Untitled INC

A Distributed Economy Network

The Token Classification Framework: A multi-dimensional tool for understanding and classifying crypto tokens.

January 18, 2018 by Thomas Euler

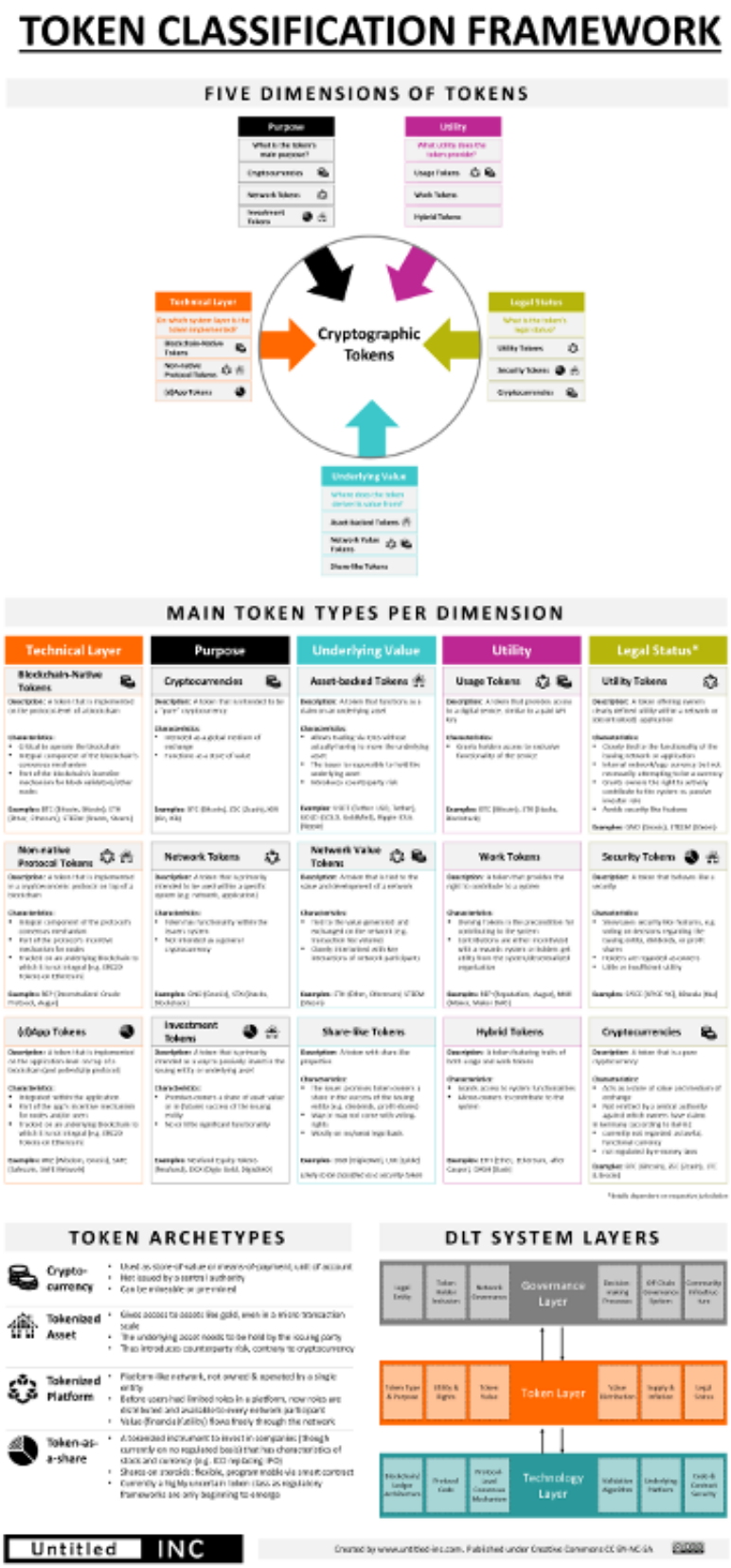
The development of the framework presented in here was a collaborative effort between me and several of my Untitled INC fellows. Peter Trapp was heavily involved in all aspects of the creation, including lending his surprising design prowess to it. Prof. Dr. Andranik Tumasjan of the University of Mainz (and formerly Technical University Munich) provided very valuable feedback and ideas, as did Dr. Oliver Krause, Dr. Karl-Michael Henneking and Daniel Pichler.

About

Untitled INC is a network organization dedicated to the distributed economy and blockchain. Our Blog is the hub for publications by our

Blockchain, ICOs and bitcoin's wild ride have been some of the hottest tech topics in 2017. Yet, while people spent billions of dollars on cryptographic tokens, the understanding of the different token types out there is still limited. Even among regular investors and long-standing members of the blockchain community.

members. We regularly publish about our work, present our newest thinking and much more. Make sure to drop by frequently! Learn more about us here.



One reason for it — a quite common one in emerging domains — is the lack of clear, generally agreed upon

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The Token Classification Framework: A multi-dimensional tool for understanding and classifying crypto tokens.

