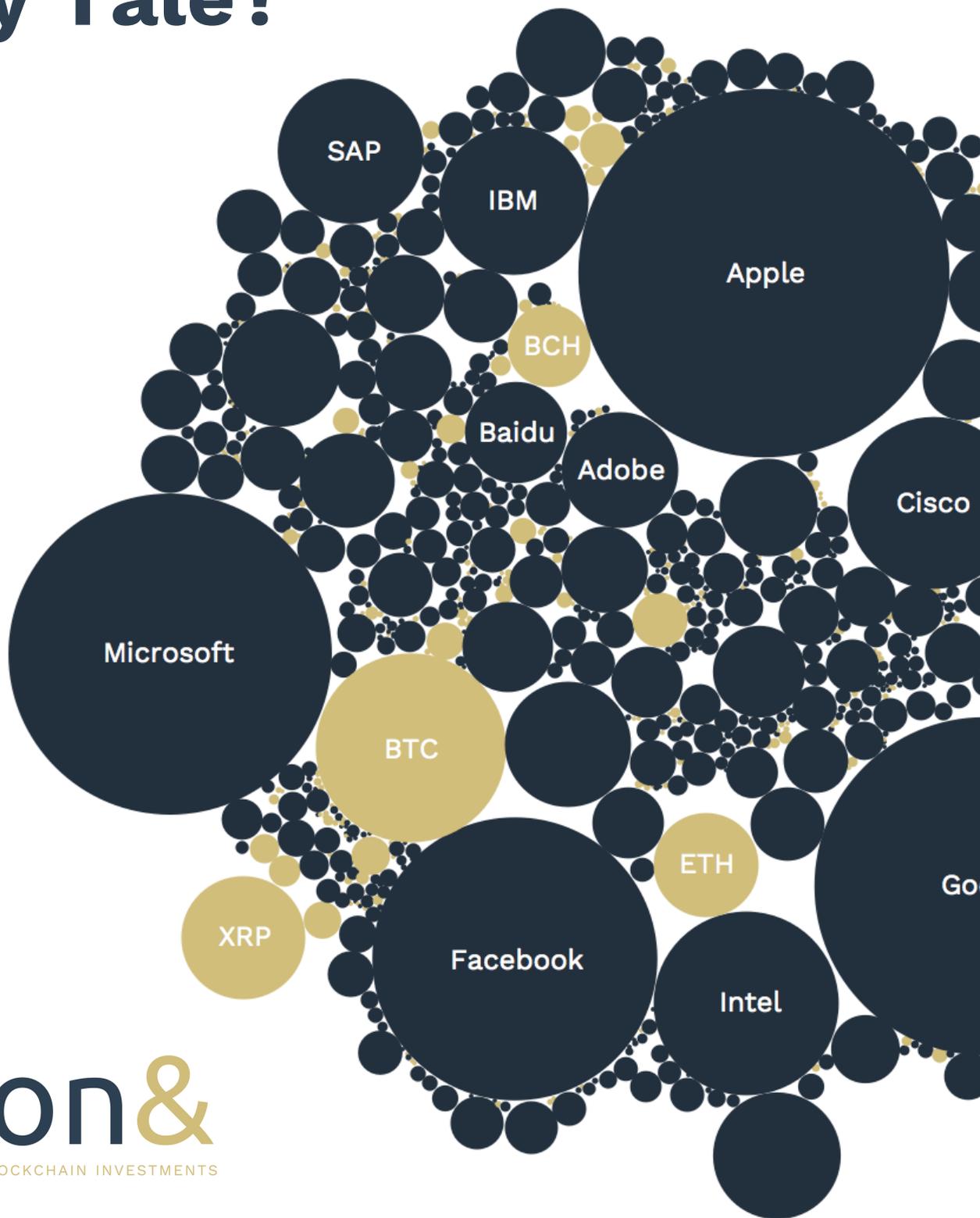


February 2018

# The Blockchain Story: An Overvalued Fairy Tale?



# A. Setting the Scene: Prince Charming, Snow White and the 1'382 Dwarfs

People ask us a lot “are crypto assets overvalued?”, “will we ever use crypto assets in real life?” or, a personal favorite, “should I still invest in crypto assets?”. We answer all of those questions with the quote best known by lawyers - “it depends”.

**It depends** because of the vast range of different crypto assets in the market. Crypto assets or crypto currencies are often equated with Bitcoin. However, as of today, 1'384 different crypto assets exist<sup>1</sup> and, as this study will highlight, they show very different characteristics. As they are not all actual currencies but are mostly based in some form on blockchain technologies or aim at developing such, we will call this entire universe of crypto assets the blockchain market.

Without spoiling the ending, just a glimpse on what you will read about in the upcoming pages: **We analyzed the blockchain market and illustrate how the coins can be classified, describe how the market developed over time, show statistics on the technologies implemented and evaluate the current crypto asset valuations.**

With the paper at hand, it is our goal to put the blockchain fairy tale into perspective – within the crypto universe as well as in comparison with the non-crypto world.

## About vision&

**vision&** is a Swiss based, SRO-regulated asset manager facilitating the access to innovative blockchain investment opportunities, based on professional investment research and integrated into a traditional banking framework.

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Let's start! We can classify the blockchain market into four main use case categories - **Currencies**, **Developer Tools**, **Financial Applications** and **Non-Financial Applications** – and a couple of subcategories, as illustrated in **Figure 1**.<sup>ii</sup>

