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Proposal for a Comprehensive (Crypto) Asset Taxonomy

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***Abstract*—Developments in the distributed ledger technology have led to new types of assets with a broad range of purposes. Although some classification frameworks for common instruments from traditional finance and some for these new, so-called cryptographic assets already exist and are used, a holistic approach to integrate both worlds is missing. The present paper[1] fills this research gap by identifying 14 attributes, each of which is assigned different characteristics, that can be used to classify all types of assets in a structured manner. Our proposed taxonomy, which is an extension of existing classification frameworks, summarises these findings in a morphological box and is tested for practicability by classifying exemplary assets like cash and bitcoin. The final classification framework can help to ensure that the various stakeholders, such as investors or supervisors, have a consistent view of the different types of assets, and in particular of their characteristics, and also helps to establish standardised terminology.**

I. Introduction

Since the inception of the Bitcoin network in the year 2009, the space for cryptographic assets has developed rapidly. The continuing technological innovation in the underlying distributed ledger technology could consequently lead to an increasing transformation of traditional financial markets into crypto-based markets. Although different asset classification frameworks exist for both worlds, a holistic approach merging both traditional finance and the crypto economy is still lacking. This poses a challenge to the various stakeholders such as investors or regulators in retaining an overview of existing assets of different types and, in particular, of their design and individual characteristics. In order to fill this lack of research, we propose a taxonomy for the systematic classification of all types of assets, be it of physical, digital or tokenised nature.

II. Literature Review

The characteristics and properties of the most common types of financial instruments such as stocks, bonds, and derivatives have been the subject of research for some time, not only in the academia, but also in the industry. Therefore, a wide range of publications exist that deal with the functioning of these different instruments in a structured way.

One framework defining the structure and format for the classification of financial instruments (CFI) was first proposed by the International Organization for Standardization (ISO) in the year 1997. The last revised version of the framework is called ISO 10962:2019 and was published by ISO in 2019. It seeks to provide a standard for identifying the type of financial instrument and its main high-level features in the form of specific codes consisting of six alphabetical characters, and should thus help to standardise country and institution-specific terminology in relation to financial instruments [1]. The first character of the CFI code indicates the main category of financial instruments. These include equities, collective investment vehicles, debt instruments, different types of derivatives, and others.[2] The second character of the CFI code indicates multiple subclasses in a given main category, called groups. Equities, for example, are divided into the groups common/ordinary shares, preferred/preference shares, and common/ordinary convertible shares, among other groups. The last four characters of the CFI code define the specific attributes of a financial instrument and depend on the group to which the asset is allocated. For financial instruments in the group common/ordinary shares from the "equities" main category, relevant attributes include voting rights, ownership, payment status, and form. These attributes come with predefined possible values that determine the final code of a financial instrument [1]. For other groups such as bonds from the "debt instruments" category, alternative attributes, e.g., the type of interest or guarantee, are of relevance.

A second framework for classifying financial instruments is proposed by Brammertz and Mendelowitz [2]. Their so-called ACTUS taxonomy is based on the specific nature of financial contracts and in particular on their cash flow profiles and seeks to create a global standard for the consistent representation of financial instruments. It distinguishes between financial contracts, which in turn are split into the subcategories of basic contracts and combined/derivatives contracts on the one hand, and credit enhancement on the other. Basic contracts consist of fixed income and index-based products, whereas combined/derivative contracts comprise symmetric financial products, options, and securitisation products. The second main category of the ACTUS taxonomy, i.e., credit enhancement, includes guarantee contracts, collateral contracts, margining contracts, and repurchase agreements. The standard is implemented on the SolitX platform with a technical API layer and DLT adapter for transaction systems and accounting, and in the AnalytX architecture for risk management analysis, simulations, asset and liability management, and business planning [3].

The standards proposed by [1] and [2] show that sophisticated classification frameworks for traditional financial assets exist, which are used in practice. For cryptographic assets, on the contrary, the characteristics of many tokens in various respects, for example in terms of regulation, utility or valuation, were and are still largely ambiguous and hard to measure. Several initiatives from governments, the academia, and the industry have sought to reduce these uncertainties

[1]Our research is part of the FinTech programme supported by Finnova, Inventx, Swiss Bankers Prepaid Services, and Swisscom.

[2]For a detailed description of each category, see [1].

by systematically structuring the hundreds of existing tokens based on predefined criteria.

The Swiss Financial Market Supervisory Authority (FINMA), for example, issued guidelines for enquiries regarding the regulatory framework for initial coin offerings in early 2018, in which it distinguishes between three types of tokens, i.e., payment tokens, utility tokens, and asset tokens, based on the underlying economic purpose [4]. Whether a particular token is a financial instrument and thus would be subject to certain laws and regulations depends on its economic function and the rights associated with it. Other jurisdictions, such as the European Union, Israel, Malta, and the United Kingdom, follow a similar classification approach, although their terminologies differ to some extent [5]. Additionally, some jurisdictions follow the approach that the three main types of tokens are not necessarily mutually exclusive. Rather, there are also hybrid forms that share characteristics of two or three main types. Accordingly, particular cryptographic assets could thus, for example, have certain characteristics of both payment and utility tokens.

