The NAP Reciprocal Advantage Model

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1. Introduction

As a technology, blockchain has failed to attain its potential in driving down real-world business transaction costs, which are still dominated by large, legacy expensive networks such as SWIFT. Blockchain has also not delivered an active environment for businesses to integrate and trade/transact smoothly, resulting in fractured services such as M-PESA in some African countries for small phone-based payments, while contracts and bills are still handled externally. An integrated full business service can greatly improve commercial opportunities and significantly reduce costs for small businesses, farmers, producers, and consumers, especially in third world countries.

NAP (Near-wrAP) offers a unique highly efficient model offering a stabletoken which recognises the trust requirements and utility of participation in a real-life transactional world where coalitions such as businesses, banks, insurances, retail services, consumers, etc, often interact in an orchestrated manner (ie, not all real-life transactions are simple buy-sell deals). Additionally, NAP abandons the current resource-intensive overheads associated with coin mining and offers payoffs to NAP participants instead of rewarding unrelated coin mining factories which feed off the enterprise and transactions of blockchain users.

In summary, NAP facilitates and maximises the intrinsic purposes of all transactions undertaken by NAP coalitions (and individuals within such coalitions). Practical benefits and rewards are redistributed to all relevant participants in any transaction. These rewards then promote and propagate into more transactions which in turn continue to benefit all other pertinent coalitions and individual participants.

1.1 Background

The environmental cost of blockchain mining for Bitcoins alone is estimated to be over 121 terawatt hours of electricity per year, much of it derived from fossil fuels with its consequent impact on global warming and air pollution.[1] That is roughly the amount of electricity used by Argentina annually. The greatest impact is in China, where over 65% of all new Bitcoins are minted, consuming 79 terawatt hours annually of mostly fossil fuel generated electricity. In comparative terms, China uses more electricity for Bitcoin mining than both Hong Kong and Denmark combined per annum.[2] Note also that the total annual figure of 121 terawatt hours is last year's median estimate; the mean between current upper and lower bound estimates is more than double that, at approximately 233 terawatt hours per annum. That is because recent price spikes are very likely to have attracted many new unrecorded participants into the coin mining industry.

Other coins offer different methods of maintaining ledger integrity and resolving Byzantine failure, but it is worth reviewing what happens with the most-used coin and how there are no reciprocal benefits to users apart from mundane, onerous creation of new blocks in the Bitcoin distributed blockchain.

The huge computing power needed to ensure security of new blocks in the Bitcoin blockchain is linked to use of elliptic curves cryptography; the underlying parameters are:

$$y^2 = x^3 + 7$$

The algorithmic elements are necessarily somewhat involved, computationally intense but also well-known by now and readily available for scrutiny.[3] However, simplified, the overall interactions involved in a Bitcoin transaction look like this:

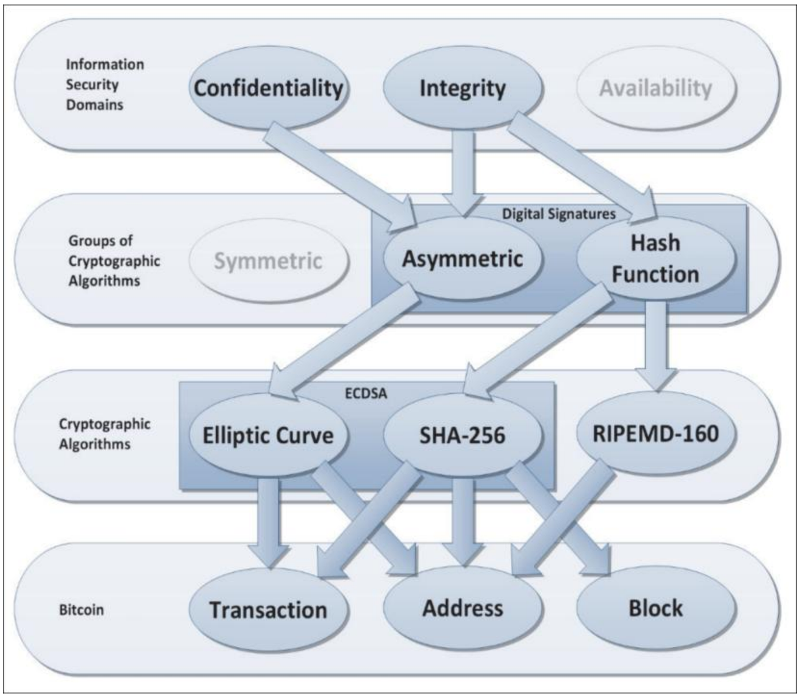

Figure 1 - Bitcoin processes

1.2 The Current Added Value

From figure 1 above, there is no identifiable added value to the consumer involved in any transaction conducted in Bitcoin. That is not to say there is no value in the coin; however, it is inescapable that adding a new secure block on the blockchain is of not much utility apart from ensuring that the coin is transferable from one wallet to another. With current computational overheads, it is not ecologically practical to use Bitcoin for minor purchases. For example, buying a sandwich may entail burning the equivalent of several trees to transfer a coin-based payment from buyer to seller. There is no good reason to worsen our planet's environmental problems for menial purchases, especially as the actual transfer of value only happens later at some indeterminate point in time when the cryptographic processes are finally completed and validated by several unknown miners. Transfers using Bitcoin are never instantaneous.

