. 1. Effective January 1, 2000.)

[55] R.W. Hahn; A. Layne-Farrar, 'An Economic Assessment of UCITA', 24 *Hastings Comm. & Ent. L.J.* 335, 341 (2002).

[56] C. Ruyan Martin & D.B. Oshinsky, *Internet Law and Practice in California* (Cal CEB), §7.11.

Case law reflects a more turbulent history for browse-wrap agreements, as they are generally considered not to be enforced.[57] This is mostly because of the fact that courts have found lack of notice and the non-interactive nature of such agreements to be key factors in the rejection of their enforcement.[58] However, in commercial settings, terms of use sometimes likely to be binding on Internet users,[59] and so are additional clauses incorporated in the terms of use by reference.[60]

Apart from §1633.14, there are no additional provisions under the Civil Code or the Commercial Code for that matter, to expressly regulate the electronic issues arising out of contract formation, or to codify the several principles drawn from a rich amount of case law.

Electronic signatures have been a legislative concern in California from the very early onset of e-commerce. In the days when the Internet was a fully anonymous environment where the only identifier was the IP address,[61] electronic signatures were supposed to contribute to a more transparent and trustworthy setting designed to nurture online transactions.[62]

Foreseeing the potential of internet business, in October 1995, the American Bar Association issued the Draft Digital Signature Guidelines, which were implemented, among

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[57] J.M. Jensen, 'Personal Jurisdiction in Federal Courts over International E-Commerce Cases', 40 *Loy. L. A. L. Rev.* 1507, 1551 (2007); F.J. III Mootz, 'After the Battle of the Forms: Commercial Contracting in the Electronic Age', 4 *I.S.J.L.P.* 271, 282 (2008); See also *Specht v. Netscape Commc' ns Corp.*, 306 F. 3d 17 (2d Cir. 2002); *Hubbert v. Dell Corp.* 835 N. E. 2d 113 (Ill. App. Ct. 2005); *Southwest Airlines v. Boardfirst, LLC.*, 2007 U.S. Dist. LEXIS 96230 (N.D. Tex. 2007); *Cvent, Inc. v. Eventbrite, Inc.* 739 F. Supp. 2d 927 (E. D. V a. 2010); *Nguyen v Barnes & Noble, Inc.*, 763 F.3d 1171 (9th Cir. 2014); *Be In, Inc. v Google Inc.* (ND Cal, Oct 9, 2013, No. 12-CV-04=3373-LHK) 2013 US Dist Lexis 147047; *Hines v. Overstock.com, Inc.*, 668 F.Supp.2d 362, 366–67 (E.D.N.Y.2009); *Cairo, Inc. v Crossmedia Servs., Inc.* (ND Cal, Apr. 1, 2005, No. C 04-04825 JW) 2005 US Dist Lexis 8450; *Pollstar v Gigmania, Ltd.* (ED Cal 2000) 170 F Supp 2d 974; *Nghiem v Dick's Sporting Goods, Inc.* (CD Cal, July 5, 2016, No. 16-00097) 2016 US Dist Lexis 89429; *Long v Provide Commerce, Inc.* (2016) 245 CA4th 855; Tompkins v 23andMe, Inc. (9th Cir 2016) 840 F3d 1016.

[58] See for instance *Lima v Gateway, Inc.* (CD Cal 2012) 886 F Supp 2d 1170; *Savetsky v Pre-Paid Legal Servs., Inc.* (ND Cal, Feb 12, 2015, No. 14-03514); *Long v Provide Commerce, Inc.* (2016) 245 CA4th 855.

[59] 'Update on Shrinkwrap/Clickwrap/Browsewrap Contracts' 21(1) *Berkeley Tech. L. J.* 552, 554 (2006). See also *Register.com, Inc. v. Verio, Inc.*, 356 F. 3d 393 (2d Cir. 2004) 356 F3d 393; *Cairo, Inc. v CrossMedia Servs., Inc.* (ND Cal, Apr. 1, 2005, No. C 04-04825 JW) 2005 US Dist Lexis 8450.

[60] *PDC Labs., Inc. v Hach Co.* (CD I11, Aug. 25, 2009, No. 09-1110) 2009 US Dist Lexis 75378; *Swift v Zynga Game Network, Inc.* (ND Cal 2011) 805 F Supp 2d 904.

[61] K. Coyle, 'Digital Signatures: Identity in Cyberspace', 2 *AALL Spectrum* 8, 11 (1997).

[62] See Internet Law & Policy Forum, 'Survey of International Electronic and Digital Signature Initiatives', last visited on 21 August 2018. See also R.L. Ravin, 'Tradesecrets and Digital Signatures', 8 *Seton Hall Const. L.J.* 751, 756 (1998).

others, in the Utah Digital Signature Act and the Washington Electronic Authentication Act, which was the first such piece of legislation in the world. [63] California followed suit and was also one of the states enacting early digital signature rules,[64] in the form of a statute dating from October 4, 1995: §16.5 of the Government Code. This statute was applicable to the use of digital signatures or other 'acceptable technologies' in connection with government contracts alone,[65] and was considered to be technology-neutral and flexible.[66] However unlike Utah, California distanced itself from the approach endorsed by ABA and taken over by at least twelve states, reflecting a complex system of rules on: a central certification authority, issuance of certificates, types of certificates, expiration or suspension, warranties and liability to name a few examples. Instead, the Californian statute delegated broad authority to the Secretary of State to further devise regulations on authentication.[67]

The Regulations were supposed to be adopted by January 1, 1997, but were in fact approved on June 12, 1998.[68] The Regulations set the standard that digital signatures are only valid if they are created by a so-called 'acceptable technology',[69] and the Regulations go on to describe what exactly is meant by this term. Regulation 22002 outlines the criteria of determining 'acceptable technologies', and according to Regulation 22003, 'Signature Dynamics' and 'Public Key Cryptography' are deemed to be acceptable technologies. At the same time, self-regulation is encouraged, as Regulation 22003(6)(D) mentions that

[63] B.W. Smith & T.E. Keehan, 'Digital Signatures: The State of the Art and the Law', 114 *Banking L.J.* 506, 509 (1997). See also S.G. Warner, 'Digital Signatures Come to Washington', 51 *Washington State Bar News* 33 (1997); S.A. Baker, 'International Developments Affecting Digital Signatures', 32 *Int'l Lawyer* 963, 968 (1998); E.D. Kania, 'The ABA's Digital Signature Guidelines: An Imperfect Solution to Digital Signatures on the Internet', 7 *Commlaw Conspectus* 297, 313 (1999); W. Everett Lupton, 'The Digital Signature: Your Identity by the Numbers', 6(2) *Richmond J. of L. and Tech.* (1999).
[64] C. Tinnes, 'Digital Signatures Come to South Carolina: The Proposed Digital Signature Act of 1997', 48 *S. C. L. Rev.* 427 (1997). See also A.M. Singer, 'Electronic Commerce: Digital Signatures and the Role of the Kansas Digital Signature Act', 37 *Washburn L.J.* 725, 746 (1998).
[65] Ian C. Ballon, *supra* note 43 at 36-18.
[66] Ibid. p. 36-31.
[67] B.W. Smith & T.E. Keehan, *supra* note 63 at 509.
[68] California Digital Signature Regulations, 37 Cal. Code Reg. §§ 22000-22005 (June 12, 1998).
[69] Regulation 22001, California Digital Signature Regulations, 37 Cal. Code Reg. See also A. White Scoville, 'Clear Signatures, Obscure Signs', 17 *Cardozo Arts & Ent. L.J.* 345, 379 (1999).

Certification Authorities may be added to the "Approved List of Certification Authorities" upon showing to the Secretary of State proof of accreditation conferred 'by a national or international accreditation body'.[70]

Later on, in 1999, California was the first state to adopt its own version of the Uniform Electronic Transaction Act (UETA), now incorporated in CC §§1633.1-1633.17.[71] This law is applicable to electronic transactions between parties in terms of both the enforceability of electronic contracts, as well as record retention and evidence.[72]

Similar rules were enacted at federal level shortly after UETA, this time not as a model law but as an integral part of the United States Code.[73] Signed into law on June 30, 2000, the Electronic Signatures in Global and National Commerce Act (E-Sign) established that parties can validly contract electronically, and allows the use of electronic records and signatures.[74] Additionally, E-Sign also included certain rights recognized for consumers in electronic transactions, which will be discussed below in Section 2.1.2.3.