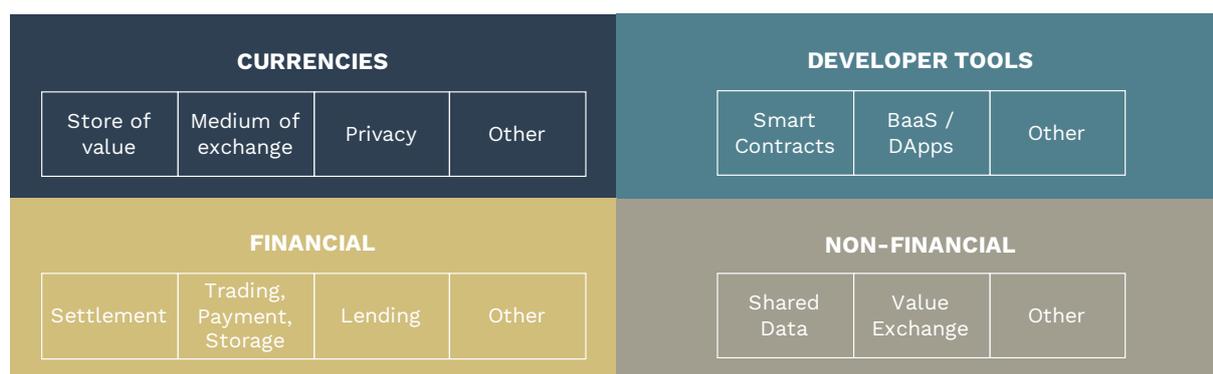
The best-known use case is **Currencies**. Coins belonging to this category aim at developing a better currency system – usually to provide an alternative store of value (comparable to gold), an alternative medium of exchange (comparable to USD) or to generate a privacy-centric, non-traceable currency (comparable to cash).

The second use case of crypto assets are **Developer Tools**. Those projects are built for developers to enable them to create new applications on top of the blockchain. Developer tools can be compared to an app store where developers use the environment to launch their own applications. Developer tools can be classified into smart contract applications and Blockchain as a Service (BaaS) / Decentralized Application (DApps) tools.<sup>iii</sup>

The third category **Financial Applications** contains projects facilitating financial transactions and investments – crypto as well as non-crypto. The main players in this field are concerned with trading, payment, storage, settlement, lending, investment management as well as insurance topics.

The last category **Non-Financial Applications** aggregates all non-financial blockchain use cases. The majority of projects in this category are engaged in facilitating trust, sharing data and allowing real value exchanges outside the financial services industry.

The classification sets the foundation, but much more important is the analysis of the specific crypto assets within the categories. To do so, we analyzed the 50 largest crypto assets in detail. This Top50 portfolio represents 95% of the market capitalization of the entire blockchain market. All the calculations in this paper, including the decision which projects belong to the Top50 portfolio, are based on the valuation date 27.12.2017.



**Figure 1: Crypto asset categories and subcategories by vision&**

**Figure 2** shows the Top50 crypto assets allocated to the respective categories. A few of the crypto assets could be classified into multiple categories, but for simplicity we decided on the one category that best fits the current orientation of the project. **Prince Charming Bitcoin** (classified as store of value currency) could for example also be seen as medium of exchange. Given Bitcoin's current orientation and usage however, we classify it as a store of value project.

Prince Charming's counterpart is obviously **Snow White Ethereum**. The main intent of Ethereum is to provide a smart contract platform. Although the platform's native currency Ether is

used for transaction payments, the creation of a new currency is not its main reason of existence.

Prince Charming and Snow White are surrounded by the **over 1000 Dwarfs** – the remainder of the projects in the blockchain market – of which some are small, some are becoming larger and larger. Examples are Ripple, Iota and Cardano – blockchain based projects which grew very large very recently.

Throughout the study, we sometimes refer to the abbreviations of the crypto assets. You will find a full list of the Top50 portfolio constituent's abbreviations at the end of the paper.

CURRENCIES				DEVELOPER TOOLS		
<b>Store of value</b> Bitcoin BitcoinGold Tether	<b>Medium of exchange</b> BitcoinCash Byteball Dogecoin Litecoin MonaCoin RaiBlocks	<b>Privacy</b> Bytecoin Dash Electroneum Komodo Monero PIVX Verge Zcash	<b>Other</b> Decred Hshare	<b>Smart Contracts</b> Cardano Ethereum Eth.Classic NEO Qtum Veritaseum	<b>BaaS / Dapps</b> Ardor Ark EOS ICON Lisk NEM Nxt Stratis	<b>Other</b> IOTA
FINANCIAL				NON-FINANCIAL		
<b>Settlement</b> Ripple Stellar	<b>Trading, Payment, Storage</b> Binance BitShares OmiseGO TenX Waves	<b>Lending</b> SALT	<b>Other</b> Populous	<b>Shared Data</b> Augur TRON	<b>Value Exchange</b> BasicAtten. Golem MaidSafe Siacoin Steem	<b>Other</b>

**Figure 2: Allocation of largest 50 crypto assets (as of end of 2017) to categories and subcategories**

# B. Prince Charming dominates, Snow White and a handful of Dwarfs catch up

The following chapter evaluates the market capitalization of the crypto asset categories and the market shares of the individual projects. The blockchain technology is increasingly used for developer tools and financial applications as opposed to pure currency applications such as Bitcoin. If you invest in Bitcoin only, you benefit from less than half of the blockchain market’s capitalization and miss out on the entire range of newer use cases.

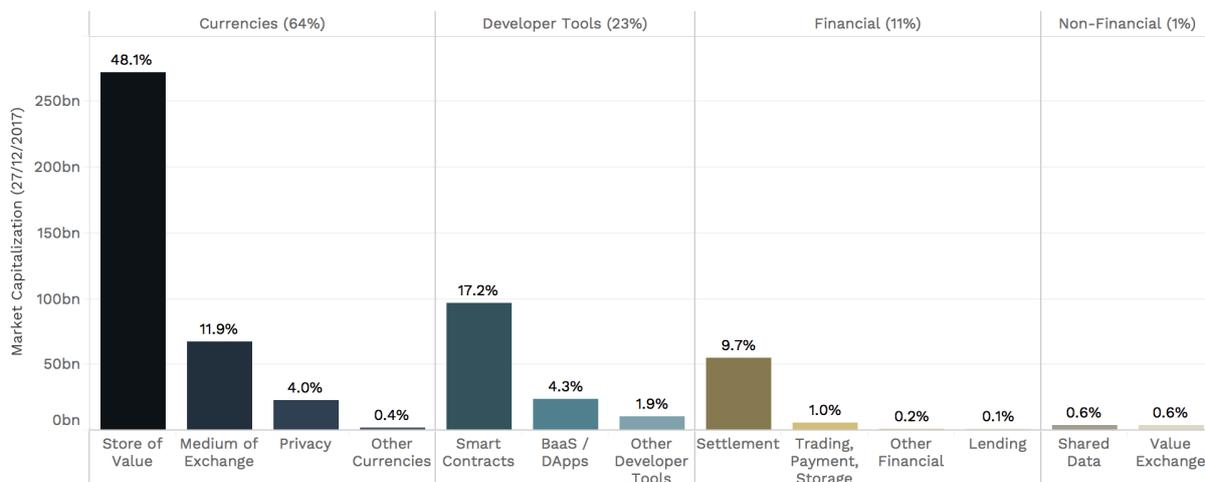
A few stats to illustrate the current market shares: Driven by Bitcoin, **currency coins dominate the blockchain market** in terms of market capitalization (64%). Thereby, 48% is used for store of value purposes, 12% is reserved for medium of exchange coins und 4% for coins focused on the privacy market.