That leaves Bitcoin as a perceived store of value and/or used for higher value transactions. As such, the use of such a coin in a true digital economy is limited and becomes more restricted as the underlying price increases.

The reality is blockchains such as Bitcoin have a place for ownership management of high-value coins. But as an all-encompassing methodology for transfer of value, the onerous computing requirements plus inherent latency makes it unsuitable for true real-time settlements. This may be perceived as a significant loss to the blockchain community.

1.3 The NAP Value

By comparison, NAP offers a robust, efficient, fully trusted, stable-asset solution for real-world transactional requirements based on a NAP stabletoken (NSTKN) which can wrap any tradeable asset. The NAP solution also applies a mathematical model to calculate added value and provide rewards to all NAP participants on the NAP service. The mining component is reduced to a comparatively minor service requirement and the mining rewards are commensurate with the actual service provided. In short, coin mining becomes a community function benefiting the community rather than miners. Even so, latency is reduced to a point where it is inconsequential for immediate confirmation of NAP transactions (usually within a few hundred milliseconds).

NAP operates as an open API service available to all commercial, financial, intermediary and consumer participants, including phone-based services such as M-PESA. Additionally, NAP offers the unique ability to link directly to thousands of legacy banks, financial institutions, FX brokers, exchanges, intermediaries, and various national payment systems. The combined contributions of these legacy participants in the NAP service ensures a significantly wider range of available products and services transactable via NSTKNs, while at the same time providing enhanced liquidity, security, and opportunities for all NAP participants.

2. NAP CONCEPTS

NAP is about the creation and use of NSTKNs as the medium of transactions between coalitions. Additionally, NAP also offers process management tools and rewards for the participants and the coalitions that they form. NAP is designed as the arbitrator of a range of financial and asset management services which are of relevance to businesses and consumers in the real transactional world, especially in developing countries.