In April 2019, the U.S. Securities and Exchange Commission (SEC) through its strategic hub for financial innovation, FinHub, published guidelines to determine whether a digital asset, which may be a cryptographic asset, is an investment contract, i.e. an agreement whereby one party invests money in a common enterprise with the expectation of receiving a return on investment. This assessment is done by applying the so-called Howey test. If an investment agreement exists, the digital asset is classified as a security and therefore U.S. federal securities laws apply and must be considered by issuers and other parties involved in, for example, the marketing, offering, sale, resale or distribution of the respective asset [6]. Other jurisdictions, e.g., Ireland, follow a similar approach of classifying cryptographic assets based on their qualification as a security [7]. However, the Howey Test is to be understood less as a classification framework but more as a decision aid as to whether a cryptographic asset represents a security or not.

An academically based classification framework for cryptographic assets, which goes beyond the legal perspective and also takes technological and economic aspects, among others, into account was carried out by Oliveira et al. [8]. By applying a design science research approach, including 16 interviews with representatives of projects with blockchain-based token systems, the paper derives a token classification framework for cryptographic assets that can be used as a tool for better informed decision making when using tokens in blockchain applications. Their final classification framework consists of the 13 attributes class, function, role, representation, supply, incentive system, transactions, ownership, burnability, expirability, fungibility, layer, and chain, each of which include a set of defined characteristics.

A similar framework was developed by Ballandies et al. [9]. The authors established a classification framework for distributed ledger systems consisting of a total of 19 descriptive and quantitative attributes with four dimensions (distributed ledger, token, action, and type). The attributes comprise the distributed ledger type, origin, address traceability, Turing completeness, and storage in the distributed ledger dimension, underlying, unconditional creation, conditional creation, transferability, burn, and supply in the token dimension, action fee, read permission, and actor permission in the action dimension, and fee, validate permission, write permission, proof, and type in the consensus dimension. The framework was derived from feedback from the blockchain community.

Three further classification frameworks for cryptographic assets that were strongly driven by the industry are those proposed by the consulting firm MME, the International Token Standardization Association (ITSA), and the Ethereum Enterprise Alliance (EEA).

The framework by MME was published in May 2018 and focuses on the legal properties and risk assessment of cryptographic assets. The paper's resulting classification is based on a token's function or main use, alongside other criteria such as the existence of a counterparty, as well as its type and/or the underlying asset or value. The final archetypes of cryptographic assets are native utility tokens, counterparty tokens, and ownership tokens, which are each subject to additional subcategories of token types [10].

The International Token Classification (ITC) framework by the ITSA comprises an economic, technological, legal, and regulatory vertical each containing a set of subdimensions with different attributes. The economic and technological verticals include three subdimensions each, which refer to a token's economic purpose, its target industry, and the way of distribution, and the technological setup, consensus mechanism, and technological functionality, respectively. The legal vertical includes the two subdimensions legal claim and issuer type, whereas the regulatory vertical focuses on assessing a tokens regulatory status in the US, China, Germany, and Switzerland. Over all verticals, a total of twelve subdimensions are defined, though ITSA plans to define further subdimensions in the future. Concerning the evaluation of these individual subdimensions, as of September 2019, the ITC framework already provided detailed information on four of the twelve subdimensions, namely for the economic purpose, industry, technological setup, and legal claim. The classification into these four subdimensions was compiled in a database covering more than 800 cryptographic tokens. Besides the classification framework and the corresponding database, the ITSA also introduced a nine digit unambiguous identifier for each token, the so-called International Token Identification Number, short ITIN [11].

The third industry-driven framework for classifying cryptographic tokens was published by the EEA in November 2019. Their proposed Token Taxonomy Initiative (TTI) distinguishes between five characteristics a token can possess. The first characteristic is the token type and refers to whether a token is fungible or non-fungible. The second characteristic, the token unit, distinguishes between the attribute of being either fractional, whole or singleton and indicates whether a token is subdivisible or not. The value type, as the third characteristic, can assume the attribute of being either of an intrinsic value, i.e., the token itself is of value (e.g., bitcoin), or a reference value, i.e., the token value is referenced elsewhere (e.g., tokenised real estate). Characteristic four, the representation type, comprises the attribute of being common or unique. Common tokens, on the one hand, share a single set of properties, are not distinct from one another and are recorded in a central place. Unique tokens, on the other hand, have unique properties and their own identity, and can be traced individually. The fifth and last characteristic is the template type and classifies tokens as either single or hybrid and refers to any parent/child relationship or dependencies between tokens. Unlike single tokens, hybrid tokens combine parent and child tokens in order to model different use cases. In addition, the TTI provides measures in order to promote interoperability standards between different blockchain implementations [12].

