Fuse 2.0 White Paper 30/01/23

Written by the Fuse team

Fuse 2.0: Unlocking Mainstream Business Adoption Of Web3 Payments

Background

Diverse factors, including the increasing adoption of mobile devices, the proliferation of e-commerce platforms, and the shift towards cashless societies, drive rapid global growth in the digital payments industry, which is expected to reach $15.1 trillion by the end of 2027, according to a report by the World Bank.

But current payment technologies rely on outdated, pre-Internet foundations that require unnecessary resources to be sufficiently functional and secure, with small and medium-sized businesses often paying much more than large enterprises.

The rise of cryptocurrency has been one of the most significant developments in the financial industry in recent years. Since its origin in 2008, blockchain technology has seen rapid application, utility, and user growth. Ethereum Virtual Machine (EVM)-based smart contracts have enabled a wide range of decentralized financial and transactional products.

The rise of DeFi, blockchain games, and NFTs have generated billions of dollars in value and led to a significant increase in the number of crypto users, which is now estimated to be 320 million worldwide. Despite this, the potential of blockchain to revolutionize payments, build real-world applications, and achieve widespread consumer adoption has yet to be fulfilled.

Fuse 1.0 - What We Learned

Platform & Ecosystem Traction

Fuse was launched in 2019 to create a vertically integrated decentralized payment platform. The Ethereum Virtual Machine (EVM)-compatible Fuse Network blockchain sits at its core. At the time of writing, the Fuse Network blockchain has processed over 120 million transactions, generated over 1.3 million unique accounts, minted 4000+ tokens, and welcomed 100+ ecosystem integrators[1] that provide services within the ecosystem, including business accounting, NFT marketplaces, decentralized trading, lending, relay, and indexing services.

Valuable Knowledge and Insights Gained from Key Partners

Much of our most valuable learning comes from the prominent real-world-focused payments-based businesses building on Fuse. Many of which grow to become what we now define as ***"operators."*** A concept expanded on further below.

These partners have helped us understand the value of decentralization for businesses. More notably, the factors determining which protocol elements need to be decentralized and which should remain centralized.

We have learned through our work that decentralization has numerous benefits, but it is not always feasible or desirable to decentralize every aspect of a business. The essential advantage of a decentralized payments network is the ability to operate globally, without borders, and the reduced need to trust intermediaries.

One of the main advantages of using a decentralized payment network is the reduced cost of conducting transactions because work and trust are externalized to a global network of validators instead of a single entity providing this service and creating a "walled garden." However, the network does not handle underwriting or risk management for every transaction.

Fuse Network's target audience, small and medium-sized businesses (SMBs), need more than low transaction fees. They need solutions for building secure products without taking on the burden of custody and reaching customers.

They need to be sheltered from the costs of compliance and licensing to provide exceptional consumer experiences without building wallets and other front-end interfaces from scratch. SMBs are the largest sector in the economy. SMBs comprise most businesses in the US and employ nearly half of the American workforce[2]. This is why we believe focusing on digital payment solutions for the "long-tail" of small and medium businesses globally will grow in importance over the coming years.

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[1] Fuse Ecosystem Partners https://fuse.io/ecosystem

[2] https://www.forbes.com/advisor/business/small-business-statistics/#:~:text=Nearly%20half%20of%20all%20U.S.,even%20have%20employees%20at%20all

Additionally, they need to be able to move value within and outside their companies without facing high fees and barriers. To address these challenges and help the network evolve into a valid alternative to legacy payments infrastructure that leverages the benefits of decentralization for businesses where it makes sense, we will propose updates to the network's structure and tokenomics.

Fuse 2.0 A New Chapter

Our Vision

In our first three years, we successfully established a thriving and dynamic ecosystem by taking our platform from inception to implementation. Now, as we look ahead to the next three years, our focus shifts to bringing the benefits of web3 payments to the masses and empowering small to medium-sized businesses globally through the continued development of a cost-effective, private, fast, scalable, and secure platform.

With a clear roadmap that leverages our experience and insights, we position perfectly to shape the future of finance and drive the next generation of financial innovation

Leveraging Vertical Integration to Enable Seamless Payment Experiences

Open-source money powered by public blockchain technology has the potential to revolutionize financial services and make them accessible to everyone around the world. We are building a payments network focused on mainstream business adoption. Our goal is to enable businesses that may not be technically or crypto-savvy to provide a user experience that is simple, fast, and secure.