**Developer Tools** are the second largest category and represent a market

share of 23%, smart contract applications are the dominant subcategory here.

**Financial Applications** account for 11% and are mainly driven by applications in the settlement sphere (mainly due to Ripple).

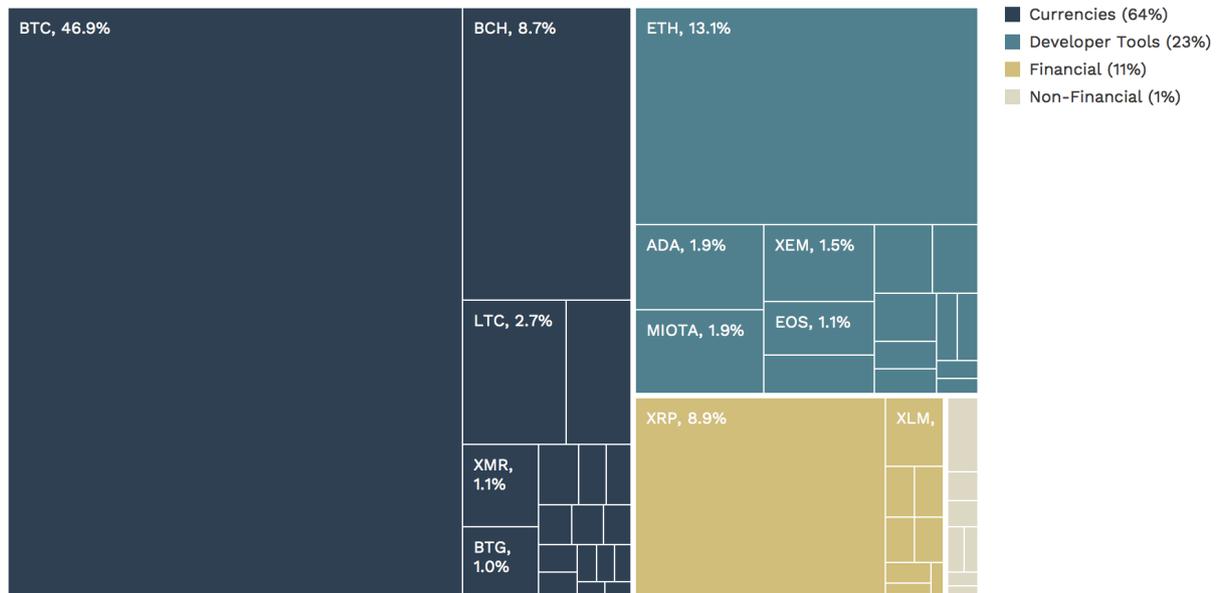
**Non-financial Applications** are highly underrepresented in terms of market capitalization.



**Figure 3: Market capitalization distribution by subcategory as of end of 2017**  
(data sources: CoinMarketCap, vision&)

The blockchain market is currently dominated by a few very large crypto assets. Bitcoin (BTC) leads the way in the currency bucket, Ethereum (ETH)

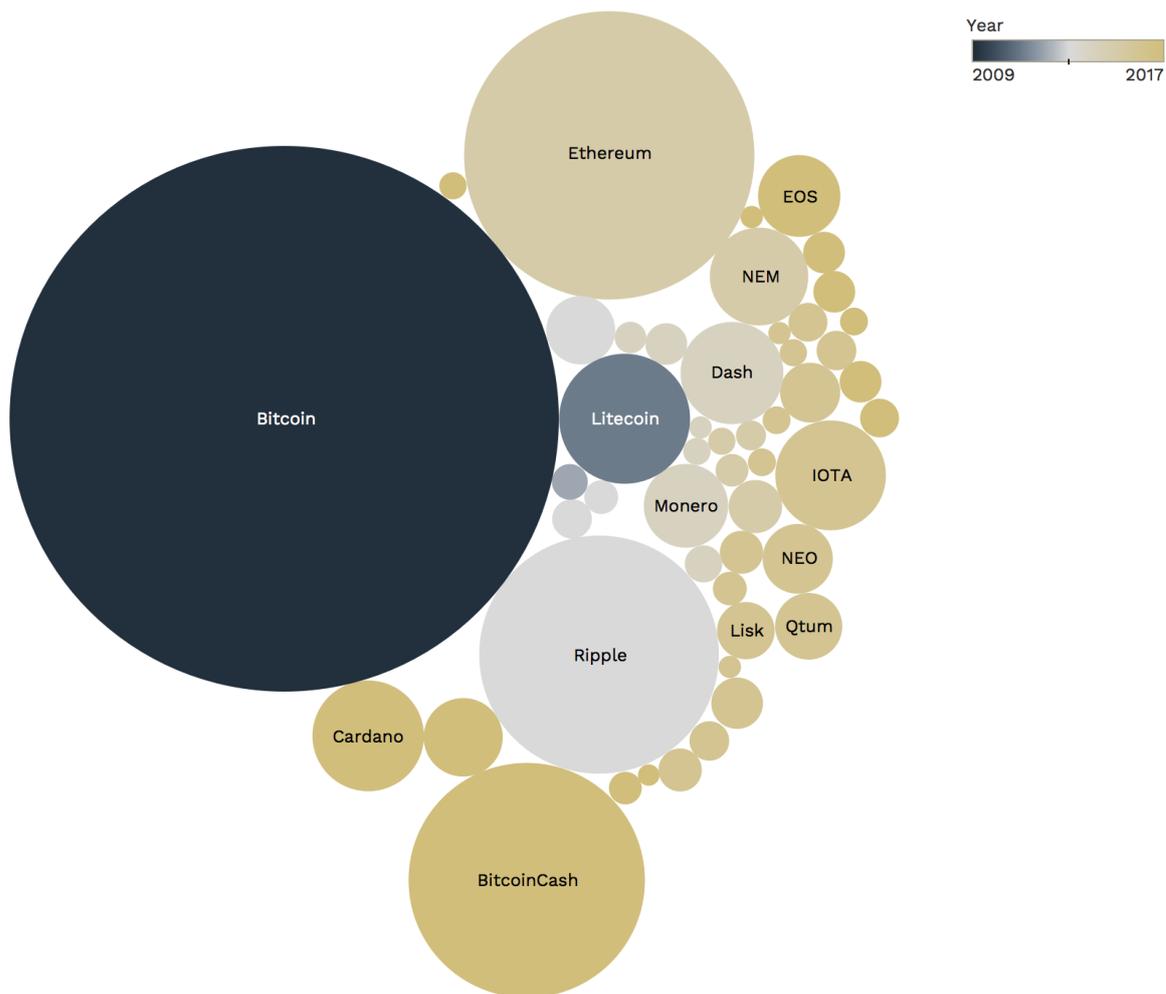
heads up the developer tool space and Ripple (XRP) is driving financial applications.



