CRADL Report

Income and Wealth Creation in Web3:

Case studies demonstrating economic outcomes

Crypto Research
& Design Lab

Income and Wealth Creation in Web3
Case studies demonstrating economic outcomes

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The Crypto Research and Design Lab (CRADL)'s vision is to champion a humanity-centric Web3 for everyone. Our mission is to clear a path for an equitable Web3 where people and communities are at its center.

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Introduction

Executive Summary

Much of the excitement around Web3 centers on the possibility of creating new systems of commerce, power, and wealth distribution.

Proponents of new Web3 systems cite their potential improvements over existing systems. For example, that they present viable solutions for financial equity—via more democratic access to financial tools and services, incentivization of different behaviors through emerging tokenomics design, and enhanced control of data and records. The desire to create new systems has been attributed to mechanisms within the current financial system that make it difficult for many people to access economic opportunity.

At the end of 2022, there is a growing sense of frustration over the perception of scarcity of real Web3 use cases. Assessing their potential social and environmental impact is timely.
Recent crypto market volatility and the emergence of large-scale crimes have dominated news coverage of Web3 activity. The mainstream reputation of this industry is marked by scams and rug pulls, which taint the potential value-add of dedicated, credible leaders and builders focused on new Web3 solutions.

Currently, the narrative around untrustworthy actors in Web3 is eclipsing most other stories emerging from the space. This makes it difficult for certain stakeholders—especially policymakers—to effectively engage without more examples of applied Web3 technology to consider and compare.

Despite setbacks, real progress is being made.
This report aims to create frameworks and offer language for considering if and how blockchain-based projects might be used to create new wealth and generate income. Though there are other benefits that may be generated by Web3 tooling, economic indicators remain the most tangible indicators of positive change, and are thus the focus of this report.

While it remains too early to define the gold standard for a Web3 company, this report documents projects in market or pre-launch and—where possible—identifies questions that decision-makers in the policy and industry realms might consider as the space evolves.

CRADL's research in 2022
Our work has focused on putting humans back at the center of Web3—investigating the potential and promise of blockchain for people. Working at the intersection of design, crypto, and social impact, our research has examined financial inclusion models, shortcomings of the financial system that crypto might address, motivations for entering crypto and Web3, how communities can interact with Web3, and the conditions of the Web3 ecosystem and implications for social equity.

Published:
- Black Crypto
- Cities and Crypto
- Generational Wealth
- Hackathons
- New Ecosystems: Tokenomics and inclusion in Web3
- New Forms of Wealth Creation
- Onboarding to Web3
- Proof of Impact Report

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KEY INSIGHTS:

Web3 may offer new opportunities to create income and wealth, but the space is still evolving.

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1. New economic opportunities in Web3 are not yet transformational for most people.
New opportunities for income remain relatively marginal—with greater impact in the developing world. Access to new financial tools and ecosystems may take time to mature to create significant wealth-building impact.

—

2. Web3 development appears to be driven by a small, homogeneous group of investors and builders.
Power and decision-making in Web3 projects appear to be largely centralized, with many still being designed by the few. As is the case within some traditional systems, there is a risk that the eventual products developed may allocate the most benefits to those creating the systems versus the many who may use or otherwise benefit from them.

—

3. Progress is being slowed by gaps in new digital infrastructure.
Many startups can not solve problems at scale because Web3 infrastructure is still nascent. A lack of standards and gaps in intermediary services and enterprise solutions pose challenges.

—

4. Real-world benefits of Web3 innovations are not being tracked in a meaningful way.
Many projects do not identify building wealth for the average person as a goal, but inadvertently create opportunities as a positive externality of their model. As new systems afforded by Web3 mature, these benefits may increase in unanticipated ways.

This report is...

- **An exploration of nascent Web3 use cases and projects that purport to support greater equity in income generation, wealth creation, and ownership opportunities.** This report provides evidence-based documentation of new approaches to income generation and ownership, built using Web3 tooling. We consider how builders approach and frame these opportunities—particularly for groups which have been historically marginalized or underserved.

- **A reference for industry and policymakers related to business cases using Web3 tooling.** This report moves beyond the headlines to examine real examples, leveraging primary research with the companies featured to understand how they are framing opportunities, bringing solutions to market, and evaluating success. The report poses critical questions that policymakers, builders, funders, and observers can consider as this rapidly evolving sector continues to develop.

This report is not...

- **A comprehensive industry-wide assessment.** The Web3 space is still in its incipience, with new projects and uses emerging every day. This report is a snapshot in time, documenting specific categories of uses that have emerged and generated significant interest, with select projects featured as examples. Critically, the projects presented here all have customer-facing value propositions, and do not reflect numerous other notable projects in the space.

- **An endorsement of the projects featured.** CRADL is a research organization committed to documenting people, organizations, and activities in the crypto ecosystem and their impact on the broader industry as objectively as possible. The views and perspectives of research participants included in this report are their own and not necessarily reflective of CRADL, its partners, funders, and advisors.

- **Due diligence.** Because the space is so dynamic, it can be difficult to fully assess risk. While we conducted primary research on organizations featured in this report to document their approaches to implementation, this report should not be taken as a business audit or regulatory diligence or as investment advice.

How to use this report

This report explores how Web3 solutions may present opportunities for people to create new sources of income and wealth.
In our research on Web3 uses and projects, we observed these opportunities occurring in two ways:

- **Access to income and wealth within existing models.** Putting existing models and processes on-chain can create more efficiency (and thus cost-savings for companies). In the process, putting business processes on-chain may create secondary effects that increase access to income or wealth opportunities for people, such as removing the need for intermediaries, giving holders of assets more control, increasing price discovery, or increasing demand for existing roles by growing their market.

- **Emerging financial and business ecosystems offer new pathways to economic participation.** New financial and business ecosystems are also emerging in Web3. With maturation, the new tools and commercial activities afforded by these novel ecosystems can provide people with new ways to participate and financially benefit.

Policymakers:
Use this report to reframe what you already know about crypto to include potentially novel uses that do not fit current regulatory definitions. Reference this report to prevent any over-indexing on consumer risk in light of recent financial crimes in cryptocurrency (a specific application of blockchain) that could preclude impactful innovation in other use areas.

Crypto founders, builders, and developers:
If you're building a new tool that could empower people to generate income or wealth, use this report to consider how you are delivering impact and to whom, how you are measuring that impact, and what is required of industry and policy for success.

Investors and funders:
When evaluating crypto companies that advertise financial returns, use this report to assess whether their teams understand their potential user base, and the possible outcomes of the project features.

Key terms in this report

Blockchain. A distributed ledger of transactions which stores data in cryptographically linked batches called blocks.

Builder. In this report, anyone who is working on a Web3 application. This includes people such as founders, product leaders, software engineers, consultants, and community managers.

Composability. The operability of components and applications within a system to create positive experiences. In the context of digital identification, the ability to combine multiple forms of identifiers.

Cryptocurrency. A digital asset native to a specific blockchain network in which transactions are maintained.[1]

Decentralized Autonomous Organization (DAO). A non-hierarchical, community-led entity with smart contracts executing the functions of the organization.[2]

Decentralized Finance (DeFi). Refers to a suite of digital ledger infrastructure and technologies including cryptocurrencies. DeFi is often situated against Traditional Finance (TradFi), which refers to long-standing finance institutions, assets, and payment rails such as banks and fiat currencies.

Ecosystem. A community of individuals and organizations that interact with one another.

Project. In our report, a piece of Web3 software built for a specific function and the community around it which might be a company, a foundation, a DAO, or a group of volunteers.

Progressive Decentralization. Decentralizing ownership and influence of a Web3 project in a controlled manner over time.

Reputation. Data about one's past behavior. On chain, this could be contributions and achievements.

Rug pull. A scam in which coin offerings are maliciously used to defraud buyers.

Token. A digital unit of account that can be used for a variety of purposes in an online community, such as tracking contributions, proving ownership of digital or physical assets, or using as a currency.

Tokenize. The process of converting assets into digital tokens that can be traded on a blockchain.

Tokenomics. The study, design, and implementation of token-based economic systems for Web3 ecosystems. Tokenomic designs aim to incentivize agents to take coordinated actions that will benefit the ecosystem.

Utility. In this report, utility is a specific action made possible by a token that a participant can take in an ecosystem that is NOT related to market or governance actions.

Web3. Refers to the industry ecosystem—and culture—calling for a new iteration of the World Wide Web with greater levels of decentralization and involving the use of blockchain networks.[3] Web3 includes builders, funders, and people using products.

In this report, we refer to the tools that are unique to Web3 as the "Web 3 tooling," which include tokenomics, blockchain technology, and DAOs.

User Experience (UX). UX considers the holistic product or service experience, including privacy and security, moving beyond the elements of a digital product's interface (screens and buttons).

Use category selection considerations

This report builds upon the World Economic Forum's Crypto, What is it Good For?,[4] as well as CRADL's Investigating Generational Wealth report,[5] which considers how generational wealth is built in existing financial systems in the U.S. and potential new opportunities for crypto shortcoming in the existing financial system.

This report hones in on use cases that leverage Web3 tooling to generate new forms of wealth and income for individuals. All the case studies in this report fall within one of the seven categories below:

1. **Identity & Personal Data:** Projects seeking to provide individuals control over their data and potential opportunities to derive benefits from it.

2. **Environmental Sustainability Assets:** Projects seeking to create incentives for environmentally responsible practices by putting existing assets on chain.

3. **Control of Creative Output:** Projects seeking to provide creators with more control over their output and IP than in traditional models.

4. **Community Development:** Projects that create incentives or systems to support communal wealth-oriented purposes.

5. **Decentralized Infrastructure:** Projects that put decentralized pieces of infrastructure on-chain to create mesh networks, and primarily generate income for individuals through the management and placement of devices.

6. **Decentralized Finance:** Uses that provide access to financial tools and services to individuals who may not traditionally have had access.

7. **Other Emerging Uses:** Emerging examples that are still in nascent stages.

Category Selection

To arrive at these categories, we reviewed existing research to date, conducted additional desktop and field research, and sought input from leaders in the Web3 ecosystem. Specifically, we:

Reviewed existing literature. We spent over 40 hours conducting desktop research on the industry, including reviewing reports, news media, investment activity, and individual use cases themselves to identify trends and volumes of activity.

Engaged the CRADL Network. In partnership with the World Economic Forum, CRADL has actively curated a diverse, multidisciplinary network across several industries that includes crypto/Web3 expertise, social justice leaders, community organizers, VCs, designers, developers, and other business people. Over the course of two meetings with over 30 members of the CRADL network, we received input on potential categories of uses to include in this report.

In the course of this process, we developed the project selection criteria detailed on the next page, which we used to confirm the use categories and use case projects featured in this report.

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Project selection considerations

This document is an initial consideration of well thought through implementation plans for generating wealth or income using Web3 tools. This report is not a holistic accounting of wealth-building tools in the Web3 space.

For this assessment, we selected projects using the following considerations:

- **Varying states of implementation:** For the more detailed case studies, there is a focus on those which have gone beyond pilot stage, and/or have established a value proposition or market opportunity (in particular, GoodDollar, Humanity Cash, Helium, and Plastiks).

- **Varying target markets:** Where possible, we focused on uses that benefit people who have been historically marginalized or excluded from wealth-building and income-generating opportunities.

- **A diversity of use applications:** The projects here exclude speculative digital assets and uses that transfer money or payments, such as remittances. In addition, project selection prioritized uses that are less explored and/or widely known in the Web3 industry, such as environmental sustainability assets.

- **An eye toward impact and business sustainability:** CRADL previously conducted an assessment of financial inclusion projects, Assessing Proof of Impact,[6] to add needed depth and nuance to the evaluation of the impact of financial inclusion projects. This report's project selection builds upon that work and screens projects for sustainability of model and impact.

Key Takeaways

Each Use Category contains a "Key Takeaways" section. This is a qualitative assessment that synthesizes perspectives from the CRADL team, grounded in our research and leveraging decades of experience in economic development, tech, startups, design, and social impact.

Research methodology

We used purposive sampling from CRADL's and the [World Economic Forum's Crypto Impact and Sustainability Accelerator](#)'s network to select Web3 projects that had a direct or indirect contribution to building wealth or generating income for people and small businesses.[7]

- We conducted the interviews between October and December 2022 after extensive desk research on each of the case studies and examples.

- The report lists **40** examples across **9** categories, and provides **8** case studies documenting how Web3 can impact income generation or wealth building.

- We conducted up to four interviews for each case study organization, totaling 15 virtual interviews of 60 to 90 minutes each. Some interviews included product demonstrations.