To drive widespread adoption, we must compete with the dominant players like Visa, Mastercard, and Stripe rather than Ethereum or any other blockchains.

Traditionally, a tradeoff between creating fully centralized payment systems with good user experiences or completely decentralized payment systems with poor user experiences is needed. Our mission is to change this by focusing on the long tail of SMBs and recognizing the importance of providing a technology stack built of components that work in harmony to streamline the process of creating exceptional user experiences.

We made it a vital part of our strategy to provide all aspects of the platform, from the payment network to core business-ready infrastructure to digital wallets. This allows us to optimize and streamline the user experience, making it faster, easier, and more convenient for our customers. By leveraging vertical integration as part of our strategy, we aim to compete with major payment providers on a global scale.

Web3 payments present diverse business innovation and advancement opportunities. The ability to facilitate the seamless movement of funds opens doors for new business models and consumer behaviors, ultimately fostering increased economic activity and improving the lives of individuals. Fuse aims to play a pivotal role in shaping this future.

A Business-First Approach

In today's advanced digital world, user experience (UX) has become a critical factor in determining the success of any product or service. Onboarding a mainstream audience relies on providing an intuitive and seamless user experience that aligns with users' expectations and needs while adhering to the Web3 fundamental of self-custody.

A great product is not just a result of technical expertise; it is also closely tied to the success of the business that creates it. One of the main reasons why Web3 has yet to reach mainstream adoption is due to the complexity and lack of user-friendliness of existing products and services.

Fuse builds on its experience collaborating with real-world projects to deliver a strategy that focuses on understanding businesses wishing to embrace Web3 payments. While providing them with the infrastructure and tooling needed to provide seamless, friendly customer experiences.

Operators: Key Growth Partners For The Fuse Ecosystem

Most blockchains operate on an effective business-to-consumer (B2C) basis. Users typically create their blockchain accounts, manage their private keys and pay network fees for every transaction they submit to the blockchain.

While the concept of individuals being their own banks and directly interacting with blockchain networks is appealing, at Fuse, we believe this model may not be practical or desirable in the long term for most users. Instead, we envision a future where most consumers interact with blockchain infrastructure through intermediaries or “**Operators.”**

These Operators can include integrators, payment providers, financial institutions, apps, consumer clubs, sharing economies, startups, local communities, online and offline retailers, and more. They use the Fuse Network blockchain and other tools to power payment services for their customers, enabling the exchange of real-world goods and services using the blockchain.

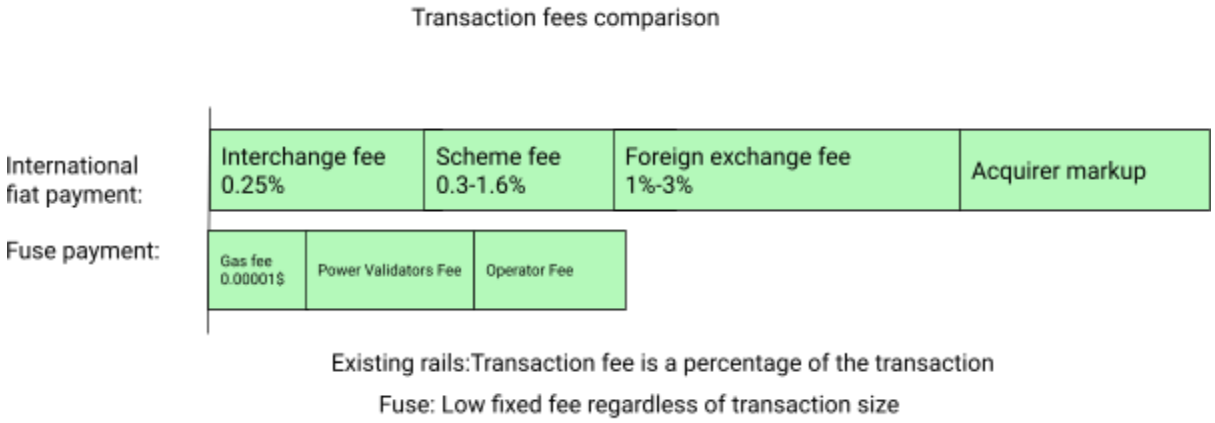
A key feature of Operators is that they pay network fees on behalf of users. Like in traditional finance, financial service companies use a distribution platform or infrastructure to hide costs from end-users—for instance, Venmo or Square Cash cover transaction fees for using legacy systems.

