Standard Protocol—— A Collateralized, Rebasable Stablecoin for Synthetic Assets

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Abstract

Standard Protocol is the first Collateralized Rebasable Stablecoin (CRS) protocol for synthetic assets, and will operate in the Polkadot ecosystem. It introduces a new paradigm for liquidity aggregation. In contrast to the previous generation of algorithmic stablecoins, Standard rebases its stablecoin supply in each era. It will act as the catalyst for the financial activities of other parachains, to enable leveraged trading and arbitrage via a built-in AMM. It will also include a protocol for synthetic asset markets by way of a decentralized oracle.

In this paper, we introduce Standard Protocol, a Collateralized Rebasable Stablecoin (CRS) protocol for synthetic assets. The paper covers cross chain integration, mechanisms and modules.

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1. Introduction

Unlike first generation algorithmic stablecoins with no collateralized assets, Standard Protocol provides collateralized rebasable stablecoin and acts as an index of digital assets with its vault.

1.1 Problems

Current algorithmic stablecoins face three problems:

1. Too much focus on price stability, with no sustainable use cases for interoperability

Current algorithmic stablecoins focus only on automated price stability. Although they provide some interoperability between tokens with initial distribution via yield farming, there is still no sustainable way for them to interoperate in financial activities without the unsustainable level of token issuance distributed to staking pools.

2. Current oracles are centralized, and there is no decentralized ecosystem to reward them

There is no reward system for oracle providers currently, and the current solutions are either controlled by validators or by the companies themselves. One can be dependent on DEXes, but they are prone to flash swaps and generating unwanted arbitrage data when compared to centralized exchanges. In order to provide aggregated and balanced data, oracle providers must be rewarded in a decentralized manner. Standard Protocol proposes a reward mechanism in each era and slashes equivocation with the IQR rule.

3. Auctions are hard to track and are centralized

Liquidation auctions are hard to track and participate in, and thus only experienced traders can benefit from them. A more decentralized method to liquidate positions must be considered. Auction orders come in high volumes of collateral, which can lead to plutocracy.

1.2 Solutions

Standard Protocol tries to solve the above problems with these solutions:

• Elastic Supply

MTR issuance ratio (inverse of collateralization ratio) is fully controlled by governance within an epsilon range. However, when the MTR price goes out of the epsilon range, emergency shutdown executes and no more MTR will be issued for the rest of the era.

Starting from the next era, the system takes charge and adjusts MTR issuance ratio to

stabilize MTR price to USD until MTR price recovers to three(3) quarters of the epsilon range.

If MTR price is above USD, more MTR will be minted from collateralization in the next era.

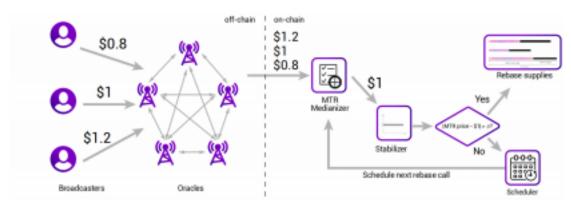
If MTR price is below USD, less MTR will be minted from collateralization in the next era.

$$\frac{\textit{next total supply}}{\textit{circulating supply}} = \frac{\textit{oracle price}}{\textit{1USD}}$$

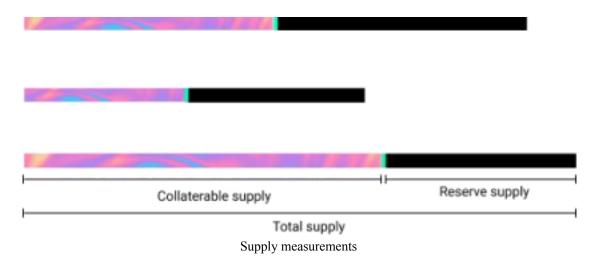
The total supply is adjusted to follow the ratio above.

Ampleforth (AMPL) uses elastic supply to rebase its total supply of tokens. Standard rebases its stablecoin supply in each era, and utilizes overcollaterization to mint its stablecoin, Meter (MTR).