Categories

terminology and definitions. For instance, I regularly come across people who refer to all tokens as "cryptocurrencies". Which, as we are going to see in a minute, isn't precise. Which is somewhat problematic because precision in language and terminology is the basis for an informed, nuanced dialogue and good analysis.

Whether you want to develop a token or evaluate one, it's critical to understand the nuances of the subject. Moreover, the blockchain community is growing and maturing. As a result, it is increasingly getting in touch with "the real world" (aka people who are new to the subject). Investors, regulators, politicians and decision-makers in businesses are all taking the space increasingly serious. Many are in the process of formulating their positions and strategies for dealing with the subject. Clarity and accessibility of relevant knowledge are key to allowing those actors to make good, informed decisions.

This is why we, the Untitled INC team, set out to develop a framework that a) reflects the various existing token types, b) allows to classify and analyze tokens in various relevant dimensions, and c) fosters a better, nuanced understanding of crypto tokens. Today, we are presenting the first iteration of the Token Classification Framework, the result of our effort. In this post, I'm going to walk you through the framework and explain the work and thinking that went into it.

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Tokens
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Archives

February 2018
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Introductory Remarks

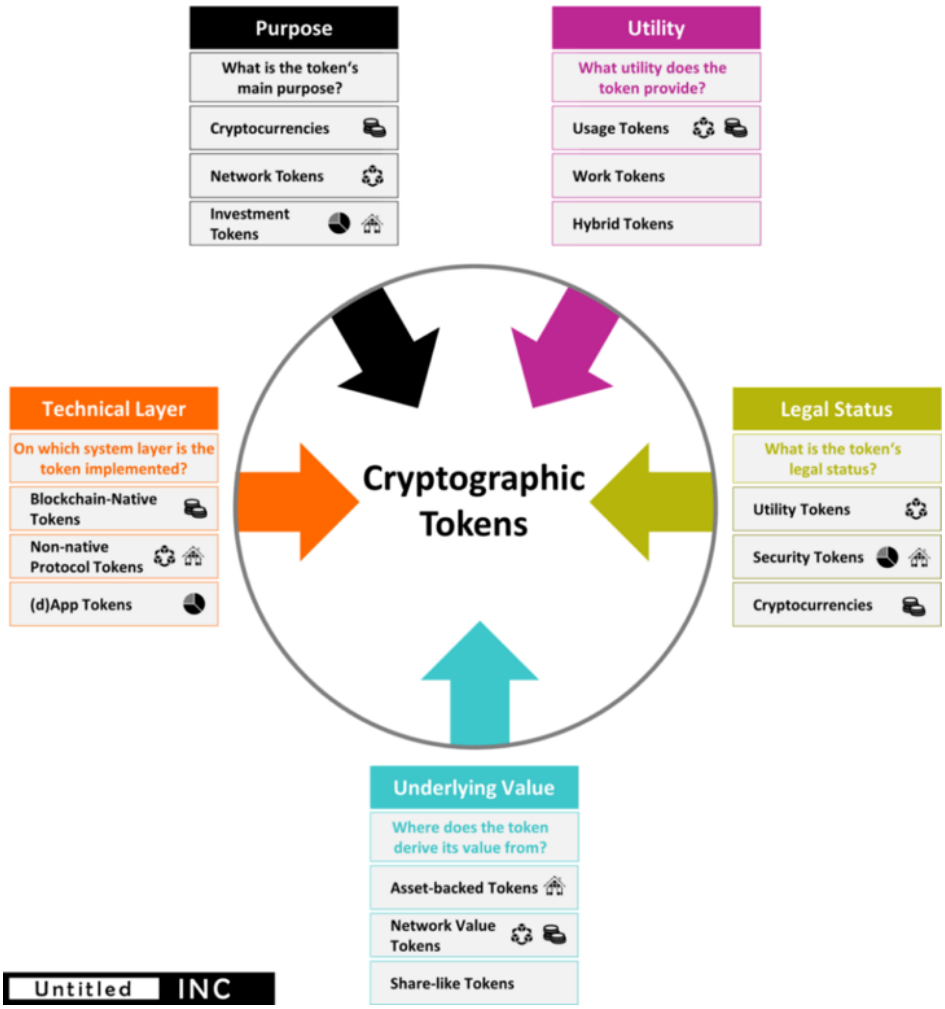
Before we get into the framework, some technical and procedural remarks.

To develop the framework, we reviewed a lot of work on tokens that had already been put out there. Many smart people published very helpful thoughts and ideas which influenced our thinking and chosen terminology. You'll find a list of references at the end of this article.

The version of the framework in this article is version 1.0 of the Token Classification Framework (TCF). The crypto space is moving at a rapid pace, so we expect to see new developments and innovative approaches to tokens quite frequently. Thus, we regard the framework as a living document. The version in this article shall serve as a point-of-reference going forward, so we won't update the TCF in here. Instead, we'll host and maintain the most current version on our website.

Last but not least, we decided to turn the future development of the framework into a collaborative endeavor. Which is why we are releasing the framework under a Creative Commons BY-NC-SA license. This allows the community to iterate on the framework and contribute to its development. Also, your feedback is highly welcome so please leave your feedback in the comments below.