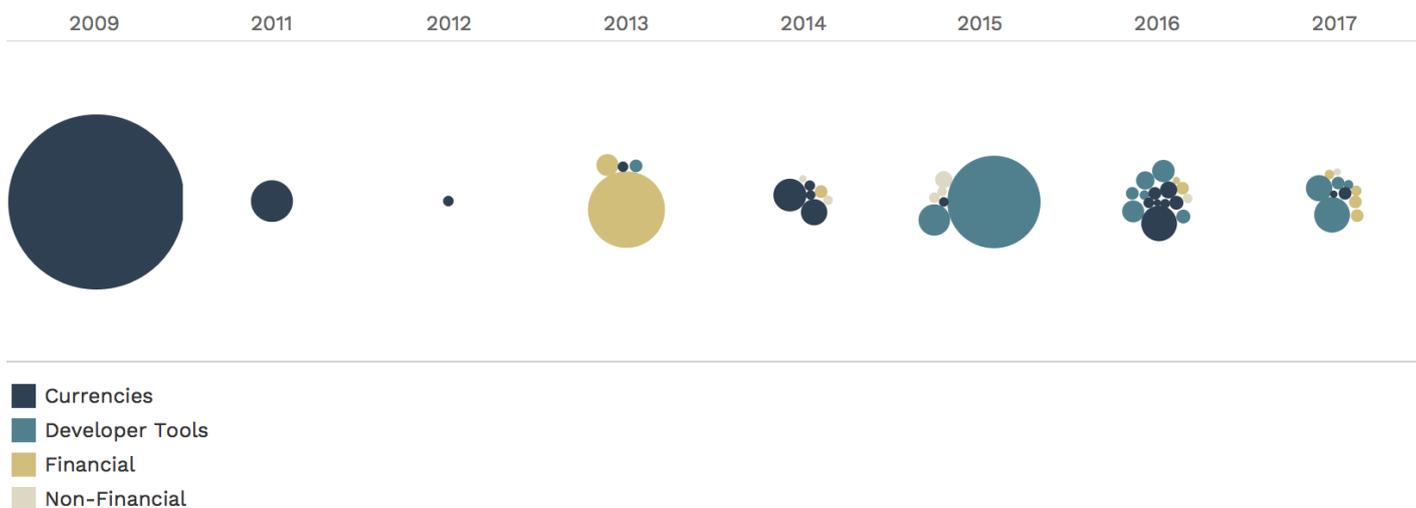
**Figure 4: Market capitalization distribution of the 50 largest crypto assets as of end of 2017**  
(data sources: CoinMarketCap, vision&)

Bitcoin has existed since 2009, while most of the other blockchain applications were launched only in the last three years. Very noteworthy though: We see a move away from the launch of new currency applications (excluding hard forks). The blockchain technology is increasingly used for developer tools and financial applications. This is illustrated in **Figure 5** and **Figure 6**.

**Figure 5** shows the largest 50 crypto assets, whereby the bubble size depends on the market capitalization and the color on the year of implementation (from older projects in blue to newer projects in gold). **Figure 6** shows which categories have been launched over time (excludes the hard fork related coins Bitcoin Cash, Bitcoin Gold and Ethereum Classic).



**Figure 5: Market capitalization distribution of the 50 largest crypto assets as of end of 2017, colored by launch date** (data sources: CoinMarketCap, CryptoCompare, vision&)



**Figure 6: Market capitalization distribution of the 50 largest crypto assets as of end of 2017, separated by launch year and colored by category (excluding BCH, BTG and ETC)** (data sources: CoinMarketCap, vision&)

Let's quickly take a break and **recap**.

If you invest in Bitcoin only, you benefit from less than half of the blockchain market's capitalization and you will not participate in the broad range of various blockchain use cases. You bet on the store of value use case alone.

This does not mean that the store of value use case is not an important one – but be aware that it solely depends on people believing that it will keep its

value over time. Exactly the same as people believe that gold has some sort of value. Borrowing crypto sceptics words, believing in gold seems odd too since it neither pays dividends nor can you buy milk with it (still, people have believed in its value already a bit longer than only 9 years).