Standard (STND) automatically rebases the collateralized stablecoin, in the manner of an algorithmic reserve bank with decentralized governance for STND holders. By rebasing the price in each era, the total supply of the stablecoin Meter (MTR) and the amount that can be issued are adjusted to peg Meter (MTR) to the value of USD.



Elastic supply architecture for Standard Protocol



Meter (MTR) supplies are measured in each rebase and adjusted with the medianized price from oracles.

• Decentralized Oracle Ecosystem

Oracle clients from various sources (e.g. Binance, Coinbase, HydraDX, etc) can provide aggregated price information so that the price cannot be manipulated by a single entity.

Standard Protocol builds an oracle module to share block rewards with oracle providers. Substrate enables developers to split block rewards to other network participants in every era. Block rewards to oracle providers maintain an 8:2 ratio between validators and the providers in an era. The total block rewards in each era is 10% (governance controlled) of total STND produced in the era.

Oracle providers are selected using the phragmen algorithm. Selected oracle providers have no fee.

Block can only have upto certain number of oracle transactions recorded. This is to prevent too many oracle transactions taking up one block.

a. Oracles are used for generating synthetic assets from the stablecoin Meter (MTR). Standard Protocol treats oracles like validators for operating across the wide scope of the DeFi ecosystem.

• Market Efficient Liquidity

Instead of hosting an auction for liquidating collateral, Standard Protocol deposits liquidated collateral to its AMM pair so that Meter (MTR) holders can purchase other liquidated digital assets. Standard protocol uses a built-in AMM module to provide liquidation in a more market efficient way where liquidated assets are utilized to conduct arbitrage trades.

Standard Protocol rewards stakeholders who find expired loans by giving them a percentage (10% or more) of the collateral. The rest of it goes to Standard Protocol's built-in DEX to provide arbitrage opportunities to stakeholders who use the exchange.



• Other Reasons

Stable Base Price

By being algorithmically stabilized through rebasing, Standard Protocol provides cash which can act as a base price. For speculating on a digital asset, Meter can be used to estimate how much the asset is worth with the price pegged to USD.

Interoperable Ecosystem

Standard Protocol is a collateralized, rebasable stablecoin (CRS) protocol, working across different blockchains as a form of smart contract in each network. Together, the Standard Protocol ecosystem for interoperability represents a blockchain hub. Standard Protocol will be able to share price information to other chains or fiat assets without charging fees due to its self-sustaining oracle reward ecosystem.



Ecosystem Overview

2. Token System

Standard Protocol has three tokens, each serving a specific purpose. Here, we look at them in detail.

2.1 Meter (MTR)

Meter (MTR) is the stablecoin which is synthetically generated by the protocol's vault. By rebasing the stablecoin's total supply with the oracle price provided by oracle clients, the stablecoin's supply is adjusted to have a value maintained at 1 USD. Holders can use MTR as a medium of exchange, to buy other assets, and to farm tokens within the Standard Protocol ecosystem by providing liquidity. MTR's supply is expanded and contracted accordingly in order to maintain the peg.



2.2 Liter (LTR)

Liter (LTR) is a liquidity provider token that represents a share of the AMM module. Similar to LP tokens in Uniswap, LTR can be burned in an AMM to receive deposited assets. LTR can also be used for liquidity mining.



2.3 Standard (STND)

Standard (STND) is the network and governance token for using Standard Protocol. STND can be used in the following ways:



Standard (STND)

• Network Staking

STND token holders have an option to stake STND on the Standard Protocol network. (Standard Protocol validators or collateral providers). By doing so, the staker receives the nomination reward and the network becomes more secured and decentralized.

• Stability Fee Rewards

Stability fee collected from a user closing his/her vault goes to STND holders.