Since the 1995 rules referred to 'digital signatures', while the 1999 ones to 'electronic signatures', a bill amending Section 1633.3 of the Civil Code was approved by the Governor of California on August 19, 2016, to harmonise the two statutes and 'amend current law to clarify that a "digital signature" authorized by Section 16.5 of the Government Code and

[70] Ian C. Ballon, *supra* note 43 at 36-32.
[71] CC Title 2.5 added by Stats. 1999, Ch. 428, Sec. 1; see also J. Braucher, 'Rent-Seeking and Risk-Fixing in the New Statutory Law of Electronic Commerce: Difficulties in Moving Consumer Protection Online', *Wis. L. Rev.* 527, 531 (2001).
[72] C. Ruyan Martin & D.B. Oshinsky, *supra* note 56 at § 7.9. See also *Ruiz v. Moss Bros. Auto Group, Inc*., No. E057529, 2014 WL 7335221 (Cal. Ct. App. 2014); *Langston v. 20/20 Companies, Inc*., No. EDCV 14–1360 JGB (SPx), 2014 WL 5335734 (C.D. Cal. 2014); *Jones-Mixon v. Bloomingdale's, Inc.*, No. 14–cv–01103–JCS, 2014 WL 2736020 (N.D. Cal. 2014); *Espejo v. Southern California Permanente Medical Group* (Cal. App. 2nd Dist., Div. 4, 2016) 2016 WL 1613487.
[73] 15 USC §§7001-7031.
[74] See for instance *Newton v American Debt Servs., Inc.* (ND Cal 2012) 854 F Supp 2d 712.

subject to regulations adopted by the Secretary of State is one type of "electronic signature" that a public agency may choose to adopt under the Uniform Electronic Transactions Act'.[75]

b) Consumer rights

Enacted in 1984, California's Electronic Commerce Act (§1789 - §1789.9 of the Californian Civil Code) mandates certain disclosures with respect to 'electronic commercial services', defined as 'electronic shopping systems designed to conduct the purchase of goods and services via a telecommunications network',[76] and it only applies to tangible goods, physical services, or 'or tickets or vouchers for such tangible items or physical services, but does not mean computerized data delivered to the consumer via a computer terminal or in printed form'.[77] The information required from the service provider deals with: (i) contact details (name, address, and telephone number); (ii) any charges to the consumer imposed by the provider for the use of the service; and (iii) dispute resolution instructions ('the procedures the consumer may follow to resolve a complaint regarding the service, including the telephone number and address of the Complaint Assistance Unit of the Division of Consumer Services of the Depart of Consumer Affairs').[78]

As of 1996, the California Business & Professions Code §17538 was amended as to include different mandatory disclosures for Internet sales on businesses.[79] In contracts concluded via the Internet, Section 17538 states that it is unlawful for a seller or a service

[75] Assembly Bill No. 2296, 'An act to amend Section 1633.2 of the Civil Code, and to amend Section 16.5 of the Government Code, relating to state government'. See also, Reggie Davis, 'New California law inks a big step forward to e-signatures', San Francisco Examiner, 17 October 2016, last visited on 21 August 2018.
[76] Section 1789.2(a), California Civil Code.
[77] Section 1789.2(d), California Civil Code.
[78] Section 1789.2(d), California Civil Code.
[79] B. Fraser, 'Regulating the Net: Case Studies in California and Georgia Show How Not to Do It', 9 *Loy. Consumer L. Rep.* 230, 231 (1996). Notable case law arising out of the interpretation of this section has dealt with spam e-mails, see *Intel Corp. v. Hamidi*, 114 Cal. Rptr. 2d 244, 246 (Ct. App. 2001); *Ferguson v. Friendfinders, Inc.*, 115 Cal. Rptr. 2d 258 (Ct. App. 2002); *eBay, Inc. v. Bidder's Edge, Inc.*, 100 F. Supp. 2d 1058 (N.D. Cal. 2000). See also P.M. DeGaetano, 'Intel Corp. v. Hamidi: Private Property, Keep Out - The Unworkable Definition of Injury for a Trespass to Chattels Claim in Cyberspace', 40 *Cal. W. L. Rev.* 355 (2004); D.T. Bartels, 'Business Associations and Professions', 30 *McGeorge L. Rev.* 387 (1999); J.D. Zentner, 'State Regulation of Unsolicited Bulk Commercial E-mail and the Dormant Commerce Clause', 8 *Vand. J. Ent. & Tech. L.* 477 (2006); J.B. Beckham, 'Intel v. Hamidi: Spam as a Trespass to Chattels - Deconstruction of a Private Right of Action in California', 22 *J. Marshall J. Computer & Info. L.* 205 (2003).

provider to accept payment and allow 30 days to pass without either: shipping the goods, offering a full refund, sending a notification of delay, or sending replacement goods and offering a refund.[80] Moreover, Section 17538(d) states that in any transaction involving a buyer located in California, a vendor, before accepting any payment, must disclose to the buyer the following information: (i) the vendor's return and refund policy; (ii) the legal name of the vendor; and (iii) the complete street address from which the vendor's business is conducted.

Before 1996, this statute was initially only applicable to harms arising out of transactions based on mail-order catalogues, and was adapted by the mere addition of the phrase, "Internet or other electronic means of communicating". This has raised questions regarding the fitness of a regulatory policy of using old instruments to govern new dangers, and has led to additional criticism calling the Californian regulatory approach 'gentle'.[81] However, from the perspective of a standard reflecting how reluctant the American legal system as a whole has been to impose mandatory disclosures in many areas of trade, the very existence of these information duties – albeit very limited – has still been a signal from the Californian legislator that some checks and balances are in order for the smooth operation of online commerce. This approach focuses on highlighting inefficient transactions and keeping transaction costs low,[82] rather than create an entirely new principled legal framework.[83] However, the wording of §17538 does not specifically empower online Californian consumers through the provision of withdrawal rights, which are still left to the discretion of the trader.

2.1.3.2 SWITZERLAND

a) Contract formation

[80] B. Fraser, *supra* note 79.
[81] B. Fraser, *supra* note 79 at 245.
[82] L.E. Ribstein & B.H. Kobayashi, 'State Regulation of Electronic Commerce', 51 *Emory L.J.* 1, 10 (2002).
[83] G.E. Maggs, 'Regulating Electronic Commerce', 50 *Am. J. Comp. L. Supp.* 665 (2002).

Switzerland follows the offer and acceptance model for the valid conclusion of contracts, with a focus on *consensus ad idem*,[84] and additional requirements such as the capacity to contract.[85] Freedom of contract as a general principle governs not only the substantive content of the rights and obligations, but also the form aspect: with a few exceptions,[86] contracts may be concluded in any form.[87]

The first Swiss instrument to tackle electronic signatures was the Decree on Electronic Certification Services, entered into force on 1 May 2000,[88] which was replaced by the lengthier Federal Law of 19 December 2003 (ZertES).[89] Similarly to the European Regulation for the electronic identification and trust services for electronic transactions,[90] the goal of Swiss regulation in this respect is to promote the security of services and to create an equivalence between handwritten and electronic signatures.[91] The ZertES introduced different types of electronic signatures: (i) electronic signatures as electronic data attached to or logically linked to other electronic data and used to verify their authenticity; (ii) advanced electronic signatures as electronic signatures that meet the additional requirements (be related only to the holder; identify the holder; be created by means that the owner may retain exclusive control; be linked to the data to which it relates in such a way that any subsequent change in the data is detectable); and (iii) qualified electronic signatures as advanced electronic signatures based on a secure signature creation device in accordance with Article 6(1) and (2) and on a qualified certificate

[84] Article. 1(1) of the Swiss Code of Obligations (Part V of the Swiss Civil Code), reads: 'The conclusion of a contract requires a mutual expression of intent by the parties' (unofficial translation).
[85] E. Bucher, 'Law of Contracts', in F. Dessemontet & T. Ansay, *Introduction to Swiss Law* (Kluwer/Schulthess, 2004), p. 107.
[86] Article. 12, Swiss Code of Obligations. See also F. Dessemontet, 'The European Approach to E-Commerce and Licensing', 26 *Brook. J. Int'l L.* 59, 61 (2000).
[87] Article. 10, Swiss Code of Obligations.
[88] This decree introduced the voluntary recognition of suppliers of certification services, consisting in the generation of private cryptographic keys and the administration of public keys.
[89] This law had entered into force on 1 January 2005.
[90] Regulation (EU) No 910/2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC (2014) by the European Parliament and the European Commission; see also Commission Implementing Regulation (EU) 2015/1502, Commission Implementing Regulation (EU) 2015/1501; Commission Implementing Decision (EU) 2015/296.
[91] For business-specific benefits such as lowering transaction costs, increasing compliance and sustainability, see Cryptomathic, 'eIDAS Compliant Remote eSigning', White Paper, p. 3.

valid at the time of its creation.[92] The ZertES led to the modification of Article 14 of the Code of Obligations, and introduced the rule according to which qualified electronic signatures were to be considered equivalents of handwritten signatures.[93]

