

Tokenization of Assets: Security Tokens in Liechtenstein and Switzerland

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Abstract

Technological innovations invariably lead to legal questions being raised; the sphere of digitalization of physical documents and securities by use of blockchain and other distributed ledger technologies does not constitute an exception. While solutions for many questions can be found within the existing legal framework, some developments call for legislative measures. This paper examines the hurdles in connection with the issuance and transfer of securities by virtue of a mere digital transaction and the approaches of the Liechtenstein and Swiss legislator to overcome them. Both have recognized that entries in distributed ledgers may fulfill the same main functions as the possession of a physical document. While the focus of the selective legal adaptations in Switzerland is on the use of DLT and securities law, the Liechtenstein legislator strives towards a holistic legal and regulatory framework for the entire token economy by introduction of a new set of rules.

Catchwords

Digitalization, Sachenrecht, STO, Token, Tokenized Securities, TVTG, Vertrauenswürdige Technologien

Regulations

OR Art 965; PGR Art 267, 328, 326a; SchlTPGR §§ 73 ff, 81a; SR Art 1 ff; TVTG Art 1 ff; ZGB Art 641 ff

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I. Introduction

Distributed ledger technology (DLT), blockchain, internet of things (IoT), artificial intelligence (AI); these are some of the most intensely discussed buzzwords of the last few years. The «tokenization of assets» or so-called «token economy» must be added to this list as relatively recent phenomenon that arose with the emergence of DLT. In addition to the advantage provided by the great variety of possible applications, tokens representing rights and assets are regarded as having lasting influence and importance as new forms of corporate financing. In this context, initial coin offerings (ICO) and security token offerings (STO) are currently at the center of the debate. A systematic examination of the legal implications seems necessary in order to ensure that the potential of digitalization can be fully exploited without losing sight of possible risks.

It is only natural that technological developments lead to legal questions being raised; by way of example, see the emergence of e-commerce that came along with the invention of the Internet. It is debatable whether the new phenomena and business models can be governed by existing rules or whether there is a need for new legislation. The legal mapping of digitalization tendencies is a balancing act that is currently being mastered by legislators around the globe in different ways. On the one hand, legislators want to curb the misuse of new technologies as far as possible; on the other, they do not want to unnecessarily slow down innovation. This can be well illustrated by taking as an example the legislative developments in the sphere of DLT and crypto-currencies, or tokens based on this technology. While some jurisdictions have developed specific laws in order to govern the new phenomena, some are taking a wait-and-see approach or trying to create legal certainty by making selective legal adaptations, and others have prohibited individual services or banned crypto-currencies, ICOs, etc as a whole. The treatment of so-called security tokens in Liechtenstein and Switzerland with special focus on the issuance and transfer of securities by virtue of a mere digital transaction on a distributed ledger is examined in this paper from a private law perspective. The main hurdles *de lege lata* as well as the approaches of the Liechtenstein and Swiss legislator to overcome them *de lege ferenda* are outlined below. A comparison of the situation in Liechtenstein and Switzerland is particularly exciting, as both jurisdictions aim to play a leading role when it comes to the token economy, and despite the fact that there are many legislative similarities, both pursue different approaches to provide a legal environment for the token economy.

II. From ICOs to STOs

In the early stages of blockchain technology, it was all about initial coin offerings (ICO) as an alternative and innovative form of funding for blockchain-based companies. This means that so-called digital coins or tokens are issued in order to raise capital, instead of offering shares within the framework of an initial public offering (IPO).¹ There is no uniform definition of what a token is; technically speaking, a token is an entry or information in a distributed ledger. For the purpose of this paper, particular reference should be made to the basic distinction between crypto-currencies and tokens; while crypto-currencies are purely digital values which are primarily assigned to a payment function within a blockchain or network, tokens are linked to rights outside of the blockchain.² These tokens can fulfill different functions: they can represent membership rights, rights to property or other absolute or relative rights.³ The «European Blockchain Observatory and Forum»⁴ defines «token» as «type of digital asset that can be tracked or transferred on a blockchain» and often used as a digital representation of assets, such as commodities, stocks or physical goods, or to incentivize market participants in maintaining and securing blockchain networks. ICO initiators usually explain the details and token functions in a document, the so-called white paper, that can be compared to a prospectus. Investors pay either in crypto-currencies or fiat money⁵ and receive tokens or coins in return in the hope that the value will increase, and/or the token can be used to get access to services or goods if the project succeeds. ICOs are therefore a new form of financing with elements of crowdfunding that offers advantages compared to traditional methods, like IPOs. The simplified process and fully digital approach are appealing, especially when it comes to start-ups that do not have a lot of assets at their disposal and are looking for a quick and uncomplicated form of financing.

ICOs were named the wild west of corporate financing at the height of the ICO boom in 2017 and 2018, legislators have since identified a high risk of fraud and

1 For details regarding the different types of token sales, see *Voshmgir*, Token Economy, How Blockchains and Smart Contracts Revolutionize the Economy (2019) 198 ff.

2 *Layr/Marxer*, Rechtsnatur und Übertragung von «Token» aus liechtensteinischer Perspektive, LJZ 2019/1, 11 (12).

3 From a financial market regulation standpoint, a distinction can basically be made between investment or security tokens, currency tokens and utility tokens.

4 *Lyons/Ludovic/Timsit*, Legal and regulatory framework of blockchains and smart contracts, (27 September 2019), 38, <<https://www.eublockchainforum.eu/reports>> (4 October 2019).

