

A teal-colored world map with numerous small, glowing teal dots scattered across the continents, representing a global network or data points.

ANCHOR

DESIGNED AND DEVELOPED BY

MVP
WORKSHOP

Anchor

Product Case Study

Anchor is a two-token, algorithmic stablecoin pegged to the growth trend of the global economy via Monetary Measurement Unit (MMU), a financial index that has been developed for this project by macroeconomics and quantitative finance experts Zoran Grubišić, PhD and Aleksandar Manić, MSc. The original MMU concept was conceived and initially developed by the project co-founders Daniel Popa and Cristian Bronescu.

MVP Workshop had been working with the Anchor team from June 2018 until March 2019, primarily on developing the business model around the MMU and Anchor system as a whole, designing the product architecture, and developing a tech stack proposal for future project implementation.

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01 Business Model Ideation

CHALLENGE

Create a non-inflationary stablecoin pegged to an economic index that can stand on its own as an independent financial instrument/standard and a reliable measure of value.

SOLUTION

- Evaluate risky assumptions behind existing stablecoins (the main competitors) and the pros and cons of their business models to determine the essential characteristics of an ideal stable currency.
- Peg the stablecoin to an inflation-resistant financial index (Reference Measurement Unit – RMU) that calculates the growth trend of the global economy using readily available official data reported by the most reputable international financial institutions/sources.
- Factor in daily fluctuations of relevant macroeconomic data to ensure that the real growth of global GDP is expressed in a nominal sense by adjusting the index (Monetary Measurement Unit – MMU) calculation with respect to the exchange rates of the most relevant fiat currencies that represent the world's strongest national economies.
- Design a token mechanics framework that keeps the stablecoin's value pegged to the MMU by algorithmically reacting to the stablecoin's market price fluctuations.
- Ensure the interaction of the stablecoin as the system's unit of value with the underlying business model and create a fair and sustainable model of distribution and sharing of benefits to the system users.

- Create an efficient decentralized representative governance model that improves the system's stability and supports its growth and evolution.
- Understand the motives and behavior of each adopter group and make sure that each of them gets what they need.

Characteristics of an Ideal Stablecoin

According to our market research and analysis, an ideal stablecoin has the following characteristics:

- Easy to understand and transparent, with regular auditing;
- Stable matching to the value of the reference unit to which it is pegged;
- Resilient to market volatility, while not having to resort to collateralization.

Based on the above conclusions, we have decided to build an algorithmic (non-collateralized) stablecoin.

Reference Measurement Unit (RMU)

In order to provide a true representation of the growth trend of the global economy in the form of a numerical index, we have decided to use the growth of the real GDP as the basis for the calculation of the RMU. The RMU reflects the historical trend of growth of global GDP with projections for the upcoming period based on historical data from more than 190 countries reported over the previous 25 years.

Such a choice gave us both an objective measure that excludes volatile effects of inflation and regional market instability, and a precise measure of each country's influence on the economic growth of the world economy.

Monetary Measurement Unit (MMU)

Compared to the RMU, the MMU offers additional stabilization by taking into account forex indicators from a basket of currencies, and premium sovereign bond yields from ten (10) of the world's strongest economies.

It is based on a dynamic currency basket that is re-evaluated and updated at the beginning of each fiscal year to ensure that the strongest national fiat currencies are represented at all times. The MMU calculations that reflect the real growth of the global GDP are represented in the so-called FX Indicator, while the annual growth of the world economy is reflected in the MMU Premium.

The FX Indicator

The FX Indicator indexes currencies from 10 of the world's strongest economies (the threshold criterion being a country's participation in the world economy that is larger than 1%) using international market exchange rates to calculate the daily nominal expression of the MMU.

The MMU Premium

The MMU Premium calculates the amount of growth that can be expected based on sovereign bond yields of AAA-rated countries, as well as the average inflation rates. Calculations based on historical data place the average annual value of this premium in the ballpark of 0.4%.

The Two-token Model

The main purpose of Anchor's two-token model is to keep the value of Anchor (ANCT), the system's payment (main) token, pegged to the value of the MMU. This goal is accomplished with the help of Dock Token (DOCT), the system's utility (secondary) token, through two distinct phases in the Anchor Tokenomics: the Contraction Phase and the Expansion Phase.

Contraction Phase

A Contraction Phase is triggered when ANCT price falls below the Contraction Phase Threshold (CPT). The system validators can change the value of the CPT, which is currently (as of November 25, 2019) 1% below the value of the MMU.

The following explanation of the Contraction Phase mechanism can be found in the official version of the Anchor Whitepaper (pp. 17-20), as published on the project website:

If the reported exchange rate for ANCT ($ATRP_{current}$) is below the current value of the MMU by a margin greater than or equal to the Contraction Phase Threshold ($\Delta AT_{contraction}$), with a value that has been agreed upon by the system validators (i.e. $\Delta AT_{contraction} \leq MMU - ATRP_{current}$), the system will initiate an open auction for purchasing ANCT from holders in exchange for new DOCT at preferential rates for holders, which will be redeemable for ANCT at a 1:1 ratio if and when certain conditions are met in the future.

The number of ANCT that will be burned to reduce the market cap (ΔA_{circ}) will be calculated according to the following formula:

$$\Delta A_{circ} = ((MMU - ATRP_{current}) * A_{circ}) / MMU, \text{ where} \\ \Delta AT_{contraction} \leq MMU - ATRP_{current}$$

A_{circ} — circulating supply of ANCT that has to be reduced by ΔA_{circ} to keep the peg
 $\Delta AT_{contraction}$ — Contraction Phase Threshold, typically expressed as an agreed upon percentage of the official value of the MMU (e.g. $0.01 * MMU$, or 1% of the MMU value)

During the Contraction Phase Auction (CPA) all ANCT owners will have an opportunity to sell any number of the coins they own worth more than or equal to \$1,000 at the time of sale that is less than or equal to the number of coins that still have to be reclaimed from the users and burned to keep the peg. In return, they will get more DOCT (N_{DOCTi}) than the amount of ANCT they are selling (N_{ANCTi}), according to the following formula:

$$N_{DOCTi} = N_{ANCTi} / (k_{Vi} * k_{Ri}), \text{ where}$$

k_{Vi} is the Volume Discount approved to the i-th responder

k_{Ri} is the Quickness of Response Discount approved to the i-th responder

Token holders can agree to sell any amount of ANCT that still need to be burned at their turn (based on the sale terms and conditions), and obtain more DOCT in return

due to a discount belonging to the corresponding range (as outlined in the Table 1 below).

ANCT to burn [USD worth at the time of sale]	Volume Discount, $k_v = N_{\text{ANCT}} / N_{\text{DOCT}}$ [%]
\$1,000 - \$99,999	0.99 or 1%
\$100,000 - \$249,999	0.98 or 2%
\$250,000 - \$499,999	0.97 or 3%
\$500,000 - \$999,999	0.96 or 4%
\$1,000,000 - \$1,999,999	0.95 or 5%
\$2,000,000 - \$4,999,999	0.94 or 6%
\$5,000,000 or more	0.93 or 7%

Table 1 – Volume Discount: Terms and Conditions During the CPA

This discount is greater if the buyer is among the first five responders to the sale:

Order of Response to CPA (i-th responder)	Quickness of Response Discount, k_r [%]
1st Responder	0.9 or 10%
2nd Responder	0.92 or 8%
3rd Responder	0.95 or 5%
4th Responder	0.98 or 2%
5th Responder	0.99 or 1%
Other Responders	1.00 or 0%

Table 2 – Discounts for Buyer Response Sequence During the CPA

DOCT purchased during the auction will be placed in the Contraction Phase Queue (CPQ). They will be converted to ANCT either after their respective waiting periods,

shown in the list below, or earlier, provided that a sufficient number of ANCT is generated during the Expansion Phases (see below) that occur after the auction:

- The first \$1,000 to \$99,999 of each buyer's purchased worth of Dock Tokens will be converted to ANCT after 2 (two) months.
- The next \$1 to \$150,000 (if applicable) of each buyer's purchased worth of DOCT will be converted to Anchor Tokens after 4 (four) months.
- The next \$1 to \$250,000 (if applicable) of each buyer's purchased worth of DOCT will be converted to ANCT after 6 (six) months.
- The next \$1 to \$500,000 (if applicable) of each buyer's purchased worth of DOCT will be converted to Anchor Tokens after 10 (ten) months.
- The next \$1 to \$1,000,000 (if applicable) of each buyer's purchased worth of DOCT will be converted to ANCT after 15 (fifteen) months.
- The next \$1 to \$3,000,000 (if applicable) of each buyer's purchased worth of DOCT will be converted to Anchor Tokens after 20 (twenty) months.
- The remaining amount (if applicable) of each buyer's purchased worth of DOCT will be converted to ANCT after 25 (twenty-five) months.

The Contraction Phase Queue

All the issued DOCT are tallied and ordered based on their release dates. This ordered sequence of DOCT belonging to their respective holders is referred to as the Contraction Phase Queue (CPQ). DOCT with shorter waiting periods will be exchanged for Anchor Tokens earlier than those with longer waiting periods.

Consequently, the initial ordered sequence in the Contraction Phase Queue (QCP0) is formed as an array:

$$Q_{CP0} = Q_{CP}(t_0) = (t_{EXPd1}, t_{EXPd2}, \dots, t_{EXPk}, \dots, t_{EXPd_{cpq0}}) \text{ where}$$

t_0 represents the time of the creation of the CPQ after the first response to the first DockTokens auction,

t_{EXPdk} represents the k-th ($k = 1, 2, \dots, D_{CPQ0}$) Dock's release date, where

$$t_{EXPd1} \leq t_{EXPd2} \leq \dots \leq t_{EXPdk} \leq \dots \leq t_{EXPd_{cpq0}}$$

The order of DOCT in the Contraction Phase Queue is redone after each new auction, as all the newly issued DOCT are added to the CPQ."

