

Whitepaper

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1. Abstract

There are about 250 million immigrants in the world sending over \$600bn to support their friends and families back home every year. The remittance market is a significant source of funding for many individuals and families across the world.

Immigrants face some challenges when executing cross-border and local money transfers; specially, the cost of remittances is punitively high. Transferring money via banks and traditional international money transfers operators could cost from 7-12% of the value transferred. Over the past decade, new digital remittance companies have succeeded in reducing this cost, but the cheapest service could cost up to 4%. Their access-points or withdrawal channels can also be difficult to interact with, especially by the unbanked population.

Although centralized remittances like WesternUnion, MoneyGram and a few others tried to solve these problems, they still incur high transaction fees (6%-10%) for low amounts (\$100 - \$300). These centralized giants manage to build a huge retail network across the world (more that 1 million retail) so competing with them without forming strong alliances is impossible and the wealth will be within their small pool.

Blockchain and crypto coins solved the problem of borderless assets transfer, however, there is still a gap to complete the cycle for people who needs to receive their assets in form of a cash to workout their daily life needs. Currently, converting from crypto coins to cash requires an exchange to convert/transfer the money to a bank account which again takes time, coin-to-cash conversion fees and bank transfer fees. AirTransferProtocol is designed to bridge the gap between coin-cash-coin.

AirTransferProtocol (ATP) is the first decentralized P2P open protocol designed with the power of the blockchain by putting the standards for creating a decentralized network of entities (retails or individuals) that would like to operate cost-less remittance business to facilitate the transfer and conversion of coin-cash-coin (cash to coin, coin to cash and cash to cash) using only stable coins to avoid crypto volatility and reserve the transaction amount and staked tokens values.

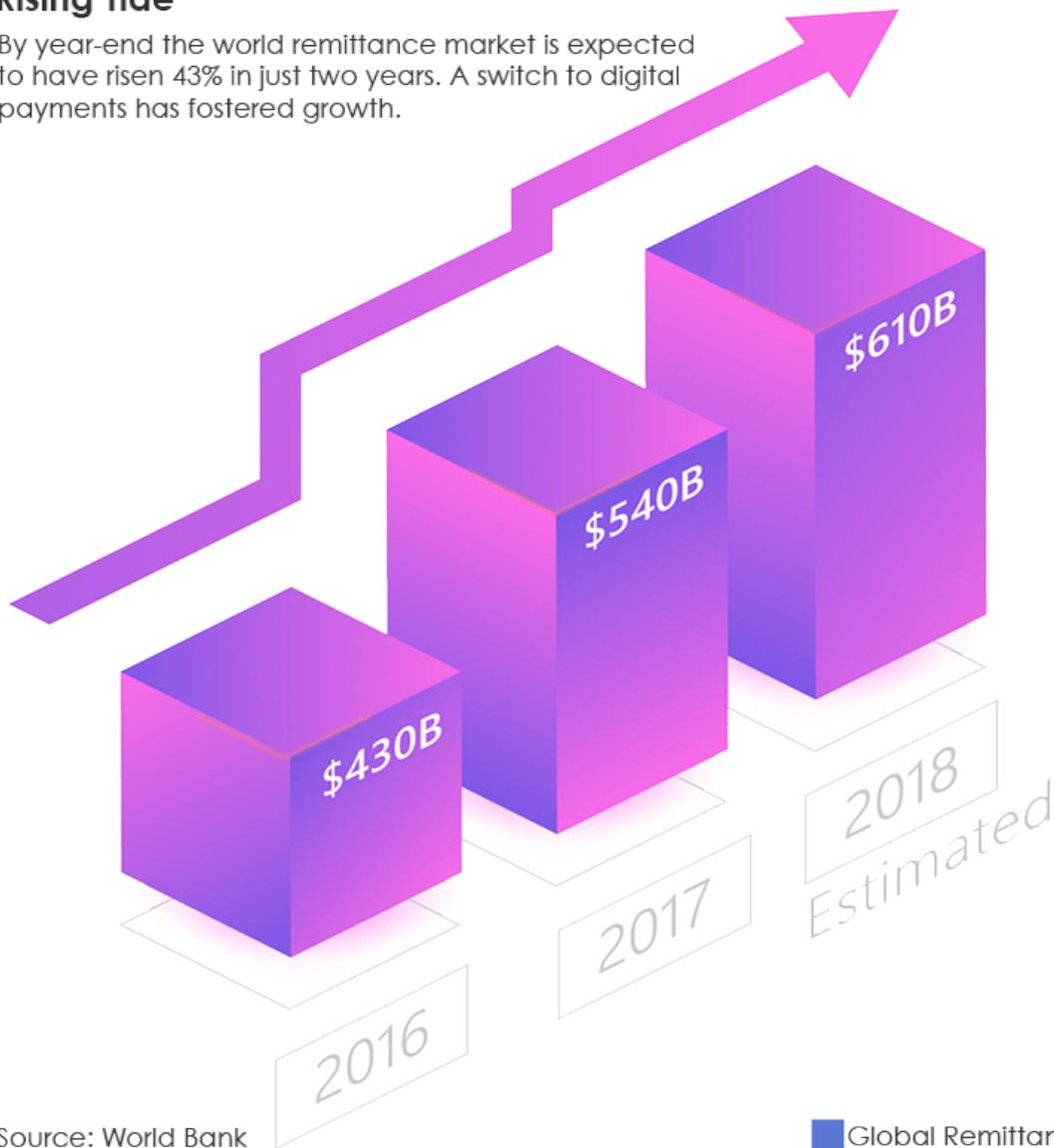
2. The Global Remittance Market is Flourishing

Remittance is referred to as the money sent by immigrants to their families residing in their native countries. The remittance market plays a vital role in the economic growth and livelihoods of people across the world.[\[1\]](#)

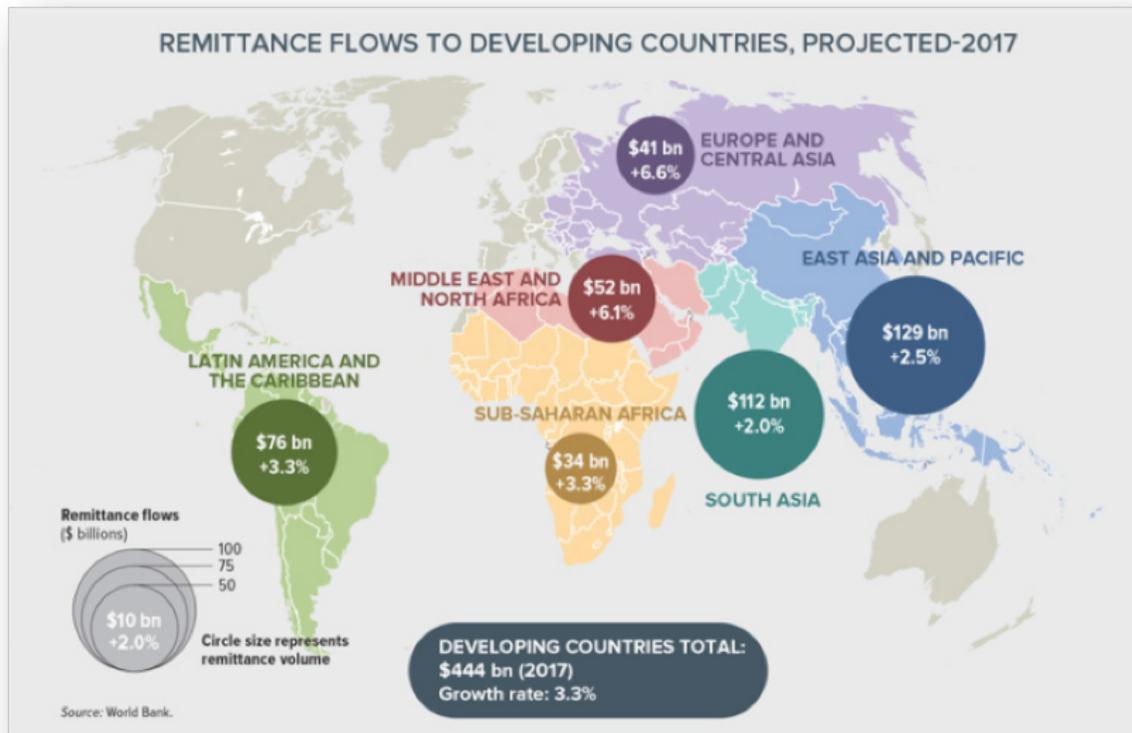
According to the World Bank, global remittances grew 7% to \$613 billion in 2017, from \$573 billion in 2016 and are expected to grow 4.6% to \$642 billion in 2018.