- We interviewed co-founders, board members, and executive-level officers. Our interviews did not include customers of or partners to these companies.
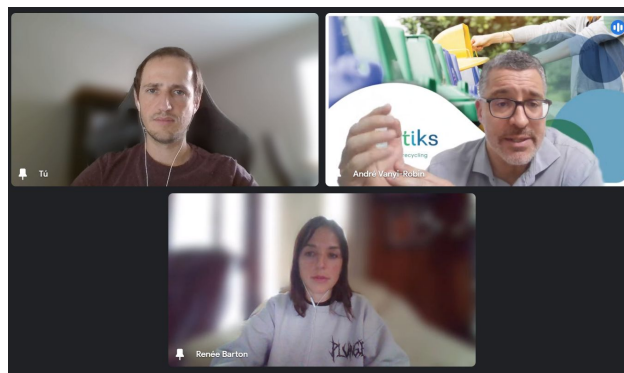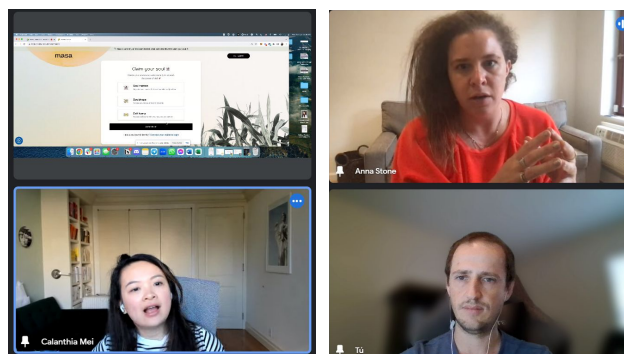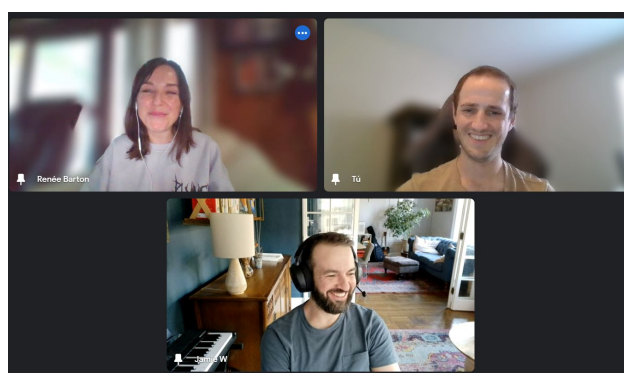
From Top: Dele Atande of MetaMe; CRADL team with Jamie Wilkinson, Board Member of Helium; Calanthia Mei giving a product demo of Masa; CRADL team and Anna Stone of GoodDollar; CRADL team and André L. Vanyi-Robin of Plastiks

Identity & Personal Data

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Overview

Identity systems are "collections of tools and techniques" that monitor people, processes, and other information required to categorize people, identifying potential threats and granting access to those who satisfy requirements. For individual people, verifiable proof of one's identity is often required to access essential services including banking, healthcare, employment, housing, and education. This proof requires the use of personal data, which may be verified and held by multiple entities. These entities may have insecure and fragmented data storage that subject people to hacks and fraud. [8]

At the same time, other forms of personal data that may be tied to one's identity—such as one's social media profile, online buying patterns, and participation in web forums—are also being collected at scale and used to make assessments of individuals, often without people's express consent or awareness. Uses for this personal data include targeted advertising, as well as the creation of opaque consumer scores that can inform lending, hiring, and housing decisions, contribute to pricing discrimination, and determine levels of customer service. [9][10][11]

As in Web2, identity and the ability to prove it is critical infrastructure for a wide range of uses in Web3 that require credentials. In Web3, decentralized approaches to identity posit a new value add for people: a focus on privacy, consent, and control that seeks to address the challenges of existing systems.

Self-Sovereign Identity (SSI) is an approach to digital identity that does not depend on any centralized authority. It allows people to manage attributes of their personal identity securely, is fully controlled by identity-holders, can be selectively shared, and is portable. SSIs enable identity-controllers to prove control of their identity and the data that proves their identity without the permission of other parties. [12][13][14]

Within the concept of SSI, people can compose their identities, selecting credentials and identifiers from multiple sources for inclusion into a single and portable digital identity, revealing only those credentials and identifiers essential to specific needs and transactions.

This ability has real-world, practical uses for people. Having a portable identity can help to streamline access to multiple services, reflected in the emergence of national digital identities such as in Singapore, or increase access to credit across jurisdictions, currently limited by credit bureau jurisdictionality. [15]

How It Works

In Web3 identity solutions, people can use wallets similar to those used to buy and hold cryptocurrencies to access and verify their SSI and associated personal data. To compose identity, people can include data or attestations from off-chain and on-chain resources:

Attestation	Examples
Verifiable Credentials	Attestations of (primarily off-chain) identifiers and data such as a traditional credit score, email account, or proof of residency, providing digital confirmation of the credential that may be used at any time within a digital identification.
On-chain Identifiers	Aliases for on-chain transactions, return on investing documentation, NFT ownership documentation.
Reputation Tokens	Awarded for online activity without investment and non-transferable; may be consensual or non-consensual.

People can then control how this information is shared, setting rules and permissions executed by on-chain smart contracts. Depending on a person's needs and preferences, SSIs can be transparent, pseudonymous, or anonymous. Permitted transactions can attest to properties of information, rather than the raw information itself, sharing the bare information necessary for verification to preserve people's privacy.

While it remains early for SSI, significant work in the areas of verifiable credentials and decentralized identifiers has been done by organizations such as W3C to advance technical standards and community promulgated principles that seek to shift toward more individual control over digital identities and personal data.[16][17][18][19] While the newer concept of reputation tokens (popularized by a recent paper on Soul Bound Tokens) has generated interest, it has not yet undergone comparable peer review and community consensus.[20]

Current Model

In the current Web2 model, a platform gathers data from people in exchange for providing them a service without monetary payment. Conversely, the platforms allow advertisers to publish a targeted advertisement for a fee.

Decentralized Model
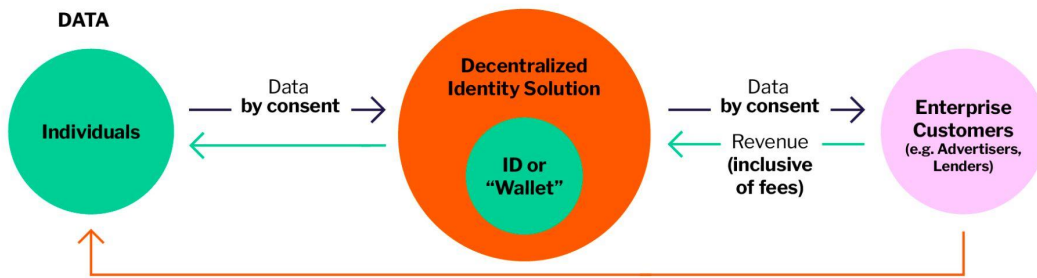
Under Web3, people could mine their own data, encrypt it into the vaults they manage, and decide who gets access to their data. As it is currently modeled, identity plays a key role in managing personal data. In return, businesses obtain clean data for targeted advertising or other purposes, people receive revenue when their data is used, and the marketplace protocol manager receives a fee for making the exchange possible.

Intermediaries   Individuals   Customers   → Service to individual   → Economic Flow   → Data

Opportunities for Income & Wealth Building

- **New Access to Financial Tools:** Practices of existing financial service providers can be exclusionary. For example, credit scoring bureaus often consider factors which may be exceptionally punitive to people who are struggling financially. New forms of identity and reputation scoring in the Web3 space could enhance access to uncollateralized loans.
- **Monetization of Personal Data:** Most people are unaware of how much value their data generates. Decentralized identity solutions could enable individuals to control and monetize this information.

Relevant Trends

- Despite significant work done to advance standards for approaches to SSI, there is still a broad lack of consensus around approaches that emphasize on-chain versus off-chain data—including potential long-term or ethical implications of putting sensitive information on-chain.
- Some founders admit they struggle to develop viable business models in the current platform-dominated market and regulatory environment. The adoption or viability of such approaches will also hinge on the willingness of enterprise players such as financial institutions to adopt them.[21]
- Many people who are not in the tech industry have not heard of digital identity, organizations are still learning how to deploy it at scale, and legacy systems and regulations pose barriers.
- As digital identity becomes incumbent in tech-forward nations, building decentralized identity systems that are interoperable will be important for identity ownership.
- Credentialing-as-a-Service as a third-party service (e.g. Galxe and Gateway attaches NFTs to Soulbound Token) could increase interoperability and be an alternative to native on-chain identity verification.[22] Credentialing services can also support economic advancement, providing accreditation for skills learned through platforms such as Proof of Learn.

Emerging Policy Implications

- **Data Privacy:** Data privacy regimes such as the General Data Protection Regulation (GDPR) and upcoming EU AI Act will likely apply. There is currently an ethical debate on whether the immutability of identity and individual behavior on-chain could lead to unintended consequences that harm people.[23] [24] [25]
- **Consumer Protection:** The possible harms could trigger calls for regulation similar to consumer protection policy on traditional credit scoring (e.g. Fair Credit Reporting Act).

What's happening in this space

In the following pages, you'll find detailed case studies of:

metaMe   masa

Other Examples to Watch:

- Unstoppable Domains: Offers people the ability to manage their identities in Web3 through NFT minting.

- Vana: A decentralized platform for individual data management.

- Civic: An identity pass solution for NFT minting and managing DAOs and communities.

- Spruce: A sign-in tool that provides interoperability with Web2 platforms to provide enhanced control of data across the web.

- Disco.xyz: An identity solution that provides Web2 interoperability and focuses on verified credentials.

- Snickerdoodle: Offers people the ability to manage components of their identities through NFTs.

- **Financial Compliance:** Particularly for financial uses, Know Your Customer (KYC) and other regulatory requirements could pose challenges, and become a driver that fuels the need for identity in Web3.

Key Takeaways

- Due to the decentralized, pseudonymous nature of Web3, a trusted and ubiquitous identity framework is key to unlocking numerous use cases—and founder confidence—in experimentation.
- As people are accustomed to centralized identity solutions (such as social security numbers in the U.S., or those provided online by Google or Facebook), UX practices that provide an easy transition from existing patterns will help adoption.
- Incumbents may challenge advancements.

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Identity & Personal Data

metaMe

metaMe invites people to reclaim control over their digital data, and creates a mechanism for them to build wealth by selling their data directly to companies. It enables individuals to manage and monetize the use of their data by choosing their level of anonymity and who accesses their data for how long.

The platform will offer an encryption-based model where users can manage their own data as personal property, as opposed to the default, extractive model currently used to drive Web2 services and businesses.[26]

"*Every way we touch the internet forms a unique pattern, so almost all personal data becomes identity data.*"

Dele Atanda Founder and CEO of metaMe

metaMe Prototype Web App

RAG Color Coded and Sensitivity Scored mPods

Confidential   Identifiable   Non Identifiable

Examples of mPod Core Data

Source:
metaMe White paper v1.4

metaMe

Project Goals

metaMe seeks to improve data set quality and methods of digital identity management. To fulfill this goal, they offer people a way to take ownership of data with minimal risk of data loss or breach. The platform lets individuals manage and mint their data, choose permission levels for companies requesting their information, and sell it at a price point they choose. Ultimately, metaMe seeks to apply the Ethical Data Standards, as approved by the British Standards Institute.[27] The platform incentivizes individuals to provide clean data while also empowering them to manage how third parties use their data.

Implementation Strategy

metaMe introduces the concept of mPods (minimum private obscure datastores), which are smart contracts that contain non-fungible assets, and can be programmed to manage the data stored within them. mPods enable their owners to isolate, containerize, and price their stored data for enterprises to rent and use. People can mine their own data by connecting existing public and private sources to their metaMe data vaults, pulling their own data in, cleaning it, and storing it in mPods for their own commercialization.

On the demand side, metaMe's commercial model enables brands to qualify, acquire, and deepen customer relationships.

metaMe intends to obtain B-Corporation status. The certification will introduce additional obligations for the company to consider social values.. Additionally the Internet Foundation (the IF)—a Swiss non-governmental organization that owns the mPod protocol—has declared that it intends to establish universal digital rights as human rights, and enable the ethical and sustainable use of personal data in commerce.

OUTCOMES

How People Benefit

- People can monetize third-party use of their data by claiming ownership of it and using cryptography to protect their privacy. Existing data protection laws help make this possible.

Key Metrics

Business Metrics:

- User, developer, and enterprise adoption
- Partnerships within the ecosystem
- Adoption by Layer 1 and Layer 2 protocols

Social Impact Metrics:

- Tying outcomes to the UN's Sustainable Development Goals: Goal 1 (no poverty), Goal 3 (good health and well-being), Goal 10 (reduced inequalities), and Goal 16 (build effective, accountable and inclusive institutions at all levels).

Policy & Industry Considerations

By recasting data as the property of the humans generating it, metaMe eschews the current Web2 market structure in which harvested data fuels businesses and services. As metaMe grows, this model may challenge businesses that generate revenue by harvesting, analyzing, and selling people's data without their consent or full control, such as those in the current social media and digital advertising industry.

Policy & Industry Considerations (continued)

In terms of regulation, metaMe's business model is currently viable, but expansion could be fostered by regulations around privacy, establishing data as a form of property, and clarifying the legal status of tokens. According to metaMe, countries including Switzerland, Singapore, and Bermuda already offer advanced clarity on on-chain securities and tokens.

As for data protection, metaMe considers it easier for individuals to mine or recover their own data in countries under the jurisdiction of the European General Data Protection Regulation, the Canadian Consumer Privacy Protection Act, and the California Consumer Privacy Act. Some states in the United States, countries in the Middle East, and China present complexities on the retrieval of own data by individuals that might block the growth of business models like metaMe to those markets.