• Transaction

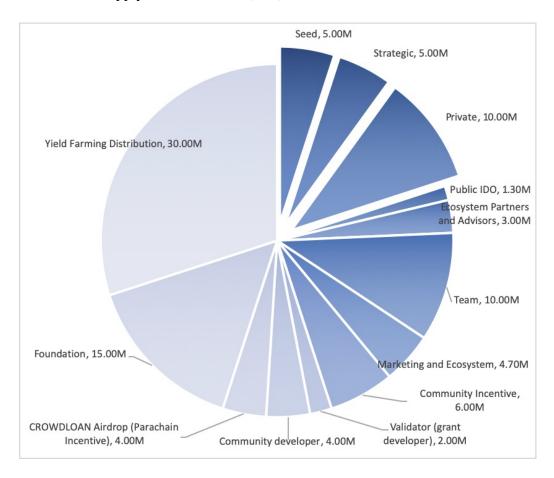
To use Standard Protocol's system, you need to pay fees with STND. STND can be burned or given to validators depending on the module's transaction.

• On Chain Governance

STND holders can participate in the governance of the Standard Protocol ecosystem.

2.4 Token Distribution

The total token supply of STND is 100,000,000.



2.4.1 Token Release Method

✓ Funding: 21.3%

■ Seed round: 5%

These tokens are assigned to top venture capital firms and proactive investors. 15% of these tokens sold in the seed round will be released on TGE with the remaining subject to a linear release schedule every quarter over one year.

■ Strategic partners: 5%

The strategic partner tokens are to be allocated to strategically value adding funds. 20% of the tokens will be released on TGE, with the remaining subject to a linear release schedule every quarter over one year.

■ Private round: 10%

The private sale tokens are to be allocated to good partnership funds and community funds. 20% of the private sale tokens will be released on TGE, with the remaining subject to a linear release schedule every quarter over one year.

■ Public IDO: 1.3%

1.3% of the total supply will be released on an IDO platform such as Polkastarter. It will be fully unlocked on TGE.

✓ Ecosystem Partners and Advisors: 3%

These tokens are assigned to global advisors. Tokens are distributed a linear release schedule every month over one year after 3 month cliff.

✓ Team: 10%

These tokens are assigned to the core team and full-time employees. Tokens are distributed a linear release schedule every month over one year after 3 month cliff.

✓ Marketing and Ecosystem: 4.7%

These tokens are assigned to early-stage community builders for growing traffic in different social platforms, crypto communities, Reddit communities and developer forum communities.

✓ Community Incentive: 6%

These tokens are to be distributed to various communities so that more people can join the Standard Protocol community.

✓ Foundation: 15%

These tokens are to be assigned to a Foundation reserved for business partnerships and collaboration.

✓ Yield Farming, Staking Distribution: 30%

These tokens are to be assigned for liquidity mining rewards.

✓ Protocol Developers _ The external contributors: 10%

■ Validator (grant developer): 2%

These tokens are to be distributed to initial grant programmers or testnet validators before market discovery and test net structures are rolled out.

■ Community developer: 4%

These tokens are to be distributed to programmers in post market discovery.

■ Crown Loan Airdrop (Parachain Incentive): 4%

These tokens are to be distributed in establishing the Polkadot ecosystem partnership consortium.

3. Standard 101

3.1 Using Standard Vaults to Create Collateral Leverage

As an example to help better understand Standard Protocol, Alice, a cryptocurrency holder, is introduced. Just like MakerDAO's vaults, Standard generates MTR by leveraging all accepted collateral assets called Standard Vaults. One of the key ways a Vault owner can use Meter (MTR) is to purchase more collateral, typically DOT. If the price of DOT increases, the Vault owner stands to profit. She can also borrow from the Vault as a form of decentralized leverage. Because Standard Vaults require a minimum of 150% collateralization, the maximum leverage available is 3x, not taking into account transaction fees or slippage.

Consider the following, paraphrased from MakerDAO's example:

Assume one DOT is \$100. Alice deposits 15 DOT, worth \$1,500, to her Vault. She generates 1,000 Meter (MTR) against it (the maximum possible given the 150% collateralization requirement), and then uses the Meter (MTR) generated to purchase 10 DOT, which she deposits back into her Vault.

