

# BLOCKCHAIN TECHNOLOGY WILL BE BEST ACCEPTED BY THE MASSES WHEN THE MASSES DO NOT REALIZE THEY ARE ADOPTING THE NEW TECHNOLOGY

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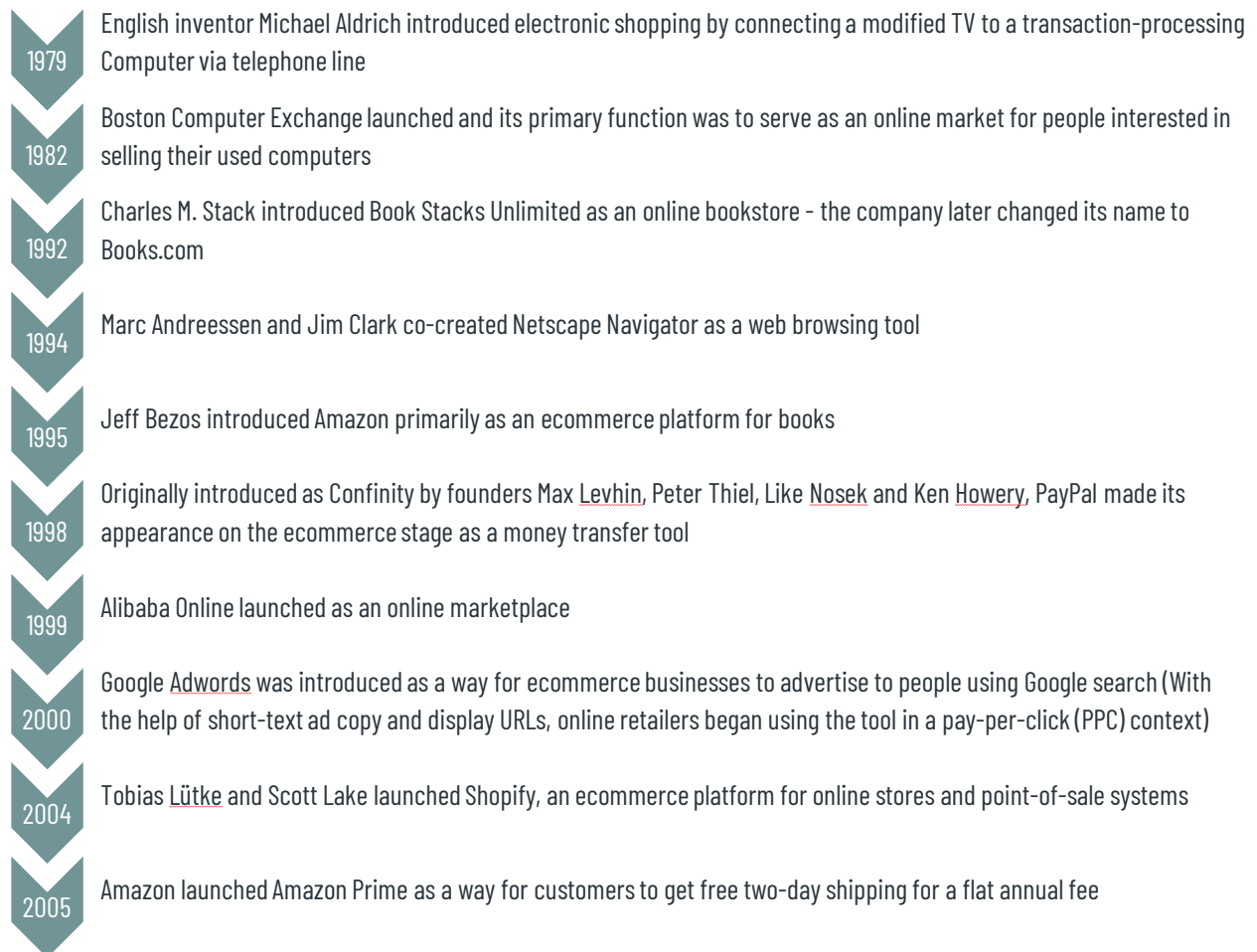


We believe that technology reaches “mass” adoption only when the “masses” do not know they are adopting the new technology. Stated another way, we believe technology is adopted when that adoption process is “frictionless”. During the “dot.com” era, many users were skeptical about making purchases on the internet. That is until they realized they were making purchases on the internet without their knowledge.