Rising Tide

By year-end the world remittance market is expected to have risen 43% in just two years. A switch to digital payments has fostered growth.



Remittance inflows improved in all regions and the top remittance recipients were India with \$69 billion, followed by China (\$64 billion), the Philippines (\$33 billion), Mexico (\$31 billion), Nigeria (\$22 billion), and Egypt (\$20 billion).[\[ii\]](#)

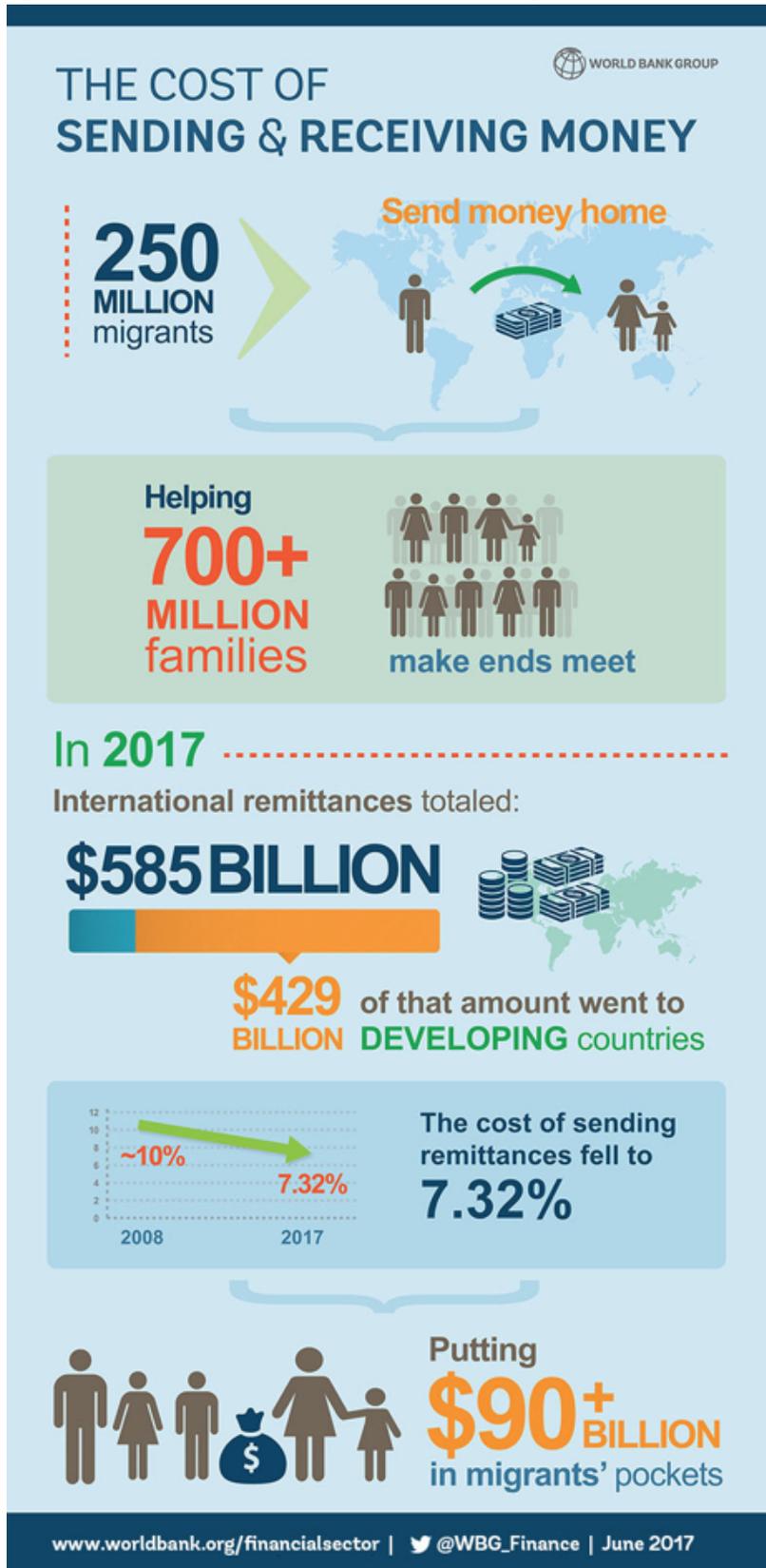


The global remittance market is expected to grow in the future due to:

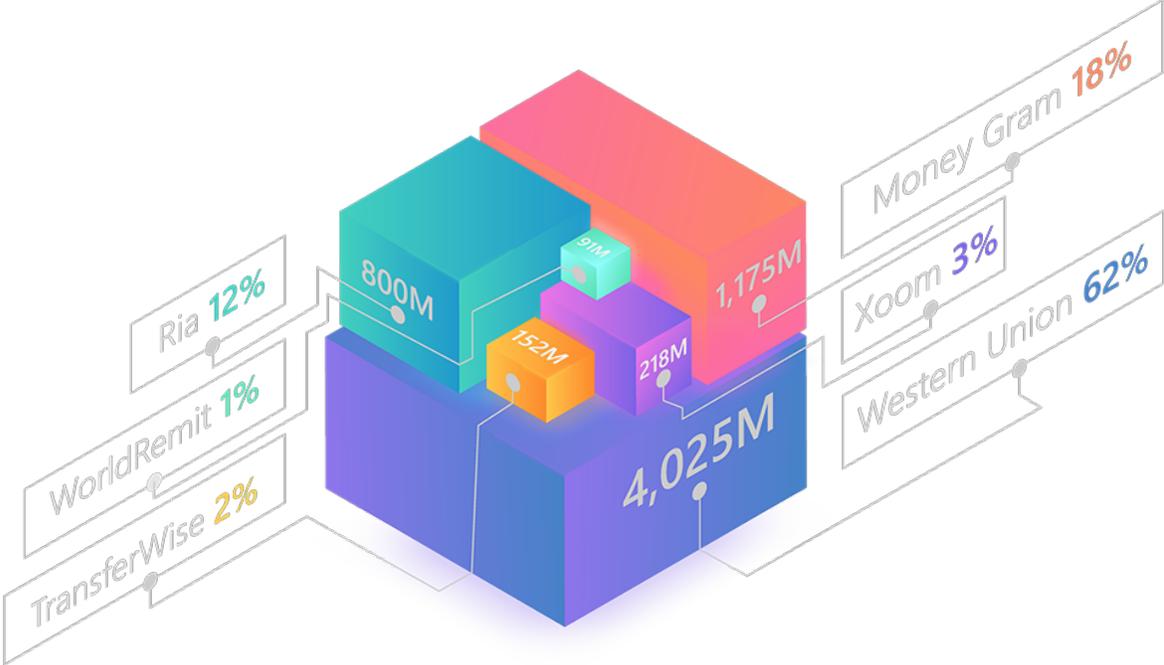


Key trends of this market include increasing growing trend of mobile payments and number of money-sending options.[\[iii\]](#)

The cost of sending remittances was 7.32% in 2017, according to the World Bank.