As the ZertES framework only applied to natural persons, a restriction intended to avoid the violation of main principles on the law of mandate,[94] this was considered to limit the possibility for companies or authorities of benefitting from the framework, and was one of the main reasons which led to the legislative update started as of 2014.[95] The current form of Article 14(2bis) of the Code of Obligations implements the most recent modifications brought to this regime by the Federal Law of 18 March 2016 on Electronic Signatures.[96]

The reform had three main objectives: (i) to introduce a new type of signature which could also be used by commercial legal persons and authorities and which could guarantee the origin and integrity of a document; (ii) to create a legal basis that includes electronic signatures as well as secure authentication via certification products; and (iii) to the extent possible, to simplify and harmonize the terms used in the rules on electronic signatures from different laws in force.[97]

b) Consumer rights

While the European Union was adopting rules on information duties and withdrawal rights for distance sales in the late 90s,[98] Switzerland decided not to acquiesce to this legal

[92] Article 2, ZertES; see also D.M. Turner, 'Understanding ZertES - the Swiss Federal Law on Electronic Signatures', Guest Cryptomathic blog post, 10 April 2016, last visited on 21 August 2018.
[93] G. Misuraca *et al.*, 'Overcoming barriers to innovation in E-Government – the Swiss way', in P.G. Nixon *et al.* (eds.), *Understanding E-Government in Europe: Issues and Challenges* (Routledge, 2010), p. 209; A. Thalmann, 'New Swiss Law on Electronic Signatures', Walder Wyss & Partners NewsLetter No. 52, September 2004, last visited on 21 August 2018.
[94] *Message conseil fédéral du 15 janvier 2014 relatif à la révision totale de la loi sur la signature électronique* (SCSE), FF 2014 957, p. 958.
[95] For commercial uses, the so-called advanced signature was employed to circumvent the limitations. However, the disadvantage of this method had been that the certificate would not meet the quality criteria set by the State, ibid., p. 961.
[96] This law entered into force on 1 January 2017.
[97] Supra note 95, p. 962.
[98] Directive 97/7/EC of the European Parliament and of the Council of 20 May 1997 on the protection of consumers in respect of distance contracts, *OJ* L144 of 4 June 1997. See also R. Bradgate, 'The EU Directive on Distance Selling', 4 Web J. of Current Legal Issues (1997); J. Dickie, *supra* note 47; M. Donnelly & F. White,

framework and thus did not take any measures to create consumer rights such as withdrawing from a sales contract.[99] These rights are currently governed by the general terms and conditions of the online merchant.

Swiss law does however govern contracts concluded outside of business premises. Articles 40 a-f of the Code of Obligations apply to contracts over goods or services which fulfil two conditions: (i) the seller/supplier acted in a professional or commercial capacity; and (ii) the price paid by the buyer exceeds 100 francs.[100] If these conditions are met and the transaction was proposed at the consumer's place of work, residential premises or immediate vicinity, the consumer has the right to revoke his offer or his acceptance of such an offer.[101]

2.2. Case study 2 – Social media influencers

2.2.1 The development of the social media influencers phenomenon

Social media is a phenomenon facilitated by Internet dispersion, whereby computer-based technologies facilitate the creation and sharing of information by the community of users,

'The Distance Selling Directives – A Time for Review', 56 *Northern Ireland Legal Quarterly*, 200 (2005); S. Eickelmann, 'No General Requirement to Pay Compensation for the Use of Goods after Withdrawal from a Distance Contract', *European Law Reporter* 398 (2009); K. Henderson & A. Poulter, *supra* note 48; J. Hörnle *et al.*, 'Directive 97/7/EC on the Protection of Consumers in Respect of Distance Contracts', in A.R. Lodder, A.R. & H. Kaspersen (eds.), *eDirectives: Guide to European Union Law on E-Commerce* (Kluwer Law International, 2002), p. 11-31; A. Lodder & M. Voulon, 'Intelligent Agents and the Information Requirements of the Directives on Distance Selling and E-commerce', 16(3) *Int'l Rev. of L., Comp. & Tech.* 277 (2002); M. McDonald, 'Distance Contracts Directive and Tourist Bookings: *easyCar v OFT*', 4 *International Travel Law Journal 192* (2005); J. Rothchild, *supra* note 47; P. Rott, 'The Balance of Interests in Distance Selling Law – Case Note on *Pia Messner v Firma Stefan Krüger*', 18(1) *Eu. Rev. of Private L.* 185 (2010); C. Goanta, 'Information Duties in the Internet Era: Case Note on Content Services Ltd v Bundesarbeitskammer', 21(2) *Eu. Rev. of Private L.* 643 (2013); G. Spindler, 'Internet-Auctions versus Consumer Protection: The Case of the Distance Selling Directive', 6(3*) German L. J.*, 725 (2005); A. Poulter *et al.*, 'The Distance Selling Directive: Consumer Champion or Complete Irrelevance?', Paper presented at IADIS e-Society Conference on E-Commerce, E-Learning and E-Government, Unpublished (2003), last visited on 21 August 2018.

[99] Swiss law focuses on consumer protection in the meaning of warranties and product safety, see M. Pichonnaz Oggier, 'OECD Annual Report on Consumer Policy Developments 2000 (Switzerland)', 27 April 2001, last visited on 21 August 2018; B. Stauder, 'Warranties and Consumer Protection in Swiss Law', 1987 *Ariz. J. Int'l Comp. L.* 53 (1987).

[100] Art. 40a Swiss Code of Obligations, Inserted by No I of the FA of 5 Oct. 1990, in force since 1 July 1991 (AS 1991 846; BBl 1986 II 354).

[101] Art. 40b Swiss Code of Obligations.

tapping into the human desire of being known and connecting to one another.[102] Although social media as a concept has been thriving in the past decade, its roots extend well beyond that, and can be traced back – just like e-commerce – to the creation of the Internet: ARPANET's activity generated a lot of computer-based communication exchanged between its users, and even led to the creation of a network etiquette.[103] Internet-facilitated social media platforms such as Facebook, Instagram, Youtube and more recently Musical.ly have met with great success, as they have given 'the people formerly known as the audience' new powers.[104] This empowerment translates into heaps of followers, views, likes, and engagement. Media that started out as an alternative channel for the sharing of low-resolution home videos soon became a place where users could create their own content in a more professional manner.

This development has been possible because of the proliferation of peer-to-peer services in the past decade, coupled with the struggle faced by advertisers to follow user engagement on social media as a new promotion channel.[105] As far as online content is concerned, the gig economy, as it is also known as,[106] has empowered every individual with a smart phone and an Internet connection to be able to create video or photo content and share it with the world. The content creators behind the uploads thus become 'influencers', namely users who are popular with a considerable number of peers, and who have been shaping a global marketing and labour phenomenon as of 2015, and growing exponentially ever since.[107] This definition is contested voices from marketing practice, who instead consider that

[102] J. Rosen, 'The People Formerly Known as the Audience', in M. Mandiberg (ed.), *The Social Media Reader* (NYU Press, 2012), p. 13. See also D. Tapscott & A.D. Williams, *Wikinomics: How Mass Collaboration Changes Everything* (Penguin, 2006); C. Fuchs, *Internet and Society: Social Theory in the Information Age* (Routledge, 2008).
[103] C.C. Stacy, 'Getting Started Computing at the AI Lab', MIT AI Lab Working Paper 235, 7 September 1982, last visited on 21 August 2018; see also M. Riese "The definitive history of social media", *The Daily Dot*. Online, 11 September 2016, last visited on 21 August 2018.
[104] J. Rosen, *supra* note 102.
[105] R. Ferguson, 'Word of Mouth and Viral Marketing: Taking the Temperature of the Hottest Trends in Marketing', 25(3) *J. of Cons. Marketing* 179 (2008).
[106] *Supra* note 3.
[107] R. Williams, 'Study: Instagram influencer marketing jumped 198% in 2017', Mobile Marketer, 16 January 2018, last visited on 21 August 2018.

influencers are people who help other people to buy something from a specific company:[108] 'When done right, influencer marketing is a multiplier: It leverages the reach, credibility and salesmanship of a community of influencers to advocate your product to consumers, and it results in awareness, improved perception and action.'[109] This is also reflected in the definition of influencer marketing adopted by the Word of Mouth Marketing Association: 'the act of a marketer identifying and engaging influencers to share information with influencees in pursuit of a business goal.'[110] However, any angle on the definition of influencers arising in this debate is not legal, but merely informal, which is also reflected by the fact that any individual with a social media account – recently even allegedly non-humans[111] – can describe themselves as an influencer, since this title/description is in no way protected.