III. The (Crypto) Asset Taxonomy

Building on the literature review in Chapter II, this chapter proposes a holistic framework for the classification of assets. Unlike existing classification frameworks, our asset taxonomy aims to classify all existing types of assets, i.e., assets from both traditional finance as well as the crypto economy, based on their formal characteristics. Furthermore, the taxonomy introduces a terminology that is suitable for both traditional and the crypto assets. A morphological box is chosen as the methodological approach in order to be able to take the multi-dimensionality of the matter into account. The taxonomy is illustrated in Appendix A. In total, we identify 14 different attributes based on which all types of assets can be classified. They include claim structure, technology, underlying, consensus/validation mechanism, legal status, governance, information complexity, legal structure, information interface, total supply, issuance, redemption, transferability, and fungibility, with each attribute comprising a set of at least two characteristics. Note that certain attributes in the frameworks discussed in Chapter II subsume some of the attributes presented here. Hence, our 14 attributes factorize these superordinate attributes to make them universally applicable. Table I breaks down the 14 attributes in terms of their inclusion in the publications discussed in Chapter II. The first column shows the attribute labels of the taxonomy we propose. Column two to ten refer to the publications discussed, where an "x" indicates that the corresponding attribute is either explicitly or implicitly considered in the classification framework given in row one. Note that the terminology regarding a particular attribute differs across these publications, for example, because they focus on different types of assets. The terminology we propose generalises these terms to ensure compatibility across all types of assets, thus creating a common linguistic understanding. Also note that due to the extension of the taxonomy to traditional assets, some DLT-specific attributes/characteristics in the publications discussed are summarised or generalised, while new attributes/characteristics were added in order to enable the mapping of traditional asset types. Overall, Table I shows that each of the existing frameworks covers certain attributes determined by the specific focus or objective of the publication. The framework of FINMA [4], for example, focuses on regulatory aspects, and thus predominantly includes corresponding attributes, i.e., claim structure, legal status, and legal structure. Other frameworks, for example the one published by the EEA [12], focus more on technological aspects or the design of token features. Overall, none of the frameworks discussed in Chapter II covers the full range of formal attributes identified in our taxonomy. However, our taxonomy is generally confirmed by the existing literature, as each attribute is considered in at least one of the existing classification frameworks. The degree of agreement with the classification framework we propose varies, however. While the publication of ISO [1] covers four attributes of our taxonomy, the publications of Oliveira et al. [8] and Ballandies et al. [9] cover ten. There are also differences in coverage from an attribute perspective. While the underlying of an asset is of relevance in all frameworks analysed, the attributes information interface and fungibility are only covered by two. The taxonomy we propose therefore goes further than the existing classification frameworks, firstly because it is independent of the type of assets to be classified and secondly because it contains additional attributes and characteristics. Since some of these attributes and characteristics are not intuitively clear, they are explained in more detail in the following:

Claim structure: Does the asset represent a claim, i.e., a demand for something due or believed to be due [13]?

- No claim(s): The asset does not represent any kind of claim.
- Flexible claim(s): The asset represents certain claims, the possession or exercise of which can depend on certain conditions (e.g., catastrophe bonds).
- Fixed claim(s): The asset represents claims which can neither be restricted nor restrained under any condition (e.g., fixed income).

Technology: Which technology is the asset based on?

- Physical: The asset exists in a physical form (e.g., gold bullion).
- Digital: The asset exits in a digital form, but is not based on the distributed ledger technology (e.g., electronic share).
- Distributed ledger technology: The asset is based on the distributed ledger technology, structured either as a native

Table I: Coverage of the 14 attributes in existing classification frameworks

Attribute	ISO [1]	B.&M. [2]	FINMA [4]	O. et al. [8]	B. et al. [9]	MME [10]	ITSA [11]	EEA [12]
Claim structure	x	x	x	x		x	x	
Technology			x	x	x	x	x	x
Underlying	x	x	x	x	x	x	x	x
Consensus/Validation mechanism					x	x	x	
Legal status			x	x		x	x	
Governance				x	x	x		
Information complexity	x	x			x			
Legal structure	x	x	x			x		
Information interface					x			x
Total supply		x		x	x			x
Issuance		x		x	x			x
Redemption		x		x	x			x
Transferability			x	x	x	x		x
Fungibility				x				x

token, i.e., a token that is native to a specific blockchain, or as a protocol token, i.e., a token issued on an existing blockchain protocol [8] such as, for example, ERC-20 or ERC-721 tokens for the Ethereum blockchain.

Underlying: Which underlying or collateral is the asset's value based on?