Classifying Tokens in Five Dimensions



There are multiple angles from which you can look at tokens. Back when we began working on the framework, we quickly realized that it would have to cover multiple perspectives in order for it to be useful. After reviewing the current literature and analyzing dozens of whitepapers, we distilled five major dimensions which we wanted to reflect in the framework: a token's purpose, utility, legal status, it's underlying value and the technical layer it's implemented on.

Purpose. What is the token's main purpose? What is it designed to do? This dimension illustrates why the people who call any token a cryptocurrency err. Tokens *can* certainly be intended as a *cryptocurrency*. But often

they are meant to enable a specific network and catalyze its growth (*network tokens*) or merely present a way to invest in an entity or asset (*investment token*).

Utility. The term "utility token" has become commonplace[1] but there are various types. When looking at different tokens, you'll find many approaches to creating utility for token owners. But on an abstract level, there are two major ways to provide utility: by giving access to network or service features (*usage tokens*) or by allowing token holders to actively contribute work to the system (*work tokens*). Some tokens do both (*hybrid tokens*) and some tokens don't provide any utility at all[2].

Legal Status. The legal perspective is extremely relevant as of now, so it is reflected in the framework. The category's content, however, is expected to change quite a bit in the upcoming months as it is a volatile environment and more regulation is expected to emerge. Moreover, every jurisdiction can differ. The general outline of the current state in multiple countries is that tokens which aren't clearly a utility token — i.e. a means to access features of a network/service — or which aren't a pure *cryptocurrency* can easily be classified as a *security token* by regulators. In some jurisdictions, such as Germany, there is some definition by regulators as to what constitutes a *cryptocurrency*. Several cases we found hover between two types, due to fact that current legal frameworks have been created before tokens existed and most haven't been updated so far. (This isn't legal advice.)

Underlying Value. Most tokens are created to have a monetary value. But the sources of their value differ

considerably. Some basically work as IOUs to a real-world asset which they are tied to (*asset-backed tokens*). Others showcase stock-like properties as they are linked to the commercial success of the issuing entity. Those *share-like tokens* would be regarded as securities in most jurisdictions (actual enforcement by the regulator is a different subject). Finally, there are tokens which are tied to the value of a network, not a central entity (*network value tokens*). The latter might be the hardest to wrap one's head around and the most interesting value source at the same time.

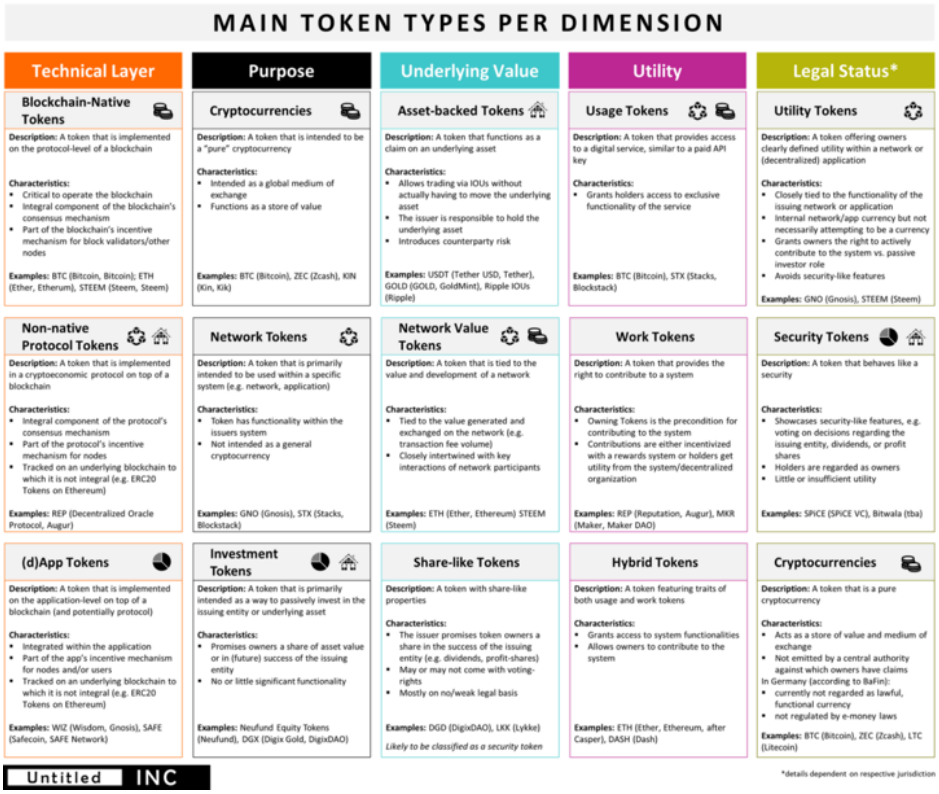
Technical Layer. Tokens can be implemented on different technical layers of blockchain-based systems: on the blockchain level as the chain's native token (*blockchain-native tokens*), as part of a cryptoeconomic protocol that sits on top of the blockchain (*non-native protocol tokens*), or on the application level (*(d)App tokens*).