While some influencers have become remarkably successful and have tens of millions of followers (mega-influencers),[112] there are a lot of smaller influencers, followed by tens or hundreds of thousands of users (microinfluencers),[113] who aim to do the same: make a living out of broadcasting their life, preferences or advice on social media. The content is industry-specific, and it can reflect a wide spectrum of activities such as video games, comedy, lifestyle, life streaming, art or lip-dub to more unorthodox content such as eating channels, unwrapping/unboxing items or playing pranks on people for an audience.

[108] G.A. Dada, 'What Is Influencer Marketing And How Can Marketers Use It Effectively?' Forbes, 14 November 2017, last visited on 21 August 2018.
[109] Ibid.
[110] WOMA, 'The WOMA guide to influencer marketing', 2017, p. 7, last visited on 21 August 2018. See also M. Jahnke, '*Ist Influencer Marketing Wirklich Neu*', in M. Jahnke (ed.), Influencer Marketing: Für Unternehmen und Influencer: Strategien, Plattformen, Instrumente, rechtlicher Rahmen (Springer, 2018), p. 4.
[111] J. Stanley, 'The Makers of AI Influencer Lil Miquela Receive $6 Million USD Funding From Silicon Valley', Hypebeast, 24 April 2018, last visited on 21 August 2018.
[112] As of 2017, Forbes overviews 12 industry categories where it follows the top ten influencers in said industries: https://www.forbes.com/top-influencers/#67e300d772dd, last visited on 21 August 2018.
[113] B. Wissman, 'Micro-Influencers: The Marketing Force Of The Future?', Forbes, 2 March 2018, last visited on 21 August 2018.

A vast part of the content generated on the different channels influencers use is monetized. In other words, creating online content is nowadays a business model which generates user engagement in the hundreds of millions. However, the monetization of content raises a lot of legal and ethical concerns: are influencers paid for their reviews, and if so, do they disclose this to their followers? Is there a conflict of interests if influencers are bound to the sincere opinions their followers ask for, on goods and services they are paid to promote? Influencers rarely use their channels as direct sellers, and act as collaborators in advertising campaigns. As there is no market-entry barrier with respect to legal form, influencers are not obliged to register themselves as freelancers or as companies, with many of them falling outside the scope of the already few consumer protection instruments which might govern their activity.

Table 3. Chronology: The history of peer content creation[114]

Year	Notable Event
2005	Chad Hurley, Steve Chen and Jawed Karim (Paypal) founded Youtube Youtube.com domain name activated on February 14, 2005 First Youtube video uploaded on April 23, 2005 by Jawed Karim ('Mee at the zoo')
2006	Fastest growing website of the year 100m views/day in July Purchased by Google on October 9, 2006, for US$1.65 billion in stock
2007	Youtube consumes as much bandwidth as the whole Internet in 2000 Local language versions available
2008	Youtube receives Peabody Award Video analytics tool added
2010	Thumbs rating system introduced October 6, 1020, Instagram iOS app officially released through the App Store
2012	±60 hours of new videos uploaded every minute Algorithm change replaced the view-based system for watch time
2013	15-second video sharing incorporated by Instagram

[114] Loosely based on G. O'Malley, 'YouTube is the Fastest Growing Website', Advertising Age, 21 July 2006; 'YouTube serves up 100 million videos a day online', USA Today, 16 July 2006; C. Lewis, 'Web could collapse as video demand soars', The Daily Telegraph, 7 April 2008; 'Complete List of 2008 Peabody Award Winners". Peabody Awards, University of Georgia, 1 April 2009; S. Richmond 'YouTube users uploading two days of video every minute', The Daily Telegraph, 26 May 2011; The Game Theorists '*Game Theory: How Minecraft BROKE YouTube!*', 7 April 2017; M.G. Siegler, 'Instagram Launches with the Hope of Igniting Communication Through Images'. TechCrunch, 6 October 2010; O.B. Waxman, 'Here Are the 5 Most Popular Instagram Photos of All Time', Time, 6 October 2015; A.J. Campbell, 'Rethinking Children's Advertising Policies for the Digital Age', 29 *Loy. Consumer L. Rev.* 1 (2016). All online sources were last visited on 21 August 2018.

2014	Official version of Musical.ly is launched
2015	Youtube launches Youtube Red Instagram hosts over 50 billion photos
2016	Musical.ly introduces user-generated ads
2017	Very public Fyre Festival fiasco gives rise to FTC concerns
2018	Instagram launches IGTV

2.2.2 Selected legal issues reflecting the impact of social media influencers

With the rise of technological support for their content,[115] individuals around the world now have access to their own TV-stations where they can attract funders and actually make a good living out of running their channels.[116] Online content creation raises issues that are similar to those in the sharing economy (e.g. Uber, Airbnb, etc.). On the one hand, online platforms connect individual content providers with viewers, in the same peer-to-peer fashion that AirBnB connects an apartment owner and a tourist. Given the service-orientation of both activities, provided they are monetized, a clear issue emerges: when does an individual stop being a peer? In other words, what does it mean to be a consumer in this environment? Relatedly, what legal standards apply to the process of creating such content? On the one hand, influencer marketing is a grey area of consumer advertising with complex interactions between influencers, peers, platforms, businesses, and whatever other companies or agents in between.[117] It entails companies reaching out to celebrities who benefit from a faithful following of individuals who they can easily sway to buy certain products. Monetizing a Youtube channel is a process requiring sustained effort, as channel owners will have to strike a balance between keeping their followers entertained and generating enough revenue for their

[115] For instance, Instagram extended video limits from 15 to 60 seconds, and subsequently even launched its own creators TV station.
[116] R. Rowel, 'Youtube – The company and its founders' (ABDO Publishing, 2011), p. 8.
[117] S. Schick, 'Why influencer marketing has become a moving target', Mobile Marketer, 27 November 2017, last visited on 21 August 2018.

activity. Popularity is correlated with the amount of earnings celebrities can make out of sponsored content. What makes this into a great marketing technique is also what may hurt consumers the most. The trust-based relation between a celebrity and its fan-base appeals to marketers; it creates a more genuine story for their products or services. But trust is a fine line, and if a celebrity only endorses material things for money, it means they are not being honest with their audience, who might go and buy those products under mistaken assumptions. Just like Instagram, Youtube is a huge market for reviews on products or services relating to technology, games, clothing or make-up, just to name a few. Ordinary people become channel owners and post regular videos focusing on a particular theme. With time, some of these people reach quasi-stardom and become known names on the Internet. To take an example, NikkieTutorials, a successful make-up vlogger based in the Netherlands, has gained a total of 6,998,037 followers since joining Youtube in 2008, and her videos have been viewed 537,159,106 times so far. And while that might look like a lot, these numbers really fade into oblivion when compared to one of the most famous Youtubers of all time, the Swedish game vlogger PewDiePie. With a total following of around 55,538,695 individuals, his videos have collected an overwhelming total of 15,449,755,042 views ever since he joined Youtube in 2010 and earned approximately $7,400,000 in 2014 on the basis of this following. But these are only examples of very well established Youtubers; thousands if not hundreds of thousands of people are currently turning to Youtube to make a living, and in doing so, they seek to earn money from potential collaborators, and this latter category seems to have become more treasured by businesses in need of advertising.[118]

Youtube monetization often entails two main streams of revenue: AdSense and sponsorships. AdSense is a Youtube feature that allows channel owners to play ads in various formats before their own content, and their remuneration depends on the number of views their

[118] *Supra* note 113.

videos will score. Sponsorships are separate from the Youtube channel, in that external companies can contact a popular Youtuber and offer to pay that Youtuber for a sponsorship agreement. These agreements are likely to entail that the Youtuber endorses specific companies or products. As one of the most important features of Youtubers is that of being relatable, namely the feeling that Youtubers are normal people, just like their followers, channel owners will likely not want to openly disclose sponsorships. This creates a conflict of interests where the channel owner's main activity is that of generating consumer opinions and reviews, while at the same time being secretive about the products that he or she is being paid to advertise.

On the other hand, a labour question arises. In the gig economy, how are content creators to be treated? Just like with other app-facilitated services, content creators find themselves in a legal limbo that at best depends on the classifications to be found in a given jurisdiction. An individual who starts a Youtube channel deals with uncertain information; information they have no way of knowing at the moment the channel is initiated (such as what kind of growth they will experience; what kind of partners they will be able to attract; how their content will be perceived by the users of the platform; how many followers they will have at every moment of their content creator careers), and information they are likely not going to know (such as obligations arising out of the platforms' general terms and conditions; legal prerequisites; business management; etc.). Just like Uber drivers and AirBnB hosts, content creators are trapped in between their own freedom of choosing how to conduct their activities, and limitations posed by platforms themselves.[119]

The following sections will discuss these two issues (influencer advertising as a commercial practice and content creator gig work as a labour/legal form matter) in greater

[119] J. White, 'Influencers React to Facebook's New Branded Content Policy', Inc., 26 February 2018, last visited on 21 August 2018.

detail, explore potential Californian and Swiss laws, and make an overview of regulatory responses.

