BY CRYPTO VALLEY ASSOCIATION
EDITED BY FLORIAN DUCOMMUN

Paper

ASSET TOKENIZATION

Under Swiss Law

CRYPTO
VALLEY
ASSOCIATION

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Glossary

AML	shall refer to anti-money laundering.
Articles of Association	shall refer to the documents of incorporation which set out the legal structure of the Issuing Company.
Airdrop/Airgrab	shall mean a distribution of Cryptocurrency or other Digital Asset units to a defined scope of digital ledger addresses, usually without any compensation or other form of remuneration due by the unit recipients, often for promotion or similar purposes.
Board of Directors	shall refer to the Board of Directors of the Issuing Company.
BA	shall mean Federal Banking Act.
BO	shall refer to the Banking Ordinance.
CISA	shall mean Federal Collective Investment Scheme Act.
Collision attack/ Birthday attack	shall mean Collision Attack on a cryptographic hash tries to find two inputs producing the same hash value, i.e. a hash collision. This type of cryptographic attack exploits the mathematics behind the birthday problem in probability theory and depends on the higher likelihood of collisions found between random attack attempts and a fixed degree of permutations. Such attack could be used to modify transactions.
Consultation Draft	shall mean the Federal Council's consultation on the adaptation of federal law to developments in distributed ledger technology (DLT) (issued on the 22nd March 2019) and subsequent preliminary legislative proposal for a new Federal Act on the Amendment of Federal Laws in light of the Developments regarding DLT[1].
CSD	shall mean Central Security Depositary.
CVA	shall mean the Crypto Valley Association.
DEBA	shall refer to the Federal Debt Enforcement and Bankruptcy Act.
DLT	shall mean decentralized ledger technology.
Dusting Attack	shall mean a malicious activity where an attacker breaks the privacy of holders of a Digital Asset by sending very small amounts of coins to their addresses. The activity performed on these addresses is tracked down by the attacker and used to identify the person or company behind an address.
Digital Assets	shall refer to dematerialized assets constituted and existing as entries on a public, permissioned or hybrid (sidechain) blockchain or other digital, distributed ledger only.

[1] Bundesgesetz zur Anpassung des Bundesrechts an Entwicklungen der Technik verteilter elektronischer Register / Loi fédérale sur l'adaptation du droit fédéral aux développements de la technologie des registres électroniques distribués, at https://www.admin.ch/gov/en/start/documentation/media-releases.msg-id-74420.html.

Explanatory DLT Report	shall mean the Swiss Federal Council's explanatory report for the consultation on the adaptation of federal law to developments in distributed ledger technology (DLT) dated 22 March 2019 (German version).
FDF Consultation Report	shall mean the Swiss Federal Department of Finance's report on the consultation regarding the modification of the Banking Act and the Banking Ordinance dated 1 February 2017.
FINMA Fact Sheet	shall mean FINMA's fact sheet on virtual currencies dated 30 August 2018.
FATF	shall mean the Financial Action Task Force.
FINMA	shall mean Financial Market Supervision Authority.
FISA	shall mean the Federal Intermediated Securities Act
FINSA	shall mean Financial Services Act.
FINSO	shall mean Financial Services Ordinance.
FINIA	shall refer to the Federal Financial Institutions Act.
FMIA	shall mean Financial Market Infrastructure Act.
FMIO	shall mean the Financial Market Infrastructure Ordinance.
Hard Fork	shall mean a consensus affecting protocol change to which the participants that did not adopt the change will not be able to continue validating and verifying transactions.
ICO	shall mean Initial Coin Offering.
Issuing Company	shall mean the company that would want to issue a security such as a share, participation certification or bond.
KYC	shall mean Know-Your-Customer.
Miner/Minter	shall mean Refers to a device or person that operates the device performing an act of creating valid blocks. Some protocols require demonstrating proof of work (done by "Miners") while other consensus mechanisms require the staking of the assets (done by "Minters"). In addition to the Miners and Minters, there are other consensus mechanisms which require different devices or persons, such as for example "Validators" in byzantine fault tolerant mechanisms.
OECD	shall refer to Organization for Economic Co-operation and Development.
OTC	shall refer to over the counter.

Rules	shall mean use and administration rules according to art. 647 SCC.
SCO	shall mean Swiss Code of Obligations.
SCC	shall mean Swiss Civil Code.
SESTA	shall mean Stock Exchange Act.
SESTO	shall mean Stock Exchange Ordinance.
Smart Contract	shall mean a code and data organized in a manner to allow the autonomous execution of an agreement. The required conditions are coded in the smart contract and once they are met the contract obligations are automatically executed.
SNB	shall mean the Swiss National Bank.
Soft Fork	shall mean a consensus affecting protocol change to which the participants that did not adopt the change will still be able to participate in validating and verifying transactions.
STO	shall mean Security Token Offering
Token	shall mean a digital unit of computer code representing or, where applicable, incorporating an asset.
Tokenization	shall mean the fact of digitalizing assets using the distributed ledger technology.
VASP	shall refer to the Virtual Asset Provider.
51% attack	shall mean a potential attack on a blockchain network, where a single entity or organization can control a high percentage of the hash rate, potentially causing a network disruption. In such a scenario, the attacker would have enough mining power to intentionally exclude or modify the ordering of transactions. Such attacker could potentially also reverse transactions, putting it in a position to double-spend the same unit of a Digital Asset. A successful majority attack would further allow the attacker to prevent some or all transactions from being confirmed (transaction denial of service) or to prevent some or all other miners from mining, resulting in what is known as mining monopoly (censorship attack).

Foreword — Mattia Rattaggi

The Board of the CVA is extremely pleased to offer to its members and the wider Crypto Valley community this unique asset tokenization paper, written by practitioners (members of the Asset Tokenization Task Force of the CVA Regulatory Working Group) for practitioners. The Board is convinced that this paper will provide a useful guide to entrepreneurs seeking to carry out a Security/Asset Tokens Offering (primary market) and/or trade security tokens (secondary market) in Switzerland and will assist them in addressing practical questions from a legal and technological standpoint. The paper takes into consideration the message adopted by the Federal Council on 27 November 2019 on the improvement of the framework conditions for DLT/blockchain. The Board of the CVA is happy to offer to the community yet another valuable input in the broader effort of relentlessly developing the blockchain / crypto valley ecosystem and ensuring it continues to lead the industry.

For the CVA Board
Dr. Mattia Rattaggi

Introduction — Florian Ducommun

Pragmatism has been the driver of both the Federal Council's and FINMA's approach. By applying the principles of "substance over form" and "same functions, same rules", FINMA has favoured the development of a very strong blockchain ecosystem in Switzerland in the field of financial markets. This is key for Switzerland which, as a country, has always positioned itself both as an innovator and as a financial hub.

Using blockchain technology to optimize capital markets has the potential of providing funding to innovative companies in a streamlined way and, thereby, to position Switzerland's fintech industry as a leading player.

In order to be able to maintain this position and this competitive advantage, Switzerland must however ensure that the blockchain ecosystem of companies strictly complies with international rules and standards for fighting against anti-money laundering and funding of terrorism.

In this respect, two FINMA Guidance focused primarily on anti-money laundering and highlighted that:

a. the traditional regulatory framework relating to anti-money laundering (i.e Anti-Money Laundering Act and Ordinance) are particularly relevant for matters relating to blockchain. FINMA would start proceedings in order to ensure that any anti-money laundering breaches are rectified[2];

b. financial intermediaries must implement FATF standards and guidance for virtual assets service providers. The responsibility to ensure the combatting of money laundering and funding of terrorism was also been extended to the intermediaries who may offer services related to the transfer, settlement and clearance of tokens (not only to the issuers)[3].

The FINMA "*Guidelines for enquiries regarding the regulatory framework for initial coin offerings*" (issued on February 2018; "ICO Guidelines") categorized tokens into three separate

[2] FINMA's Guidance 04/2017 on the regulatory treatment of initial coin offering
[3] Guidance 02/2019 on the payments which occur on the blockchain

classes (payment tokens, utility tokens and asset tokens) without further defining the applicable rules for issuing / trading Security/Asset tokens. Since the ICO Guidelines, the market considerably evolved towards asset/security tokens. With the digitalisation of the economy and the inclusion of wallets within smartphones, the use of tokens to represent assets is likely to become the rule.

On November 27th, 2019, the Federal Council published the draft amendments to the current legal framework and the message relating to the framework conditions for DLT/blockchain, aiming at increasing legal certainty, removing barriers for applications based on DLT and reducing the risk of abuse[4]. This approach from the government provides the country with a very advanced, fundamental and comprehensive legal framework for the DLT/blockchain industry, achieved by adapting existing laws to the extent that necessary instead of introducing a technology neutral law. With this framework, Switzerland possesses best conditions to further nurture its already leading, innovative and sustainable position for fintech and DLT companies.

The purpose of this CVA Asset Tokenization Paper is to address practical questions from a legal and technological standpoint and to define best practices, while providing practical guidance to CVA members considering proceeding to a Security/Asset Tokens Offering (primary market) and/or trading Security/Asset Tokens (secondary market). This CVA Asset Tokenization Paper strives to practically define, step by step, the tokenization process that a company must go through. Tax and accounting aspects with respect to Asset tokenization are not addressed in this CVA Paper[5].

The mission statement of the CVA Regulatory Working Group is to ensure that the stakeholders within the CVA understand the legal and regulatory environment, retain best practices, comply with market standards using streamlined processes, with the aim of continuing shaping a reliable and strong framework for blockchain technology in Switzerland.

In order to achieve this, CVA Regulatory Working Group commissioned Florian Ducommun, founder of HDC Law Firm, a law firm based in Lausanne specialized in technology and early mover in the Asset/Security tokens field, and Founder / Chairman of The Legal Factory SA, to create a task force composed of attorneys, compliance specialists and technology experts.

The authors of this publication form part of a sub-group ("Asset Tokenization Task Force") of the CVA Regulatory Working Group. This Task Force is composed by:

- **Florian Ducommun** (HDC) – Head / Chair;
- **Jürg Baltensperger** (JayBee);
- **Tina Balzli** (PwC);
- **Raphael Baumann** (PST);
- **Delphine Forma** (Lykke);
- **Katharina Lasota Heller** (LEXellence)
- **Biba Homsy** (Vice-Chairwoman CVA Regulatory WG).
- **Marcel Hostettler** (MME);
- **Athanasios Ladopoulos** (Lapo.io);
- **Yanina Petrovskaya** (RLP);
- **Patrick Salm** (SEBA).

[4] Message and draft amendments available at the following URL: https://www.admin.ch/gov/de/start/dokumentation/medienmitteilungen.msg-id-77252.html

[5] Members interested to Tax / Accounting Aspects can refer to "Tax/Accounting/Structuring" from Crypto Valley Association published by(Markus Vogel [Chair], Kevin Leuthardt, Thomas Linder and Heiko Petry; https://cryptovalley.swiss/wp-content/uploads/QA_ICO_Accounting.pdf

1. Security/Asset tokens — Athanasios Ladopoulos

Security/Asset tokens represent assets such as a debt or equity claim on the issuer. In terms of their economic function, therefore, these tokens are analogous to equities, bonds or derivatives. Tokens which enable physical assets to be traded on the blockchain also fall into this category.

Security/Asset tokens include tokens issued for shares, participation Certificates, bonds, collective Investment Schemes, derivatives, titles representative of property and more. As a starting point we set out to explain what a token is and set the terms of importance as a value handling mechanism. We will then proceed with briefly describing the nature of Security/Asset tokens.

A token is a unit of account representing a specific amount of goods (i.e. computers), services (i.e. cloud storage), or assets (i.e. property), (altogether referred to as "Assets"), and is exchangeable (tradable) between those who wish to access such Assets and those who own the Assets. Thus, a token has a value that is linked to the perceived value of the Assets, it is directly linked and the amount (proportion) of the value it represents.

As in many other instruments price is what you pay, and value is what you get. When the price is equal to the value then this is a fair valued trade. When price is below value then this is undervalued (bargain) trade and when price is above value then this is an overvalued (speculative) trade. Similarly, a token has a price and a value that follows the same principles.

Under normal circumstances – i.e. efficient market, the token's price equals its value which is the value of the underlying Asset – also called intrinsic value (always assumed in proportional terms). Then the token's price is equal its value and is fairly valued. Any divergence of the price from its fair value gives opportunities for arbitrage. Thus, when the price is below its intrinsic value the token is undervalued and access to Assets is obtain for below their intrinsic value. Savvy resource hunters would accumulate such tokens in hope of appreciation in the token's price or access to disproportional amount of Assets. This is driven by uncertainty and fear linked to the quality of the resources or their future value.

When the price of the token is above its value and thus above its intrinsic value, then the token is perceived to be overvalued. The percentage of the price standing above its intrinsic value is called speculative price because is driven by speculation i.e. expectation of a continued higher demand of the token driven mainly by crowd behavior or expectations of an increase in the value of the underlying Asset due to i.e. expected changes in macro or micro-economic factors. If the former is true, it would drive rational holders to sell the tokens and obtain disproportional returns. This could also drive rational holders to sell their tokens, but this time buy the underlying Asset at the lower price and benefit from the arbitrage (between price of the token and proportionate value of the underlying asset).

1.1 What is a Security/Asset token?

The materialization of securities law, from a civil law point of view, consists in establishing a link between a right, on the one side, and a title, on the other side[6].

[6] Message from Federal Council relating to the framework conditions for DLT/blockchain, Nov. 27, 2019, p. 29, https://www.newsd.admin.ch/newsd/message/attachments/59302.pdf

Security/Asset tokens is an umbrella term that could include shares, bonds, futures, physical property, intellectual property rights, etc. By definition, it is a token (i.e a title) to which a right is attached.

1.2 How does tokenization work?

In three steps:

- **Step one**: real or digital Assets "move" to the blockchain, meaning Smart Contracts (lines of code) are written to represent ownership and ownership rights and under what conditions and how those are enforceable;

- **Step two**: tokens are created to represent the means and amount of ownership or participation stake in these Assets;

- **Step three**: subject to certain rules, tokens can be bought and sold on token trading exchanges. Tokens enable people to gain ownership, invest and trade Assets and financial instruments previously unavailable to them.

1.3 What are the benefits of asset tokenization?

We can outline the following benefits of tokenization:

1. Price discovery – value release and appreciation

a. Increase his/her cash holding (receive money from the token sale);
b. Generate interest and a market (price discovery and price appreciation);
c. Address directly new investors.

2. Access to funding

Private company wishing to expand its business but lacking the required capital to go public may address a larger community of investors through tokenization.

3. Community based fundraising

By issuing tokens, a private company combines mechanisms of crowdfunding and traditional funding, creating at the same time a community of users which is interesting for internet-based business models and increases the engagement of the investors.

