Collateralized Personal Tokens

A Primer on Deploying People-Centric Tokens using other Cryptocurrencies as Collateral

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Personal Tokens

A *personal token* is a cryptocurrency, which is tethered directly to an individual person (or group of people). There are two classes of *personal tokens*: (1) those that provide utility specifically related to an individual, such as using artist tokens to buy tickets to an artist's upcoming performance, and (2) those that allow people to speculate on the value of an individual, like a stock or future representing the popularity of an artist over time. **A strongly designed personal token should enable both classes simultaneously.**

A *personal token* maintains its application either through memetic means – whereby a community, through social consensus, simply believes a token fairly represents a person – or through cryptographic means – whereby the token, itself, enforces or guarantees valuable behavior of a person through cryptoeconomic design. The scope of this primer is focused largely on the latter.

Collateralized Tokens

First described by Adam B Levine in 2013, a *collateralized token* is a cryptoeconomic primitive – a building block to be used alone or in combination with other contracts, applications, etc. – which can be applied as a *personal token*. *Collateralized tokens* are minted when another cryptocurrency, like Ether or DAI, is deposited into a smart contract. The deposited Ether or DAI can only be withdrawn from the smart contract by the contract owner if the owner burns all or a portion of the *collateralized token*.

The *collateralized token* operates as a *personal token* because anyone who holds a person's *collateralized token* knows the only way for that person to gain access to their deposited funds is if they earn their tokens back (and burn them). In other words, *collateralized tokens* only have a final-state value to a single individual: the owner. (1) Utility and (2) speculation can subsequently emerge based on this final-state principle.

Contract Interface

The *collateralized token* contract interface consists of three functions and events:

```
contract CollateralInterface {

    function mintToken() public payable returns(uint supply);
    function depositCollateral() public payable returns (uint rate);
    function withdrawCollateral(uint amount) public returns (bool success);

    event Mint (uint depositAmount, uint collateralRate, uint totalSupply);
    event Collateralize (uint depositAmount, uint collateralRate);
    event Burn (uint burnAmount, uint collaeralRate, uint totalSupply);
}
```

Mint Token & Deposit Collateral

The mint & deposit functions are similar in functionality – in both cases an individual is sending a cryptocurrency to the `Collateral` contract. The difference is that when crypto is sent to the `mintToken()` function, new *collateralized tokens* are minted at the current collateral rate. When crypto is sent to the `depositCollateral()` function, no new tokens are minted. Instead, the amount of collateral backing each token increases. It is feasible that anyone could call these functions.

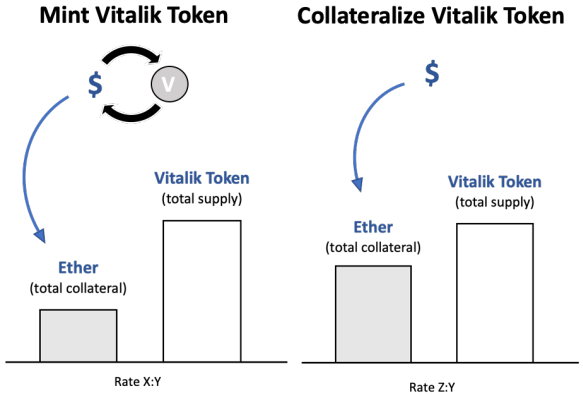

Figure 1: Minting and Collateralizing Token Functions Example

Withdraw Collateral

The withdraw function is the only way to access the funds that have been deposited into the `Collateral` contract. Only the owner of the contract can withdraw these funds. The owner can withdraw these funds by burning the *collateralized token*.

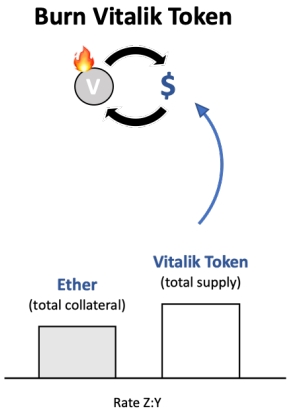

Figure 2: Burning Tokens & Withdrawing Collateral Example

Applications

The scope of applications for a *collateralized personal token* can best understood by exploring variations in two parameters (1) the contract owner – who can call the `withdrawCollateral()` function – and (2) the contract funder – who can call the `mintToken()` and `depositCollateral()` functions.

		Funder: Owner	Funder: Other
Owner	**Individual**	IOUs	Patreon
	Group	Guilds	(out of scope)

Table 1: Examples of collateralized token applications organized by an owner x funder quadrant

IOUs

Trading Favors

If a person is both the owner and the funder, they can use their own *collateralized tokens* as a means to distribute IOUs. For example, a person might ask their community from crypto twitter to review and edit an upcoming blog post. Instead of posting a bounty in DAI or ETH, they could offer volunteers some of their own *collateralized personal tokens*. This provides volunteers with a degree of confidence that that they can "cash in" these *collateralized tokens* to the owner/issuer at a later date in exchange for an equal favor.