Business Data

Status: Beta version currently in development
Technology: Layer 0 - cross-chain framework
Location: U.S.
Constituency: Global

Entity: metaMe Inc.
Business model: Platform licensing to companies, commission on C2B and B2B sales of data.
Financing stage: Pre-Seed
Funding sources: Bicameral Ventures
Capital raised: US$ 475,000

Resources and References

Website: https://metame.com/
Additional resources: https://theinternet.foundation/
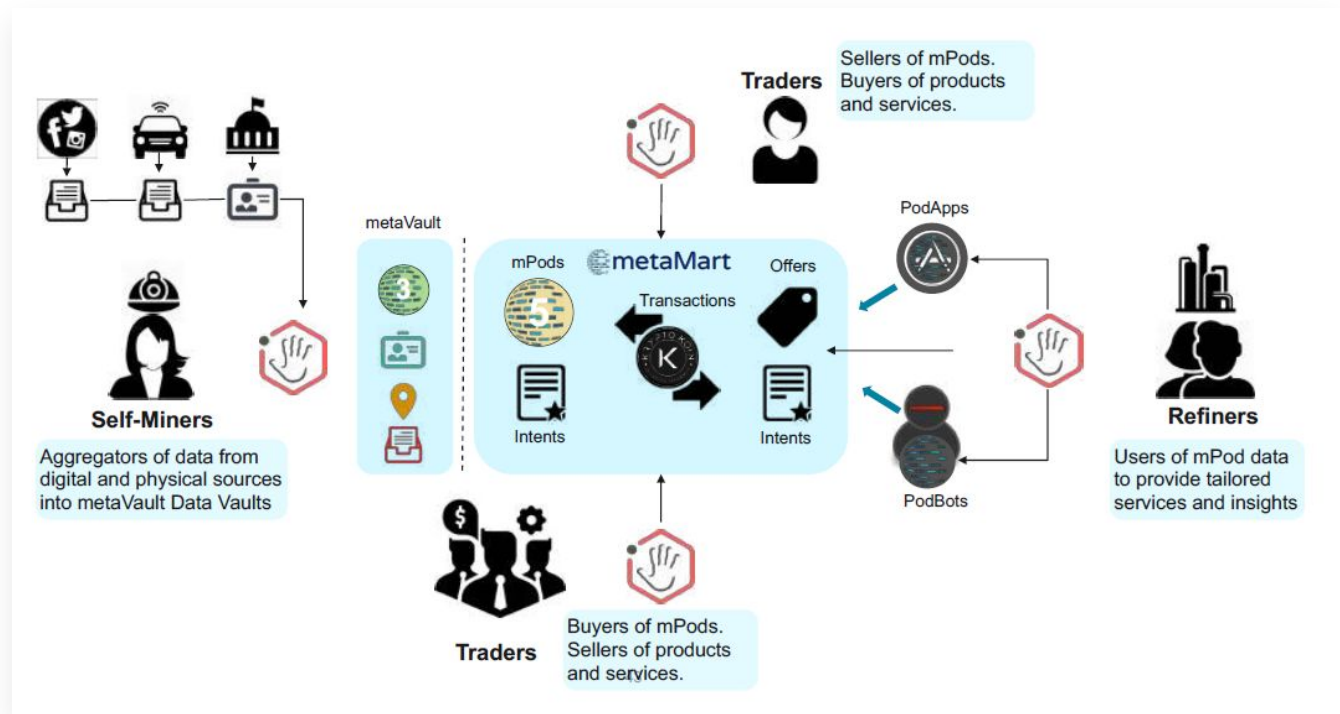
Source: metaMe White paper 1.4, page 31.

Identity & Personal Data

Masa

Masa is launching an on-chain identity solution for a variety of applications. Increasing equitable access to credit is Masa's first use case. To support this, the company is creating a self-sovereign, composable identity solution that provides people with a portable and secure financial identity in Web3 containing on-chain and off-chain personal financial data. People using Masa can access new sources of credit by giving lenders access to their data, with a focus on sharing data that fits lenders' risk assessment needs.
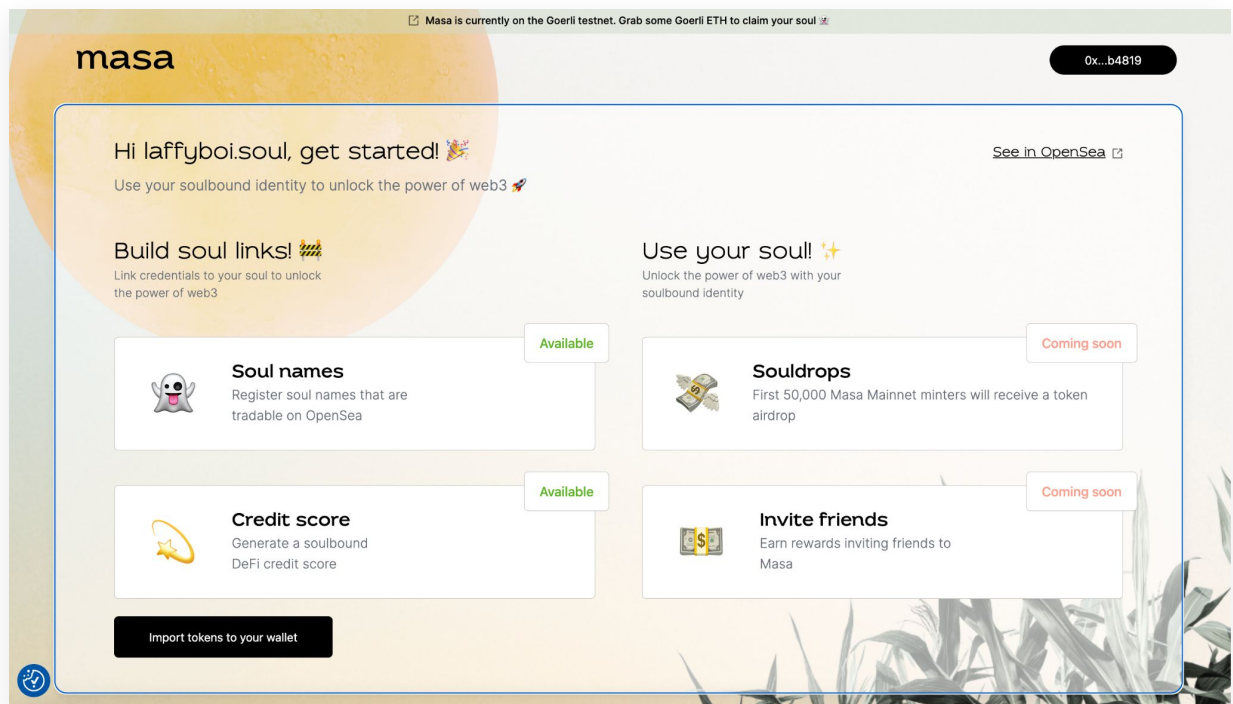
"We want to provide access to capital to people across the world by creating a financial identity on chain that is fair, more transparent, and more democratized. "

Calanthia Mei Co-Founder of Masa Finance

Source: Soulbound Digital Identity & DeFi | Blockchain Interviews, the Coin Show

Crypto Research & Design Lab

Source: Live Masa site

Masa

Project Goals

Risk assessment in traditional financial institutions is jurisdiction-specific, with credit ratings bodies (e.g. credit bureaus) and the information they consider legitimate varying by country. As a result, immigrants often have to build an entirely new financial history when they relocate. Masa's shareable identity solution allows people to add their on-chain and off-chain financial data to a digital on-chain identity.

Masa also aims to broaden the pool of information considered by lenders in risk assessment processes, thereby reducing barriers that prevent people from accessing credit through the traditional financial system.

Masa plans to expand its SSI solution to other use areas, and aims to create tooling relevant to both Web3 and legacy institutions.

Implementation Strategy

Masa initially sought to be a Web3 credit bureau, providing credit scores based upon on-chain activity. However, Masa realized that a core piece of infrastructure was missing for decentralized finance service providers: a way to build a composable identity on-chain that integrated on- and off-chain credentials.

While there is some disagreement among identity experts to the ethical and long-term implications of such approaches, Masa is now building that infrastructure using Soulbound tokens (SBTs).[28] Conceived by Puja Ohlhaver, Glen Weyl, and Ethereum co-founder Vitalik Buterin in May 2022, SBTs are publicly visible, non-transferable, non-fungible tokens (NFTs) that prove elements of a person's identity in a way that is intrinsically tied to the individual. SBTs are intended to be used to provide a more holistic demonstration of a person's identity and actions on-chain. They represent the online activity and affiliations of the persona linked to the wallet where the SBT resides.

OUTCOMES

How People Benefit

- Individuals who use Masa's SBTs can access the products and services offered by Masa's enterprise customers. Because Masa's SBTs are decentralized, these individuals have greater control over their digital data in addition to potential access to new sources of credit.

Key Metrics

Business Metrics:

- Number of individual users who have minted soulbound tokens using their protocol.
- Number of enterprise customers using Masa's soulbound identity protocol to verify identity.
- Quality of those enterprise customers. (That final metric is subjective, and Masa is trying to hit their metrics directly by being very selective in their initial pool of customers.)

Social Impact Metrics:

- Any collection of social impact data is done by Masa's partners and customers who build products that directly serve customers.

People who use Masa mint "Masa Soul Names" that serve as the address for Masa's Soulbound Identities, tokens that compose a financial profile that lenders can access to inform decision-making.

After launching their DevNet in October 2022, Masa partnered with DeFi projects to develop their protocol offerings. Partner projects build applications on the Masa protocol that leverage consensually provided data in Masa's Soulbound Identities to inform lending decisions and execute other DeFi services they offer.

Policy & Industry Considerations

One of Masa's core applications is in ensuring immigrants have access to their credit history across borders. As such, the company's offerings must be flexible enough to accommodate varying Know Your Customer (KYC) requirements: the processes that allow financial institutions to confirm the identities of organizations and individuals. Currently, Masa is developing its products to be compliant with various standards, including those set by the United States Office of Foreign Assets Control (OFAC). However, lenders are still responsible for the way in which identity data is used and bear associated regulatory risk.

The adoption or viability of on-chain credit history will also hinge on the willingness of lenders to adopt it.

Finally, Masa's current model assumes that the population will research issues of safety and privacy, and act accordingly prior to putting their financial data on-chain. To effectively regulate products like this one, regulators will do well to consider individual rights at risk, and the required compliance for a multijurisdictional project.
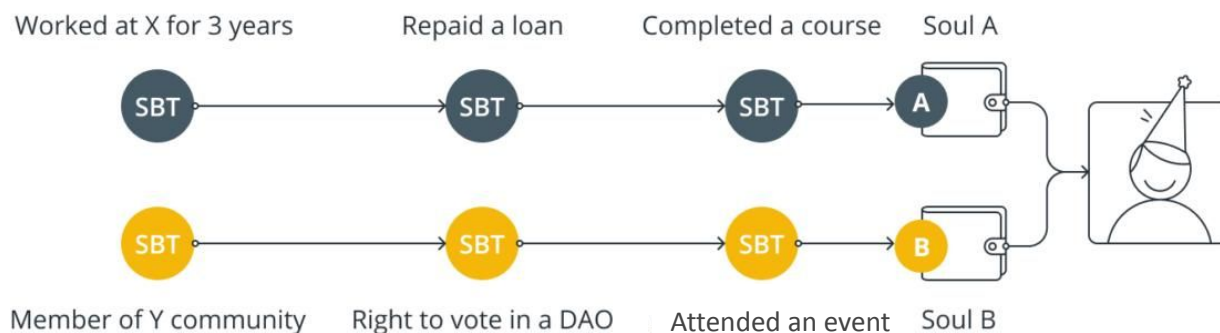
Business Data

Status: Active - in market
Technology: Ethereum, Celo
Location: California, United States.
Constituency: Global; they focus on challenges establishing credit across borders.

Entity: Moon Laboratories (d/b/a/ Masa)
Business model: Service fee to its enterprise customers whenever they are granted access to the consumer data that they request.
Financing stage: Pre-Seed
Funding sources: Digital Currency Group, GoldenTree, GSR, OP Crypto, CitizenX, Lateral Capital, Unshackled Ventures, among others.
Capital raised: US$ 8M

Resources and References

Website: https://masa.finance/
Additional references:
https://www.youtube.com/watch?v=KWojf2YcJ7Y&t
https://www.masa.finance/blog/post/welcome-to-masa-2-0

Source: Cointelegraph

Environmental Sustainability Assets

Crypto Research
& Design Lab

Overview

Environmental crises such as <u>climate change</u>, <u>plastic-filled oceans</u>, and <u>polluted air</u> are already affecting millions of lives across the globe.[29] [30] [31] Yet the rate and severity of these effects are not distributed equally. <u>Marginalized communities are impacted</u> by environmental disasters and climate change earlier and more acutely than privileged communities, and current policies and behavior patterns make it challenging to shift this dynamic.[32]

As our ability to tackle environmental challenges has evolved, so has our need to track the impact of actions that individuals and organizations take to protect the planet. Carbon markets, environmental asset management tools, LEED certification, and other rating and tracking mechanisms were born of this need. Current environmental asset markets and monitoring systems typically face three primary problems: scalability, cost, and lack of public trust.

Proponents of Web3 solutions are exploring ways to help organizations monitor and amplify their environmental impact by putting environmental sustainability assets and supply chains on the blockchain. Their goal is to build a globally trusted, transparent, and immutable record of environmental sustainability assets and their impacts.

Crypto Research & Design Lab

How It Works

Projects we have highlighted in this category leverage blockchain in specific parts of the value chain to more efficiently facilitate the creation, management, and trade of Environmental Sustainability Assets such as carbon credits, recyclable plastic, or land.

