The Token Economy

Andy Martin Blockchain is really a governance technology

Published on October 16, 2021

This is my third article on the token economy. Here are links to articles one and two . This article is the summary of eight or nine recent posts. Most of the infographics used in this article are here.

Introduction

Token economy - this article summaries my recent posts over the last month or two on the token economy into one place. This is the third article I have written on the token economy. It attempts to take forwards the business model debate about what business models need to take into account in the token economy to come. This token economy will result in market transformation and market reinvention driven by Web 3.0 and the Internet of Value.

What do tokens mean?

The token economy - a blockchain stores the state of objects on the internet, where no one person is in charge, and we are all in charge of those state changes. That seems like a "so what" but it is a huge deal. That object could represent ownership of anything of value and the state change represents a business deal to move the ownership from me to you if you give me some value. The rules of that value exchange can be automated in a smart contract. If the conditions or rules are met, then ownership will be transferred.

No one can stop that smart contract from executing – and no one person but everyone is in charge. That is a big deal – squared. And that asset – that we traded – well we can represent the ownership of that asset in a token – or digital asset. That might be a non-fungible thing or a one of a kind, like the Mona Lisa. Now if I am trading – this for that – it makes life easier if we can have money – like USD or a crypto like bitcoin as a token or digital asset as well as the thing I am selling to you. Why? Well, because it's helpful if I can do the value exchange or payment, instantly – and maybe in very little micro or nano payments.

We transfer value and ownership, at the same time - no post trade settlement is needed (T0). For that you need money – or value – that is digitally native on the internet - and that is a stable coin or a crypto.

Now we have one thing left to define in our token economy. And that is the utility token. You see, if no one person – in fact if all of us, in the community, oversee governing these trades, then how do we do that? Well, that's where this utility token comes in handy. We might ask the folks who write smart contracts to buy these tokens and stake them in order to run their smart contracts in our community. We might ask folks to buy these tokens as access to the marketplace / platform where these trades take place. Smart contracts might allocate utility tokens for helpful behaviours for the network. We might assign voting rights to these tokens to help in making decisions for our community

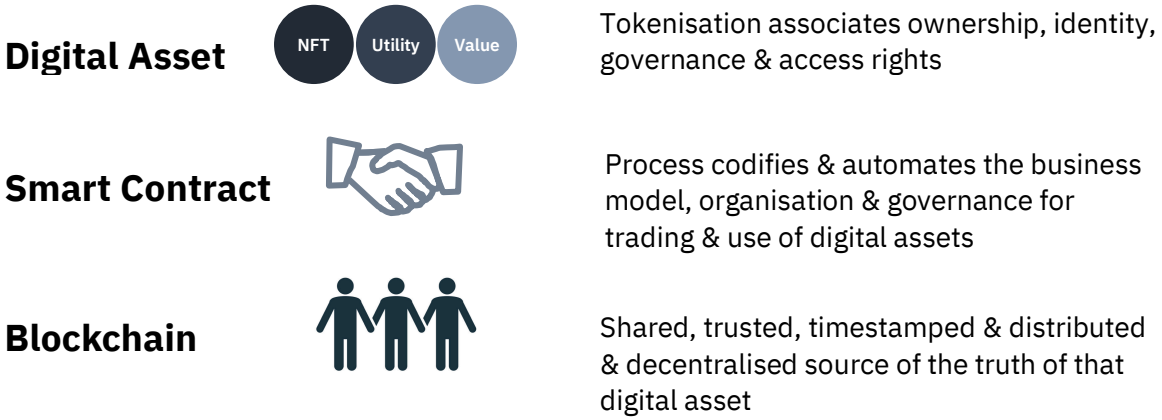

Figure 1: Token economy

What's different this time?

The Token Economy - what's different? The internet has both exceeded and fallen short on its original vision. Far more value has been created by sharing information than could ever have been understood back in 1995. But just look at the small list of the most valuable companies and individuals in the world that has been the result. The rewards have concentrated and centralised power in less not more hands. As we move to the next, and even more important, stage in digitising not just information (the web) but the ownership and trading of value itself (the blockchain) then we must not repeat the mistakes of 1995.