2.2.3 Comparative insights from innovative jurisdictions

2.2.3.1. CALIFORNIA

a) Influencer marketing

Commercial practices in advertising are regulated at federal level in the United States.[120] The Federal Trade Commission (FTC) labels influencer marketing acts as endorsements, and is very clear that since such advertising tools can persuade consumers to engage in commercial transactions, endorsements must be truthful and not misleading.[121] For this reason, the FTC created the Guides Concerning the Use of Endorsements and Testimonials in Advertising,[122] soft rules designed to address the application of Section 5 of the Federal Trade Commission Act on unfair or deceptive acts or practices. The Guides recognize three different types of endorsements on the basis of the natural/legal person making them: (i) consumer endorsements;[123] (ii) expert endorsements;[124] and (iii) endorsements by organizations.[125]

Moreover, one specific element present in endorsements is specifically acknowledged: the material connection, meaning 'a connection between the endorser and the seller of the

[120] V. N. Ramirez, 'Fashion Statements Turned Endorsements: How FTC Enforcement Could Cripple the Internet's Trendsetters', 68 *Syracuse L. Rev.* 483, 485 (2018); A. Sconyers, 'Corporations, Social Media, & Advertising: Deceptive, Profitable, or Just Smart Marketing', 43 *J. Corp. L.* 417, 420 (2018); A. Khuong, 'Complying with the Federal Trade Commission's Disclosure Requirements: What Companies Need to Know When Using Social-Media Platforms as Marketing and Advertising Spaces', 13 *Hastings Bus. L.J.* 129 (2016); R. Brown, 'Was That an Ad', 29 *Loy. Consumer L. Rev.* 225, 277 (2016).
[121] 16 CFR. § 435.2(a).
[122] 16 CFR § 255.
[123] §255.2 Code of Federal Regulations.
[124] §255.3 Code of Federal Regulations; the term expert is defined in §255.0(e) Code of Federal Regulations: 'an expert is an individual, group, or institution possessing, as a result of experience, study, or training, knowledge of a particular subject, which knowledge is superior to what ordinary individuals generally acquire.'
[125] §255.4 Code of Federal Regulations.

advertised product that might materially affect the weight or credibility of the endorsement', which if existent, must be fully disclosed,[126] and the disclosures must be clear and conspicuous.[127] According to the Guides, if there is a 'material connection' between an influencer and an advertiser which can influence the credibility of the messages posted on social media, the endorser must make this connection clear. In practice, that means adding different hashtags such as the hashtag #ad, by which the public understands that the celebrity in question has been paid to promote a specific product.

b) Influencer gig work

As far as influencer gig work is concerned, the main legal question that arises is whether influencers can be considered independent contractors or whether they are employed by the brands they need to advertise, or the agencies giving them guidance. The latter will often train influencers on various business aspects of advertising, monitor compliance with instructions and enforce consequences in the case of non-compliance.

Before the emergence of the sharing economy, employee misclassification has also been found to be a rampant issue in other industries (e.g. construction).[128] According to the US Supreme Court in *Board v. Hearst Publications*, '[f]ew problems in the law have given greater variety of application and conflict in results than the cases arising in the borderland between what is clearly an employer-employee relationship and what is clearly one of independent, entrepreneurial dealing.'[129] A lot of the Californian law dealing with drawing this line emerged not out of regulation, but at common law. For instance, in determining whether a worker was an employee or an independent contractor, courts have used the 'principal test'. This test

[126] §255.5 Code of Federal Regulations.
[127] FTC, '.Com Disclosures', March 2013, p. 4, last visited on 21 August 2018.
[128] F. Carre & R. Wilson, 'The Social and Economic Costs of Employee Misclassification in Construction', 17 December 2004. See also U.S. Gov't Accountability Office, GAO-09-717, 'Employee Misclassification Improved Coordination, Outreach, and Targeting Could Better Ensure Detection and Prevention', p. 12 (2009).
[129] *Board v. Hearst Publications* (1944) 322 U.S. 111, 121.

focuses on whether 'the person to whom service is rendered has the right to control the manner and means of accomplishing the result desired.'[130]

No cases specifically dealing with influencers as employees have so far been heard by the Californian judicial branch. Still, the recent *Dynamex* case heard by the Californian Supreme Court can clarify what type of test would be applicable – if interpreted broadly – to any case arising out of influencer marketing activities.[131] In *Dynamex,* the Court adopted a new rule, different from the leading prior test in *Borello,*[132] for the purpose of interpreting the definition of an 'employee' in the light of California's Industrial Welfare Commission's wage orders. According to the new rule, all workers are now presumed to be employees instead of contractors, unless the entity which classifies the worker as an independent contractor establishes the following cumulative conditions (the so-called ABC test): (i) that the worker does not operate under the control and direction of the hirer in connection with the performance of the work; (ii) that the work performed by the worker is outside the usual course of business for the hiring entity; and (iii) and the worker has customarily established itself in an independent trade, occupation or business as that performed for the hiring entity.[133]

For influencers, the way in which companies establish and maintain compliance with instructions could potentially convert an influencer from an independent contractor to an employee. This situation is somewhat complicated by the requirements imposed by the FTC

[130] *Tieberg v. Unemployment Ins. App. Bd*. (1970) 2 Cal.3d 943, 946. See also *Isenberg v. California Emp. Stab. Com.* (1947) 30 Cal.2d 34, 39 (Isenberg); *Perguica v. Ind. Acc. Com.* (1947) 29 Cal.2d 857, 859-861 (Perguica); *Empire Star Mines Co. v. Cal. Emp. Com.* (1946) 28 Cal.2d 33, 43 (Empire Star Mines); *Tomlin v. California Emp. Com.* (1947) 30 Cal.2d 118, 123; *Twentieth etc. Lites v. Cal. Dept. Emp*. (1946) 28 Cal.2d 56, 57-60; *Cal. Emp. Com. v. L.A. etc. News Corp.* (1944) 24 Cal.2d 421, 424-425.

[131] *Dynamex Operations West, Inc. v. Superior Court of Los Angeles*, No. S222732 (Cal. Sup. Ct. Apr. 30, 2018).

[132] *S.G. Borello & Sons, Inc. v. Dep't of Indus. Relations*, 769 P.2d 399, 404 (Cal. 1989). See also P.A. Izvanariu, 'Matters Settled but Not Resolved: Worker Misclassification in the Rideshare Sector', 66 *DePaul L. Rev.* 133 (2016).

[133] Ibid. For an overview of the lower instance case, see P. Tran, 'The Misclassification of Employees and California's Latest Confusion regarding Who is an Employee or an Independent Contractor', 56 *Santa Clara L. Rev.* 677 (2016).

on compliance with the Guides referred to above.[134] In compliance orders such as *CSGOLotto Inc.*,[135] the FTC had to assess the advertising practices of social media influencers Trevor 'TmarTn' Martin and Thomas 'Syndicate' Cassell, well-known to the online gaming community, and determined that the two had deceptively endorsed the online gambling service CSGO Lotto, without disclosing that they jointly owned the company. According to the compliance order, the FTC made it clear that it will hold liable any actors operating together with influencers themselves (such as brands, agencies, or influencer networks) for compliance lapses, and that all such actors are expected to: (i) provide influencers with a clear statement of responsibilities; (ii) establish, implement and maintain a system to monitor and review influencer posts; and (iii) terminating and ceasing payments to non-compliant endorsers immediately.[136]

2.2.3.2. SWITZERLAND

a) Influencer marketing

Switzerland governs commercial practices in advertising through the Federal Law on Unfair Competition of 19 December 1986,[137] with three particular aims: (i) to update the general clause – the governing principle deeming practices to be unfair; (ii) to extend the application of prior rules to pricing, unfair advertising as well as the protection of services and general business conditions; and (iii) to strengthen civil and criminal protection.[138] The Law on Unfair Competition lays the foundation for fair and undistorted competition in the interest of all parties concerned.[139] Article 2 of the Law establishes the general clause according to

[134] *Supra* note 127.
[135] FTC, 'CSGO Lotto Owners Settle FTC's First-Ever Complaint Against Individual Social Media Influencers', Press release, 7 September 2017, last visited on 21 August 2018. For a wider discussion of the business practices in this case, see J. Vrooman Haskell, 'More than Just Skin(s) in the Game: How One Digital Video Game Item Is Being Used for Unregulated Gambling Purposes Online', 18 *J. High Tech. L.* 125 (2017).
[136] FTC, Decision and Order Docket No. C-4632.
[137] RO 1988 223.
[138] *Message du Conseil fédéral du 18 mai 1983*.
[139] Art. 1, Swiss Law on Unfair Competition.

which any commercial conduct or practice which is misleading or otherwise in breach of the principle of good faith and which affects relations between competitors or between suppliers and customers shall be unfair and unlawful, and non-transparent marketing practices have already been established as unfair under this general clause.[140] Even though to date there might not be any case law publicly available on this point in Switzerland, it seems that some influencer marketing practices could be considered disguised advertising, and therefore deemed to be prohibited according to Swiss law. This can be the case even if there was no payment involved for disguised marketing.[141]

Two self-regulation organizations, namely the Swiss Commission on Fair Competition (SCFC) and the Swiss Press Council have further developed guidelines applicable to digital marketing. For instance, in 2005 the SCFC issued the Guidelines on Fairness in commercial communication, a collection of soft law rules instructing the market on the principles around digital marketing.[142]

The guidelines have not been updated since April 2008, but the principles contained therein are likely to apply to digital influencer marketing as well. In particular, principles 3.1 to 3.12 stipulate that commercial communication must be recognizable and therefore labelled as such. Given that advertising law seems to be rather liberal in Switzerland and heavily relying on self-regulation,[143] these guidelines are not binding, and the SCFC lacks authority to issue any sanctions on the basis of the principles enshrined. This being said, the SCFC does issue decisions which are informally respected by market actors, and which often are of use to judges when interpreting statutory law.

