



# ***ELECTRA***

## ***THE DEMOCRATIZATION OF BUSINESS TRANSACTIONS***

Wealth is created and distributed by constant value movement. Examples are services, commercial goods, assets, commodities, stocks, money. The faster and easier it is to transfer value, the better it is for everyone. Electra helps to make transactions better, so that everyone can have a fair go.

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### ***Introduction – Establishing a Foundational Piece***

There has been various attempts at introducing cashless solutions into national economies throughout the world. Examples are Wechat and Alipay in China, TRUE Wallet in Thailand and PayLah as well as GrabPay in Singapore.

Besides the national success of Wechat and Alipay in China (which was primarily driven by huge user adoption through the convenience of being a super app, forcing merchants to be on board or be left out of the digital economy), other cashless solutions has struggled to build up critical mass.

The root challenge for existing digital stored value wallets are transaction costs. Specifically, existing digital wallets are built upon and around traditional centralized settlement structure – cash transfers, cheques, interbank clearance, multi-levels of verification, wire transfers, credit card processors – each party adding a layer of costs to the transaction.

In order for a merchant to accept a cashless digital wallet payment or card payments (which appears as a cash equivalent to the consumer), the merchant has to bear merchant fees, settlement fees, chargeback fraud risks, as well as waiting for fund clearance in settlement time. So existing cashless options only solve half of the cashless equation – Transactional Inequity

For a cashless solution to truly gain traction, it has to reach a parity in ease and cost of acceptance that is equivalent to cash – as instantaneous and cheap to accept as cash, but infinitely more secure to store, carry and manage – for BOTH consumers and merchants – Transactional Equity

The first step towards Transactional Equity is to remove the shackles of traditional money movement mechanisms and replace it with a system that is more open, transparent, fast, secure and accessible to every participant in the national economy.

SendX Pte Ltd, has introduced a stored value facility (SVF) into the Singapore market that creates an equivalent SGD1.00 for every SDX

### **About SendX**

We are a Singapore grown company focused on innovating business solutions built on the power of blockchain technology.

Our distributed and decentralized back office, known as Electra, helps businesses take care of their financials, overheads and money flows without burning a hole in their pockets.

Electra is where the business world meets to attend to its business and to transact.

We have more to deliver to you as we build our Transactional Equity proposition.

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token exchanged. Built upon de-centralized blockchain technology, it is designed primarily to deliver real Transactional Equity for the first time in the world.

### ***A Common Language for Money***

In the push towards a digital cashless society, moving daily transactions away from traditional money infrastructure model towards one that is freed from multiple layers of abstractions and verifications (with their associated costs), a new token equivalent needs to be introduced as a unit of measure.

This is an important differentiator as only central banks and governments are legally able to issue country specific currency as legal tender. So the digital token cannot carry the same nomenclature as the base currency.

To eliminate any possible exchange rate confusion, the digital token (e.g. SDX in Singapore (live) and INX for India) will carry a constant 1:1: peg with the base domestic currency unit (SDX 1 = SGD 1.00, INX 1 = INR 1.00). Each token introduced into the network will require an equivalent unit of fiat currency to be received by the network operator (e.g. top-up).

The greatest advantage of the rupee token is the elimination or deep reduction of merchant fees, removal of terminal costs, elimination of cash management costs, reduction in reconciliation and account management expenses, elimination of leakage and removal of fraud. With Self-Sovereign Digital Identity integrated with Aadhar, KYC becomes more enhanced and vulnerability of storing data pools securely is removed.

This makes user mind set adoption seamless and also helps to differentiate between digital and physical units of exchange easily as well.

### ***SendX Digital National Tokens***

The digital national tokens are all hosted on a national blockchain platform. Users interact (top-up, view balance, send/receive, exchange) through the SendX mobile wallet application (wallets can be white-labeled with national partners).

Users can send and receive tokens directly through the mobile application and transactions are completed in near real time. Tokens can be sent to contacts or to scanned QR codes (e.g. merchant POS or a SendX QR code posted on social media).

All transactions are captured on a distributed ledger that is built and secured on a blockchain. This results in an open and secure system that is immutable.