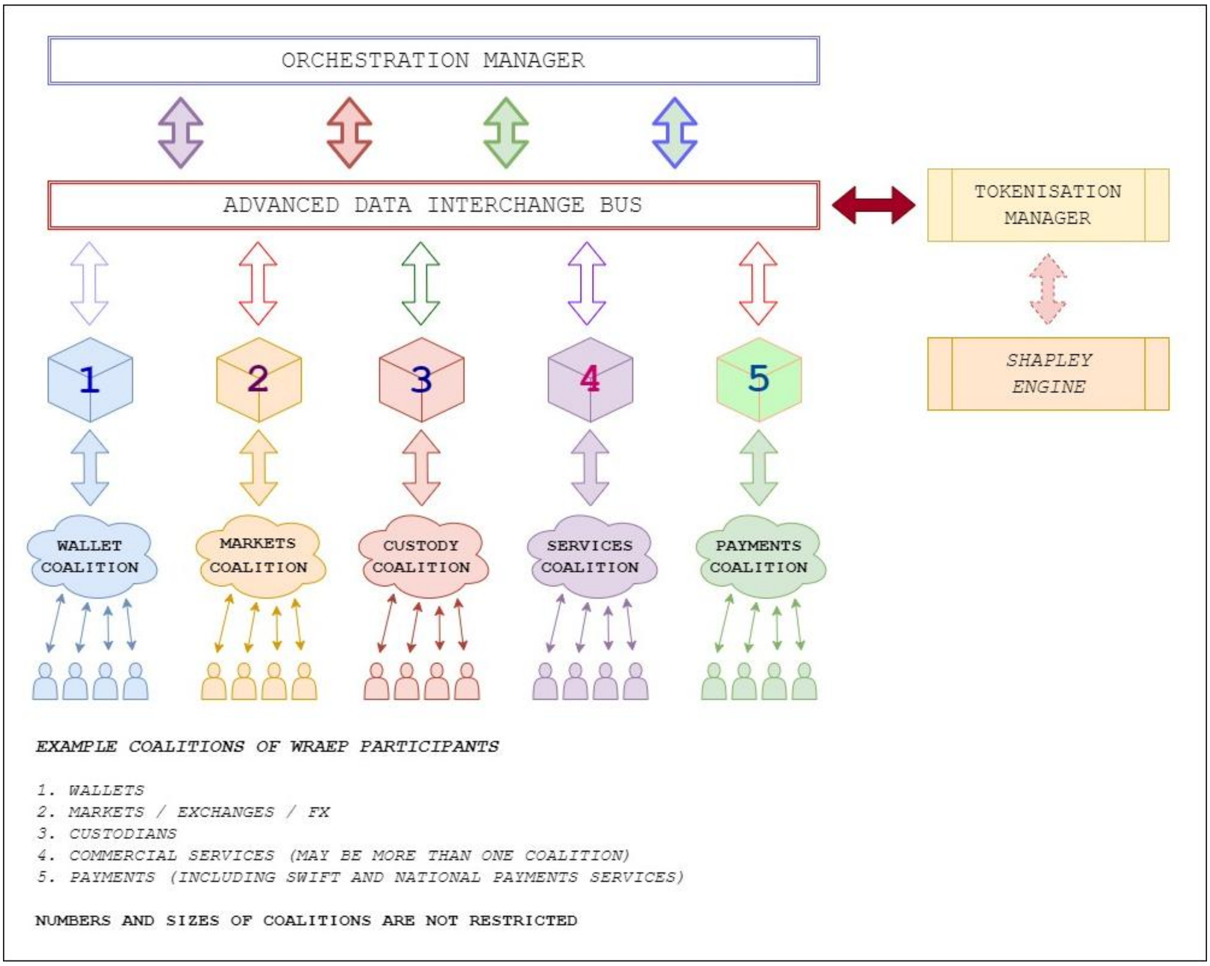

Figure 2 - Examples of NAP Coalitions

We begin by defining the unique core concepts integrated into the NAP stabletoken model. It is important to recognise that all times, the underlying principles are (a) *inviolable trust* (in unlimited classes of tradeable assets definable by smart contracts), (b) *orchestration* (the sequential/concurrent processing of service combinations based on semaphore-driven smart contracts), (c) *coalitions* (for the organisation of like-minded service takers or providers), (d) *seamless integration of cards and legacy banks* (via the world's largest interbank connectivity network), (e) *the calculation and distribution of rewards for all participants in the NAP service* (via the NAP calibrated Shapley model). Additionally, NAP is designed to offer transaction throughput rates where single or complex orchestrated multiple transactions may be executed and confirmed within milliseconds via a secure audit and reporting framework.

Coalition services on NAP have fees and charges and these are settled via the use of the NAP Token (NT). It is important to note the NT is not a NSTKN and the NT is used solely for settlement of NAP services. The acquisition of NTs is done via a token exchange as the price is not fixed and fluctuate according to demand. Depending on transaction types and volumes, NAP also rewards participants by offering fair rewards based on calculated *coalition tariffs* (based on the NAP Shapley model). The NT is used also to settle unavoidable costs such as SWIFT messages, block ledger maintenance, support costs, etc, as applicable. Hence there is also a natural floor for the price of NTs.

In common with all blockchains, the NAP service can also operate as a simple individual transaction platform, such as an exchange where various classes of assets (such as cryptos and currencies) are bought, sold, and then transferred between sellers and buyers without the use of NSTKNs.

However, the additional functionality, expandability, and advantages offered by NAP significantly outweigh the functionality of most single purpose blockchain platforms.

2.1 NAP Inviolable Trust

There is a general perception that stablecoins are trustworthy holders of some fixed financial value due to their implied tethers against base assets, commonly a currency or some basket of cryptos. The subject is worth a little investigation to understand the value of the unique trust component of NAP.

There are currently 3 types of stablecoins: (a) *fiat-backed*, (b) *crypto-backed*, and (c) *algorithmic*.[4]

The fiat-based (collateralised) stablecoin appears to be a plausible holder of value until one recognises the punitive costs of issuance and redemption and the necessary delays required. To compound the limitations, there is a bid/ask spread to trade stablecoins like USDC even if one is paying in USD. There is also no visibility on the currency collateral versus the number of stablecoins issued - the trust component is therefore not necessarily complete as it is impossible to independently reconcile and verify the collaterals against coins issued. Also, the only fiat currency stablecoins available today are all USD-denominated.

Crypto-based stablecoins are backed by crypto assets tied to smart contracts. Usually, a volatility coin is also involved as the volatile nature of crypto assets require a degree of over-collateralisation and the risks of the initial excess collateral are managed by this volatility coin. There are significant transaction fees/costs applicable to trades in such crypto-based stablecoins; holders of such coins expect to receive shares in transaction fees or in some cases, rights on the interest on the crypto assets. Redemption of these coins are also often complicated, expensive and involves delays. Also, they regularly fluctuate wildly in price.