4. Investment round and Marketing combined

Marketing efforts to raise funds digitally is combined with marketing efforts to promote the company.

5. Access to investment previously not available

Through tokenization, the Issuing Company is likely to have a wider outreach and a cost-effective expansion in its pool of investors. Small investors are almost completely excluded from private equity investment as available investment capital requirements are often close or well above the one million dollars mark.

6. Easing Corporate Governance Requirements[7]

If the Issuing Company issues participation certificates, there is no voting rights, hence facilitating the governance of the Company[8].

7. Liquidity

When the secondary market will be in place, tokenization has the potential of decreasing the cost of money as the opportunity cost is reduced and liquidity enables better negotiation terms.

[7] Fabien Gillioz et Alexandre De Boccard, "Initial Exchange Offerings »
[8] Fabien Gillioz et Alexandre De Boccard, "Initial Exchange Offerings »

In this respect, it should be noted that, as soon as Security/ Asset Tokens become negotiable on a large scale, meaning standardized and suitable for mass trading, they become "negotiable securities" within the meaning of Art. 3 let. b FINSA and, as a consequence, subject to financial markets regulation and FINMA surveillance[9].

There are at least three primary incentives from the investor's perspective:

1. Diversification
Investors seeking diversification might find opportunities to get exposure into high quality and counter cyclical as well as newly formed classifications of Assets.

2. Increased transparency
A distributed ledger with immutable records will help investors make better investment decisions based on recorded information now available to everyone. Information among other things could include governance rules, the ownership of the Asset i.e. the identity of the Asset owners, and the compliance rules of the Asset i.e. the set of regulatory and compliance rules governing the ownership and permissible transaction rights of the Asset.

3. Trading opportunities
Traders are exploiting new markets, thereby helping to create liquidity and trading opportunities for all participants.

Other potential benefits of tokenization are[10]:

- Programmability of securities (automated dividend pay-outs, integrated voting protocols, regulatory compliances such as reporting, KYC and AML procedures);
- Increased transferability of ownership;
- Interoperability of unrelated securities (e.g. ERC-20 token standard);
- 24/7/365 security trading;
- Dramatic cost reductions because of the removal of most middleman;
- Fractionalization of securities and the Assets they represent;
- Major boost of addressable (global) investor pool;
- Immutable transparency.
- Framework standards (e.g. CMTA) and security token standards (e.g. ERC-14xx family, ST20 etc.) available.

On the other side, there are still legal and technological drawbacks, among others:

- Cost of legal documentation and compliance (although some companies are working at streamlining the legal processes for issuing Security/Asset tokens [11]);
- High burden for compliant Asset Token issuance (e.g. AML risk due to usage of pseudonyms);
- Risk of security breach / hacking of wallets;
- Risks of 51% attack, hard fork, network congestion, Dusting Attack etc. (see glossary for detailed description);
- No regulatory compliant trading facility for Security/Asset tokens.

[9] See. Message from Federal Council relating to the framework conditions for DLT/blockchain, Nov. 27, 2019, p. 30-31, https://www.newsd.admin.ch/newsd/message/attachments/59302.pdf
[10] Non-Technical Guide to Security Tokens, By LCX Team, June 13, 2019 https://www.lcx.com/security-tokens/
[11] E.g www.legalfactory.ch

1.4 What are the challenges ahead?

With the introduction of the new legal framework for DLT/Blockchain, new business models in the Asset/security tokens field in Switzerland's Crypto Valley include structuring of tokens, custodians of tokenized Assets, distributors of tokens or token account facilitators, creating a vivid ecosystem.

Leaving aside technological challenges such as cybersecurity and privacy, probably the most prominent challenge is compliance with regulation, including AML, not simply at the issuing level but also at the trading level at different exchanges and jurisdictions.

2. Types of Assets and their Tokenization

2.1 Shares — Raphael Baumann

Tokenizing shares is an efficient way to simplify investor relations and/or raise enough capital for an Issuing Company. Tokenizing shares is feasible under current Swiss law and opens the door for more digitalization of the economy. When properly structured, the digital transfer of a share is possible under the current rules, without having to deal with a written form of contract or an intermediary.

According to its guidelines, FINMA basically qualifies such tokenized shares as asset tokens or security tokens.

2.1.1 Tokenization of shares

Tokenizing shares requires that the Articles of Association of the Issuing Company contain specific provisions. It also requires that the Issuing Company adopt internal regulations, which will formalize the manner in which the tokenized shares will be issued and transferred on the blockchain, how the shareholders can get back their tokenized shares once they have lost access to the tokenized shares (e.g. loss of private key) and how a token holder will be recognized as a shareholder of the Issuing Company.

Even though the general assembly is the highest corporate body, the decision as to whether the shares of an Issuing Company should be tokenized is by current law basically a decision to be made by the Board of Directors. However, the Federal Council proposed in its latest legal framework that the board of directors shall only be allowed to tokenize the shares of the company if the articles of association stipulates and authorizes the board of directors. The Board of Directors decides which blockchain will be used and which measures could be implemented regarding technical issues on the blockchain. Currently, most of the projects in Switzerland are using the Ethereum platform (ERC-20 tokens) to tokenize securities.

2.1.2 Articles of Association

The Articles of Association shall contain under current law the following provisions such as but not limited to:

- The Issuing Company may issue its shares in uncertificated form at any time and without the approval of shareholders (art. 937c SCO);
- Shareholders have no right to the printing or delivery of share certificates;
- The Issuing Company only recognizes as shareholders persons recorded in the Issuing Company's share register, provided that they confirm in the manner specified by the Issuing Company that they are holding the shares so acquired in their own name and for their own account;

- Persons having acquired shares of the Issuing Company will be recorded in the Issuing Company's share register and uncertificated securities register as shareholders;
- The shareholders' register may be held digitally;
- Transfer of shares can be done using secured transactions.

Pursuant to the latest framework conditions for DLT/Blockchain released by the Federal Council, the articles of association shall contain provisions that the board of directors shall be allowed to tokenize the shares of the company.

2.1.3 Internal regulations

The internal regulations shall be approved by the Board of Directors and shall contain following provisions such as (but not limited to):

- Loss of token procedure (for registered token holders as well as for unregistered token holders);
- Registration requirements for registration in the Issuing Company's share register;
- Transfer of token procedure (i.e. the Issuing Company, as the debtor of the rights embedded in the tokenized shares, explicitly agrees to such transfers without a written form being used).

2.1.4 Prospectus obligations

With the entry into force of FINSA in 2020, every public offer of tokenized shares triggers the obligation to provide a prospectus which must be approved by a supervisory authority.

Noteworthy exceptions to this prospectus obligation include, in particular, (i) public offers that intended only for professional clients or (ii) there are less than 500 clients, (iii) that require a minimum purchase of CHF 100,000 or (iv) do not exceed a total volume of CHF 8 million. Art. 652a SCO will be abrogated by FINSA / FINSO. New prospectus requirements are detailed in Appendix I FINSO.

To sum up, in most cases of tokenizing shares for public fundraising purposes, the publication of an offering prospectus is mandatory. While drafting the prospectus for public offering available over the Internet, it is recommended to make sure not only to comply with Swiss law, but also with applicable foreign laws (i.e. EU Prospectus Directive) and to implement technical measures to ensure that no foreign law is violated.

2.1.5 How to structure a public offering of shares

There are currently two possible ways as how to raise funds through offering tokenized shares. On the one hand, the Issuing Company can raise funds through an **ordinary or authorized share capital increase** while issuing tokenized shares (*primary market*). An ordinary share capital increase has no %-limit, whereas an authorized share capital increase is limited to 50% of the share capital. Therefore, within these limits, the Issuing Company can offer as many tokenized shares as required to raise capital. This model is appropriate for an Issuing Company intending to raise a greater amount of capital and the initial shareholders are willing to accept greater dilution. Briefly the process is as follows:

(i) the initial shareholders resolve an ordinary or authorized share capital increase and determines the terms and conditions;
(ii) the Board of Directors publishes the offering prospectus and establishes the Smart Contract;
(iii) the investors (a) accept the investment agreement, (b) undergo KYC and AML checks, (c) give a proxy to the Issuing Company in order to sign the subscription form on a

fiduciary basis and (d) finally pay in the issue price in fiat to a blocked account (a solution with cryptocurrencies and conversion into fiat is also possible, but raises additional compliance questions);

(iv) the Issuing Company formally signs the subscription form on a fiduciary basis and subscribes the shares;

(v) the Board of Directors issues a capital increase report and resolves (a) the completion of the capital increase, (b) the tokenization of the new shares and (c) subsequently files the capital increase with the commercial register;

(vi) as soon as the registration with the commercial register has been completed, the shares are tokenized and distributed in the form of tokens to the investors; and

(vii) the shareholders' register and uncertificated securities registers are amended accordingly.

On the other hand, the Issuing Company may **sell its own tokenized shares** (*secondary market*). The advantages are obvious: Issuing Company can easily sell and transfer its own tokenized shares to third parties without carrying out a share capital increase. From a marketing prospective it is quite easy to place this model on the market. Terms and conditions for the sale of tokenized shares must be prepared, as well as a Smart Contract for issuing the tokens. The investors shall undergo KYC and AML checks (see sections 3.3 and 4.4 regarding Compliance aspects). The decision to sign a shareholder's agreement is optional and depends on the individual needs of the Issuing Company and the initial shareholders. Since there is still some legal discussions between scholars as to whether the transfer of a share issued as an uncertificated security on the blockchain is formally valid under Swiss law, this model has the advantage of legal security to for token holders. Indeed, should the transfer of a tokenized share be considered as invalid, the Issuing Company, as the first transferor of the tokenized share, may formally re-transfer the share issued as an uncertificated security to the token holders. The downside of this model is however that, by law, the Issuing Company is limited to no more than 10% of its share capital by public offering (Art. 659 SCO).

2.2. Participation Certificates — Florian Ducommun

Participation certificates are non-voting shares, giving only economic prerogatives to their holders. The Articles of Association may provide for participation capital divided into specific amounts and issued in the form of participation certificates. Participation certificates are issued against a capital contribution, have a nominal value and do not confer voting rights (art. 656a para 1. SCO).

Unless otherwise provided by law, the provisions governing share capital, shares and shareholders also apply to the participation capital, participation certificates and participation certificate holders (art. 656a para 1 SCO). Provided the Articles of Association provide accordingly, participation capital may be created by means of an authorized or conditional participation capital increase (art. 656b para 5 SCO). An authorized or conditional increase of the share and participation capital must not in total exceed one-half (50%) of the combined existing share and participation capital (art. 656b para 4 SCO).

The holder of a participation certificate has the right to a financial claim to the Issuing Company's dividend (and in the event of liquidation or sale of the Issuing Company) which is granted by means of the Articles of Association.

When considering ICO Guidelines[12], a participation certificate, once tokenized, falls under the classification of a **Security**/**Asset token** since a creditor will have an equity claim on the issuer. FINMA treats Asset tokens as securities. Asset tokens constitute securities within the meaning

[12] 16th February 2018

of art. 2 let. b FMIA if they represent an uncertificated security and the tokens are standardized and suitable for mass standardized trading. Therefore, as soon as associated with tokens, participation certificates are likely to be qualified as securities[13].

The advantage of participation certificates (in comparison to shares) is that governance rules applicable to shares are not applicable since no voting rights are attached to them. There are however specific rules in SCO with respect to the legal position of participation certificate holders, for example to election of a representative of the participation certificates holders (art. 656c ff. SCO).

By applying art. 656a ss of the SCO which applies to the participation certificates along with the rules applicable to securities (art. 965 ff. SCO), it is possible, under the current state of the law, to issue participation certificates as uncertificated securities (rights; art. 973 c SCO) and to **associate** them to tokens (titles). The Board of Directors can then decide to recognize as participation certificate holders only the holders of tokens associated to participation certificates. Legal security will even be increased with the introduction of art. 973d SCO contemplated by the Federal Council in its report about DLT dated December 14th, 2018; this new article will introduce a new category of securities entitled "register uncertificated securities[14]" allowing to literally **encapsulate** the rights attached to the participation certificates within the tokens by holding a secured register playing the role of public faith.

2.2.1 Tokenization of participation certificates

According to FINMA, if tokens constitute securities, they fall under securities regulation (i.e mainly under the rules of the SCO).

Under FINSA (entering in force on January 1st, 2020), participation certificates are qualified as "financial instruments" and, more specifically, as "participation titles" (Art. 3 lit. a n. 1 FINSA).
Under SESTA, book-entry of self-issued uncertificated securities is essentially unregulated, even if the uncertificated securities in question qualify as securities within the meaning of FMIA[15]. This is also applicable to participation certificates.

Thus, under Swiss law (and this is a notable difference with US law), a company may issue rights with the same function as securities (uncertificated securities) without prior approval of FINMA, provided (a) the conditions for issue or the Articles of Association of the company provide therefore or (a) the investors have consented thereto (art. 973 c para. 1 SCO).

The uncertificated securities are created upon entry in the book (uncertificated securities' register which can be held using non-public DLT) and continue to exist only in accordance with such entry (art. 973 c para. 3 SCO).

Therefore, the only formalities to issue uncertificated securities is for the Issuing Company to amend its Articles of Association allowing participation certificates to be issued in the form of uncertificated securities and to hold a register of uncertificated securities (which cannot be public) containing the list of holders and details regarding nominal value of the uncertificated securities issued (art. 973c para 2 SCO).

The Board of Directors is entitled to decide to associate tokens to uncertificated securities representing the issued participation certificates and to recognize the holders of tokens as participants.

[13] "Legal Framework for Distributed Ledger Technology and Blockchain in Switzerland", p. 58 and p.111
[14] Translation of "droits-valeurs inscrits" or "Registerwertrechte", not to be confused with "registered" securities
[15] FINMA ICO Guidelines, February 16th, 2018, p.5

Concretely, tokenization occurs through the development of a Smart Contract which creates the tokens and is coded in a manner to allow for the development of a set of pre-determined conditions and rights i.e. the way tokens can be issued, transferred and/or cancelled.

The Issuing Company is recommended to anticipate technological improvements and choose a cryptographic technology (potentially quantum resistant in anticipation of the coming technological improvements) which ensures the highest standards in terms of security to issue the tokens to be associated with the participation certificates, since any security breach would lead to a potential theft of the tokens, whose liability could be ultimately attributed to the Board of Directors.

2.2.2. Transfer of participation certificates

Initial issuance of the participation certificates as tokens by the Issuing Company to investors relies on the Articles of Association, the prospectus, the internal regulations, an investment agreement and a subscription form.

Unless otherwise provided by law or the Articles of Association, the Issuing Company's registered participation certificates are transferable without restriction (art. 684 SCO).

However, the Articles of Association may stipulate that registered participation certificates may be transferred only with the consent of the Issuing Company (art. 684a para. 1 SCO). Where the consent required for transfer of participation certificates is not given, the ownership of the participation certificates remains with the alienator.