Token settlement speed is measured in near real time seconds and are final upon completion, eliminating any possible chargeback frauds or credit exposure. Tokens received are immediately available for use by the merchant within the national blockchain network (i.e paying vendors or business bills)

The Stellar protocol on which the SendX token system is developed allows for a broad range of business and financial activities besides just moving value easily and quickly. For example, consumer facing smart contracts can be issued by merchants to secure micro instalment payments (daily, weekly) automatically for small ticket item purchases at very low financing costs, making the previously impossible to save for purchase, now possible.

Businesses that makes better decisions with accurate data, minimizes waste and maximizes productivity have better odds of thriving in their chosen field. Not many small businesses are able to secure the skills and financial resources to access and maintain this critical business advantage.

**Distributed ledger and blockchain accuracy forms the basic foundation** which allows tiny businesses to harness the power of transactional data – back office accounting, GST reporting, product and service management, sales tracking and inventory – all previously accessible only to established businesses with dedicated staffs.

SendX has created such a back office tool – one that is kept updated and audited every minute with each transactions, one that will allow a small business to accomplish so much more – we named her, Electra.

### ***Electra - The Democratization of Business Transactions***

First, we need to redefine what business transactions mean. They do not refer only to B2B but to any transaction in which a business is involved. What do we mean by business? It can be a sole proprietor, a freelancer, a more conventional company or even a conglomerate. Basically, anyone who does or aspires to do business is a business. Naturally, ethically and morally prohibited businesses (including but not limited Darknet entities) are excluded from this definition.

Business transactions face a dual problem. One, the cost of accepting and handling payments has a cost and that can be significant. **If the establishment has to handle cash, the cost may not be apparent to an outsider at the point of exchange.** But the real cost includes many different parts and eat into the company's revenues.

**If the establishment accepts cards - and we know this already - it is vulnerable to a complex and relatively opaque pricing and administrative framework imposed by card networks.** Again, as pointed out at the beginning of this paper, the choices are not very good.

Further, businesses often find it difficult to start accepting cashless modes - if their applications are not rejected due to their size or apparent risk profile, they find it too complicated and expensive.

Secondly, businesses have to follow a lot of compliance requirements that can lead to significant overheads. But these overheads are also contributed by the nature of the transactions today. There does not exist in traditional frameworks, a way in which trustless parties can transact directly with one another easily and with integrity.

The amount of time and effort such transactions would take in terms of reconciliation alone, would be quite high and probably unsustainable. To achieve the status of trust which could bring about a lower level of cost, requires time and the ability to pay for manpower, travel etc. So there is no escaping mounting costs.

This is where smaller organizations and individuals start to lose out. It also hampers a truly global, open ecosystem of trading - everyone talks about it but it is difficult to practice and deliver it.

It is our opinion that anyone who wants to run a business should be able to get onto a distributed global platform and start deal making.

It is important that we make another point here. The traditional and dominant view of payment brands is that these are consumer first. In other words, consumers will drive usage and adoption.

It is our opinion that this view is contestable. The reason is that consumers will not adopt a payment brand in any significant way unless it can be used at enough merchant establishments. We, therefore, would like to use the merchant as the starting point for consumer adoption. This is the basis of Electra. Electra has the following components.

### ***Acceptance Terminal and Processing***

The merchant acceptance world (with the exception of a few standout markets such as USA, Australia and UK) is faced with a dilemma. On one hand, the cost of accepting global scheme based cards has not gotten significantly cheaper, despite the regulatory constraints applied in some markets.

It is also difficult to say whether those constraints have led to a greater penetration of terminals - if it is in markets like Australia, the net increase (if any) would not be visible; there is no evidence from large emerging markets.

At the same time, local schemes (most notably RuPay in India) have increased their terminal penetration while Alipay and WeChat Pay are being accepted by more merchants outside China.

It is, again, not easy to gauge whether the increased number of terminals in India has resulted in a commensurate and durable growth in transactions; as far as the Chinese giants are concerned, they remain focused on overseas travelers from PRC at the moment.

There is no doubt that a network like RuPay aspires to be a long-term cost-effective and fair network; however, we do not yet know whether the compulsions of member banks, political machinations in Delhi and the costs of expanding overseas (should that occur at all) would help retain low costs.

Despite the best of intentions, it is a centralized network running off long established infrastructural design and processes, and the fundamentals of a four-party processing model are at its core.

In any case, there are not too many other national schemes in effective deployment and operational mode like RuPay, outside the traditional big five processors (MasterCard, VISA, American Express, Unionpay and JCB). Hence, it may not be a relevant example for many smaller, but nonetheless, important markets.