Fuse embraces a similar concept. With fee abstraction, the user signs the transaction with their private key while the financial operator relays it and pays the fee behind the scenes. Fee abstraction is a compelling approach that can help Operators find the business models of the future.

By providing a suite of operator incentives, we aim to attract them to build and perform those experiments on Fuse. Establishing a healthy community of Operators that can share tools and business insights is a vital part of the Fuse vision. We believe that incentives for Operators will eventually be the primary driver of growth and the leading revenue generator in the Fuse Network.

The volume of transactions generated on Visa in 2022 was worth more than $14 trillion globally. This immense volume generated $30 B in revenue, primarily from merchants using the credit card payments network.

Blockchain-based payments give Operators more because every transaction made on Fuse Network can automatically share the fee with the operator. It also makes transactions more efficient because they are cleared and settled in one transaction. Additionally, with fee abstraction, no chargebacks dramatically change the cost structure, resulting in increased profits for Operators and lower costs for the merchants.



Power Validators

A Decentralized, Coordinated Business Layer

For businesses to provide user experiences that compete with Web2 applications, they need robust API endpoints, fast user data feeds, secure data storage, and more. These services need to be made available in a way that is accessible and easy to navigate.

Charge provides a one-stop shop solution for developers. However, while Charge removes complexity for developers, the centralized infrastructure on which it is built does not provide the redundancy needed for long-term scale.

The ideal solution is scalable Web3 business infrastructure that is easy to navigate and build on while being sufficiently decentralized to provide the redundancy and security needed to scale confidently to hundreds of millions of users.

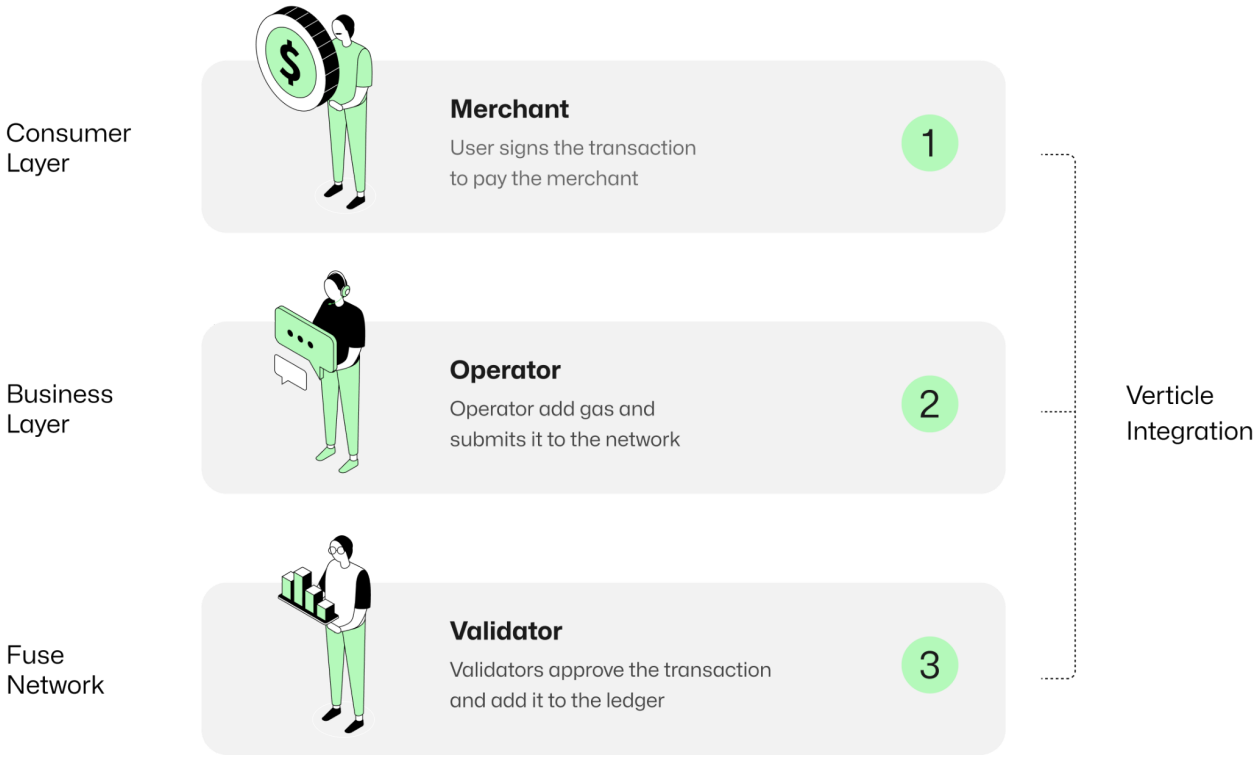
We propose a novel blockchain-based architecture that aims to solve this challenge. Power Validators are economically incentivized node entities that sit above the execution layer and establish the business layer of the payment network.

