



Position paper v.4.12.8
by Sean Patrick Braithwaite, Marco Muccini, Julian Lenz

*“One in every seven people in the world is
a migrant”*

*(William Lacy Swing, Director General of the International Organization for Migration,
December 2016)*

Abstract

Topos is a financial inclusion framework built on blockchain to protect the wealth of the growing migrant population. Topos will be built on two tokens. TPX, a fully collateralized stable coin that will enable low cost and secure protection and transfer of wealth. TPG, a governance token that will provide community oriented management of risk. Each wallet will require a full KYC and endow the owner with voting rights to shape monetary policy. Community participation will be incentivised with redistribution of surplus which will make usage of the network free or even cost negative. The goal of Topos is to produce a fully decentralized bank which preserves the wealth and dignity of migrants.

Motivation:

Financial inclusion remains one of the largest impediments to sustained global peace and prosperity. Without a state, the nationless population faces unique challenges to transport, maintain and accumulate wealth. The lack of economic agency has a profound effect on the prosperity of individuals and communities alike.

Communities and peoples remain connected even when divided by large geographic distances. Every year over 500 billion dollars is transferred in financial remittance. Fees and complex regulations have led to the creation of grey market alternatives [CFR. Hawala]. Unofficial forms of remittance are estimated to account for an equivalent amount, meaning that half of global remittance is completely untraceable¹.

Lack of transparency and fears over money laundering have put unofficial remittance systems at odds with both banks and governments. Fears of connections to terrorism have led to government intervention, seizing of broker assets and disruption of communities². These systems provide essential access to capital but offer little hope for the long term promise of financial inclusion. The goal of Topos is to fill this gap and provide a decentralised and transparent set of services to expand financial inclusion to the growing migrant population.

Old Networks, New Communications:

Migrating people form diaspora networks These networks are built on trust and drive powerful economic forces. Evolving technical and economic conditions have made such networks larger and more numerous. These new networks reflect kinship and culture and have become essential to the spreading of ideas.

Social media have become the main communication channels in migration networks. They have transformed the nature of these networks and become essential the migration process. Qualitative data³ reveal four relevant functions of social media that facilitate international migration.

1. Maintaining strong ties with family and friends.
2. Organizing the process of migration and integration.
3. Establishing a new infrastructure consisting of latent ties.
4. Sharing insider knowledge on migration that is discrete and unofficial.

¹ the anthemis newsletter:trends in remittances, <https://www.scribd.com/doc/150342765/Trends-in-Remittances-June-2013-The-Anthemis-Newsletter>

² After the events of september 11th 2001, The united states president froze the assets of what they believed of Barakat, a large Dubai based conglomerate: <http://www.economist.com/node/877145>

³ How social media transform migrant networks and facilitate migration Rianne Dekker and Godfried Engbersen <http://onlinelibrary.wiley.com/doi/10.1111/glob.12040/pdf>



This makes potential migrants 'streetwise' with regard to the undertaking of migration and furthermore creates an infrastructure of latent ties (ones that exist technically but have not yet been activated) providing an opportunity for weak ties to develop and strengthen.

Interpersonal ties in migrant networks are reducing the costs and risks of migration through the exchange of information, resources and assistance.

Migration network theory assumes that people go to places where they already have contacts. However, with the internet as a social medium, it is easier to revive or make new contacts, thus widening the horizons for aspiring migrants.

Opportunity:

Technological adoption is often high even in regions of low political stability. Smartphones' ownership in developing countries was 47% percent in 2015 and is expected to exceed 60% by 2020 (vs 65% global index)⁴. That same population features 75% adoption rate of online social networks which both comprise and extend real communities.

Smartphones and social networks provide a meaningful opportunity to deploy a digital currency and offer services supported by the inherent trust within these communities.

Even with access to smartphones, banking can be an intractable problem in high risk markets. The role of a centralised bank is then to manage the risk of conducting transactions and collect fees for the service. One of the reason why parts of the population are left unbanked is because the risk would be too high to justify the expected revenue from fees.

Topos proposes a decentralised framework for financial inclusion which differs from both traditional and grey market facilities by:

1. Issuing a digital currency which can be shared without direct transfer, disrupting traditional fees' structure
2. Developing a reputation system which leverages existing social networks to alleviate the risk of malfeasance.
3. Provide distributed governance of the monetary policy to entitle token holders to shape the economy to their needs.