Expansion Phase

The following explanation of the Expansion Phase mechanism can be found in the official version of the Anchor Whitepaper (pp. 20-22), as published on the project website:

“When the reported exchange rate for ANCT ($ATRP_{current}$) is above the current value of 1MMU by a margin greater or equal than the Expansion Phase Threshold ($\Delta AT_{expansion}$), with a value that has been agreed upon by the system validators (i.e. $\Delta AT_{expansion} \leq ATRP_{current} - MMU$), new ANCT (A_{EP}) will be issued:

$$A_{EP} = \Delta A_{circ} = ((ATRP_{current} - MMU) * A_{circ}) / MMU, \text{ where } \Delta AT_{expansion} \leq ATRP_{current} - MMU$$

A_{circ} – circulating supply of ANCT that has to be increased by ΔA_{circ} to keep the peg
 $\Delta AT_{expansion}$ – Expansion Phase Threshold, typically expressed as an agreed upon percentage of the official value of the MMU (e.g. $0.01 * MMU$, or 1% of the MMU value)

After the creation of A_{EP} amount of new ANCT, they are used to redeem the first $D_{EP} = A_{EP}$ amount of DOCT from the CPQ. The required number of new ANCT is then minted and distributed to DOCT owners by converting DOCT into ANCT 1:1 according to their order in the CPQ. After conversion, all the redeemed DOCT are burned.

If there are no more outstanding DOCT, any remaining new ANCT are distributed by airdropping them to users or system-reserved allocations by means of random picks with pre-specified statistical probabilities. 50% of the airdropped ANCT will be distributed among the system-reserved allocations, whereas the remaining 50% of the airdropped ANCT will be distributed among the non-system allocations belonging to various ANCT holders.

SYSTEM-RESERVED ALLOCATIONS [50%]	NON-SYSTEM ALLOCATIONS [50%]
VALIDATORS	INDIVIDUAL ANCT HOLDERS
TREASURY	COUNTRIES
OPERATIONS & MANAGEMENT	PARTNERS
SALES & MARKETING	CONSULTANTS

RESEARCH & DEVELOPMENT	ADVISORS
GENERAL & ADMINISTRATIVE	
LEGAL & REGULATORY	
ANCHOR AG	
CONTINGENCY	

Table 3 - Expansion Phase Airdrop Allocations

All current holders of ANCT (i.e. those holding ANCT at the beginning of the initiated Expansion Phase), non-system allocations and system-reserved allocations participate in the process, and the probabilities are determined by the following criteria:

- Users who purchased more DOCT overall have better chances of getting new ANCT airdropped to their account;
- Users with more Anchor Tokens at the beginning of the Expansion Phase have better chances of getting new ANCT airdropped to their account.

Each system-reserved allocation's probability P_{SRI} of being picked as the recipient of an airdropped Anchor Token is calculated according to the following formula:

$$P_{SRI} = (D_{SRI} + A_{SRI}) / (\sum D_{SRI} + \sum A_{SRI})$$

D_{SRI} – number of all historically-owned Dock Tokens by the i-th system-reserved allocation;

A_{SRI} – number of Anchor Tokens belonging to the i-th system-reserved allocation at the beginning of the Expansion Phase in progress;

$\sum D_{SRI}$ – number of all historically-owned Dock Tokens by all system-reserved allocations;

$\sum A_{SRI}$ – number of all Anchor Tokens belonging to all system-reserved allocations at the beginning of the Expansion Phase in progress.

Each token user's/non-system allocation's probability P_{UNSj} of being picked as the recipient of an airdropped Anchor Token is calculated according to the following formula:

$$P_{UNSj} = (D_{UNSj} + A_{UNSj}) / (\sum D_{all} - \sum D_{SRI} + \sum A_{circ} - \sum A_{SRI})$$

D_{UNsj} – number of all historically-owned Dock Tokens by the j-th user or a non-system allocation;

A_{UNsj} – number of Anchor Tokens belonging to the j-th user or a non-system allocation at the beginning of the Expansion Phase in progress;

D_{all} – number of all historically-issued Dock Tokens;

D_{SRi} – number of all historically-owned Dock Tokens by all system-reserved allocations;

A_{circ} – total circulating supply of Anchor Tokens at the beginning of the Expansion Phase in progress;

A_{SRi} – number of all Anchor Tokens belonging to all system-reserved allocations at the beginning of the Expansion Phase in progress.”

The idea of using statistical probabilities instead of a simple percentage of each user’s holdings’ share was motivated by the fact that the Anchor system (the way it is designed) values each user’s contributions, though it cannot guarantee any type of gains/profit to anyone, especially given the fact that Anchor was conceived as a payment token, and not an asset/security.

The rationale for using historically-owned Dock tokens is the following: users can obtain Dock tokens either by purchasing their batch from the primary issue (when they support the system in its early phase and deserve to be rewarded for that), or by participating in the Contraction Phase (when they support the system during its highly turbulent period and also deserve to be rewarded for that).

Reference Price Calculation

Nota bene: The following description contains the original proposal made by the MVP Workshop Team. The actual solution has been done differently by another team. The price of the Anchor Token is pegged to the Monetary Measurement Unit (MMU), which is calculated based on the proprietary formula that takes into account publicly available macroeconomic data from the most reputable international financial institutions. The MMU will be recalculated periodically, taking into account new sets of values of macroeconomic indicators from trusted sources that have become officially available since the last calculation.

The calculation based on the MMU formula will determine the initial price of the Anchor Token at the time of its launch and its subsequent availability at the Decentralized Exchange (DEX). The Anchor System will be using a set of delegated data feeds provided by the system Validators, who will constantly monitor the reference

price of the Anchor Token across a number of whitelisted external sources, consisting mostly of off-chain data, typically coming from decentralized crypto exchanges¹, and submit updates to the blockchain when:

- Source price differs from the most recently submitted price by more than the defined amount².
- Last price update was more than a specified period of time ago.

Price updates will be written to the blockchain via price feed accounts, which are owned by the system Validators. The reference price for the Anchor will be provided via a system's Oracle (a.k.a. the MediAnchor), which collates price data from the system Validators.

MediAnchor is envisaged as the system's smart contract³ that provides the Anchor Token's Trusted Reference Price (ATRP). It maintains a whitelist of price feed contracts (owned by the system Validators) that are allowed to post price updates, and a record of recent prices supplied by each address.

Every time a new price update is received, the median of all feed prices (with the exemption of the lowest and the highest input values, as well as five more randomly excluded sources) is re-computed and the medianized value is updated.

Δt_{PFI} – the interval between two consecutive price feeds: $\Delta t_{PFI} = t_{PFI+1} - t_{PFI}$

$\Delta t_{ATRPmax}$ – the maximum interval between ATRP updates

$\Delta a_{ATRPmax}$ – the maximum difference between consecutive ATRP calculations that does not require updating of the ATRP value.

V_j – j-th Validator ($j = 1, 2, \dots, N$)

W – number of whitelisted price feed sources

S_k – k-th whitelisted price feed source ($k = 1, 2, \dots, W$)

PF_{jk} – price feed reported by j-th Validator from k-th source

¹ Price feed Validators may configure their instances to obtain price data from any of the whitelisted sources. Validators can choose which sources to report.

² Validators will set (or change, if needed) limits on how much the price feed can move within certain time frames, so that the price calculation software can send alerts/reports to the network.

³ In the initial phase these operations can be performed manually, or semi-manually, before the eventual implementation of the smart contract.

VALIDATORS	WHITELISTED SOURCES					
	k = 1 S_1	k = 2 S_2	...	k S_k	...	k = W S_W
V_1	PF_{11}	PF_{12}	...	PF_{1k}	...	PF_{1W}
...
V_j	PF_{j1}	PF_{j2}	...	PF_{jk}	...	PF_{jW}
...
V_N	PF_{N1}	PF_{N2}	...	PF_{Nk}	...	PF_{NW}

Table 4 – Price Feed Matrix $PF_{jk}(t = t_{PFi})$

Before each calculation of the ATRP Calculation Matrix $ATRP_{mk}$ ($m = 1, 2, \dots, N - 7$; $k = 1, 2, \dots, W$), smart contract excludes all prices submitted by five randomly chosen Validators, as well as the feeds from Validators with the lowest and the highest reported median values:

$$ATRP(t = t_{PFi}) = \text{Mdn} \{ATRP_{mk}\}$$

Only the price feed contracts that have been whitelisted by the MediAnchor will be able to forward their prices for inclusion in the medianized price of Anchor. The adding and removal of whitelisted price feed addresses is controlled via governance, as is the setting of the minimum number of valid feeds required in order for the medianized value to be considered valid.

If $ABS(ATRP(t = t_{PFi}) - ATRP_{current}) \leq \Delta a_{ATRPmax}$ the Anchor Token's Trusted Reference Price will not be updated unless $t_{PFi} - t_{ATRPcurrent} \geq \Delta t_{ATRPmax}$

As the median of the price feeds provided by the Validators is used, a majority of the Validators would have to collude to manipulate it. This, in itself, is not particularly

likely to happen, and Validators can also be voted out of their duty for providing false data⁴.

Primary Issue and Token Allocation/Distribution

The entire Anchor Economy was kick-started by the primary token issue and its allocation, described in detail below (see Table 5). In the primary issue, the Anchor Company issued \$600 million worth of DOCT, mirrored by \$600 million worth of Anchor Tokens, in the Mirror Vault (see below).

Dock Tokens are offered in batches with different release dates (i.e. dates of 1-for-1 conversion to Anchor tokens) to an array of stakeholders with the primary aim of creating an initial pool of reputable buyers and operational teams who will have embraced the vision of the Anchor Project and will contribute to its validation, adoption, stability and success.

The System Launch (SL) that took place on September 12, 2019 began with the primary issue of ANCT and their placement into the Mirror Vault, immediately followed by the primary issue of DOCT, and their distribution to respective owners.