It's important to note that the dimensions are complementary. Most tokens can be assessed in all dimensions and, as we'll see when looking at the archetypes, there are strong correlations between some types in different categories.

Main Token Types per Dimension

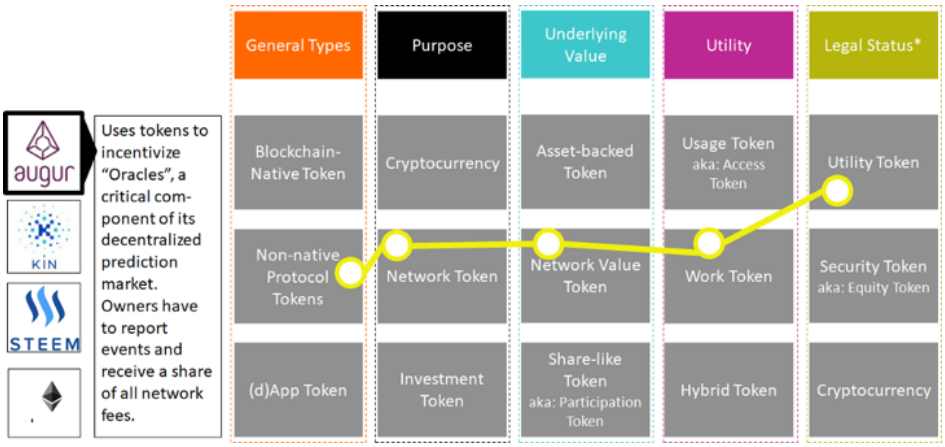
In any dimension, we identified various token types, summarized their main characteristics and included relevant examples. You can find the result in the graphic

below.

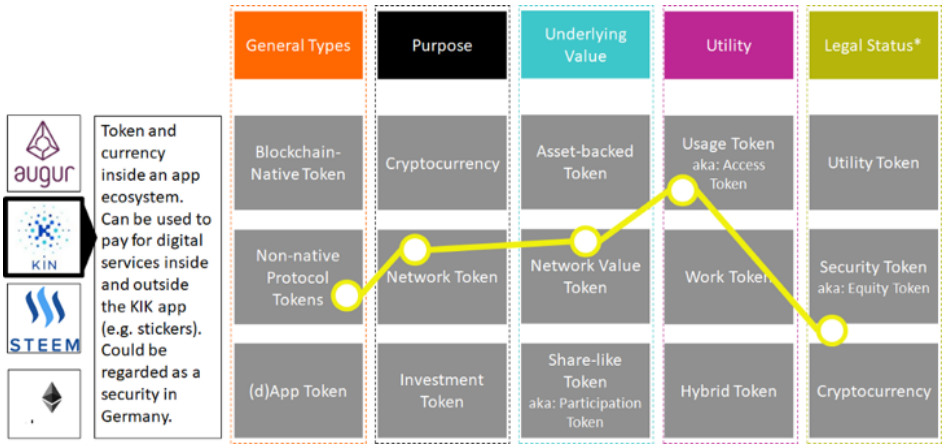


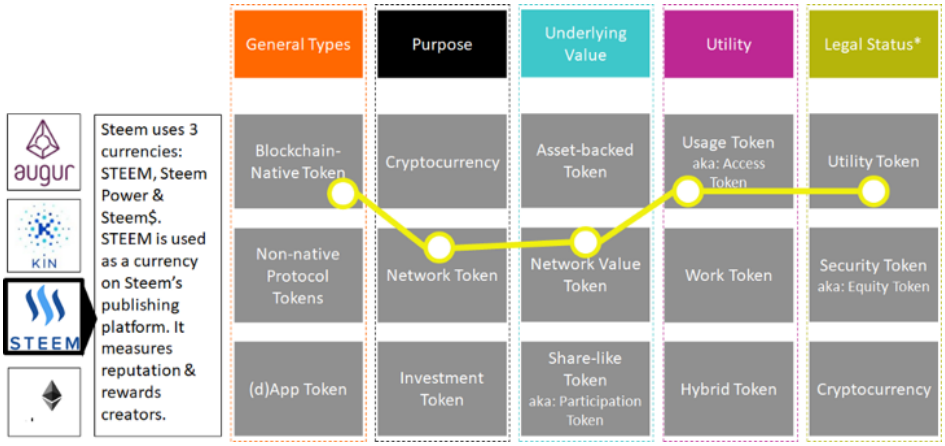
Putting the TCF to the Test

A granular framework like this allows us to understand a given token with a higher degree of precision. In order to put the framework to practice, we looked at several tokens and classified them. You'll find some examples from a recent workshop we held below:



As the first chart shows, you could call Augur's REP a *Non-native-protocol-Network-Network-value-Work token* that would likely classify as a *utility token*.