From social to financial connections:

Following the social dynamics underlying migrants' communities, wallets created in Topos will carry identity informations and will be therefore searchable and ready to connect to each other via link requests. Such connections will establish a permanent and bidirectional flow of social and financial interaction.

⁴ GSMainIntelligence: The Mobile Economy 2017 - <https://www.gsmaintelligence.com/research/?file=9e927fd6896724e7b26f33f61db5b9d5&download>



Token Design:

Topos will build both a digital and physical infrastructure to enable cryptographically secure and accessible financial services for the migrant populations. Token transactions will be recorded in a distributed ledger providing true transparency and auditability of the network. Two tokens will be issued providing distinct functions to the operation of Topos. Token types include:

1. TPX: a token class which value is pegged against local currencies. TPx will serve as borderless currencies, guaranteeing international redeemability.

TPX tokens will be the exchange-value tokens issued in the Topos network and will provide a safe and transparent mean for accumulating and transferring wealth. TPX tokens will be fully collateralized and maintain a 1:1 peg to the corresponding currency to prevent volatility.

Pools of collateral will be spread throughout the network to decentralize the counterparty risk. Fiat-TPX transactions will be recorded on the blockchain to calculate and manage the risk of solvency.

Users will be able to purchase TPX also through a network of physical coin desks. These will be managed by local merchants to enable accessible currency onramps to communities which are typically cash based. Merchants will receive a portion of the transaction fees and benefit from their contribution to the network.

2. TPG: Governance tokens

TPG Tokens will be a floating value utility token used to govern the Topos network. A portion of TPG tokens will be sold in order to fund the development of the network. Shortly after the launch, TPG tokens will be available from exchanges. TPG will be an inflationary currency with tokens being minted and allocated to Coin Desks to collateralize the funds they manage. Incentives between investors and users will be balanced with a bias towards people using the network.

Staking

TPG tokens will be also used by participants to govern local commerce. Merchant wallets can be staked with a tag representing the binary (yes/no) service or product provided by the merchants. Participants will vote proportionate to their stake on whether a merchant is offering a specific service.

Oracles will be selected algorithmically based on past performance but blind to the designation. Once an oracle has confirmed the tagging of a merchant wallet, users who voted correctly will be entitled not only to a portion of the opposing stake, but also to discounts of subsequent transactions.



Reputation Scores

The outcome of different votes will contribute to an algorithmic reputation score associated with each wallet. The algorithm for determining reputation score can be global or community-specific. Reputation scores can be used in subsequent calculations, like determining interest rates for loans.

TPG tokens and staking allow communities to self govern their monetary policy. In order to prevent the formation of plutocracies, TPG tokens can be delegated or lent to other wallets. Proceeds from staking will be shared between delegates. Chains of delegations can be formed allowing more complex networks of governance. The proceeds from delegation will be balanced to exceed the depreciation incurred from inflation. In this way, TPG holders are incentivised towards participation instead of accumulation.

Topos-M: Mobile app

A multi platform application will be developed and serve as the main interface of the Topos network. The mobile app will provide access to both financial services and insights. Beyond a typical banking app, Topos-M will provide deep read/write access to the networks functioning and governance. The architecture of the Topos-M will allow users to build networks and group into fully fledged communities. Each connection will establish a permanent financial relation between wallets, allowing interactions to flow in both directions in real time and with no need to gather additional information each time.

Identities through wallet

One of the key elements for allowing financial inclusion is a reliable identification system. Topos proposes grounding identity in Topos-M and providing incentives through the reputation network to ensure good behaviour. Accumulating reputation within a wallet will be sufficiently difficult so that users will be incentivised to make transactions with larger hubs that provide attestation. Both governmental and non-governmental institutions can function as reputation hubs to onboard new users.

Wallet Sharing

Wallet sharing is defined as the allocation of a portion of a user's total holdings to another user. Wallet sharing provides low cost and robust alternative to traditional financial remittance, which can be cost prohibitive or dangerous in the developing world. The ability to disseminate wealth through this wallet sharing facility is the backbone for emergent networks of support. At a local level, this will be reflected in the formation of communities or causes in which funds are accumulated and distributed safely and directly. At the global level, wallet sharing provides the foundation for a much more ambitious project, Universal Basic Income (UBI)[6].