The Mirror Vault

The first \$600 Million worth of ANCT, the system's payment token, were issued at SL and placed in the Mirror Vault, the account that is used for storing the primary issue. The corresponding \$600 million worth of Dock Tokens, the system's utility token, were distributed to the system validators, token buyers and other stakeholders, and placed in the Mirror Vault Queue.

These batches of DOCT will be exchangeable for Anchor Tokens from the primary issue deposited in the Mirror Vault, on their respective release dates that differ for each stakeholder category.

The Mirror Vault Queue

All the issued DOCT are tallied and ordered based on their release dates. This ordered sequence of Dock Tokens belonging to their respective users is referred to as the Mirror Vault Queue. DOCT with shorter waiting periods will be exchanged for ANCT earlier than those with longer waiting periods.

⁴ Voting out a Validator from its duties over a given period (or indefinitely) would require a two-thirds majority vote of the system's remaining Validators.

Consequently, the initial ordered sequence in the Mirror Vault Queue was formed as an array:

$$Q_{MV}(t_0) = Q_{MV0} = (t_{L0d1}, t_{L0d2}, \dots, t_{L0dk}, \dots, t_{L0dN}) \text{ where}$$

$t_0 = 0$ (generally, t represents the time elapsed after the end of Presale),

t_{Ldk} generally represents the time remaining until the expiration of k -th ($k = 1, 2, \dots, N$) Dock Tokens waiting period,

t_{L0dk} represents the duration of k -th ($k = 1, 2, \dots, N$) DOCT waiting period, counting from the end of the System Launch, where

$$t_{L0d1} \leq t_{L0d2} \leq \dots \leq t_{L0dk} \leq \dots \leq t_{L0dN}$$

Treasury

A special deposit account called the Treasury will hold US \$21 million in Dock Tokens, which will be used to compensate the system's Validators during an initial grace period for early Anchor Token purchasers, i.e. after the initial distribution of the primary issue is concluded.

The Grace Period represents a timeframe that started after the end of the System Launch and ANCT became available for purchase to the general public. Within this timeframe, the Anchor Team will be able to test out various transaction models and configure workflows, at the expense of the system.

This means that the Validators who are eligible to receive a portion of the transaction fee from each newly purchased Anchor Token after SL, will be compensated in DOCT from the Treasury, while these initial purchasers of Anchor Tokens will not be charged any fees until the funds stored in the Treasury run out, by which time the Anchor Team will have configured, optimized and validated the system's behavior and workflows.

After the expiration of the Grace Period (i.e. when the Dock Tokens in the Treasury have all been distributed to the Validators), the system will charge a Stability Fee that will be evenly split among the Validators.

SYSTEM-RESERVED ALLOCATIONS [STATISTICAL DISTRIBUTION OF 50% OF EACH EXPANSION PHASE AIRDROP]		NON-SYSTEM ALLOCATIONS [STATISTICAL DISTRIBUTION OF 50% OF EACH EXPANSION PHASE AIRDROP]	
SR1. SYSTEM [17.83%]	OPERATIONS & MGMT [5.00%]	NS1. FOR SALE [26.67%]	
	SALES & MARKETING [5.00%]		
	RESEARCH & DEVT [1.00%]		
	GENERAL & ADMIN [1.00%]	NS2. 195 COUNTRIES [32.50%]	
	LEGAL & REGULATORY [0.83%]		
	CONTINGENCY [5.00%]		
SR2. ANCHOR AG [5.00%]		NS3. CONTRIBUTORS [4.00%]	PARTNERSHIPS [1.50%]
SR3. 21 VALIDATORS [10.50%]			CONSULTANTS [1.50%]
SR4. TREASURY [3.50%]			ADVISORS [1.00%]

Table 5 - Primary Issue Allocation Distribution Structure

Token Allocation and Release Plans

After the Hard Launch, new users will be added to the system. They will typically come from the following allocations:

SR1 (“System”):

Hard Launch: 20% of DOCT to ANCT

HL + 4 months: 20% of DOCT to ANCT

HL + 8 months: 30% of DOCT to ANCT

HL + 12 months: 30% of DOCT to ANCT

The SR1 (“System”) allocation should be placed into a single account, and its statistical probability for the Expansion Phase Airdrop distribution should be calculated as a whole.

SR2 (“Anchor AG”) & SR4 (“Treasury”): HL + 12 months: 100% of DOCT to ANCT

SR3: Validators - Each new validator will get SR3/21 DOCT, including Anchor AG. Anchor AG’s allocation should be kept as a separate account and not merged with SR2. Those DOCT will be converted to ANCT based on the following plan:

Hard Launch + 12 months: SR3/126 of DOCT to ANCT

Hard Launch + 15 months: SR3/126 of DOCT to ANCT

Hard Launch + 18 months: SR3/126 of DOCT to ANCT

Hard Launch + 21 months: SR3/126 of DOCT to ANCT

Hard Launch + 24 months: SR3/63 of DOCT to ANCT

NS1: For Sale - Each new user will get as many DOCT as they paid for. They will be subtracted/transferred from NS1, immediately converted to ANCT and placed on their individual account(s).

NS2: 195 Countries - Each new country will get \$1M worth of DOCT. They will be subtracted/transferred from NS2 and placed on the country’s account. Those DOCT will be converted to ANCT based on the following plan:

Upon receipt: 20% of DOCT to ANCT

UR + 4 months: 20% of DOCT to ANCT

UR + 8 months: 30% of DOCT to ANCT

UR + 12 months: 30% of DOCT to ANCT

NS3: Contributors - Each new contributor will get the contracted amount in DOCT. They will be subtracted/transferred from NS3 and placed on the contributor’s account. Those DOCT will be converted to ANCT based on the following plan:

Upon receipt: 20% of DOCT to ANCT

UR + 4 months: 20% of DOCT to ANCT

UR + 8 months: 30% of DOCT to ANCT

UR + 12 months: 30% of DOCT to ANCT

System Governance

Nota bene: The following model represents the original proposal made by the MVP Workshop Team. It is likely that the system governance will undertake some changes, as the project appears to be moving in a different direction than originally envisaged. Governance inside the Anchor system consists of executive and legislative power.

The executive power lies in the hands of Anchor Validators (AV), whose Rules of Conduct are described in the AV Agreement. The legislative power lies in the hands of the Anchor's Board of Governors (ABG), where each governor represents one of the 195 countries. ABG Rules of Conduct are described in the ABG Agreement. General rules of governance are described in the Anchor's Constitution.

Validators

The Anchor Validator Body (AVB) is envisaged as the Anchor Network's body that exercises executive power within the network. The AVB will have 21 Validator slots, and the first Anchor Validator will be Anchor AG (i.e. the Anchor company). Each new Validator that will subsequently join the system will have a $1/21$ voting power, the same as Anchor AG.

The Anchor Validators will perform validating duties, as specified in the Governance in Anchor document, in accordance with regulations, standards and code of conduct specified in the Anchor Validator Agreement. As a means of compensation for performing said validating duties, the Anchor Validators will receive a portion of the stability fee charged to the token holders. Each Validator will receive $1/N$ of the total amount of the stability fee charged, where N represents the number of Validators in the AVB.

The design is, and it is in everyone's interest, to gradually empower the system Validators over time, as they are key to decentralized governance for two primary reasons: they form a decentralized entity gathered around the system's core information (e.g. value of the MMU, price of Anchor, etc.), and they guarantee transparency of the system's actions (financial audits, purchasing of sovereign debt, etc.), or data (e.g. market cap, daily trading volume, number of issued Docks, etc.). In future, Validators can form a body that will not only keep the network/system in check, but also make decisions (by voting) on token issuance, sovereign debt purchases, etc.

The Validator body should gradually extend its authority to other decision-making and operational or executive duties, such as burning/minting tokens and purchasing sovereign debt themselves, etc. Eventually, this body may even become recognized as an entity that represents a “Single Point of Truth” that could offer its validation and governance expertise and services to other decentralized projects.

Based on the above considerations, It is perfectly clear that trust in Anchor as a system depends on reputation and behavior of the system Validators, so everything starts from there. Validators should provide details of ownership disclosure and make it available not only to Anchor AG, but to all other Validators and the community as well.

Validators should embrace and promote a spirit of cooperation and mutual understanding among their peers and within the network, especially in regard to governance, system transparency, security issues, standards, compliance, technology, hardware and software solutions, software updates, etc.

Conversely, acting in collusion aimed at manipulating the system governance for personal/private gain, or the gain of narrow self-interest, is utterly harmful to the system and its reputation, and has to be avoided and, whenever possible, timely prevented, to the maximum extent.

It is in Validators’ best interest to perform their duties to the best of their ability, as the stability of the system would increase the trust in the Anchor token. Ultimately, a fully-rounded system of respectable Validators should guarantee a level of decentralization sufficient to allow for a perception shift from trustless (as the old blockchain trope that has overstayed its welcome goes) to trusted.

Working with blockchain technology typically requires a certain amount of technical capability and credentials, and the same applies here. To effectively perform Validator duties and services required to support the entire ecosystem requires not only high-end infrastructure solutions, but an experienced and committed internal team as well.

In a nutshell, being an Anchor Validator is a time-intensive technical responsibility that requires a mature operational structure with professional integrity and extensive experience in running, monitoring, managing and maintaining data center infrastructure and its security.

Country Representatives

The Anchor Body of Governors (ABG) is envisaged as the Anchor Network's body that exercises legislative power within the network. It will have 195 slots, one for each member state of the United Nations.

ABG members will hold voting power that reflects their contribution to the global economy, as expressed by the macroeconomic index that is used as the country influence ponder in the MMU formula, rounded off to the nearest fourth decimal. If the result of such rounding yields zero, the ponder will be rounded off to 0.0001, or 1/10,000, for the simplicity of calculation. Each country's voting power is then calculated as:

$P_i / (P_1 + P_2 + \dots + P_i + \dots + P_N)$, where

P_i is the i -th country's influence ponder as calculated for the MMU formula, and N is the number of countries represented in the ABG.