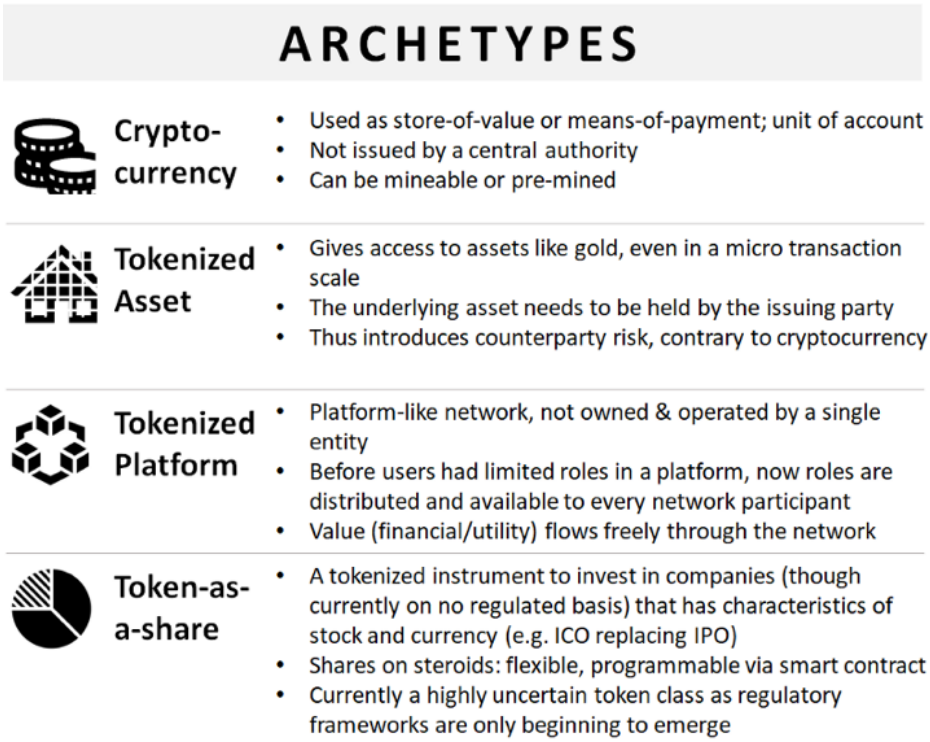
Let's stop here. If you are interested in playing around with the framework, you might want to start with

Ethereum and classify it yourself.

Archetypes

After using the framework to classify a fair number of tokens, some patterns emerged (unsurprisingly). As I said before, there are some rather obvious correlations between different token types. For instance, many *network tokens* (by *purpose*) will also be *network value* tokens, i.e. their value is tied to the value of the network they are used within. Similarly, an *investment token* will basically never be a *network value token* but either *asset-backed* or *share-like*. We looked at those patterns and derived some archetypes.

Each archetype is represented by an icon. The icons are also included in the main table above, next to the token typology usually associated with a respective archetype. A description of each archetype is included in the graphic below:

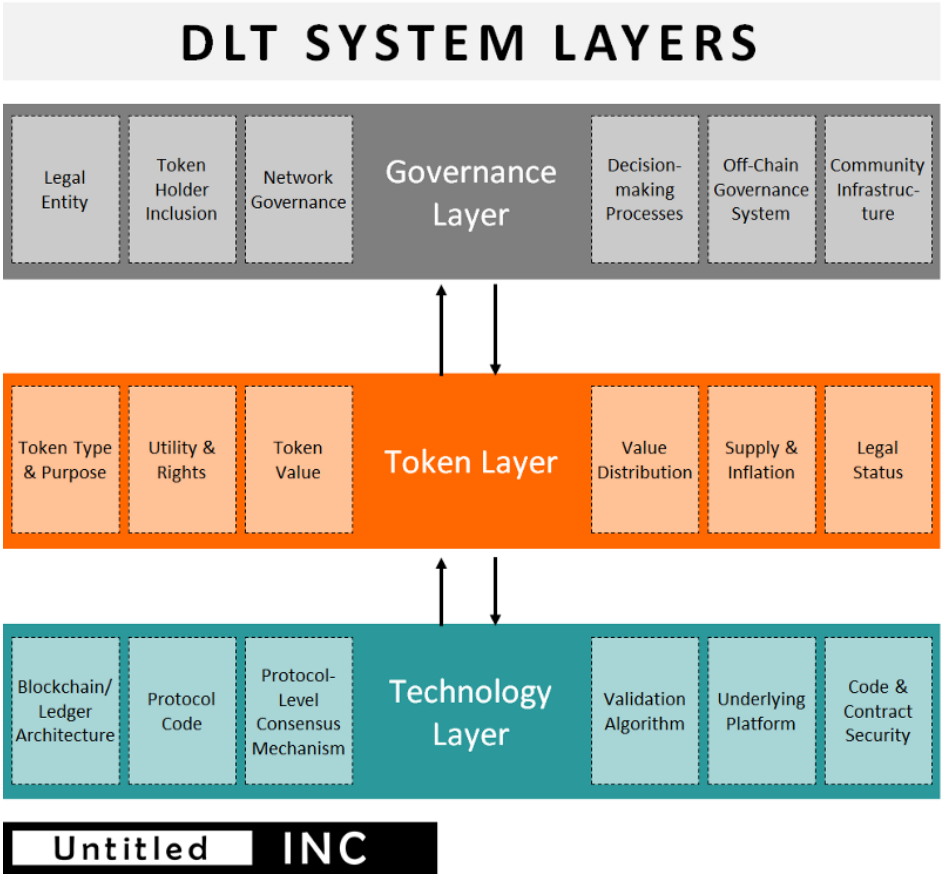


The Wider Context

We think the TCF is useful to classify and create more clarity around the various token types you can find today. Still, it is important to note that it isn't enough to merely analyze a token.