Transaction conducted through the Topos-M can be sourced from all wallets a user has access to. Wallets can be composed for individual transactions in which configurable proportions of various wallets can be combined to sum the total transaction amount. The



mobile application will provide templates of wallet composition to enable users to quickly and easily aggregate proportions of their available wealth for specific uses.

Wallet sharing surfaces the latent social connection that binds communities. Users will connect to form a range of social topology to reflect the dynamic behaviour of their communities. Aid organisation can serve as central hubs, connecting with both people and other organisation enabling effective, transparent and low cost flows of aid.

Token Pinning

TPX tokens within a wallet can be programmed for a specific person as well as specific purpose amongst shared wallets. Token pinning allows the allocation of portions of wealth to a set of categories such as shelter, food or aid services. Vendors will be vetted for the class of product/services they offer and dis-incentivised by the reputation from misappropriating tokens through the staking mechanism.

TPX tokens can be pinned to first, second or third degree tiers in a user's network. The degree distance in token pinning scheme will not determine the fee structure of the incurring transactions, incentivising the establishment of new connections within the network and the forming of new communities around causes.

Short term loans

Beyond sharing specific portions of a wallet with a specific user, Topos users will be able to allocate portions of their wallet to users as loans. Loans will be programmed with interest rates, which can be set locally to reflect community specific values or inherit global parameters set by the distributed governance mechanism.

Since all transactions will be transparent and rated through the reputation system, assessing the candidacy of lenders will be significantly cheaper than it is today. Users who accumulate enough reputation will have access to the capital they need to start business and empower the local community in a way that is reflective of local values.

Lenders will be able to make capital-efficient investments in local communities without the need for expensive auditing infrastructure. The reputation and transparency built into the system ensures that lenders can manage an expansive portfolio of loans with little administrative overhead.

Communities

Communities will be an essential part of the Topos network. Communities will form implicitly through interactions and explicitly through a join/invite/vetting mechanism. Implicit communities will emerge naturally as people orient around high reputation care services and merchants. As a new community formalises, the Topos-M app will codify its structure and allow its members to play a role in local monetary policy.

Communities are intended to reflect the values of their members. Interest rates and other monetary policy parameters can be developed, voted on and instilled locally at this community level. Users can also refine the way and conditions reputation scores are interpreted changing the way wealth flows to nodes in the network they trust.



Monetary Policy:

Topos aims to empower users to not only benefit from the success of the network but to shape it. A democratic structure will be developed to enable wallet holder voting rights on various parameters that together shape monetary policies of the network. Each wallet will have at most a single vote, but voting rights will be reserved to users who has crossed a specific threshold of reputation. This minimum reputation score floor will ensure that participants are active and vetted by the network.

Votes will include several important parameters which determine the wealth of wallet holders and even the health of the network. These parameters include:

- Risk thresholds for loans
- Dividend allocation
- Inter-wallet transfer fees
- Token sale fees

Understanding the impact of changes in monetary policies is typically limited to the privileged few. This has created an information asymmetry between those who have the relevant knowledge and those who don't. It is important that each individual with a voting right is informed on the short/long term impact of different policy changes in order to enable a meaningful balance between economic agents and avoid populist short-sighted decisions.

Topos-M will therefore visualise the impact of a suggested policy on a user's transaction history. Users will be able to scroll through different parts of history to easily assess the burden/benefit a given policy. Votes then can be cast directly through Topos-M.

Revenue Structure:

Topos is a for-profit venture, adopting a decentralized and participatory business model. The goal is to enable each TPX users to both shape and benefit from profits generated through their participation.

Wealth protection and on-boarding into the network will be free, both from coin desks and online. Topos-M will be available through the typical app store and cryptographic cards will be available for a small fee through merchants. Entrance into to the network will be subsidized by the governing Topos foundation as a marketing cost. Governments & NGOs will also enter the network for free while merchants will incur an entrance fee as well as a 1% fee on transactions.