Community Initiatives

The Anchor Network is committed to transitioning into a fully functional ecosystem that is fair, transparent and decentralized. To achieve that goal, the Anchor Network intends to make every reasonable effort to give ANCT/DOCT holders a meaningful say in the governance of the ecosystem, and increase its chances of success to everyone's benefit. The Community Initiative Anchor Governance Proposal Process is thus introduced as a structured procedure that initiates requests for making changes to the Anchor system/network resources.

Adopter Groups

"Who your early token holders are matters a lot (...) Sophisticated contributors are generally better community members than pure speculators."

Nick Tomaino, Founder of 1Confirmation ([Lessons from MakerDAO](#))

Innovators

The system's first Validators, who should be able to recognize the vision and the long-term potential of the project. Onboarding the validators before the system launch is crucial for meeting legal requirements of being a decentralized system, so offering them free packages is the most reasonable way of making it happen fast enough.

Such an offer was proposed to give Anchor a serious shot of getting game-changing validators, which would practically immediately secure the success of the project. By onboarding high-profile validators Anchor was supposed to get instant transfer of reputation, large networks and available channels in return. The entire platform would then be able to operate as a self-sustainable system with stable growth, which is essential for algorithm-based models.

Early Adopters

Traders and crypto enthusiasts were expected to love the fact that their attempts of mitigating their losses by exiting from speculative cryptocurrencies into Anchor would even increase their holdings if there were enough of them doing it to trigger the Expansion Phase. Therefore, trader incentives were proposed to boost daily trading volumes in the early days of the project's life on the open market, which was supposed to give Anchor the much-needed visibility and boost the early hype.

Early Majority

Systems that manage to reach the early majority segment are the only ones that succeed. For innovations that rely on disruption, there is a gap/chasm between the first two adopter groups (innovators/early adopters), and the mass-market. The choice of initial market segment (in this case – the first validators) has crucial importance for crossing the chasm, as adoption in this segment can lead to a cascade of adoptions in the other segments.

In order to reach that goal, the system validators should provide access to their user base through their network and play the role of “technology stewards” - entities with sufficient understanding of the available technology and the technological needs of a community to steward that community through the technology adoption process. That's why Anchor needs both global service providers and regional technology leaders. Consequently, by offering free validator packages, Anchor stands to get much more in return.

Late Majority & Laggards

Winning over late majority and laggards requires recognition from the official institutions, so this is one of the most important reasons for onboarding country representatives.

02 Proposed Technical Solution

Nota bene: Technical solution that is described here represents the original proposal made by the MVP Workshop Team (the actual development of the Anchor system was done differently by another team – as an Ethereum-based platform only). The idea to suggest issuing tokens both on Stellar (ANCT and DOCT) and Ethereum (ANCT) was motivated by the following comparative advantages (cf. Table 6 below):

- It is easier to lock Dock tokens on Stellar and prevent their appearance on the secondary market.
- Conversely, it is convenient to issue a batch of ANCT (the proposed amount was in the ballpark of 20% of the primary issue) on Ethereum, as that would mean automatic listing of ANCT on Decentralized Exchanges (DEX). However, issuing the remaining 80% of ANCT on Stellar has a very clear advantage, as the transaction fees are much cheaper on Stellar than on Ethereum.

	Transaction Speed	Transaction Cost	Easy Exchange integration	Validators Fee distribution (Y/N)	Instant Validator Fee distribution (Y/N)	Platform Credibility
Stellar	> 1k tps (has channels)	Low	✓	✓	x	High
Ethereum	~20tps	Volatile	✓✓✓	✓	✓	High
Bitshares	~3.4k tps	Low	✓	?	?	Medium to Low
Omni Layer	7.6 tps	Volatile	x	?	?	Medium
EOS	> 3.5k tps	Low	✓	✓	✓	Low

Table 6 – Platform Parameters Comparison

Tokens

Anchor Token on Stellar

Anchor Token on a Stellar-based network can be created as a Stellar Asset, which can then be traded for any other asset on the network. Trading asset on a Stellar-based network actually represents trading credit issued by some party, so the Anchor Token must first be issued as a Stellar asset by Anchor AG, in order to exist on the network.

By virtue of issuing assets, the account then becomes a so-called Stellar Anchor. Holding tokens on an account thus actually means owning credit issued by Anchor AG. If an account is to hold and trade assets, there must be a trustline established between the account and the asset issuer.

That way, the owner of a particular account on the network states, in a technical way, that she/he trusts the issuer about that specific asset/credit. Once the trustline between these two parties has been established, the account owner can trade assets with other accounts that have established a trustline with the same issuer for the same asset.

Dock Token on Stellar

Because of the specific nature and role of this token, a bit different approach should be used than for the Anchor token. On a Stellar network, there is a way of controlling who can own a particular asset, but there is no way of limiting the trading of that asset for a particular set of assets or just a single asset.

Keeping in mind that Dock token should be exchangeable for the Anchor token only, a federated approach should be used here. It means that all tokens should be kept on a single account owned by Anchor AG (it can also be accomplished by using a multisig account, but it would be highly impractical).

In addition to the federation and compliance services, this single account can perform token trading on behalf of other accounts by utilizing a memo field. The amount of Dock tokens owned by a particular user should then be referenced (but not owned) by the corresponding user account using the above mentioned approach.

Token Mechanics on Stellar

Trading Anchor Tokens

Anchor, as a Stellar asset, can be traded for another asset on a Stellar network, as well as sent to other users that have a trustline established with the issuer. It can also be traded via third-party wallets and exchanges that support custom Stellar assets.

Trading Dock Tokens

Since there is no intention of trading Dock tokens on secondary markets, but only using them as keepers of value and for converting to Anchor tokens, this part should be implemented in a way that the end users have no direct control over it. Such a federated approach would mean that Dock tokens should be traded in a specific way and kept on a single Stellar account that should be managed by the system.

Swapping Anchor Tokens for Dock Tokens and Vice Versa

Exchanging Anchor tokens for Dock tokens will be done by sending Anchor tokens, via regular Stellar payment operation, to a specific address (an issuer address, a distributor address or a specific purpose address) with a specific memo added to the transaction. This way, an appropriate amount of Dock tokens will be allocated to that user's account inside a centralized database.

Exchanging Dock tokens for Anchor tokens can be done in two ways. One way is to send a minimum amount of XLM (zero, if possible) to a specific address (an issuer address, a distributor address or a specific purpose address) with a specific memo that will make the system react to it by sending the appropriate amount of Anchor tokens to that account and burning the corresponding amount of Dock tokens (the amount determined by the memo value).

Another way would be to make a call to the Fisherman service with a proof that user owns that particular account (e.g. by signing a dummy transaction with its private key), and the service will respond to it by transferring Anchor tokens to the user's account and burning the appropriate amount of the user's Dock tokens.

Burning Anchor Tokens on Stellar

Since assets on a Stellar network can be perceived as some kind of credit, by returning credit to its issuer that credit becomes liquidated. Therefore, burning tokens should be done by simply sending them back to the issuer. This is a very useful built-in feature that can be applied to our use case since, during the Contraction Phase, participating users need to send their Anchors back to the issuer in order to get the corresponding amount of Dock tokens.

Anchor Token on Ethereum

Anchor tokens on Ethereum blockchain will be built according to the ERC-20 token standard. It will mostly be a vanilla ERC-20 with additional functionalities, such as management of a special kind of address that can be used to transfer tokens to and from the Stellar network.

Swapping the tokens from the Ethereum network to the Stellar network shall be done by sending tokens to this type of address that will automatically burn these tokens and trigger minting on the Stellar network.

Swapping in the opposite direction will burn tokens on the Stellar network and trigger minting on Ethereum. This type of address will be managed from a single account or by using a multi-signature approach with multiple accounts.

Multisigs

Stellar network supports multi-signatures in a way that, for a single account, multiple accounts can be added as signers – up to 20. A set percentage of signatures for every group of operations (payment, managing data, etc.) could also be required in order for the transaction to be accepted as valid.

Furthermore, adding a new signer can be made to require multiple signatures (i.e. the existing validators can decide on accepting/rejecting a new validator by signing or refusing to sign the transaction that was created with the purpose of adding a new validator as a signer). It should be noted that various signers can have different weights of their signatures, if that is required.

A general template for every multi-signature operation would be the following:

1. One of the signers suggests a transaction by creating and sending it to the Fisherman service (or by sending a request for transaction, which the Fisherman service then creates).
2. Server broadcasts transaction to other signers, including the one that initiated it.
3. Each signer signs the transaction and sends the signature back, or informs the Fisherman service that she/he refuses to sign.
4. Upon receiving all the responses (or if the signing time has elapsed), the Fisherman service sends the transaction on-chain if a required number of signatures have arrived, or drops it otherwise.

Issuance of New Tokens

During the Expansion Phase a new amount of Anchor tokens has to be issued. Issuance of a new quantity of Stellar assets is done the same way as the initial creation of that asset. However, contrary to the initial issuance, multiple signers need to validate the procedure now, so, in order to issue new tokens, the payment transaction must be signed by the required percentage of validators.

Anchor Price/MMU Value Updating

Both the MMU value and the Anchor price should be kept on the Stellar network by being assigned to the issuer account, unless decided otherwise later. This is done by using a multi-signature process, thus keeping it decentralized.

Validators

Issuer Accounts

Every asset on the Stellar network, except its native Lumen currency, is uniquely identified by two parameters: the asset code and the issuer account (public key).

Issuing a new asset is done by a single payment from one account to another, stating the asset code.

The account that has initiated that payment is called the issuing account and, theoretically, becomes the Stellar Anchor at that moment. This account can be locked (to prevent it from issuing more tokens), can stay like that (if there is a need to issue more tokens later) or it can be set up to be controlled by multiple signatures, thus allowing a decentralized control of the account and the asset(s) issued by that account.