Crypto tokens don't exist in isolation but are only one component of a distributed ledger system. While tokens are an integral component of the system — as they are critical to establishing a cryptoeconomic dynamic —the *token layer* is only one of three system layers. The others are the *governance* and *technology layer,* which are connected by the token. I won't go into detail on the model below, as it merits its own post in the future. For

now, it's enough if you keep in mind that any assessment of a DLT project shouldn't exclusively focus on the token but look at the entire system.

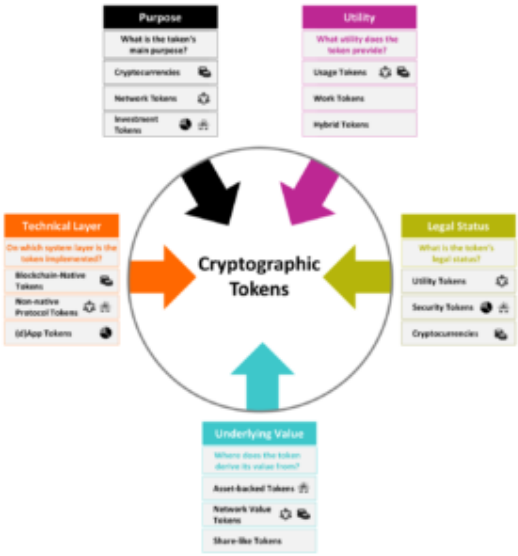


The Complete Token Classification Framework

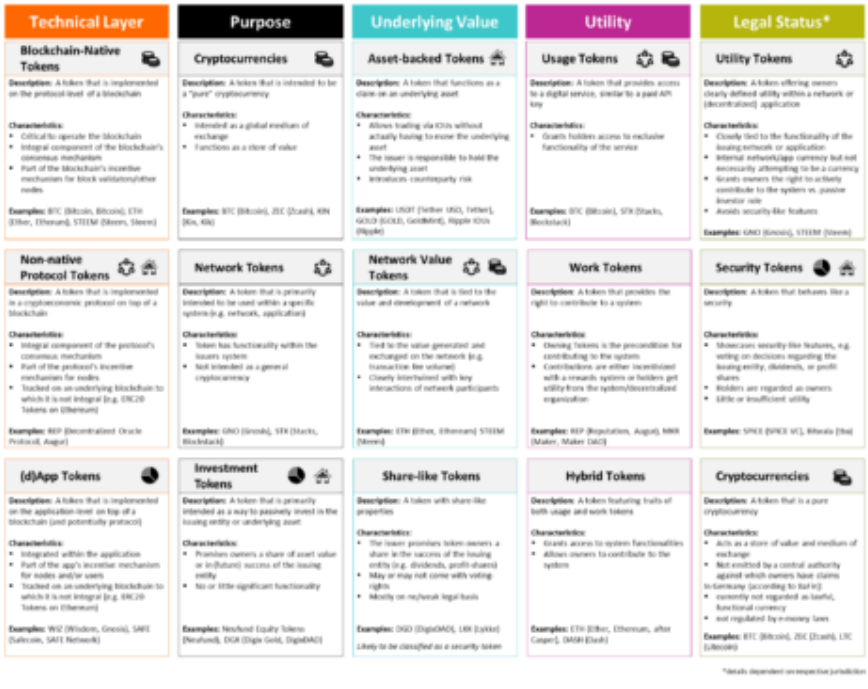
Now that you are familiar with the different components of the TCF, you can find the complete framework below in high resolution. As it is published under Creative Commons, feel free to share and iterate on it. Just don't forget to link back to us. And if you have comments or suggestions for further improvements to the framework, please let us know.