But if you see Bitcoin (partly) replacing gold as store of value, it is definitely worth an allocation. **But should it be the only one?**

## C. Imagine Prince Charming on steroids, who shall be king then?

**There is not one single blockchain implementation. It is rather a continuous technological development rooted in the countless experiments happening around the world. Diversification into multiple projects is the only reasonable way to benefit from technological advancements.**

Bitcoin was the first blockchain application and is commonly known to have certain technological flaws in its current stage, particularly with respect to transaction speed and scalability. Can you remember how you downloaded a song via Napster in the late Nineties? It took one whole night for your “I'm blue da ba dee da ba daa” to play - don't even imagine if you would have been into Beethoven's Symphonies back then. Now there is Spotify, and with one click you listen to your song. The first applications on new technologies are usually not very user-friendly nor even useful as a matter of fact. But they are highly important for newer projects to experiment and improve on. At the same time, this is also the curse of first applications. Very often, they are overtaken by new players - Napster was. **Will Bitcoin be another Napster?**

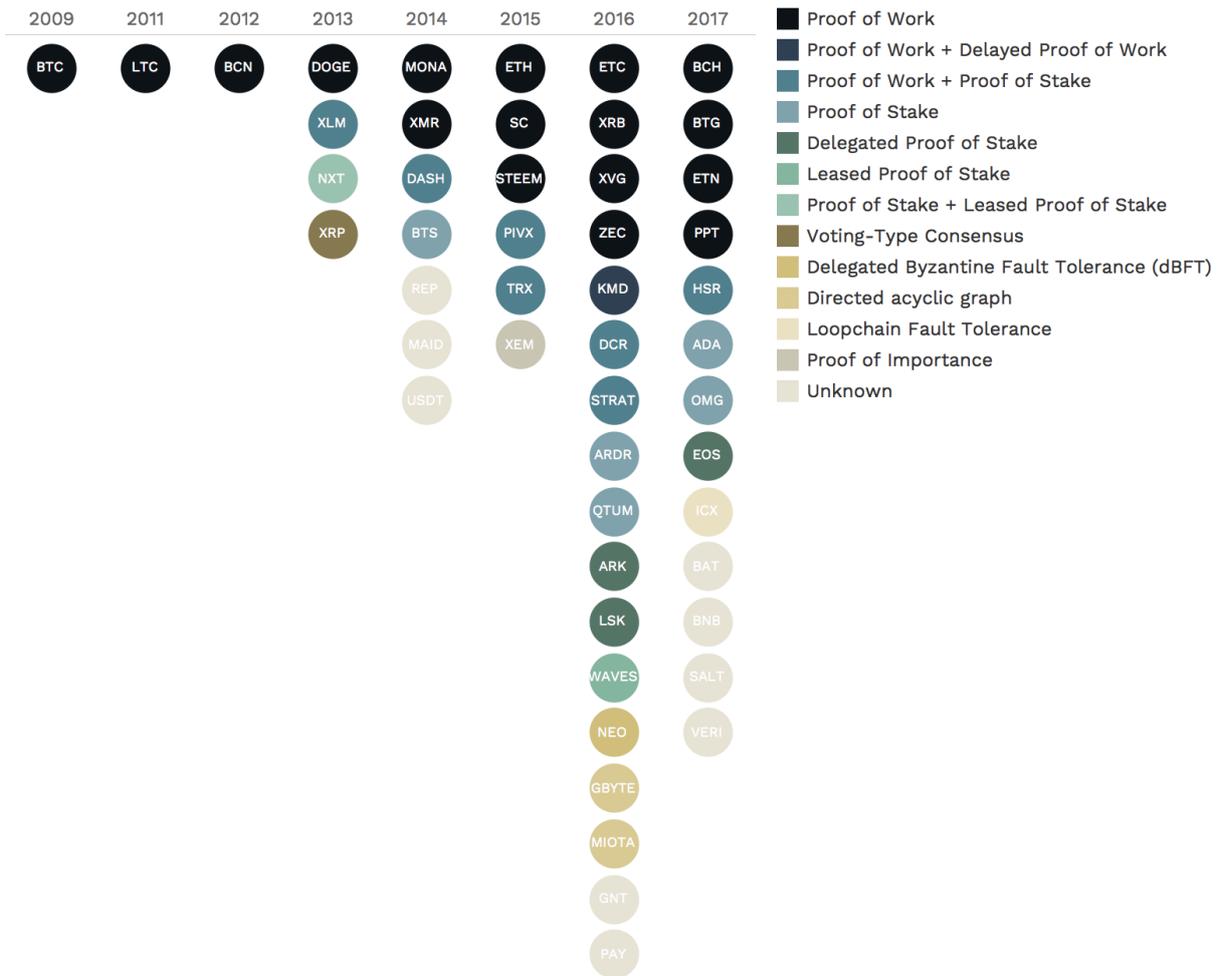
It is too early to know and highly depends on the developments within the Bitcoin community. But what we do know at the moment is, that the blockchain technology is developing fast. By diversifying into a broad range of crypto and blockchain assets, you benefit from other, newer and potentially better technologies - one of them might be the future Spotify.

With crypto assets, we see an amazing amount of experimenting. Out of the Top50 universe, 36 projects built their own token platforms (see **Figure 7**). And our analysis shows that they are also implementing new forms of consensus algorithms - one of the most important elements in further developing the blockchain technology. 17 projects are using the Bitcoin type technology **Proof of Work (PoW)**, which was successfully put to the acid test (as opposed to certain Bitcoin exchanges, Bitcoin itself has never been hacked). We then see quite a substantial number of projects experimenting with other consensus algorithms, such as **Proof of Stake (PoS)** or **Directed Acyclic Graphs (DAG)**. Also when looking at the time axis (see **Figure 8**), we see that the share of newly launched projects experimenting with different technologies is immense.

To summarize, you are advised to diversify not only in order to benefit from a broad range of blockchain use cases, but also to benefit from advancements in the technology. There is not one single blockchain implementation, but it is rather a continuous technological development rooted in the countless experiments happening around the world.