Therefore, if the transfers of registered participation certificates are subject to the approval of the Issuing Company, the Smart Contract shall include a validation process by the company for the transfer of the tokens. Such process shall also be integrated within the internal regulations of the Issuing Company.

Subsequent transfers of uncertificated securities associated with tokens will also be subject to the written form requirement (art. 973c para 4. SCO and art. 165 SCO). The legal aspects of the transfer of tokens associated to uncertificated securities are still subject to academic debate among scholars since there has not yet been any judgement clarifying whether a secured transaction on the blockchain may constitute a valid transfer of ownership of the tokens. The introduction of art. 973f para 1 SCO will clarify this point, by creating "register uncertificated securities", thereby allowing the transfer and registration to occur within a DLT register based on a registering agreement (not subject to any form requirement). The enactment of this amendment will introduce legal security, without invalidating previous transactions.

Ultimately, insofar as the uncertificated securities register strictly reflects (or even is synchronized with) the ledger used to register the transfers the tokens, the traceability of the transfers that the written form is supposed to document will be ensured. Therefore, keeping in mind the rationale behind Art. 973c para. 4 SCO, there is no reason to challenge the validity of transfers occurring using DLT with the agreement of the parties, even less if the Board of directors validated them. The Federal Council confirmed it in its message relating to framework conditions for DLT/Blockchain: "the proposed amendment of civil law will not affect the validity of transactions which are currently subject to the autonomy of the parties"[16].

[16] Message relating to framework conditions for DLT/Blockchain, p. 46

2.2.3 How to structure a public offering of participation certificates

Concretely, the procedure which needs to be followed in order to issue participation certificates associated with tokens is the following[17]:

2.2.3.1. Amendment of the Articles of Association

The general meeting of the Issuing Company issuing the participation certificates shall proceed to the amendment of the Articles of Association which has been duly notarized and entered into the commercial register (art. 647 SCO). The amendments of the Articles of Association are mainly threefold:

a) Ability of the Board of Directors to issue participation certificates as uncertificated securities;
b) Ability of the Board to issue uncertificated securities using a register compliant with the conditions of Art. 973 d para. 2 SCO;
c) Authorized capital increase allowing the Board of Directors to create or increase the participation capital of the Issuing Company up to a maximum equivalent to the "hard cap";
d) Ability of the Board to hold the uncertificated securities' register digitally;
e) Ability to transfer the participation certificates through secured transactions.

2.2.3.2. Internal regulations

The Issuing Company shall also ensure that the Articles of Association are drafted in a manner which does not prohibit the Board of Directors from introducing binding internal regulations[18]. The internal regulations shall clearly set out the procedure which shall be followed in order to (among other things):

a. associate the right to a claim arising from a participation certificate to a token;
b. register the holder of participation certificates into the register of uncertificated securities;
c. register the holders of participation certificates into the register of holders of participation certificates;
d. transfer a participation certificate which is associated to the token;
e. regulate the participation certificate holder's activity with regards to the token;
f. self-regulate the employees and Board of Directors when associating the right to a claim arising from a participation certificate to a token;
g. define the rules in the event of security breach, loss or theft of the tokens;
h. define the rules in the event of a "hard fork".

2.2.3.3. Prospectus

Pursuant to Art. 652a SCO, where new shares are publicly offered for subscription (i.e) any invitation to subscribe that is not addressed solely to a limited number of persons), the Issuing Company publishes an issue prospectus containing information about:

1. the content of the existing entry in the commercial register, with the exception of details relating to the persons authorized to represent the Issuing Company;

[17] The CVA tokenization process is based on the CMTA Blueprint: https://www.cmta.ch/content/52/cmta-blueprint-for-the-tokenization-of-shares-of-swiss-corporations.pdf
[18] For standard documents, see CMTA Blueprint, October 2018, https://www.cmta.ch/content/52/cmta-blueprint-for-the-tokenization-of-shares-of-swiss-corporations.pdf

2. the existing amount and composition of the share capital, including the number, nominal value and type of shares and the preferential rights attaching to specific share classes;
3. the provisions of the Articles of Association relating to any authorized or conditional capital increase;
4. the number of dividend rights certificates and the nature of the associated rights;5. the most recent annual account statements and consolidated account statements with audit reports and, if more than six months have elapsed since the accounting cut-off date, the interim accounts; in the case of companies that do not have an auditor, the Board of Directors must arrange for an audit report to be prepared by a licensed auditor and provide information on the result of the audit in the issue prospectus (art. 652a para. 3 SCO);
6. the dividends distributed in the last five years or since the Issuing Company was established;
7. the resolution concerning the issue of new shares (if available).

FINSA / FINSO will abrogate Article 652a SCO as of January 1st, 2020. New requirement for issuance of shares are set by Annex I FINSO. These prospectus requirements are however subject to the exceptions of Art. 36 to 38 FINSA.

In any event, even though the exceptions of FINSA may apply (art 36 to art. 38 FINSA), it is highly recommended to always issue participation certificates on the basis of an investment memorandum detailing the investment terms and the risks, even when a prospectus compliant with the requirements of Annex 1 FINSO is not formally required.

2.2.3.4. Board resolution

A resolution by the Board of Directors shall approve:

a. The internal regulations;
b. The prospectus;
c. The investment agreement (containing (a) a proxy given to the Issuing Company to subscribe participation certificate on a fiduciary basis for the investors (b) a waiver of the preferred subscription rights for next rounds of investment and (c) a drag-along clause in the event of sale or listing of the Issuing Company).

2.2.3.5. Receipt of the funds

It is paramount to ensure that the Anti-Money laundering obligations are strictly respected when collecting funds on the Issuing Company's deposit account and issuing participation certificates associated with tokens. Therefore, the engagement of a financial intermediary who can carry out the necessary due diligence for the reception of funds is required.

2.2.3.6. Subscription of the participation certificates and creation or increase of participation capital

In order to facilitate the administrative process and avoid having to gather original subscription forms among investors, the participation certificates may be subscribed by the Issuing Company on a fiduciary basis for the investors (on the basis of the proxy contained in the investment agreement). The Board of Directors will then resolve the creation or increase of the participation capital based on the authorized (or ordinary) participation capital increase.

2.2.4 CMTA standards

Standards for tokenization of participation certificates have been set by the Capital Markets and Technology Association (CMTA[19]), both from a legal and technological standpoint. These standards and templates will be extremely helpful to CVA members wishing to tokenize securities.

2.3. Cooperative — Florian Ducommun

The cooperative is a legal entity which serves the purpose of promoting and safeguarding specific economic interest of the members which form part of it (art. 828 SCO).

The persons forming part of a cooperative are obliged to promote and safeguard specific economic interests which belong to the members of this cooperative[20].

It is formed once the Articles of Association which were approved by the constituent assembly have been entered into the commercial register (art. 830 SCO). This is deemed to be an essential element in order to ensure that the cooperative acquires legal personality (art. 838 SCO). A pre-determined nominal capital is not permitted by law, implying that its existence is independent from the amount of capital in the company.

2.3.1. Membership rights

Membership within the cooperative grants the rights which are either related to assets or not related to assets.

Rights related to the assets include the right to use the services, goods and facilities which are available within the cooperative as well as a distribution of the profit generated by the cooperative (Art 859 para. 2 SCO).

2.3.2. Becoming a member of the Cooperative

An accession to the Cooperative occurs through a deed of membership which must be done in writing (art. 840 SCO). The acceptance of new members is carried out by the directors of the cooperative unless it is stipulated otherwise in the Articles of Association (art. 840 para.3 SCO).

This requirement can be replicated through a standard agreement which allows a prospective member to subscribe to a membership through an online portal and to adhere to the deed of membership.

When a person becomes a member, there is the possibility to issue titles. These titles are merely evidence of membership and cannot take the form of securities (art. 853 para. 3 SCO).

Therefore, it is not possible under Swiss law to issue proof of membership in a cooperative as Security/Asset tokens using DLT.

[19] https://www.cmta.ch/ ; https://github.com/CMTA/CMTA20 ; https://www.cmta.ch/content/52/cmta-blueprint-for-the-tokenization-of-shares-of-swiss-corporations.pdf
[20] Article 852 of the Swiss Code of Obligations

2.3.3 Can tokenization and distributed ledger technology facilitate the functions of the Cooperative?

There are various approaches through which DLT and tokenization can be introduced into the cooperative system.

2.3.3.1 Utility or payment tokens

Once an individual adheres to the deed of membership (which can be made accessible online), a cooperative may elect to issue payment tokens or utility tokens (and even link the acquisition of membership to the acquisition of such tokens). It should be noted the new DLT framework proposed by the Federal Council allows companies to issue utility tokens as "register uncertificated securities".

Pursuant to the ICO Guidelines, the token holder would in this case be conferred digital access rights to an application or service (which should already available at the time the tokens are issued). It would give the cooperative the possibility to allow the token holder a form of digital coupon to a service, goods or any access to a facility provided by the cooperative.

Under FINSA / FINSO, subject to the exceptions of Art. 36 and 37 FINSA, the issuance of "titles of credits" (typically utility tokens) pursuant to Art. 3 let. a ch. 2 FINSA are considered as "financial products" and are, therefore, subject to the prospectus requirements set forth in Appendix 2 FINSO.

2.3.3.2 Facilitating the voting process

The members all have equal rights and obligations, unless the law makes an exception (art. 854 SCO). Every member has one vote at the general assembly of members or by correspondence (art. 885 SCO).

The rights of members to participate in the affairs of the cooperative, in particular with regard to the management of its business and the promotion of the society's interests, are exercised by taking part in the general assembly of members or, where prescribed by law, by correspondence (art. 855 SCO).

In the case of cooperatives with more than 300 members, the Articles of Association may stipulate that all or some of the powers of the general assembly of members be exercised by correspondence (art. 880 SCO).

Where all the society's members are present, they may, if no objection is raised, pass resolutions without needing to comply with the formal convocation requirements (art. 884 SCO).

Therefore, vote by correspondence are admitted for cooperative.

Under Swiss law, the materialization of a voting right within a title is possible only if the law provides for it[21]. This is the case, under current law, only for the limited company and for the limited partnership by shares. The Swiss code of obligations does not expressly allow it for cooperative. Therefore, tokens issued by a cooperative cannot be considered as securities (titles) with rights attached to them.

However, through tokenization and the use of DLT, the tokens may be used as a technical tool for facilitating the vote and governance. Members may vote using the tokens issued by the

[21] DLT Report / Message relating to Framework Conditions for DLT/ Blockchain

cooperative, insofar as this possibility is set in the membership deed and in the Articles of Association.

2.3.3.3 Retention of the register

Pursuant to art. 837 SCO, the cooperative shall keep a register in which the first name and surname or the business name of the members and their addresses are recorded. It must keep the register in such a manner that it can be accessed at any time in Switzerland. The Cooperative may thus keep the register of the members using DLT.

2.3.3.4 The way forward

With DLT, it would be possible to envisage a scenario where the rights of members of a cooperative may be exercised by the token holders (as a vote by correspondence tool) and/or where the benefits (products / services) of the cooperative are represented by utility tokens issued in the form of "register uncertificated securities". The cooperative structure would offer a good blockchain governance model under Swiss Law, since every member (i.e token holder) has, by law, one vote at the general assembly of members. Such governance has the potential of being more democratic than a governance based on the number of tokens held.

2.4. Bonds — Florian Ducommun / Athanasios Ladopoulos

Security/Asset tokens such as Tokenized bonds represent a new paradigm shift that has the potential to drastically simplifying the infrastructure requirements of fixed-income markets and reduce cost substantially. By removing friction and costs, tokenized bonds could disrupt the debt market. At the same time, they could be a platform for innovation by introducing new business models and thus help the debt market evolve and maintain its leadership position within financial markets.

In order to raise capital, companies may issue debt in the form of bonds. When a bond is issued, the lender (the "**Bond Holder**") intends to receive, at the maturity date, the capital lent to the Issuing Company (principal) along with the interests. The Bond Holder has a claim in repayment against the Issuing Company. The price of a bond is determined by two major variables such as the coupon it pays i.e. the "bond yield", as well as the issuers' risk.

Under Swiss law, Bonds are subject to private law, i.e art. 1156 ff SCO (as of 2020, art. 3 lit. a para 7 FINSA).

2.4.1 Legal classification of a bond as uncertificated security — Florian Ducommun

Bonds may be issued as securities (as set out in art. 965 SCO) incorporating the claim that the Bond Holder has against the Issuing Company. The right attached to the instrument can neither be exercised nor transferred without the instrument incorporating such rights. In tokenized form, the right to claim reimbursement against the Issuing Company would be associated to a token.

2.4.2 Tokenizing bonds

Pursuant to the message relating to the framework conditions for DLT/Blockchain, the Federal Council states that all type of rights that are currently subject to be securitized will be subject to an issuance as "register uncertificated securities".

By issuing uncertificated securities, it is possible for an Issuing Company (Limited company/limited liability company) to issue rights which have the same functions as securities by entering the details of the individual acquiring the rights into an uncertificated securities'

register. The details included in the register (art. 973c para.2 of the SCO) shall include the name of the Bond Holder and the amount of the debt of the Issuing Company towards the Bond Holder. The register can be held electronically and, therefore, the distributed ledger technology (private blockchain) can be used to hold such register (which cannot be publicly available).

The debt of the Issuing Company is written in the books and this would subsequently lead to the creation of a right/claim by the Bond Holder against the Issuing Company. Since bonds are associated with a corresponding debt towards Bond Holder, the rules about capital loss and over indebtedness (art. 725 SCO) will apply and shall be considered before issuing tokenized bonds.

Tokenized bonds issued by using DLT means that blockchain becomes the register of holders where records are maintained regarding all of transactions, terms, obligations and rights of issuers and holders of the tokenized bonds. In contrast to conventional bonds, where several intermediaries hold different pieces of information and exchange of information might take hours or even days, with tokenized bonds, the information is recorded on one blockchain in a distributed manner.

Pursuant to article 1157 ff SCO, bonds issued publicly on the basis of similar conditions, the Bond Holders constitute, by law, a community of interest which can designate a representative. The Issuing Company will have to manage this community of Bond Holders and may consider defining a governance mechanism for handling it.

Governance rules may be set out in pieces of code – Smart Contracts- which may be operated using DLT. Thus, when any change takes places or new piece of information added to the tokenized bonds and its Smart Contracts, dissemination of that information regarding recent activity and the rules governing this activity is done almost immediately.

2.4.3 Tokenization process

Pursuant to the ICO Guidelines[22], bonds will be qualified as **Security**/**Asset tokens**.

As previously stated, the regime of uncertificated securities is mostly unregulated and except for the requirement of a register, there are no additional formalities to be respected in order to issue debt in an uncertificated security form.