5 Legal tender; fiat is the term often used for terminological differentiation from crypto-currencies.

►

manipulation in relation to token offerings⁶ and started to discuss and implement regulatory measures.⁷ The debate about ICO regulation raised questions about the nature and legal status of tokens, as well as their possible classification as securities or financial instruments. Tokens often contain elements of shares, currencies, or accounting units, but can basically serve an unlimited amount of functions, which makes it difficult to clearly assign them to one specific category.⁸ Regulators and legal scholars have started debating the classification of tokens from both a financial market law and a private law perspective. A distinction is necessary, because the categories proposed in relation to financial market law are not fitting properly for a private law analysis.⁹

After the ICO boom and some cases of fraud, the need for options to use the advantages of the new technologies within a regulated environment arose.¹⁰ The focus of the debate shifted from ICOs to security token offerings (STOs), a term without a general definition and quite different semantic content, depending on the source or person asked.

III. Tokenized securities and security tokens

A. Definitions and general introduction

In order to be able to discuss the admissibility of issuing securities as tokens or security tokens, it is necessary to find a definition of the term «security token» as starting point for this paper. It should be noted that in this paper the term security is used to describe securities as defined in private law, not financial market law. In this context, securities are instruments to which a right attaches in such a manner that it may not be exercised or transferred to another without the instrument.¹¹ The prerequisites are, therefore, a certificate that securitizes a claim and a close link between claim and certificate. The main functions of securities are the transport function, legitimation function and serving the public interest in upholding the validity of transactions (*Verkehrsschutzfunktion*). It is possible to securitize debts (eg bills of exchange, cheques, debentures, warrants), membership and participation rights (eg shares, participation certificates) or property rights (eg bill of lading, commercial paper).¹² The effect of linking a right to a certificate is that it becomes negotiable and tradable on the basis of the rules of property law. Thus, the transfer of ownership of the security certificate – which requires a valid title plus handover of the certificate – also implies the transfer of the securitized right. According to the prevailing doctrine, the scope of Swiss and Liechtenstein¹³ property law is limited to the acquisition, holding and transfer of physical objects and some exceptions explicitly mentioned by law.¹⁴ Consequently, a transfer of intangibles is not subject to the transfer rules under property law. In this context, questions arise regarding the link between rights and tokens, the classification, «ownership» and the transfer of tokens and the linked rights. In order to gain a better understanding of the current situation and problems related to STOs, the process of dematerialization of securities will be outlined below.

6 According to the recently published Report by the «European Union Blockchain Observatory & Forum», a large number of ICOs turned out to be scams; *Lyons et al*, Legal framework, 27 <<https://www.eublockchainforum.eu/reports/>> (4 October 2019).

7 Early examples are the Malta Virtual Financial Assets Act, the Gibraltar Financial Services (Distributed Ledger Technology Providers) Regulations 2017; see for example *Kaul*, Ico and ico regulations in malta, *Court Uncourt*, 2019/6, 4, 11–13; France was also one of the early movers; the so-called «PACTE law» – *LOI 2019-486 du 22 mai 2019 (Action Plan for Business Growth and Transformation)* was adopted in 2019. It enables issuers of ICOs to obtain an optional visa from the financial market regulator (AMF) as well as licenses for digital assets service providers (DASP), <https://www.amf-france.org/en_US/Reglementation/Dossiers-thematiques/Fintech/Vers-un-nouveau-regime-pour-les-crypto-actifs-en-France>, <https://www.legifrance.gouv.fr/affichTexte.do?sessionId=A2654C05BAC8DEF570802ADC4D8DD865.tplgfr41s_2?cidTexte=JORFTEXT000038496102&dateTexte=&oldAction=rechJO&categorieLien=id&idJO=JORFCONT000038496092>, (4 October 2019); a further example is Thailand with the Digital Asset Businesses Decree, B.E. 2561 (C.E. 2018), <https://www.sec.or.th/EN/Documents/EnforcementIntroduction/digitalasset_decree_2561_EN.pdf> (4 October 2019) and the Amendment of the Revenue Code Decree (No 19) B.E. 2561 (C.E. 2018), which came into effect on 14 May 2018, summary available at <https://www.sec.or.th/TH/Documents/DigitalAsset/enactment_digital_2561_summary_en.pdf> (4 October 2019).

8 *Goforth*, How blockchain could increase the need for and availability of contractual ordering for companies and their investors, *North Dakota Law Review*, 94(1), 2019, 1–64.

9 Regulators roughly differentiate between crypto-currencies with payment function, utility tokens that render a right to access and/or use DLT platforms, security or equity tokens representing a share or stock in a company, or grant the right to receive dividends.

10 See for example the case of «E-Coin»; <<https://www.finma.ch/en/news/2017/09/20170919-mm-coin-anbieter/>> (4 October 2019).

11 See §§ 73 ff concluding part (*Schlussabteilung*) of the Liechtenstein Persons and Company Act of 20 January 1926 (*Schlussabteilung des PGR*; *SchlTPGR*) and Art 965 of the Swiss Code of Obligations of 30 March 1911 (*Obligationenrecht*; *OR*).

12 *Furter*, Art 965 OR in *Honsell et al* (eds), *BSK-Wertpapierrecht* (2012) N 12 ff.

13 Liechtenstein property law was basically adopted from the Swiss Civil Code (*Zivilgesetzbuch*; *ZGB*); the relevant provisions are Art 641 ff ZGB in Switzerland and the *Sachenrecht* (SR), *LGBL* 1923/4 in Liechtenstein.

14 See for example *Schmid/Hürlimann-Kaup*, *Sachenrecht*⁴ (2012) N 4; *Arnet*, Art 641–645 ZGB, in *Breitschmid/Rumo-Jungo* (eds), *Handkommentar zum Schweizer Privatrecht – Sachenrecht*² (2016) N 10.

B. Switzerland

1. Dematerialization of securities

The development of mass trade was accompanied by the industry's search for solutions for settlement without requiring a physical transfer of documents. The dematerialization of securities was particularly necessary for the rapid settlement of stock exchange trading. In practice, shares and options were securitized in individual certificates and deposited in a collective custody account. The holders rights were directly entitled in rem to all documents in the form of so-called modified and unstable co-ownership (*modifiziertes und labiles Miteigentum*).¹⁵ The transfer took place by way of an instruction to hold them on behalf of the transferee; in practice, this was actually purely an accounting transaction. The next step towards dematerialization was that the individual certificates were replaced by a global certificate; ie still a physical document.