Algorithmic stablecoins rely on the principle of *seigniorage* for investor shareholders and have no inherent redemption capabilities. Technically, seigniorage is the net revenue derived from the creation of an algorithmic stablecoin and the valuation of the stablecoin in the market. In a historical context, it is the difference between the cost of producing a currency note and the value of the note in use. The value of algorithmic stablecoins is managed by increasing supply of such coins (and shares) during periods of demand, thereby keeping the price flat, and buying back coins (using shares) during periods of low demand to burn them and restrict supply, thereby supporting the price. It is evident therefore that the value of an algorithmic stablecoin is artificially managed to maintain a “stable” value. Without redemption capabilities (as there is no asset to redeem), the transactional utility of such coins is somewhat limited as these are coins ostensibly created purely for trading.

By contrast, NAP provides inviolable trust in its NSTKNs via smart contracts created from either standard or customised templates, and the use of global custodians and Tier 1/central banks to hold all relevant assets. All NAP stable tokens are therefore guaranteed to rank *pari passu* with the underlying assets held at official custodians (for cryptos, equities, bonds, debt instruments and other tradeable assets) and large/central banks (for fiat currencies).

Additionally, each smart contract is tied to individual parcels of assets or cash deposits held at the custodians and banks and may be readily verified/audited at any time. NAP NSTKNs are reconciled with the custodians and banks daily to ensure integrity and trust. All NAP NSTKNs created under the *same smart contract template* can also be aggregated or subdivided as required to fulfil any commercial/financial settlement commitments. For example, several USD NSTKNs can be aggregated into a larger value USD NSTKN for use in settlements, or a large USD NSTKN can be sub-divided into smaller USD NSTKNs for use as smaller payments.

Due to inviolable trust, NAP NSTKNs enables businesses to operate efficiently. For example, paying a bill due in the currency of an emerging country from another emerging country involves expensive FX cross trades, deal spreads, and delays. By using NAP coalitions and NAP orchestration, fiat currency NSTKNs can be created and then re-used by other parties in future transactions for trade and debt settlements. The initial costs and delays would only apply to the originator of the NSTKNs, but once issued, the currency NSTKNs can be used to settle future transactions or redeemed back into the fiat currency as required. As NAP operate as a 24/7/365 service, there are no limitations such as banking hours for all transactions.

Additionally, the NAP Shapley Engine can determine the fairest costs and rewards for the originator of the NSTKNs, the coalitions involved in the transaction, and future users of the NSTKNs. For example, it may be determined that the origination costs may be offset by rewards every time the same NSTKNs are re-used for future transactions as there is then no requirement to go through the usual routes of FX crosses, deal spreads, and delays.

The advantages of creating instant stablecoins via NSTKNs in any required major or minor currencies are significant, especially for businesses or consumers transacting across borders. For example, it is now feasible for a Malaysian business to lock in a favourable Singapore dollar exchange rate via several NSTKNs for use in a future combined large settlement, and not be restricted by any capital transfer or FX liquidity restrictions at the time.

2.2 NAP Means Faster, Better Services

The NAP Advanced Data Interchange Bus (ADIB) connects businesses, consumers, brokers, traders, exchanges, banks, payment services, cards, phones, etc, as coalitions with the ability to transact seamlessly between participants within one or more coalitions. This connectivity is achieved via APIs and/or direct links using industry-wide standards.

This means that NAP connects natively with the UK Faster Payments service, where payments in GBP can be executed within seconds. Similarly, NAP also connects natively with SEPA, ensuring same day (or faster) EUR/EU currencies payments between accounts with SEPA-authorised IBANs (which are practically all bank accounts held by EU citizens). The same principles apply for other payment services in all other countries, where NAP can interface and connect directly, for example, with M-PESA in Africa.

More significantly, the NAP ADIB connects directly with the SWIFT network, enabling all participants and coalitions to execute financial transactions and confirmations via SWIFT messages. This native linkage into the SWIFT systems permits all legacy banks without any API processing capability to participate as members of a NAP coalition from their SWIFT terminal without the need for any additional software or hardware. There are an estimated 25,000 banks in the world, including many small banks in emerging countries and they are automatically able to use NAP for payments and confirmations. This hugely significant potential is not to be underestimated.

Similarly, for ease of funding, the ADIB also connects to a card switch via an ISO8583 interface. This allows for credit/debit cards to be used to fund other wallets connected via NAP, execute transactions, and act as stores of value in various currencies, subject to applicable regulations.

Corporate treasurers would also recognise that NAP's use of Tier 1/central bank accounts to hold all fiat currency assets means that most payments can be processed natively from the NAP currency accounts at these banks direct to a recipient bank account as fast as the national payment service permits. This potent feature eliminates costs, liquidity issues and potential late settlements when correspondent banks are used. The use of correspondent banks is the method bank clients are often required to use to remit funds across currency borders. NAP makes correspondent banking redundant for almost all small transactions.