Therefore, bonds may be issued in the form of uncertificated securities associated with tokens. The Articles of Association of the Issuing Company shall provide for this possibility and the Bond Holder shall give consent to this form of issuance (art. 973c para 2 SCO).

When issued as uncertificated securities, bonds will fall within the definition of negotiable securities (Art. 3 let. b FINSA) as soon as they will become tradable, i.e standardized and suitable for mass trading. In this instance, tokenized bonds will become subject to financial market laws and subject to FINMA surveillance.

The Articles of Association of the Issuing Company shall allow the Board of Directors to issue uncertificated securities and allow for the bonds to be tokenized and transferred through secured transactions.

The Issuing Company shall also draft internal regulations which set out the process of associating the tokens to bonds, the registration of the holder of the token, the process of removing the holder from the register and the possibility to transfer the tokens.

[22] FINMA ICO Guidelines, February 16th, 2018

Subsequently, there shall be a resolution by the Board of Directors which approves these internal regulations, the prospectus and the agreement binding the Issuing Company with the Bond Holder. Therefore, technically, the process would be identical to the association of shares or participation certificates to tokens.

2.4.4 Prospectus requirements

The prospectus is a matter of paramount importance when considering the issuance of bonds. The issuance prospectus is important to set the terms applicable to the bonds, but also because this distinguishes bonds from public deposits (Art. 5 para 3 BO).

Currently, the bonds may be offered for public subscription only on the basis of a prospectus (Art. 1156 para. 2 SCO). Under the current law, the provision governing prospectus for issues of new shares (art. 652a SCO) applies *mutatis mutandis* (see. 2.2.3.3 above); in addition, the prospectus must provide detailed information about the bonds themselves, the interest and redemption conditions, the special collateral posted for the bonds and, where applicable, the representation of the Bond Holders.

Should bonds be issued without a prospectus that complies with these provisions or should the prospectus contain inaccurate information or information that fails to satisfy the statutory requirements, all persons involved in such non-compliance, whether intentionally or negligently, are jointly and severally liable for the damage arising (art. 752 SCO).

As of January 1st, 2020, the FINSA will be in force and abrogate these articles (Art. 1156 SCO / Art. 652a SCO / Art. 752 SCO). Art. 3 lit. a para 7 FINSA defines bonds (including convertible or option bonds) as “financial instruments” and as negotiable securities when issued in uncertificated form, standardized and suitable for mass trading (Art. 3 let. b FINSA). Therefore, Art. 35 para. 1 FINSA submits such financial instruments and/or negotiable securities to the obligation to publish a prospectus (compliant with Appendix I FINSO) for issuing them to the public.

At the same time, exceptions for the obligation to publish a prospectus are set by Art. 36 to 38 FINSA, which are relevant for bonds as well. The publication of a prospectus or - at least, when a prospectus is not required formally an investment memorandum detailing the terms and the risks of the investment - is always recommended to issue tokenized bonds in order to provide visibility and transparency to investors.

2.4.5 Facilitation of bond maturity through DLT Athanasios Ladopoulos

Due to the fact that the bond represent debt, there are two flows to be considered:

a. Capital required for the purchase of the bond (principal amount);
b. Interest which is paid by the Issuing Company to the Bond Holder (interests).

The Issuing Company can include the pre-determined conditions for the payment of interests as well as the conditions which are relevant to the maturity of the bond within a Smart Contract.

The fulfilment of the conditions of repayment at maturity date can be confirmed by an oracle, triggering the reimbursement through the Smart Contract. This is likely to improve the security of repayment for Bond Holders and therefore, potentially, the value of the bonds on the market.

The Board of Directors should however be aware of the security risks which may arise by issuing bonds using DLT. In particular, the cryptographic methods must be tested and in line

with the highest and latest industry standards (especially in light of the fact the developments in quantum computing) in order to withstand any security breaches.

In addition, tokenized bonds must be coded with Smart Contracts that could determine the payment terms of the coupon, the redemption date and terms of redemption, as well as terms that dictate the eligibility of the Bond Holders to received payments based on local laws and regulations.

Some debt tokens might be issued to fractionalize highly complex debt instruments. In such case, Smart Contracts will be written to support the complex relationships between issuers' risk, basket rebalancing, debt defaults, coupon target, etc. which sets them apart from tokens that point to a simple ownership of an asset on the blockchain.

One of the major advantages that DLT may offer to investors interested in tokenized bonds is that it could serve as a transparent and immutable source of information and as a perfect tamper-proof audit trail of all agreements (including amendments) between the parties involved. All of them could be managed in a distributed way, thereby reducing the number of intermediaries and thus, reducing the associated costs with issuing and maintaining a debt instrument.

It could be possible to store in the same block, coupon payments and debt instrument information, whilst offering:

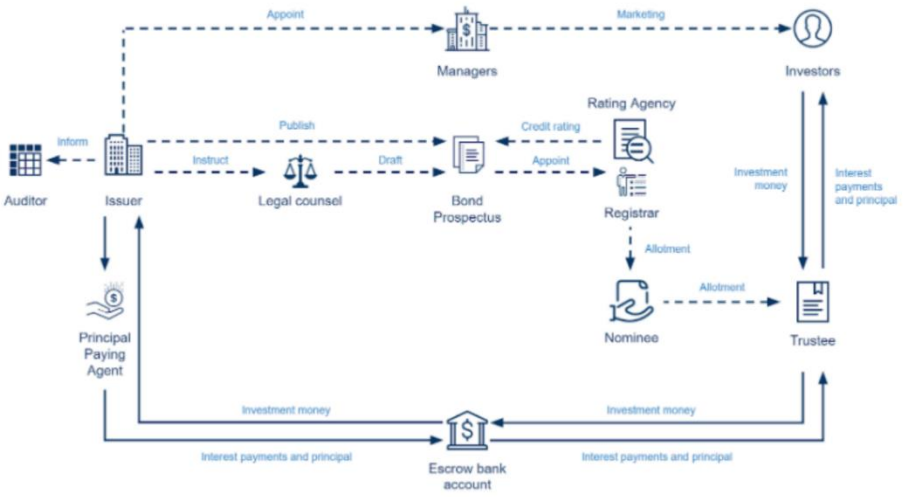
a. real time delivery versus payment;
b. automated and frictionless interest payments;
c. improved liquidity;
d. streamlined regulatory reporting; and
e. more efficient use of capital.

Ultimately, the fixed-income industry will benefit from a dramatically reduced counterparty risk, and a robust and secure infrastructure for future institutional capital markets.

Currently, institutions involved in debt instrument's issuing and trading life cycle, are spending billions in manual reconciliations and resolving discrepancies, identifying and amending human errors, and investigating and resolving disputes.

By using tokenized bonds and an algorithmic reconciliation process called consensus, all of the abovementioned issues are dealt within the issuing protocol. Reconciliations as well as all the actions taken by the participants, including the issuance and trading of bonds, delivery of bonds versus payment, size of the coupon, bond yield and payments terms, are shared among themselves through consensus.

This has the potential to reduce the money spent each year on manual reconciliation processes between parties and instead of each participant maintaining its own centralized database, all participants can share a synchronized distributed ledger (blockchain) to access information about the state of the financial instrument. This information could be then accessed by anyone with proper access credentials.



The current bond issue ecosystem. Source: https://www.liquefy.com/

Using blockchain is likely to pick up on errors almost immediately as every transaction on the network is signed, recorded, and shared in real time by and with all participants. Finally, due to increased transparency, tokenized bonds may be easier to rate by rating agencies who track the issuer's financial records to access the credit rating of their bond issuance, and audit by auditors who track the issuers accounts, thus increasing the efficiency of the market even further.

2.4.6 Technological aspects

From a technological point of view, transfers can be performed using the Hashed TimeLock Contract (HTLC), a time constrained conditional payment which allows a payment to be executed only when specific conditions are met within a specific and predefined timeframe – the deadline. It requires a two-way authentication – the bond issuer that issues the bond as a token on the blockchain and the investor that purchases the bond.

HTLCs are used to execute atomic swaps for instantaneous settlement between two parties based on a peer-to-peer approach. Although HTLCs need no third party to complete the transaction they do not accommodate fiat money. Hence, fiat money must be held in an off-chain custodian account, then converted to a cryptocurrency that is held at the wallet of the buyer/investor. A trusted stable coin would remove the need to hold fiat money in a custodian account and allow for an even more efficient transaction.

2.4.7 Limitations of Tokenized bonds

Transparency vs privacy: a limitation that derives by the public blockchains themselves. It is still unclear if the way forward will be on a completely decentralized and public blockchain like Ethereum or through private blockchains. It remains to be seen whether private blockchains will be able to address the problem of information asymmetry public blockchains are supposed to be addressing. Past issuance of bonds used different blockchain technologies:

Issuer	**Daimler AG**	**Russian Sberbank**	**Austrian Government**	**BBVA (partner with MUFG & BNP Paribus)**	**Societe Generale SFH**	**World Bank[1]**	**Santander**
Date	28 Jun 2017	18 May 2018	2 Oct 2018	7 Nov 2018	18 Apr 2019	24 Aug 2018, 16 Aug 2019	12 Sep 2019
Blockchain	Private Ethereum	Hyperledger Fabric	Permissioned Ethereum	Hyperledger & Rinkeby testnet (Ethereum)	Ethereum public	Private Ethereum	Ethereum public
Issuance	1-yr bond bond	Commercial bond transaction	Notarization of auction of government bond	Syndicated loan	5-yr covered bond	2 tranches of AUD-denominated bond "Bond-i", raising US$108m total	bond
Amount raised	US$111m	US$12m	[illegible]	[illegible]	[illegible]	US$108m	US$20m

Debt issuances on blockchain[23]

Regulatory restrictions: unfortunately, tokenized bonds suffer from an uneven regulatory environment. Encouraging though is that most regulatory authorities are working on regulatory sandboxes opting to develop comprehensive security token working frameworks. Most recently in Germany The German Financial Market Supervisory Authority (BaFin) approved the first blockchain real estate bond (July 2019).

2.5. Collective Investment Schemes — Tina Balzli

2.5.1 Legal Considerations

2.5.1.1 Introduction

Generally speaking, collective investment schemes are assets raised from investors for the purpose of collective investment, whereby such assets are managed for the account of the investors, typically by a third party (art. 7 para. 1 CISA).

In the context of collective investment schemes in particular the following two scenarios can be differentiated:

- "Crypto Asset Fund": So-called crypto asset funds are collective investment schemes that (also) invest in crypto assets such as Bitcoin. For the most part, the existing fund regulations, in particular, the licensing requirements of the CISA, are applicable. When choosing the type of fund (i.e. securities funds, real estate funds, other funds for traditional and alternative investments), the legal restrictions regarding the permitted investments must be observed[24] .
- "Tokenized Fund": The term tokenized fund relates to conventional funds whose units/shares are recorded on the blockchain and, thus, issued in the form of Tokens that can be used as peer-to-peer instruments[25].

Given that the present subject matter of interest is Tokenization resulting in the issuance of security Tokens in Switzerland, the following legal considerations concentrate on the Tokenized Fund in the above sense. When analyzing the Tokenization of collective investment schemes from a legal perspective, one needs to differentiate between the four possible forms

[23] Binance Research, Case Study: Santander's Latest Bonf Issuance on Ethereum", Binance, 19 Sept 2019 https://info.binance.com/en/research/marketresearch/img/issue18/Binance-Research-Santander-Bond-Issuance-Ethereum.pdf
[24] DLT Report p. 126 et seqq
[25] DLT Report p. 128

of collective investment schemes pursuant to Swiss law, i.e. the contractual fund, the SICAV, the SICAF and the limited partnership for collective investment (LPCI).

This CVA Paper does not address the potential tokenization of foreign funds and distribution in Switzerland.

2.5.1.2 Basic Considerations as per Possible Forms of Funds

2.5.1.2.1 Contractual Fund

The contractual fund (investment fund) is based on a collective investment agreement (i.e. fund contract) under which the fund management company commits itself to: (a) involving investors in accordance with the number and type of units which they have acquired in the investment fund; and (b) managing the fund's assets in accordance with the provisions of the fund contract at its own discretion and in its own name (art. 25 para. 1 CISA).
The fund contract is a tripartite contract concluded amongst a multitude of investors, the fund management company and the custodian bank. By subscribing and paying for a fund unit in a contractual investment fund, the investor merely acquires a claim against the fund management company for participation in the assets and returns of the investment fund. In contrast to the forms of collective investment schemes under corporate law, the investor does not participate in the fund assets or the fund management company as such on a corporate law basis.

Therefore, in the case of a contractual fund, the Tokenization of a fund unit results in the securitization and Tokenization of a mere claim against the fund management company. From a technical legal perspective, such claims can basically be securitized in the form of (a) certificated securities (paper based; art. 965 SCO); (b) uncertificated securities (digitized; art. 973c SCO); or (c) intermediated securities (meeting the additional requirements for intermediated securities; art.3 FISA).

According to the predominant doctrine, given their lack of physicality, Tokens are not deemed to fit into the concept of certificated securities[26]. At the same time, the additional requirements for intermediated securities (i.e. in particular the need to custody the underlying securities with a licensed custodian) will typically not be met. Tokens representing a claim such as fund units can, basically, qualify as uncertificated securities if their issuance as uncertificated securities is intentional and the blockchain performs the function of an uncertificated securities register[27]. For the applicable regulatory limitations see section 2.5.1.3 hereunder.

2.5.1.2.2 SICAV

The investment company with variable capital (SICAV) is a company: (a) whose capital and number of shares are not specified in advance; (b) whose capital is divided into company and investor shares; (c) for whose liabilities only the company's assets are liable; and (d) whose sole object is collective capital investment (art. 36 para. 1 CISA).

The formation of a SICAV is based on the provisions of the SCO regarding the formation of companies limited by shares, with the exception of the provisions regarding contributions in kind, acquisitions in kind and special privileges (art. 37 para. 1 CISA).
From a corporate law perspective, it is, basically, possible to issue the shares in a SICAV in the form of Tokens (for details refer to above Section 2.1). For the applicable regulatory limitations see, however, below Section 2.5.1.3.

[26] DLT Report p. 56
[27] DLT Report p. 58

2.5.1.2.3 Limited Partnership for Collective Investment (LPCI)

The limited partnership for collective investment is a partnership whose sole object is collective investment. At least one member bears unlimited liability (general partner), while the other members (limited partners) are liable only up to a specified amount (limited partner's contribution) (art. 98 para.1 CISA). Unless the CISA provides otherwise, the provisions of the SCO concerning limited partnerships apply (art. 99 CISA).

The securitization of memberships under company law is only possible where the law permits such. This is currently only the case for companies limited by shares and partnerships limited by shares[28]. Since the securitization of memberships in limited partnerships is not possible pursuant to Swiss corporate law, Tokenization is basically not possible in Switzerland from a legal perspective.