## ECOMMERCE ADOPTION

One of the earlier use cases of the internet was ecommerce. While the early adopters began making ecommerce transactions in the year 2000, that certainly was not the norm. Before we dive into adoption after the year 2000 let’s look at the history of ecommerce prior to this time, as we believe many people do not really remember the exact timeline for the adoption of ecommerce.

Ecommerce was introduced about 40 years ago in its earliest form and here is the timeline:



As you can see, adoption by the masses takes time. We believe the masses adopted ecommerce payments and transactions when they realized the Visa and MasterCard payment networks were utilizing the internet for transactions processing every time they paid with their credit cards. I recall many a conversation when people would tell me they did not make ecommerce transactions because they did not want their financial information “on-the-internet”. My response was to start with a simple question, “Do you use your credit card to make purchases at a restaurant or any other location that utilized point-of-sale (POS) systems?” One hundred percent of the time, their response was “yes”. I then would explain to them that by doing so, their financial information was “on the internet”. Essentially, Visa and MasterCard in our opinion was the key to the masses being comfortable with ecommerce. Users had adopted the technology without their knowledge without having to change their behaviors. In other words, the adoption was “frictionless”.

To better understand my response, we will use VisaNet as an example. The following entities take part in each transaction facilitated by Visa’s system:

**MERCHANT** – an entity (business or non-profit) that is authorized to accept Visa-branded cards for the payment of products and services.

**ACQUIRER (ALSO KNOWN AS A MERCHANT BANK)** – a financial institution and a Visa member that contracts with merchants to accept Visa cards for the payment for goods and services.

**CARDHOLDER** – an authorized user of Visa cards.

**ISSUER** – a financial institution and a Visa member that issues Visa cards for use in transactions and enters into agreements with its cardholders for the billing and payment of these transactions.

**VISA, INC.** – a publicly-traded corporation that works with financial institutions, which issue Visa cards (the issuers) and / or sign merchants to accept Visa-branded cards for payment of goods and services (the acquirers). Visa provides card products, promotes the Visa brand and establishes the rules and regulations governing the processing of payments involving its cards. Visa also operates the world’s largest retail electronic payments network to facilitate the flow of transactions between acquirers and card issuers.

**VISANET** – part of Visa’s retail electronic payment system, VisaNet is a collection of systems that includes:

- An authorization service through which card issuers can approve or decline individual Visa card transactions.
- A clearing and settlement service which processes transactions electronically between acquirers and issuers to ensure that:
  - Visa transaction information is sent from acquirers to issuers for posting to cardholders’ accounts, and
  - Payments for Visa transactions are facilitated from issuers to acquirers to be credited to the merchant accounts.

Here is how each of the above entities participates in a Visa transaction:

The cardholder presents the merchant with a card for payment. The card data is read directly from the card by a point-of-sale (POS) device, key-entered into it by the merchant or provided by the cardholder on the merchant’s website or over the phone;

The merchant transmits the transaction information to the acquirer via Hypertext Transfer Protocol Secure (HTTPS) or otherwise referred to as the internet;

The acquirer sends a transaction authorization request to Visa (via the internet);

Visa sends the authorization request on to the issuer (via the internet) or, in certain circumstances, it may perform “stand-in processing” on behalf of the issuer and approve or decline the transaction;

The issuer sends back to Visa (yes, via the internet) an authorization response, either approving or rejecting the transaction;

Visa sends (via the internet) the authorization response on to the acquirer; and,

The acquirer routes the authorization response (via the internet) to the merchant.

## **BLOCKCHAIN ADOPTION**

We believe the adoption of distributed ledger technology (DLT) - often referred to as blockchain - will be adopted in a similar fashion to Hypertext Transfer Protocol Secure (HTTPS), often referred to as the internet and ecommerce.

We believe that Visa and MasterCard will play a key role in this adoption process along with stablecoins. In plain English, blockchain is software just as HTTPS (otherwise known as the internet) is software. They are both software solutions that create efficiencies across many industries. Interestingly enough, we believe that both technologies will be adopted by the masses as part of financial transactions and in partnership with Visa and MasterCard.