2.3 NAP Orchestration

Incorporated within NAP's design is the NAP Orchestration Manager, based on smart contracts managed within NAP itself. This is a process flow management system which arbitrates the transaction processing flows between initiating participants and coalitions, and managed, risk-controlled and authorised via smart contracts. A NAP process flow can be considered as a series of transactions, managed via a set of control semaphores, each dependent on the completion status of a prior transaction, or the change of state of a previous semaphore. It is also possible to submit process flows where transactions occur independently of each other. Such an example may be multiple Good Till Cancelled purchase transactions where the next transaction stage would not commence until all required GTC orders are filled, regardless of sequence of filled trades.

The NAP Orchestration Manager is based on using templated scripts within smart contracts for standard simple orchestrations which may be invoked, concatenated or modified by user-defined scripts held within smart contracts. When executing a script of process rules, a unique Rules Process ID is generated for managing the processes as they progress along the script. A sandbox is provided to execute any processing rules in a test environment prior to submitting any rules script to the Orchestration Manager. The processing rules can be sophisticated, and any processing rules can be aborted at any time if required by terminating the Rules Process ID via a request to the Orchestration Manager.

Note that there is no requirement to use the NAP Orchestration Manager. All transactions can also be manually conducted individually. Therefore, the Orchestration Manager is available to assist in automating a series of tedious tasks in an intelligent, orderly manner.

The following is an example of a possible use of the Orchestration Manager to settle a regular rental payment.

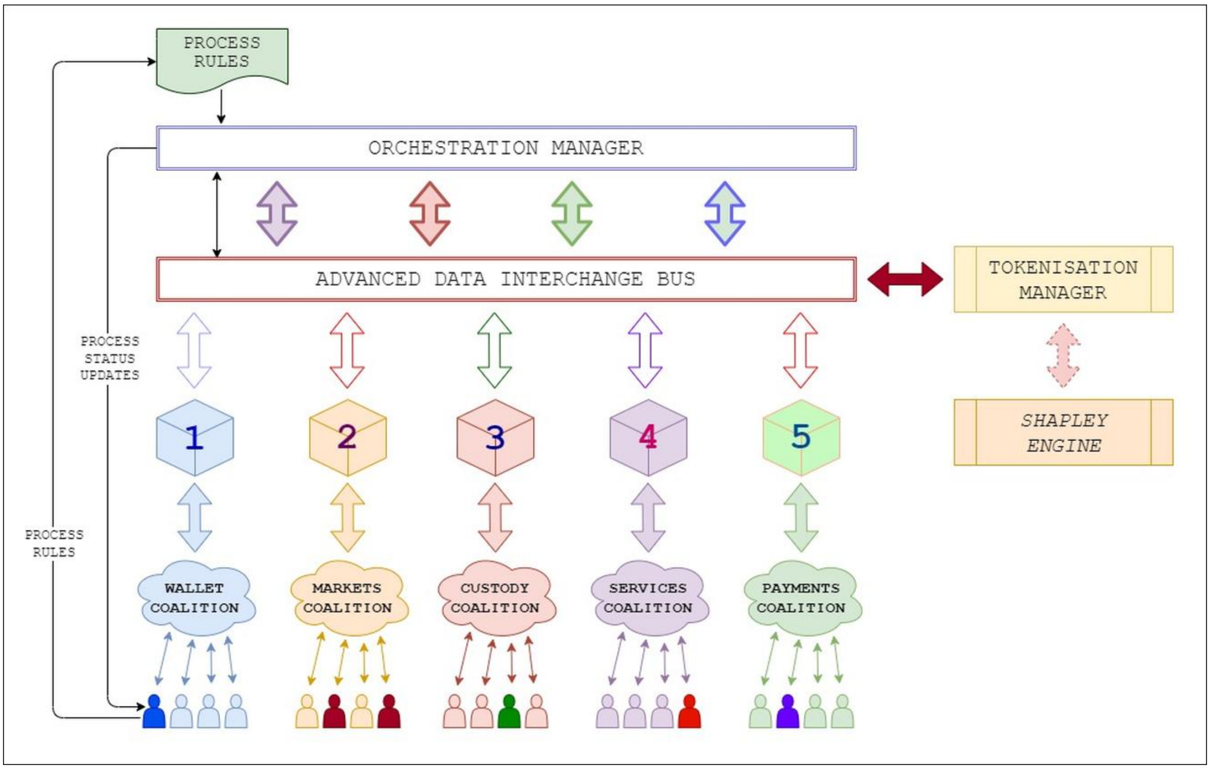

Figure 3 - NAP Orchestration Manager Example

In the above example, a wallet holder (1) exchanges some crypto assets for currency X. This involves selling the crypto assets in currency Y (via a crypto exchange) and converting the proceeds into currency X (via a FX exchange) (2). Currency X is then transferred to a custodian bank where a standard smart contract is applied (3). NAP NSTKNs are then issued for the fiat currency amount. The NSTKNs are now available for use for a service such as payment of monthly rent (4). Only the amount required for the rent is submitted for making the payment. The payment of the rent is conducted by sending NAP NSTKNs to the landlord's target wallet along with confirmations for both parties regarding the payment (5). Any balance NSTKNs left over are returned to the originating wallet holder.