In a further step, the concept of registered shares with deferred or cancelled printing was developed for registered shares. The shares were no longer printed and only recorded in the books, with the transfer taking place by way of assignment. This made a written assignment agreement necessary to ensure that the custodian bank was granted a power of attorney to assign the shares or that a blank declaration of assignment was issued. Due to digitalization, physical share certificates became more and more uncommon. For exchange trading of uncertificated rights, the concept of uncertificated securities was introduced under Art 973c of the Swiss Code of Obligations (OR). The provisions lay the foundation for issuing rights with the same function as negotiable securities or replacing fungible negotiable securities or global certificates with uncertificated securities.¹⁶ A book on uncertificated securities with details regarding their number and denomination, as well as information concerning the creditors must be kept by the obligor.¹⁷ Uncertificated securities are created on entry into the book and only exist in accordance with such entry.¹⁸ Although uncertificated securities are basically fully dematerialized, there is the requirement of a written declaration of assignment for their transfer, which is in practice being circumvented by transfer agreements made between the parties.¹⁹ Coupled with the fact that, according to the main doctrine, the assignment right does not permit bona fide acquisition from a non-entitled party, this has increasingly led to a split between

the reality of paperless securities trading and statutory law.²⁰

The Swiss Federal Act on Intermediated Securities (FISA)²¹ established that a written declaration was no longer required for a transfer of intermediated securities, which is why a mere electronic entry in a securities account is sufficient for the transfer. Recognition of the constitutive effect of entries in the securities account is thus the central point of the FISA. The FISA applies to intermediated securities that are credited to a securities account by a custodian.²² Securities falling within this scope need to be standardized and suitable for mass trading. In order to be considered standardized and suitable for mass trading, intermediated securities must be offered to the public in the same structure and denomination, or be offered to more than 20 customers, provided that they are not created exclusively for individual counterparties (eg OTC derivatives). Intermediated securities do not constitute objects within the meaning of Art 713 ZGB, however they are functionally equivalent to certificated securities. Intermediated securities come into existence by way of book-entry into the register of intermediated securities, or by book-entries in securities accounts of the investors by an authorized central securities depository. Within the complex capital market, securities are held and transferred through several intermediaries and investors no longer hold physical securities. However where small companies or start-ups are concerned, listing and creation of intermediated securities is too cost-intensive and not a viable way of financing.²³

2. Token sales under Swiss law

Switzerland is not only an important financial center; it is also very active in the realm of token sales. To name an example: the Ethereum Foundation was established in Switzerland back in 2014, marking a milestone for the token economy. The Ethereum blockchain can be used to build new applications with numerous functions by programming «smart contracts» in order to create decentralized applications (DApps).²⁴ The term «smart

15 *Zobl/Gericke*, in *Zobl et al* (eds), *Kommentar zum Bucheffektengesetz (BEG)* (2013) N 1 ff.

16 Art 973c para 1 OR.

17 Art 973c para 2 OR.

18 Art 973c para 3 OR.

19 Art 973c para 4 and 165 para 1 OR.

20 Regarding the situation in Germany, see *Bauer*, *Bestrebungen zur Reform des Wertpapiersachenrechts*, in *Kümpel et al* (eds), *Bank- und Kapitalmarktrecht* (2019) 2362 ff.

21 Federal Act on Intermediated Securities of 3 October 2008 (FISA).

22 Art 2 para 1 FISA.

23 *Pasquier/Ayer*, *Formungültige Aktienübertragungen auf der Blockchain*, *Anwaltsrevue* (2019) 196.

24 The term «smart contract» was first introduced by Nick Szabo, who basically used the example of a vending machine to describe how contractual obligations can be put into code *Szabo*, *The Idea of Smart Contracts* (1997) <<https://archive.is/wIUOA>> (30 October 2019).

contract» was introduced by Nick Szabo,²⁵ who used the example of a digital vending machine to describe how contractual obligations can be put into code; the idea is to embed contractual clauses in hardware and software in order to automatically execute the terms of a contract.²⁶ While Szabo was ahead of his time in respect of the technological possibilities available, DLT seems to enable the realization of his ideas. However, the terminology is somewhat confusing because there are different definitions and understandings of smart contracts. For instance, on the Ethereum blockchain, tokens are smart contracts, whereas, in a more general context, tokens can be defined as pieces of code that can represent assets on a blockchain. Legal scholars predominantly agree that smart contracts do not constitute contracts for legal purposes.²⁷

What exactly are tokens under Swiss law? The FINMA²⁸ issued guidelines for ICOs on 16 February 2018, where they defined three token categories: payment, utility and asset tokens (security tokens).²⁹ While payment tokens are basically crypto-currencies with a payment function, utility tokens provide access to an application or service and asset tokens represent assets, such as debt, equity or physical assets. FINMA also points out that there are also hybrid tokens that, for example, are classified as payment and utility tokens.³⁰ From a private law perspective, tokens are not considered legal tender for the purposes of the Swiss Federal Act on Currency and Payment Instruments (CPIA).³¹ Due to the lack of physicality, tokens are *prima facie* not objects under property law. Although electronic storage media can also be regarded as a certificate in certain circumstances and there are undeniable similarities

between tokens and objects,³² the prevailing opinion in legal commentary negates the categorization of tokens as certificated securities.³³ Hence, the question about their categorization as uncertificated securities arises. The problem with this categorization lies in the fact that, pursuant to Art 973c para 4, a written declaration is required for a transfer of uncertificated securities. This is not a straightforward issue where the use of DLT is concerned, as the transfer should be preceded by entry in the decentralized ledger solely. If there is a central counterparty, there are ways to solve that issue on a contractual basis, but the essence of a decentralized system is the absence of such intermediaries. There is, of course, the option of transferring uncertificated securities as intermediated securities, if they fulfill the requirements (standardization and suitable for mass trade). Security tokens are often standardized and offered to a broad circle of investors, which is why they may fall within the definition of intermediated securities contained in the FISA. The problem in this context is that they need to be lodged in a special custody account established at a custodian as defined in Art 4 para 2 FISA. Distributed ledgers cannot act as custodians under this definition, but at least it seems to be feasible for custodians to use DLT in order to fulfill their duties in their capacity as custodians. This, of course, is not what is intended by most DLT projects and does not serve the purpose as a new and innovative way of funding start-ups.