Distributor Accounts

Since issuing a new asset on the Stellar Network is done by simply sending payment from one account to another, it is a common practice that the account that has received this initial payment now becomes the so-called base or distributor account. This is basically the account that holds the total initial supply of a particular asset and that will later be used for selling tokens.

Anchor Validators

Anchor Validator is practically an account owned by the institution selected to be a part of the Anchor ecosystem. These accounts typically have two roles: maintaining a decentralized consensus on the value of the MMU and sourcing the value for the Anchor token.

One of the ways to obtain a decentralized consensus on the value of the MMU is to keep that value on the Stellar network bound to a single account controlled by all the validators using the multi-signature approach.

In such case, the only way to change the value of the MMU is if the transaction that is created with the intent of changing it is signed by a predefined percentage of accounts with signing permission.

This percentage of signatures can be adjusted as well as the weight of each signature. When it comes to sourcing the value for the Anchor Token, this value can be kept on the Stellar network by each of the validator accounts (since it can be different based on each validator's sources), or it can be kept on a centralized server if there is no need to keep it on-chain.

Stellar Anchor as a Validator

Stellar Anchor will have a bit more specific role among the validators. It is created with the intent to issue the initial amount of tokens and assume the role of the first validator. It will also be responsible for the initial process of adding new validators, which can later be altered to require signatures of multiple validators. It can also have unanimous signing rights for a specific group of operations so that no other signatures are required, if necessary.

After the initial setup, tweaking the signing options should be done with extreme caution because their misadjustment could lead to an unrecoverable state of the system.

Exchange

Bifrost

From the official Bifrost [Github repo](#):

Bifrost is a highly available and secure Bitcoin/Ethereum → Stellar bridge. It allows users to move BTC/ETH to the Stellar network and then trade them for other tokens or participate in ICOs (Initial Coin Offerings).

In a nutshell, a user calls the Bifrost server by passing his Stellar public key (address), and in return gets a dedicated ETH/BTC address where he should send the desired amount of ETH/BTC. The Bifrost server then listens for a transaction to this address to happen. Once the transaction happens, the server creates a new account on the Stellar network, adds a temporary signer, sets a trustline, funds the account with the same amount of the ETH/BTC Stellar custom asset, exchanges the ETH/BTC asset for the Anchor asset and removes the temporary signer.

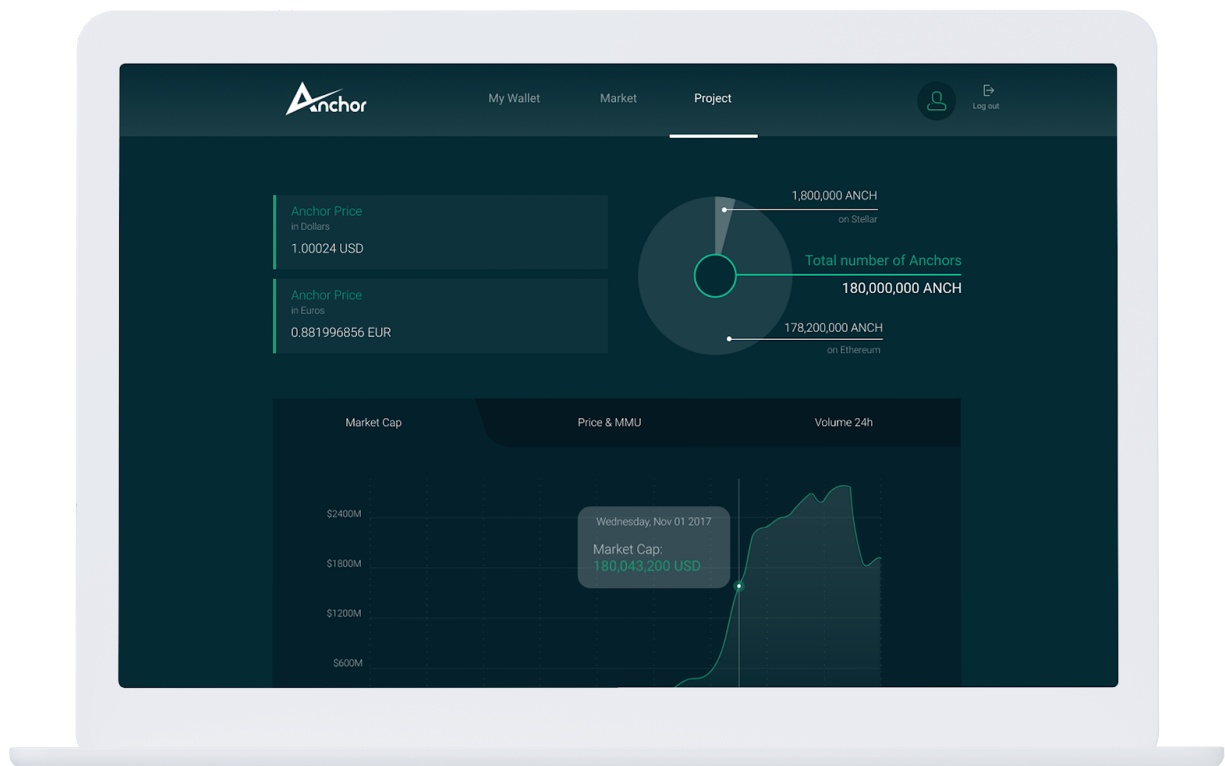
Solution Architecture


Public Dashboard

User (public) Dashboard is used by regular users to check the metrics, sign the transactions, and buy or sell tokens.


Public dashboard is communicating with the Backend API to get summarized data from Bifrost and Stellar nodes. Communication which doesn't require summarized data from the backend is directed to the Stellar and Bifrost nodes directly. Below is the table showing public dashboard communication with other entities.

Entity	Dependent Entities
Public Dashboard	Backend API, Stellar Blockchain, Bifrost Server





[My Wallet](#)
[Market](#)
[Project](#)



[Log out](#)

My Anchors

My Anchor Wallet



My Address
1BoatSLRHtKNgkdXEeobR76b53LETpyT

Balance
3,000 ANCH





Total Balance


10,820 ANCH


7,820 ANCH  3,000 ANCH 

Track Anchors on other addresses

3,000 ANCH 

4,820 ANCH 



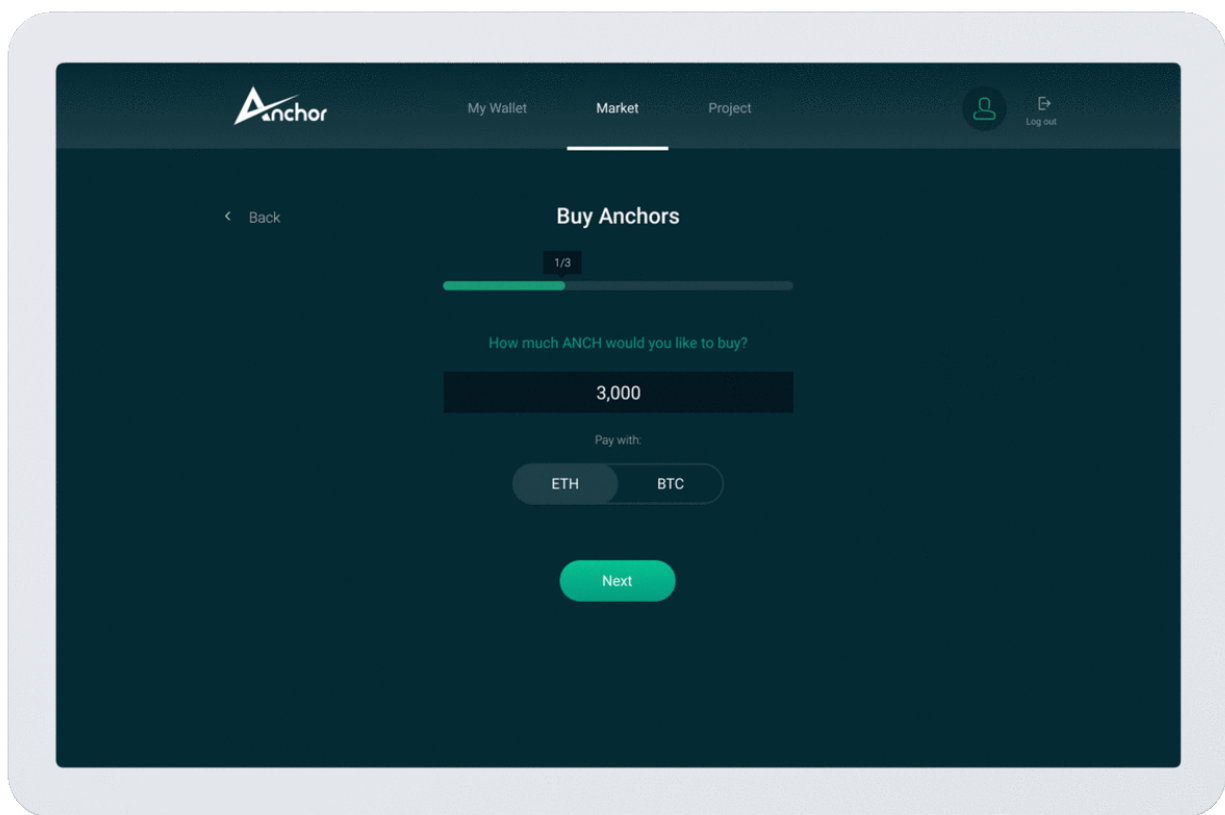
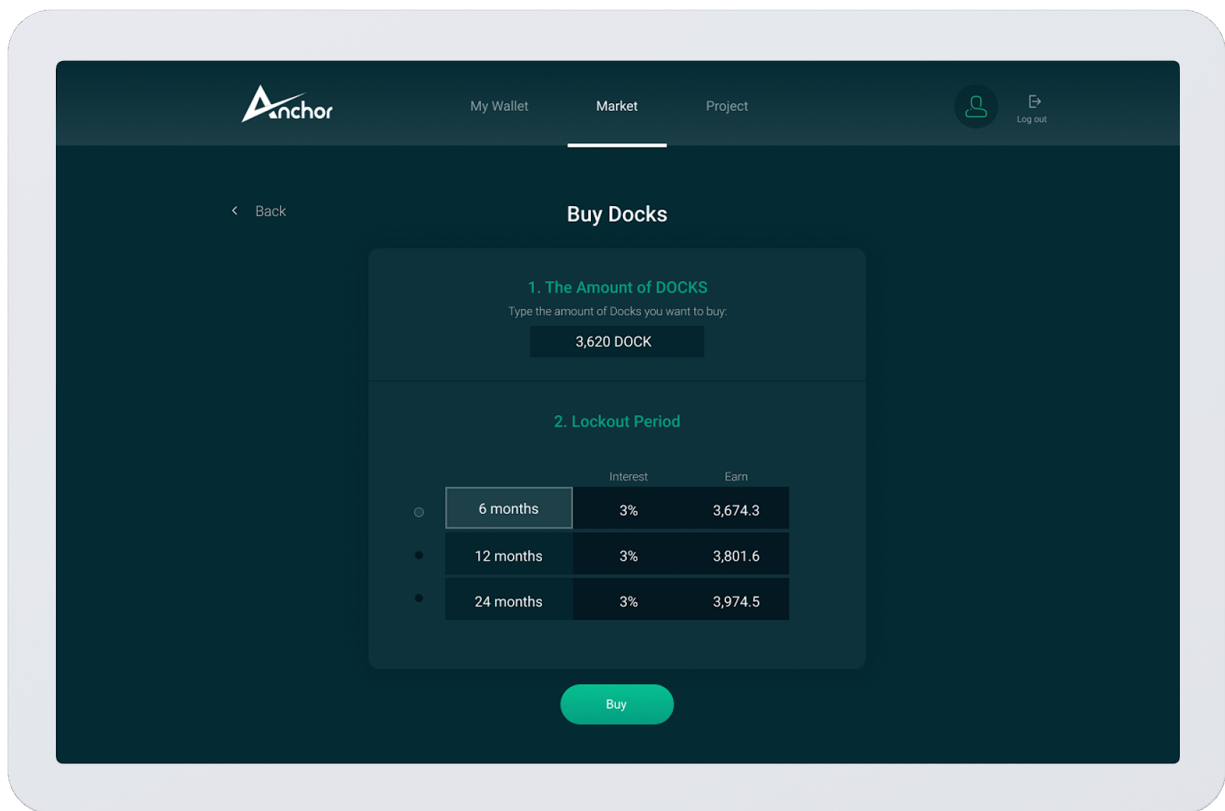
My Address 03
1BoatSLRHtKNgkdXEeobR76b53LETpyT  Copy