**Figure 7: Distribution of implemented blockchain platforms and consensus algorithms of the 50 largest crypto assets as of end of 2017 (size of squares depends on the number of projects using the respective technology)** (data sources: CoinMarketCap, CryptoCompare, vision&)



**Figure 8: 50 largest crypto assets sorted by launch year and colored according to consensus algorithm implemented** (data sources: CoinMarketCap, CryptoCompare, vision&)

## D. Is Prince Charming really a good guy?

**Bitcoin is often said to be used for illegal transactions and money laundering. Does Bitcoin simply have a reputational issue or is Prince Charming rather the villain in the story after all?**

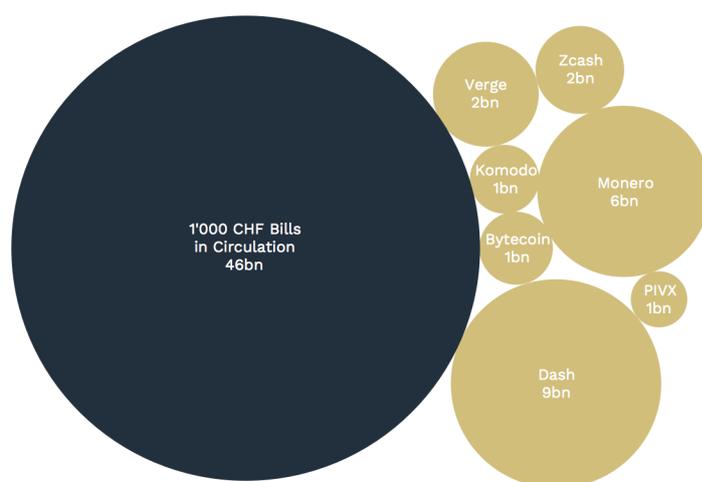
Bitcoin is actually no longer the crypto asset favored by drug dealers (not that we have first-hand experience). Although Bitcoin is known to be an anonymous currency – Bitcoin transactions can increasingly be traced. Transactions and account balances of every single Bitcoin account have always been public information and a growing number of tools help interested parties, such as governments, to link Bitcoin accounts to people.

This gave rise to crypto assets specifically implementing technologies to improve privacy and non-traceability of transactions. The reason to use such currencies do not have to be illegal at all – but it is highly likely that they are used for such purposes as well. It is interesting to compare such coins to the Swiss CHF 1'000 bill. CHF 1'000 bills account for 62% of the entire Swiss banknote circulation.<sup>iv</sup> Although one would never assume all of those note holders to pursue illegal intentions (as we do not for privacy coins either), a certain proportion might pursue illegal intentions (as it is the case for privacy coins).

The market capitalization of all existing privacy coins taken together is USD 23bn, the market capitalization of

all CHF 1'000 bills in circulation is USD 46bn. Privacy coins are – to a certain degree – likely used to buy drugs and launder money. But so is cash.

When investing, regulatory risks have to be considered. One potential regulatory risk is a government shutdown of crypto assets (although such a crude measure has to be global to have a substantial effect). If governments decide to take regulatory measures, we would expect them to start with privacy oriented coins. If you want to mitigate regulatory risks, it is a possibility to restrict the allocation to privacy coins – although they can make a lot of sense from an investment return perspective.



**Figure 9: Privacy coins in comparison with CHF 1'000 bills in circulation**  
(data sources: SNB, CoinMarketCap, vision&)

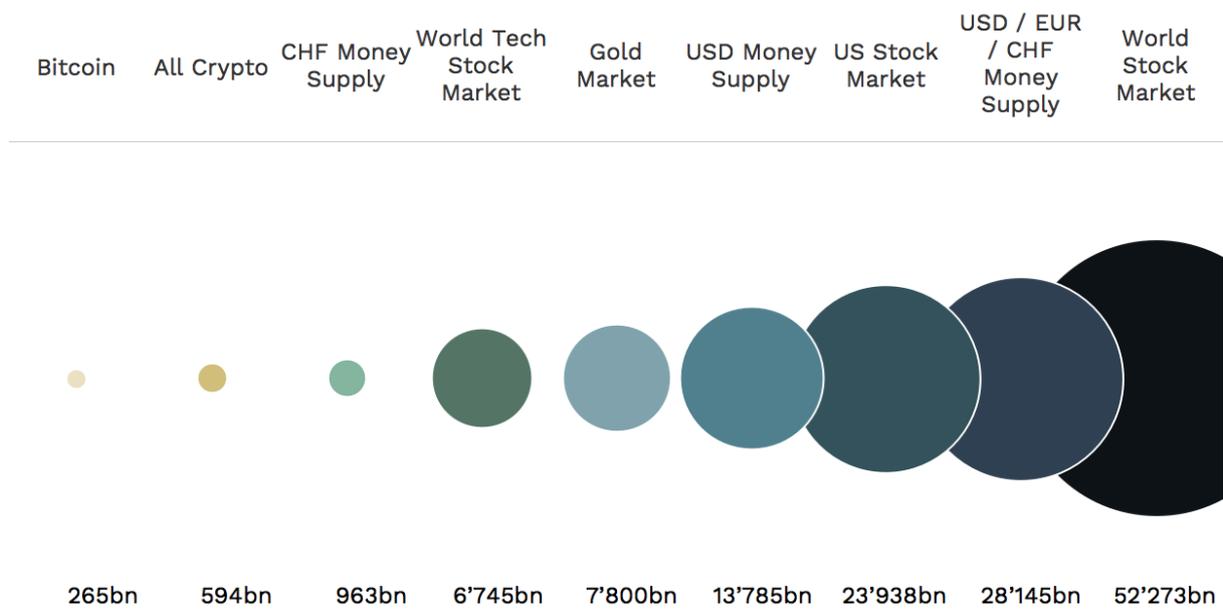
# E. Put aside your currency fairy tale, it's bedtime in the real world

**Now you know that if you fall for Prince Charming's charms, also try to catch a kiss from Snow White, put a couple of Dwarfs into your garden and try to make sure that the villains stay outside. But would it not be better to leave your hands off the whole Brothers Grimm industry in general?**

**Figure 10** shows how crypto assets compare to the rest of the world. The market is undeniably very big already – in fact the entire blockchain market capitalization amounts to 1% of the entire worldwide stock market.

Looking at Bitcoin only: If it is assumed to be a medium of exchange, putting it in relation to fiat money supply sets it

in perspective. Bitcoin represents 28% of the CHF money supply, 2% of the USD money supply or 1% of the USD / EUR / CHF money supply taken together. If Bitcoin is assumed to be a store of value on the other hand (as done in this study), comparing it to the gold market sets it in better perspective: There, Bitcoin represents 3% of the gold market capitalization.