3- Legislation

The Swiss Federal Council recognized a need to adapt legislation and opened the discussion about improvement of the legal framework and regulatory standards for DLT.³⁴ Unlike in other jurisdictions, the Federal Council found that it was not necessary to create a whole new set of rules or a «Blockchain Act» to govern

25 Szabo, Smart Contracts (1994), <<http://www.fon.hum.uva.nl/rob/Courses/InformationInSpeech/CDROM/Literature/LOTwinterschool2006/szabo.best.vwh.net/smart.contracts.html>> (30 October 2019).

26 Szabo, Smart Contracts.

27 For example Schurr, Anbahnung, Abschluss und Durchführung von Smart Contracts im Rechtsvergleich, ZVglRWiss 2019/118, 260 ff; Paulus/Matzke, Smart Contracts und Smart Meter – Versorgungssperre per Fernzugriff, NJW (2018) 1905 ff; Buchleitner/Rabl, Blockchain und Smart Contracts, Revolution oder alter Wein im digitalen Schlauch?, ecolex 2017/1, 6; Meyer/Schuppli, «Smart Contracts» und deren Einordnung in das schweizerische Vertragsrecht, recht 2017, 208.

28 Swiss financial market authority.

29 FINMA, Guidelines for enquiries regarding the regulatory framework for initial coin offerings (ICO), 17 February 2018 (FINMA Guidelines), <<https://www.finma.ch/en/news/2018/02/20180216-mm-ico-wegleitung/>> (4 October 2019) and Supplement to the guidelines for enquiries regarding the regulatory framework for initial coin offerings (ICO), published 11 September 2019, <<https://finma.ch/en/news/2019/09/20190911-mm-stable-coins/>> (8 October 2019).

30 FINMA Guidelines, 3.

31 Federal Act on Currency and Payment Instruments (CPIA; 941.10) of 22 December 1999.

32 See for example Handschin, Papierlose Wertpapiere, Diss. Basel 1987, 17; von der Crone/Kessler/Angstmann, Token in der Blockchain – privatrechtliche Aspekte der Distributed Ledger Technologie, SJZ 2018/341; Graham-Siegenthaler/Furrer, The Position of Blockchain Technology and Bitcoin in Swiss Law, Jusletter 8 May 2017, 16 ff; Kogens/Luchsinger Gähwiler, Token als Erklärungsträger für Forderungs- und Mitgliedschaftsrechte, Jusletter 17 December 2018, 1 ff; Eckert, Digitale Sachen als Wirtschaftsgut: digitale Daten als Sache, SJZ 2016, 245 ff; Weber/Iacangelo, Rechtsfragen bei der Übertragung von Token, Jusletter IT 24 May 2018, N 10 ff.

33 See for example von der Crone/Monsch/Meisser, Aktien-Token, in Daeniker et al (eds), Gesellschafts- und Kapitalmarktrecht (GesKR) (2019) 3 ff; Eggen, Was ist ein Token? AJP 2018, 561 ff; digital data and property law in general see Thouvenin, Wem gehören meine Daten? Zu Sinn und Nutzen einer Erweiterung des Eigentumsbegriffs, SJZ 2017, 21 ff.

34 Federal Council, Federal Council wants to further improve framework conditions for Blockchain/DLT, <<https://www.admin.ch/gov/en/start/documentation/media-releases.msg-id-73398.html>> (9 October 2019).

the new technology. It concluded that the existing Swiss legal framework is well suited to deal with DLT in general, but recognized the need for selective adjustments in some fields of law in order to evolve as a leading, innovative and sustainable location for fintech and blockchain companies.³⁵ The Federal Council instructed the Federal Department of Justice and the Federal Department of Finance and Police to prepare a consultation draft in order to initiate the consultation process by March 2019.³⁶

One major focus is to increase legal certainty concerning the transfer of rights by means of digital registers. According to the consultation report, tokens that represent a legal position (debt or membership) perform functions similar to securities and the entry into a distributed ledger comparable to the possession of a physical share certificate or entry into a central register and should, consequently, trigger similar legal effects.³⁷ The consultation report points out that the Swiss Code of Obligations needs to be adjusted in such way that the «possibility of an electronic registration of rights that can guarantee the functions of negotiable securities is to be created».³⁸

The planned revision of the law will provide a legal framework for the issuance of securities based on DLT by introducing a new category of securities: so-called DLT-registered uncertificated securities (DLT securities). DLT securities fulfill the same main functions as traditional securities and are also limited to the representation of rights which can also be certificated in securities.³⁹ The transfer of uncertificated securities through book-entry in distributed electronic ledgers will be possible within a secure legal framework.⁴⁰ Although it is mentioned in the introduction to the report that Swit-

zerland continues to pursue a principle-based and technology-neutral legislative and regulatory approach,⁴¹ advantage has been taken of an opportunity to allow an exception by revising the law specifically in light of the developments in DLT.⁴² The Swiss legislator intends to apply analogously the principles of securities law to entries or bookings in distributed ledgers. This means that a new provision will be introduced in Arts 973 ff OR that permits the registration of rights in distributed ledgers with the same functions as securities. It will be possible to legally transfer DLT securities by entry in a distributed ledger, hence fulfilling the transport function. The parties need to agree on exclusive assertion and transfer of uncertificated securities via DLT, which will result in the fact that whoever is identified by the register as authorized will be considered as having legitimacy to dispose. Further, the distributed ledger will assume the function of upholding the validity of transactions, in the same ways that certificated securities do, meaning that whoever acquires a DLT uncertificated security in good faith will be protected by law.⁴³