TOKEN CLASSIFICATION FRAMEWORK

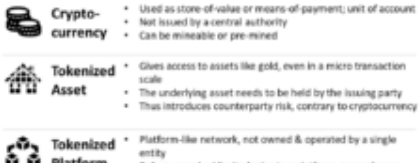
FIVE DIMENSIONS OF TOKENS



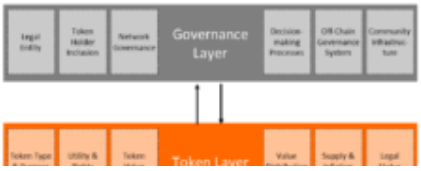
MAIN TOKEN TYPES PER DIMENSION

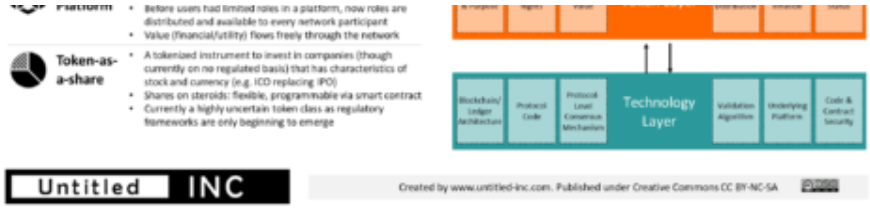


TOKEN ARCHETYPES



DLT SYSTEM LAYERS





Final Remarks and Sources

As the blockchain space matures, clarity and a precise terminology become increasingly important. With the TCF, we hope to have created a valuable resource that contributes to a better, more nuanced understanding of tokens. As it is now part of the commons, everybody is invited to further improve it.

What's not in there

There are two potential dimensions which we thought about but eventually didn't include in the framework: the *Issuance Approach* and *Supply Structure*. In the case of issuance (ICO, airdrop etc.) it's only a one-off event that we didn't regard as a fundamental characteristic of the token. It doesn't influence how the token behaves long-term. Thus, we eventually decided against including it.

In the case of supply (fixed, inflated with cap, inflated without cap), it's dicier. On the one hand, it is very relevant when it comes to investment decisions. On the other hand, it's not a characteristic of the token itself but rather a property of the overall system (which is why it's part if the *token layer* in the DLT system layers model but not a token dimension). Depending on your feedback, we

might rethink our decision, though.

Sources

Bulkin, Aleksandr; Cryptoeconomics Is Hard; CoinFund; 2017; Aleksandr Bulkin

Cicero, Simone; Blockchain Powered Platforms; Stories of Platform Design; 2017; Simone Cicero

Dixon, Chris; Crypto Tokens: A Breakthrough in Open Network Design; Medium; 2017; Chris Dixon

Mougayar, William; Tokenomics — A Business Guide to Token Usage, Utility and Value; Startup Mangement; 2017; William Mougayar

Svrinivasan, Balaji S.; Thoughts on Tokens; earn.com; 2017; Balaji S. Srinivasan

Tomaino, Nick; On Token Value; The Control; 2017; Nick Tomaino

Various; A Securities Law Framework for Blockchain Tokens [PDF]; Coinbase; 2016; Coinbase

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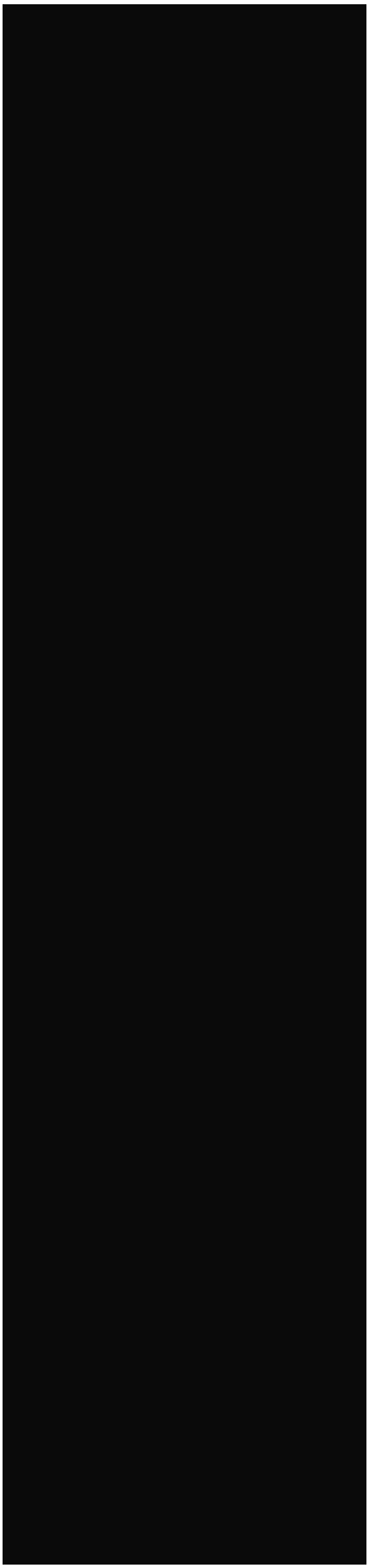
[1] Mostly because everybody who performs an ICO emphasizes that the issued token is a utility token in order to avoid being regarded as a security.

[2] While tokens which don't provide any utility are often frowned upon, that thinking shouldn't be generalized.



While its often a characteristic of scams, an asset-backed token doesn't necessarily *need* any further utility to be legitimate.

Author: Thomas Euler

Thomas is an experienced consultant, analyst, and writer at the intersection of tech, business, and the digital economy. He has been researching and regularly covering the blockchain space for several years now as he has long been interested in decentralized systems and new types of organizations.

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Blockchain, Tokens

cryptocurrencies, cryptographic tokens, framework, TCF, token classification, utility tokens

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26 thoughts on "The Token Classification Framework: A multi-dimensional tool for understanding and classifying crypto tokens."