We need collaboration incentivised by fair "everyone wins" and "everyone has power and influence" to be digitised into these markets, just as the power of the sovereign individual was built into the democracy of the West since the ancient Greeks. Power in these markets to trade digital ownership of value must be decentralised. Here you are the sovereign individual of your digital ownership of value and credentials unlike today when your identity is bought and sold as some digital serf. Economic activity goes through the roof as velocity and liquidity is truly digitised as paper and reconciliation and powerful intermediaries - that is the web platforms of today - are swept away

	Old	New
Market data	Central	Distributed & decentralised
Platform power	Lock-in	Open-neutral
Identity	"Controls"	"Verifies"
Incentive	Winner takes all	Win-win-win
Liquidity	"Analogue"	"Digital"
Monetisation	Platform	Data owner, innovator & platform

Figure 2: Token economy – what's different

Decentralised Finance

The token economy - you can't avoid talking about DeFi. This is about using smart contracts to bring borrowers and lenders together. Potentially this can disrupt the role of commercial banks. I don't think DeFi really makes sense unless you can link this new digital economy to the physical economy that we have today. We start by bringing lots of small lenders together to provide digital liquidity (edit) e.g., in the form of a stable coin. The DeFi marketplace brings buyers and sellers together to create the credit to fund supply chains.

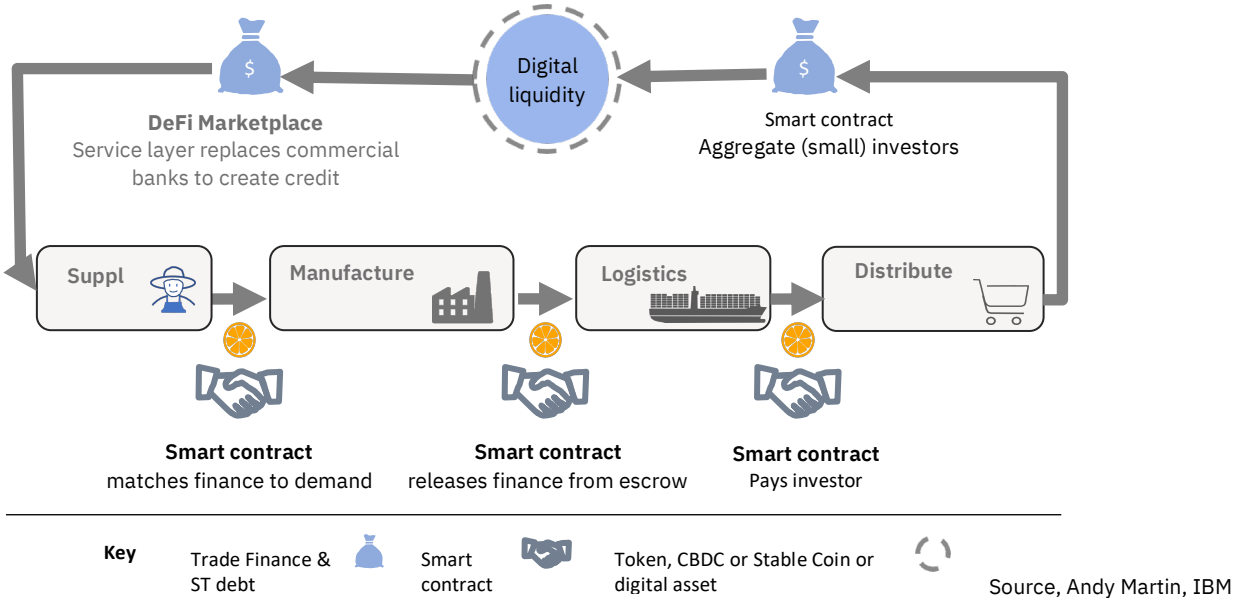

Figure 3: DeFi and the real economy

What are the components in this supply chain?