The corresponding preconditions are:

- ▷ registration in a distributed electronic register based on DLT that meets certain requirements and
- ▷ consent of all the parties to this kind of registration.⁴⁴

According to the report, there are no further requirements for the establishment of such DLT-based securities registers, but the Federal Council reserves the right to introduce minimum requirements for the register (draft Art 973d OR).⁴⁵

In addition to the changes required to general securities law, selective adjustments within two categories of securities – namely shares and commodity securities – will be necessary according to the consultation report. The Federal Council points out that all provisions of company law must be fully complied with where shares are concerned, meaning that especially future legal developments in connection with the recommendations of the Global Forum and the FATF/GAFI must be considered.

35 Federal Council, Framework for Blockchain/DLT, <<https://www.admin.ch/gov/en/start/documentation/media-releases.msg-id-73398.html>> (9 October 2019).

36 Federal Council, Framework for Blockchain/DLT, <<https://www.admin.ch/gov/en/start/documentation/media-releases.msg-id-73398.html>> (9 October 2019).

37 Eidgenössisches Finanzdepartement (EFD), Bundesgesetz zur Anpassung des Bundesrechts an Entwicklungen der Technik verteilter elektronischer Register, Erläuternder Bericht zur Vernehmlassungsvorlage (Consultation Report), 22.3.2019, 8, <<https://www.newsd.admin.ch/newsd/message/attachments/56192.pdf>> (30 October 2019).

38 Federal Council, Federal Council initiates consultation on improving framework conditions for blockchain/DLT, <<https://www.admin.ch/gov/en/start/documentation/media-releases.msg-id-74420.html>> (9 October 2019); *Eidgenössisches Finanzdepartement (EFD)*, Consultation Report; further, changes to the Federal Law on Debt Collection and Bankruptcy, Financial Market Infrastructure Law, the future Financial Institutions Act and also amendments of the Anti-Money Laundering Ordinance as part of the ongoing revision of the Anti-Money Laundering Act are planned.

39 See *EFD*, Consultation Report, 8.

40 See *EFD*, Consultation Report, 8.

41 See *EFD*, Consultation Report, 6.

42 See *EFD*, Consultation Report, 8.

43 See *EFD*, Consultation Report, 12 ff.

44 See *EFD*, Consultation Report, 12.

45 The lack of further requirements is subject to criticism, especially when it comes to trade between a large number of market participants in the regulated financial market area. See for example FINMA, Vernehmlassungsvorlage zum Bundesgesetz zur Anpassung des Bundesrechts an Entwicklungen der Distributed Ledger-Technologie, 10 July 2019, <<https://www.finma.ch/de/~media/finma/dokumente/dokumentencenter/finma-stellungnahmen/finma-stellungnahme-distributed-ledger-technologie-20190710.pdf?la=de>> (8 October 2019); *Kuhn/Stengel/Meisser/Weber*, Wertrechte als Rechtsrahmen für die Token-Wirtschaft, Jusletter IT 23 Mai 2019, 6 ff.

For this reason, caution is advised when it comes to the tokenization of shares. Further, the introduction of DLT securities will have no effect on the categorization under financial market law.⁴⁶ In future, DLT securities will exist alongside traditional securities, uncertificated securities and intermediated securities, and financial intermediaries will also be allowed to make use of DLT for register keeping. It should also be mentioned that a licensing system for DLT trading facilities will be introduced under the Swiss Financial Market Infrastructure Act (FMIA); however, this cannot be discussed in detail within the scope of this paper.

4. Interim conclusion

The Swiss approach to govern the legal issues related to DLT has its starting point in securities law and envisages selective adjustments to existing laws. The legislator bases this on the flexibility of the Swiss legal framework, which seems adequate to deal with the new phenomena and accompanying legal questions. It is interesting to note that the legislator is planning to derogate from the principle of technology-neutrality by introducing a set of rules to exclusively govern DLT. As technology evolves, this inevitably means that legislative adjustments will be necessary, which may, in turn, lead to legal uncertainty and a constant need for amendments. It is also noteworthy that possible alternative approaches have not been considered in the legislative process so far.⁴⁷

In respect of STOs, it can be concluded that, within the existing legal framework, contractual constructions are necessary in order to issue security tokens with use of DLT. With the introduction of DLT-based uncertificated securities, the issuance of security tokens with the same functions and legal effects as certificated securities is feasible if the new provisions are enacted as foreseen in the draft. While the distributed ledger must be structured in such a form that the functionality and security of the register conform to the legal situation, the details of the technical implementation is left to practice. In this context, it must be assumed that adjustments will be made to the draft, as the duty to ensure the functionality and security of the register should lie with the issuer, leading to liability in case of breach.⁴⁸

46 The Federal Council refers to the FINMA's practice in this regard; *EFD*, Consultation Report, 15.

47 See for example the proposals made in the UNCITRAL Model Law on Electronic Transferable Records (MLETR), 2018, <http://www.uncitral.org/pdf/english/texts/electcom/MLETR_ebook.pdf> (31 October 2019); *Furrer*, Funktionale Äquivalenz digitaler Rechtsgeschäfte – Ein tragendes Grundprinzip für die Beurteilung der Rechtsungültigkeit von Rechtsinstituten und Rechtsgeschäften im schweizerischen Recht, *Jusletter*, 18 Juni 2018.

48 *Kuhn et al*, *Wertrechte*, 7 ff.

Legal certainty will be enhanced by the introduction of rules regarding segregation of digital assets in case of bankruptcy, which will basically be modelled on the rules applicable to physical objects.