Transactions of TPX through wallet sharing will incur a minimum fee with additional cost defined by the community developed policy.



Exit fees will vary by account type. Individuals will incur a 3% fee when converting TPX tokens to fiat while merchants will pay up to 5%.

Loans will accrue interest determined by the community structure with a 15% of that revenue allocated to dividends pools.

Reserves gathered will be managed in order to secure and increase the value of collateralized assets. The surplus resulting from reserves' management and fees collected will be redistributed periodically amongst TPX holders, making the network free to use for all participants.

Governing Structure:

The goal of Topos is provide not only a framework for financial inclusion but really enable community driven development. This means that the community which benefit from Topos should be able to shape it. Different communities will benefit from different policies and should be able to form consensus among their members. Users will decide for themselves which communities they belong to.

The Governance is based on a two-levels model: A global Topos Governing Body (Topos-GB) and an emergent set of Topos Local Communities (Topos-LC*). Topos-GB will develop, market and provide guidance to local emergent communities with an envisioned Lamfalussy_process reverse structure⁵.

The future of financial services will be directly affected by the institutional supervision design and by the extent to which the legislative process ensures the principles of transparency, market discipline, consultation and flexibility⁶. Default policies and parameters shaping the economics will be handled at the Topos-GB level and adapted by Topos-LC* based on community needs. Topos-LC* will develop diverse perspectives and policies to reflect local needs as well as inform the direction of Topos-GB.

The governing system will operate in phases following the rollout and establishment of Topos. Initially, the parameters determining fiscal policy deployed in smart contracts will be fixed changed exclusively by Topos-GB. This will allow a period of time for token value and distribution to stabilize. Once a threshold of tokens have been distributed throughout the network, the parameters determining the monetary policies will become subject to votes held at the Topos-LC* level. This mutable phase will best represent the intentions of the Topos project: for the network and governing rules to be determined as much as possible by Topos-LC*.

⁵ The Application of The Lamfalussy Process To EU Securities Markets Legislation
http://ec.europa.eu/internal_market/securities/docs/lamfalussy/sec-2004-1459_en.pdf

⁶ The Governance Structure For Financial Regulation And Supervision In Europe
<http://www.lse.ac.uk/fmg/documents/specialpapers/2003/sp149.pdf>



Who is Topos For:

The sustainability and profitability of the Topos project will depend on the careful balance of incentives between its users. Topos aims to service specific personas to shape the various use cases.

Individuals:

Individual who download the Topos-M can exchange fiat currency and gain mobility of their wealth immediately. Focused on the migrant population, wallet holders will not only get access to financial services but be able to participate in governing the fiscal policy. Individual will be incentivised to maintain good wallet status in order to maintain voting rights, lower transaction fees and receive better dividend allocations.

Collectives

Collections of people represented by a single wallet to amass tokens. This role will be fulfilled by NGO, medical practitioners, legal aids, shelters, transport services, food distribution and other service providers also who serve as hubs for both transactions and reputation tokens. As established institutions, it's easier to verify the legitimacy of their operation.

Investors:

Investors will participate in currency speculation of the TPG token and effectively fund the development of the project. Investors will be able to actively participate in reserves management and lending pools proportionally to their TPG holdings, and receive a compensation for such activities. Investors will also be incentivised by inflation to allocate TPG through delegation/staking to maintain their investment value.

Balancing the incentives of the various roles will require diligent mechanism design. TPX tokens must be designed to be robust. Reputation should be used to incentivise good behaviour. TPG tokens should allow investment in the network without jeopardising the wealth of TPX holders.

Implementation

The aim of the Topos platform is to evolve into a permissionless and trustless network, resilient against censorship and single points of failure. While this might take time, these objectives will be manifested in the design from the onset. This is to ensure the path towards increased decentralization is clear to all participants.

By leveraging existing platforms, Topos can go to market faster and direct its efforts towards fulfilling the needs of migrants. To this end, several distinct components will need to be built, integrated or extended.

KYC/ Identity infrastructure

Storing the data collected during the KYC procedure is a complex undertaking, especially



given that breaches could be fatal. Legislation for such sensitive data also varies around the globe which would make centralized storage unviable. It might therefore be necessary to select multiple KYC/ID providers. These providers would still need to be able to supply globally unique identities. Ideally, users would also have full control over their security setting, including who has access to each part of their personal information. New technologies such as Civic will be analyzed as preferred partners.