We propose that it is possible for large scale retail transaction processing to take place through the Stellar network. The design of Stellar makes it possible to deliver a 3-5 seconds per transaction speed, which is good quality from any standards. It is scalable to allow millions of transactions at any time.

This is possible because there are two main parts to the transaction being processed - one, it has to be approved by validators on the network; once it is validated, the ledger is updated. The only significant externality to this process, if we may use this term, is the exchange rate of assets.

**In the underlying protocol, the exchange of an issued asset by an anchor for another asset (say our global token for cash or our token for another token or vice versa) is the key transaction that is approved and recorded on the ledger.**

The exchange rate may be pre-determined or it may be an outcome of external market forces. We will choose the available rate or the best market rate accessible to it and that is recorded on the order book.

The order book, the distributed exchange and the distributed ledger are synonymous. In case of retail transactions, there are two possible scenarios - domestic and cross-border.

Domestic transactions call for a one-to-one exchange between the billed fiat amount and the cryptocurrency. In case of cross-border transactions, there are two options:

- 1) there are multiple rates for the swap between the buyers currency and the cryptocurrency and the lowest one is always chosen;
- 2) there is only one rate available as there is only one market maker and that rate determines the exchange rate between the buyers home currency and the cryptocurrency.

In other words, the fundamental process of swap between the currencies is not different from that of cross-border money transfer. Once the asset swap is done, the transaction is complete and recorded on the distributed ledger. This enables very high speeds.

Also, the distributed nature of the order book and ledger enables the transaction to be always completed. It is to be noted that transactions cannot be reversed. The immutable nature of transactions ensures that there cannot be declared fraud and hence chargebacks.

However, refunds can be built into the system. For example, a customer may want to return goods that he /she had purchased. In such a case, a separate transaction would be carried out crediting the appropriate amount of cryptocurrency into the end-user account. This would be recorded in the distributed ledger.

What we have described above is the transaction processing, which happens outside the moment-to-moment invigilation of the consumer in a practical, real-life situation. We now turn our attention to the manner in which the payment is enabled at the point of sale.

### ***Point of Sale***

The bulk of physical, at-POS cashless transactions happen through cards and in some cases through phones. In case of China, this is mainly through phones, using QR codes.

Both cards and phones require in-store terminals, which are connected to the cash register locally and to the processor remotely.

For the card/phone transactions which involve processing by card networks, EMV standards need to be followed. This requires the form factor of the payment instrument to carry a significant amount of encoded information in a card chip. If it is a tokenized card in a phone, the same data is involved in the transaction too, albeit with a different form factor. This is not necessary for the SendX interaction. In case of QR transactions (specifically the Chinese and other independent operators), the end-user interaction at point of sale is close to what we envisage.

We do not see the need for dedicated hardware. A smartphone with a data connection would suffice. There is some difference in the user interface on the merchant side but that is relatively light. The fungibility of our app allows it to be used by both consumers and merchants.



If the merchant is a freelancer or a sole proprietor, he or she would be satisfied with the same consumer app, albeit with some superficial changes. If the merchant is a traditional retailer, he or she would require a more detailed cash register function.

What would this cash register do? It would behave exactly like a cash register at the point of sale today in merchant establishments. When a person wants to buy something, the teller scans the product or enters the product code manually, throwing up the price and thence the amount to be paid. This is exactly what our app will enable the teller to do. The critical difference is that the transactions obviously get recorded on the blockchain. The price display with details will be seen by the end user on his/her app, as both parties (customer and merchant) are both on the same ledger.

Once the end user approves the purchase, the transaction is completed with funds deducted from the wallet. Given the processing architecture, levying very high fees on merchants to accept payments - whether online or offline - becomes unnecessary.

We are able to charge a fee for settlement while waiving or drastically reducing merchant discount fees. Indeed, as far as small merchants are concerned, we will waive MDR (merchant discount fees) completely.

The next step for us is to issue plastic. There are likely to be two categories of plastic - contactless and QR. The former would be for more developed and urban economies, while the latter would be for those on the lower rungs of the economic ladder as well as rural and displaced people.

It is possible of course, that students and younger people in Southeast Asia may gravitate towards QR. These cards can be tapped or scanned at phones which act as terminals. The key to enabling contactless phone terminals is to deploy a HCE spec in our cloud with the client sitting in the phone. Upon tapping, the transaction is passed onto the blockchain for validation.