C. Liechtenstein

Nestled between Switzerland and Austria, Liechtenstein has built up a reputation as a hub for blockchain and new technologies. Companies with innovative business ideas in the DLT field have established their businesses in Liechtenstein at an early stage of the technological developments.⁴⁹ This is also due to the fact that Liechtenstein, as a member of the European Economic Area (EEA), offers full access to the European market whilst also maintaining close bonds to Switzerland, which is best illustrated by the customs union and the use of the Swiss franc (CHF) as their common currency. In addition to the geographical and economic situation, however, it should be emphasized that Liechtenstein has been involved with blockchain technology from a very early stage. Particular attention was paid to the Principality when it announced that it was working on a «Blockchain Act» in spring 2018. In August 2018, the NEON Exchange AG (now «Nash»), registered in Liechtenstein, issued their NEX Token, which is said to be the first STO approved by any Financial Market Authority.⁵⁰ On 3 October 2019, the Liechtenstein Law on Tokens and TT⁵¹ Service Providers («TVTG»)⁵² passed its second reading in Parliament, meaning that it will enter into force in January 2020. In the following section, the legal framework for securities and STO from a private law perspective will be outlined, before delving into an examination of the new draft legislation, its scope and its main implications.⁵³

49 One of the first examples in this regard is the establishment of AETERNITY ANSTALT in 2016; the aim of the company is to build a new blockchain platform, proposing «decentralized, trustless alternatives to the existing governance, economic and financial intermediaries». <<https://aeternity.com/en/>> (1 November 2019). Shortly after this, in November 2018, the Austrian Financial Market Authority (AT-FMA) approved the prospectus of the H₃O-Token issued by the Austrian startup Hydrominer, that has since filed for insolvency.

50 TT is the abbreviation for Trusted Technologies or «Vertrauenswürdige Technologien (VT)» in the original German version.

51 Report and Motion (Bericht und Antrag; BuA) of the Government to the Parliament of the Principality of Liechtenstein concerning the creation of a Law on Tokens and TT Service Providers (Token and TT Service Provider Act; TVTG) and the amendment of other laws, No 54/2019.

52 For aspects of supervisory law, see for example *Nägele/Bergt*, *Kryptowährungen und Blockchain-Technologie im liechtensteinischen Aufsichtsrecht*, *LJZ* 2018, 63 ff.

1. Securities under Liechtenstein law

The relevant provisions for securities can be found in §§ 73 ff of the Concluding Section of the Law on Persons and Companies (SchlT PGR).⁵⁴ Pursuant to § 73, security means any instrument to which a right attaches in such manner that it may not be exercised, enforced or transferred without the instrument.⁵⁵ This definition gives the impression that a physical document is necessary for the legally valid creation of a security. Regarding the form of securities, para 2 refers to the provisions on share certificates. The corresponding Art 267 PGR determines that the necessity for the issuance of a physical share certificate only exists if the articles of incorporation do not provide otherwise. Consequently, under the Liechtenstein PGR, it is permissible to waive the issuance of a physical certificate.⁵⁶ Where shares are concerned, there are nevertheless further formal requirements depending on the type of share involved. It is important to distinguish between registered and bearer shares; while bearer shares must be registered in the companies' share register, bearer shares of non-listed companies must be deposited with a depository that needs to keep and maintain the share register.⁵⁷ In this context, the question arises as to whether these registers can be administered or replaced by DLT, which can be affirmed from a purely Liechtenstein national standpoint; limits may be imposed as a result of international requirements (eg by the GAFI/FATF).

In practice, physical share certificates are (still) used in many cases; the two main reasons for this are the necessity to deposit bearer shares of unlisted companies and the provisions regarding the transfer of shares. In the case of registered shares, a written declaration of transfer on the share title (endorsement) is required in addition to a handover of the certificate. This means that a physical certificate is necessary when it comes to the transfer of registered shares. In the case of bearer shares, a notification must be made to the custodian, who will enter the new shareholder in the register. The shareholder rights can only be asserted after the information on the bearer shareholder has been registered. Even if physical share certificates exist, ownership of bearer shares of unlisted companies are not transferred until they have been entered in the register.⁵⁸ It can, therefore, be concluded that the function of the share certificate is reduced to a document of evidence.

54 LGBI 1926/4, 20 January 1926.

55 This provision essentially corresponds to Art 965 of the Swiss Code of Obligations (Obligationenrecht; OR).

56 Layr/Marxer, Rechtsnatur, 16.

57 Art 328 and 326a PGR; see Layr/Marxer, Rechtsnatur, 16 ff.

58 This is explicitly stated in the BuA 2012/69, 28.

Unlike in Swiss law, there are no provisions regarding uncertificated securities in Liechtenstein law yet. The lack of actual practical demand and the absence of a stock exchange may be possible reasons. Nevertheless, there will be a change on January 1, 2020, when the TVTG⁵⁹ enters into force. The TVTG aims to regulate activities and providers in relation to the token economy and, at the same time, uncertificated securities will be introduced into Liechtenstein law.

2. Legislation

In order to support a positive development of token economy in Liechtenstein, the TVTG aims to increase legal certainty for users and service providers.⁶⁰ The Liechtenstein government recognized the potential of blockchain and similar technologies for various industries and branches. Therefore, it started to work on creating a holistic legal framework that considers all aspects of the token economy, in order to address the risks without hampering technological innovation. The government points out that distributed ledgers can provide for «digital originals» or «digital certificates», which is a fundamental requirement for both virtual currencies and digital securities.⁶¹ Although securities trading on the financial market has already largely been digitalized, only large companies can currently benefit from these opportunities.⁶² This means that distributed ledgers offer new financing opportunities and easier access to the capital market for small and medium-sized companies («SMEs») that make up a large percentage of corporations in general, and specifically in Liechtenstein.⁶³ Furthermore, DLT creates new opportunities for small-scale investors to invest in corporations, which naturally raises questions related to investor protection that cannot be addressed within the scope of this paper, but requires further examination by legal scholars in the future.

a. TVTG and technological neutrality

The TVTG follows a holistic approach based on the principle of technology-neutrality, meaning that the

59 See BuA 54/2019.

60 BuA 54/2019, 7.

61 BuA 54/2019, 18; DLT seems to have the solution to the so-called «double-spending problem» – see Nakamoto (Pseudonym), Bitcoin: A Peer-to-Peer Electronic Cash System, White Paper November 2008, 1 ff. <<https://bitcoin.org/bitcoin>> (22 October 2019).