Payment Rail

TPX will be deployed on a blockchain which is capable of high throughput of low fees transactions. Tendermint⁷ is widely used as a payment rail system and offers easy integration with variety of on chain assets which can be used as collateral.

The Tendermint network is open source and easy to extend. It could therefore provide Topos with a strong foundation to build on.

Smart contracts

TPG will be deployed on blockchain technology, hence using decentralized computation (Smart Contracts) in a fully transparent policy application. Currently, Ethereum is the industry standard platform for deploying such smart contracts. However, alternatives technologies are developing quickly. EOS, Tendermint Cosmos and others are opening the door to potentially higher throughput, lower cost alternative.

Conclusion:

The project of financial inclusion is highly ambitious both in terms of the people that it will impact and its prospective benefit. Up until now, financial services which reach this disenfranchised population have been scarce and limited. Smartphone adoption, latent community structures and digital currencies are creating opportunities for a more inclusive financial sector. Topos intends to pursue these opportunities by building a new kind of bank

Topos will be a decentralized network operating with two tokens to provide safe and self governing wealth protection. TPX tokens offer is a fully collateralized token for value exchange while TPG tokens enable nodes interoperability via credit and staking/investing to reflect community values and enable self governance.

There are still big questions to be answered. Balancing the profit and social aspects will take both careful design and rollout. The reputation system will require on-boarding of care workers and extensive development of physical infrastructure. Incentivising the right behaviour to accomplish long term goals will be challenging.

The motives are clear: people should be able to carry their wealth with them. That is especially true for those whose lives are shattered by conflict and disaster. Sufficiently powerful mobile application and blockchain technology can turn this notion from an ideal into the new reality. Allowing broad access to decision-making will ensure the system remains

⁷ <https://www.tendermint.com/>



fair, inclusive, and balanced. Decentralising the infrastructure will make it sustainable even when national financial institutions are not.

Appendix:

Hawala:

Hawala is distributed network of brokers operating in the middle east, Africa and across India to enable the transferring of funds without actually moving money. Individuals on both sides of a transaction coordinate with respective brokers to enable the issuing of the sender's desired amount to the receiver without the broker's exchanging any currency. Records are kept of transactions performed between brokers and resolved periodically through alternative often non-monetary means. This allows the transaction to avoid complicated regulations and foreign exchange rates.

References:

[1]: Global Financial Development Report

World Bank. 2014. Global Financial Development Report 2014: Financial Inclusion. Washington, DC: World Bank. doi:10.1596/978-0-8213-9985-9. License: Creative Commons Attribution CC BY 3.0

[2]: The Risk of Resource Misappropriation in Community-Driven Development

Jean-Philippe Platteau and Frédéric Gaspart

Centre for Research on the Economics of Development (CRED) Faculty of Economics
Rempart de la Vierge, 8 B-5000 Namur Belgium

Email address of the contact person: jean-philippe.platteau@fundp.ac.be (Fax: 32-81-724840)

[3]: Bardhan, P., and D. Mookherjee, 2000a, "Capture and Governance at Local and National Levels", American Economic Review, Vol. 90, N° 2, pp. 135-139.

[4] Bardhan, P., and D. Mookherjee, 2000b, "Corruption and Decentralization of Infrastructure Delivery in Developing Countries", Working Paper, University of California, Berkeley.

[5] Identification for Development Strategic Framework

World Bank Group, Strategic Framework, January 2016 2016



[6] Marangos, John. "Social Dividend versus Basic Income Guarantee in Market Socialism." *International Journal of Political Economy*, vol. 34, no. 3, 2004, pp. 20–40. JSTOR, JSTOR, www.jstor.org/stable/40470892.

[7] Cross-country variation in household access to financial services," *Journal of Banking & Finance*, 2008, Volume 32, Number 11, pp. 2493–500.

[8] United Nations, Department of Economic and Social Affairs, Population Division (2016). *International Migration Report 2015: Highlights*

[9] Tether Whitepaper
<http://www.the-blockchain.com/docs/Tether%20Whitepaper.pdf>