- No underlying: The asset's value is not a derivative of an underlying asset (e.g., bitcoin).
- Company: The asset's value represents a stake in a company (e.g., equity).
- Bankable asset: The asset's value represents a bankable asset, i.e., an asset that can be deposited in a bank or custody account (e.g., fiat currencies).
- Cryptographic asset: The asset's value represents a cryptographic asset, i.e., an asset based on the distributed ledger technology (e.g., derivative of a cryptographic asset).
- Tangible asset: The asset is in a physical form [14] (e.g., real estate).
- Contract: The asset's value represents a contract (e.g., license agreement).

Consensus-/Validation-mechanism: How is the agreement on the finality (e.g., property rights or ownership transfer) of the asset reached?

- Instant finality: Consensus is final. Mechanisms that typically, but not necessarily, belong to the deterministic type are, for example, notary services or qualified written form.
- Probabilistic finality: Consensus is not final, but reached with a certain level of confidence. Mechanisms that typically, but not necessarily, belong to the probabilistic type are, for example, proof-of-work or proof-of-stake.

Legal status: What is the regulatory framework governing the asset?

- Regulated: There are regulatory requirements for the issuance, redemption and governance of the asset.
- Unregulated: There is no specific regulatory framework for the issuance, redemption and governance of the asset.

Governance: In which way is the asset governed?

- Centralised: The asset is governed by an authoritative party or consortium.
- Decentralised: The asset is governed without centralised control (e.g., certain types of cryptographic assets such as bitcoin).

Information complexity:[3] What type of information complexity is associated with the asset?

- Value: The asset represents a specific value (e.g., currencies).
- Contract: The asset encompasses conditional information in addition to its value (e.g., coupon bonds or DLT-based smart contracts[4]).
- Turing completeness: The asset is based on a Turing-complete («universally programmable») computational model (e.g., Ethereum).

Legal structure: What is the legal form of the asset?

- No legal structure: There is no legal structure governing the asset.
- Foundation: The asset is governed by a foundation/ trust structure.

[3]Note that the characteristics of this attribute build on each other, i.e., each characteristic contains additional information compared to the previous one.

[4]Note that such (smart) contracts, as in the case of bitcoin, are not necessarily based on a Turing-complete system.

– Note/bond: The asset is structured as a note or bond.
– Share: The asset is structured as a share.
– Other[5]: The asset has an alternative legal structure (e.g., central bank money).

Information interface: How does the asset receive and/or send relevant information?

– No interface: The asset has no kind of information interface.
– Qualitative: The asset manages relevant information indirectly through an authorised instance (e.g., general assembly).
– Quantitative: The asset manages relevant information from authorised sources automatically (e.g., IoT sources or oracle interfaces in the case of DLT-based smart contracts).

Total supply: To which limit can the asset be generated?

– Fixed: The total supply of the asset is fixed.
– Conditional: The total supply of the asset is dependent on predefined conditions.
– Flexible: The total supply of the asset is managed flexibly by authorised parties.

Issuance: How is the asset generated?

– Once: After an initial issuance, no additional units of the asset are issued.
– Conditional: Additional units of the asset are issued once predefined conditions are met (e.g., newly issued cryptographic assets through mining).
– Flexible: Additional units of the asset can be issued flexibly by authorised parties (e.g., increase in share capital).

Redemption: How is the number of outstanding assets reduced?

– No redemption: The number of outstanding assets cannot be reduced.
– Fixed: The reduction of the number of outstanding assets follows a predefined protocol.
– Conditional: The reduction of the number of outstanding assets is initiated once predefined conditions are met.
– Flexible: The reduction of the number of outstanding assets can be carried out flexibly by authorised parties (e.g., share buyback).

Transferability: Can the asset's ownership be transferred to another party?

– Transferable: The asset's ownership can be transferred to another party.
– Non-transferable: The asset's ownership cannot be transferred to another party, for example, by sale or giveaway (e.g., some types of registered securities).

[5]The characteristic "Other" subsumes the broad range of alternative legal structures for reasons of simplicity and practicability.

Fungibility: Can the asset be interchanged with another asset of the same type?

– Fungible: The asset is substitutable with another asset of the same type.
– Non-fungible: The asset is not substitutable with another asset of the same type (e.g., artwork).

IV. Classification Examples

This subchapter seeks to test the above-mentioned taxonomy with selected examples. First, the taxonomy is used to compare cash to bitcoin, as both are intended means of payment[6]. This comparison is followed by the classification of Ether, a utility token, Crowdlitoken, an asset token, CryptoKitties, and a traditional share.