Alice can now generate a further 667 Meter (MTR) against the extra \$1,000 in DOT collateral. Purchasing \$667 of DOT allows her to generate a further 444 Meter (MTR). Repeating this process provides a further 296 Meter (MTR), then 198 Meter (MTR), 131 Meter (MTR), 88 Meter (MTR), and 59 Meter (MTR). Ultimately a total of 3,000 Meter (MTR) can be generated against the original 15 DOT, enabling Alice to leverage her initial stake by 200%.

The risks of falling DOT prices are also amplified. If Alice does not keep her Vault adequately collateralized, it may be liquidated. Hopefully, the contents are auctioned, but Standard has a different approach to handling the collateral.

3.2 Spending Your Meter (MTR)

In addition to recapitalizing a Standard Vault with generated Meter (MTR), the MTR token can also be used to make purchases. One option is to use Meter (MTR) to purchase other cryptocurrencies in the Meter (MTR) market for a cheaper price than those available from HydraDX. Alternatively, you can hold, earn, spend, donate, lend, and trade Meter (MTR). The community will grow as teams build projects that utilize Meter (MTR).

3.3 Support the Meter (MTR) Economy

Meter (MTR) will become a gateway for a wide range of initiatives, from financial services to charities, and aspires to become the most used cryptocurrency in the Polkadot ecosystem. By engaging with the many different products and services that have integrated Meter (MTR), users are able to manage and trade their crypto assets, as well as develop and expand the Standard ecosystem and the industry as a whole.

Simply by spending Meter (MTR), you are adding liquidity to the token, growing the global Meter (MTR) economy, and raising the profile of Meter (MTR) and its many advantages over conventional alternatives:

- **Decentralization.** Meter (MTR) can be transferred peer-to-peer by anyone, anywhere in the world, with no third-party interference.
- Accessibility. Anyone with an internet connection can access Meter (MTR) via various wallet solutions within the Polkadot ecosystem, including Mathwallet, Speckle, etc.
- **Speed.** Transactions generally take just a few seconds on a PoS network.
- Low cost. Transfer fees are typically just a few cents.

3.4 Using the Standard Protocol

In Bullish Market Conditions

Standard Protocol issues its stablecoin MTR from collateral, typically DOT. This enables leverage trading to generate profits with one's existing assets. Alternatively, MTR holders can generate synthetic assets from oracles, such as virtual stocks, commodities, etc.

In Bearish Market Conditions

MTR holders can still generate profits by purchasing other digital assets from liquidation. These assets can be purchased with MTR and sold on exchanges.



Why are digital assets cheaper from the Meter (MTR) market than other exchanges?

Because liquidations from expired vaults goes to markets, Meter (MTR) holders can purchase other digital assets at a discount.

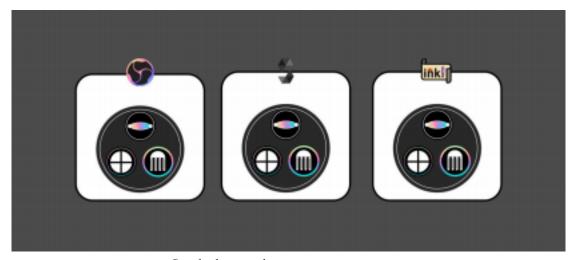


4. Cross Chain Integration

Standard Protocol is a cross chain application protocol which aims to become the preeminent currency for each blockchain ecosystem. Standard Protocol will be applied to blockchains which contain the following:

- Built-in Exchanges
- Oracle support for price
- Smart contract support

Phase 1. Implementations



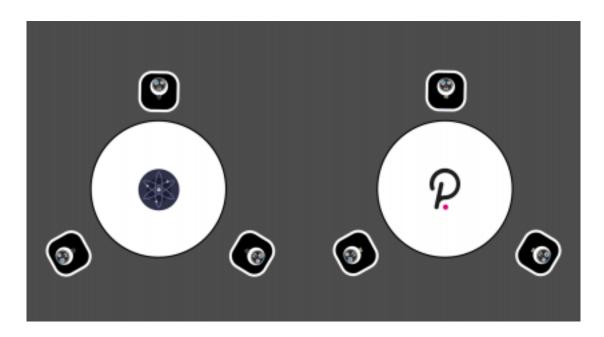
Standard protocol smart contract ecosystem