[+ Add New Address](#)

My Docks

USD value	DOCK	Response Discount	Volume Discount	Interest	Earn
\$ 5,000,000.00	4,998,800	5%	7%	13.1862%	\$ 5,659,309.67

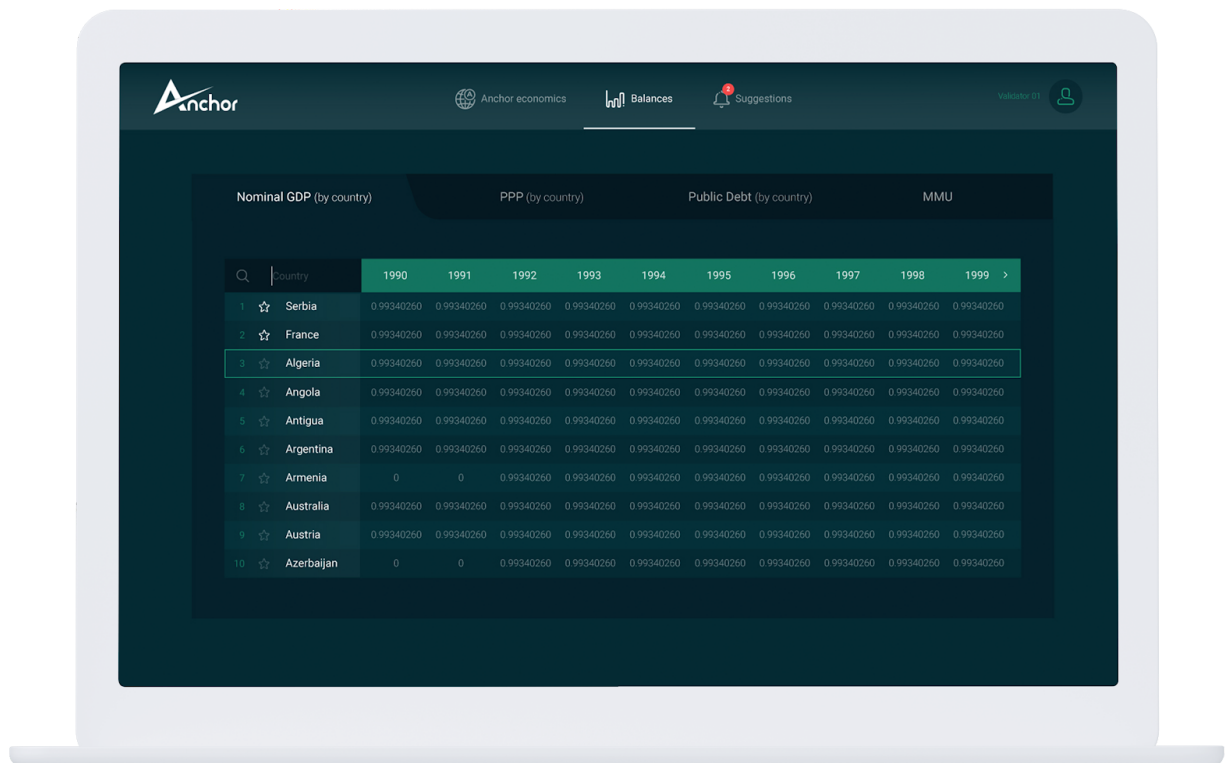
USD value	ANCH value	Lockout Period	
\$ 100,000	99,976 ANCH	2 months	Redeem
\$ 150,000	149,964 ANCH	4 months	Redeem
\$ 250,000	249,940 ANCH	6 months	Redeem
\$ 500,000	499,880 ANCH	10 months	Redeem
\$ 1,000,000	999,760 ANCH	15 months	Redeem
\$ 3,000,000	2,999,280 ANCH	20 months	Redeem
\$ 659,309.67	659,151 ANCH	25 months	Redeem