A. Comparison between Cash and Bitcoin

As both cash and bitcoin follow the purpose of a means of payment, both assets share certain similarities (see Appendix B). Neither cash, in the case of a fiat money system, nor bitcoin have a direct underlying asset. The value of the two assets is rather based on the public's trust in the issuer of the currency or in the underlying technological protocol, respectively. There is also no oracle interface, i.e. no specific source that interacts (e.g., directly provides information) with cash or bitcoin. Since both assets are designed as cash equivalents, their units are transferable from one party to another and individual units are interchangeable. Besides these commonalities there are some significant differences. While cash represents a certain value which depends on the denomination, bitcoin is of contractual type as it is transferred via smart contracts in the Bitcoin-script which is not Turing-complete. Bitcoin is furthermore not subject to any type of legal claim and has no legal structure. In contrast, cash is regulated as legal tender under national law. Since cash is of physical form, consensus on its state is given deterministically by the owner of the asset. Bitcoin, on the contrary, is a digital representation of value based on the distributed ledger technology. It is the native token of the Bitcoin blockchain, the consensus of which is based on the proof-of-work mechanism and thus finality of the system is not guaranteed but only probabilistic. This implies a decentralised governance of the asset, which is in contrast to the centralised governance of cash by central banks. Both assets also differ in terms of their total supply as well as in their ways to manage the number of outstanding units. While the maximum supply of bitcoin is fixed at 21 million units, there is no such restriction for cash. The issuance of additional units of bitcoin is conditional on the mining of new blocks and reducing the number of outstanding units is not possible[7]. The issuance and redemption of cash, on the contrary, is handled flexibly by central banks.

[6]Bitcoin is often considered to be a store of value, but the original intention is to provide an alternative means of payment.

[7]It is possible to send units of bitcoin, or other cryptographic assets, to an address without a known private key, so that these units are no longer accessible. However, this does not reduce the number of total units in the system.

B. Ether

Ether (see Appendix C), which is classed as a utility token, is the native token of the Turing-complete Ethereum platform which is governed by the Ethereum Foundation located in the Crypto Valley. The token itself is unregulated. Although multiple decentralised systems which can act as a quantitative oracle interface for the platform exist, there are no legal claims and no underlyings associated with the token. Consensus on the Ethereum platform is, at the time of writing, achieved based on the proof-of-work mechanism, and therefore is of a probabilistic nature. As a consequence, the governance of the token is decentralised. Like with bitcoin, the issuance of Ether tokens is conditional on the creation of new blocks, i.e., when miners get awarded with newly mined units, and the destruction of existing units is not possible. However, currently the total supply of Ether is not limited. All Ether tokens are transferable between parties and are fungible.

C. Crowdlitoken

Crowdlitokens (see Appendix D) are classed as asset tokens and are tokenised real estate bonds, regulated under the existing law. They are issued on the Ethereum Blockchain under the ERC-20 standard and represent a contract including fixed claims (e.g., voting and interest payment). The token value is derived from the fundamental value of the issuing company, and only indirectly by its real estate portfolio. Due to the underlying distributed ledger technology, consensus on the state of the tokens is not final but only probabilistic. Crowdlitokens are structured as notes/bonds. They are governed in a centralised manner through a qualitative oracle interface since token holders are allowed to vote on changes proposed by the management. They can be issued and burnt (e.g., through token buybacks) flexibly by the corresponding company, implying a flexible token supply. The Crowdlitoken is both transferable and fungible, whereby only persons who have successfully completed the KYC/AML audits can subscribe to the bonds and exercise all rights relating to them.

D. CryptoKitties

CryptoKitties (see Appendix E), as the last example from the crypto space, are collectible digital representations of cats created on the Ethereum blockchain. The corresponding smart contracts can generate over four billion variations of phenotypes and genotypes (CryptoKitties, 2019). CryptoKitties neither represent claims against a counterparty, nor a specific underlying. They are non-fungible - every cat is unique - but transferable ERC-721 tokens, without any regulatory or legal governance. Although the front-end as a traditional web app is managed by the development team, the token's governance, e.g., ownership, is decentralised. Since consensus of the underlying Ethereum protocol is reached via a proof-of-work mechanism, the finality of the state of a CryptoKitties token is probabilistic. Also, there is no oracle interface related to CryptoKitties tokens. The creation of additional units is done by breeding two CryptoKitties, resulting in a new unique kitty, represented by a newly issued unique token, while destroying a unit is not possible. The corresponding smart contract allows for a total limit of around four billion cats that can be bred, implying a fixed total supply.

E. Traditional Share

Traditional shares (see Appendix F), as the one example from traditional finance, are either physical or digital in nature and represent a contract including fixed claims (e.g., voting and/or profit participation) against a counterparty, with its fundamental value also representing the underlying of the asset. Shares, as a legal form, are governed in a centralised manner and are subject to the existing law (e.g., national corporate law), with the general assembly of shareholders being the supreme organ of a stock corporation, i.e., acting as a qualitative oracle interface. Consensus on the state of a share is deterministically given by the share registry. The creation of new shares as well as the reduction in share capital, for example through share buybacks, is left to the general assembly of the corporation. As a consequence, the total supply of traditional shares is flexible. Shares are typically transferable, with exceptions such as restricted shares, and fungible, i.e., substitutable with other shares of the same company.