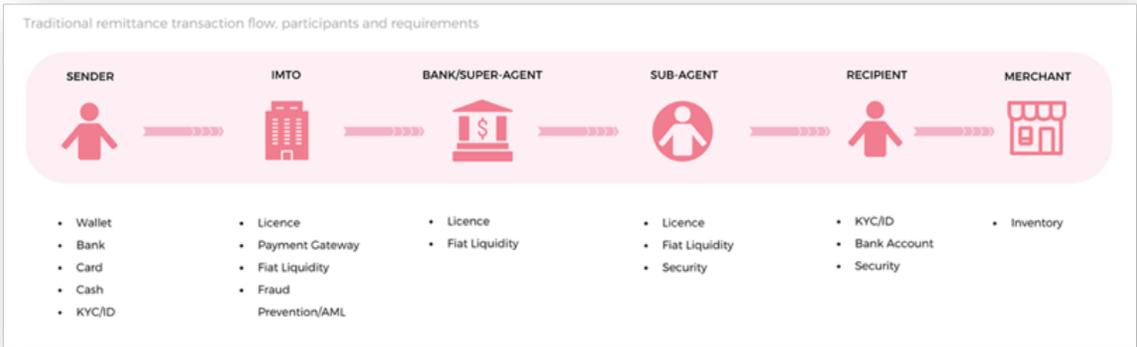


The major player in this market include The World Bank, Western Union Company, Euronet worldwide Inc. and, MoneyGram International Inc.[\[iv\]](#)



2017 transfers revenue for the major players in remittance market based on SaveOnSend.com analysis

2.1 Current Transaction Flow



- Sender:** Senders hold cash, debit/credit cards, bank accounts and mobile money wallets. They require any of these and fulfill the elaborate KYC requirements of banks and international money transfer operators in order to fulfill regulatory requirements of

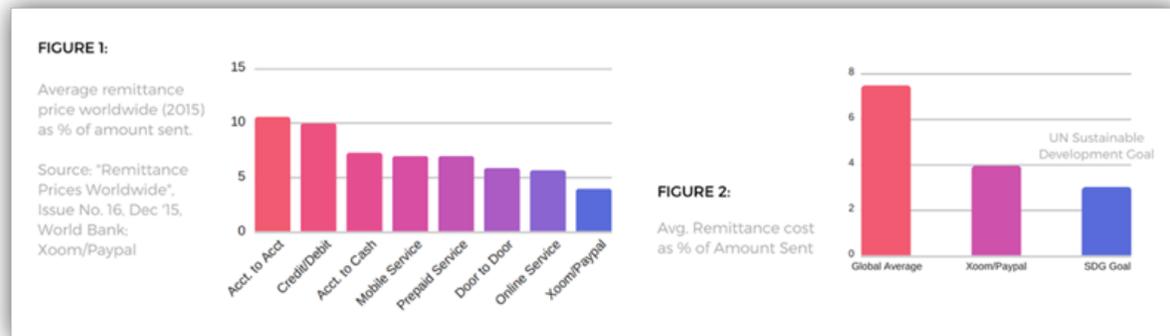
money transfers. The KYC requirements can also vary depending on the location of the sender.

- **International Money Transfer Operators (IMTO):** IMTOs facilitate the transfer of funds from one location to another. Licensed by the regulators and working with banks, payment gateways and fraud detection services, they accept cash and transfer the equivalent value to the bank/super-agent in the recipient location. IMTOs follow strict anti-money laundering, fraud and foreign exchange guidelines.
- **Bank/Super-agent:** The banks provide the liquidity for local currency in the recipient location. The banks are licensed by local regulatory authorities to facilitate the receipt and conversion of forex into local currency. The banks act as agents themselves, or work with sub-agents to distribute cash to recipients. Recipients with bank accounts can also be paid directly into their accounts.
- **Sub-agent:** The sub-agent is the primary interaction point for recipients looking to cash out. The sub-agents finance the float of local currency that is used to settle the recipient. The sub-agent is typically licensed by the regulator as a "bureau-de-change", and they have little or no control on the rates/pricing and speed of transaction.
- **Recipient:** Banked recipients can receive cash into their bank accounts or mobile wallets, or they can visit an agent location to receive cash. The recipient presents verification details to confirm both the sender and recipient details. Usually, a government issued ID is required to access the cash, and security of the cash is the responsibility of the recipient upon receipt.
- **Merchant:** The merchant accepts cash as payment for goods and services.

2.2 Remittance Challenges

2.2.1 Cost

The cost of remittances has been traditionally high (7- 12% Fees), but they play an important role in global market. A \$200 remittance to Latin America cost nearly 10 %, and some remittance corridors in places like Africa continue to have even higher fees. Remittances have such an important role to play in the support of lives, that the cost of facilitating them has been a major strategic focus for multilateral development organizations like the United Nations. The Sustainable Development Goals, effective from January 2016, includes a target to reduce the cost of remittances to less than 3% by 2030.



2.2.2 Time

The time it takes to complete a remittance transaction via traditional or informal channels can range from 24-72 hours. The typical international money transfer requires loads of communication between the persons on either end of it. They have to calculate exchange rates, synchronize amounts, collect personal details, agree on a transfer method, and then confirm when the cash has been sent and received.

2.2.3 Identity

Cash transfers are heavily regulated. Regulators requires verification of a person's identity before delivering financial services for anti-money laundering and fraud-reduction purposes. It is nearly impossible for a financial service provider to verify identity if a consumer has no government-issued identification. Approximately, 1.1 billion people globally do not have an officially recognized document to prove their identity.

2.3 Digital Remittance Market

The past two decades have witnessed the entry of digital remittance operators. These operators pose a serious challenge to traditional cash-in-hand providers due to reduced user fees and ease of usability.

They offer digital transfer network, which include an easy-to-use mobile application and eliminate the need for tedious form-filling processes, agents, and codes. [\[v\]](#)

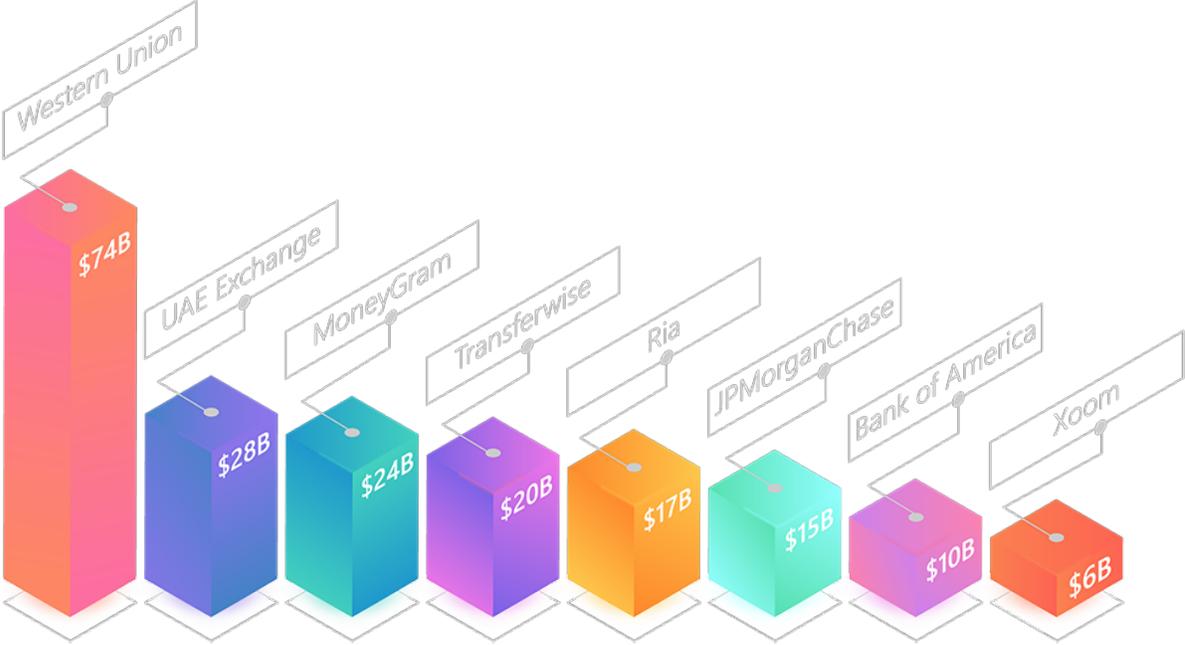
In 2017, the global Digital Remittance Market Size was valued at 1,536 million USD, and it will reach 8,590 million USD in 2025, with a Compound Annual Growth Rate (CAGR) of 23.3% between 2018 and 2025. [\[vi\]](#)

The growth of the digital remittance market is driven by rise in digitization & automation, reduced remittance cost & transfer time, and growth in adoption of banking & financial services. Furthermore, regulatory initiatives that encourage all financial institutions to become more transparent and nurture richer ecosystems of data & partners supplement the market growth.