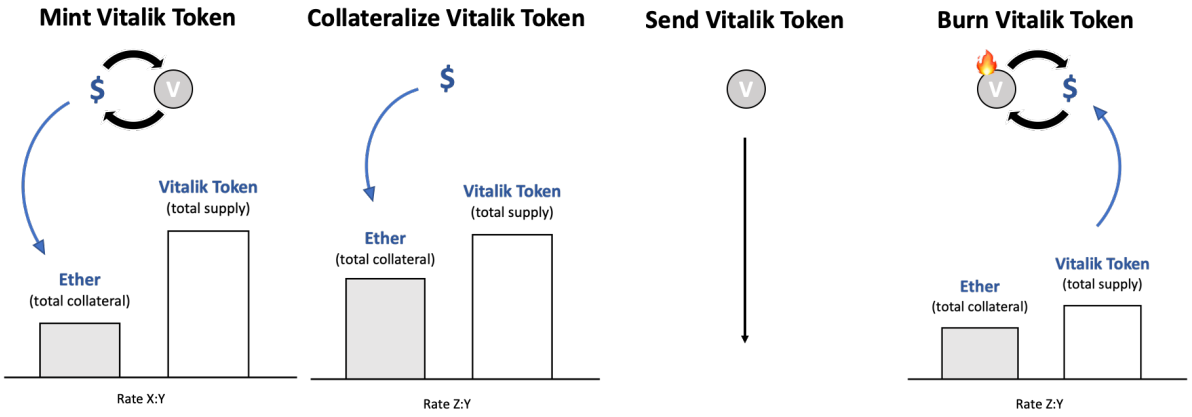

Figure 3: Vitalik Token Example – IOUs can be minted, collateralized, sent, and redeemed

One interesting IOU use case is if a project, like OmiseGO, were to exchange $OMG for any IOU from a community member that supplies at least 1 ETH as collateral. OmiseGO could then return IOUs to community members for completing tasks like registering for the new GOEx.

Guilds

Next Gen Social Platform

If a group of people collectively own and fund a *collateralized token*, they have effectively formed a guild. Similar to an individual's IOU, a guild may provide tokens to individuals or other guilds in exchange for favors, services, or behaviors. A guild may come together to tackle a mutually-shared problem that is "too small" to justify the formation of a formal organization, like a corporation. For example, a group of Ethereum developers might form a guild to establish an effort to pass an under-appreciated EIP. They could, perhaps, use their tokens to convince a larger community to generate a meme campaign.

All guild members may be required to make a single deposit or make regular deposits (similar to paying regular HOA dues). If any guild member earns their guild's *collateralized token* back from a community member who is "cashing it in," then that guild member can burn the tokens and withdraw the respective collateral funds for themselves. It is, therefore, possible for a guild member to withdraw more from the guild than they originally deposited. This means guild members could actually make money from actively participating in effective guilds.

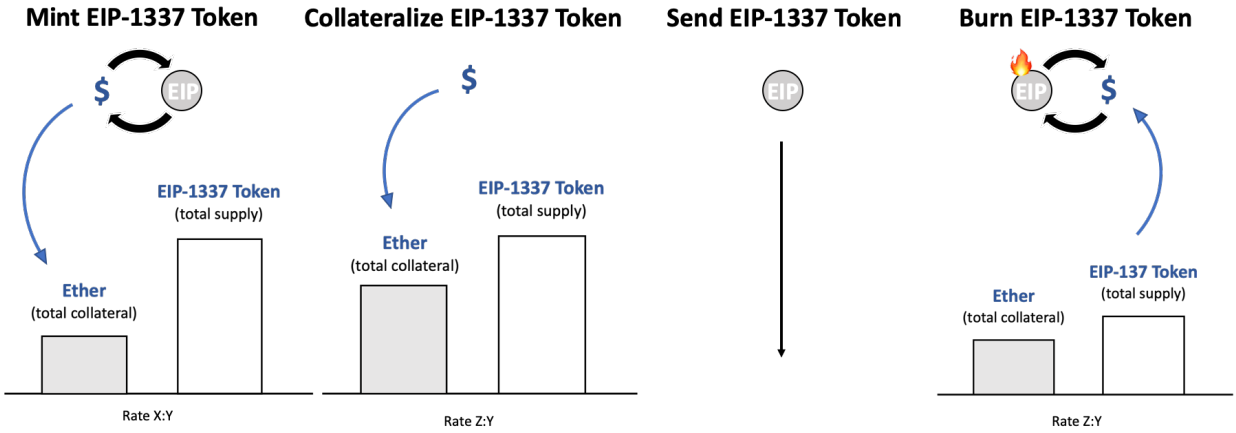

Figure 4: EIP-1337 Token Example - Guilds collectively mint, collateralize, send IOUs. Members redeem.