Token economy - we think of shared processes (blue) across the value chain B2B2C and local, or private, processes (red). You can think of the shared process as a thin layer to automate all those phone calls, emails and paper documents that today integrate your private processes with your upstream and downstream B2B trading partners and ultimately to the end customer/consumer. For the shared process, private keys are held in wallet or agent with the front-end user experience and related logic. The shared process itself is where we have the rules to govern transfer of value and ownership, these are decentralised state updates to the blockchain as we codify & automate trading of digital assets. The shared data in the blockchain gives us the provenance of who did and who owned what in our digital assets (or values store) representing an immutable decentralised & distributed shared source of the truth

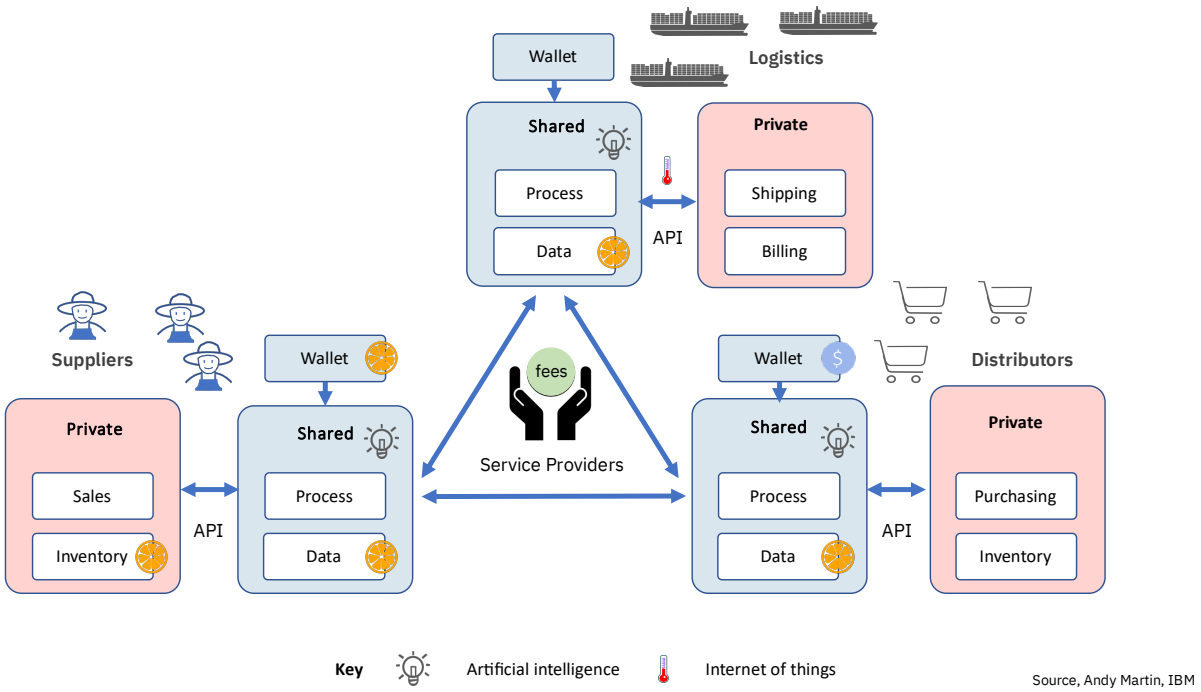

Figure 4: Composable business components

Who will fund these networks?

Token economy - who will pay for and who will start an industry platform has been the biggest challenge in enterprise blockchain. As public and private blockchains merge into one this brings new business models based on the token economy to the enterprise world. The problem is to fund a distributed and decentralised network and to reward risk takers. The answer is likely to be in the token economy. Here the token for the community can encapsulate the whole protocol's funding (e.g., using staking mechanisms), decentralised decision making on chain and risk vs. reward in the form of the market value of the token relative to fiat. I am convinced that the way to reinvent industries in the collaborative economy to come is to design, launch and own tokens in the winning industry protocols.

Your job as a CEO is to know what role your company will play in the token economy that will transform your industry. You must stop thinking in company-by-company silo (those days are fast drawing in) but instead differentiate by extending these new industry collaboration platforms with your private capability to provide delight to customers and to delight your shareholders with the increase in fiat market value of the tokens you earn, hold and own in the industry protocol.

So, will you as CEO be active or passive in creating the protocol for how your industry will add value on web 3.0 and will your shareholders thank you for it? For a great analogy think 1995 and the crazy stock market performance of the "dotcoms" over the next five years. The potential rewards are mind blowing (think of buying Amazon in say 1999) but you might end up with the 90% that became worthless. It is a time of great opportunity but think things through!

At what levels do business models exist?