However, lack of awareness & guidance is a major factor that restrains people from opting for digital remittance transfer mode. Increase in access of financial services such as basic bank accounts among remittance recipients and rise in internet usage offer growth opportunities for the market.[\[vii\]](#)

Currently, the global Digital Remittance market is dominated by several traditional global money transfer operators (MTOs) like Western Union (WU), Ria Financial Services and MoneyGram. But the fintech like start-ups Xoom, TransferWise, WorldRemit, Remitly and Azimo, have significant impact on the global Digital Remittance market.

The major players in the global market include:[\[viii\]](#)



Money Transfer Providers: X-border Volumes (\$ Billions) in 2017

In the future, the blockchain technology will exert far-reaching influence on the remittance market. Most of traditional bank, fintech and other financial firms have researched and tested the blockchain technology used in remittance volume.

2.4 Entering Remittance Business Challenges

Establishing and operating a remittance requires some challenges, expertise and initial high costs that prevents small entities from operating and make it hard for medium entities to get into the remittance world. We're highlighting some of these challenges below:

2.4.1 Data security

Data Security Standards (PCI DSS) certification is required for every merchant or business in credit cards, money transfer, online or off. PCI DSS standards require merchants and processors to meet 12 criteria across six security arenas:

- Build and maintain a secure network and systems
- Protect user data
- Maintain a vulnerability management program
- Implement strong access control measures
- Regularly monitor and test networks
- Maintain an information security policy

2.4.2 Technical integration

A combination of features, including integrated systems and gateways are required to be implemented and integrated with different payment processors.

2.4.3 Multi-currency and payment methods

Multi-currency, cross-border transactions can require new bank accounts, new business entities, and new regulatory hurdles in each national market. Selecting an exchange service provider with the necessary infrastructure ready to provide effective, and immediate, solutions to those problems requires initial setup costs and extra fees per transaction.

2.4.4 Regulatory Requirements

Working with payments and storing sensitive user and payment details requires high standard and regulations differ from country to country but in general takes time and money.

2.4.5 High Initial Costs

Operating services like Western Union or TransferWise requires huge initial funds to setup retails or even create digital accounts in multiple countries with enough funds to operate, which is a high burden entry for all medium-small business.

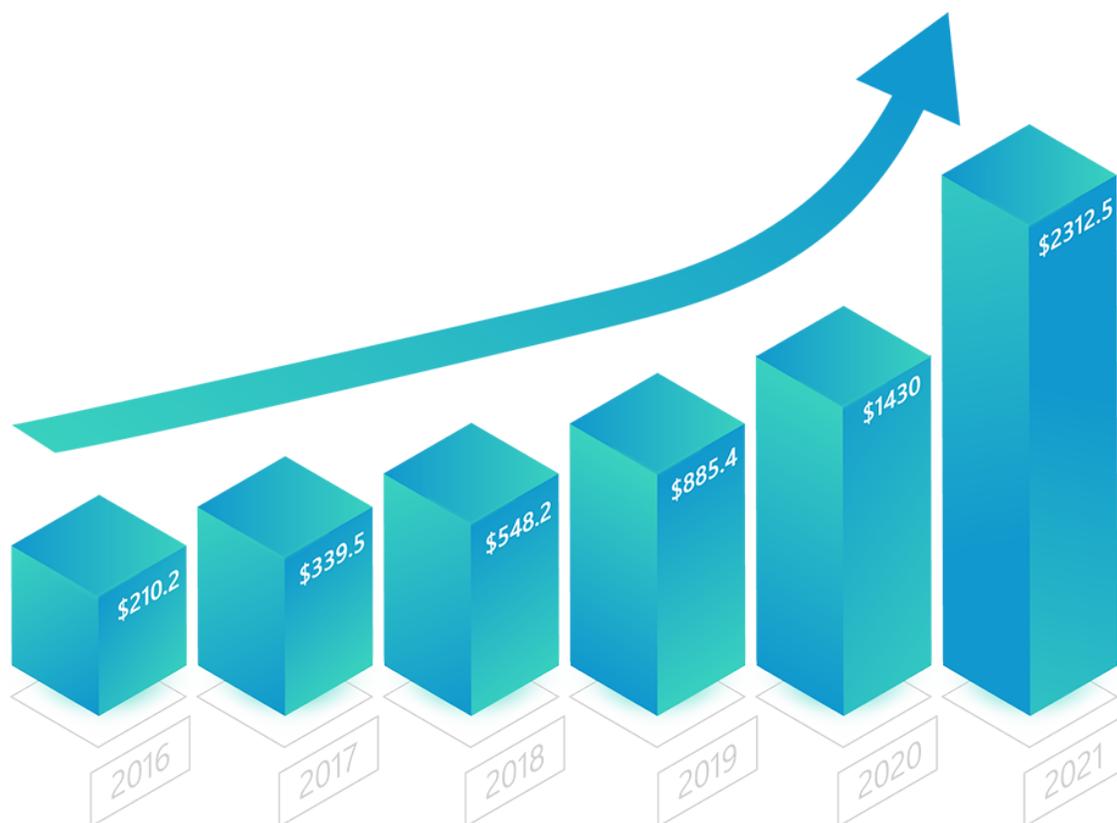
2.4.6 Marketing and Partnership

To have a successful business, it requires large marketing campaigns and customer reach, in addition to forming partnerships with other alliances to exchange services and support each other. Achieving that takes a long time, effort and again high costs.

3. Blockchain Technology: Is Disrupting the Market

Blockchain technology is changing the way many markets operate and is here to stay.

In 2017, the global blockchain technology market was predicted to reach 339.5 million U.S. dollars in size and is forecast to grow to 2.3 billion U.S. dollars by 2021.[\[ix\]](#)



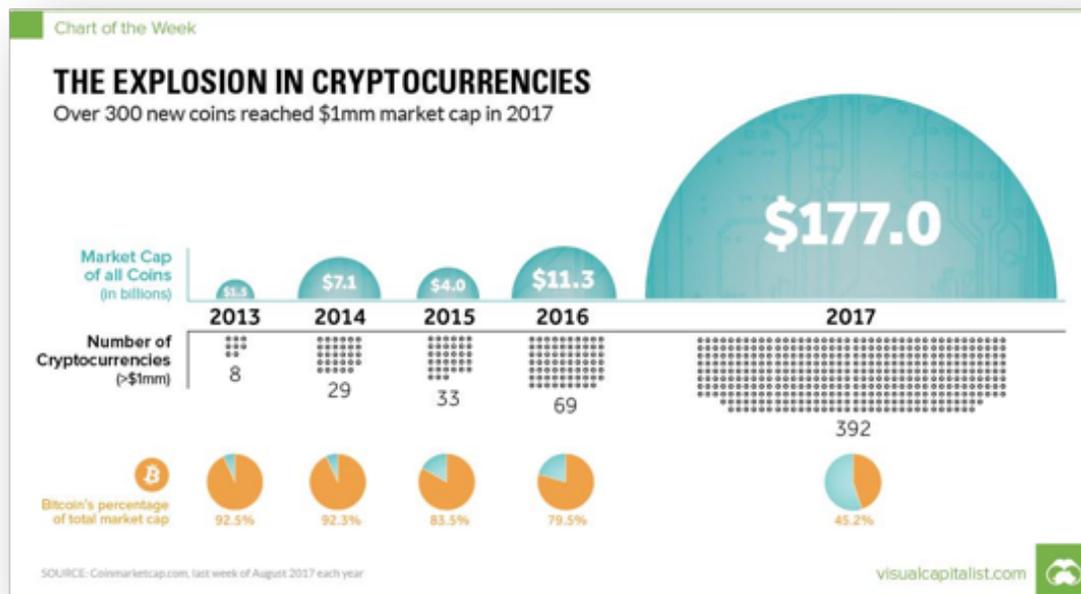
Blockchain Technology Market in Millions U.S Dollars

The market is expected to exhibit significant growth owing to abundant benefits provided by this technology, such as eliminating need for any financial institution to authenticate transactions, eliminating reconciliation, reducing duplicative recordkeeping, facilitating faster settlement, and minimizing error rates. This technology allows access to databases from everywhere, thereby allowing multiple institutions to use it simultaneously to bring different systems nearer and help improve efficiency.