This supports communication and behavioral changes around the use of Environmental Sustainability Assets via three key mechanisms:
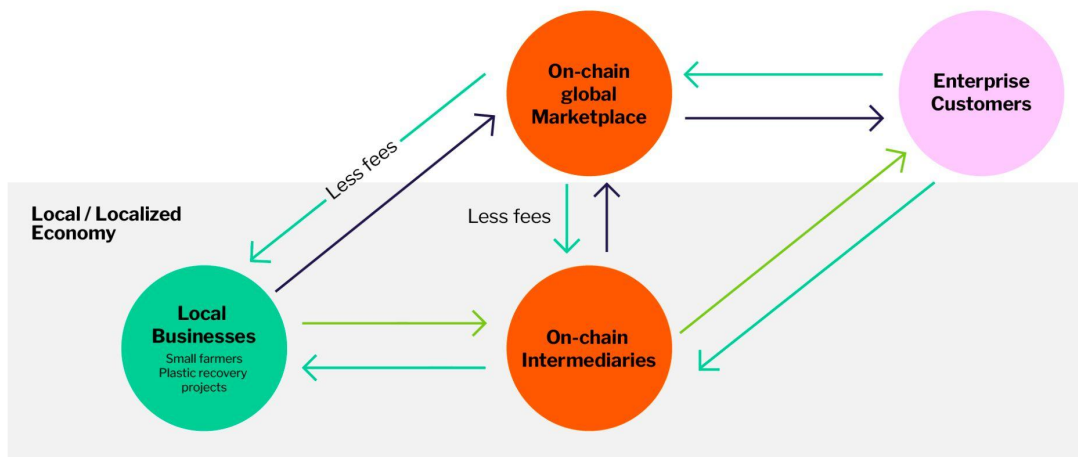
1. **Creating trust in records of truth**: Blockchain can support the creation of indisputable records.
2. **Illuminating supply chains**: Visibility into (and auditability of) the full supply chain makes reporting regimes more transparent and creates efficiencies that support cost savings.[33]
3. **Creating behavioral incentives**: Tokenomics design can create more momentum in the market around behaviors such as helping projects scale by increasing price discovery to draw more liquidity into the system.[34] [35]

Current Model

Local / Localized Economy

Local Businesses → Intermediaries → Enterprise Customers
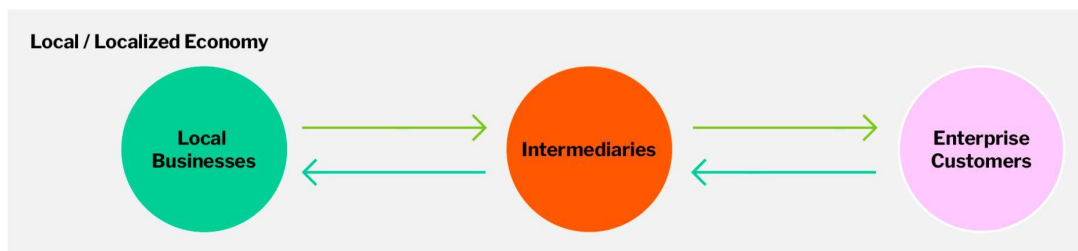
Under a centralized model, environmental asset recovery is usually restricted to localized economies due to the lack of auditability of the entire recovery and recycling process.

Decentralized Model

On-chain global Marketplace

Enterprise Customers

Less fees

Less fees

Local / Localized Economy

Local Businesses
Small farmers
Plastic recovery projects

On-chain Intermediaries

Using an on-chain model provides auditability and transparency in exchange for an additional source of income, and enables the incorporation of recycled materials into the global manufacturing process.

● Intermediaries   ● Individuals   ● Customers   → Economic Flow   → Environmental Asset   → Data

Opportunities for Income & Wealth Building
- **Increased Market Demand:** Growing a market for Environmental Sustainability Assets by creating more transparency around supply can create additional demand for jobs.
- **New Income Streams:** Tokenization of an asset that existed already but was not being commodified can generate incremental new income for small business operators.

Relevant Trends
- For in-demand Environmental Sustainability Assets such as recycled plastic, increasing transparency can grow the market globally, expanding outputs of local economic activity tied to recovery projects.
- Blockchain technology, in conjunction with other emergent tech, can significantly lower the cost of asset and credit verification in international markets.
- Blockchains can facilitate compliance with pending and in-place environmental protection regulations, such as Extended Producer Responsibility (EPR) laws around materials reporting.

Emerging Policy Implications
- **Verification standards:** The traditional regulations and standards around verification for assets like carbon credits may be too costly for small business owners. For cases in which there are no such standards, markets may lack the consistency of information necessary to scale.
- **Knock-on effects:** In new or expanded environmental asset markets, standards imposed by countries with stronger regulations around labor conditions and recycling efficiency could create new best practices for countries with less stringent standards.

Key Takeaways
- Enhanced transparency in the supply chain can create efficiencies and facilitate trust needed to scale across ecosystem services markets.
- New decentralized incentive mechanisms could inspire new frameworks for nascent ecosystem services in unregulated markets (e.g. biodiversity, methane).

What's happening in this space

In the following pages, you'll find detailed case studies of:

Plastiks   ReSeed

Other Examples to Watch:

- Preservaland: Aims to simplify ESG investment in preservation projects. Landowners convert surplus forests into legal reserves. Contracts are minted into NFTs and can be resold in the marketplace.

- Aeternals: A regenerative, NFT-based digital asset connecting a collector's proof-of-impact towards rainforest protection where 55% of initial profits supports Rainforest Partnership.

- Sea Nexus: Decentralized support of research related to the preservation of seas and oceans.

- Regen Network: The Regen Marketplace facilitates the trading and retiring of on-chain carbon and ecological assets. It has internal, public, and peer review processes to accept credits into the marketplace and community governance in which more than one third of the chain's stake is reserved for stakeholders who are often excluded or marginalized from governance (indigenous people, land stewards, etc).

- Kolectivo: Uses GeoNFTs to support regenerative local projects, including Curaçao's coral reefs.

Environmental Sustainability Assets

ReSeed

ReSeed enables smallholder farmers who use regenerative agricultural land management techniques to be paid for the carbon they generate and store on their farms. By using sensing technology, satellite imagery, and AI recognition to track the carbon impact of agricultural practices, and documenting the process in a blockchain currently under development, ReSeed lowers the cost of verifying carbon protection activities. This verification cost has been historically high enough to prevent smallholder farmers from entering the carbon credit market.

The company mints and sells carbon credits to businesses and individuals who want to reduce their footprints, directing half of the gross revenue back to farmers.

"How can we help [farmers] access financing especially if we consider how much they're doing for food security and climate change mitigation?"
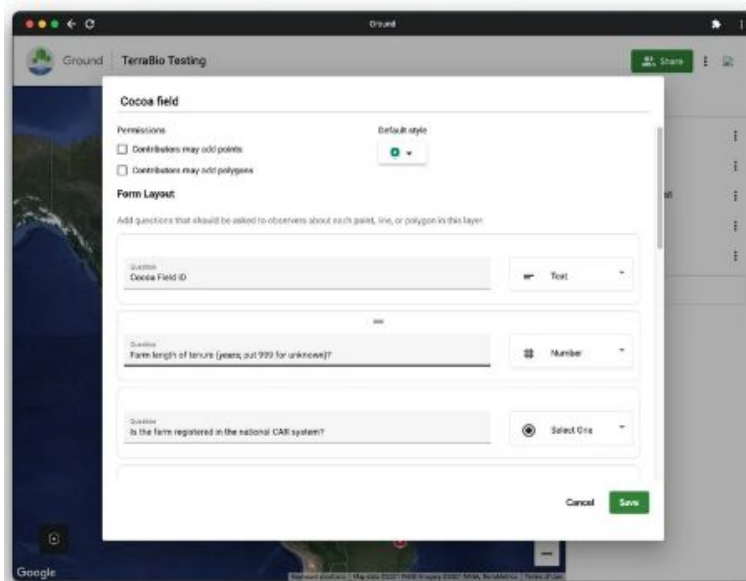
Vasco van Roosmalen Co-founder, ReSeed

Pilot program participants. Quilombola community members Joaquina dos Santos
(right) and Lavoisier Ferreira (center), participants of ReSeed's pilot program.

Screenshots of the mobile and desktop app used to report field
measurements for ReSeed

Source:
(Above) Shaping the future of mobile field data collection
with Terrabio and Ecam
(Below) ReSeed

ReSeed

Project Goals

Until recently, only large farms[36] have been able to participate in the carbon credit market due to a high level of complexity and high cost of entry. ReSeed lowers the costs of quantifying and verifying carbon assets on smallholder farmers' land, creating new access to participation in global carbon markets.

Through ReSeed, smallholder farmers (1 billion people globally) are compensated for their preservation of existing carbon sinks, as well as for any additional atmospheric carbon emissions they remove by using regenerative farming and forestry practices.[37]

Implementation Strategy

ReSeed works directly with organizations or community groups that serve smallholder farmers. In June 2020, ReSeed launched a pilot program with 8,700 Quilombola farming households in the Brazilian Amazon.

Participants report their field coordinates in the ReSeed Farm app. Location is then checked against title registry records by country, with the app stamping the date and longevity of ownership or stewardship of the field, along with crop descriptions and geolocation. AI-supported analysis of multispectral satellite images contrasts with forest vegetation and land use inventory, to compute the biomass of the land and the stock of carbon. This information and the process of Measurement, Reporting, and Verification (MRV) will be stored in a blockchain for auditability and verification purposes. After its pilot program, ReSeed is currently developing the blockchain that they will use.[38]

Additionally, ReSeed states that their auditable certification of carbon credit and sale directly to buyers enables them to share more profits with farmers. ReSeed pays participating farmers 50% of the gross revenue of the sale of carbon credits, while another 30% covers farmer support services

OUTCOMES

How People Benefit

- Smallholder farmers receive an additional revenue stream from activities on their land (some of which they are already doing), at a higher per-credit rate than they would get through other carbon partners.
- Farmers are compensated at the time of the credit sale, based on the market price per tonne at the time of sale.

Key Metrics

Business Metrics:

- Tonnes of carbon protected. ReSeed now has 2 million tonnes of carbon in protection credits ready for market.
- Tonnes of carbon removed from the atmosphere. Measured in removal credits.

Social Impact Metrics:

- ReSeed measures how much income smallholder farmers receive for carbon credit as a percentage of the household farming income.

including technical assistance required to verify the agricultural practices that protect the carbon. By contrast, farmers and land stewards working with other carbon project developers typically receive 5% to 30% of the credit revenue.

With an average farm size between two and 20 hectares, the pilot program farmers produced 40 tonnes of carbon per hectare in stock or protection, and between four and eight tonnes of removal credits in one year. Although it varies per farm and region, at a selling point of USD 10 to 20 per carbon credit per tonne, farmers can double their annual revenue. ReSeed aims to increase the household income of farmers to attain a minimum living pay.

Policy & Industry Considerations

Regulation that would require corporate carbon accounting is in various stages of passage and implementation globally. Its introduction and implementation is likely to have a significant impact on the demand for carbon credits.

The costs around carbon credit verification are generally too expensive for smallholder farmers. For ReSeed to present a viable, affordable alternative that meets current regulations, the company has used blockchain technology to build an auditable process. Like all companies leveraging Web3 technologies, ReSeed would benefit from regulatory certainty around asset tokenization to make their operation sustainably successful.

In addition, the markets in which ReSeed can operate are determined by local regulations around carbon market credits and land regulatory frameworks, which might add specific challenges for specific adaptation case by case.

Business Data

Status: Active - in market with blockchain proof of concept
Technology: Blockchain-based MRV
Location: Delaware, United States
Constituency: Global; pilot market in Brazil

Entity: ReSeed PBC.
Business model: Revenue share of carbon credits
Financing stage: Bootstrapped

Resources and References
Website: https://www.reseed.farm/
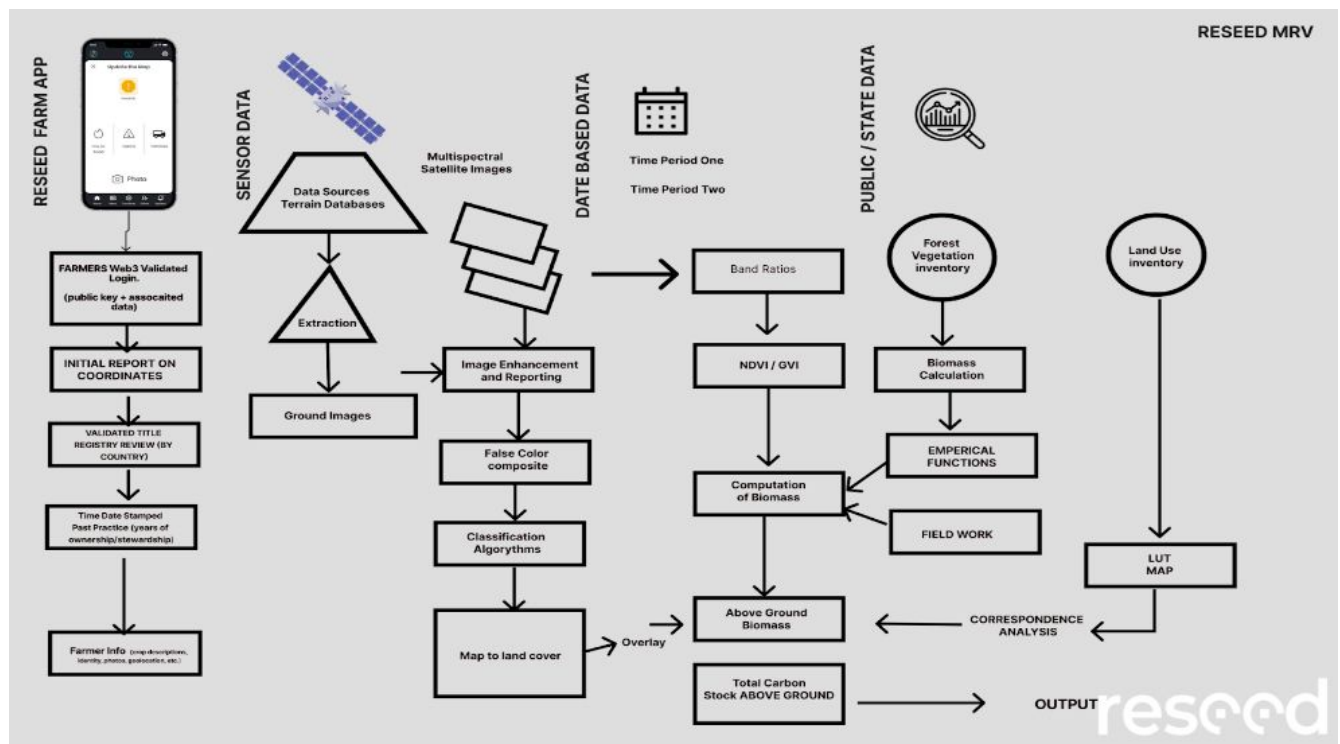
Source: ReSeed's pilot program presentation.