**Figure 10: Crypto assets in comparison with other financial markets as of end of 2017 (in USD)**  
 (data sources: CoinMarketCap, SNB, MSCI, Yahoo Finance, STOXX, US Fed, Forbes, vision&)

Market capitalization of currencies can have multiple drivers. Demand can stem both from transactional trades (I need Bitcoin because I want to buy milk) as well as from speculative trades (I need Bitcoin because I want

to sell it at some higher price tomorrow). Even when taking both transaction types together, Bitcoin trade volumes are not yet comparable to transaction volumes in non-crypto markets, as illustrated in **Figure 11**.

Name	Transactions per year	Transactions per second	Number of accounts
Bitcoin	52 mn	2	21 mn
Ethereum	99 mn	3	17 mn
Paypal	6'100 mn	193	218 mn
Visa	121'131 mn	3'841	849 mn

**Figure 11: Transaction volumes in comparison (2017)**  
 (data sources: Paypal, Visa, Altcoin Today, Coindesk, vision&)

**Side note: Ethereum is added in above table for comparison reason, although it should not be mistaken for a medium of exchange currency. Side insight: Ethereum processes twice as many transactions as Bitcoin.**

**Combining the analyses: If the crypto assets are evaluated as medium of exchange currencies, the current market capitalizations are way off compared to the actual usage.** From that perspective, a crash would have to be expected rather sooner than later. However, we have to keep in mind two points: (1) the technology is still in its infancy, scalability is expected to improve over the upcoming years and – even more importantly – (2) there are other applications of the technology than being a medium of exchange.

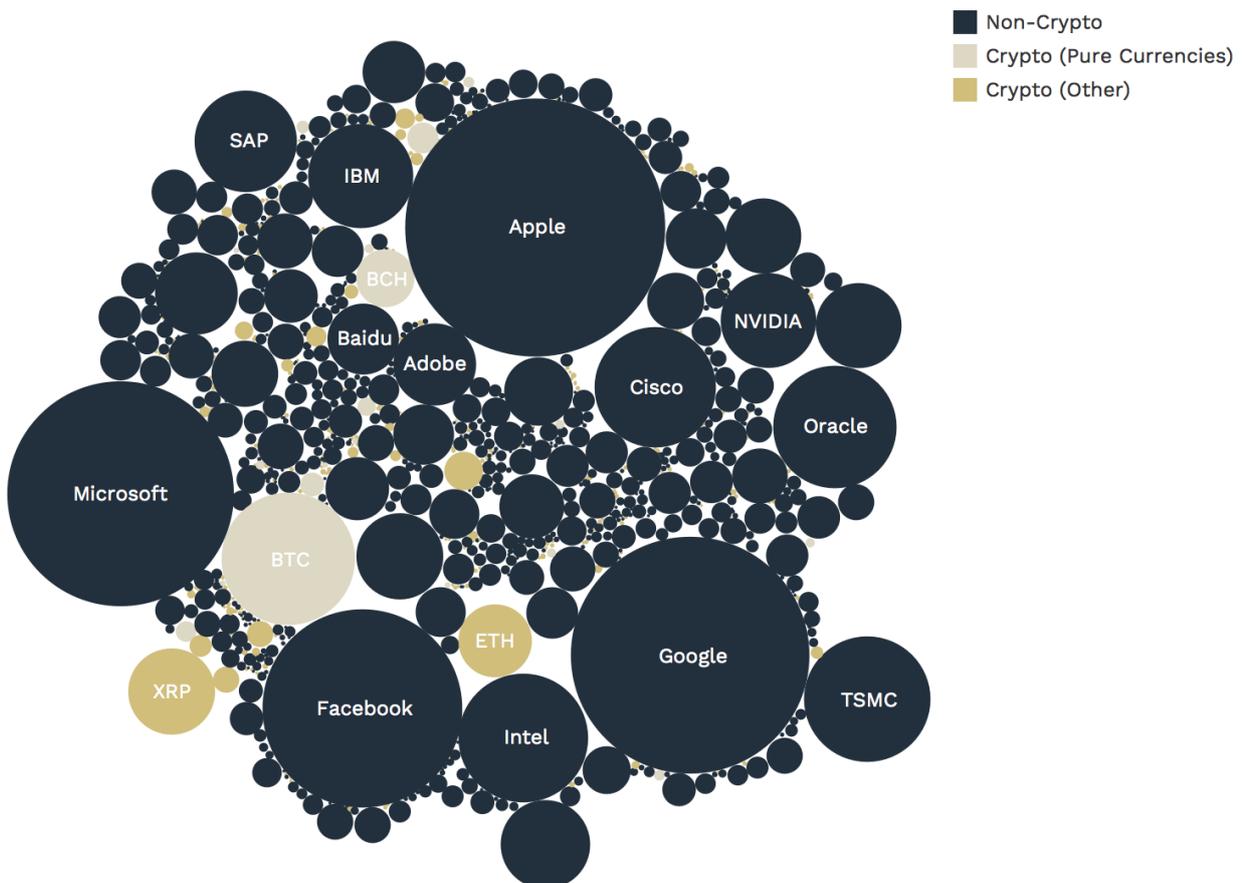
If Bitcoin or another upcoming crypto asset manages to **establish itself further as alternative store of value, growth potential is still existent** – as it is also seen when comparing it to the gold market. This might be true in particular for the generation of digital natives, which is likely to favor a digitalized store of value option over some physical option like gold. Furthermore, certain crypto assets are closer in comparison to tech projects and tech companies than they are to currencies (see next chapter).

## F. As Snow White grows older, keep an eye on her kids

**The larger crypto assets compare to sizable tech companies in market capitalization, although being in a much earlier stage. A consolidation can be expected. And: the biggest crypto assets of today will not be the biggest crypto assets of tomorrow.**

As seen earlier in the study, many crypto assets are not currencies. Their main purpose is not to replace the USD or EUR, but rather to replace Apple or Google. They are tech companies in the new form of crypto assets. In **Figure 12**, we compared the entire blockchain market with the Nasdaq

technology segment, whereby the bubble sizes illustrate the market capitalization of the projects. We included Bitcoin and other pure currency use cases for completeness reasons, but they do not really compare to tech companies (see **Chapter E** for those).