Major growth drivers include growing interest of the Banking, Financial services and Insurance (BFSI) sector and increasing merchants accepting cryptocurrencies. The probable opportunity of this technology further includes instant settlement of various financial transactions and achieving optimized settlement options for netting and clearing process.[\[x\]](#)

3.1 Cryptocurrencies

With the introduction of crypto currencies in early 2011 and the rise of blockchain with Ethereum and its smart contracts, a new era of ideas come to live in many sectors starting with digital money. Using the blockchain allows for fast borderless payment that settles in seconds to minutes for tiny amount of fees paid for transaction processing.



Although there are thousands of crypto currencies, tokens and apps that are trying to bridge the gap between crypto to cash payments using crypto credit cards, still these services process high conversion fees and extra fees for cash withdrawal ~5%. Thus, a gap still exists in offering cash liquidity from crypto and transferring cash between two parties for fast and cost-effective way.

4. Air Transfer Protocol (ATP): The Ultimate Solution

Now, imagine the ultimate solution to all the above challenges, the explosive combination of digital remittances, blockchain technology and cryptocurrencies:

Air Transfer Protocol (ATP)

AirTransferProtocol (ATP) is the first decentralized P2P open protocol designed with the power of the blockchain to break the impossible by putting the standards for creating a decentralized network of entities (retails or individuals) that would like to operate cost-less remittance business to facilitate the transfer and conversion of coin-cash-coin (cash to coin, coin to cash and cash to cash).

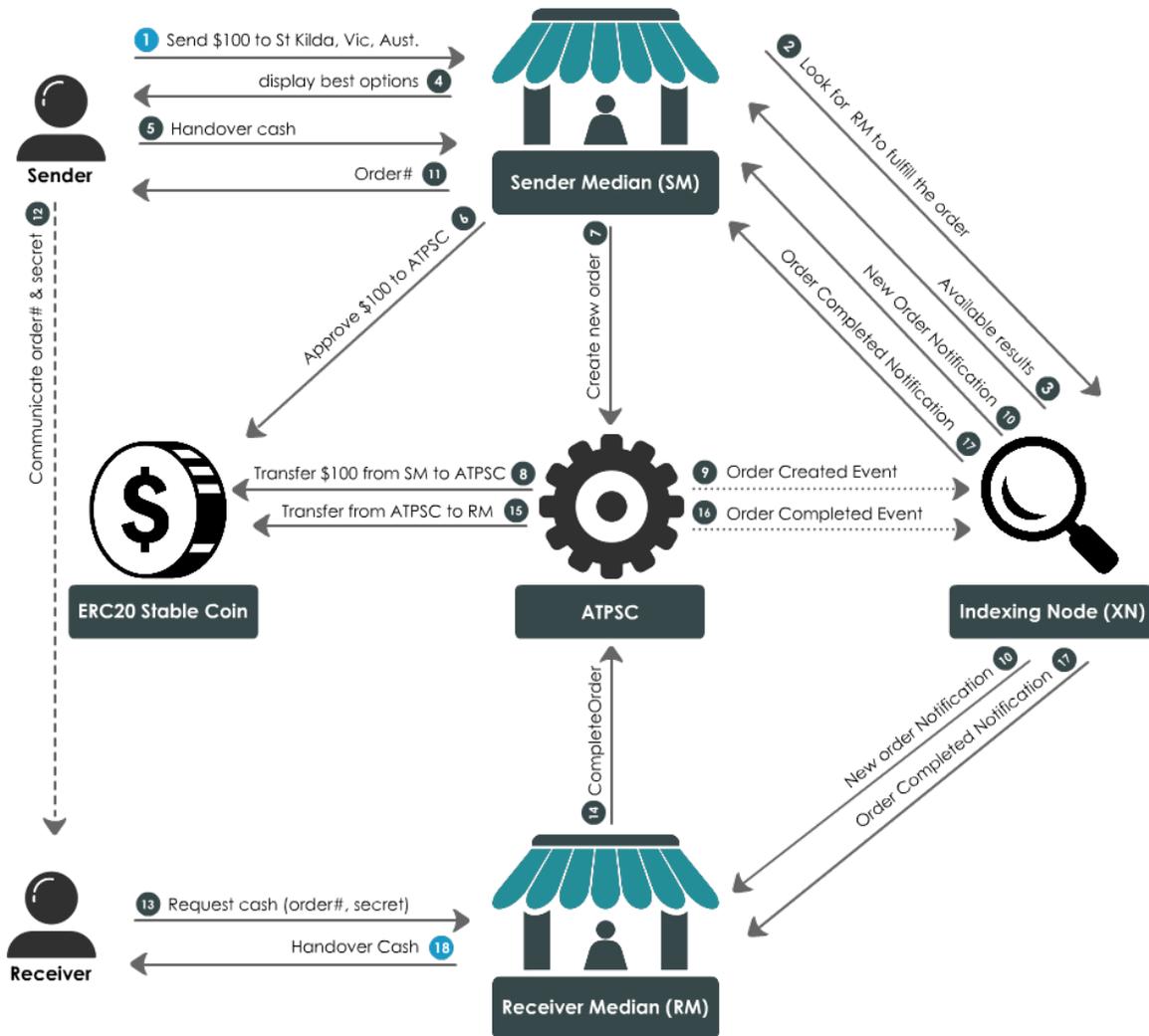
ATP will use only stable coins to avoid crypto volatility and reserve the transaction amount and staked token values.

4.1 How it Works

ATP defines a set of entities and rules managed by smart contracts to form a trustless decentralised remittance transfer. Let's begin by explaining a high-level flow of a transaction then discuss in detail.

There are 4 entities in each flow defined by the ATP and they are: sender, receiver, sender median (SM) and receiver median (RM). The money transfer process varies depending on the type of operation required whether it's a cash-to-cash, cash-to-wallet or wallet-to-cash but they all share most of the main flow.

A sender goes to a sender median (SM) to handout the cash, then sender median sends tokens to a suitable receiver median that commits to deliver the cash. ATP Smart Contract (ATPSC) holds the sent tokens till the Receiver Median (RM) delivers the cash to the receiver. Once the receiver confirms receiving the cash, the ATPSC releases the transferred tokens to the receiver median after deducting any fees included for the involved parties.



In the following sections, we'll explain the details of the ATP different processes and the role of each defined entity.

4.2 Definitions

The protocol defines key entities who are going to form the system and procedure flows for different scenarios:

4.2.1 Air Transfer Protocol Smart Contract (ATPSC)

A group of smart contracts that act as the core engine for the protocol where it:

- Holds registry of medians and their staked tokens
- Manages orders (creation, fulfillment and cancellation)

4.2.2 Indexing Node (XN)

Open source server & API that listens to all events from Ethereum Network, filter and store ATP related events and their associated details in an indexed storage for fast performant queries and notification services. The initial NX code will provide:

- Indexing and storing ATP events
 - Median Registered
 - Median Unregistered
 - Median Updated
 - Median Rated
 - Order Created
 - Order Completed
 - Order Cancelled
 - Order Secret Updated
- Provide Restful API for queries.
- Provide automated notifications where possible to (Email/SMS) for involved parties.