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[140] P. Jung & P. Spitz (eds.), *Federal Act Against Unfair Competition, Hand-commentary* (2010), Art. 2 marginal note 41; see also R.H. Weber & S. Volz, 'Online Marketing and Competition Law', Zurich 2011, 52, marginal note 205, 244.
[141] Ibid.
[142] Swiss Commission on Fair Competition, 'Guidelines on Fairness in commercial communication', April 2008, last visited on 21 August 2018.
[143] See for instance P. Hofer & J. Bieri, 'Advertising to children in Switzerland", 6(3) *Young Consumers* 80 (2005).

Influencer marketing is likely to pose additional issues to Swiss law, as the liberal regulation does not have enough tools to deal with some of the technological challenges of advertising on social media. One example of such challenges is a media report issues in 2017, following the market of fake followers.[144]

b) Influencer gig work

The legal issues posed by creative gig work done on social media are nothing new, and they reflect, on the one hand, the types of challenges which artistic/creative freelance work has always posed (e.g. what is the legal form best suited for work done by website designers; what are the advantages and disadvantages of freelance work from a labour perspective, etc.), and on the other hand, the types of questions which have been posed for other industries, such as transportation.[145]

In 2017, the Swiss social security agency Suva determined that Uber exercises actual control over its drivers, and that there was no evidence to suggest that drivers acted as independent contractors; as a result, Suva claimed that Uber drivers have a right to social security compensation, as if they were employees.[146] However, more recently, the Social Security Court in Zurich disagreed with this qualification, as it considered drivers to be independent.[147]

As such judicial qualifications are currently lacking in the case of influencer marketing, it is safe to assume that Youtubers or Instagrammers would be considered to have the same independent status, and that employment protections would not extend to their work.

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[144] J. Schmidli *et al.* 'Influencer-Marketing: Wer beeinflusst hier wen?', Schweizer Radio und Fernsehen, 11 October 2017, last visited on 21 August 2018. See also N. Confessore *et al.*, 'The follower factory', New York Times, 27 January 2018. For a more general overview on advertising on social media, see M. Faßmann & C. Moss, *Instagram als Marketing-Kanal: Die Positionierung ausgewählter Social-Media-Platformen* (Springer, 2016).

[145] T. Lowenthal et al, 'The Employment Status of Uber Drivers: A Comparative Report Prepared for the Social Law Project, University of the Western Cape', Cambridge University, October 2017, p. 25.

[146] Ibid.

[147] Zurich Social Security Court, Decision of 10 July 2018. See also C. Badertscher, 'Teilsieg für Uber vor Gericht', Schweizer Radio und Fernsehen, 23 July 2018.

Moreover, as far as new regulation proposals are concerned, no regulatory measures can be reported at the time of concluding this research.

2.3. Case study 3 - Blockchain

2.3.1 The development of blockchain

Rooted in information security, blockchain is an Internet-enabled cryptohraphy-based information transfer technology which acts as a ledger that records information in so-called 'blocks'.[148] One of the most prominent blockchain developers, Vitalik Buterin, defines it as 'a magic computer that anyone can upload programs to and leave the programs to self-execute, where the current and all previous states of every program are always publicly visible, and which carries a very strong cryptoeconomically secured guarantee that programs running on the chain will continue to execute in exactly the way that the blockchain protocol specifies'.[149] The intricacies of this technology are beyond the purpose of this paper, and more specialized literature must be consulted.[150] However, in what follows, a very brief overview of how blockchain works will be given, so that the reader can understand the basic concepts surrounding this technology.

[148] World Bank, 'Distributed Ledger Technology and Blockchain', FinTech Note no 1, 2017, last visited on 21 August 2018.
[149] V. Buterin, 'Visions, Part 1: The Value of Blockchain Technology', Ethereum Blog, 23 April 2015, last visited on 21 August 2018.
[150] P. De Filippi & A. Wright, A., Blockchain and the Law: The Rule of Code (Cambridge, 2018); V. Buterin, 'Ethereum White Paper: A Next Generation Smart Contract & Decentralised Application Platform', 2013, last visited on 21 August 2018; M. Finck, 'Blockchains And Data Protection In The European Union', Max Planck Institute for Innovation and Competition Research Paper No. 18-01, 2018; G. Peters & E. Panayi, 'Understanding Modern Banking Ledgers through Blockchain Technologies: Future of Transaction Processing and Smart Contracts on the Internet of Money', in P. Tasca et al, *Banking Beyond Banks and Money* (Springer, 2018), p. 239-278; K. Delmolino et al, 'Step by Step Towards Creating a Safe Smart Contract: Lessons and Insights from a Cryptocurrency Lab', University of Maryland, 18 November 2015, p. 2, last visited on 21 August 2018; B. Wang, 'Blockchain and the Law', 19(1) Internet Law Bulletin 246, 252 (2016); A.K. & N. Ramasubbu, 'The Digital Wallet: Opportunities and Prototypes' 42(4) *IEEE Computer* 100 (2009); R. Kemp, 'Mobile Payments: Current and Emerging Regulatory and Contracting Issues' 29(2) Comp. Law & Security Rev. 175 (2013).

Blockchain is mostly known for facilitating the transaction of cryptocurrencies, as its original application, the Bitcoin, was developed by Satoshi Nakamoto to solve existing behaviour and technological problems with the concept of peer-to-peer electronic cash,[151] previously attempted in the 80's.[152] Since its anonymous launch in 2008, (the Bitcoin) blockchain has been traditionally composed of a peer-to-peer (P2P) network where so-called 'miners' (e.g. network actors with sufficiently high computing power) are involved in solving cryptographic puzzles in order to receive a gain. In doing so, the resulting decentralised mining leads to a consensus protocol which validates transactions happening in the network, a mechanism also known as proof-of-work (PoW).[153] Once the consensus mechanism validates information, this information is added in the form of a new block to the existing ledger, and is encrypted using technology that is also common to digital signatures.[154] Every ledger starts with a 'genesis block', and evolves with the addition of new blocks which contain 'hashed' information of the previous block.

According to De Filippi and Wright, blockchain technology innovates information management as it combines different technologies, (e.g. P2P networks, public and private key cryptography, consensus mechanisms and distributed computer networks) into a new type of database characterized by immutability, flexibility and transparency.[155] In the light of these features, blockchain becomes particularly interesting for the financial industry, smart contracts and securities, but also showing potential outside of finance, namely in corporate governance or democratic participation.[156]

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[151] S. Nakamoto S., 'Bitcoin: a peer-to-peer electronic cash system', October 2008, last visited on 21 August 2018
[152] D. Chaum, 'Blind signatures for untraceable payments', in D. Chaum *et al.* (eds), *Advances in Cryptology* (Springer, 1983), p. 199-203.
[153] J. Ceremeño, 'Blockchain In Financial Services: Regulatory Landscape And Future Challenges For Its Commercial Application', BBVA Working Paper (No 16/20) (2016).
[154] *Supra* note 63.
[155] P. De Filippi & A. Wright, *supra* note 150.
[156] A. Wright & P. De Filippi, P., 'Decentralized Blockchain Technology and the Rise of Lex Cryptographia', 2015, p. 3.