2.5.1.2.4 SICAF

The investment company with fixed capital (SICAF) is a company limited by shares pursuant to the SCO: (a) the sole object of which is the investment of collective capital; (b) the shareholders of which are not required to be qualified pursuant to collective investment schemes law; and (c) which is not listed on a Swiss stock exchange (art. 110 para 1 CISA). Unless the CISA provides otherwise, the provisions of the Code of Obligations concerning companies limited by shares apply (art.112 CISA).

From a corporate law perspective, it is, basically, possible to issue the shares in a SICAF in the form of Tokens. For the applicable regulatory limitations see, however, Section 2.5.1.3 hereunder.

2.5.1.3 Regulatory Practice

As we have seen, the recording of units/shares in collective investment schemes is, for the most part, possible from a corporate and private law perspective (except for the LPCI see, section 2.5.1.2.3). Notwithstanding this, FINMA is currently not inclined to deem collective investment schemes issuing their units/shares as Tokens as eligible for approval.

This is mainly due to practical considerations as well as the broader regulatory context. In particular, most fund units/shares of open-ended collective investment schemes are currently booked as intermediated securities, which is not practical from a DLT perspective (which is by essence distributed; cf. above section 2.5.1.2.1). Further, open-ended collective investment schemes (i.e. contractual funds and SICAVs) as well as SICAFs must dispose of a custodian bank from a regulatory perspective.

Amongst others, it is the regulatory duty of the (specially licensed) custodian bank to issue and redeem the fund units/shares. As Swiss collective investment scheme law currently stands, the function of the custodian bank cannot simply be substituted by the blockchain. And even if a custodian bank remains involved, the question is undecided under current law, whether the custodian bank can exercise its duties using the blockchain[29].

Given that DLT is still at an early stage in the area of collective investment schemes, the Swiss Federal Council has concluded that the need for an adaption of the law cannot be assessed at this stage[30]. Therefore, neither the Consultation Draft published on 22 March 2019 nor the message dated November 27th, 2019 does not include specific modifications to collective

[28] DLT Report p. 54
[29] DLT Report p. 128
[30] Explanatory DLT Report, p.10

investment schemes law and one can currently not foresee, when it will become possible to tokenize units/shares in Swiss collective investment schemes from a regulatory perspective.

2.5.2 Practical Considerations

Although, in practice, DLT is still at an early stage in the area of collective investment schemes, there is agreement that DLT also has potential in this field. The expectation is that DLT has potential of helping to improve the efficiency of nowadays quite burdensome unit settlement and register-keeping[31].

Before issuing Security/Asset tokens which may be requalified as collective investment schemes, Issuing Companies are recommended to always go thorough analysis of the applicable of CISA requirement before proceeding to the contemplated public offering.

2.6. Derivatives — Yanina Petrovskaya

2.6.1 Definition of Derivatives

Derivative financial instruments are contracts that derive their economic value from the fair value of an underlying as a benchmark (see art. 2 let. b FMIA). Assets such as equities, bonds and commodities or reference rates such as currencies, interest rates and indices may be provided as underlings (art. 2 para. 2 FMIO). Derivatives can be either a fixed, swap or option.

Derivatives can be issued as:

- certificated securities (traditional, paper-based);
- uncertificated securities (securitized rights without reference to paper) ; and
- intermediated securities (securitized rights without reference to paper in standardized form suitable for mass trading) (art. 2 (b) FMIA).

2.6.2 Tokens as Derivatives

In case value of token depends economically on another underlying asset and forward transactions, tokens can qualify as derivatives[32].

According to Federal Council report, tokens rather would not fit into the concept of certificated securities due to lack of physicality[33] and can be classified as uncertificated securities[34].

Uncertificated securities are according to legal definition rights with the same function as certificated securities (art. 973c Para. 1 SCO). In principle, all rights that can be securitized, including derivatives, can be issued as uncertificated securities. Derivative tokens can also be issued as intermediated securities.

Intermediated securities may be transferred by instruction of the account holder to the custodian and subsequent crediting to the securities account of the acquirer (art. 24 para. 1 FISA). No form is prescribed for the instruction. However, it is stipulated that the entry be performed by a custodian referred to in art. 4 FISA. The requirement of a central custodian is likely not easily reconciled with the blockchain as a decentralised register[35].

[31] DLT Report p. 128

[32] DLT Report p. 95
[33] DLT Report, p. 56
[34] DLT Report, p. 58
[35] DLT Report, p. 66

2.6.3 Requirements for Primary and Secondary Market

Requirements for issuing and trading of derivative tokens under the current legislation as well as under FINIA and FINSA (possibly entering into force on 1 January 2020) must be complied with.

2.6.4 Primary Market. Securities Dealer/Firm License and Prospectus

Under the current legislation any party that creates standardised derivatives itself that are suitable for mass trading and offers them publicly in the primary market for its own account or the account of third parties is considered under prevailing law as a derivatives firm and needs authorisation as a securities dealer[36].

Under FINIA, the professional creation of derivatives (in the form of securities) for public offering on the primary market will also be reserved to banks and securities firms – and thus to institutions subject to FINMA supervision (art. 12 let. b FINIA).
Currently, a prospectus publication is required for public offering of derivatives. Under FINSA derivatives most likely would fall under financial instrument (art. 3 let. a FINSA) as they constitute equity securities or debt instruments. The term "securities" in art. 3 letter b FINSA is identical to the term "securities" in FMIA and thus comprises certificated and uncertificated securities, derivatives, and intermediated securities that are standardised and suitable for mass trading.

Companies that issue tokens that can be classified as securities are issuers within the meaning of art. 3 letter f FINSA and must therefore comply with the duty to publish a prospectus in accordance with art. 35 et seq. FINSA. If these tokens are classified as financial instruments in accordance with art. 3 letter a FINSA, the Issuing Company is also an issuer within the meaning of art. 3 letter i FINSA. Issuers of financial instruments must in principal draw up a key information document[37].

2.6.5 Secondary market

The following rules are considered to be applicable[38]:

- Obligation to disclose shareholding;
- Public takeover offers obligation. This applies in case someone directly, indirectly or acting in concert with third parties acquires equity securities including derivatives which, added to the equity securities already owned, exceed the threshold of 33⅓% of the voting rights of a target company (art. 135 para. 1 FMIA);
- Insider trading (art. 142 para.1 FMIA) and market manipulation regulatory bans (art.143 para. 1 FMIA), which apply to all market participants.

FMIA does not explicitly answer the question whether derivative trading duties are applicable to derivative tokens. In any case, it is clear that, at present, they are not subject to either a clearing duty or a trading duty[39].
When derivative tokens are issued as **intermediated securities**, the following market conduct rules for secondary market are to be mentioned:

- Clearing duty for standardized OTC derivatives via central counterparties (art. 97 et seq. FMIA), subject to FINMA consent whether it should be applied to certain derivatives (art. 101 FMIA);

[36] DLT Report, p. 95
[37] DLT Report, p. 120
[38] DLT Report, pp. 110, 111
[39] DLT Report, p. 111

- Reporting duty to a trade depository authorised and recognized by FINMA (art. 104 et seq. FMIA);
- Risk mitigation duty for OTC derivatives that are not cleared via central counterparties (art. 107 FMIA);
- Platform trading duty via an authorised and recognised trading venue/ operator (art. 112 et seq. FMIA) subject to FINMA consent whether it should be applied to certain derivatives (art. 113 FMIA).

Such market conduct rules were intended to regulate traditional forms of exchange-traded and OTC derivatives. An illustration of this is the clearing duty. Counterparties in derivatives trading must use an approved or recognised central counterparty to clear derivatives that are not traded via a trading venue (art. 97 FMIA). In a fully decentralised DLT or blockchain system, however, central clearing seems to run counter to the nature of the system[40].

2.7 Titles Representative of Property — Raphael Baumann

Tokenizing objects such as art, real estate, precious stones, classic cars and valuable watches is the goal of various Swiss-based companies. The idea behind property tokenization is that for each token, the token holder receives a **co-ownership right** over the underlying object. In some projects, the shared use of the objects is the primarily goal whilst in other projects, a further increased value of the object is the main emphasis.

According to the SCC, co-ownership exists where several persons own a quota of an object which is physically undivided (art. 646 para. 1 SCC). Unless otherwise stipulated, they are co-owners in equal measure. Therefore, it is important to stipulate that each token represents a quota of the underlying object. FINMA basically qualifies such tokenized objects according to its guidelines as being asset tokens. As long as the token is merely evidence of an ownership right of the token holder, the token generally does not qualify as being a security.

When tokenizing property, a distinction must be made between movable and immovable property.

2.7.1 Immovable property

The tokenization of immovable property, such as a co-ownership rights of a real estate itself, is not feasible under current Swiss law. The acquisition of immovable property must be recorded in the land register. The registration process is formalistic and requires a contract, which must be executed as a public deed. Therefore, an informal transfer of the token does not lead automatically to the transfer of the co-ownership right of a real estate. It cannot be guaranteed that the token and the co-ownership right could be transferred at once within one transaction.

Nevertheless, there are other possibilities to tokenize immovable property. Companies or funds can be the owner of the immovable property and potential investors can buy or subscribe for shares and/or participation certificates which can be tokenized. In addition, tokenized loans or bonds are basically feasible to allow a buyer to purchase real estate.

Form a regulatory prospective, such model are likely to be qualified as collective investment schemes by FINMA as soon as a link to an immovable property or to a real estate portfolio and a redemption claim of the token holder exists. It should be noted that the third-party management of the real estate portfolio is, in itself, an indication of a collective investment scheme. In this case, FINMA generally assumes that a licensing requirement as a collective investment scheme exists.

[40] DLT Report, p. 96

2.7.2 Movable property

The tokenization of movable property such as a co-ownership right of a classic car or a collection of art is not possible under current Swiss law. As long as the token itself evidences a co-ownership right of the token holder, such an object-backed token generally does not qualify as a security, but as a mere evidence of possession.

Rights in rem such as movable property cannot be represented by a token, nor transferred by way of a title. Only transfers of possession by way of inscription in a DLT register is however feasible under current Swiss law[41].

From a regulatory perspective, this presupposes that (i) an ownership right and not merely a contractual claim to the underlying object exists, (ii) the transfer of the token results in the transfer of the respective possession.

The third-party management of the tokenized object needs to consider that before issuing an object-backed token, some rules regarding use and administration (the "**Rules**") should be implemented and every token holder needs to accept those Rules before buying the object-backed token. It is important to grant the third-party management as much flexibility as possible in order to establish an efficient management and administration. Each future acquirer of such token is bound to these Rules by law.

It shall however be noted that as soon as third-party management exists, there is a risk of qualification of the model by FINMA as a collective investment scheme.

Since each token holder is only entitled to an arithmetical quota of the underlying asset, the "token balance" of a token holder in relation to the total number of tokens issued, corresponds to the proportional entitlement to the underlying asset.

The Rules shall define the transfer of tokens from one holder to another as an order of possession within the meaning of art. 924 para. 1 SCC. By agreeing on the Rules, all token holders agree that the indirect transfer of possession is feasible. In application of art. 924 para. 1 SCC, this leads to the fact that with the transfer of tokens the indirect ownership of the corresponding co-ownership quota and thus also the ownership thereof passes to the purchaser (art. 714 para. 1 SCC).

3. Issuance of Security/Asset tokens (Primary market)

3.1 Civil law aspects — Marcel Hostettler

In its ICO Guidelines dated 16 February 2018, FINMA mentions that "market participants themselves remain responsible for evaluating and complying with other obligations especially under civil law (…)".

From a technical point of view, a Security/Asset token is a data unit registered on a DLT. From a legal point of view, a Security/Asset token is not a materialization of a specific right in terms of securities law but represents an underlying in the form of an entry on a DLT protocol. The most prominent underlying are uncertificated securities (section 3.1.2) and global certificates (section 3.1.3). Intermediated securities (section 3.1.4) may be structured in a way that a synchronization between an underlying and a token becomes obsolete.

[41] Message relating to framework conditions for DLT/Blockchain, p. 45

3.1.1 Security/Asset token do not qualify as certificated securities

Pursuant to art. 965 SCO, a certificated security is any instrument to which a right attached in such a manner that it may not be exercised or transferred to another without the instrument. Thus, in order to be qualified a certificated security, (i) there must be a physical deed (ii) evidencing a right, and (iii) the link between the right and the deed must be so close that the right cannot be enforced without the physical deed. Due to their digital nature, it is disputed among scholars whether Security/Asset token can be qualified as certificated securities in the sense of art. 965 SCO.

3.1.2 Uncertificated securities

According to art. 973c SCO, the following formal requirements for the creation of uncertificated securities must be met: (i) there is no securitization (ii) there is an authorization of the issuer or depositor or this is provided for in the Articles of Association or terms of issue and (iii) entry in a register of uncertificated securities. In addition, a provision in the Articles of Association for the issuance of shares in the form of uncertificated securities and the issuance of corresponding Security/Asset token is required.

In contrast to certificated securities (section 3.1.1), uncertificated securities do not require a physical deed. The law does not specify the form of register for uncertificated securities but requires the number and denomination of the issued uncertificated securities must be entered in such a register. Further, uncertificated securities must be allocated to the respective beneficiary in the register. These conditions can be fulfilled in a DLT structure. Instead of using DLT as the register for uncertificated securities, it possible to rely on separate (traditional respectively physical) register and Security/Asset tokens can be synchronized accordingly.

Structuring Security/Asset Token by means of issuing uncertificated securities is a pragmatic approach and is currently supported by highly recognized legal scholars. However, this option requires that the underlying uncertificated securities need to be associated with a token. Therefore, under the current law, the token itself does not itself qualify as uncertificated security and only represents a marker associated with the underlying security. By creating a “register uncertificated security” the new framework conditions for DLT/Blockchain will allow the token to be a title encapsulating the right.

3.1.3 Global certificates

Global certificates can be used, for example, to securitise participation certificates. Participants are entitled to a mathematical quota of this global certificate held in "modified" co-ownership. The participants can then transfer this share without any formal requirements by means of an ownership instruction. Such an instruction can finally be made by means of the transfer of the token representing the ownership rights. Pursuant to art. 973b para. 1 SCO, global certificates may be issued if an authorisation has been provided in the terms of issue, in the Articles of Association or by the consent of the depositors.

3.1.4 Intermediated securities

Intermediated securities are considered as the most dematerialized securities not only under Swiss law but also in most developed jurisdictions. Therefore, at first sight, intermediated securities seem to a suitable tool for DLT.