## ***Back-Office***

Given the opportunities presented by the technology we use, we are prepared to go a step further and addressing other back-office and transactional issues faced by merchants.

These issues are largely in the areas of book-keeping and reconciliation, tackling fraud and dispute resolution.

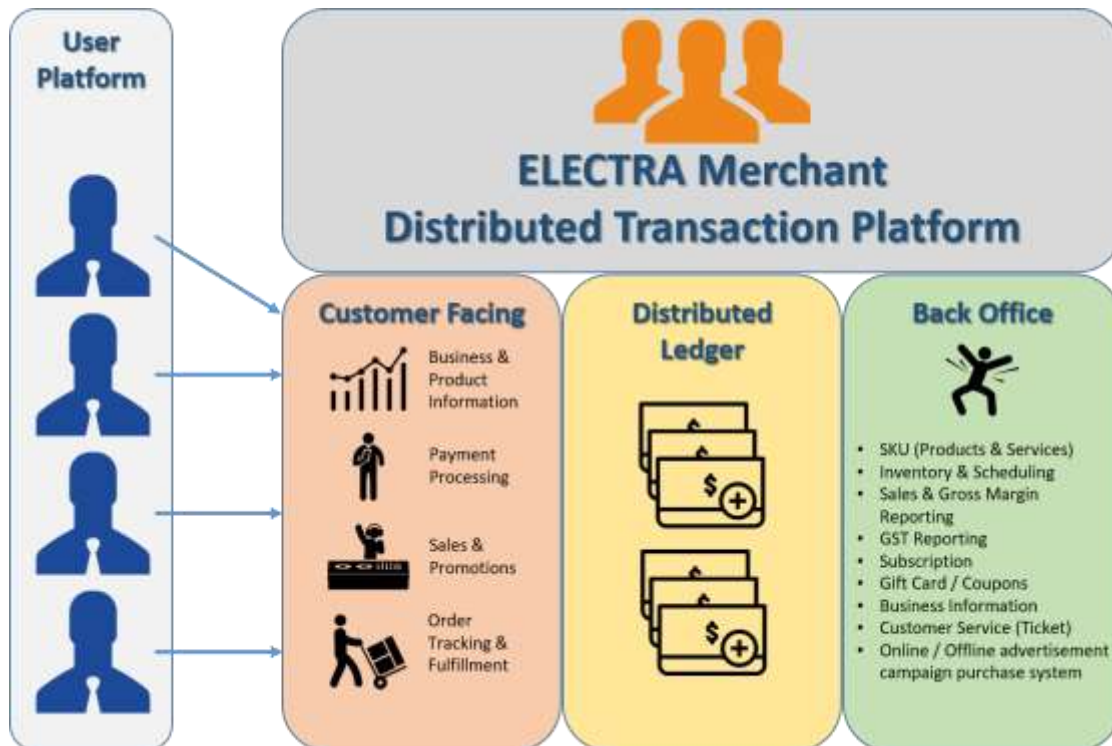
Our product enables a merchant to have zero transactional disputes, near-zero fraud complaints and a much slimmer back-office. All of this comes from the immutable and transparent, always-on, distributed nature of the ledger.

The merchant app (which is not significantly different from the consumer app) becomes the gateway to a new back-office. While a more accurate per-company assessment may be appropriate, it is not difficult to see that the cost of ledger maintenance and reconciliation would be at least halved.

This has upstream implications for the merchant as well. He/she can insist that small payments be made through the wallet that we dispense, thereby making sure that at least a part - if not the whole-of the supply chain becomes part of the blockchain.

Once that happens, all the supply chain transactions (at least for the connected actors) are recorded on and seen at the distributed ledger. This leads us to the next step in the evolution of our product. This will be the enablement of smart contracts.

Merchants, sole proprietors and SMEs will be able to enter into smart, multi-signatory contracts which are tokens that can be signed by multiple parties with their public keys. We will make the SendX global token a powerful multi-purpose tool, whereby it can be used for creating, maintaining and amending contracts between businesses and their customers and stakeholders up and down the value chain.



## Community

There is one area where we feel traditional financial ecosystems have bypassed small merchants - this is in the creation of a community. While there are SME practices in many software companies, the percentage of small and sole proprietorship businesses that do not accept cards remains consistently high.