Table 4. Chronology: The history of blockchain

Year	Notable Event
1983	First attempts to conceptualize digital money by David Chaum
1990	David Chaum founded Digicash in Amsterdam
1997	Nick Szabo publishes paper on smart contracts
2008	Satoshi Nakamoto publishes White Paper on the Bitcoin blockchain
2011	Silk Road v1 (first Bitcoin marketplace) is founded
2015	Ethereum goes live
2017	Bitcoin reaches $17,900

2.3.2 Selected legal issues reflecting the impact of blockchain

The market is currently trying to channel the potential of blockchain technology, and more start-ups are dedicating their resources to pursuing use cases,[157] from e-voting[158] to cadastral registration[159] and even transparency in the supply chain.[160] However, in spite of a boom in global interest over the potential applications of this technology, a lot of the use cases do not seem to reflect market, legal or social needs. For example, blockchain-powered e-voting aiming to reduce potential vote tampering by removing the trust component in the process does not take into account that data still needs to be recorded onto a blockchain, and every such entry point (from real-world to digital) might be a point of tampering. In other words, the technology, albeit promising for digital democratic participation, might not be a solution for the type of problems it needs to address.

[157] G. Hileman & M. Rauchs, 'Global Blockchain Benchmarking Study', Cambridge Center for Alternative Finance, 2017, p. 8.
[158] M. Pilkington, 'Blockchain Technology: Principles and Applications', in F.X. Olleros & M. Zhegu (eds.), *Research Handbook on Digital Transformations* (Edward Elgar, 2016).
[159] L. Shin, 'The First Government To Secure Land Titles On The Bitcoin Blockchain Expands Project', Forbes, 7 February 2017, last visited on 21 August 2018.
[160] Steiner, J., 'Blockchain Can Bring Transparency to Supply Chains. The Business of Fashion', 11 May 2015, last visited on 21 August 2018.

When looking at the five key components of blockchain technology, namely (i) cryptography, (ii) P2P network, (iii) consensus mechanism, (iv) ledger, and (v) validity rules, applications make sense when all components are vital and cannot be replaced by other technologies (e.g. alternative database management systems, etc.).[161]

One of the blockchain applications believed to meet these requirements, and moreover, have the potential to disrupt the way in which individuals conclude transactions with one another, is smart contracts, namely 'transaction protocols which autonomously execute the terms of a contract'.[162] This notion was proposed by American computer scientist Nick Szabo in early 1994, and was conceptualized in seminal 1997 paper.[163] With the advent of more complex cryptographic technologies, decades later smart contracts became not only possible but also scalable on platforms such as Ethereum, a blockchain-based virtual machine and cloud 2.0 platform which allows for the conclusion of complex smart contracts. One of the main prerequisites of such a platform is the creation of a value of unit (e.g. on Ethereum the unit of value is 'ether'), which allows 'a form of payment made by the clients of the platform to the machines executing the requested operations'.[164] In other words, the unit of value is the incentive that nudges developers to create high quality applications, and compensates network participants for the resources they contribute to the network with.

An interesting case study is the use of smart contracts in the service supply chain surrounding transportation and logistics.[165] As an industry which has been heavily relying on

[161] G. Hileman & M. Rauchs, *supra* note 157, p. 14.
[162] M. Giancaspro, 'Is a 'Smart Contract' Really a Smart Idea? Insights from a Legal Perspective', 33(6) *Comp. L. and Sec. Rev.* 825 (2017). See also S. Geiregat, 'Cryptocurrencies Are (Smart) Contracts', *Comp. L. and Sec. Rev.*, forthcoming; D. Tapscott & A. Tapscott, *Blockchain Revolution: How the Technology Behind Bitcoin is Changing Money, Business and the World* (Penguin, 2016); S. Omohundro, 'Cryptocurrencies, Smart Contracts, and Artificial Intelligence' 1(1) *AI Matters* 19 (2014); P. Paech, 'What Is a Smart Contract', Oxford Business Law Blog, 9 July 2018, last visited on 21 August 2018; J.M. Lipshaw, 'The Persistence of 'Dumb' Contracts' Suffolk University Law School Research Paper No. 18-11 (2018).
[163] N. Szabo, 'The Idea of Smart Contracts', 1997.
[164] https://www.ethereum.org/ether.
[165] A. Furrer & L. Müller (2018), '"Functional Equivalence" of Digital Legal Transactions: A Fundamental Principle for Assessing the Legal Validity of Legal Institutions and Legal Transactions Under Swiss Law' ('*"Funktionale Äquivalenz digitaler Techsgeschäfte – Ein tragendes Grundprinzip für die Beurteilung der*

paper documents in the past,[166] blockchain and smart contracts may very well bring about a much-needed reform: self-enforcing obligations, database management and standardization fit perfectly with the nature of logistic activities. However, as most of transport nowadays is cross-border, whatever challenges might come with such an automated system could not be resolved by national jurisdictions. Challenges including regulatory uncertainty (e.g. validity of smart contracts), or fitness of business solutions affecting adoption scale would then have to be overcome through legal harmonization solutions which have occurred in the past as well, namely the adoption of international binding and soft legal standards regulating cross-border transportation.

Moreover, smart contracts in general can prove to be a challenge to one of the most essential parts of the legal framework in any jurisdiction: contract law. As automatization entails lack of human involvement, stringent questions relating to the validity of consent and intention to be legally bound arise. Moreover, the same problem of determining the intention of the parties can be equally challenging when determining fraudulent behaviour (e.g. defects of consent), not to mention the potential shortcomings of proving real-life facts which may have online (contractual) repercussion. In addition to these concerns, it must be said that in spite of the differences between common and civil law in terms of contracts, many of the features of this field of law are as old as society, and legal systems have borrowed earlier solutions (e.g. types of contracts in Roman law). Therefore, recognizing smart contracts is not simply a policy objective which can enable more innovation, but it is a policy objective which requires a lot of self-reflection about the nature and future of contractual traditions.

Rechtsgültigkeit von Rechtsinstituten und Rechtsgeschäften im schweizerischen Recht'), Jusletter 18 June 2018. See also T. Leonard, '[Blockchain for Transportation: Where The Future Starts]', TMW Whitepaper, 2017; H. Nach & R. Ghilal, 'Blockchain and Smart Contracts in the Logistic and Transportation Industry: The Demurrage and Maritime Trade Use Case', 2017. All online sources were last visited on 21 August 2018.

[166] For instance, maritime transport has been employing the standardized 'bill of lading' as a title document which can determine liability in case of damage occurring during transport.

2.4.3 Comparative insights from innovative jurisdictions

Given the novelty of the blockchain developments, as well as the particular regulatory challenges surrounding this technology, it has yet to lead to any bespoke regulatory frameworks in either California or Switzerland. For this reason, the issues posed by smart contracts will be addressed in both jurisdictions at the same time.

Californian lawmakers have been busy trying to propose different regulatory amendments to incorporate blockchain technology into the legal framework. An example of such undertaking is Assembly Bill 2658 introduced on 15 February 2018, aiming to add and repeal Sections 11546.8 and 11546.9 of the Government Code relating to blockchain technology. Its preamble links back to UETA, and the fact that e-commerce challenged the nature of records in that 'a record or signature may not be denied legal effect or enforceability solely because it is in electronic form and that a contract may not be denied legal effect or enforceability solely because an electronic record was used in its formation'.[167] The bill therefore seems to propose an equivalence between electronic records and blockchain information, but this is not reflected in the body of the articles which are amended/added: Section 11546.8. defines blockchain as 'a mathematically secured, chronological, and decentralized ledger or database of transactions or other data';[168] while Section 11546.9 establishes a blockchain working group. This proposal has most recently been amended in Senate on 14 June 2018.[169] While it may indeed show that California is a jurisdiction willing to engage in protecting its innovative industries, the history of this bill shows that it aimed to initially recognize blockchain data and ended up only defining blockchain (and not smart contracts in particular), and setting up a state taskforce on blockchain. This can be interpreted

[167] California legislature, Assembly Bill 2658, 15 February 2018, last visited on 21 August 2018.
[168] The initial bill defined a smart contract as "an event-driven program that runs on a distributed, decentralized, shared, and replicated ledger that can take custody over, and instruct transfer of, assets on that ledger', see https://legiscan.com/CA/text/AB2658/id/1732549, last visited on 21 August 2018.
[169] Ibid.

as some degree of scepticism with respect to the potential of the technology, as well as to the moment and method for this technology to be acknowledged specifically by the legal system.

While capitalizing on its large-scale FinTech operations and promoting more liberal regulation for financial markets through blockchain,[170] Switzerland also does not yet regulate smart contracts as a species of contracts recognized by the Code of Obligations, and no policy proposals to this end have been circulated.[171] So far, similarly to California and its Silicon Valley, Switzerland nurtures a blockchain innovation hub in the area of Zug, and many of the companies active in the region need to develop potential products under the constant concern of not knowing whether their solutions will be recognized by the law or not.

It remains to be seen what both California and Switzerland will do with blockchain and more specifically smart contracts once the technology has matured more.