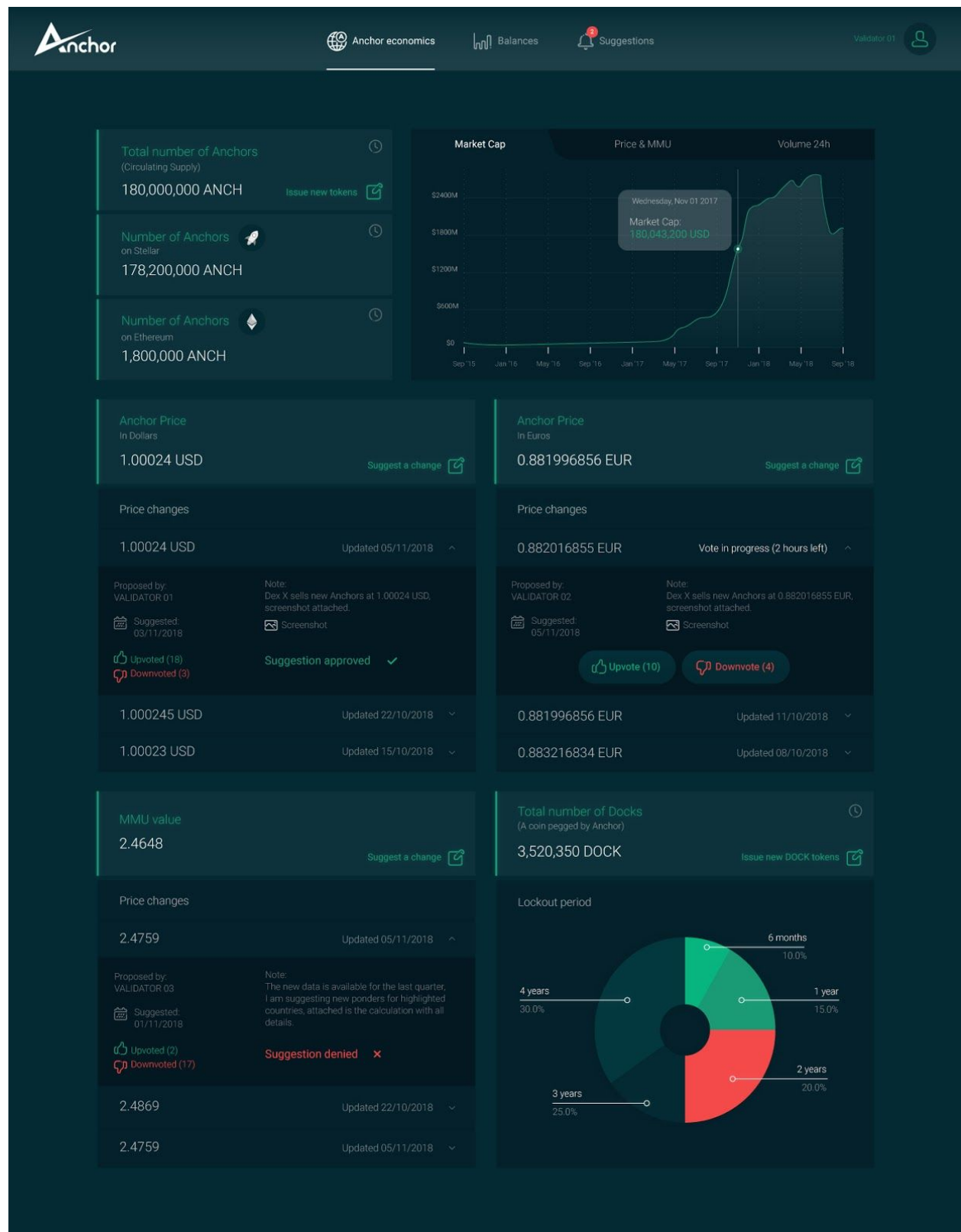


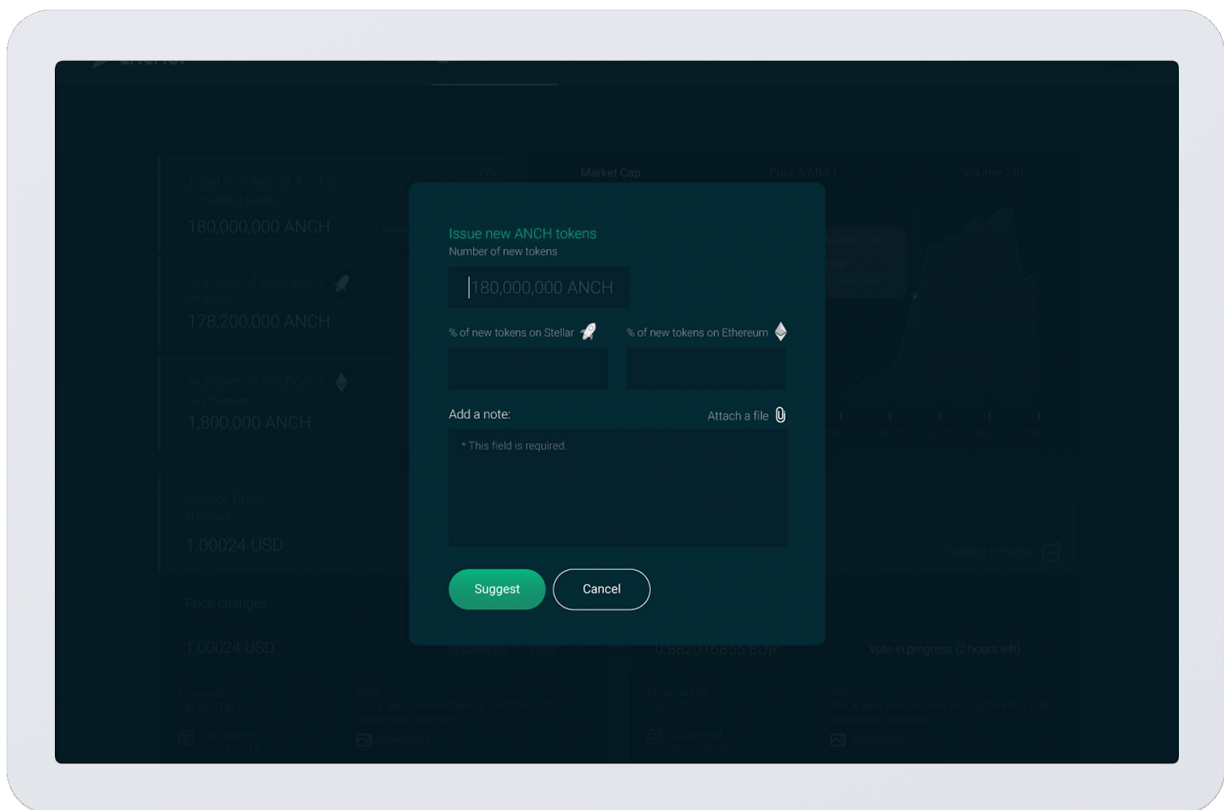
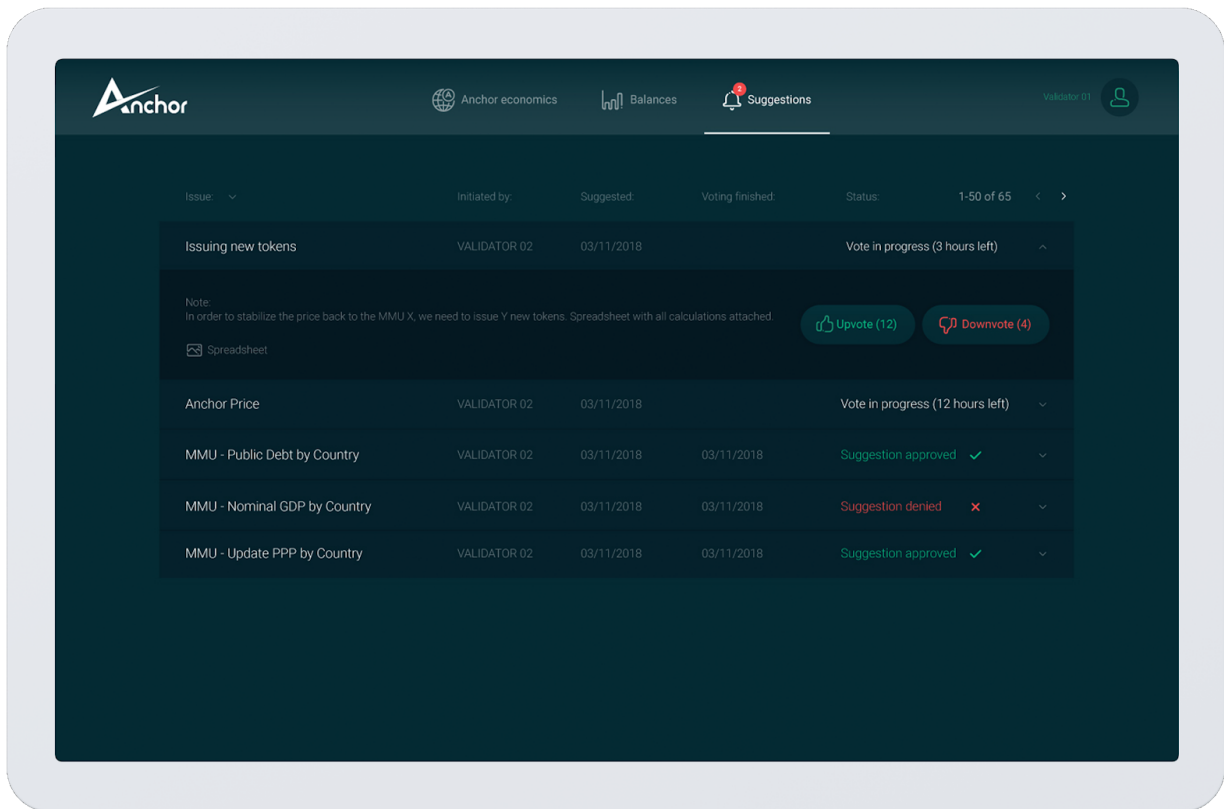
Validator Dashboard

Validator Dashboard is separated from the public one, being used by the system validators in order to change the system's vital metrics such as the MMU value, price, token volume and so on. It requires validator authentication before allowing them to use this dashboard, with additional authentication per transaction requests.

Entity	Dependent Entities
Validator Dashboard	Backend API







Backend

System's backend services execute the business logic and link blockchain data with the supporting logic and data. Backend services provide complete infrastructure for transaction creation and storing of the signed transactions, acting as the transaction relay. Therefore, when a transaction needs to be passed to the blockchain, backend needs to have a connection with the Stellar network in order to send the transaction.

Backend is also connected to an Ethereum network (the network is specified through the environment) in order to analyze the transactions from Bifrost that have been detected as successful. Backend establishes a connection with Bifrost's PostgreSQL database to collect the transaction IDs of successful transactions.

Backend is connected to the following:

1. Stellar Network
2. Ethereum Network
3. Bifrost Database

Bifrost Server

Bifrost is a service that enables users to move BTC/ETH to the Stellar network. It can either be used to give a representation of BTC or ETH on the network, or trade it for another custom token.

Bifrost has been set up to generate Ethereum addresses using the BIP-32 protocol and listening to all payments to those addresses. When a payment arrives, Bifrost generates a new Stellar address keypair that the Anchor tokens will be sent to. After the tokens are transferred to that address, front-end moves the tokens to the user wallet and the generated address becomes useless.

Bifrost communicates with the following:

1. Stellar Network
2. Ethereum Network (through Geth)

Ethereum Nodes

Ethereum nodes enable Bifrost communication with the Ethereum network. Current setup is using geth – a command line interface for running a Ethereum node implemented in Go, acting as a Rinkeby testnet node. In the existing architecture Geth is the only way that Bifrost can “listen” to the Ethereum network and process every block that is being mined.

Geth is started as a light node, as with such configuration the storage requirements are minimal and the time that Bifrost needs to detect a transaction is also minimal, as light nodes have faster synchronization with the Ethereum network.

03 Additional Explanations & Examples

An Example of a Contraction Phase Scenario

In the Contraction Phase, the reported value of the Anchor Token falls below the currently defined Contraction Phase Threshold (CPT), set by the Validators, due to market conditions.

Consequently, the Anchor System notifies the Validators that the CPT has been breached and recommends to schedule a Contraction Phase Auction (CPA). The Validators have a defined period of time to make one of three decisions:

1. Confirm the Anchor System's decision to initiate the Contraction Phase Auction as scheduled;
2. Set the Initiation of the Contraction Phase Auction at an earlier date and time than the one recommended by the Anchor System; or,
3. Postpone the decision to Initiate the Contraction Phase Auction to a later date and time.

Let us take the example that the Anchor System CPA has been initiated with the requirement to burn \$1M worth of Anchor Tokens in exchange for Dock Tokens. The Anchor system will, therefore, notify all current Anchor Token Holders that a Contraction Phase Auction has been initiated, after which the Holders need to respond and commit Anchor Tokens to the system, for burning, in exchange for Dock Tokens under favorable conditions.