Token economy - it's important to understand that the business model exists at the platform level, network level and application level. There are three types of platforms. General applications support smart contracts and are Turing complete. Digital assets are focused on payments. And cross chain allows the composition of composable business built from component parts from different chains. The platform token is used to reward providers of technical platform services.

Networks are built on these platforms. The organisation of these networks is decentralised and autonomous and is governed on chain via a governance token. This is used both for decision making and to drive helpful behaviours by network members such as providing access to the networks' digital products and services to known identities (e.g., by reputation such as certified sustainable and responsible suppliers or by ownership of an NFT.)

Applications are built on each network. Each will have its own business model and again tokens can be used to drive helpful behaviours. Networks tend to be built by industry, but industry boundaries will blur and cross industry networks will emerge. It is important that these networks do not become monolithic but instead components remain composable and loosely coupled.

In these ways utility tokens are used to build business models in the token economy to come. The models are not used to optimise the world as we know it today. Rather these models are used to reinvent industries by disintermediating the incumbent if they are passive and let web 3.0 happen to them rather than drive the changes that are coming fast

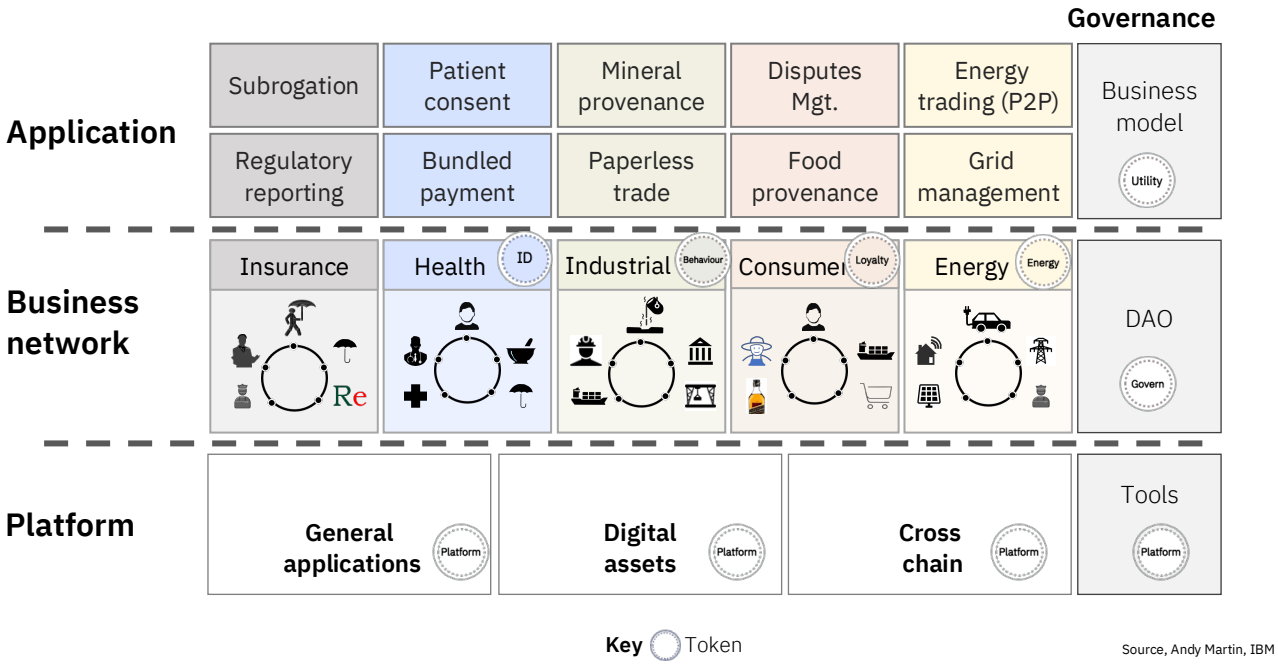

Figure 5: 3 Business Model Levels in a Composable Architecture

What parts are there in the business model?

Token economy - so how do you build a business model for a decentralised and autonomous network and the applications that run on it? I think there are three interlinked parts to any such model.

First, we need to recognize that what blockchain is good at is changing a lot of peoples' behaviour a little bit. It is an economy in code. So, whether we are at the level of the platform, the network or the application we need to model our interactions as an "economy in code" with the needed incentives, disincentives and reserve fund for our new marketplace currency that will be used to govern value transfers in the marketplace.