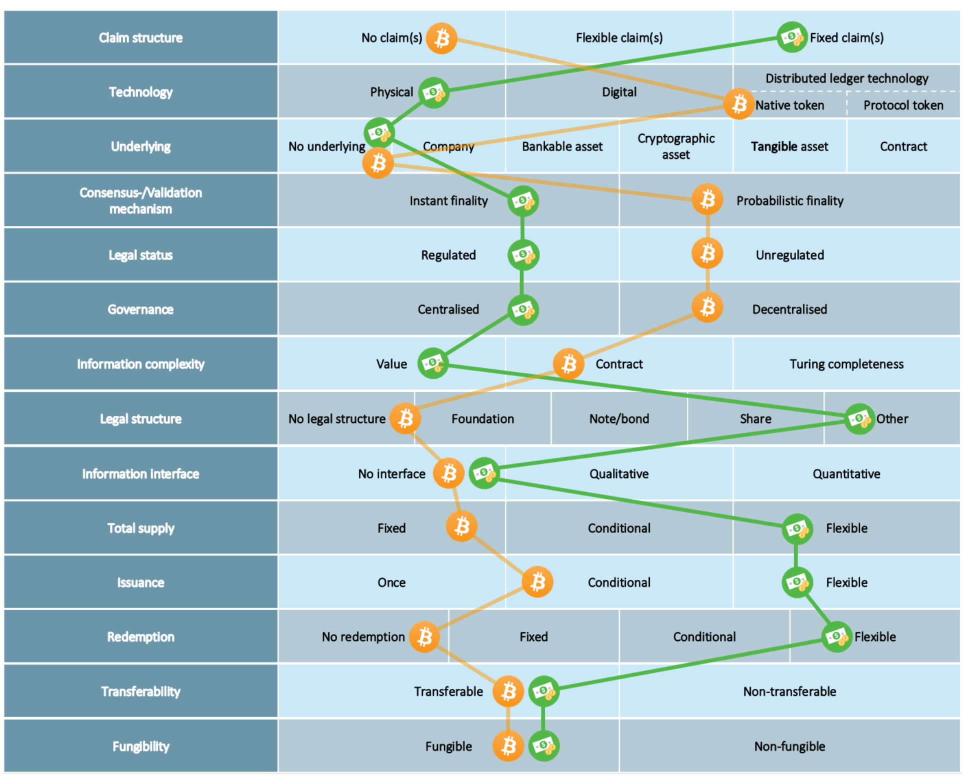
V. Conclusion

Various classification frameworks for traditional and cryptographic assets already exist and are applied in practice. However, a universal approach linking the two worlds has not yet been developed. In this paper we fill this research gap by proposing a taxonomy that extends existing classification frameworks. We identify 14 different attributes that are supported by the existing literature and by which each type of asset can be properly classified. These attributes include the claim structure, technology, underlying, consensus-/validation mechanism, legal status, governance, information complexity, legal structure, information interface, total supply, issuance, redemption, transferability, and fungibility. With the help of a morphological box, various possible characteristics that an asset can have are identified and assigned to these attributes. In this way, our taxonomy bridges the gap between physical, digital, and cryptographic assets, where sometimes the same asset can appear in all three forms, thus creating clear terminology. Thanks to the methodical approach, the individual attributes can be expanded or broken down at any level of detail without changing the overall framework. The classification of selected assets, such as cash and bitcoin, has also shown that the proposed taxonomy is applicable in practice. In a next step, the robustness and practical relevance of the taxonomy could be further tested, for example by interviewing experts in the field.