The speed with which an Anchor Token Holder responds to the auction and the amount of Anchor Tokens they commit for burning will determine the discounts they will receive for redeeming the Dock Tokens they receive in the Contraction Phase, back to Anchor Tokens on the release dates set for these Dock Tokens.

Let us say that the First Responder decides to offer \$650K worth of Anchor Tokens to the System, for burning in the Contraction Phase. As the First Responder, their Response Discount is 10% (Discount Coefficient 0.9), while their Volume Discount is 4% (Discount Coefficient 0.96), based on the Volume Discount Tables for the Contraction

Phase (see Tables 1 and 2). Their compounded discount is, then, $0.9 * 0.96 = 0.864$, or 13.6%.

As a result, our First Responder will be getting $\$650K / 0.864 = \$752.3K$ in Dock Tokens. The First Responder will then be able to redeem the Dock Tokens received in the Contraction Phase Auction, for Anchor Tokens, in line with their position in the Contraction Phase Queue.

The batches of Dock Tokens, acquired during the CPA by burning their Anchor Tokens, are placed into the Contraction Phase Queue into a time-ordered sequence, in line with the following rule (all the following amounts are calculated at the time of the Contraction Phase Auction):

- \$99.999 worth of Dock Tokens no later than 2 months after the auction;
- \$150.000 worth of Dock Tokens no later than 4 months after the auction;
- \$250.000 worth of Dock Tokens no later than 6 months after the auction; and,
- The remaining \$150.001 worth of Dock Tokens no later than 10 months after the auction.

After the First Responder accepted and committed \$650K worth of their Anchor Tokens to the System for burning, of the total amount of \$1M Anchor Tokens that the Anchor System had set for burning in the Contraction Phase, as a corrective measure to direct the Anchor Token's value closer towards the value of the MMU (the Anchor's Value Peg), the Anchor System notifies the next responder in the Contraction Phase Auction Queue (CPAQ) that they are eligible to offer up to \$350K worth of their Anchor Tokens for burning.

The Second Responder, as the next responder in the CPAQ, can react with a decision to burn a certain amount of Anchor Tokens, or to pass and not burn any at all, and the same logic is applied to all responders in the CPAQ.

An Example of an Expansion Phase Scenario

Let's examine what will happen during the first Expansion Phase. Before it occurs, the system has to sell all Anchors from the NS1 allocation ("For Sale") at the ceiling price, so that no more ANCT are available for selling, and the market price is 1% above the official MMU value (due to high demand).

At the beginning, the value of all ANCT in the system was \$600M. The number of ANCT after selling all ANCT from the NS1 allocation remains the same, but its unit price is 1% greater than the original one.

That means that Anchor's market cap valuation is also 1% greater than the original one, i.e. \$606M. ANCT needs to get back to the original price, yet keep the market cap intact. To do that, the system needs to issue new ANCT that's worth \$6M, based on the unit price that's equal to the value of the MMU. Therefore, \$6M worth of ANCT has to be split among all holders using the statistical method of distribution based on each holder's percentage of holdings.

This is, perhaps, a good time to examine in greater detail the logic behind the concept of sharing ANCT that is created during the system's Expansion Phases. Why is Anchor doing that (i.e. sharing the wealth/profit) instead of keeping it all? The answer is simple: Anchor needs to be instantly recognizable as the clearly superior option to the rest of the field. Being pegged to the MMU is a promising concept, but it is not enough.

The truth is that users would most likely need additional motivation (in this case - additional gain, the simplest and most powerful incentive) to choose Anchor instead of other stable coins, so Anchor needs to be instantly recognizable as clearly better than the rest to gain traction that would lead to mass adoption.

Being pegged to the MMU and the gains that it creates represents a long-term benefit, which is not attractive per se for ordinary users to perceive Anchor as significantly better than other available options.

For a while Anchor will be perceived as an unproven commodity, and the cost of using ANCT (especially given the fact that it was developed exclusively on Ethereum, and not predominantly on Stellar, as it was originally proposed) does not favor Anchor as it would be playing against the entire field, where some stable coins offer cheaper transactions/exits from crypto.

An Example of an Expansion Phase Airdrop

If we expand on the logic explained above, it is important to understand why Anchor doesn't simply share the Anchor tokens created during the Expansion Phases proportionally, instead of using the more complicated statistical mechanism.

The answer is actually simple – to avoid being a security, as that would constitute a promise, which would make ANCT an asset and thus a security token by definition.

The difference that Anchor's statistical probability model makes lies in the fact that theoretically an ANCT holder can get zero tokens in an Expansion Phase (though it is virtually impossible due to the Law of Large Numbers), which means that Anchor as a system does not promise/guarantee any gains based on the system's successful performance. Let's just use some concrete numbers to explain how this mechanism works.

The statistical probability mechanism practically does the following: if a user owns e.g. 2% of all ANCT, she/he will get approximately 2% of the new issue (i.e. the one from the Expansion Phase), but this amount/ratio is not guaranteed and may vary to the point that (theoretically) the user may not even get any ANCT from the newly minted batch.

That practically means that the above mentioned holder will most likely get the amount of ANCT that is worth somewhere in the ballpark of \$120,000 (according to projections as of November 25, 2019). If we compare the ratios, Anchor holders practically make the same profit as Bitcoin holders, with one important difference that heavily favors Anchor: Bitcoin holders profit from the increase of the unit price of BTC (meaning that their BTC holdings will take a serious blow every time the market price of BTC goes down), whereas Anchor holders receive more tokens that minimally vary in price.

Given that the Expansion Phase Airdrop distribution calculation takes into account both "historical" DOCT (either from the Primary Issue, or generated during a Contraction Phase) and ANCT, it is important to establish all the released/converted ANCT (not taking into account the unconverted ANCT in the Mirror Vault).

For instance, based solely on the initial distribution (i.e. happening within the first three months), the first EP airdrop for the SR1 ("System") allocation would look like this:

```
D(SR1) = 135,417,723 DOCT
A(SR1) = 20% * 135,417,723 DOCT = 27,083,545 ANCT
D(SR2) = 37,974,684 DOCT
A(SR2) = 0% * 37,974,684 DOCT = 0 ANCT
D(SR3) = 79,746,835 DOCT
A(SR3) = 0% * 79,746,835 DOCT = 0 ANCT
D(SR4) = 26,582,278 DOCT
A(SR4) = 0% * 26,582,278 DOCT = 0 ANCT
D(SR) = D(SR1) + D(SR2) + D(SR3) + D(SR4)
D(SR) = 135,417,723 DOCT + 37,974,684 DOCT + 79,746,835 DOCT + 26,582,278
```

$$D(SR) = 279,721,520 \text{ DOCT}$$

$$A(SR) = A(SR1) + A(SR2) + A(SR3) + A(SR4)$$

$$A(SR) = 27,083,545 \text{ ANCT} + 0 \text{ ANCT} + 0 \text{ ANCT} + 0 \text{ ANCT}$$

$$A(SR) = 27,083,545 \text{ ANCT}$$

Statistical probability:

$$P(SR1) = (D(SR1) + A(SR1)) / (D(SR) + A(SR))$$

$$P(SR1) = (135,417,723 \text{ DOCT} + 27,083,545 \text{ ANCT}) / (279,721,520 \text{ DOCT} + 27,083,545 \text{ ANCT})$$

$$P(SR1) = 162,501,268 \text{ DOCT} + \text{ANCT} / 306,805,065 \text{ DOCT} + \text{ANCT}$$

$$P(SR1) = 0.53$$

Assuming that 1% of all the ANCT in the system (which, in this case, would be equal to the primary issue of ANCT (A(PI)), as it would consist of the converted ANCT and the unconverted ANCT in the Mirror Vault) will be created as newly minted ANCT for the first Expansion Phase Airdrop (EPA), the complete calculation would look like this:

$$N(EPA) = 0.01 * A(PI)$$

$$N(EPA) = 0.01 * 759,493,671 \text{ ANCT}$$

$$N(EPA) = 7,594,937 \text{ ANCT}$$

Half of it should be split among the system-reserved allocations:

$$N(EPA-SR) = N(EPA) / 2 = 7,594,937 \text{ ANCT} / 2 = 3,797,469 \text{ ANCT}$$

Approximately 53% (i.e. P(SR1)) of that amount will be added to the SR1 ("System") allocation after the Expansion Phase Airdrop, based on the outcome of the random drawing (lottery) for each of the newly minted ANCT:

$$N(EPA-SR1) \approx N(EPA-SR) * P(SR1) = 3,797,469 \text{ ANCT} * 0.53 = 2,012,659 \text{ ANCT}$$

Nota bene: The amounts of ANCT/DOCT used in the previous example were calculated using the following exchange rate: 1 ANCT/DOCT = \$0.79.

04 Final Considerations

USP: What Makes Anchor So Special?

Anchor's innovative core concept based on the MMU offers its users several valuable benefits. Pegging Anchor to the MMU brings stability and predictability (similar to other stable coins), while taking care of the inflation (unlike any other stable coin).

It also provides a reliable foundation for sustainable growth and fair spreading of the wealth. Simply put, the system and the holdings within the system can grow only as much as the growth of the global economy allows them.

General Benefits of Anchor in Simple Terms

- (1) Pegging ANCT to the MMU allows users/holders to have a two-in-one functionality: a current and a savings account at the same time.
- (2) The Contraction Phase mechanism (in addition to being a defensive mechanism) adds another familiar option - that of a fixed-term deposit with favorable terms.
- (3) The system's Expansion Phase adds a Bitcoin-like quality to Anchor (i.e. the possibility of making some profit when the system is doing well), only without adverse effects that typically occur when market cap goes down (the Contraction Phase takes care of that), all the while remaining a payment token, and not a security.

All things considered, Anchor offers a multitude of functionalities and benefits for end-users, with the Contraction Phase and Expansion Phase protective mechanisms that provide opportunities for additional gains.

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