According to art. 6 of the FISA, intermediated securities are created (i) when a custodian accepts certificated securities for collective custody and credits them to one or more securities accounts, (ii) when a custodian accepts a global certificate for custody and credits the

respective rights to one or more securities accounts; or (iii) when a custodian registers uncertificated securities in the main register and credits the respective rights to one or more securities accounts. According to FISA, only supervised institutions such as CSD, banks, broker dealers, fund management companies as well as SNB and Swiss Post qualify as custodians.

In contrast to uncertificated securities and global certificates, intermediated securities can be designed in a way that a synchronization between an underlying and a Security/Asset token is not necessary and the Security/Asset token itself is the intermediated security. Therefore, this structuring option bears the least legal risks. However, the requirements for the creation of intermediated securities are challenging. Further, as ultimate custodian the involvement of a CSD is required.

It should be noted that the framework conditions proposed by the Federal Council will assimilate regulated DLT trading facilities to depositories. This implies that the fact of depositing "simple uncertificated securities" or "register uncertificated securities" by such depository will allow the creation of intermediated securities.

3.2 Regulatory aspects — Katharina Lasota Heller

As mentioned in the introductory paragraph, the regulation of Swiss financial markets is generally principle-based and technology-neutral. In the ICO Guidelines, FINMA described asset tokens as tokens that represent assets, such as participation in real physical undertakings, companies, or earning streams, or an entitlement to dividends or interest payments. In terms of their economic function, tokens are analogous to equities, bonds or derivatives[42].

3.2.1 Asset tokens as securities

Securities are standardised certificated or uncertificated securities, derivatives and intermediated securities that are suitable for mass standardised trading, i.e. they are publicly offered for sale in the same structure and denomination, or are placed with more than 20 clients, insofar as they have not been created especially for individual counterparties.
Tokens can be treated as securities if they – in their economic function – (i) represent an uncertificated security are (ii) standardised and (iii) suitable for mass standardised trading.

3.2.2 Cases of regulated STO

Issues and public offerings of securities generally do not require an authorization from FINMA. There are, however, cases when issues and/or public offerings of security tokens require a licence, namely in the following cases:

- Underwriting and offering tokens constituting securities of third parties publicly on the primary market, is, if conducted in a professional capacity, a licensed activity (art. 3 para. 2 SESTO);
- The creation of derivative products, as defined by FMIA, and their issue to the public on the primary market is regulated (art. 3 para. 3 SESTO);
- When issued tokens are similar in their function to collective investments schemes, the funds accepted in the context of an ICO are managed by third parties (art. 13 para 1 CISA.

The public acceptance of deposits is limited to licensed banks.

[42] https://www.finma.ch/en/news/2018/02/20180216-mm-ico-wegleitung/

Furthermore, it must be mentioned that, if issuing tokens is linked to a repayment obligation from the issuer, that token offering might be treated as accepting public deposits – an activity that is generally reserved for officially licensed banks.

One of the situations where there is no public deposit in place might be the issue of tokenised bonds in accordance with art. 1156 SCO (soon to be replaced by FINSA; more about it in section 2.4).

Other important exceptions are included in bank-related laws and are as follow:

- Under what is known as the Sandbox exception, it is possible to invest deposits received up to CHF 1 million within the sandbox. More details in relation to the Sandbox can be found in the FINMA Circular "Public deposits with non-banks"[43];
- FinTech Licence institutions are allowed to accept public deposits of up to CHF 100 million, provided that these are not invested, and no interest is paid on them. A further requirement is that an institution with a FinTech licence (legal persons under art. 1*b* of the BA) must be in the form of a company limited by shares, a corporation with unlimited partners or a limited liability company and must have its registered office and conduct its business activities in Switzerland.

3.2.3 Stable coins

From the beginning of the "age of tokens" there was an appetite to issue a means of payment that would make transactions faster, safer and cheaper, and less volatile. The blockchain technology, connected to stable values of various legal tenders, seems to be perfect for that purpose.

In September 2019, FINMA issued a supplement[44] to its guidelines related to the ICO Guidelines mentioned above.

From a legal point of view, many but not all 'stable coins' confer a contractual claim against the issuer on the underlying assets (known as the redemption claim) or confer direct ownership rights. Depending on the specific purpose and characteristics of 'stable coins', different financial market laws can apply, a short schedule of applicable regulations based on the economic function of stable coins is presented below:

Coin – economics	**Indicative supervisory classification (in addition to anti-money laundering legislation)**
1. Linked to a *fiat currency* / *cryptocurrency* with a fixed redemption claim	Deposit under the banking law
2. Linked to a *basket of fiat currencies* / *cryptocurrencies* with a redemption claim dependent on price development	Management of the currency basket and risk-bearing: • for the account of the issuer: deposit under banking law • for the account of the token holder: collective investment scheme
3. Linked to a *commodity* (incl. "bank precious metals") with a contractual claim	Bank precious metals: deposit under the banking law

[43] https://www.finma.ch/en/news/2019/06/20190627-mm-rs-fintech/
[44] https://www.finma.ch/en/news/2019/09/20190911-mm-stable-coins/

	Commodity: security and possibly derivative
4. Linked to a *basket of commodities* (incl. "bank precious metals") with a redemption claim dependant on price development	Collective investment scheme
5. Linked to *commodities* (incl. "bank precious metals") with ownership rights	No prudential licensing requirement
6. Linked to *real estate* with a redemption claim dependent on price development	Collective investment scheme
7. Linked to *specific security* with a contractual claim	Security and possibly derivative
8. Linked to *basket of securities* with a redemption claim dependent on price development	Collective investment scheme

3.2.4 Communication with FINMA

Generally, in all cases of issuing security tokens, a previous clarification with FINMA is highly recommended.

If there is already a general legal evaluation of the case, it is possible to ask FINMA for confirmation.

If the legal opinion states that the intended STO does not require a licence from FINMA – a request for confirmation in the form of a non-action letter is also highly advisable.

There are various ways of contacting FINMA. In relation to enquiries about banks, securities dealers, financial intermediaries, collective investment schemes, insurance companies and insurance intermediaries, asset managers and unauthorised institutions, FINMA advises using the following email address: questions@finma.ch

FINMA answers short questions by email. However, in the event that comprehensive feedback or a non-action letter is required, FINMA will provide a longer statement for a fee. The fees are included in an Ordonnance about collection of fees by FINMA accessible through following link: https://www.admin.ch/opc/de/classified-compilation/20080355/index.html In any case, one needs to take into hourly fees between 10 and 500 CHF.

3.2.5 Offering of STO – requirements related to a prospectus

Security tokens can currently be issued in accordance with art. 652 a ff SCO (tokenised shares) or art.1156 ff. (tokenised bonds) SCO. As from 2020, stricter requirements for a prospectus under art. 35 et seq. FINSA will apply.

The most important obligations, according to art. 35 et seq. FINSA, are (a) the obligation to publish a prospectus and (b) the obligation for the prospectus to have a specific content and information.

There are some exceptions, but the obligations relating to publishing the prospectus will always apply when the addressees of the prospectus are not qualified investors, if the number of at least 500 investors is exceeded and (c) if the value of CHF 8 Mio is exceeded within the time frame of 12 months.

3.3 Compliance Requirements — Jürg Baltensperger

Security token offerings (STO) differ substantially from the issuing of payment or utility token. Since the rules set in place for securities apply for security token as well, an established regulatory framework is in place already. The key challenges are therefore, if it comes to an STO, not to define the applicable rule set itself but the implementation of the respective regulation in an efficient way.
Firstly, it is relevant to clarify whether an issuer of Security token is a regulated financial intermediary. If it is classified as a bank for instance, the regulation for issuing securities as a bank apply coming along with the respective compliance requirements such as AML and sanctions screening. Professional issuance of token classifies as derivative firm and a securities dealer license from FINMA (SESTO Art. 3 para 3) is needed. Concerning compliance regulations, it therefore depends what kind of license or membership (for instance a membership with a self-regulatory organisation SRO) is applicable.

The pure issuance of Security token itself does not fall under AML and sanctions duties as stated in the FINMA guidance dated February 16th, 2018. However, the Swiss Banking Association recommends in its guide from August 2019 that issuer of security token shall follow compliance regulation in any case irrespective whether they are classified as financial intermediaries according to AMLA art. 2. If cooperating with a bank as partner, the Issuing Company might be forced to fulfil the respective regulation in order to be accepted as customer. The reason for is the banks duty to select, instruct and observe third parties and therefore banks are taking an increased risk in case an issuers business does not meet compliance regulation.

The purpose of compliance by meaning anti-money laundering, terrorism financing prevention as well as sanctions screening is to protect the financial industry from criminal activity. Since a financial intermediary is not an investigation authority, its competences are limited. Reasonable grounds to suspect money laundering or terrorism financing are therefore sufficient to trigger a reporting duty to the Money Laundering Reporting Office Switzerland MROS. In addition, if assets are deriving from a person listed on a sanctions list, a reporting duty to SECO might be given and the relationship with the customer shall be reviewed for potential money laundering and terrorism financing activities.

In order to fulfil these duties, the respective people as well as the assets involved have to be analysed and matched with sanctions lists as well as searched for indicia for money laundering and terrorism financing.

Assuming an issuer of security token falls under AML/sanction regulation or decided to fulfil these requirements voluntarily, the following tasks shall be undertaken:

- Identification of the investor;
- Identification of the beneficial owner (if differing);
- Sanction screening of all people involved;
- Establishing the source of funds used to purchase Security Token.

In addition, investors shall be risk classified and, in case of a high-risk exposure, an enhanced due diligence performed.

The information gathered shall be assessed and the assets reported in case of reasonable grounds that assets involved are deriving from a crime or a sanctioned person is involved.

In the future, the on-going discussion about a zone of lower identification duties or a zone of no-identification below certain thresholds is key. If a risk-based approach with relations to compliance risks shall apply, low risk investors as well as low amounts may be treated in a simplified way. If not, we risk slowing down the development of the token economy.

3.4 Technological aspects — Patrick Salm

3.4.1. Introduction

Digital Assets are an evolving, non-uniform asset class characterized using distributed ledger technology or similar technology.

Digital Assets may constitute native units of value that do not include or represent any claim against an issuer or another third party. Where such units are intended or used for payment purposes and do not qualify as nor represent securities or other financial instruments, they are referred to as payment tokens in Switzerland (“Payment Token”) or (pure) cryptocurrencies ("Cryptocurrencies"). Other types of Digital Assets may grant a right of use to a digital service, platform or infrastructure (“Utility Token”), or constitute a hybrid form of Digital Assets, including Cryptocurrencies (“Hybrid Token”). These types of Digital Assets are not part of the discussion hereafter.

On the other hand, Digital Assets may constitute or represent a form of traditional, non-traditional or exotic financial instruments including shares, bonds, fund units, structured products or derivatives (referred to as “Asset Token”).

Depending on their specific structure and depending on the rules of various jurisdictions, Digital Assets may, irrespective of the terminology used by an issuer or other involved parties, qualify as securities (“Security Token”) or other forms of financial instruments, with the associated legal and regulatory consequences, in particular if they are suitable for investment purposes.

While based on DLT, Digital Assets may be subject to centralization effects, e.g. due to concentration of ownership of issued/pre-mined units with the issuer, another single party or a small number of related or unrelated parties, or due to concentration of network functions such as node operation or transaction validation with a single party or a small number of related or unrelated parties. This may cause Digital Assets to display characteristics of centrally issued instruments and/or may result in potentially detrimental effects for parties other than those participating in or having any effect on the concentration of ownership or network functions.

With regards to the new framework conditions for DLT/Blockchain proposed by the Federal Council, the major novelty is the definition of the technical requirements of the uncertificated securities register (Art. 973d para. 2 SCO):

1. Power to the creditors (token holders), but not to the Issuing Company, to dispose of their rights by technical means;
2. Integrity of the register shall be protected by appropriate organizational and technical measures preserving it from any unauthorized medication, being specified that the common holding of the register by numerous independent participants shall be considered as an appropriate organization and technical measure to ensure integrity;
3. The content of the rights, the functioning of the register and the registering agreement are kept within the register or in a documentation which is associated to it;
4. The register allows the creditors (token holders) to consult the information and the inscriptions of the register concerning them and to verify the integrity to the content of the register concerning them without the intervention of a third party.

3.4.2. Key properties for the issuance of Asset Token

The Asset Token industry is currently at its nascent stage, in which many token issuance providers are trying to reshape the financial ecosystem. Some of the players have proposed their own token standard (e.g. Polymath: ST-20[45], Harbor: R-token[46], Securitize: DS Protocol[47], TokenSoft: ERC-1404 Simple Restricted Token[48]). However, none of the security token proposals has achieved broad acceptance yet. The transition from traditional assets to tokenized assets involves a set of requirements from both, technical and regulatory perspective. As a minimum requirement, a tokenized version of a financial assets should be able to demonstrate these three key properties on the blockchain[49]:

1. The virtual representation of the asset ("Underlying Asset")
   a) Wrapped Asset Token
      A token may **represent** one or part of one financial instrument, not changing the nature of the security. In such case, tokens to be issued act as **marker** only ("association" of existing securities with digital tokens).
   b) Substitute Asset Token
      A token may also **replace** one or part of one financial instrument by converting them into tokens. In such case, the ownership rights of the securities holder will be determined on the record of the tokens on a public-, private-, or sidechain.
2. The identity of the Asset Token owners ("Ownership of the Asset");
3. The set of regulatory and compliance rules governing the ownership and transaction of the asset ("Compliance Rules of the Asset").

3.4.3. Type of protocols to issue Asset Token

Asset Token can be issued on various blockchains. The protocols can broadly be divided into three main categories:

1. Token issuances on a public blockchain
2. Token issuances on a sidechain of a public blockchain
3. Token issuances on a private blockchain

3.4.3.1. Issuance of Asset Token on a Public Blockchain

Currently, the most advanced Asset Token issuance platforms are building their solutions on top of public blockchains, with Ethereum being still the most utilized blockchain. However, more and more companies are choosing Tezos to issue their security tokens. Enterprises such as tZERO, Alliance Investments, BTG Pactual, Dalma Capital, Elevated Returns, Securitize, and more have announced a significant amount to be deployed on the Tezos blockchain[50]. Most of the token platform providers are operating as centralized entities and working with third parties for the onboarding of investors (KYC and AML) such as Onfido or IDnow.

Advantages of token issuances on a public blockchain:

+ Accessible for everyone;
+ Most secure and transparent;
+ Significant developer community;

[45] https://github.com/PolymathNetwork/polymath-core
[46] https://harbor.com/rtokenwhitepaper.pdf
[47] https://medium.com/securitize/introducing-ds-digital-securities-protocol-securitizes-digital-ownership-architecture-for-4bcb6a9c4a16
[48] https://erc1404.org/
[49] https://hackernoon.com/should-there-be-a-blockchain-for-security-tokens-4efc877ce044
[50] https://coinfomania.com/security-tokens-on-tezos-higher-demand/

+ Framework standards (e.g. CMTA) and security token standards (e.g. ERC-14xx family, ST20 etc.) are available for everyone;
+ Tokens on the same blockchain are generally interoperable (e.g. ERC-20).