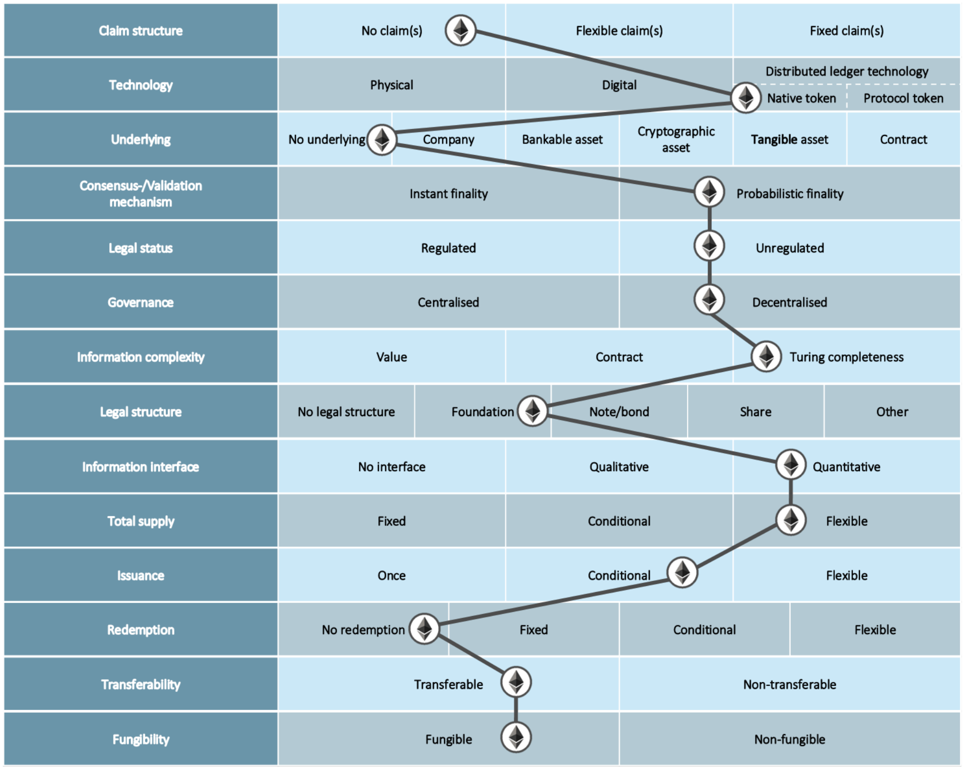
APPENDIX A
ASSET TAXONOMY

Claim structure	No claim(s)	Flexible claim(s)	Fixed claim(s)			
Technology	Physical	Digital	Distributed ledger technology: Native token	Distributed ledger technology: Protocol token		
Underlying	No underlying	Company	Bankable asset	Cryptographic asset	Tangible asset	Contract
Consensus-/Validation mechanism	Instant finality	Probabilistic finality				
Legal status	Regulated	Unregulated				
Governance	Centralised	Decentralised				
Information complexity	Value	Contract	Turing completeness			
Legal structure	No legal structure	Foundation	Note/bond	Share	Other	
Information Interface	No interface	Qualitative	Quantitative			
Total supply	Fixed	Conditional	Flexible			
Issuance	Once	Conditional	Flexible			
Redemption	No redemption	Fixed	Conditional	Flexible		
Transferability	Transferable	Non-transferable				
Fungibility	Fungible	Non-fungible				

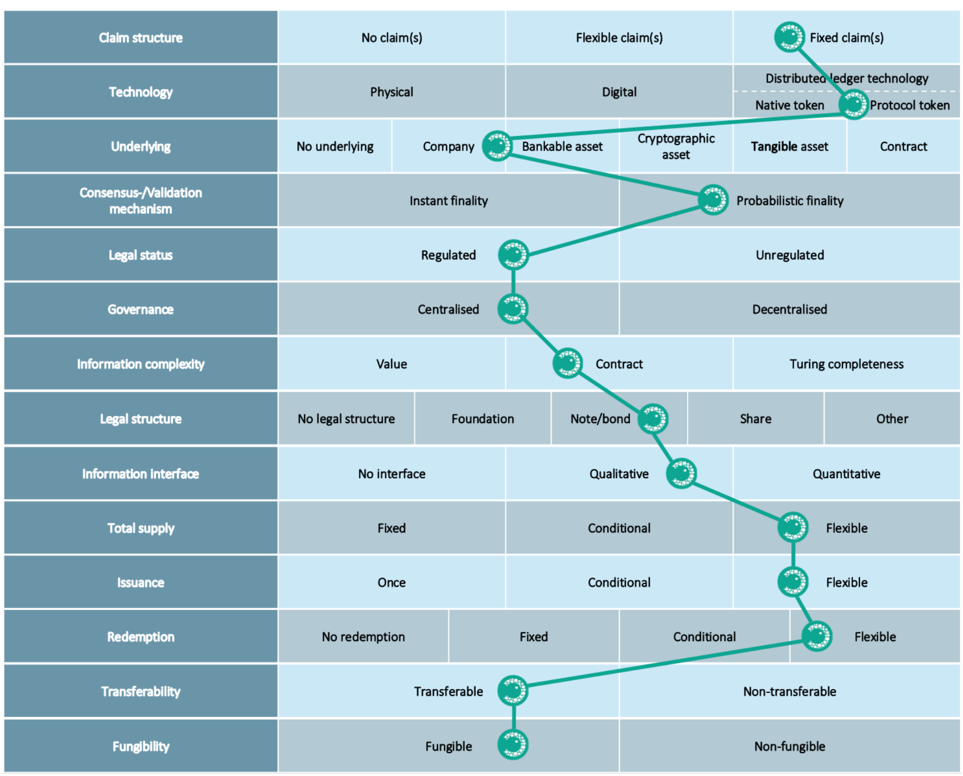
APPENDIX B
CLASSIFICATION OF CASH (GREEN) AND BITCOIN (ORANGE)