We believe consumers need to be confident that they can exchange money for goods and services through payments securely. Consumers also need to feel assured that the speed of authorization and settlement, as well as consumer protection are robust. We believe blockchain provides the best software to provide security for these transactions, but is it robust enough? Digital transactions that take place in the financial system are recorded by some type of digital ledger. Such a digital ledger is used to track the balances of the system’s users and serves as a digital bulletin board, where all transactions in the system are posted.

With the innovation of blockchain technology, we have seen significant growth of digital coins and tokens. These tokens include cryptocurrencies such as bitcoin and ether, as well as stablecoins, which are private digital tokens with their value-pegged one-for-one to some external underlying fiat currency or other asset. The transfer of digital tokens is processed over blockchain networks. However, there are some limitations to the design of these major blockchain networks when assessing them for payment purposes. First, a payment rail requires high throughput to facilitate retail payment use cases. Some of the largest blockchain networks today face scalability challenges, as they cannot process substantial quantities of transactions per second (TPS). For example, in April 2021 the Ethereum network’s throughput was limited to 16.5 TPS (Ethereum Throughput Skyrockets After Gas Limit Adjustment <https://money.yahoo.com/ethereum-throughput-skyrocketsgas-limit-061312938.html>. (Accessed on 09/24/2021); on average, it takes five minutes for a single transaction to be confirmed and settled on the Ethereum network compared to 65,000 TPS on VisaNet (Visa Fact Sheet. <https://usa.visa.com/dam/VCOM/global/about-visa/documents/visa-facts-figures-jan-2017>). A second challenge that most blockchain networks face today is interoperability. Many digital tokens built on top of the Ethereum network are interoperable with one another because they are created by smart contracts that adhere to the same set of Ethereum token standards. However, there are many more digital tokens built on different blockchains that are not interoperable by design,

such as the case between Ethereum and Bitcoin networks. A lack of natural interoperability poses a challenge to the transfer of crypto assets from one network to another. As the number of blockchain networks increases, each with unique design characteristics, the probability for parties of a transaction to be on the same network decreases. Thus, it is crucial to facilitate payments that are both off-chain (to save overhead and fees) and universal (to transact across networks). Envisioning a future payment network that may be built on top of blockchain networks but without the limitations highlighted, we believe a payment route that can be used to support stablecoins and digital token transfers. We believe various payment channels are a class of mechanisms for making blockchain payments faster, by diverting as many transactions as possible to an off-chain communication channel between the payment sender and the payment recipient.

As an example, the off-chain payment channel could be VisaNet's Universal Payment Channel. The off-chain payment channel is created through a funding transaction that takes place on-chain, then any number of subsequent transactions can be performed off the blockchain, and finally when one or both parties agree, the channel is closed through an exit transaction on the blockchain. We believe this design mitigates both the costs and the latency associated with on-chain operations, effectively amortizing the overhead of the funding and exit transactions (which must be on-chain) over many off-chain transactions. This type of transaction would use the same credit cards and point of sale terminals used today by trusted parties such as Visa and MasterCard. Unbeknownst to the consumer though the back-end of the transaction is running across a blockchain network and utilizing stablecoins.

## **WHY WE BELIEVE MOST PAYMENT TRANSACTIONS WILL UTILIZE STABLECOINS**

Digital currencies like Bitcoin and Ethereum have often been criticized for not being able to offer true utility as currencies given their high volatility. While bitcoin and Ethereum have various use cases such as bitcoin as a store of value, they struggle to function as a medium of exchange due to their volatility and high on-chain transaction fees. We believe stablecoins provide the price-stability needed for blockchain-powered digital value transfers that can be used for payments, remittances, trading, and across various blockchain networks. We believe stablecoins can transform ecommerce and the global payments ecosystem, as blockchain transactions can be settled faster, more easily, and more securely compared to most fiat currency transactions. While the majority of stablecoins currently in circulation are powered by public blockchain networks, we believe banks and payment processors will create stablecoins to be utilized on both "closed-loop" or private blockchains as well as "open-loop" or public blockchains. Moreover, stablecoin demand is surging. From October 2020 to October 2021, the total value of stablecoin assets grew by roughly 495%, according to The Block. More than \$115 billion in stablecoins value has been issued to date according to Statista. According to a report released by NYDIG on January 28, 2022, we now know that Bitcoin has jumped ahead of American Express in annual payment transaction volume. In 2021, Bitcoin processed \$3.0 trillion worth of payments, placing it above well-known card networks American Express (\$1.3T) and Discover (\$0.5T), but still below Visa (\$13.5T) and Mastercard (\$7.7T). We believe this is astonishing growth for a payment network that just had its 13th birthday. The major card networks have multi-decade histories as Visa was launched in 1958, Mastercard in 1966, American Express issued its first card in 1958, and Discover in 1985.