Drawback of token issuances on a public blockchain:

- Risks of 51% attack, hard fork, network congestion, dusting attack etc. (see glossary for detailed description);
- High burden for compliant token offerings (e.g. AML risk due to usage of pseudonyms);
- High risk of front running due to full transparency;
- No enterprise-grade architecture, especially “middleware” and frontend applications (Infura, IPFS, MetaMask etc.);
- No regulatory compliant trading facility for Asset Token as of today.

Example implementation of an Asset Token issuance (smart contract features)

The Capital Markets and technology association (CMTA) has proposed an extension to the ERC20 token standard in accordance with its Blueprint for the tokenization of shares[51].

a) CMTA20 reference implementation[52]

The CMTA20 token is an ERC20-compatible token, which extends the ERC20 interface with the following functions:

1. *Set Contact (Shareholder’s Data)*
   Sets the contact point (such as an email address) for shareholders to contact the token issuer.

2. *Set / Retrieve Identity (Shareholder’s Data)*
   Allow a shareholder to set his own identity on chain and to retrieve the encrypted binary string that represents the identity of a shareholder. For privacy reasons, it is recommended that the identity is cryptographically protected (e.g. encrypted and signed).

3. *Freeze / Unfreeze Transfer (Token Admin)*
   Freeze the token transfers and unfreeze the token transfers. This function can be used for either an individual address or all token transfers to be paused ['unpaused']. The freeze/unfreeze function for all token transfers is useful in case of a "hard fork" of the blockchain to wait for a decision of the issuer which version of the blockchain will be supported. The ability for the issuer to freeze a single address is to prevent it from engaging with transactions. This function will pause or freeze trading on an individual user while an investigation is in process.

4. *Issue Token (Token Admin)*
   Create tokens or issue additional tokens will increase the total supply of tokens allocated to the issuer's address. This function is meant to be used when the total number of shares increases, or when the issuer decides to tokenize shares previously issued in a different form (e.g. in the form of paper certificates).

5. *Redeem Token (Token Admin)*
   Redeem share token on the owner address.

6. *Reassign Token (Token Admin)*

[51] www.cmta.ch/standards
[52] https://github.com/CMTA/CMTA20

Reassign tokens from an original address to a replacement address without increasing the total supply of token. Tokens are pulled from the original address and transfer to the replacement address. This function may be used when the investor loses access to his account or to avoid the decrease total supply function, in case the issuer intends to retire certain specific tokens while preserving the underlying shares [e.g. because the issuer wishes to issue the relevant shares in certificated form]).

7. *Destroy Token (Token Admin)*
   Destroy tokens from address holding it. Tokens will be sent to owner address that will have to call redeem to destroy the tokens.

8. *Set Rule Engine (Optional)*
   The rules are defined through an (optional) rule engine (e.g. to verify if a transfer is authorized). CMTA does not provide a rule engine implementation.

b) <u>OpenZeppelin implementation used in CMTA20</u>

1. *Renounce Ownership (Ownable)*
   Renounce the ownership of the token. This change cannot be reverted, and the token will not be able to be administered anymore.

2. *Transfer Ownership (Ownable)*
   Transfers the ownership of the token to a new owner.

c) <u>Other reference implementations</u>

1. *Create / Revise Whitelist Rule*
   Configurable whitelists to have a custom set of requirements with regards to sending/receiving tokens

2. *Add / Remove an Address to Whitelist*
   An address can be added or removed to a whitelist.

3. *Approve / Reject Transfer*
   The ability for the issuer to review every single transaction before it executes on the blockchain.

4. *Message to Issuer*
   Allows the issuer to verify that an investor is in control of the address (e.g. for a Private Key Control Procedure).

5. *Token Divisibility*
   This function defines the decimals that they can only represent whole numbers (as opposed to real numbers). In the context of the Ethereum blockchain, tokens must have a decimal place set to zero (meaning that splitting into a fraction of a token is not possible).

d) <u>Possible use case</u>

1. *Dividend and other corporate actions*
   A snapshot of the token holders to be taken at a point in time. Subject to compliance with withholding tax obligations, dividends may be paid to investors (push) or investors to be asked to come in and withdraw their dividend payments (pull).

2. *Flowback prevention*
   Each jurisdiction has its own whitelist. Rules would be configured to prevent investors in one whitelist from trading with investors in another.

3. *Investigating a token holder or transaction*
   The issuer would have the ability to pause or freeze trading on an individual user while the investigation is in process. This is done by moving their Ethereum address into a whitelist that prevents sending and receiving of tokens. Finally, the token can be revoked (if necessary).

4. *Lost or stolen private key*
   The issuer would first freeze the investor's Ethereum address (by moving it to a restrictive whitelist). Then the investor would be asked to whitelist another Ethereum address, whose private key they control. This new Ethereum address would be added to the appropriate whitelist. The issuer would then revoke the tokens from the investor's old Ethereum address and send it to their newly whitelisted address.

3.4.3.2. Issuance of Asset Token on a Sidechain

A sidechain is a separate blockchain that is attached to its parent blockchain using a two-way peg that enables interchangeability of assets between the pegged protocol and the sidechain. As both Bitcoin and Ethereum have limiting factors affecting network performance, scalability and transaction throughput; sidechains have been designed to fix those issues. Liquid is the most prominent sidechain, developed by Blockstream[53], a Bitcoin technology leader, initially as inter-exchange settlement network linking together cryptocurrency exchanges and other financial institutions to enable faster and more confidential Bitcoin transactions. Recently, Liquid Securities[54] was introduced for the issuance and distribution of privacy focused Asset Token, meaning that details of a transaction, including the type of asset and amounts, are kept hidden by default. At the same time, issuers and investors can selectively share information with auditors and other interested parties using a special sharing key. Other noteworthy sidechains are POA[55] and Plasma[56] on Ethereum and RSK[57] on Bitcoin.

Advantage of token issuances on a sidechain:

+ Lower burden for compliant Asset Token issuances (adaptable compliance rules) while still accessible for everyone;
+ Native privacy to keep financial data safe by implementing confidential transactions (to prevent front running);
+ Reorganisation of the chain not possible (fork-resistant);
+ Fast and final settlements.

Drawbacks of token issuances on a sidechain

− Not completely decentralized, governed by federation members;
− Lower level of network security compared to public blockchains;
− Widespread adoption not reached yet.

[53] https://blockstream.com/
[54] https://docs.blockstream.com/liquid/technical_overview.html#security-tokens
[55] https://www.poa.network/
[56] https://plasma.io/
[57] https://www.rsk.co/

3.4.3.3. Issuance of Asset Token on a Private Blockchain

A private blockchain is an invitation-only network governed by a single entity. Entrants to the network require permission to read, write or audit the blockchain. Different levels of access and roles exist that can be encrypted to protect commercial confidentiality. As financial institutions and institutional investors aim for privacy; either a sidechain with privacy features or a private protocol such as Corda or Hyperledger is the preferred solution.

Advantage of token issuances on a private blockchain:

+ Low burden for compliant Asset Token issuances (build-in compliance features);
+ Improved scalability and privacy without risk of a hard fork, dusting attack etc.;
+ Nodes are composed of a network of known player (e.g. financial institutions);
+ Identity management in most private blockchains integrated.

Drawbacks of token issuances on a private blockchain

− Much initial effort needed to create a new protocol (requires time and cost for infrastructure);
− No existing developer community, applications and tools at the start of a new protocol;
− Only approved members have access to the network;
− Security gaps due to lack of developer community;
− Lack of interoperability with other protocols;
− Lack of transparency due to closed network.

4. Trading of Security/ Asset tokens (Secondary market)

4.1 Civil Law aspects — Marcel Hostettler

Transferability of Security/Asset Token is a highly important topic. As mentioned in section 3, the issuance of Security/Asset Token is currently being performed by relying on (i) uncertificated securities, (ii) global certificates and (iii) intermediates securities. Each of these structuring options have different requirements for enabling secure and efficient trading.

As soon as Security/ Asset Tokens become negotiable on a large scale, meaning standardized and suitable for mass trading, they become “negotiable securities” within the meaning of Art. 3 let. b FINSA and, as a consequence, subject to financial markets regulation and FINMA surveillance[58].

4.1.1 Uncertificated securities

A sustainable association between the underlying and Security/Asset token is only guaranteed if the transfer of the Security/Asset token also leads to the transfer of the uncertificated security:

Uncertificated securities are relative rights and are transferred according to the rules for the assignment of claims. Pursuant to art. 973 para. 4 SCO, the transfer of uncertificated securities requires a written declaration of assignment. Neither simple written form nor qualified electronic signature are practicable in a DLT-based system. Therefore, Security/Asset token cannot be transferred by way of written declaration.

[58] See. Message from Federal Council relating to the framework conditions for DLT/blockchain, Nov. 27, 2019, p. 30-31, https://www.newsd.admin.ch/newsd/message/attachments/59302.pdf

Receivables can also be transferred within the framework of a transfer of contract instead of by assignment. According to the Federal Supreme Court, the transfer of a contract is not subject to the written form requirement of assignment. Since a contract can be transferred without form with the consent of all parties, an individual claim can also be transferred without adhering to any form requirement.

According to teleological considerations, simple written form serves to document the claim against the debtor who is not a party to the transfer of the contract. The written form in the case of an assignment is therefore not intended to protect against haste, but rather serves to inform the debtor and to legitimize the claim against the debtor; If, however, the debtor is included as a party in the transfer of the contract, the requirement of simple written form pursuant to art. 165 para. 1 SCO ("tripartite transfer agreement") does not apply.

Since the consent of all parties involved (i.e. assigning creditor, acquiring creditor and debtor) is required for the transfer of a contract, according to the Federal Supreme Court the principle of freedom of form of contracts according to art. 11 para. SCO takes precedence over the provision of art. 165 para. SCO which focuses on a disposition without the involvement of the debtor.

In its report about DLT (p. 62ss) and in the recent message of the Federal Council relating to framework conditions for DLT/Blockchain (p. 46), the Federal Council reached the conclusion that, pursuant to current law, it is already possible to transfer a right by an expression of will that takes the form of a token.

In a nutshell, uncertificated securities can be synchronized with Security/Asset token in a way that they can be transferred on a DLT without adhering to any written form requirements.

4.1.2 Global certificates

The STO terms shall state that each party agrees that any future transfer of Security/Asset token(s) to him or her will result in the transfer of possession and ownership of the relevant co-ownership interest in the global certificate. In addition, by transferring the Security/Asset token(s), he or she confirms to transfer the indirect possession and ownership of the respective co-ownership of the global certificate to the recipient of the Security/Asset token(s).

In order to prevent co-ownership interest in the global certificate from being transferred to the acquirer without the corresponding Security/Asset token(s) being transferred, this must be excluded in the Terms by stating that ownership of the respective co-ownership may only be transferred by the transfer of Security/Asset token(s).

Global certificate is a very solid and secure option for structuring Security/Asset tokens.

4.1.3 Intermediated securities

According to art. 24 et seq. and art. 29 FISA, the transfer of intermediates securities does not require a written form and the acquisition in good faith is protected.

FISA does not yet assume a decentralized financial market: For the creation and transfer of intermediated securities, FISA requires a regulated financial services provider as custodian (see section 3.1.4). This issue could be addressed by embedding the custodian to the DLT platform as a node.

4.1.4 Outlook

The introduction of so-called “register uncertificated securities” and thus the electronic registration of rights is planned, and the SCO is likely to be adapted accordingly to the framework conditions for DLT/Blockchain proposed by the Federal Council. These “register uncertificated securities” can only be created and transferred – without adhering to any form requirements - via a secured register. The prerequisite is that the parties who are entitled and obligated have agreed to the registration in a DLT-based register (by accepting "Terms of issue").

4.2 Regulatory aspects — Delphine Forma

The main goal of current regulations is the protection of market participants and treating investors equally and fairly.

As of today the trading of “asset tokens” on the secondary market is regulated mainly by the FMIA which defines three types of trading institutions:

- **Stock exchanges** defined as “an institution for multilateral securities trading where securities are listed, whose purpose is the simultaneous exchange of bids between several participants and the conclusion of contracts based on non-discretionary rules”;
- **Multilateral Trading Facilities (MTF)** defined as “an institution for multilateral securities trading whose purpose is the simultaneous exchange of bids between several participants and the conclusion of contracts based on non-discretionary rules without listing securities”;
- **Organized Trading Facilities (OTF)** defined as an institution for multilateral or bilateral trading in securities and *other financial instruments* based on discretionary or non-discretionary rules.

It should be noted that to operate an OTF, the applicant must be a bank, a security dealer or an existing trading venue, at the difference of an MTF and Stock Exchanges. Only the OTF allows the direct participation of retail customers. Indeed, only securities dealers, parties subject to FINMA supervision, foreign participants authorized by FINMA and SNB can participate in a MTF and Stock Exchange.

It is thus crucial for the applicant to clearly defines its business model before applying to any kind of license, including, but not limited to bilateral or multilateral trading, type of assets tradable (securities only versus other instruments), discretionary or non-discretionary rules, custody or not, direct settlement or not, type of clients to onboard, issue of own financial instruments, proprietary trading, market making.

In order to be able to get such a license the applicant will have to comply with all the duties set in the FMIA and FMIO which includes, among other things, organisation and management, risk management, fit and proper business conduct, outsourcing, business continuity, minimum capital requirements, operation of IT systems, documentation and storage duties, avoidance of conflicts of interests, compliance with relevant AML regulations, compliance with market manipulation and insider trading rules, orderly trading, transparency of trades, reporting. These duties also include the obligation to identify the beneficial owner.

The OTF license allows the holding of tokens in the form of intermediated securities only for trading. The applicant can maintain securities accounts for the trading of its customers and own securities accounts for proprietary assets.

None of the above license allows to take deposits from the public without a banking license. Indeed, under art.5 para. 3 of the BO "Credit balances on client account of securities dealers (…) which solely serve the purpose of settling client transactions, provided that no interest is paid on them and that they are not client accounts of securities dealers, i.e. their settlement takes place within 60 day" are no considered as deposits from the public.

The FINMA Circular 2008/3 defines the application of this provision in further details: "the purpose of such accounts is to maintain the necessary liquid funds to settle the client's business. The rapid turnover (i.e. maximum 60 days) and limitation of the volume of such funds is ensured by the interest ban applicable to such funds. Securities dealers are not restricted by the 60-day period when settling client transactions". However, under art. 5 al.3 para.c BO, foreign exchange traders who maintain accounts for investment in various currencies for their clients are not to be covered by the exception. If engaged in similar activities, cryptocurrency dealers shall also not be covered by the exception.