Standard Protocol will be initially implemented in smart contracts

- in Parity ink!
- Cosmwasm
- EVM(Solidity, Vyper)

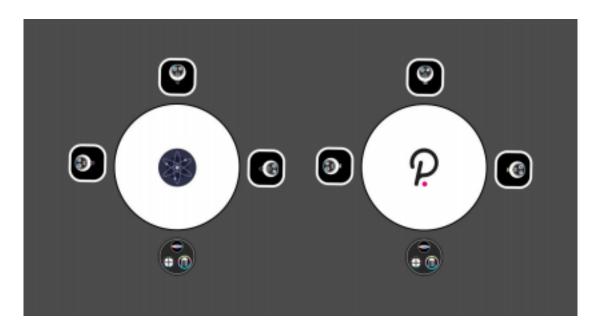
An aggregated interface will be provided starting with EVM implementations.

Phase 2. Connection



Standard Protocol will be implemented to parachains or Cosmos SDK based chains which all support IBC. Each of Standard Protocol implementations will be able to transfer assets or get price oracles from other blockchains in a decentralized manner.

Phase 3. Unification



Governing each implementation with different tokens can be confusing for STND holders. To prevent this, Standard Protocol will build separate working blockchains for each interchain ecosystem to provide unified governance. Smart contracts are limited in a way that one has to execute a transaction for governance. A dedicated governance blockchain will process proposals and voting automatically and fairly.

5. Mechanisms

Stability Maintenance

Standard Protocol defends its price in both contractionary and expansionary periods, with overcollaterization, through stability fees and rebasing the total stable coin supply every 4 hours.

Stability Fee

Standard Protocol takes stability fees as interest by generating the MTR stable coin. Stability fees are determined by governance as a percentage, and the amount of MTR required to close the vault is calculated by the number of elapsed eras after opening a position in the form of a simple interest formula. Suppose the stability fee rate is R, the number of elapsed eras is N, and G is the amount of MTR that was generated.

Era

An era means 24 hours in a substrate node with a period of 6 seconds for the block finalization time. Standard Protocol uses the same amount of time to define an era.

Elastic supply

Similar to Ampleforth's elastic supply, total supply of the stable coin is adjusted when the price falls out of epsilon range, approximately 1% of 1 USD.

$$\frac{\textit{next total supply}}{\textit{circulating supply}} = \frac{\textit{oracle price}}{\textit{1USD}}$$

The total supply is adjusted to follow the ratio above.

Expansionary

In cases where the appreciation of MTR goes above 1 USD, the vault mints new MTR to the vault account. Then, the vault will have more collateralized MTR to distribute to the community.

Contractionary

In cases where the price of MTR goes below 1 USD (or DAI), the community is incentivized to pay back the loan from the vault due to a relatively cheaper MTR price. Vault adjusts this situation by reducing the reserve supply in the Vault account to maintain the peg of 1 USD. If the Vault cannot reduce the reserved supply, the Vault module declares an emergency shutdown for generating MTR.

6. Runtime Modules

Standard Protocol is implemented using Parity Substrate and has 9 runtime modules built using pallets available in the Open Runtime Module Library (ORML). Here are the details for each of these modules:

6.1 Token

The Token module is a registry which stores asset information about Standard Protocol and other chains. Derived from the ORML's XCM token, Standard Protocol's token module manages assets that flow in and out via Cross-Chain Message Passing (XCML) across parachains. Assets are managed with a unique identifier.

6.2 Market

The Market module manages pairs for the automated market maker (AMM) between each collateral and its stablecoin Meter (MTR). Derived from Uniswap V2 contracts, the AMM module facilitates trading in the Standard Protocol ecosystem. The module enables MTR holders to purchase other digital assets or provide liquidity to earn fees on every exchange in the market.

6.3 Vault

The Vault module collaterizes other digital assets and generates MTR. MTR holders can generate other synthetic assets with price information provided by oracle providers.