2.4 NAP Tokens and Reciprocity of Rewards

As mentioned, it is incongruous that in the 21st century, one of the major beneficiaries of modern technologies such as blockchains are opportunistic enterprises offering only a marginal service (coin mining) which burns so much natural resources it is having a sizable negative impact on our planet's environment.

The objective should be for users of a modern service to obtain tangible rewards themselves for participating in a secure digital community which simplifies commerce, trading, promotes ease of business transactions, and optimises utilisation of money and assets.

At this point, it should be stated that no good service comes for free, as a completely free service would obviously be unable to support itself.

Participation within the NAP system is therefore supported by a NAP Token (NT), deductible from the participant's NT wallet upon successful completion of a service on NAP. The value of a NT is not fixed and floats depending on the exchange price for NTs. Participants do not always need to acquire NTs in advance as the cost of the NTs can also be deducted from the consideration inherent in a transaction. Where a transaction has no inherent realisable value (e.g., tokenisation of an equity), then enough NTs must be present in the originator's wallet before such a transaction can proceed.

NTs can be offered as rewards to participants who have initiated transactions between themselves and other coalitions, depending on the cost and utility of the services used. For example, the cost of using a coalition of market trading services to transact FX deals would result in a reward in NTs depending on the sizes and volumes of trades done with the markets coalition. Additionally, participants within the markets coalition who execute such deals get NTs based on the sizes and volumes of deals, as rewards for consistently offering the best deals.

There is an additional aspect to such rewards. If one considers a coalition to be akin to a country, then it is apparent not all visitors travel uniformly to all locations across the entire country. If France is a coalition, then the most visited places would probably be Paris, Lyon, Nice, and other such places.

Similarly, if Germany is a coalition, it may be that most travellers from Berlin may choose to visit Nice, while more people from Frankfurt or Leipzig may prefer Paris.

It is therefore recognised that levels of transactions vary significantly between participants within a coalition and there may also be affinities for dealing between participants within different coalitions. Such cross-coalition links are also rewarded with NTs. The overall net result is the promotion/encouragement of trades and transactions between coalitions.

How such NT rewards are calculated is outlined in the next section.

2.5 NAP Shapley Engine

As mentioned, there are significant limitations in all current incarnations of stablecoins. Either the element of trust is not inviolable, or the "stable" value is subject to volatility which does not correlate to the inherent nature of a required asset or currency.

Currently, the creation of a perfectly correlated stablecoin or stabletoken is complex and expensive for originators with little incentives for issuing such stable products. With NAP, this is no longer the case as originators can now receive rewards for issuing NSTKNs. Additionally, there are significant tangible benefits for users of such NAP-originated NSTKNs.

The rewards are calculated using a NAP proprietary model based on the Shapley Value (optimal fair values for each participant in a coalition). This model is based on a mathematical game theory concept published in 1951 by Lloyd Shapley which won the Nobel prize in 2012. The original Shapley Value for individual participant i is denoted as follows.[5]

$$\varphi_i(v) = \sum_{S \subseteq N \setminus \{i\}} \frac{|S|!\,(n - |S| - 1)!}{n!}(v(S \cup \{i\}) - v(S))$$

where $\boldsymbol{v}$ is a characteristic function which maps subsets of $\boldsymbol{n}$ in the set of $\boldsymbol{N}$ to real costs in a collaborative transaction where the coalition is defined as $\boldsymbol{S}$. Therefore, $\boldsymbol{v}(\boldsymbol{S})$ is the sum of the costs of transacting via the coalition.

However, when a normal NSTKN is issued (e.g., for a fiat currency), there is initially only one participant in the set. This single participant (the originator) pays for the acquisition of the currency, smart contract, deposit of currency into a Tier 1/central bank account and creation of the NAP NSTKN. This is akin to taking and paying for a long-distance taxi ride to a single destination completely alone, without any co-passengers.

This does not take account of the utility of the NAP-created NSTKN. This is where the originator can get participants to pay for his initially expensive, lonely taxi journey.