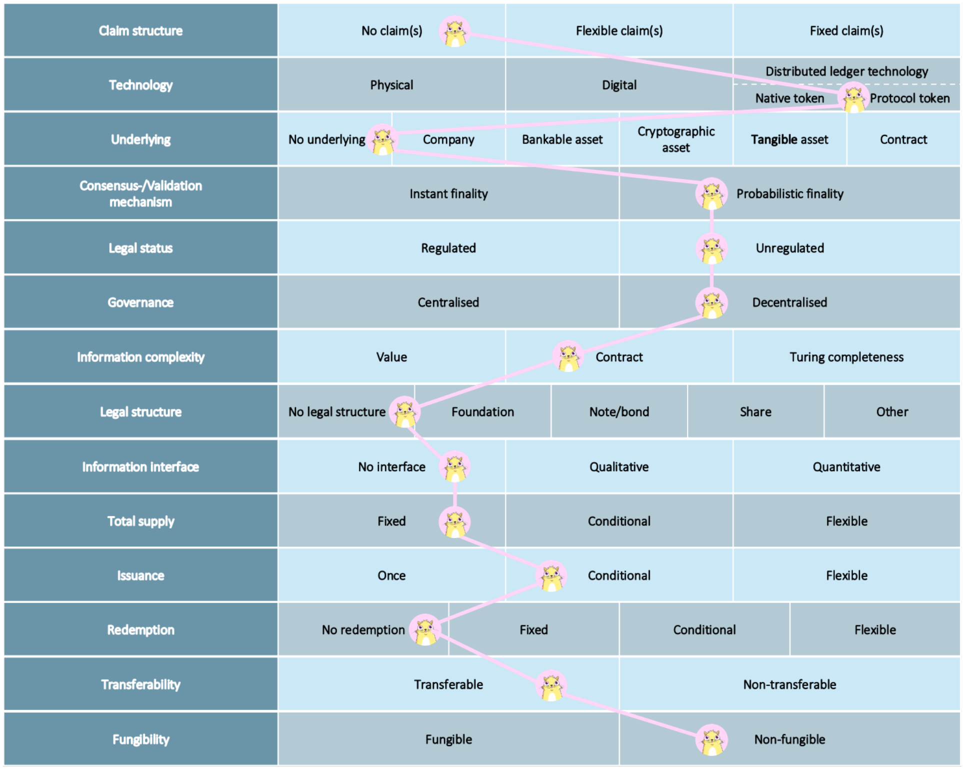
Appendix C
Classification of Ether



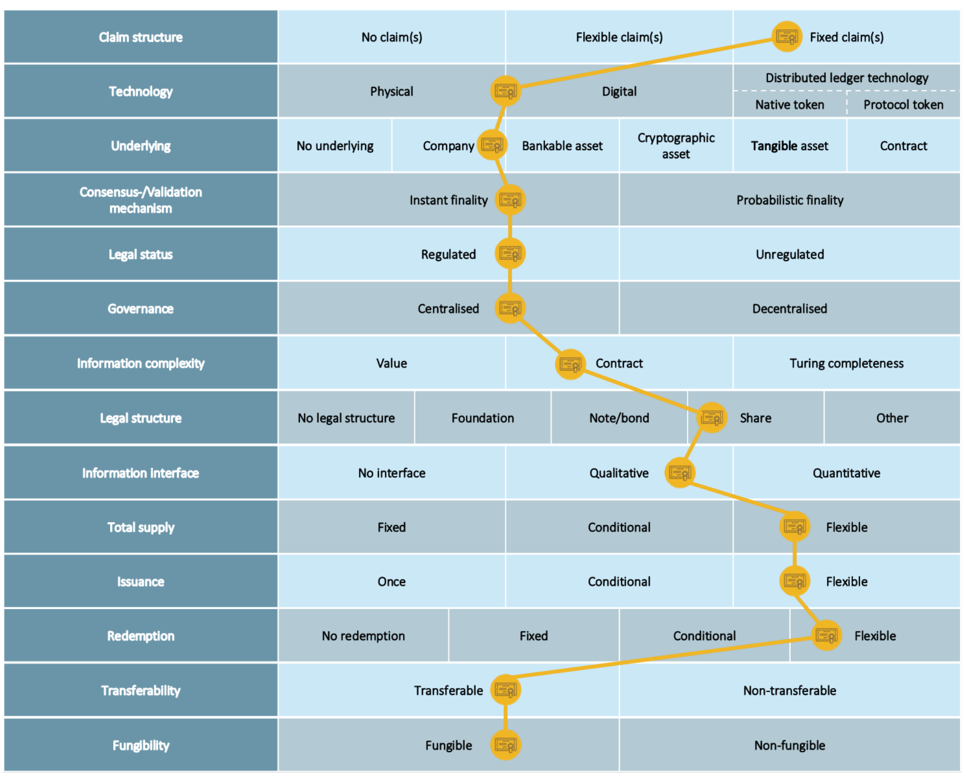
Appendix D
Classification of a Crowdlitoken token



Appendix E
Classification of a CryptoKitties token



Appendix F
Classification of a traditional share



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