6.4 Staking

The Staking module uses NPoS(Nominated Proof of stake) mechanism to select validators and rewards them with their actions in each era. Staking module comes with other module sets, including authority discovery on authority key candidates for each block, authorship for recording block authors and following reporting modules: offences, babe, grandpa, collective for managing slashes, im-online for reporting liveness, treasury, bounties, tips for distributing slashed validator's balance to communities.

6.5 Oracle

The Oracle module is an election and price feed information module which stores prices from external data with asset IDs from the Token module as keys. Oracle providers are elected in every era with the amount staked from the users. Oracle providers produce price information and are rewarded in each era on each block reward. Prices are stored in the state, and oracle providers are reviewed in each era. If they produce outliers, they get slashed. The total reward for each oracle provider in

each era is recorded by the Reward module and stakers can get their rewards by claiming them.

6.6 Farm

The Farm module models after the existing Solidity contracts that are used for yield farming projects in Ethereum. It distributes rewards proportionally based on staked amount and elapsed time. The Farm module will be used to reward liquidity providers who supply liquidity for each pair of assets consisting of MTR and some other asset.

6.7 Reward

The Reward module manages the annual inflation rate through governance and stores the total reward for network participants in each era. With 5% initial annual inflation rate of STND, the reward is distributed to oracle and validator with 2:8 ratio. Other network participants (e.g. liquidity providers) can be added through on-chain upgrade of runtime.

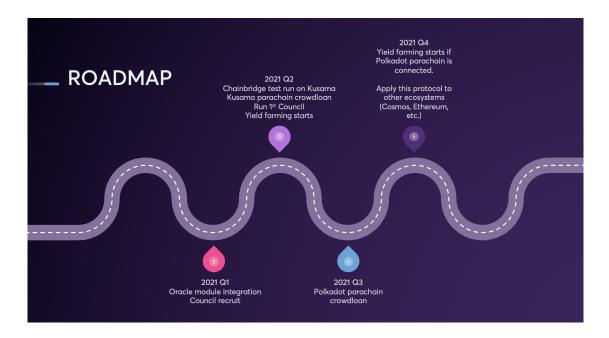
6.8 Democracy

The Democracy module manages the governance for operating Standard Protocol. The Democracy module has access to all root methods for each of the runtime modules and holders can propose changes in the network. The voting rules follow the same rules laid out in the Polkadot wiki.

6.9 Treasury

The Treasury module manages the funds collected from fees or slashes in Standard Protocol. The Treasury module is used for funding protocol developers, monthly payouts for operators and team, stability fee management, or tipping community members

7. Roadmap



Future Plans

- Become a common good parachain which acts as an oracle to provide external data to the ecosystem.
- Full function test on Kusama/Rococo.
- Full function test on Polkadot.

8. Team

Hyungsuk Kang: Founder & CTO

Experiences:

Lead Developer at Plasm;

Head ambassador for East Asia of Polkadot;

Co-founder of PolkaKR;

Description:

Hyungsuk is a software engineer with a strong background in cryptocurrency markets. He is currently a software engineer at Plasm, Head Ambassador for East Asia of Polkadot and the Co-founder at PolkaKR. With his versatility from over 5 years of research and development in software industries, he enjoys challenges in technical problems, and thrives to solve them in the most effective and efficient way.

Jaewon (Jay) Shin: Co-founder

Experience:

Korean partner of BitBlock Capital;

Co-founder of PolkaKR;

Founder of Zhejiang University International Student Blockchain Association;

Description:

Jay attended Zhejiang University for his undergraduate studies, and went to Columbia University and National Taiwan University as an exchange student. Since 2018, he

has been investing in the field of cryptocurrencies, and has participated in more than 20 blockchain investment projects. He is a co-founder of Polkakr and the Korean partner of BitBlock Capital. On the media side, he is a political columnist in the two renowned Chinese newspapers "The Paper", and the "Crossing", specialized in analyzing business from a political perspective.

Billy: Lead Developer

Experiences:

Software Engineer:

Description:

Billy is a software engineer with a strong background in full stack web development. He enjoys utilizing technologies to create fast and powerful modules along with web design. He is currently in charge of managing all of Standard's products and their respective development. His biggest priority is to provide users with a streamlined experience for product usage.