The second element is the on-chain governance model for agreeing on and then implementing the rules of the road for this autonomous marketplace.

And the third level is the commercialisation of the network as the utility token or internal currency of our marketplace is used to collect fees for access to digital products and services on the marketplace, fees to process transactions and fees for insight from using the new asset of trusted data at the level of the market. The critical success factor will be the liquidity of the marketplace token.

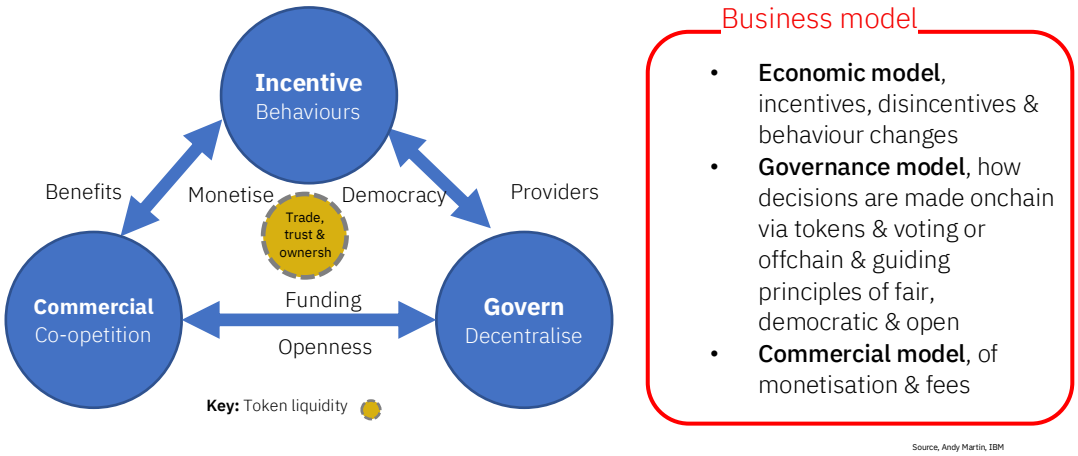

Figure 6: Business Model Components

How does the token economy function?

Token economy - in the business model template we start with data owners who provide or bring their data to smart contracts and to collaboration in the community.

This data is tokenised and data providers are rewarded with tokens representing value. This data is helpful to data queriers as for example it might be a digital representation of information about goods provided which previously was held on paper documents. Data queries may be paid for in tokens for the right to view this data perhaps to help queriers avoid human reconciliation effort in say a post trade reconciliation process.

Also, innovators pay in token to earn the right to use this data in their innovative apps to provide new digital products and services to the community. A share of these fees may be held by the community autonomous entity in order that funding is available to support shared community costs to govern this community.

The community app store is built around foundational services such as identity management (perhaps in pseudo anonymous reputation form), provenance of goods traded in the community and digital payment rails using the internal currency token for the community. Buying and selling access to this data to innovators allows more apps to be built on the community. Community governance of this community currency token may include governance of a reserve fund to manage the volatility of the exchange rate into fiat when token leaks out of the community and value tokens are burnt or redeemed.

The community is designed to retain tokens in the community as token earned by say innovators can be used as a stake to earn the right to provide more apps on the community or by say data providers using tokens earned to buy digital products or services provided by the community. In this way incentives and disincentives are designed to keep tokens in the community and to grow the size of the marketplace economy and to increase the market value of the community token to reward the original and new innovators of the community in a fair, transparent, and democratic way. The community pays data validators and ledger orderers in token as they provide infrastructure services to the community perhaps in new minted token economy.