Today, business payments are made through the SWIFT messaging system, debit and credit cards, or direct bank transfer, e.g., ACH. We believe these traditional payment systems have significant disadvantages, including high transaction costs, slow delivery and settlement, fraud, and inconvenience.

Processing cards costs about 3% on average; SWIFT transfers cost between \$40 and \$90. If the payment is across borders or cross-currency, there is an additional 2%-5% in foreign exchange commissions. Card processors take as long as 2-5 days to settle funds to any merchant. When you pay a business using a card, they will see the funds in their accounts after 2 to 5 days. SWIFT transfers take 2 to 7 days, and sometimes the money disappears for months. Card payments are notorious for fraud and chargebacks. The consumer may be protected most times if a credit card is used. However, the merchant is usually liable for chargebacks.

Enter stablecoins: we believe we will see stablecoins offered as a payment option by leading payments service providers soon. We believe well designed stablecoins have the potential to be used just like any other currency for commerce. Additionally, we believe Visa and MasterCard will serve as a channel for stablecoins to enter mainstream spending. For example, both Visa and MasterCard have launched payment cards that allow transactions in USDC, a fully backed by cash, equivalents, and U.S. Treasuries stablecoin developed by Circle. Stablecoins could also find applications for overseas money transfers since there does not have to be any conversion of different fiat currencies. A person in India could receive USD-backed stablecoins without converting them into rupees and losing a percentage to fees.

Stablecoins also allow the use of smart financial contracts that can be enforceable over time. Smart contracts are self-executing contracts that exist on a blockchain network, without requiring any third party or central authority to enact them. These automatic transactions can be traceable, transparent, and irreversible, making them well suited for salary and loan payments, rent payments, and subscriptions. For example, an employer could set up a smart contract that automatically transfers stablecoins to their employees at the end of each month. This is especially beneficial for businesses that have employees all over the world, as it provides a way to sidestep the high fees and days-long process of transferring and exchanging fiat currency from, say, a bank account in New York to one in China.

While the stablecoin market is dominated by fintech companies as issuers, federal agencies released guidance in late 2021 signaling that stablecoins should be issued by insured depository institutions. We believe this indeed will be the case and stablecoin consortium such as the one recently announced between Figure Technology and five founding member banks are designed to be in line with those recommendations, in the sense that USDF, a bank-minted stablecoin referencing fiat currency on blockchain, will be issued by banks and backed by their deposits. The goal is to use USDF as an on-ramp to facilitate real-time payments, loan and securities processing on blockchain among many more use cases.

Unlike traditional payment rails that rely on a central operator to batch and settle transactions, the Provenance blockchain enables banks to move money 24/7 instantly following consensus rules set by smart contracts. This structure is meant to eliminate interchanges. Provenance is also open source to allow developers to build applications without any additional permission from Figure.

The USDF consortium is not the first attempt by the banking industry to experiment with blockchain and stablecoins. Tassat Group LLC, which has developed blockchain-enabled payment platforms for several banks, is in the process of signing up banks to join its interbank network. The payment network will leverage private permissioned blockchain and will be owned and governed by member banks.

We believe that with regulatory clarity around stablecoins, anticipated in 2022, stablecoin usage will be widely seen as the best method for business-to-business payment transactions. Furthermore, we believe the Visa and MasterCard networks will utilize their current payment networks, stablecoins and blockchains for settlements to improve settlement and payment methods for merchants and their consumers. At that point distributed ledger technology (blockchain) will begin its "rapid adoption" by the American consumer.

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