They run the required services needed to conduct Charge-powered payment applications. While we defined the initial list of essential services, Operators and Power Validators can create new services independently, thus extending the business layer functionality. This will create a prosperous community of developers, operators, and infrastructure providers based on open-source software and uses blockchain technology as a distribution platform.

Power Validators supply essential services such as transaction relaying, running oracles, token bridges, Layer-2 scaling, and decentralized storage nodes.

Operators essentially “purchase” these critical services to “resell” them to business users, filling demand. Operators, therefore, act both as brokers and curators for those services. Operators are incentivized to boost the demand for their services to increase revenues.

Entities wishing to become Power Validators will need to stake Fuse Tokens as part of a new economic model for the Fuse ecosystem. We will provide more information on the tokenomics of Power Validators in our upcoming technical roadmap.



Achieving High TPS and privacy for business

Private, Scalable Mobile Transactions

Today's usage of money is constrained by legacy software and hardware that predate the Internet. On the other hand, smart contracts offer novel and rich functionality, like micropayments and money streaming, currently available to only a tiny fraction of advanced users. Hence, we set our goal to eventually scale the network up to billions of daily transactions with negligible costs to realize the Fuse vision.

Existing digital payment rails execute billions of daily transactions. Offering a cheap, flexible, and simple solution to transact with every business on the planet will drive the usage of digital payments even further.

Over the last year, we have extensively researched the usage of Layer 2 technology. Off-chain transaction execution via semi-decentralized platforms like Rollups is the right approach to scale blockchains to billions of users.

The future of Fuse will be crafted to handle the majority of retail transactions off-chain efficiently. It would be inefficient for a simple transaction such as purchasing a cup of coffee to be recorded permanently on a public ledger and wait for multiple confirmations before completion. Conversely, the Fuse technology stack is readily compatible with Layer 2 solutions, providing a dynamic environment for exploring new ideas and validating concepts.

One more pain point of using blockchain technology for businesses is privacy. For business owners, it's highly undesirable to show cash flow as public information. Simultaneously, the same problem exists for customers. As a result, Zero Knowledge technology is paving the way for public blockchains to hold private data.

Eventually, we plan to build a Layer-2 on top of the Fuse Network:

- Designed to handle large amounts of low denomination transactions with fast confirmations.
- Utilizing decentralized storage as an off-chain data layer will make operations more efficient and means ledger history doesn't need to be kept on every node, but can be divided among various instances and run by Power Validators.
- Users will have the ability to open private accounts and conceal cash flow. At the same time, transaction history can be audited with the merchants' consent using ZK proofs.

Fuse is committed to helping drive forward scaling technologies by focusing on real-world operators' needs. Moreover, scalable private transactions will expand businesses' adoption of Web3 payments.

On-Chain Scaling - Wholesale Prices On L1, Retail Prices On L2

When considering the base layer, understanding which platform and programming languages are likely to be widely adopted is important to Fuse. The Ethereum Virtual Machine (EVM) is widely considered a strong candidate to become the standard on which future applications are built, with smart contracts predominantly developed using solidity. For this reason, developer adoption of Ethereum is more potent than that of any protocol.

Fuse Network has been running on the AuRa (Authority Round) consensus since the network launched in 2019. Its flexibility allowed us to upgrade the initial POA model to dPoS, enabling on-chain staking and governance. In addition, its EVM compatibility played a crucial role in driving ecosystem growth.