62 BuA 54/2019, 23 ff.

63 According to Eurostat in 2015, enterprises employing fewer than 250 persons represented 99% of all enterprises in the EU <https://ec.europa.eu/eurostat/statistics-explained/index.php/Statistics_on_small_and_medium-sized_enterprises#General_overview> (22 October 2019).

scope of application goes beyond DLT or the tokenization of securities. For this reason, the law does not use the terms DLT or blockchain, instead referring to «transaction systems on the basis of trustworthy technologies». Moreover, the scope is not strictly limited to decentralized ledgers. In order to be regarded as trustworthy, the technology needs to ensure the integrity of tokens and the secure transfer thereof.⁶⁴ The government report points out that trustworthy technologies are replacing trusted intermediaries; hence, the trust traditionally placed in intermediaries – like banks – is replaced by trust in trustworthy technologies. According to the report, banking software is not considered trustworthy within the meaning of the TVTG, because the data in these systems can be changed or deleted. This allows the conclusion that the immutability and indelibility – offered by blockchain technology – are prerequisites for classification as trustworthy. Whether a blockchain really offers immutability and indelibility is not a legal question; it can however be noted that blockchain is, in principle, regarded as trusted technology in the report.⁶⁵

b. Token Container Model

From a technical standpoint, a token is simply a piece of information within a distributed database. The lack of physicality leads to the fact that, as in Switzerland, property law is not applicable, a fact which prompted the legislator to introduce a new concept and terminology. The act defines tokens as legal objects that do not create new rights, but can – like a «container» – represent various kinds of rights, such as membership rights, ownership, intellectual property rights, vouchers, usage rights or rights of lien.⁶⁶ The report holds that a representation of all kinds of rights is possible, but also the lawful creation of «empty» containers, eg crypto-currencies, is feasible.⁶⁷ The legislator has introduced autonomous rules for the «ownership» and transfer of tokens. The person entitled to dispose of a token is regarded as equivalent to the owner within the meaning of property law, whilst the holder of the power of disposal over a token will be regarded as possessor. The power of disposal is linked

to the so-called «private key» or «TT key», which is necessary in order to transfer tokens.⁶⁸

In order to link the offline with the online world, it is necessary to ensure that the rights and assets exist in the physical world before tokenizing them. Consequently, different roles and service providers – like a «physical validator» – are introduced into Liechtenstein law to ensure that this is the case.⁶⁹ The person with this function is responsible for ensuring that there is a link between the objects and the respective tokens representing them. The introduction of new roles or intermediaries is the result of a compromise made between full decentralization and centralization; a person in the real world has to ensure that only existing things and rights are transferred into the digital world. Take for example the tokenization of existing shares where a physical validator must make sure that the shares exist. In order to prevent the digital and analogue assets from being disposed of separately, he will have to take the physical certificates into custody.

c. Introduction of uncertificated securities

At the same time as the TVTG enters into force, uncertificated securities will be introduced into Liechtenstein law. The government defines these as dematerialized securities where the certificate and its functions can be replaced by entry into a register.⁷⁰ The legislator points out that, under Liechtenstein law, uncertificated securities contain all functions of a security of public faith.⁷¹ In essence, this means that there is a (rebuttable) presumption of accuracy of register entries. Until there is proof to the contrary, the registered person is considered to be entitled to the registered right and the *bona fide purchaser* will be protected. The entries are considered to be in accordance with the true legal situation, even if the true, unregistered entitled party may suffer legal disadvantages.

Uncertificated securities can be issued for the same purpose as certificated securities, or can replace certificated securities, as long as the conditions of issue and the articles of association allow for this. Uncertificated securities are created, transferred or pledged through entry into a register. The person entered into the register is regarded as holder of the power of disposal, which means that bona fide acquisition of uncertificated securities is possible. The Liechtenstein legislator refers to the functional equivalence of the register entry and a certificate, which is the justification for de jure equal

64 BuA 54/2019, 55 ff.

65 In practice there are different types of blockchains. Hence, blanket statements to the effect that all systems based on blockchain are trustworthy within the meaning of the TVTG should be treated with caution.

66 BuA 54/2019, 58 ff; Art 2 TVTG defines token as a piece of information on a TT System which can represent claims or rights of memberships against a person, rights to property, or other absolute or relative rights; for a general overview, see *Nägele/Bont*, Tokenized structures and assets in Liechtenstein law, *Trusts & Trustees*, 2019/6, 633–638.

67 BuA 54/2019, 58 ff.

68 BuA 54/2019, 63 ff.

69 Art 2(p) TVTG.

70 BuA 54/2019, 7; Art 81a SchlTPGR.

71 BuA 54/2019, 108.

treatment.⁷² In contrast to Swiss law, a written declaration of assignment has never been required for the transfer of uncertificated securities in Liechtenstein; the mere register entry is sufficient.⁷³ The register shall be kept by the obliger. The core novelty is that the register may also be kept and managed by the use of trustworthy technology.