Environmental Sustainability Assets

Plastiks

Plastiks enables sustainability-minded businesses to sponsor plastic recovery organizations. The project also verifies the recovery and recycling of plastic that's been removed from the environment by plastic recovery organizations.

"We have to be able to inspire confidence in our brands. That is why we are developing a feasible [trustworthy] and verifiable methodology."

Florence Bouché Compliance and Methodology Officer, Plastiks

Source: Plastiks whitepaper

Plastiks

Project Goals

The primary goal of Plastiks is to increase the amount of plastic being recovered and recycled each year. Currently, plastics recycling is largely localized due to recovery and sorting difficulties compounded by a lack of transparency in the supply chain. Simultaneously, the project aims to improve working conditions for workers within plastic recovery organizations (PROs) by benefiting projects with higher safety standards.

Implementation Strategy

Plastiks increases transparency in the recovery and recycling sector by offering market incentives for organizations that remove plastic waste from the environment, in lieu of government incentives or requirements such as corporate carbon accounting.

When a local PRO expresses interest in participating, Plastiks assesses the legal, financial, and operational risks and status of the company. Verified organizations are allowed to mint NFTs called Plastic Recovery Guarantees (PRGs). Participating PROs must declare how they plan to use any additional income when they mint PRGs. This enables PRG-purchasing businesses to see how their investments will be used. Each PRG contains data about the number of kilograms of plastic the organization recovered and sold to recycling facilities. PRGs also reflect the date recovered plastic was sold, the type of plastic, and the place of collection.

Businesses interested in showing their commitment to environmental stewardship can purchase PRGs through the [Plastiks Marketplace](). After companies buy PRGs, the plastic recovery organizations receive a large portion of the generated funds. PROs are required to use this new income to hire more workers, upgrade machinery, or improve working or living conditions for workers and their local communities.

OUTCOMES

How People Benefit

- Workers in the plastic recovery and recycling sectors get better working and safety conditions, formal employment, and more employment opportunities.
- Communities see investment and improvements where workers live or work.

Key Metrics

Business Metrics:

- Number of PRGs sold. (Plastiks aims to verify, mint, and sell 11,000 metric tons worth of PRGs by 2023.) Between June 2022 and December 2022, Plastiks had sold 93 metric tons worth of PRGs.

Social Impact Metrics:

- Amount of waste recovered in metric tons, minted as PRGs.
- Ways in which additional income generated by PRG sales was used by plastic recovery organizations.

Plastiks uses a five-criteria assessment methodology to assign grades to PROs on their compliance of Plastiks' requirements. They evaluate factors including safety and health standards, legal status, and financial procedures. The three highest-rated tiers of PROs can mint PRGs and receive income on their sales. To ensure projects' transparency and high-quality auditing, Plastiks does not release additional funds until they have evidence that the initial funds were used to make promised upgrades. Plastiks or a local third-party specialized firm audit each PRO periodically. When the PRO makes an update, Plastiks may assign them a higher grade, further incentivizing them to improve their business practices.

Policy & Industry Considerations

The incentive mechanism designed by Plastiks makes it easier to measure how much plastic waste is being recovered, and recycled. The project aims to increase transparency in the plastic recycling ecosystem, which means it could inspire new environmental policies, practices, and revenue sources. A credit system similar to the one used for carbon protection and removal could be created around Plastiks' platform.

The methodology that Plastiks uses to grade its participating plastic recovery organizations aims to support additional policy implications, such as creating mechanisms to share knowledge between firms for improving workers' conditions and recycling efficiency.

Business Data

Status: Active - in market
Technology: Celo. Previously also in Binance
Location: Spain, UK
Constituency: Global. Works with plastic recovery organizations in Brazil, Chile, Costa Rica, Ivory Coast, Ghana, Kenya, Tanzania, Egypt, Thailand, India, Sri Lanka, Indonesia, Spain, and the United States (California)

Entity: Nozama Green Ltd.
Business model: Obtains a fee for each Plastic Recovery Guarantee traded via their platform.
Financing stage: Seed
Funding sources: Celo, Flori Ventures, Climate Collective, Allegory Capital, Karamm Group, Holders & Brothers, among others.
Capital raised: US$ 2.4M

Resources and References
Website: https://plastiks.io/
Additional references: https://nozama.green/

Source: Plastiks presentation October 2022.

Control of Creative Output

Crypto Research
& Design Lab

Overview

In the modern marketplace, creators face significant challenges in distributing and benefiting from the monetization of their work.[39] Musicians may earn fractions of a penny per stream on songs that rack up hundreds of thousands of streams, and many resort to intensive touring to generate income. Creators such as visual artists, choreographers, writers, and videographers may struggle to retain attribution for their work as it circulates on digital channels. Some may see their works resold multiple times with no share of profits, while speculation-fueled "flipping" can harm emerging artists' careers.[40][41] Where creatives do have a right to royalties, residuals, or other benefits from their intellectual property (IP), many can find contractual language to be unwieldy and difficult to enforce.

A significant challenge with existing IP models is that it is difficult to register IP rights, and thus difficult to prove infringement. Web3 advocates believe that blockchain can provide a solution for proving the time a work was created and the identity of its creator, making it easier for creators to enforce their rights. They point out that smart contract tools such as non-fungible tokens (NFTs) can be used to support better royalty regimes, as well as to incorporate lifetime payments each time a work is resold.

How It Works

Through Web3 publishing tools, creatives can mint an NFT that corresponds to a unique creative work. NFTs can correspond to digital or non-digital works, and contain unique identifying information that records the date and time of creation, the identity of the creator(s), and the current owner, holder, or licensee of the NFT and associated artwork. In some cases, creators can publish these NFTs within a marketplace where primary and secondary buyers can purchase their works.

Proponents of NFTs cite them as a possible mechanism for recouping benefits from secondary sales of creators' work. Under this proposed system, minting providers

and marketplaces would offer a set percentage of resale value to creators at each resale of the work. However, realization of this benefit has been inconsistent.[21] NFT royalty systems are still actively evolving, and can differ between blockchains, with smart contract terms often set by the platforms within which NFTs are minted. In some cases, platforms have retroactively opted to not enforce royalties that were advertised but not stipulated by smart contract code.[22]

Current Model
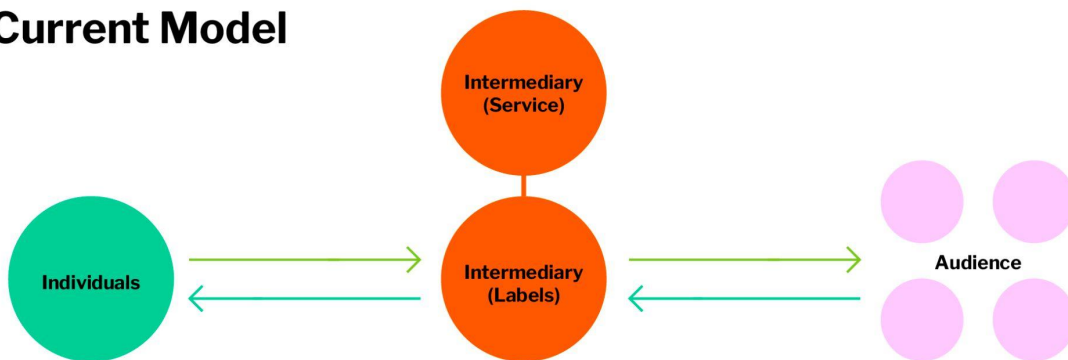
In the current model of creative output, producers and music labels intermediate between individual artists and their audiences. This model limits the benefits creators can derive from audience engagement.

Decentralized Model
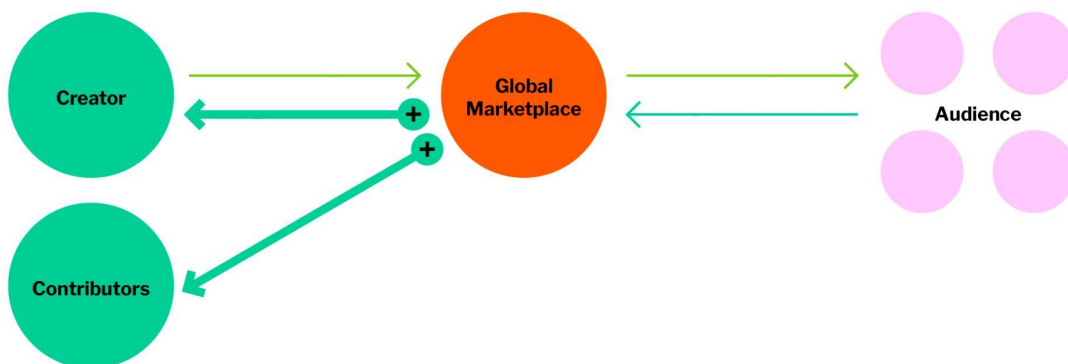
Web3 proposes an alternative where intermediaries in the current model become service providers of art creators and contributors.

This model recenters the role of artists in content creation and shifts the revenue distribution accordingly.

Intermediaries   Individuals   Customers   → Economic Flow   → IP

Opportunities for Income & Wealth Building

- **New Forms of Audience Engagement:** While speculative NFT launches have dominated news cycles, the sale of NFTs can also provide artists with new means of engaging their audiences through special benefits unlocked with purchase.
- **Enhanced Efficiency:** When created and integrated correctly, NFT smart contracts can be leveraged to support streaming and other usage monetization.
- **More Control of IP:** Smart contracts can define the terms of IP usage on Web3 publishing and marketplace platforms, automating payments, and tracking usage with fidelity.

Relevant Trends

- NFTs have already benefited many artists significantly through sales. Artists with no gallery representation have found new audiences through NFT sales, accessing new fans of their work through Web3 communities.
- Although blockchain advocates recommended smart contracts as a method for enforcing royalties, the code in widely used NFT templates did not account for royalty payments, making them impossible to enforce. Many marketplaces rescinded their honor code policy for paying royalties, leaving artists unpaid.[44]
- It's difficult to predict if the current music streaming model can remain viable while fairly compensating artists as mandated by their smart contracts. New paid models of patronage—similar to existing Web2 platforms such as Patreon and Substack—may be the future of creativity in Web3.

Emerging Policy Implications

- **Enforceable title:** The extent to which smart contracts can serve as evidence of enforceable title (or right to payment/compensation) remains to be seen absent of legislation.
- **Artist compensation:** There is an opportunity to create new norms of better compensation with new efficiencies gained.

Key Takeaways

- While more speculative NFT launches and sales may be declining in popularity, evidence suggests that NFTs are here to stay as tools to designate ownership of work.
- Better communication and education will help translate the code of an NFT into more equitable attribution and compensation—both with regards to its immutability and the terms of the related smart contract(s).

What's happening in this space

In the following pages, you'll find a detailed case study of:

Mirror

Other Examples to Watch:

- OpenSea: The largest NFT marketplace.

- SuperRare: An NFT art marketplace, with contributions curated by the platform.

- ColorsDAO: A decentralized community providing support and tools for creatives.

- Wakanomy: Subscription-based NFT marketplace and education platform that functions as a resource for underrepresented communities during their transition into Web3.

- Zora: Universal media registry protocol where creators can publish digital media, earn money on their work, and have others share what they create.

- Blvkhvnd (BlackHand): A DAO that offers Web3-native tools to create greater opportunity in equity, monetization, access, and promotion for esports and dsports.

- Steemit: Decentralized social media platform rewarding posts with tokens.

- United Masters: Service that gives artists access to their streaming and social data, and the ability to distribute music to all major streaming services.

Control of Creative Output

Mirror

Mirror is a decentralized publishing platform that enables creators to publish, own, and permanently store their creative works on chain.

With an Ethereum log in, people can mint all published posts online, enabling more dynamic and mutually beneficial engagement with audiences.