3. Comparing jurisdictions and rethinking regulatory frameworks

3.1. Instruments of regulation

In section 2, three different case studies have followed Californian and Swiss law to identify regulatory responses in terms of the following Internet-based technologies: (i) e-commerce (legal issues – digital signatures and consumer rights); (ii) social media advertising (legal issues – influencer marketing and creative gig work); and (iii) blockchain (legal issue – the contractual validity of smart contracts). The three case studies were selected because they represent different waves of innovation, and are at different adoption stages. Moreover, the two

[170] Blockchain Taskforce, 'Stärkung des Blockchain-Standorts Schweiz – White Paper der Blockchain Taskforce', Bern/Zug, April 2018, last visited on 21 August 2018.
[171] See for instance, W. Blocher, 'The next big thing: Blockchain – Bitcoin – Smart Contracts: Wie das disruptive Potential der Distributed Ledger Technology (nicht nur) das Recht fordern wird', 8-9 AnwBl 612 (2016); Deloitte, 'The Blockchain (R)evolution – The Swiss Perspective', White Paper, February 2017, p. 17; Hans Rudolf Trüeb, 'Smart Contracts', 2017, last visited on 21 August 2018.

legal systems were selected in the light of international metrics showing that they are global innovation leaders.

The purpose of this mapping exercise has been to understand how innovative jurisdictions deal with these different waves of Internet-enabled innovation which might challenge the status quo not only of society, but also of its legal order. To complete the analysis and compare the two jurisdictions, I will refer to a regulatory framework established in public policy by Stiglitz. In 'Government Failure vs. Market Failure: Principles of Regulation',[172] Stiglitz recognizes three different so-called 'instruments of regulation', which are forms of regulation answering the question of how regulation can look like when it is necessary. Of course, the necessity of regulation has been a long-standing economics debate which most often translates into a normative standard applied in the light of the political features of lawmakers: should individuals be protected more than companies? Should the state be involved in addressing market failures and taking care of the irrationality of individuals? These are questions which often do not have a wrong/right answer – non-extremist social or liberal policies might not lead to incredibly different outcomes for general individual welfare. One of the normative questions which has yet to be asked in academic literature is how the public policy dimension of regulation affects the understanding of private law applied to technological advancement. The private law framework of a jurisdiction is deeply rooted into its legal culture; yet the regulation of technology tends to lend itself more to evidence-based policy-making, which collides with the concept of legal tradition.

To contribute to this latter question, this section is dedicated to applying Stiglitz' classification on instruments of regulation to the findings of the three case studies. Three tables are presented below to visualize these findings, and they refer to the following categories:

[172] Joseph E. Stiglitz, 'Government Failure vs. Market Failure: Principles of Regulation', Columbia University Academic Commons, 2008, last visited on 21 August 2018.

Disclosures 'Markets cannot function well with distorted and imperfect information; hence, requirements that lead to improved information can (by and large) lead to better resource allocations'.[173]

Restrictions 'The most direct restrictions are proscriptions on behaviors: firms are not allowed to collude in price setting or to engage in other anti-competitive practices, banks are not allowed to engage in insider lending'.[174]

Mandates 'Mandates […] enable the accomplishment of public purposes without the expenditure of money'.[175]

To Stiglitz' list of instruments of regulation, two additional categories are added.

Certifications Form of regulation that entails certifying specific technological standards; the same certification requirement can be applicable to other administrative aspects such as legal form.

NR NR stands for 'No Regulation', namely a situation where no disclosures, restrictions or mandates have been established by lawmakers.

Each of the overview are presented and discussed below.

Case study 1: E-commerce		
	Contract formation	**Consumer rights**
California	Certifications	Disclosures (some)
Switzerland	Certifications	NR

[173] Ibid, p. 8.
[174] Ibid., p. 9.
[175] Ibid.

With respect to e-commerce, it is interesting to note that both jurisdictions opted for almost the same regulatory instruments, even in spite of the specific challenges posed by this Internet technology. On the one hand, e-signatures as a part of contract formation needed a legal framework, so certification seems like the most reasonable regulatory intervention, although it must be pointed out that the ambit of this regulation is much broader in Switzerland than it is in California. What is more, Switzerland has recently and comprehensively updated its digital signatures regulations, unlike California, where the most recent regulatory intervention has been the amendment of a definition. Disclosures could also play a very important role in the regulation of e-commerce: the biggest problem with buying goods online is not being able to see them, so extensive information duties make a lot of sense. California embraced disclosures by imposing a very limited amount of information duties on online traders; however, Switzerland has decided not to expand this type of protection from doorstep selling to distance selling.

Case study 2: Social media advertising		
	Influencer marketing	**Creative gig work**
California	Restrictions[176]	NR
Switzerland	Restrictions[177]	NR

Regarding social media advertising, we can see once more that the pattern of regulation is similar in both California and Switzerland. Both jurisdictions regulate influencer marketing by extension, namely by applying existing advertising rules on unfair commercial practices to the newer phenomenon of native advertising on social media. The second identified legal issue,

[176] Applied as an extension of the current legal regime; does not entail any new regulation.
[177] Ibid.

namely creative gig work – which is a labour law question, was not regulated in any way. Inspiration from earlier problems posed by other equivalent services (e.g. Uber drivers) supports the view that unless a specific window of opportunity for public policy arises (e.g. public scandal, disaster, etc.), Youtube work will not be regulated explicitly, not even from a perspective of certification.

Case study 3: Blockchain	
	Contractual validity of smart contracts
California	NR
Switzerland	NR

Blockchain is a case study where the same regulation pattern occurred – or better said lack of regulation in this case – blockchain-based smart contracts have not been legally given any binding effect through the change of existing regulation on contract law. Disclosures or restrictions could have been regulatory interventions which might have alleviated the legal uncertainty surrounding such smart contracts, but none of these measures have been taken to date.

3.2 How should technology be regulated? Lessons learned from California and Switzerland

Upon a closer look at both California and Switzerland, three main conclusions arise.

First, it comes as no surprise that their regulatory interventions are almost identical, when using the adapted Stiglitz taxonomy; after all, both jurisdictions are known for their liberal takes on legislation, which they try to reduce as much as possible in order not to stifle innovation. The predominant feature of both legal systems is thus the reluctance with which

new regulation is adopted in the field of technology. For e-commerce, this reluctance puts consumers at greater risks than in other legal spaces which are more protective towards individuals, and thus more invasive from a regulatory perspective. However, the adoption of certification standards for the cryptographic components of digital signatures can be a great inspiration for similar technologies of newer generation (e.g. blockchain). Similarly, mandates can also be a way in which private actors may be involved in the certification process (e.g. delegating the certification process to a trade union, etc.).

Second, technology as such can be incredibly diverse, so the question is how to draw the line between over- and under-categorizing it. Do smart contracts in transport and logistics need a special provision because of the types of electronic title documents they may generate? And similarly, do provisions that acknowledge blockchain as one sole type of technology fit other distributed ledger technologies which might not even be developed yet? While it may be difficult to answer this question, several factors can be of help in determining how such an answer may look like: adoption scale and preferences (local, regional or international); negative externalities (e.g. in the case of blockchain scalability – energy sustainability); or desired harmonization level (local, regional or international).

Third, regulation is a matter of information. The risks which arise out of different uses of technology attract questions regarding the information on the basis of which different incentives are set for regulatory stakeholders. Since information regarding regulatory benchmarking is buried in the preparatory works of different regulation, it is difficult to understand the types of scientific evidence regulators deal with when considering new measures. For instance, in the case of the Californian bill concerning blockchain, the bill itself does not acknowledge any scientific framework for defining a highly technical term such as blockchain. Are the legislators involved even considering any scientific research? If so, which one, and for what reasons? A general lack of public policy transparency with respect to

scientific research makes it difficult to fully understand the economical impact of certain policies. In the case of both jurisdictions studied in this paper, most of the regulatory questions arising out of disruptive internet technologies have even been barely touched by statutory regulation. The result is an even more stringent lack of transparency with respect to meaningful political discussions when it comes to scientific research, technology and private law regulation.

All in all, it may be that both California and Switzerland are weary of regulating new technologies for the sake of seeing them mature on local markets, giving each jurisdiction the competitive advantages they are known for. However, it can be equally argued that in spite of regulatory liberalism, technology-related law-making challenges the status quo of legal cultures to such a degree that it may have a domino-effect: one small change in the recognition of smart contracts as contracts has the power of affecting the integrity of a legal identity that took centuries to form, and regulatory reluctance might very well be a way to preserve this legal culture. Regardless of which argument is more likely to be true, the perspective of technology regulation and private law culture lends itself to a lot more future research.[178]

[178] See for instance J.L. Mashaw & D.L. Harfst, 'Regulation and Legal Culture: The Case of Motor Vehicle Safety', 4(2) *Yale J. on Reg.* 257 (1987).