We believe this constituency is key to our success. In order to galvanize it, we need to create a community.

The community will be created by allowing any entity having a valid identity to become a business on our network.

To get entry into the network, all the business needs to do is download a business wallet on a smartphone and register. Thereafter, even an individual starting from scratch can list a storefront and attach the SGT as a payment source.

The distributed nature of the platform lends itself well to commercial and non-commercial broadcast messages. Businesses will be able to talk to one another through more traditional, opt-in channels.



Each merchant can introduce and bring in other merchants. We want to particularly pursue the merchants where there is a network effect forming - freelancers, coders, game specialists, artists and so on. This needs to extend to the world of remittances - payout and cash-in/cash-out agents, pawnshops and other micro-businesses who provide liquidity.

The advantage for us is the formation of a community that has buy-in to what we do and one which we can constantly influence through dissemination of information.

### ***The Core of Electra***

At its core Electra is made up of:

- i) A series of adaptors that can integrate into any underlying protocol. This allows an end-user transaction to pass credentials through to the protocol and to be processed appropriately, passing back the output to the platform and then the application level.
- ii) Business applications such as “view your ledger”, management dashboard, smart contracts.
- iii) Set up your own business- a toolbox that allows anyone to set up an online store from scratch or add his/her existing business.
- iv) Payment Acceptance-Electra allows any merchant or business on board to accept SendX tokens for payments. This will be done through the merchant app which in its first edition will allow virtual, followed by QR-code payments. In a later version we will introduce tap and pay from one phone to another. There is no separate terminal with a spec sitting in it, needed as in case of card schemes. Here, a regular smartphone can be utilized as merchant acceptance terminal.
- v) Customer Care- Customers can rate individual merchants/businesses. They can search for merchants and businesses by product category, city, and name of business. This is possible through a series of algorithms written into the Electra stack.
- vi) All users of Electra are equipped with a Self-Sovereign Digital Identity product which is embedded into the Electra app on their phones. They need to set up their own identities and get their accompanying credentials and claims attested by the competent authorities appointed by the SendX partner running the programme on the ground in each country. This will bring about a much more foolproof, efficient KYC and KYB process that is resistant to hack attacks on centralized data pools. It makes the end-user an active participant in the KYC/KYB process and at the same time enhances transparency, security and cost-effectiveness.
- vii) In markets like India, the SSDI software will integrate into the India Stack and pick up credentials and claims such as the Aadhar card number and a scanned copy of the same.

Electra is a complete, protocol-agnostic transactional platform which brings disparate actors in the SendX value chain together and enables auditable, secure and easy transaction flows. It enables choice for both businesses and their end-users, creating a global market with local editions wherever possible. Electra integrates into the Ammbr Wifi stack as well, allowing interchange between SendX and Ammbr tokens.

## ***Electra Technical Product Info***

### **1) Consumer and Merchant App**

- a. SSDI Enabled
- b. KYC/KYB process
- c. POS - items for sale, scanning of product, manual product code entry, show of price.
- d. Payment
  - i. Consumer scans QR to pay
  - ii. Consumer taps to pay (HCE)
- e. Backoffice
  - i. Dashboard
  - ii. Transaction Ledger
  - iii. Smart, multi-signatory contracts (tokens)
- f. Community
  - i. Easy storefront setup
- g. Customer Care
  - i. Merchant search - keyword and category
  - ii. Consumer can rate merchants

### **2) Management Console**

- a. Admin Access Management
  - i. Role based security access management - admin user account creation, deletion, suspension and access control to modules.
- b. Token Vault - Lifecycle Management (Account Level)
  - i. Bulk issuance of token (naming, pegging, quantity, UAT or Production).
  - ii. Balance - Unassigned in Token Vault, Assigned to wallets
  - iii. Suspension - freeze tokens
- c. Reporting
  - i. Real time transaction search with results filters
  - ii. CSV downloadable

### **3) Transactional API**

- a. Token Assign - assign tokens from token vault to wallet-ID or from wallet-ID back to token vault
- b. Token Balance - queries available token balance based on wallet-ID
- c. Token Transfer - transfers token ownership from wallet-ID-1 to wallet-ID-2

### **4) Infrastructure**

- a. Cloud Based - Elastic, Auto-Scaling
- b. UAT and Production environments
- c. API key
- d. SSL
- e. IP Whitelisting