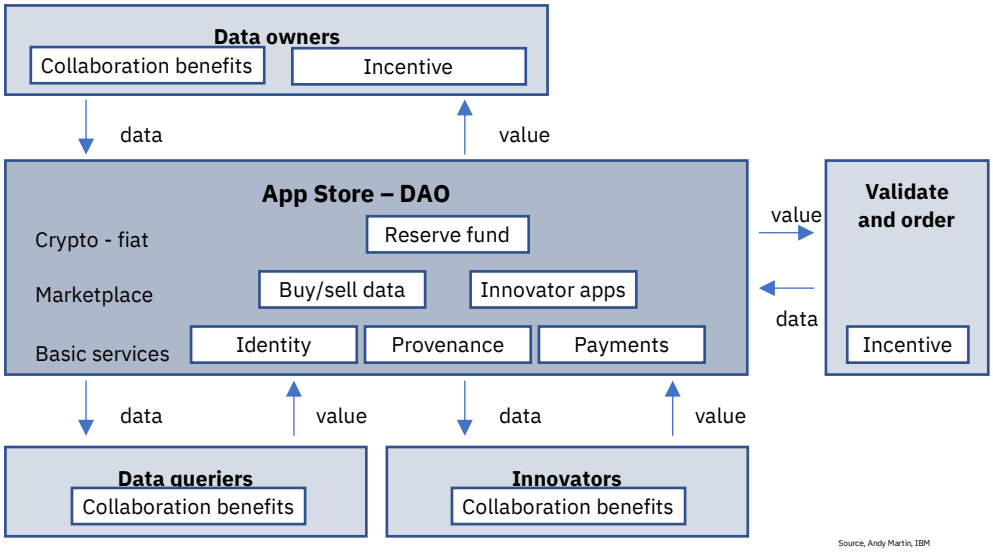

Figure 7: Business Model Template 1 of 2

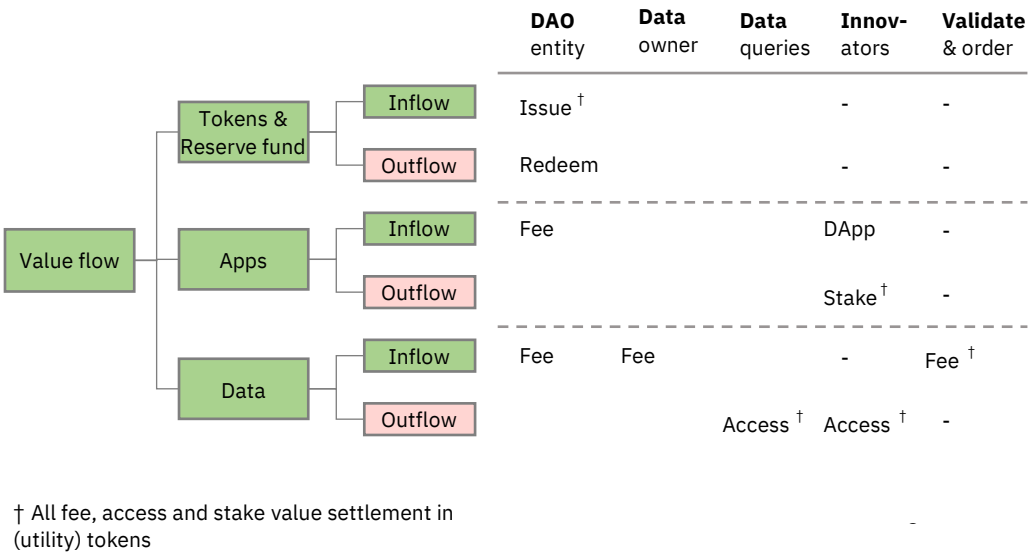

Figure 8: Business Model Template 2 of 2

So where do I start?

Token economy - where do you start? It is helpful to think in 3 phases from creating the foundations of your platform, optimising markets as they are today and finally reinventing how markets operate to take advantage of web 3.0 and the internet of value. Foundations for your new platform are in identity, so we have certainty of who we are dealing with, provenance so we have certainty of what we are buying and new digital payment rails so we can transfer value and ownership at the same time. Tokenisation opportunities are built on top of these foundations and lead to new forms of value exchange in reinvented marketplaces.