Third party apps are welcome to use the initial public hosted version or fork, customize and host their own versions according to their business needs.

4.2.3 ERC20 Stable-Coin

ERC20 token for an approved stable coin equals to a dollar value.

4.2.4 User

Both ends of a transaction, defined as sender/receiver.

4.2.5 Median

Median is an entity (individual or company) that commits to receive or deliver cash to and from users. They join the medians' pool by providing their basic details along with staking tokens, where:

- **Stakes**
 - 5% of the total trading volume; as a commitment bond.
 - Stacked when a median joins the ATP medians' pool.
 - Refunded when a median exits the ATP medians' pool.
 - Pay fines, explained in Median Operation section.
- **Sender Median (SM)**
 - Can only receive cash from a sender user.
- **Receiver Median (RM)**
 - Can only deliver cash to a receiver user.
- **Bi-Median (BM)**
 - Can receive and deliver cash to a user.

4.2.6 Facilitator

Facilitators are third party apps utilizing the ATP to facilitate the process between users and medians. Facilitator needs to adhere to a certain set of functionalities to be provided to guarantee compatibility with other facilitators.

Failing to do so, will ban the Facilitator address from the ATPSC based on a Governance DAO decision. A typical minimum set of functions provided by a facilitator would be:

- Register medians at the ATPSC
- Search the ATPSC for medians by (sender location, receiver location, amount to be transferred, pay-in, pay-out currencies)
- Display nearest median that can fulfill the user order
- Place order at the ATPSC
- Notify RM, Sender & Receiver about the new transactions when they are created or confirmed by the ATPSC.
- Allow receiver to confirm receiving the cash on the ATPSC

4.3 Flows

We'll explain basic business flows for common scenarios to get an idea how the transaction flows from sender to receiver.

4.3.1 Cash to Cash

4.3.1.1 Both Sender/Receiver has access to a facilitator app

- a. Using a Facilitator, a sender enters/scans a receiver's PubK, selects destination location, enters amount, pay-in currency, pay-out currency and search for matching. The Facilitator uses the APTSC or the Indexing Node (XN) to search for medians that match the order criteria and create a draft order displaying the nearest SM location and total amount including fees to the user.
- b. Sender uses a Facilitator app to create a passcode that gets hashed by the Facilitator app and updated on the APTSC draft order. Only correct passcode will confirm the recipient of cash. Sender then can communicate the passcode to the receiver.
- c. User goes to the SM, handover the cash and the draft order number. SM takes the cash and using a Facilitator creates an order. ATPSC creates the order by moving the transferred amount into an escrow secured by the hashed user secret.
- d. A receiver goes to the RM to receive the cash; In order for the RM to fulfill the transaction, the receiver needs to give the RM the correct passcode. RM enters the passcode through a Facilitator that hashes the passcode and matches it using the APTSC.

- e. By confirming a cash delivery, the ATPSC releases the amount to RM and distributes the fees to the involved parties; fees explained in the “operations” section.

- . **4.3.1.2 Only sender has access to a facilitator app**

- a. Same flow (1) steps.

- . **4.3.1.3 Only receiver has access to a facilitator app**

- a. User goes to the SM, handover the cash and specify receivers document type (ID, passport, bill, etc.) and number. SM takes the cash and using a Facilitator creates an order. ATPSC creates the order by moving the transferred amount into an escrow secured by the hashed user reference (DocType:DocNumber).
- b. Receiver goes to RM to receive the cash; In order for the RM to fulfill the transaction, the receiver needs to show the RM the owned reference type and number. RM verifies the number and use it to unlock the order on the ATPSC. RM using a facilitator app, needs to scan the document and store it on IPFS storage, attaching the hashed reference into the order details.
- c. By confirming a cash delivery, the ATPSC releases the amount to RM and distributes the fees to the involved parties; fees explained in the following sections.

- . **4.3.1.4 Both Sender/Receiver has no access to a facilitator app**

- a. Follow same flow (3) steps.

4.3.2 Cash to Wallet

- . **4.3.2.1 Both Sender/Receiver has access to a facilitator app**

- a. Using a Facilitator, a sender enters a receiver’s PubK, enters amount, pay-in currency and search for matching. The Facilitator uses the APTSC or the Indexing Node (XN) to search for sender medians that can fulfill the order, displaying the nearest SM location and total amount including fees to the user.
- b. User goes to the SM, handover the cash and the receiver’s public key. SM takes the cash and using a Facilitator app, creates an order on the ATPSC that sends the amount to the receiver’s address directly and distribute the fees to the involved parties.

- . **4.3.2.2 Only receiver has access to a facilitator app**

- a. User goes to the SM, handover the cash and the receiver’s public key. SM takes the cash and using a Facilitator app, creates an order on the ATPSC that sends the amount to the receiver’s address directly and distribute the fees to the involved parties.

4.3.3 Wallet to Cash

- . **4.3.3.1 Both Sender/Receiver has access to a facilitator app**
 - a. Using a Facilitator app, a sender selects destination location, enters amount, pay-in currency, pay-out currency and search for matching. The Facilitator uses the ATPSC to search for receiver medians that can fulfill the order, displaying the RM location and total amount including fees to the user.
 - b. Sender selects a receiver median, enter a secret and place an order. ATPSC creates the order by moving the transferred amount into an escrow secured by the sender's secret.
 - c. A receiver goes to the RM to receive the cash; In order to the RM to fulfill the transaction, the receiver needs to confirm receiving the money by providing the sender's secret code.
 - d. By confirming a cash delivery, the ATPSC releases the amount to RM and distribute fees to involved parties.

- . **4.3.3.2 Only sender has access to a facilitator app**
 - a. Same flow (1) steps.

4.4 Operations

By adhering to the ATP rules, all facilitator apps should be compatible with each other. That means it doesn't matter which facilitator app is being used by any of the involved parties as all of them will be able to communicate seamlessly through the ATPSC.

4.4.1 Facilitator

Mandatory for medians and optional for end users to use a facilitator app. Facilitator needs to register at the ATP and they can deactivate/activate their accounts, also a facilitator app can be restricted based on ATP DAO decision for security breach, fraud or another illegal act.

For full list of operations check the [appendix 5.1.1](#)

4.4.2 Median

A median is directly active once registered. Registration details can be updated where the new changes will apply only to new transactions. Although a median can set his own fees and conversion rates, he must be aware that higher rates will affect his chances to get selected for order fulfillment due to the competency between medians.

Medians will have a reputation score which depends on the number of orders they processed, volume and review score. Lower reputation scores reduce their chances to get chosen for an order fulfillment and will require them to deposit higher stakes.

Median rank is calculated from total reviews submitted by senders/receivers who completed orders through the ranked median. Ranking starts after 10 orders where

- Rank = (good reviews (4 and 5 stars) * 100 / total reviews) / 20

Medians having rank less than 4 will need to increase their stakes while medians with rank less than 1.0 will be deactivated by the ATPSC.

4.4.2.1 Follower Medians

In many countries, the concept of blockchain is unknown and to build large network of medians across post offices, shops, markets, etc., there will be a heavy work to spread the knowledge and to ease the barriers of buying, staking the stable coins and getting any necessarily regulatory approvals. Hence, a main remittance may exist to take care of these tasks and work on recruiting retailers by spreading Air Transfer Facilitators (dApps) in exchange of percentage of their fees for a committed period of time.

A follower median is a median that's linked to a root median and shares a percentage of his income with the root median for a committed period of time. After the expiry of committed period, a follower can remove the link to the root median and become a standalone one.