"Our primary use is audience building, and doing it in a Web3-forward way."
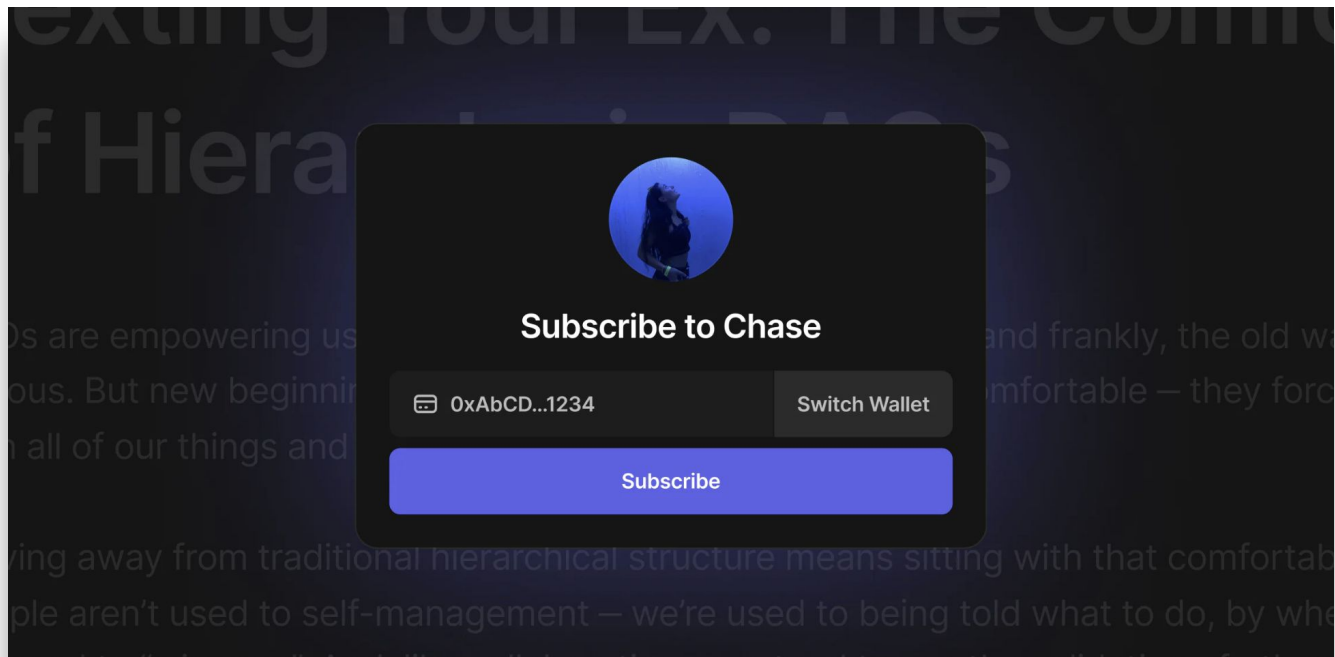
Saarim Zaman, Product Lead, Mirror
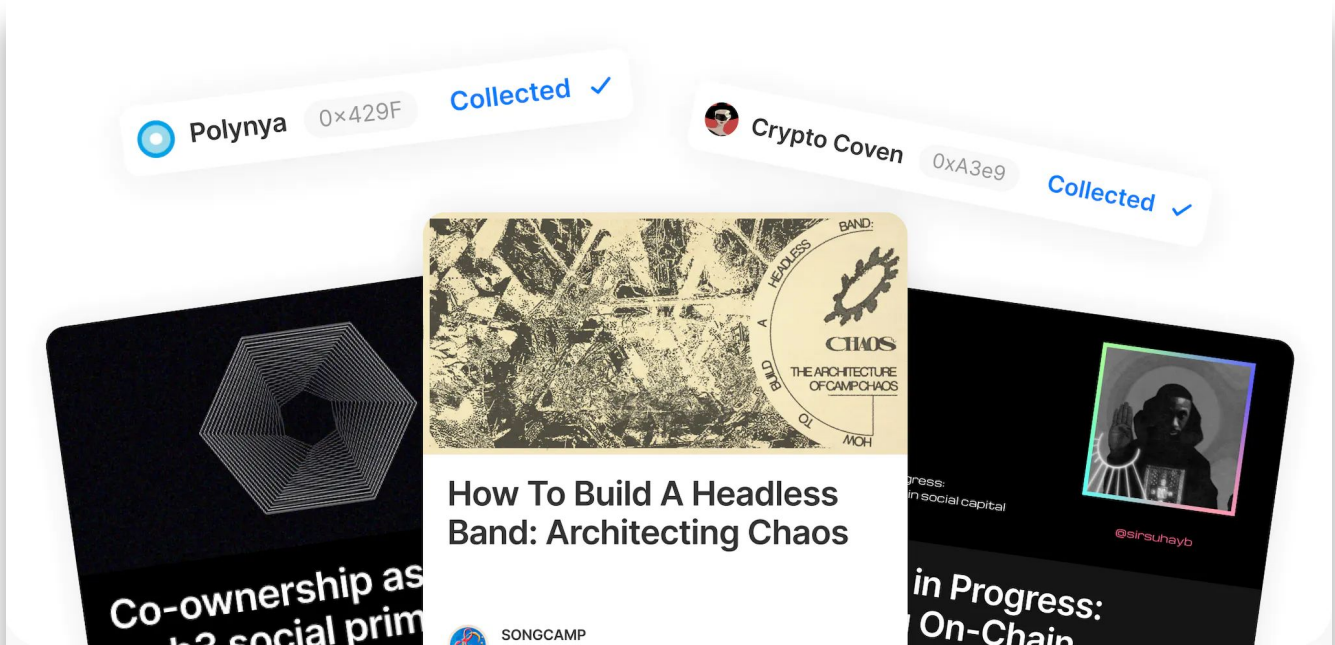
The mirror platform allows authors to mint all posts upon publication, framing patronage as collection. This allows creators to build new forms of community around their ideas.

Source: Mirror.xyz

New subscription functionality simplifies audience members' economic participation in creators' output.

Source: Mirror.xyz

Mirror

Project Goals

Creators have struggled to monetize their intellectual property using existing social media platform models, in which platforms such as Twitter are able to monetize creators' content and audience building through advertising. Mirror seeks to create a new and enhanced form of ownership for creatives that gives them more agency over their creative output and over the audiences they build.

While the emergence of Web2 platforms such as Substack have shown that individual creatives can develop audiences willing to pay for content, many of these services still limit creatives' ability to transport their own content and social graph. Creators' reputation—which often support their livelihoods—are often platform specific, with creators largely unable to bring their followers or reputations with them to new platforms. For example, creators often need to establish new follower counts, contributor scores, or other reputational indicators that signal to readers that they are worth following. Permanent storage of content is also not guaranteed. In contrast, by permanently documenting audiences and creative output on chain, Mirror seeks to empower creatives to transport their audiences and work across Web3 platforms independent of Mirror.

Implementation Strategy

Mirror is both a publishing platform and a platform for audience members to access the work of creatives they support. Mirror has prioritized the functionality of its publishing tools to build credibility with creatives, with a focus on long-form writing. Creators draft and publish work within the Mirror platform, then allow audience members to mint an NFT upon publishing. All written works are stored permanently via Arweave, a decentralized permanent data storage solution from which the Mirror protocol accesses and reads data (multimedia is hashed on IPFS). One time minting costs are supported by Mirror.

OUTCOMES

How People Benefit

- Creators benefit from more control over their creative output and enhanced control of their social graphs. With every published post minted as an NFT, creatives maintain financial control of their assets.

Key Metrics

Business Metrics:

- **Number of accounts.** There are over 100,000 ETH wallets registered to creators on the platform.

- **Creative works published.** To date, over 500,000 creative works have been published and minted as NFTs on the platform.

- **Number of transactions.** To date, over 10,250 ETH has been raised for creators across writing NFTs, crowdfunds, Mirror NFT editions, and through other one-off drops with select creators.

This structure enables creators to access and transfer their data independently of Mirror.

Mirror currently has 100,000 accounts tied to individual wallets that have published at least one entry on its platform, the majority of whom publish writing with a technical focus on the Web3 space. Creators can offer access to their work through the recently introduced subscription functionality, and can offer their content as limited edition NFTs minted on Mirror.

In addition to facilitating access to creative output, NFTs can serve as credentials that allow audience members to publicly display their support for creators in their wallets—creating reputational benefits or "clout" for early support or participation in key creator events.

Crypto Research & Design Lab

(continued) This functionality allows audience members to "collect" works and display them in their wallets, creating more permanent indicators of support than on traditional Web2 platforms.

Mirror acknowledges that people new to Web3 may encounter more friction in its UX than seasoned Web3 product and service adopters. People must log in via an Ethereum wallet in order to publish or collect, though a wallet is not necessary to read content.

Initially, Mirror assessed a 2.5% fee on all transactions. With a belief that users may be feeling cash-strapped in current economic conditions, Mirror has paused all fees on new subscriptions and transactions to support adoption growth, and plans to reassess fee structures in the near future.

Mirror is also exploring transferring management of its protocol to a DAO structure in the future, in which a share of fees could be redistributed to creatives and audience members.

Business Data

Status: Active - in-market
Technology: Ethereum
Location: New York, United States, and remote.
Constituency: Creators around the globe

Entity: Reflective Technologies, Inc.
Business model: Mirror plans to implement fees per minting.
Financing stage: Seed
Funding sources: SV Angel, Musha Ventures, Union Square Ventures
Capital raised: Undisclosed; at least US$ 10M, according to investor Union Square Ventures

**Resources and References**

Website: https://mirror.xyz/
Additional references: Documentation.

Industry Considerations

Adoption: Mirror and other self-publishing platforms are often difficult for readers and other audience members to access unless they are Web3 literate. Expanding audiences beyond early Web3 adopters may result in slower growth, creating potential pressure for fee-based models in the longer term.
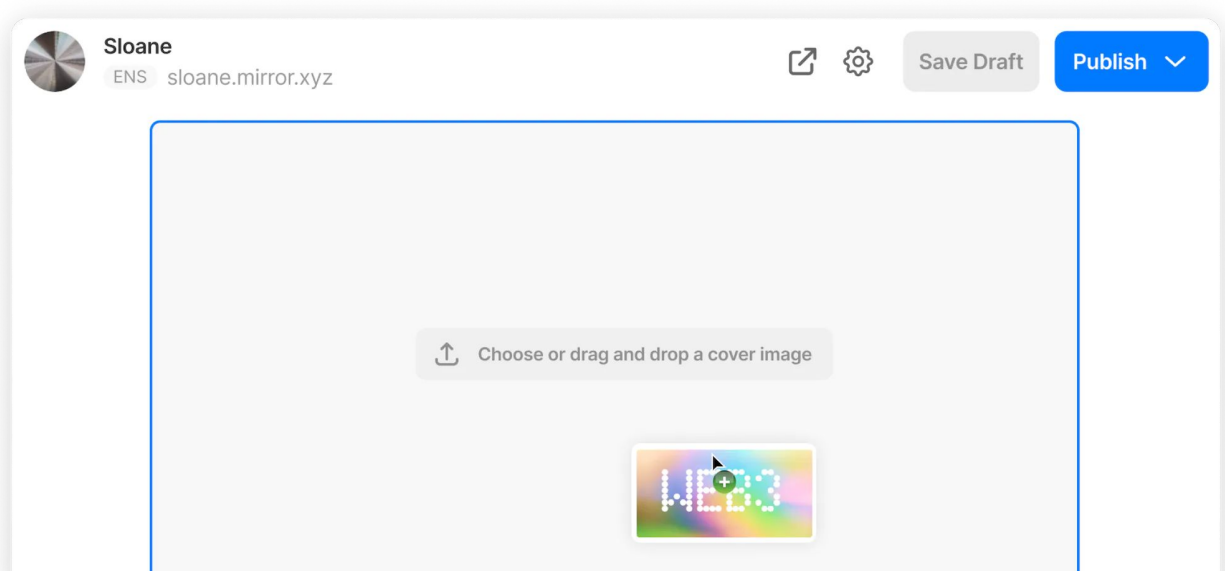
Source: Mirror's in-platform publishing tool allows creators to to embed NFTs and Web3 blocks directly into posts to combine multimedia content and smart-contract governed economic participation (such as direct purchase of the embedded NFT).

Community Development

Crypto Research
& Design Lab

Overview

Web3 experts assert that blockchain solutions have unique potential to address community issues of capacity, equity, and resource allocation approaches. Communities—particularly those that have been historically excluded from financial systems—[45] may desire to build their own financial ecosystems that remove intermediaries and reduce costs, especially during times of economic uncertainty. [46] In other cases, communities may lack the governance infrastructure, capacity, or funding access to deliver upon the shared goals of their constituents. In both of these situations, blockchain solutions hold appeal.

In recent years, blockchain projects that create incentives or systems to support communal wealth and local resilience to shocks have emerged, generating interest across a diversity of communities.[47] Advocates posit that community cryptocurrencies can provide a means of keeping spending activity within local communities, supporting small businesses, and providing people access to financial tools.[48]

Decentralized Autonomous Organizations, or DAOs, are an emerging alternative to the governance model of traditional organizations that might otherwise provide funding for community projects.[49][50] Web3 proponents present them as a more inclusive and community-oriented approach to decision-making and resource-allocation for scenarios with broad stakeholder impacts. This structure signifies a shift from the donor to beneficiary structure of traditional philanthropy, which tends to be characterized by major donors with significant influence over philanthropic outputs.

Specifically, DAOs offer new participatory vehicles for social impact that are global in scope, due to their digital and borderless nature.[51] Their structure creates novel methods for fundraising, capital formation, organizing, and ownership, and increases operational and spending transparency through the use of smart contracts consistent with community goals. DAOs can also offer new incentives for people who contribute to those goals through the issuance of tokens. DAOs with a community development focus include a number of projects focused on cities, creators, and communities specifically, bringing together large networks of individuals.