The Fuse foundation, in collaboration with the decentralized network validators and thousands of delegators, will make critical decisions in the coming year about the future of Fuse's consensus layer.

Creating a fee market

One of the apparent candidates is the Ethereum PoS which proposes a clear separation of consensus and execution and has a scaling roadmap that features sharding. Other solutions we are considering are Avalanche, Polkadot, and Cosmos.

The introduction of a new consensus layer means a tokenomic model which needs to account for the incentivization of power validators.

Payment Primitives

Mainstream Mobile Experiences

Self-custody on mobile devices using biometrics is regarded as a powerful solution to the private key management challenge for everyday, mainstream users. In addition, this method is a more user-friendly and accessible alternative to current hardware crypto wallets. Moreover, It can increase the adoption of this technology among non-technical users.

Part of Fuse's mission in this field is to develop and improve this method of private key management to make it more secure and convenient for users.

Increased mobile penetration worldwide and the continued development of self-custody wallet technology will significantly increase our ability to drive mainstream adoption of Web3 payments. In addition, as more people have access to smartphones and mobile internet, securely managing private keys through these devices becomes a more viable option for a broader range of users.

Fuse's core wallet has been forked over 100 times and is EVM compatible, meaning that it supports any Ethereum-based contract and is accessible to the largest developer audience in Web3. Built using Flutter's open-source SDK, it also enables developers to build once and run on iOS, Android, and the web on any device.

Added advantages include customizable white-label templates that allow projects to get up and running or integrate the SDK into an existing mobile product.

Smart User Accounts

On Fuse, we envisage every user or merchant represented using a smart contract. This smart contract architecture gives several advantages to Operators and developers for blockchain-based financial applications.

For example, in a regular blockchain wallet, the user must manage their funds and interact with protocols and smart contracts directly, i.e., sign approvals and deal with the mechanics of fund management—a daunting task, even for veterans.

With smart contract accounts, new features and business logic that can match the existing system's functionality, such as subscription payments, transaction insurance (consumer protection), and credit payments, can be non-custodial and frictionless by utilizing the power of smart contracts.

Imagine this as a non-custodial decentralized "bank account" that can help consumers retrieve and manage funds more safely or add new features or tools for easier and safer self-custody.

Smart user accounts give users more power while keeping better UX and allow us to reimagine old business models underpinning the traditional digital payments industry. This is why we intend to turn them into first-class citizens and integrate and reimagine those models behind the scenes to create better models for payments and enable further decentralization of digital payments silos.

We want to give Operators the tools to experiment with better models for payments. When a user conducts a transaction with a merchant using fee abstraction, the transaction can automatically be programmed to process complex business logic.

Some possible innovations using this method include:

- **Cashback** - Send a certain percentage of the transaction back to the user - instead of only paying the payment processor as the key beneficiary of the revenue generated, the users can be incentivized directly with a microtransaction for every payment.

- **Revenue share** - Most transitional payment processors are expensive because digital payments nowadays have a long value chain of intermediaries, and transactions usually take a long time to settle from the moment of payment until funds arrive in the merchant's account.

- **Subscriptions** - While recurring payments are an important primitive of credit card systems and an important tool for businesses, digital memberships can be reimagined from the ground up using contracts behind the scenes. Fee abstraction allows Operators to set rules for how payments are collected, how installments are paid, who gets access, and under what conditions by combining it with NFTs.

Fee Abstraction

With fee abstraction, the user signs a transaction with their private key while the operator handles the payment of any necessary fees behind the scenes. This allows users to focus on the blockchain's benefits rather than worrying about the technical details of fee payment.

Fee abstraction is a powerful approach that can help Operators find innovative business models. By providing a range of incentives for Operators to build and experiment on Fuse, we aim to attract a vibrant community of Operators who can share tools and insights. This is a crucial part of our vision for Fuse Network.

Conclusion and Future Work

We will regularly update our white paper to reflect our ever-evolving vision and aspirations.

Our technical roadmap will be refined and published soon. Through collaboration with our community, we will create a sustainable tokenomics model that provides powerful incentives and ownership for all participants in the Fuse ecosystem.

We are incredibly excited about the potential of web3 to revolutionize payments and provide the foundation for innovative business models and economic growth. By empowering the long tail of businesses, web3 has the power to improve the lives of everyday people and bring about a brighter future. We look forward to being a part of this journey and positively impacting the world.