	Identity	Provenance & visibility	Ecosystem reconciliation	Tokenisation	Value exchange
Automotive	• Vehicle ID	• Vehicle lifecycle • Supply chain visibility	• Vehicle leasing	• Car eWallet	• Financial settlements
Banking	• KYC/KYT	• Collateral mgt.	• Post trade	• Issue, custody & service	• Payments
Energy & Utilities	• Usage on a singular entity	• Cybersecurity device provenance	• Grid balancing	• Renewable energy credits	• Peer to peer trading
Telco	• Mobile security	• Supply chain mgt.	• Roaming, fraud & overage mgt.	• Digital services enabler	• Platform services marketplace
Distribution/Consumer	• KYB / KYS / SSI	• Anti-counterfeit	• Disputes mgt. • Post trade	• Engagement e.g., recycling & loyalty	• Circular & sustainable economy
Travel & transport	• Passenger	• Baggage handling	• Multimodal tickets	• Loyalty X-industry	• Travel marketplace

Figure 9: Use case road by sample industry

The strategic framework

Token economy - the strategic roadmap for implementing your role in the token economy will reflect a maturity from experimentation in markets, optimisation of existing markets and finally onto reinvention of markets. You will need to identify capabilities that sit either in collaboration, potentially with your competitors and private differentiating capabilities as you dove tail into the emerging web 3.0 network either joining, building or extending networks. Implementation will inevitably create a composable ecosystem of co-opetition across multiple protocols. The magic sauce however, to make all this work, is the incentive and token design.

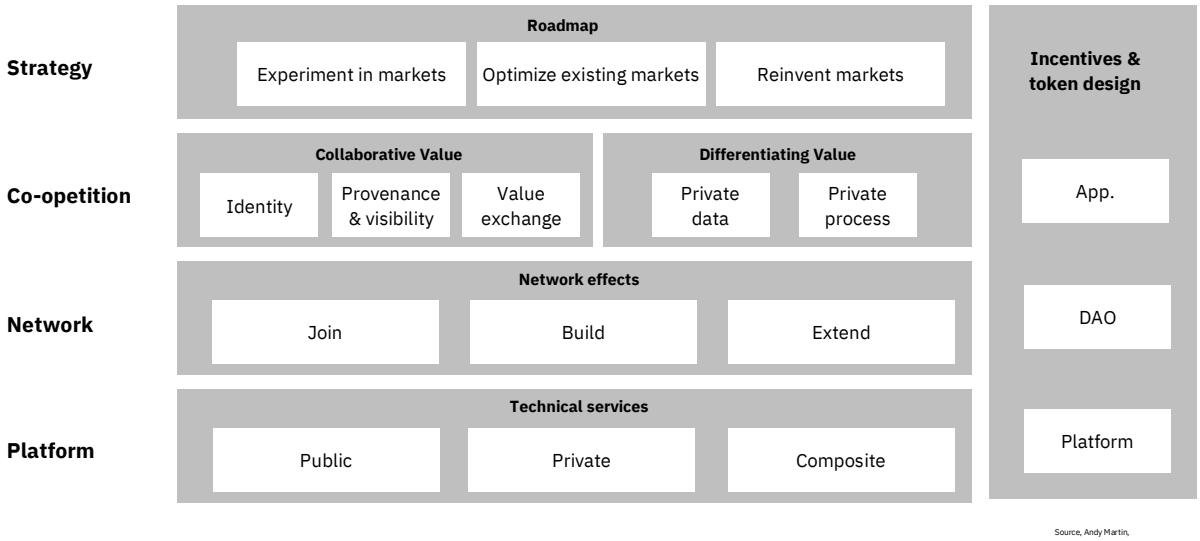

Figure 10: A Strategic Framework

Conclusion

Token economy - new types of ecosystem/network business models emerge. So my thoughts are that either this is something that happens to the incumbent or that the incumbent actively makes happen. I do agree the former may be more likely that the latter. So maybe many Barnes & Noble moments to come as the inability of the incumbent to compete with the ecosystem/network kicks in. This is about the emergence of new industry/market level protocols that are monetised as a new form of decentralised "equity" as helpful behaviours to the network earns a greater share/vote in the industry protocol as smart contracts reward this behaviour with utility tokens. Design of these tokenomics industry systems is the challenge ahead

Credits

(1) **Lisa JY Tann** - The SUM model token taxonomy

(2) **Michel Rauchs** & **Keith Bear** - layering in new marketplace models

(3) **Juergen Kuebler** - Utility token economic principles

(4) **Jorge Chevalier** - amendments to business model "holy trinity"

(5) **LinkedIn community** - review & comments over the years

Version control

Minor edits on 24th November 2021

Published by

Andy Martin
Blockchain is really a governance technology
Published • 2w

25 articles