How It Works

While blockchain applications to support community development are diverse, we see two primary models:

1. **Community cryptocurrencies:** Local authorities or communities create an alternative crypto payment system complementary to fiat, backed by legal tender through a traditional financial institution, like a bank (typically a community development financial institution or CDFI). Those cryptocurrencies are only accepted in the given region or within the given community, alongside fiat. Blockchain aids the currency issuer in being transparent on the currency circulation and enables third parties to audit the system.

2. **DAOs and community development governance infrastructure:** DAOs leverage shared internal capital as a mechanism for rewarding certain activities, with "automation at the center, humans at the edges."[52] In the community development context, DAOs may be leveraged to administer universal basic income (UBI) programs, support crowdfunding for community projects, or as a governance mechanism for other activities.


Current Model
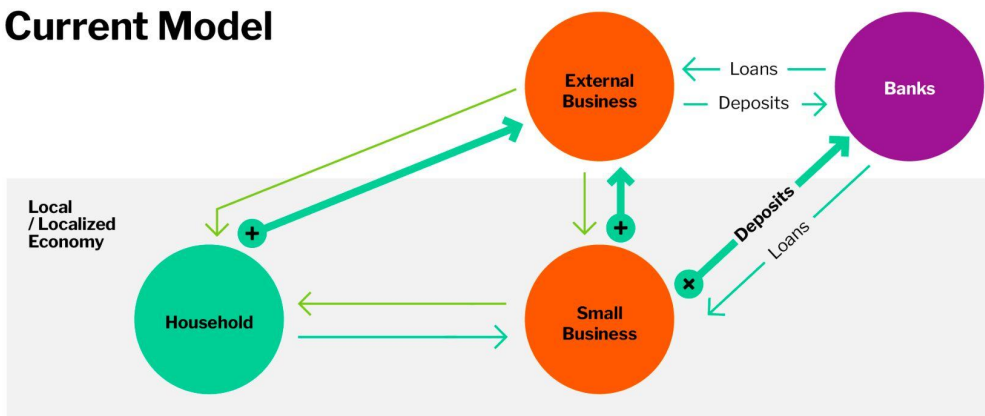
Community currencies are as old as money. National (e.g. USD, Yen) or supranational (e.g. Euro), are only different from community currencies because they are backed by governmental bodies and financial institutions.

As economies across the world have become less localized, the leakage of dollars outside of the local community has increased.

Decentralized Model
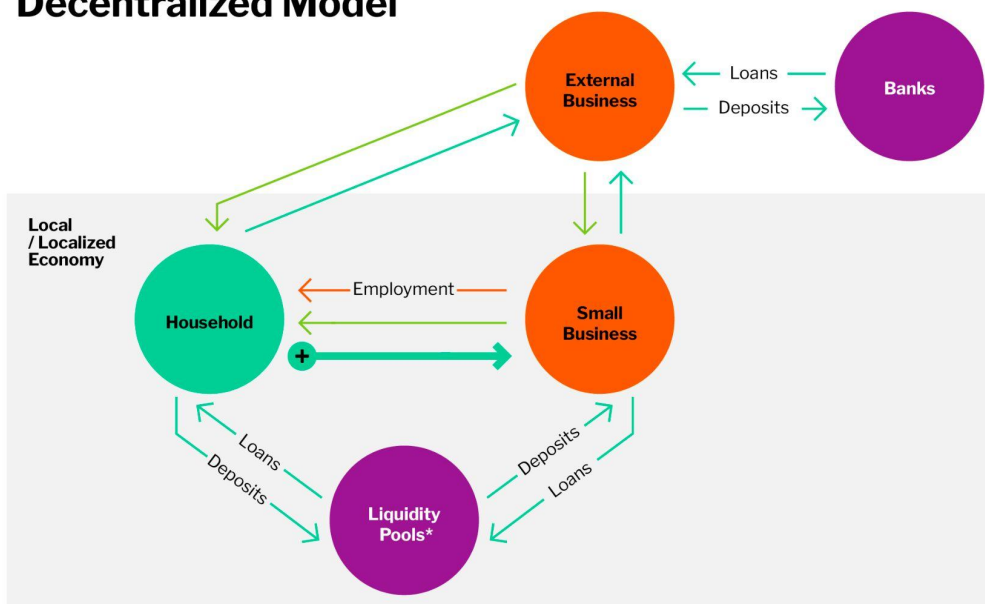
When community currencies work alongside established national currencies, they potentiate the circulation of money inside the community.

Tracking the velocity of money—or how often a currency unit is used to buy goods and services during a given period—helps to determine if a community currency is driving consumption and production upward.

In some cases local financial service providers

● Intermediaries ● Individuals ● Bank → Economic Flow → The Good / Service → Service to individual

Opportunities for Income & Wealth Building

- **Growing the Communal Economy:** Many Web3 projects emphasize building communal wealth that may create indirect benefits for individuals. In communities where small businesses thrive, individuals may find new employment opportunities. Local currencies may increase the speed of currency demand and flow.
- **New Governance Structures:** DAOs focus on creating community benefit, with positive community participation incentivized by tokens. Individuals can earn tokens for contributions or be compensated for work, while the community may secure needed funding that better reflects shared goals.

Relevant Trends

- In some cases, crypto-facilitated community currencies are presented and branded as such, however are presented in consumer-friendly terms and do not require an understanding of the underlying blockchain technology and its design. This reduces barriers of complexity that make onboarding and participation in other cryptocurrencies challenging.
- Some organizations may require participating businesses to restrict the exchange of community currencies to fiat, which limits the risk of speculation and volatility.
- Some DAOs have struggled to deliver on their goals. Ability to establish a DAO, individuals' capacity, and group dynamics can affect efficacy, but governance is evolving and may better serve community needs as approaches to management and governance continue to mature.* [53]

Emerging Policy Implications

- **Macroeconomic Conditions and Centralization:** Community currencies embedded in national currency systems rely on the country's macroeconomic conditions. A high inflation scenario may render moot the benefits of a community currency. However these currencies may be useful when a country lacks a monetary policy or the national currency is in short supply.
- **Classification & Taxation:** There is a current lack of clarity around how DAOs should be classified, with some organized through a traditional LLC structure and some organizing only on the blockchain. However, no matter the nature of their goals, DAOs may still be treated as legal entities subject to taxation, or even as unincorporated associations. [55] [56] [57]

What's happening in this space

In the following pages, you'll find detailed case studies of:

Humanity Cash   GoodDollar

Other Examples to Watch:

- IndigiDAO: A platform that enables economic empowerment for indigenous communities in the U.S.

- Tram: Pays people in tokens when they migrate from driving cars to other means of transportation that have a smaller carbon footprint.

- Grassroots Economics: Develops "Community Inclusion Currencies" for the economic development of Kenyan communities.

- Impact Market: Provides DeFi infrastructure to support Universal Basic Income, learning, and micro-lending programs.

Key Takeaways

- Community currencies thrive in strong economies, and flounder in weak economies.
- Blockchain-powered uses could provide critical infrastructure and frameworks for managing and executing community development goals. [58]
- Sustainable civic engagement could be meaningfully incentivized as DAO governance design continues to improve.
- It remains to be seen where DAOs will have the greatest impact. [59]

* Participatory budgeting is an off-chain initiative that has gained ground as an integration tool between local governments and communities. On the other hand, there are on-chain initiatives that combine Web3 and community development through quadratic voting or quadratic funding, like Gitcoin. [60]

Crypto Research & Design Lab

Community Development

GoodDollar

GoodDollar is a Web3-based universal basic income (UBI) solution and anti-poverty protocol that connects people with money to people in need through DeFi. It offers a direct aid-disbursement mechanism that empowers people to easily onboard to Web3, obtain digital wallets, and either fund or claim GoodDollar (G$) tokens.

Due to blockchain's open infrastructure and the composable nature of DeFi, any individual or corporation can transparently and permissionlessly fund the GoodDollar UBI system. This challenges traditional models of corporate giving and philanthropic capital.

"[Crypto has] this incredible potential to make meaningful impact for financial inclusion. [But you must] solve how to distribute free crypto and get people into a really simple, basic noncustodial wallet that they control, [to lower the cost of learning by doing]."

Anna Stone Executive Director of GoodDollar

GoodDollar Ambassador. Cyrille is the GoodDollar Country Lead for Cameroon, where he organizes multiple G$ community savings groups and educates students on circular economies, DeFi, and ReFi.

Source:
GoodDollar Ambassador Cyrille.
https://www.youtube.com/watch?v=Wg2G44UsRXQ

GoodDollar

Project Goals

The goal of GoodDollar is to combat global wealth inequality by lowering the barriers to entry to DeFi and providing access to free digital assets, distributed as UBI via the GoodDollar token (G$).

Additionally, the project empowers people to seek financial freedom through community grants managed by GoodDollar subDAOs.

Implementation Strategy

To build a UBI system fueled by social investment, GoodDollar needed to address two objectives: ensuring that funds reached the people who needed them, and ensuring the protocol never lacked funding by distributing only the interest earned on staked trust funds.

GoodDollar has kept the value of daily distributed G$ purposely low so that the majority of funds are available for people in less stable economies, and so people earning income in stronger economies are disincentivized from filing claims. Additionally, building the token based on holding U.S. dollar-pegged stable coins in reserve gives people all over the world the ability to claim cryptocurrency with limited volatility—every single day, if they choose. People get paid each time they claim UBI, and can claim once every 24 hours. Finally, the project designed a digital wallet with a simple onboarding process that allows sign-ins through Facebook or Google accounts, and can be accessed via the web or a smartphone app. This lowers barriers to entry for less tech-savvy users, and presents an opportunity for stable additional income for people who may struggle with financial stability.

To keep a steady stream of funding in the network, GoodDollar leverages two types of crypto-specific lending or staking: yield farming and liquidity mining. Both of these processes reward funders who add crypto to a communal liquidity pool. In essence, this means GoodDollar funders earn rewards on their crypto while simultaneously enabling the interest from the principal to fund free G$ for members who claim daily tokens as UBI. This enables the sustainable generation of UBI.

OUTCOMES

How People Benefit

- In addition to receiving daily income distributed by GoodDollar, recipients receive access and onboarding to DeFi tools available in Web3. They can also create projects funded by GoodDollar Foundation and subDAO community grants.

Key Metrics

Business Metrics:

- **The total money distributed in G$.** As of November 23, 2022, GoodDollar distributed the equivalent of US$336,168.39 to recipients via 495,564 individual transactions. This resulted in the equivalen tof US$1.5 million in volume for the year, showing a 5x multiplier effect of the currency within its ecosystem.

- **Active wallets**. Out of the 478,166 unique UBI claimers across 181 countries, 39,123 active wallets claimed funds daily for a 30 day period between December 2022 and January 2023.

Social Impact Metrics:

- The daily income is around 90 G$ per day or 2,700 G$ per month (U.S. $0.50 monthly as of December 2, 2022).

Community members can also buy and sell tokens directly in the GoodDollar Reserve, a feature that may facilitate the scaling of the product.

GoodDollar launched its wallet in 2019, the protocol in 2020, and its DAO in 2021, and now has a community of almost 500,000 members across 181 countries.

Crypto Research & Design Lab

Policy & Industry Considerations

As GoodDollar expands, its performance may strengthen the case for UBI. Policymakers who are unfamiliar with UBI can monitor GoodDollar's progress as a proof of concept.

Additionally, the transparency of blockchain and the integration of GoodDollar into existing ecosystems create an open database cataloging the impacts and effects of UBI. Anyone eager to study the effect of UBI may use it.

Business Data

Status: Active - in-market
Technology: Celo, Fuse, and Ethereum
Location: Cayman Islands.
Constituency: Global. Present in 181 countries. Biggest presence in Nigeria, Indonesia, Bangladesh, Vietnam, India, and Brazil.

Entity: Good Dollar Ltd.
Business model: Distribution of endowment yield for universal basic income. Corporate social responsibility initiatives from eToro covered the initial founding and building of the protocol, as well as current operations. Plans for the cost of operations to be fully covered by the community over the long term.
Financing stage: Corporate Sponsorship
Funding sources: eToro

Resources and References

Website: https://www.gooddollar.org/
Additional references: Documentation.
                              GoodDollar Dashboard.

GoodDollar Nigeria. The GoodDollar Country team for Nigeria on-site conducting community project work.
Source: GoodDollar.

Community Development

Humanity Cash

Humanity Cash creates a circular economy powered by UBI and community currencies, which are local payment networks that ensure that every dollar strengthens local economies.

The company works in collaboration with participating local banks, local businesses, and local non-profit organizations to enable communities to create local stablecoins that strengthen their economy. The goal is for more wealth to stay longer within participating communities.

"The paradox of community currencies: enough liquidity so people feel comfortable holding it, enough channeling to make them utilize it."

Fennie Wang Founder and CEO, Humanity Cash

A small business participating in BerkShares. Pictured is Hillary Hawk, worker-owner of Random Harvest, a store in Craryville, NY, that uses BerkShares. The BerkShares program was originally created in 2006, and Humanity Cash created a digital version of the community currency for its platform.

Source:
Berkshares.org. November, 2022.

Humanity Cash

Project Goals

Humanity Cash aims to increase the recirculation of money within local U.S. economies by facilitating the creation of community currencies: regionally specific forms of money that are designed to encourage local economic activity. Any community in the U.S. can issue their own community-focused digital dollars using Humanity Cash's platform. Each community currency is backed by fiat U.S. dollars held in deposits by local community banks, and participating banks are required to give loans that support small businesses, local farms, and local commercial developments.