3. Interim Conclusion

Under Liechtenstein law, there is no need for the issuance of a physical share certificate in order to issue digital securities and there is no requirement for a written declaration of assignment for a transfer thereof. Therefore, it can be concluded that there are no major legal hurdles for the issuance of tokenized securities *de lege lata*. *De lege ferenda* the TVTG will provide a holistic legal framework for the token economy and a higher degree of legal certainty for market participants and practitioners. The introduction of uncertificated securities of public faith, which can be issued and managed with trusted technologies – eg blockchain – allows for the tokenization of assets, eg securities. In view of the rapid technological changes and innovations, it is deemed positive that the approach is not limited to a specific technology, like DLT. Nevertheless, the issuers of tokens representing securities or financial instruments need to be clear about the fact that these tokens will be subject to existing financial market regulation, if the requirements are fulfilled.⁷⁴ However, there is uncertainty regarding situations where there is interaction with other jurisdictions.⁷⁵

IV. Alternative approaches

Digital processing is often not only more efficient than physical processing, but the legal protection objective behind the formal requirements can also be fulfilled better or at least equally well. The major challenge is to build a bridge between the «analogue and the digital world», so that digital transactions can have the desired legal effect without jeopardizing the legal protection objectives. According to the view expressed here, this cannot be ensured with the necessary speed and efficiency simply by making selective legal amendments, as this would entail a need for ongoing adaptations. It must be questioned whether the corresponding individual legislative acts ul-

timately lead to appropriate solutions or require even further adaptation as technology continues to evolve.⁷⁶

For these reasons, the development of new approaches for dealing with digitally processed transactions is virtually an imperative. The question arises as to whether the issues associated with digitalization can be solved using general legal principles. An approach derived from transport law seems particularly promising in this context. In the case of transport across several jurisdictions and national borders, different documents and certificates are required to fulfill important functions and trigger legal consequences. Digitalization of these documents was and is a promising goal with numerous legal hurdles, which have been overcome by introducing the principle of functional equivalence, which can now be described as an established principle in transport law.⁷⁷ *Furrer & Müller*⁷⁸ proposed the introduction of this principle into Swiss law to solve problems concerning the digitalization and tokenization of assets. The principle is not alien to Swiss law and holds that «insofar as Swiss law attaches the validity of legal transactions or the existence of a legal institution to substantive or formal requirements, these requirements shall be deemed to be fulfilled if a digital system can functionally replace the legal protection concerns behind these requirements on an equivalent basis».⁷⁹ By introducing this principle legislatively or recognizing it as general principle, legally valid transactions can be processed by use of eg DLT, if the substantive and formal requirements are fulfilled in a functionally equivalent manner. The same approach is followed by the UNCITRAL Model Law on Electronic Transferable Records.⁸⁰ The introduction of such an approach could help to overcome the legal barriers to digitalization without losing sight of the risks inherent in new technologies.

Unfortunately, the Swiss legislator did not seize the opportunity to consider innovative solutions like this. The Liechtenstein legislator has embraced the approach of functional equivalence where the introduction of uncertificated securities is concerned. The

⁷² BuA 54/2019, 110 ff.

⁷³ The situation will be similar in Switzerland after the enactment of the proposed amendments as described above.

⁷⁴ See BuA 54/2019, 44.

⁷⁵ *Schurr*, Liechtenstein's New Blockchain Act from a Comparative Perspective – Aspects of Civil Law, CFRED's 8th LegalTech Seminar, 21 October 2019, Hong Kong.

⁷⁶ For thoughts on the principle of technology-neutrality in general and from an Estonian perspective, *Veerpalu*, Shareholder Ledger Using Distributed Ledger Technology: The Estonian Perspective, Masaryk University Journal of Law and Technology, 2019/13, No 2, 277–310.

⁷⁷ *Furrer/Müller*, «Funktionale Äquivalenz» digitaler Rechtsgeschäfte – Ein tragendes Grundprinzip für die Beurteilung der Rechtsgültigkeit von Rechtsinstituten und Rechtsgeschäften im schweizerischen Recht, Jusletter, 18 June 2018, 5; English version available at <https://www.mme.ch/fileadmin/files/documents/MME_Compact/2018/180619_Funktionale_AEquivaleenz.pdf> (24 October 2019).

⁷⁸ *Furrer/Müller*, Funktionale Äquivalenz, 16.

⁷⁹ *A Furrer/Müller*, Funktionale Äquivalenz, 16.

⁸⁰ UNCITRAL, Model Law on Electronic Transferable Records (MLETR), 2018 <http://www.uncitral.org/pdf/english/texts/electcom/MLETR_ebook.pdf> (24 October 2019).

legislator recognized that register entry is functionally equivalent to the transfer of ownership of a deed, if the register fulfills certain prerequisites. Therefore, the TVTG provides that the register can be held and managed by use of trustworthy technology. There is no need to distinguish between DLT and conventional uncertificated securities, as long as the register meets the legal protection goals behind the requirements for the registration.

V. Conclusion

Digitalization does not (yet) create a parallel world to the «analogue world» in most known cases, but often means that existing processes and transactions are represented and managed digitally. Consequently, many of the legal questions raised are familiar ones with solutions within the existing legal framework. Furthermore, private law is basically technology-neutral and flexible in order to govern new technological developments. However, formal legal requirements, in particular, can hamper innovations or at least require a high degree of creativity on the part of practitioners in order to abide by the law. The hurdles are particularly striking when it comes to the digitalization of documents and securities, where the transfer of ownership of the respective paper is regularly linked to legal consequences. New technologies enable establishment of tamper-proof registers whose entries may indeed create similar legal effects and fulfill the same main functions that the possession of a certificated security does. Both the Liechtenstein and the Swiss legislator have recognized that such register entries are suitable to replace (the hand-over of) certificates or intermediaries and should, consequently, trigger the same legal consequences. However, the legislators pursue different approaches, in order to create a legal framework for tokenized securities. While the Swiss legislator takes securities law as its starting point and mainly focuses on DLT in its proposed selective amendments of the law, Liechtenstein strives towards creating a holistic legal and regulatory framework for the entire token economy, covering token creation, custody, exchange, public token sales and general services. Both approaches have advantages and disadvantages, but it can be held that both jurisdictions will provide a solid legal framework *de lege ferenda* in connection with STOs. In the long term, only a global approach will suffice to create the necessary legal certainty for the token economy.

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