A *collateralized guild token* would be especially valuable to a community member if the guild was comprised of effective or publicly influential figures. Anyone who's received a *collateralized guild token* would be able to shop it around to any of the guild members to "cash it in," instead of being limited to one individual (who could potentially say no to a proposal or request).

Patreon

Investing in Individuals

If an external source is funding an individual's token owner using novel cryptoeconomic schemes, such as a bonding curve, then an application could be established for community members to invest in the future success of individuals, while simultaneously supporting them financially.

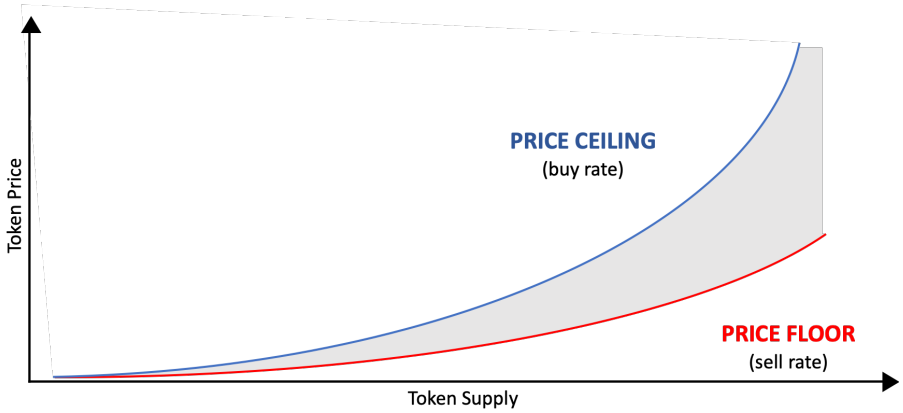

Figure 5: Bonding Curve

Individuals could, for example, send funds to a bonding curve in exchange for an individual's *collateralized token*. The differential between the price floor and ceiling of the bonding curve would effectively be the market fee that funds the collateral pool of the individual's token.

Communities could, therefore, speculate on the value of an individual person along the bonding curve, while simultaneously earning *collateralizing personal tokens* which grant them access to said individual's time, labor, attention, etc. The bonding curve would automatically handle the minting, collateralizing, and distribution of the token – three functions, which would otherwise need to be manually managed by the tokenized individual, such as in the case of an IOU.

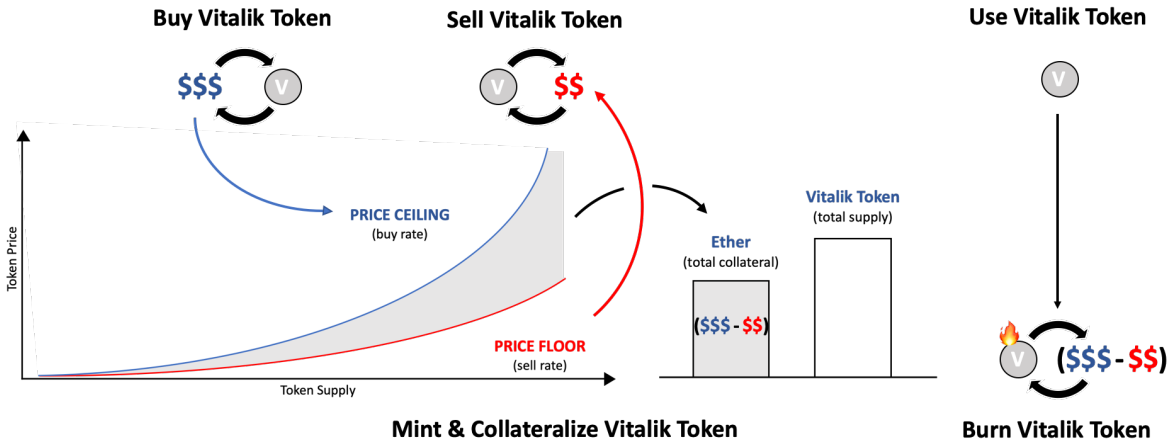

Figure 6: Vitalik Token Bonding Curve Example – the bonding curve continuously mints and collateralizes tokens

Community members would have three options for engaging with the market of an individual's token. They can buy it, sell it, or use it. The buy and use operations enable community members to purchase a token with real utility, while the buy and sell operations enable community members to speculate on an individual.

Conclusion

The Bonding Curve-based Model enables a *collateralized personal token* which allows for both (1) utility and (2) speculation. This robust design should, therefore, be explored further in an additional document.