4.4.2.2 Fines

Fines will be deducted or locked from the staked median amounts according to the following:

Failing to fulfill an order: Withdrawal fees + 3% of the order amount will be deducted from the median's staked amount if a receiver median is unable to fulfill an order due to liquidity shortage than what's declared in the ATP. The fees will be used to cover the sender's withdrawal fees, in addition to compensating the sender. Deducting from staked amount will affect the median's trading volume, hence a median will need to top-up his stake to maintain the allowed trading volume.

ATP keeps track of medians' in/out cash liquidity based on the transactions and the initial declared balance. It's important for a median to update his balance on the ATP if the tracked liquidity is different from the actual liquidity available at the median to avoid receiving orders which can't be fulfilled by his side.

Low Rating: Rating score will affect a median staked amount where every 0.5 score below 4/5 rating will lock a portion from the staked amount, hence decreases the median's trading volume until he tops-up his stake.

- Rating of 3.5, will lock 5% of staked amount
- Rating 3.0, will lock 10% of staked amount
- Rating 2.5, will lock 15% of staked amount
- Rating 2.0, will lock 20% of staked amount
- Rating 1.5, will lock 25% of staked amount
- Rating 1, will lock all staked amount and deactivate the median.

Locked amounts will be transferred to the median account when he restores a rank level. Ex: moving from 3.0 to 3.5 rating will release the 10% locked amount to the median's account, not to the staked amount because staked amount, affects the median's trade volume.

Locked amount will not go back to the staked amount, therefore in order to maintain the median's trading volume, a median is required to top-up his staked amount and improve his service to restore the locked amounts.

For full list of operations check the [appendix 5.1.2](#)

4.4.3 Orders

Sender pays cash to SM which covers the transferred amount + transfer fees. SM uses a facilitator app to place a new order signed by SM Private Key. To receive the cash, a receiver needs to provide the secret code and sign a receipt when receiving the cash which then will be scanned and uploaded to an IPFS storage using the RM facilitator app.

Median-less orders are fulfilled directly once transferred to the receiver(s) address. Otherwise, ATP will hold the transferred amount in escrow until it's released to a RM using the sender's secret key. Once order is confirmed by the ATP, distribution of tokens is processed as follows:

- Fees amount is distributed:
 - Receiver Median (RM) fees, go to RM account (if RM is involved).
 - Sender Median (SM) fees, go to SM account.
 - Sender facilitator fees, go to sender facilitator account.
 - Receiver facilitator fees, go to receiver facilitator account.
- (Transferred amount - fees) goes to receiver's median account (if RM is involved)

If the cash is not collected, sender can withdraw the order to another RM. However, in such case, the fees will be still covered as follows:

- Fees amount is distributed:
 - SM fees, go to SM account
 - RM fees, go to initial RM account
 - RM fees, go to the new RM account
 - Facilitator fees, go to facilitator accounts
- (Transferred amount - fees) goes to the sender account (if sender address exists)
- (Transferred amount - fees) goes to the new receiver's median account (if no sender address exists) providing that the sender supplies the secret code to the SM to be able to cancel the transaction.

In some cases, a receiver median can reject an order if he can't fulfill it. If the reason is "Not enough liquidity" then failing to fulfill an order fees will apply on the median to cover user's withdrawal fees and to compensate the user as described in the median's fees section. The user then, will have to cancel the order or redirect it into another RM.

For full list of operations check the [appendix 5.1.3](#)

4.4.4 Search

Medians and orders can be searched directly using the ATPSC or by using an Indexing Server. Facilitators can create their own Indexing Server that captures ATPSC events and stores them into an indexed storage for better search capabilities, complex queries and more control on filtering and sorting the records. ATP will provide an open source indexing server with containerized docker image for quick configuration and deployments.

4.5 Features

4.5.1 Self-Governance

It's important for a decentralized protocol to have a decentralized authority that guarantees self-management based on the contributors and end-users like medians and facilitators "Apps & Developers" and use a Governance DAO to decide the future updates of the ATP such as adding/removing more coins, assigning administration permissions and upgrading the contract for security, performance and extra functionalities.

4.5.2 Developers Friendly

Usability is important for the success and effectiveness of the protocol to allow developers to build dApp on top of the ATP in addition to the Indexing Node for search capabilities using a Restful API.

4.5.3 Crypto Volatility Resistant

A token with scarcity properties is not a favorable cryptocurrency due to consequential volatility from speculation. Hedging the escrowed tokens is not a practical solution to cover the required expected volumes of transfers. Also, medians are required to hold big amounts of tokens for daily business transactions and hence they'll be risking their assets capitalization. Thus, the decision to limit the protocol tokens to the stable coin was required to guarantee the value of medians capitals and the transaction amounts.

4.5.4 Multi Coin Support

Although remittance business requires stable coins as none of the medians or users will be willing to risk their capitals or transferred amounts, being dependent on one stable coin makes a sort of centralization; especially many of the stable coins are asset backed such as fiat, gold or even coin collateral, some of them trusted to a single centralized authority. ATP will support multiple stable-coins with the following characteristics:

- . **4.5.4.1 Compatibility**
- . Only ERC20 tokens will be supported to have a standard interface for dynamic integration with the ATPSC.

- . **4.5.4.2 Dynamic**

- . ATP will use a coin registry smart contract to link ERC20 coins with their contracts which allows dynamic addition/removal of additional coins after getting community approval through the governance DAO.
- .

- . **4.5.4.3 Approved**

- . Adding coins should satisfy some criteria; Ex: stable and listed on multiple exchanges. ATP initially will support currently stable coins such as True, Tether and DAI. Additional new coins can be added dynamically after being approved by the governance DAO.

4.5.5 Optimized

This is much dependent on the blockchain of choice which is Ethereum. Currently, Ethereum has its limitations but also, it's under heavy development and we're expecting more to come based on Ethereum future roadmap such as Casper (PoS) release, plasma, etc.

4.5.6 Storage

Blockchain storage is too expensive in networks such as Ethereum, so minimizing the stored data is a main objective to keep the transaction costs low. Also, data need to be structured and indexed in the best way to be searchable and updatable with fewer steps and processing required.

4.5.7 Speed

Faster is better in accordance with the transaction cost so effectively we're aiming transactions in seconds rather than minutes with the release of Casper (PoS) and will be looking into state channels to decrease the transaction time as well as the costs dramatically.

4.5.8 Cost

A transaction will involve multiple fees from medians and gas fees. Where medians will compete between each other to provide best rates, gas fees still dependent on the storage and computations involved. Thus, optimizing storage, data transfers and computations will help to reduce the gas consumption in addition to the state channels.

4.5.9 User's Privacy

User's privacy is essential; thus, the ATP doesn't store or use any user (sender-receiver) details except their Ethereum address. While medians need to include minimal details like name, location and contact number.

User details and their management, alongside KYC is different according to each country regulations. Hence, it's left to the facilitator/app to implement these features as required based on the operating country and any other factors.

4.5.10 Secure

Being in a decentralized network, increases the network security. However, smart contract code and its vulnerabilities still a developer responsibility.

ATP is an open source protocol that makes it public to the developers and contributors who can review, audit, raise pull requests for new features or fixes. Also, before releasing the ATP will go through an audit process by experts for final checks and optimizations.

4.5.11 Upgradable

Future upgrades and new features can be voted by the community. If a new feature proposal gets voted by the community then it can be appended to the protocol and deployed as a new version.

The ATPSC will be wrapped by a proxy contract to allow deploying updates and new features while keeping old versions in a registry. ATPSC will always point to the new deployed contract, however, apps that wish to use a specific version of the contract can reference it directly.

4.6 ATP DAO

For an open protocol, there is a need for a Decentralized Autonomous Organisation (DAO) to make the necessary decision for the future of the ATP; DAO is a decentralized app (web in our case).

4.6.1 Members

Medians and dApps are the main members of the DAO and are the best to take vote for its future as they're the main stream affected.

4.6.2 Proposals

All features, suggestions and enhancements will go through proposals where an interested party creates a proposal and members vote for it. Voting power equals to the staked amounts at the ATP. Successful, proposal gets implemented and applied on agreed plan.