Pingback: 仮想通貨分類のフレームワーク – なんのためのおかね

Marty
January 30, 2018 at 8:54 am | Reply

What is this reddit thread you speak of?

Thomas Euler
January 30, 2018 at 11:51 am | Reply

Hi Marty, thanks for hinting me at this. It was actually a lost sentence. It was an initial idea to collect feedback in a Reddit thread, Eventually, though, we figured that sticking to the comment section might be simpler and clutter things less.

Philipp
February 2, 2018 at 10:31 am | Reply

Hi Thomas,
great work. Why don’t you upload it to medium and steem it.
I ve heard about your framework in the Bundesblock Slack group.

Philipp

Thomas Euler
February 2, 2018 at 11:52 am | Reply

> Hi Philipp,
>
> thanks, glad you found it helpful! It actually already is on Medium. Steemit is a very good idea though (apparently it flies just below my publishing platform radar ^^)! Will put it on there asap. Appreciate the hint 🙂

Pingback: El precio de bitcoin rompe los $10.000 pero la vida sigue en Blockchain España - 4 resumen Telegram - Blockchain España

Gerry Reihsen
February 2, 2018 at 9:24 pm | Reply

> Can't read the chart. Too small in the native webpage and when blown up too pixilated. I'd love to share this with my meetups.

Thomas Euler
February 5, 2018 at 7:29 pm | Reply

Hi Gerry, thanks for the hint! That obviously was a mistake and it should be fixed now. If you click on the big graphic at the article's end, you get to another page on which you find the proper file.

Julia Schmoll
February 4, 2018 at 12:35 pm | Reply

great work!

Thomas Euler
February 5, 2018 at 7:31 pm | Reply

Thanks 🙂

John S Lee
February 4, 2018 at 6:19 pm | Reply

This is a great article Thomas, have you considered perhaps this could be a foundation to a terminology standard for blockchain

technology? This would be a good submission to the European Commissions exploration into the subject matter as a definition section.

Thomas Euler

February 5, 2018 at 7:49 pm | Reply

Hi John, thanks for your comment!

I think that a clear and agreed-upon terminology is very important indeed. I would assume that it usually emerges once certain actors, particularly academics, begin to establish an "official" terminology for a new field. Sure enough, the framework here is also intended as a contribution to the development of such terminology.

However, I'm not sure you can effectively "standardize" language – you would also have to drive adoption by the community. Which, of course, doesn't mean that it wouldn't be helpful to create a resource which suggests a clear terminology, ideally after developing it together with practitioners from the community. If you have any ideas in those regards, let me know. I definitely think that it would be a worthwhile and useful endeavor!

Philip

February 5, 2018 at 6:02 am | Reply

Awesome job, gave you a shout out: https://www.coinstaker.com/types-of-tokens-the-classification-framework

Looking forward to the governance part.

Thomas Euler

February 5, 2018 at 7:50 pm | Reply

Hi Philip, great! Thanks a lot for spreading the work!

Nako Mbelle

February 5, 2018 at 12:59 pm | Reply

This will be helpful for non-technical speculators and investors to better understand the projects they're supporting.

Your contribution will also make it easier to navigate the complexity of the ecosystem.

Thank you.

William

February 5, 2018 at 9:56 pm | Reply

Thanks for the enlightenment. You just made my job of educating customer much easier.

Daniel

February 8, 2018 at 3:46 pm | Reply

Very useful! Looking forward to your follow up work.

Dr. Yeap

February 9, 2018 at 12:13 am | Reply

Dear Thomas and team,

1. This is a wonderful framework. Do continue to improve on it and if possible, provide more examples for the community.

2. To me, the above framework in totality is akin to the Business Model Canvas / Lean Canvas which we use in the entrepreneurship and angel investors communities.

3. Very well done.

Dr. Yeap
February 9, 2018 at 12:21 am | Reply

One more thing, how would you like us to cite/reference this piece of good work?

Thomas Euler
February 12, 2018 at 12:26 pm | Reply

Dear Dr. Yeap,

Thanks for asking! Online, simply link to this article and/or the maintenance site and mention Untitled INC (and myself if you need a person as well). In an academic context, the publication should be Untitled INC Blog.

I hope that helps 🙂

Sleem Hasan
February 10, 2018 at 6:42 am | Reply

Fantastic read, logical and succinct- thanks you Thomas!

Pingback: ICO bewerten: Dieses Framework gibt Orientierung im Token-Dschungel | ❤️ t3n

Marta Cortina
February 19, 2018 at 1:30 am | Reply

Hi Thomas,
I find amazing this TCF. I like the clarity, structure, ideas and chart.
Thank you very much for sharing.

Great job!

Rui Carvalho
March 4, 2018 at 4:08 pm | Reply

Great stuff! Congrats.
A minor thing, though, you should make it clear what “DLT” stands for.

Pingback: What Is Cryptoeconomics - Extensive Resource List To Help Grow Your Knowledge Of Cryptoeconomics & Cryptocurrencies - Soapbox

Carthago
March 15, 2018 at 10:15 pm | Reply

Nice read, Thnx.
Ardor/nxt/ignis fits in all 😊

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