The initial origination costs may be represented by NTs as follows:

$\boldsymbol{v}(i)$ = 10 NTs (as an extreme example), as such;
$\boldsymbol{v}(\boldsymbol{S})$ = 10 NTs

But if the NAP currency NSTKN is available for sale, and the NT *transaction* cost of purchase is only 1 NT (as it is now a simple NAP trade), then a new buyer is joining the set, as follows:

$\boldsymbol{v}(i)$ = 10 NTs, $\boldsymbol{v}(i+1)$ = 1 NT, therefore;
$\boldsymbol{v}(\boldsymbol{S})$ = 11 NTs

The originator had paid 10 NTs for originating an asset which has now a worth of 11 NTs in both origination and transactional costs, plus the underlying asset value. As such, the originator is due a theoretical reward of 10/11 NT from the fees paid by the buyer of the NSTKN. The new buyer is not aware of the reward to the originator. From his perspective, the buyer has saved 9 NT in origination costs and acquired a NSTKN asset which offers him instant liquidity with full convertibility without having to suffer FX brokers, spreads, or settlement delays.

From NAP's viewpoint, such rewards offered to an originator would provide incentives to create more NSTKNs which will generate more future transaction volumes where NTs are charged; in short, a win-win situation.

The rewards can lead to an originator earning a profit in NTs based on seigniorage, as the revenues in NT can exceed the cost of origination of the NSTKN. Note that NSTKNs can be issued for any tradeable classes of assets, e.g., equities, bonds, debt instruments, etc. NAP makes it feasible to settle such deals faster than exchanges, and the originator will also earn NT rewards for creating such NSTKNs.

Financially, the seigniorage can also make sense to create NSTKNs purely for use by other participants. The rewards of NTs for each transaction can exceed the yield for the same currency held at a bank. This of course depends on the price of NTs on the exchanges.

Based on the above theoretical currency example, the rewards for the originator are as follows:

n	Cost in NT	
1	10	**Origination**
	Reward in NT	Total Reward
2	0.90909	0.90909
3	0.83333	1.74242
4	0.76923	2.51166
5	0.71429	3.22594
6	0.66667	3.89261
7	0.62500	4.51761
8	0.58824	5.10584
9	0.55556	5.66140
10	0.52632	6.18771
11	0.50000	6.68771
12	0.47619	7.16390
13	0.45455	7.61845
14	0.43478	8.05323
15	0.41667	8.46990
16	0.40000	8.86990
17	0.38462	9.25451
18	0.37037	9.62488
19	0.35714	9.98203
20	0.34483	10.32686

Figure 4 - Rough example of NAP rewards

In the above example, by the time the NSTKN has been transacted 20 times, the originator would have had his NT costs completely covered and would be making a profit in NTs. This example assumes a constant tariff of 1.0 is applied, plus a high initial origination cost.

The example above may not reflect reality as rewards are also calculated based on the reward tariff of each NAP coalition, and usually the origination costs are lower. As the NAP system is based primarily on offering NSTKNs with inviolable trust to promote business transactions, the coalition which enables the origination of NSTKNs (custodians and banks) is always allocated the highest tariff. Standard, basic utility coalitions are allocated a lower tariff; e.g., FX, payments, etc. A low tariff means that transaction costs in terms of NTs may be minimal, but NT rewards are also allocated at a lower ratio.

Coalition tariffs are revised regularly to ensure that distribution of rewards is always fair for all NAP participants. The main factors that affect tariffs are current price of the NT, numbers of NSTKN issues, velocity of trading in issued NSTKNs, volumes of other transactions, numbers of active participants within a coalition, creation date of NSTKNs, burn rate of NSTKNs, etc.

Older NSTKNs which have recovered their origination costs and making a profit via NT seigniorage may continue to do so for some defined period. After this period, the tariff would be set to zero to encourage the origination of more NSTKNs. The NSTKN may still be traded but no further rewards may be issued to the originator. The length of this extension period is reviewed regularly for each NAP coalition.

Recalibration of tariffs and extension periods would be done at regular intervals (expected to be every end of month) using real transaction data in NAP fed into the NAP Shapley engine to recalculate optimal tariffs based on actual real-world costs, velocities, and usages. This would necessarily be calculated based on the latest market price for NTs. Therefore, if the price of NTs is high, then the transaction costs in terms of NTs will fall. If the price of NTs is low, then more NTs will be required to execute an instruction. As mentioned earlier, there is sometimes no requirement to purchase NTs in advance for certain NAP transactions as the NT costs can be deducted from the transaction consideration.

Once data is available, it is expected that coalition tariffs may be a series of coefficients reflecting decreasing monotonic characteristics. Currently, there are no calibrated tariffs as the data is not available (apart from testing simulations), but these will be calculated, published, and applied when actual data is available.