Tony: Head of China

Experiences:

Founding Partner of Bitblock Capital;

Guest lecturer at Zhejiang University;

Author of "Unlock the new cipher, from blockchain to crypto";

Description:

Tony is an expert in the Cryptocurrency industry with a versatile spectrum. He is currently a lecturer at Zhejiang University teaching subjects related to Blockchain and is the author of "Unlock the new cipher, from blockchain to crypto". He also actively invests in the cryptocurrency industry as the Founding Partner of BitBlock Capital.

Dixon: Product Owner

Experiences:

Product manager in digital banking;

Former marketer and analytics consultant;

Ex TEDx organiser.

Michelle: Community Director

Experiences:

Managing Partner at Cognito Capital;

Cofounder of Governance Research Institute (e-governance);

Host of Laptop Radio;

Member of Blockchain Advocacy Coalition — California & Georgia.

Mentor of Singularity University Ventures;

Berkeley Blockchain Accelerator, SVI Academy, Hack Temple, Rev Accelerator Payments/IP Counsel, PayPal

Description:

Michelle Tsing was an attorney at PayPal, where she helped the Large Merchant Services team achieve ubiquity. Prior to PayPal, she was at Cisco, eBay, Samsung and Apple.

Charlie: Head Advisor

Experiences:

Partner at CarbonBlue Ventures:

Expert of Polkadot Ecosystem and Web 3.0;

Description:

Charlie is a specialist in Blockchain and related applications. Charlie has more than 8 years of experience in the blockchain industry with emphasis on community building, ecosystem development and growth marketing. He has successfully incubated and supported multiple Polkadot projects into global prominence.

March: Global Communications Director

Experience:

General Partner at Bizantine Capita;

Born and raised in United States:

Studied at Emory and Washington and Lee;

Description:

March began investing in the blockchain industry while still in college, where he discovered Ethereum and Bitcoin. The markets' outsized gains early on led to him co-founding Crusoe Capital, LLC, which eventually transitioned into Bizantine Capital, LP (https://bizantine.capital). He attended both Emory University and Washington Lee for his undergraduate studies.

Jasper: Marketing Advisor

Experience:

Founder of Blocksync Ventures;

Head of Fintech at Brilliance;

Ambassador and Strategic Advisor to several Polkadot projects;

Description:

Jasper has over 5 years of experience and has coordinated investments exceeding \$50M into world-class distributed technologies project. He has guided advisory portfolios to establish key strategic initiatives by securing partnerships, ensuring proper marketing direction, and encompassing overall day-to-day operation.

Philip: US Advisor

Experience:

Partner at BlockVenture;

Institutional Asset Management Analyst at PNC;

Founder of Carnegie Mellon Blockchain Group;

Description:

Philip is the Founder of the Carnegie Mellon Blockchain Group and is currently a Partner at BlockVenture. He's worked with numerous projects in helping them break into the US market, and has over 5 years of experience in blockchain and finance industries.

Tyler: US Advisor

Experience:

Partner at BlockVenture;

Associate at Struck Capital;

Consultant at Deloitte;

Description:

Tyler is currently a Partner at BlockVenture. He has previously worked as an

Associate at Struck Capital and was a Consultant at Deloitte. Tyler graduated from Carnegie Mellon with a degree in Economics & Statistics.

Juliet Su: Marketing Advicer

Experiences:

Partner at NewTribe Capital;

Co-founder of Digitalweek.online;

Ambassador/official representative in Asia for RACIB;

Co-founder and CEO of ECIDE;

Description:

Juliet has a strong management, marketing and sales background from one of the biggest Chinese investment and construction group of companies, based in Saint-Petersburg, Russia together with over 15 years experience of business with China

Momo Xu: Marketing Advicer

Experiences:

Previously an Administrative assistant at Google;

Top-leader at Nuskin Global Asian market department;

Sephora Asian market Director of new media operations;

BIKI BD Director;

Partner at Snapfingers;