5. Appendix

5.1 Operations

5.1.1 Facilitator

| Facilitator's Operation | Inputs |
|---|--|
| Register Facilitator | <ul style="list-style-type: none">• Name• Company• Location• FeesPercentage• Value in 5 decimals. Ex: 0.00001% would be 1 and 1% would be 100,000• FeesFixed• Value in 3 decimals. Ex: 1 cent would be 1 and \$1 would be 100. |
| Cancel Facilitator Facilitators can deactivate their accounts, also admins "based on DAO decision" can execute the function. | <ul style="list-style-type: none">• address (PubKey) |
| Reactivate Facilitator Facilitators can reactivate their accounts if they cancelled it otherwise only admins "based on DAO decision" can re-activate them. | <ul style="list-style-type: none">• address (PubKey) |

5.1.2 Median

| Operation | Inputs |
|-----------------|---|
| Register Median | <ul style="list-style-type: none">• Name• Type• (1) Sender Median, (2) Receiver Median, (3) Bi-Median• Location• Median address. Ex: ['350', 'Canterbury Road', 'St Kilda', 'VIC', 'AUS'] |

- Receivable tokens
- Type of tokens can be accepted by a RM. Ex: [USDT, TrueUSD, DAI, ...etc]
- Sent tokens
- Type of tokens can be sent by a SM. Ex: [USDT, TrueUSD, DAI, ...etc]
- Sent tokens initial balance
- Entries equal to the sent tokens where each entry holds the initial balance available. Ex: [10000, 5000,3000] which maps to USDT=10,000, TrueUSD=5,000 and DAI=3,000
- Pay-in currencies
- Type of currencies can be accepted by a SM as a cash-in payments. Ex: [USD, AUD, ...etc]
- Pay-out currencies
- Type of currencies can be used by a RM to cash-out a transfer amount. Ex: [AUD, USD, ...etc]
- Pay-out currencies initial balances
- Entries equal to the pay-out currencies where each entry holds the initial cash balance available. Ex: [10000, 5000, ...etc] which maps to AUD=10,000 and USD=5,000
- Fees Percentage
- Value in 5 decimals. Ex: 0.00001% would be 1 and 1% would be 100,000
- Fees Fixed
- Value in 3 decimals. Ex: 1 cent would be 1 and \$1 would be 100 and
- Staked Amount
- For RM:
- 5% of trading volume, minimum \$50.
- Trading volume = SUM(payout currencies balance) in USD.
- For SM:
- 5% of trading volume, minimum \$50.
- Trading volume = SUM(Sent tokens

| | |
|---|---|
| | <p>balance) in USD.</p> <ul style="list-style-type: none"> • For BM: • Stake of RM + Stake of SM • ExternalRefHash • IPFS hash for a stored JSON file on a predefined format with a complete median details and extras, ex: working hours, ...etc. |
| <p>Set Root Median Link</p> <p>A median can be a Follower Median that follows a root median and shares the income with him. This operation can be performed by the Follower Median only.</p> | <ul style="list-style-type: none"> • Root Median (PubK) • Fees Percentage • Value in 5 decimals. Ex: 0.00001% would be 1 and 1% would be 100,000 • Fees Fixed • Value in 3 decimals. Ex: 1 cent would be 1 and \$1 would be 100 and • Commitment Duration • Minimum number of days a median have to be linked to the root median |
| <p>Remove Root Median Link</p> <p>A median can remove it's root median link after completing the commitment duration. Alternatively, root median can remove the follower median link at any time.</p> | <ul style="list-style-type: none"> • Follower Median (PubK) • If set then the caller is a Root Median, otherwise the caller is a Follower Median. |
| <p>Update Follower Median Fees</p> <p>Requires a signature from both Root & follower median to adjust the fees or the commitment duration.</p> | <ul style="list-style-type: none"> • Root Median (PubK) • Follower Median (PubK) • Fees Percentage • Value in 5 decimals. Ex: 0.00001% would be 1 and 1% would be 100,000 • Fees Fixed • Value in 3 decimals. Ex: 1 cent would be 1 and \$1 would be 100 and • Commitment Duration • Minimum number of days a median have to be linked to the root median |
| <p>Update Median Fees</p> | <ul style="list-style-type: none"> • Fees Percentage |

| | |
|--|---|
| | <ul style="list-style-type: none"> • Value in 5 decimals. Ex: 0.00001% would be 1 and 1% would be 100,000 • Fees Fixed • Value in 3 decimals. Ex: 1 cent would be 1 and \$1 would be 100 and |
| UpdateMedianAddress | <ul style="list-style-type: none"> • Country • State • City • Street • Building • Unit |
| Update Median Pay-out Currencies | <ul style="list-style-type: none"> • Currencies - Array • Ex: [USD, AUD] • Balances • [10000,5000] |
| ATP keeps track about the cash liquidity available based on the initial balances set by the median, however, a median can change the list of currencies a receiver median can afford as cash-out currency and their updated balance. | |
| Update Median Pay-in Currencies | <ul style="list-style-type: none"> • Currencies - Array • Ex: [USD, AUD] |
| Change the list of currencies a sender median accepts as cash-in. | |
| Update Median Receivable Tokens | <ul style="list-style-type: none"> • Tokens - Array • Ex: [USDT, TrueUSD, DAI] |
| Change the list of tokens a Receiver Median accepts. | |
| Close Median Account | |
| Medians can close their accounts at anytime and | |

| | |
|--|---|
| get their staked amount back. | |
| Rate Median (Optionally) Medians can be rated by end user's per order using order secret as proof of order ownership. | <ul style="list-style-type: none"> • Order Id • Order Secret • MedianType • (1) Sender Median • (2) Receiver Median • Rating • Reference Hash • IPFS reference to additional description and other materials. |
| Reactivate Median Account Medians can reactivate their accounts, putting back their staked amount. | <ul style="list-style-type: none"> • Staked Amount • 5% of max transaction value, minimum \$50. • Ex: \$1000 allows a max transfer value of \$20,000 |
| Increase Stake Increasing the stake, increases the max transaction value can be fulfilled by a median. | <ul style="list-style-type: none"> • Amount • The extra amount to top up the current staked amount. |
| Decrease Stake Decreasing the stake, decreases the max transaction value can be fulfilled by a median. | <ul style="list-style-type: none"> • Amount • The extra amount to take from the current staked amount. If the final staked is less than the minimum stake required, transaction will fail. |
| Find Medians By Country | <ul style="list-style-type: none"> • Country code. |
| Find Medians By State | <ul style="list-style-type: none"> • Country • State |
| Find Medians By City | <ul style="list-style-type: none"> • Country • State • City |

5.1.3 Order

| Operation | Inputs |
|-----------|--------|
|-----------|--------|

| | |
|---|--|
| New Order | <ul style="list-style-type: none"> • Sender address PubK • Optional if SM created the transaction. • Receiver address PubK • Optional if RM address is specified. • RM address PubK • Optional if receiver address is specified. • Facilitator address PubK • To receive the Facilitator fees. • Amount in tokens • Transfer amount + fees • Secret • Hashed code or document number (proof of identity) |
| <p>Update Order Secret</p> <p>A sender can set a new order secret using a facilitator app while the order is not yet fulfilled.</p> | <ul style="list-style-type: none"> • OrderId • Hashed secret |
| Complete Order | <ul style="list-style-type: none"> • OrderId • Hashed Secret • Facilitator address PubK • To receive the Facilitator fees. • ReceiptHash • IPFS hash for a stored signed receipt image |
| Cancel Order | <ul style="list-style-type: none"> • OrderId • Hashed Secret • Facilitator address(PubK) • To receive the Facilitator fees. |
| Reject Order | <ul style="list-style-type: none"> • OrderId • Reason Code • (1) No enough liquidity • (2) Other • Reason • Supporting short text if necessary. |
| FindOrder | <ul style="list-style-type: none"> • OrderId |

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