NSTKNs may also be redeemed back into its underlying assets at any time; a currency NSTKN can be redeemed into a currency payment to a designated bank account, card, or wallet. In such a situation, the NSTKN is *burned*, the funds remitted immediately and be available as soon as technically feasible by the receiving institution. Such redemptions incur a fee payable in NTs, but the actual fair redemption cost may depend on the prior usage of the NSTKN.

In the example in Figure 4 above, if the NSTKN is redeemed after the 9th transaction, then the redemption cost may be calculated as 10 – 5.66140 = 4.3386 NTs. This is to reflect the loss of liquidity and utility due to the burning of the NSTKN. If the same NSTKN is burned after 20 transactions, then the cost of burning may be zero or some minimum NT charge.

Volume usage of NAP services is rewarded with NTs after exceeding various threshold numbers of transactions. The NAP ADIB also identifies and calculates the frequency of transactions between participants across different coalitions. All such participants are also rewarded with NTs after crossing frequency thresholds. These volume and frequency thresholds will be derived from the Shapley engine (based on previous identified volumes and the latest NT price) and published each month.

2.6 NAP and NEAR Blockchain

It was recognised early on there was no good reason to develop yet another solution to solve the Byzantine problem when existing blockchain solutions can be adopted. Therefore, after a detailed requirements review, the base criteria determined are as follows:

1. Ecologically cognisant, with minimal impact on the environment
2. High, secure blockchain performance without requirement for huge networks
3. Able to operate with both private and public networks
4. Secure connectivity with the NAP Advanced Data Interchange Bus and apps
5. Contains native smart contract capabilities
6. Ability to create secure fungible/non-fungible tokens
7. Capability to publish the entire blockchain daily for verification
8. Low operational costs
9. Established, verifiable technical capabilities, scalability, and track record
10. Meet stringent Service Level Agreement requirements.

Various development options were considered, but after all deliberations and extensive evaluations, the NEAR blockchain was selected as the core blockchain platform, scoring 8.5/10 overall for all the base criteria.[6]

The use of Rust in the core of the NEAR integration was a compelling driver. Rust is an easy-to-use general-purpose language designed specifically for performance and reliability, especially in a concurrent processing environment.

Also particularly attractive were the options to significantly scale up performance via shards and provisioning of user-specific "app chains". This means that usage of the NEAR blockchain would likely require less than 1% of the computing overhead required by Bitcoin, regardless of the performance or transactional throughput requirements.

The processing power may be provided by vetted servers linked globally via trusted name services where the data and processing submissions are validated by oracles before being allowed onto the ADIB and subsequent execution. Every qualifying NAP participant is also able to nominate their spare servers for use in generating the required new blocks on the blockchain. Such collaborative and helpful activities would generate a small yield in NTs.

The availability to further utilise Rust for creating and managing smart contracts was another significant factor. This language has the requisite ability to apply standard template contracts and also allow participants to define complex smart contracts as required, including embedded FpML for financial products and derivatives.

Regarding smart contracts, it should be noted only those NAP NSTKNs issued under the same smart contract template can be aggregated to form larger parcels of fungible blocks of NSTKNs for trading. Individual, customised smart contracts can be treated as either fungible or non-fungible NSTKNs covering idiosyncratic assets as required. The smart contracts system in NEAR can cater for such requirements.

2.7 NAP Unparalleled Versatility

Most readers by now can identify real-life applications where NAP can offer significant benefits and advantages. However, the scope of NAP extends further than improvements in trust, transactional performance, and range of services. NAP is also designed to handle idiosyncratic assets such as derivatives, art, tickets, etc.

The definition of a NAP idiosyncratic asset is *any asset which cannot be held at a custodian or deposited into a bank account*. The use of such a product is not a barrier if trust exists between all participants wishing to transact in such idiosyncratic assets.

An example may be a NSTKN wrapping a financial derivative such as a basis contract which expires at a certain time. The value of the wrapped derivative NSTKN is the difference in FX rates between 2 currencies quoted on a nominated FX board at a fixed time on a fixed future date. This idiosyncratic asset is therefore worth the difference in FX rates (possibly modified by a coefficient) in a nominated currency on expiry. Such an idiosyncratic asset may be very useful to hedge exposures; for example, on service contracts in other countries where the costs are paid in a separate currency than the supplier's home currency. On expiry, it is the responsibility of the participant ultimately holding the idiosyncratic NSTKN to demand payment from the issuer of the smart contract.

Such financial idiosyncratic assets are definable by FPML, the standard used by banks and trading houses to specify structured products and may be embedded into the smart contract.[7] For idiosyncratic asset transactions involving financial derivatives issued *outside* of NAP, the ADIB also natively supports the FIX protocol.[8]

The use of non-fungible tokens to acquire digital art is already an established business and so is the use of NFTs to preserve the integrity of an original ticket buyer (e.g., for a sports or entertainment event).[9]

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