Another aspect which should be considered is whether or not the applicant would like to operate as a central custodian and be involved in post-trading (e.g central depositories, securities settlements systems). Indeed, if the business model includes offering accounts administration and holding crypto currencies in pooled accounts, the Banking Law regulations may also apply, and a Banking license or the Fintech (so-called "Light Banking license") might be necessary.

The issue of a CSD may arise also if the applicant is the first custodian who registers the token as intermediated securities. Also, if the applicant plans to offer custody and accounts for customers, a broker dealer license will be required. The question of being qualified as a securities settlement system, definition which includes CSDS and CCP is particularly relevant in case of multilateral trading (not for bilateral as the counterparty to the trade will always be the application).

In order to solve all these potential issues, the Swiss Federal Council has proposed the introduction of a new category of license by amending the FMIA and FMIO, the "DLT license". This license will allow the participation of both retail and regulated participants, the trade of both securities and non-securities tokens on a multilateral basis with no discretionary rules, trading and post-trading activities. However, the trade of derivatives and possibly privacy coins will not be covered.

The DLT Trading Facility is described in more detail in the Consultation Draft as "an institution for the multilateral trading in *standardised DLT securities*, the purpose of which is the simultaneous exchange of bids between several participants and the conclusion of contracts based on non-discretionary rules (proposed new art.73a FMIA)".

The DLT Trading Facility licence type is intended to be a unified licence allowing also for the provision of certain post-trading services normally reserved to other financial market infrastructures pursuant to the FMIA, notably central custody / depository services as well as clearing and settlement.

4.3 Compliance Requirements — Jürg Baltensperger

4.3.1 Background

Whenever assets are transferred from one party to another, there is an inherent risk of a money laundering or terrorism financing. In order to protect the global financial system as well as the society from the negative impact deriving from money laundering and terrorism financing, asset transfers are regulated.

Since such transfers are taking place internationally, an approach based on country levels does not mitigate the risks sufficiently. Therefore, a worldwide consistent regulation is required. On an international level, it is the FATF as a sub-organisation of the OECD that is issuing global guidelines. A risk-based approach is used and these guidelines (so-called recommendations) are to be implemented in the legal framework of the FATF member countries.

The FATF also included the transfer of token into their regulatory framework. Token are called virtual assets and the respective service providers, such as for instance exchanges, are amongst the classic examples of a VASP.

It does not make a substantial difference whether a token is classified as a payment token (such as Bitcoin) or an asset / security token with an underlying. In both cases, values are transferred and therefore include a risk of criminal activities.

4.3.2 Current regulation

The focus of the FATF lays on VASPs that shall be regulated in each member country. Particularly relevant if it comes to asset / security token transfer are exchanges. Exchanges shall be registered and subject to a license including anti-money laundering (AML) obligations.

Crypto exchanges domiciled in Switzerland have been ever since subject to regulatory requirements. For purely payment token exchanges, a membership with a self-regulatory organisation (SRO) is sufficient. However, the AML rules applying are almost identical to the current regulation for securities dealers. The level of reviews during the application process as well as the level of supervision however differs. In addition, there are particular simplifications for very small VASPs regulated by an SRO.

In case security / asset token shall be exchanged, a securities dealer license provided by FINMA is mandatory. This process is more intense and requires more resources in terms of time and costs.

Key compliance obligations of exchanges are the identification of the participants of an exchange as well as their counterparties. In addition, the source of assets transferred, and the reason of transfers shall be established and documented for specific transfers based on a risk calculation.

Identification is a key requirement since players shall be matched with international sanctions list in order to identify exposed participants. The background of transfers is supervised in order to detect potential involvement of criminal activities. However, the competences of VASPs in this regard are limited so that transaction monitoring is based on a plausibility check of the picture provided by the customer as well as public sources.

In case of reasonable grounds for money laundering, a report to the Money Laundering Reporting Office must be submitted.

4.3.3 Implementation

It is key that the implementation of these requirements is efficient, and risk based. Otherwise, the development of the token economy may be stifled. On the other hand, if transfer of values is not sufficiently regulated and controlled, the token economy risks becoming a platform for criminals undermining the current defence mechanism against money laundering and terrorism financing.

On the first sight, the regulatory approach in Switzerland seems appropriate since it is mainly based on the established regulation for financial intermediaries and banks. Although, there are a few challenges left if it comes to virtual assets.

If the DLT used is a public blockchain, transaction history is – on a no-name basis – fully transparent. In the meantime, there are several established service providers on the market, analysing the transaction history of virtual assets for negative exposure. Are assets deriving from the darknet or coming from tainted wallets, an alert will be created. This allows the VASP to assess the risks even in a more precise manner than in the old world of asset transfer. On the other hand, the person involved in the transfer remains anonym. It is very difficult to prove the beneficial ownership of virtual assets since the opening of a wallet does usually not include identification. What is missing in this regard is a system comparable to SWIFT that automatically delivers the names involved in an asset transfer. **FINMA clearly stated that, as long as no such system is in place, an alternative process has to be used**. There are methods to cover this requirement. However, it is often a manual, inefficient and time-consuming process that does not match with the idea of a new, efficient and customer friendly way of transferring values.

Furthermore, virtual assets are transferable internationally in a very fast, simple and cheap manner. Therefore, the risks are even higher than the risk of transferring physical cash. Cash needs at least to be moved physically including the risk of theft, destruction or loss. Physical asset transfer is in addition very time consuming. The extreme pace of international virtual asset transfer possibilities shows a great potential to overburden current controlling mechanism.

Switzerland's set-up is considered as token friendly although certain requirements are surprisingly strict. The principle-based regulation of FINMA allows for instance an online and video identification of customers. This very helpful option opens doors for an efficient implementation of identification requirements. Unfortunately, after the identification is completed, a bank transfer is needed in addition. Whereas a credit card payment in UK is sufficient, this extra-rule in Switzerland creates a lot of additional burden. Furthermore, FINMAs silence concerning threshold leads to insecurity whether a risk-based approach as outlined by the FATF will be accepted or not.

In order to summarise, compliance for asset / security token is still a great challenge. In particular, the area of OTC transactions is completely missed out since the focus lays on exchanges only. However, it is very important to draw the line between a legal part of the token economy and an illegal part instead of between the old world and the token economy. FATF made the first steps with its regulatory approach and FINMA with its implementation. More compliance challenges guaranteed.

5. Custody of Security/Asset tokens — Tina Balzli

5.1 Legal Considerations

5.1.1 Current Law

Pursuant to Swiss banking law, whoever accepts public funds (*Publikumseinlagen*) in a professional manner basically falls within the scope of the BA and requires a banking license. The scope of the notion "public funds" covers all liabilities vis-à-vis clients, subject to certain exemptions (cf. art. 5 para. 2 and 3 BO; for the exemptions from professionalism cf. art. 6 BO).

Already in 2014, the Swiss Federal Department of Finance stated that the acceptance of virtual currencies as private means of payment may qualify as deposited funds (*Publikumseinlagen*) in the meaning of the banking law if: (i) the client cannot dispose of the virtual currencies any time without the involvement of the custodian; (ii) the custodian has a repayment obligation to the client; and (iii) the accepted virtual currencies would be included in the bankrupt's estate custodian in the event of bankruptcy[59].

Conversely and pursuant to FINMA's practice, there is no deposit business at hand requiring a banking license if merely secure safekeeping is the purpose of transferring the balance, the latter is directly kept on the blockchain and can be individually allocated to the respective clients[60]. All of this is in line with the general insolvency law principle that segregation from the bankrupt's estate is at all only necessary if the custodian has exclusive actual power of disposal over the asset.

Nevertheless, whilst in the case of insolvency of a bank deposited funds in the form or virtual currencies will regularly fall into the bankrupt's estate, so called custody assets (*Depotwerte*) are segregated in favor of the client as a matter of banking law. Such custody assets include amongst others securities of the deposit clients (art. 16 BA). Therefore, to the extent that Tokens qualify as securities, the expectation is that they will be segregated in the event of insolvency of the bank.

5.1.2 Proposed framework conditions for DLT/Blockchain

Both the Consultation Draft and the proposed framework conditions for DLT/Blockchain include an extension of the relevant provision of the BA to also include crypto assets in the definition custody assets, if the bank is in a position to individually allocate them to a specific client.

This means that once the proposed amendment to the banking law (and insolvency law) is in force, all crypto assets, including virtual currencies (i.e. payment tokens), will clearly be taken out of the bankrupt's estate as a matter of law with beneficial implications on capital requirements. During the consultation of the proposed adaptation, it was generally observed that the requirement of the bank to individually allocate the crypto currencies to specific clients is impractical due to common sub-custodian set-ups.

5.2 Practical Considerations

While keeping own Tokens on own devices and wallet addresses is, possible without the need to require a banking license, the set-up of wallet providers needs to be scrutinized in order to decide whether it is subject to a license requirement or not. In the case of so-called non-custodian wallets, which are typically decentralized open source projects, the provider does

[59] FDF Consultation Report, p. 15
[60] FINMA Fact Sheet, p. 2

not have access to the private key of the user and therefore has no possibility to transact on the Tokens.

Consequently, providers of non-custodian wallets are typically not subject to a banking license requirement. Given that providers of so-called custodian wallets, however, have access to the private key of the user, they typically operate in scope of the banking regulation.

From a technical point of view and in very basic terms, specialized crypto custody providers use infrastructures that are either connected to the Internet, so-called “hot storage” or hardware devices, which are completely segregated from the Internet, so-called “cold storage”. Given its segregation from the internet, cold storage is supposed to offer enhanced protection against hacking attacks or other interference. To the extent that cold storage hardware devices are, e.g. additionally stored in a bunker, one uses the term “deep cold storage”, which adds an additional layer of security.

6. Framework Conditions for DLT/Blockchain — Biba Homsy

6.1 Civil law

The Consultation Draft and the message dated November 27th, 2019 tackle several fields of law to be amended (SCO, FINSA, DEBA, FINIA, FMIA, BA, etc.), rather than enacting a new law focusing on DLT. This approach and, in general, the proposed amendments have been welcomed by CVA.

During the consultation phase, CVA submitted its position paper, which can be summarized as follows:

In terms of the **SCO**, the Federal Council initially proposed a legal framework for DLT-based securities, which was technologically oriented. The introduction of a technological concept (such as DLT), would have made difficult to identify a uniform definition of the constitutive elements of DLT. CVA welcomes the fact that this technologically oriented concept of DLT-Securities has been removed from the Framework Conditions for DLT/Blockchain proposed by the Federal Council and replaced by the concept of “register uncertificated securities”, which allows the register to use any technology.

In addition, art. 973c para 4 SCO states that the transfer of uncertificated securities requires a written declaration of assignment. This was one of the central provisions that should also be amended in the current legislative process. CVA therefore suggested to add a sentence specifying that the written form was deemed to be respected when the transfer takes the form of a digital secured transaction, where the transaction register meets the requirements of a qualified digital ledger as stated in art. 973d SCO. This has been considered in the Framework Conditions for DLT/Blockchain by introducing art. 973f SCO which removes any form requirement.

In the its consultation position paper, CVA suggested to delete the second sentence of art.973c para 2, that requires that “the book is not open for public inspection” in order to allow involved parties to decide, at their own discretion, the concrete access specifics of these registers by private autonomous agreements. This point has been largely addressed by the new version of art. 973d SCO proposed by the Federal Council and should be welcomed as well.

In line with a more functional regulatory approach, CVA advocated that civil law should only define the minimum requirements of the register and should not leave it to the Federal Council to define the technical standards of the ledger. This has been considered by the Federal Council that limited the requirements of the register (art. 973d para. 2) and renounced to its competence to define the technical standards.

The framework conditions for DLT/Blockchain proposed by the Federal Council therefore sets the conditions for asset tokenization in a satisfactory way in terms of civil law, after having taken into account most of the comments/remarks from CVA.

6.2 Bankruptcy Law

In terms of the DEBA, there was - and still is - a practical need to clarify the treatment of crypto-based assets entrusted to a custodian in case of compulsory liquidation proceedings and bankruptcy of the latter. Whether digital assets entrusted to a third-party fall into the bankruptcy estate is primarily determined by the exclusive custody over the asset.

In the Consultation Draft, the Federal Council proposed to limit the segregation of crypto assets in the bankruptcy to crypto assets in a DLT register which could always be attributed to a third party. Concretely, this criterion prevented the custody of crypto-assets off-chain or in cold wallets. In the framework conditions for DLT/ Blockchain (art. 242a para. 2 b DEBA), the Federal Council extended the segregation of crypto assets in the bankruptcy to crypto assets which are held collectively by a custodian insofar the share of crypto assets of the third party are clearly defined. This opens the way for segregation of crypto assets in the bankruptcy of custodians which must be welcome (both in terms of calculation of own funds and in terms of client protection) and is in line with CVA position.

Conclusions/Recommendations — Florian Ducommun

A wide range of laws and regulations come into play when the tokenization of assets needs to be analysed from a legal, compliance and technological perspective. Through this publication, authors used their experience and expertise to try to highlight the main requirements and challenges and to define a process for Asset tokenization.

Here are the key takeaways to be considered by Issuing Companies:

1. **Respect a strict process for issuance of Security/Asset tokens**
   The steps set out in this publication are paramount to ensure that there is a good legal basis for the issuance of the tokens. The legal documentation required must be in place prior to the issuance of Security/Asset tokens.

2. **Prospectus requirement**
   The Prospectus is a key requirement for the issuance of Asset/Security tokens publicly through the internet. Its content (compliant with FINSO Appendices as of January 1st, 2020) needs to be accurate and thoroughly reviewed by specialists, since any inaccurate or misleading information contained in it will lead to the liability of the Issuing Company.

3. **Compliance**
   In order to know its investors/shareholders, the Issuing Company must comply with strict AML standards and follow an adequate internal audit function to ensure that compliance standards are in place and that these standards are maintained.

4. **FINMA ruling**
   As soon as the underlying could be qualified as a derivative or a collective investment scheme or that the securities are becoming tradable as negotiable securities in the meaning of Art. 3 let. b FINSA, it is recommended to obtain a ruling, respectively an authorization, from FINMA before issuing publicly/trading the Security/Asset tokens.

5. **Security Standards**
   It is central for companies to avoid any security breach with respect Security/Asset tokens. The Issuing Company shall therefore select carefully which technology it will be using to “tokenize” its securities or assets and use/follow the existing standards. In its choice, it is also recommended to anticipate the adoption of new technologies such as quantum computing that may overcome actual cryptographic barriers.

The processes of tokenization of assets put forward in this publication are intended to pave the way towards the tokenization trend, which is expected to become widely adopted with the introduction of a “Register uncertificated securities” and the DLT Trading Facility licence. These amendments are expected to really allow for greater digitization of capital markets for the benefit of the financial place, the innovative companies and the Swiss economy.