**Figure 12: Crypto assets in comparison with the Nasdaq Technology Segment (as of end of 2017), bubble sizes illustrate market capitalizations** (data sources: CoinMarketCap, Nasdaq, vision&)

## An Overvalued Fairy Tale?

The blockchain market fits right into the Nasdaq tech segment. Two points are noteworthy:

- (1) The larger projects, such as Ethereum and Ripple, have sizable capitalizations also when compared to single tech companies. They are not yet comparable to Apple, Google and Microsoft, but to Adobe, SAP and IBM. But they are also in a much earlier stage in terms of company development than Apple and Google.
- (2) The vast majority of the entire blockchain market does not compare to the Nasdaq tech companies in terms of size. Most crypto asset projects have, despite the recent rally, much smaller capitalizations. Having said that, they mostly also do not have fully operating products, they engage much smaller teams and often have not grown their community base to the same degree.

The larger crypto assets, such as Ethereum, have already shown considerable increases in capitalization and are likely to enter a phase of stabilization and return to moderate growth. Smaller projects and projects with immense growth in the recent months will see some consolidation. Those projects that cannot deliver on their promises, will likely crash in 2018 whereas the few good ones are likely to survive. We also expect to see new project launches that will grow quickly to become market leaders in their respective fields. The crux is to watch out for those and don't get burned in the ones having overpromised.

## G. A few matured and lived happily ever after

As this analysis has shown, Bitcoin and other currency-centric blockchain applications are overvalued if evaluated as medium of exchange currencies. But they do have room for further growth if they establish themselves as a respected store of value. **Given Bitcoin's strong community base and based on the fact that the technology has held its promise of being unhackable – it is likely that Bitcoin remains king as store of value application.**

Bitcoin will however be overtaken on a technological level, as an increasing number of projects are trying to improve on the current blockchain implementations. Within those new projects, **we expect to see a consolidation in 2018**. Larger non-currency projects such as Ethereum will enter a phase of stabilization and moderate growth whereas smaller projects and projects with immense growth in the recent months will substantially decrease in

value if they are not able to deliver actual products and tools. **The biggest crypto assets of today will not be the biggest crypto assets of tomorrow.** The critical step will be to find tomorrow's winners early enough and participate in their growth. **Researching each individual project and diversifying across use cases and technologies is the only way forward.** By doing so, it will be possible to participate in the blockchain universe and therefore the future of technology.

Just like every fairy tale, this one has to come to an end too. Over the upcoming time, Prince Charming will find his right spot to live in, Snow White will enter a quieter life, whereas the Dwarfs continue trying to deliver usable products. New baby Dwarfs will be born and start to conquer the empire. Those who manage to deliver and mature, lived happily ever after.

## Abbreviations

ADA	Cardano	MIOTA	IOTA
ARDR	Ardor	MONA	MonaCoin
ARK	Ark	NEO	NEO
BAT	Basic Attention Token	NXT	Nxt
BCH	Bitcoin Cash	OMG	OmiseGO
BCN	Bytecoin	PAY	TenX
BNB	Binance Coin	PIVX	PIVX
BTC	Bitcoin	PPT	Populous
BTG	Bitcoin Gold	QTUM	Qtum
BTS	BitShares	REP	Augur
DASH	Dash	SALT	SALT
DCR	Decred	SC	Siacoin
DOGE	Dogecoin	STEEM	Steem
EOS	EOS	STRAT	Stratis
ETC	Ethereum Classic	TRX	TRON
ETH	Ethereum	USDT	Tether
ETN	Electroneum	VERI	Veritaseum
GBYTE	Byteball Bytes	WAVES	Waves
GNT	Golem	XEM	NEM
HSR	Hshare	XLM	Stellar
ICX	ICON	XMR	Monero
KMD	Komodo	XRB	RaiBlocks
LSK	Lisk	XRP	Ripple
LTC	Litecoin	XVG	Verge
MAID	MaidSafeCoin	ZEC	Zcash

- Currencies
- Developer Tools
- Financial
- Non-Financial

# Epilogue

## About us

**vision&** is a Swiss based, SRO-regulated asset manager facilitating the access to innovative blockchain investment opportunities, based on professional investment research and integrated into a traditional banking framework.

## The authors

### **Dr. Lidia Bolla** **CEO**

Lidia brings in vast experience in quantitative finance, asset management and complex tech projects. Before co-founding a startup in the field of machine learning applications, Lidia was Managing Partner of a Swiss advisory boutique specialized in quantitative finance. Earlier in her career she worked for major investment firms (J.P. Morgan, Swiss Re, Man Investments) in various asset management roles in Zurich, London and Hong Kong. Lidia holds a PhD from the University of St. Gallen, specializing in investment strategies and asset management, and acts as advisor to blockchain startups in that field.

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### **Christian Schüpbach** **CIO**

Christian's career path proves his strong passion for financial markets. He worked 15+ years for Credit Suisse in Zurich and New York where he held positions in trading, investment consulting and research. He is a senior trader with vast experience in risk managing derivative trading books in different asset classes (equity, precious metals, foreign exchange). Due to his explicit tech skills, he was substantially involved in the digitalization of the bank's structured product platform and the automation of trading processes. Christian holds a Master of Arts in Banking & Finance from the University of St. Gallen.

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<sup>i</sup> <https://coinmarketcap.com/>, 05.01.2018

<sup>ii</sup> We often read about the categorization into currency tokens, utility tokens and security tokens. That is a very valid categorization with regard to regulatory and investment considerations, but less so for an analysis of the underlying use cases. But for most cases, currency tokens overlap with our classification currencies and developer tools, financial as well as non-financial use cases are mainly represented in the form of utility tokens. As a matter of fact, among the largest 50 crypto assets, all non-currency tokens are utility tokens. No security tokens are represented in the Top 50.

<sup>iii</sup> Smart Contracts are self-enforcing software codes that allow to define conditions that will perform a specific operation between untrusted counterparties. DApps tools function like a "decentralized app store" where anyone can publish their apps (DApps). Unlike today's apps, you do not require a middleman like Gmail or Apple, for the apps to function. For more information visit [vision& Academy](#).

<sup>iv</sup> [https://www.snb.ch/en/i/about/cash/id/cash\\_circulation](https://www.snb.ch/en/i/about/cash/id/cash_circulation)