Humanity Cash states that its mission is to enable local financial institutions to effectively compete with large banks, fintechs, and payment networks, as payment rails are becoming increasingly digitized.

Humanity Cash also has the potential to create wealth for individuals by giving community members easier access to credit. As a result, small business owners and entrepreneurs enjoy a lower cost of capital. Those who don't need additional credit can still benefit since Humanity Cash's model attempts to reinforce trade between local links of a supply chain and trade between local merchants.

Implementation Strategy

For its first pilot, Humanity Cash created a digital version of an existing non-crypto project called BerkShares. Humanity Cash implemented this pilot through an alliance with several stakeholders:

- Community members and non-profits supply the cash needed to back the local currencies.
- Community banks hold the reserves as deposits and allow users to exchange the local currency for U.S. dollars.
- A minimum viable set of merchants ensures there are goods and services that can be bought using the local currency. Anchor tenants like food co-ops or popular farmers markets are usually part of the set.

OUTCOMES

People Who Benefit

- People who own local businesses in communities can benefit from additional sales within the community, as well as lower cost of capital.

- Community banks can offer cheaper credit due to the deposit-gathering mechanism of the digital community currency.

Key Metrics

Business Metrics:

- Number of users

- Number of merchants

- Transactions per month

- Total value locked

Given the purpose of community currencies, transactions per month are more valuable than value locked, as they show the circulation of money.

BerkShares was an established community currency before partnering with Humanity Cash, so the latter company is still considering how to enter completely new communities. For a community currency to be successful, people need to be interested in using it. Younger generations may participate simply because they tend to be early adopters of new technology. Members of older generations may only engage if they already have an interest in local activism. It is yet to be seen if the Humanity Cash model will work in any community that adopts it.

For more detail on how Humanity Cash works, see the case study available in CRADL's report on Cities and Crypto.[61]

Policy & Industry Considerations

Local currencies like Humanity Cash can increase the velocity of circulation. Currency recirculates faster in a small, local economy by facilitating multiple economic transactions before leaving the system. Community currencies have been shown to increase purchasing power, and to be more accepted as a secondary or residual currency when there is a shortage of commonly used money.[62] This means that community currencies can support bottom-up economic development policies that help local industries thrive.

Humanity Cash is also partnering with academic institutions to research local currency-based guaranteed income programs. Their findings may have an impact on community currencies and on broader application of UBIs at the state or national level.

Business Data

Status: Pilot
Technology: Celo.
Location: Delaware, United States.
Constituency: Small businesses and individuals within local communities of Berkshire County, Massachusetts. Plan to expand to other communities.

Entity: Neighborly Capital Company
Business model: Manages currency and investments
Financing stage: Pre-seed
Funding sources: Flori Ventures
Capital raised: US$ 500,000

Resources and References

Website: https://humanity.cash/
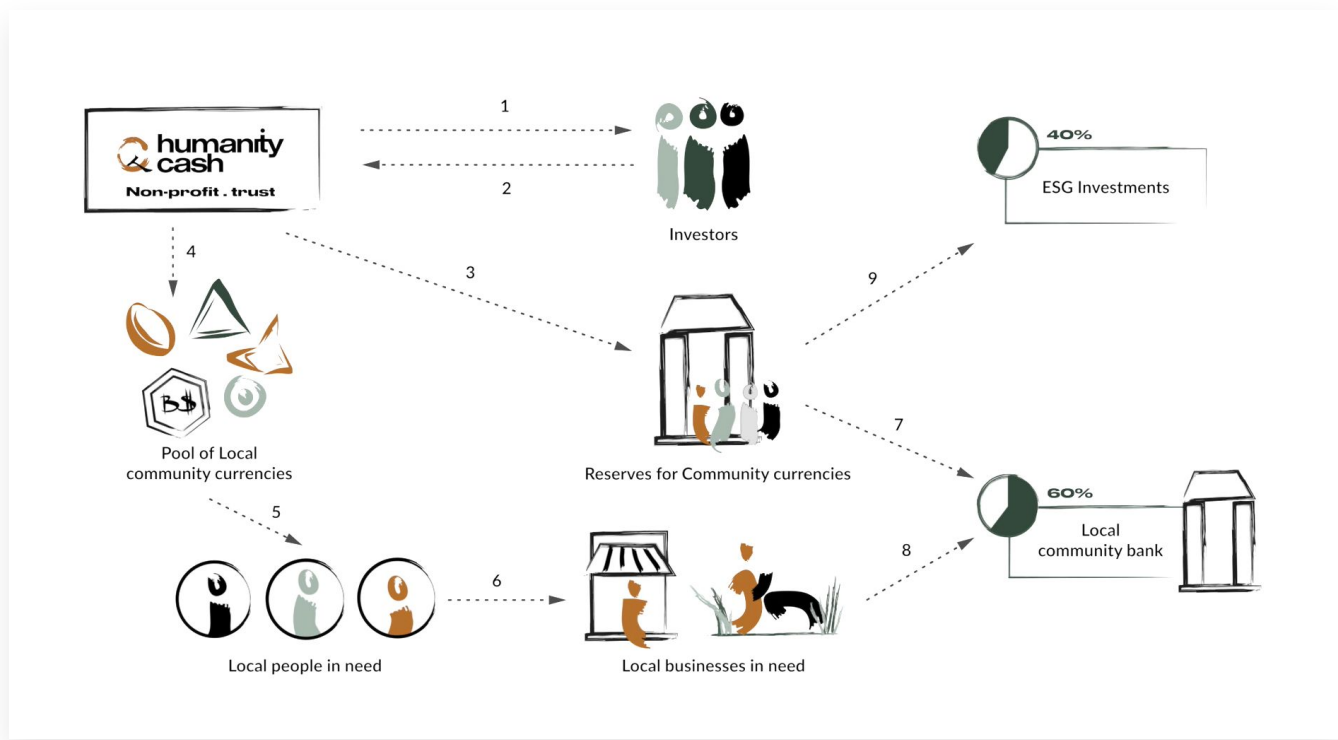
Source: Humanity Cash "Introducing Ubi Bonds" September 2021.

Decentralized Infrastructure

Crypto Research
& Design Lab

Overview

Digital infrastructure such as broadband can be costly to implement and maintain. "Last mile" connections—the portion of an infrastructure network that physically reaches the customer's location—may not generate enough revenue for internet service providers to invest in building them. This holds true not just in rural areas, but also in major cities like New York. [63]

Internet of Things (IoT) networks are an alternative to traditional networks, but they, too, are capital intensive and can pose security and affordability challenges to maintain. The centralization of data transmission and storage can create high risks that expose the cloud network to potential hacks. Computing power required for certain industries (e.g. to render video in the creative industry) can generate significant costs that may prevent smaller internet service businesses from scaling.

Despite these challenges, companies and users are beginning to collaborate to create IoT on-chain networks using Web3 tools. To make this possible, a community of individual participants form a large decentralized network by running specialized devices from their homes or businesses. Beneficiaries of this decentralized network can wirelessly connect to the internet or to smaller networks without the direct use of satellite location hardware or cellular plans. Other computing uses—such as new models to track and incentivize the distribution of server storage or computing capacity—may also become possible as this technology evolves.

Advocates assert that blockchain-enabled tooling can help to address issues of access, cost, and security.[64] Emerging on-chain networks seek to decentralize the sharing, storing, and transmission of data and provision of other web services by removing intermediaries.

How It Works

To support the efficient development of networks at scale, many decentralized infrastructure projects go to market offering hardware paired with Web3 tooling. Infrastructure in the form of connected devices is sold, rented, or provided free of charge to individuals, who operate and maintain network devices.

Networks can achieve scale using Web3 tooling and tokenomic design to incentivize adoption and maintenance of network devices by:

1. Compensating people who provide network coverage with tokens.
2. Compensating people who verify that those who claim to be network coverage providers are actually providing coverage.
3. Tracking coverage providers, network users, and fees so that network providers, coverage verifiers, customers, and general audience can verify that everything is working.

Current Model
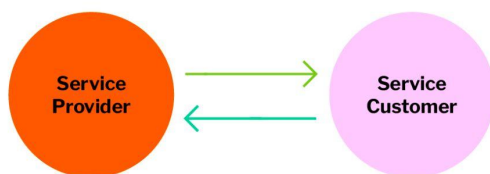
In the centralized infrastructure model, large enterprises must make extensive capital expenditures to lease land, purchase equipment, and deploy it, disincentivizing network development in rural and low-income areas. Networks are often monopolistic, creating a lack of pricing transparency. Customers pay the provider directly for the service—for example, a telecommunication firm or internet service provider (ISP).

Decentralized Model
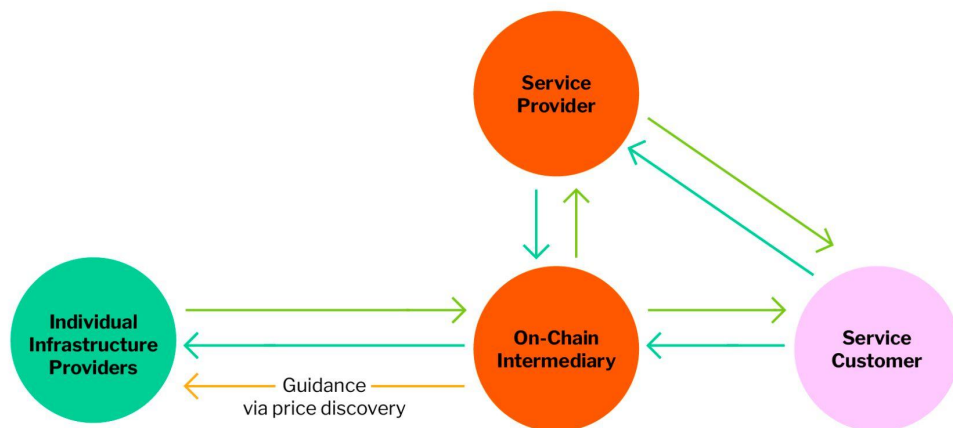
In a decentralized infrastructure model, people and organizations invest in deploying devices that extend coverage for a network on the land they are using. As a counterpart, a network broker incentivizes the adoption of the network by customers and telecommunication firms.

The lower cost of deployment of these networks allows existing centralized networks to expand coverage to distant areas and enterprise customers to implement productive, meshed, smaller networks. Web3 allows the network broker to offer incentives to the stakeholders needed to run the network and provide transparency and process auditability.

Legend: ● Intermediaries ● Individuals ● Customers → Economic Flow → Network Service → Price Discovery

Opportunities for Income & Wealth Building
Many decentralized infrastructure projects serve enterprise clients (particularly IoT, sensor networks, and computing support) and do not have stated goals of creating wealth for individuals. However, network infrastructure operators have an opportunity to generate a new stream of income. Decentralized network projects may also lower barriers to acquiring and deploying wireless infrastructure. It is possible that cost savings could be reinvested to expand network coverage at a faster rate, creating indirect benefits for network users through the ability to search for jobs, work remotely, sell goods, promote their rural businesses to wider audiences.

Relevant Trends
Networks may be time-intensive to scale to stages of being useful, especially outside of denser, urban markets. Legacy network providers are increasingly interested in expanding last-mile coverage via partnership with decentralized operators.

Emerging Policy and Industry Implications
- **Net Neutrality:** With decentralized infrastructure, IoT hotspot providers rely on wireless service they must acquire themselves. Net neutrality principles are critical to ensuring that internet service providers do not block network access. [65]
- **Low-Cost Public Goods:** In some cases, such as wireless internet connectivity, networks could be considered a public good. Internet connectivity is a critical infrastructure concern, particularly in the U.S. which has some of the highest internet costs in the world. Policymakers have the opportunity to explore IoT networks as low-cost alternatives to traditional internet services.
- **Sustainable Tokenomics:** Decentralized network managers are beginning to consider how they may ensure sustainable compensation for network component operators in their tokenomics design, versus allocating most benefits to early adopters.

Key Takeaways
- Decentralized infrastructure creates opportunity for a diversified income stream, but not necessarily for individuals due to upfront costs and low saturation points. However, indirect benefits associated with network connectivity at scale could be created.
- For solutions already in-market, the emergence of professional network operators capable of creating efficiencies and price competition through scale means returns on investment can plateau for individuals.

What's happening in this space

In the following pages, you'll find detailed case studies of:
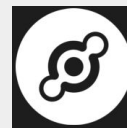
Helium

Other Examples

- **PlanetWatch**: Gamification of air quality sensoring to reward the deployment of hyperlocalized air quality sensors. Institutions can then access the data in the network.

- **Boring Protocol**: A decentralized VPN on Solana. Like Helium, it sells the infrastructure to $BOP earners.

- **Pollen**: Decentralized mobile network. Requires antennas and validators to provide infrastructure and verify it. People can use the network with an eSIM.

- **Wifi Dabba**: Low cost connectivity Layer 1 in India. Based on Helium, it uses lasers on rooftops and telecom towers to serve millions of hotspots.

- **WeatherXM**: A community powered weather network that rewards weather station owners and provides accurate weather services to Web3 enterprises.

- **Hivemapper**: Decentralized mapping of routes and car usage.

- **Render Network**: Distributed GPU rendering on the blockchain.

- **Livepeer**: Decentralized video streaming network.

- Policymakers might accelerate the growth of lower-cost, IoT networks by offering subsidies.
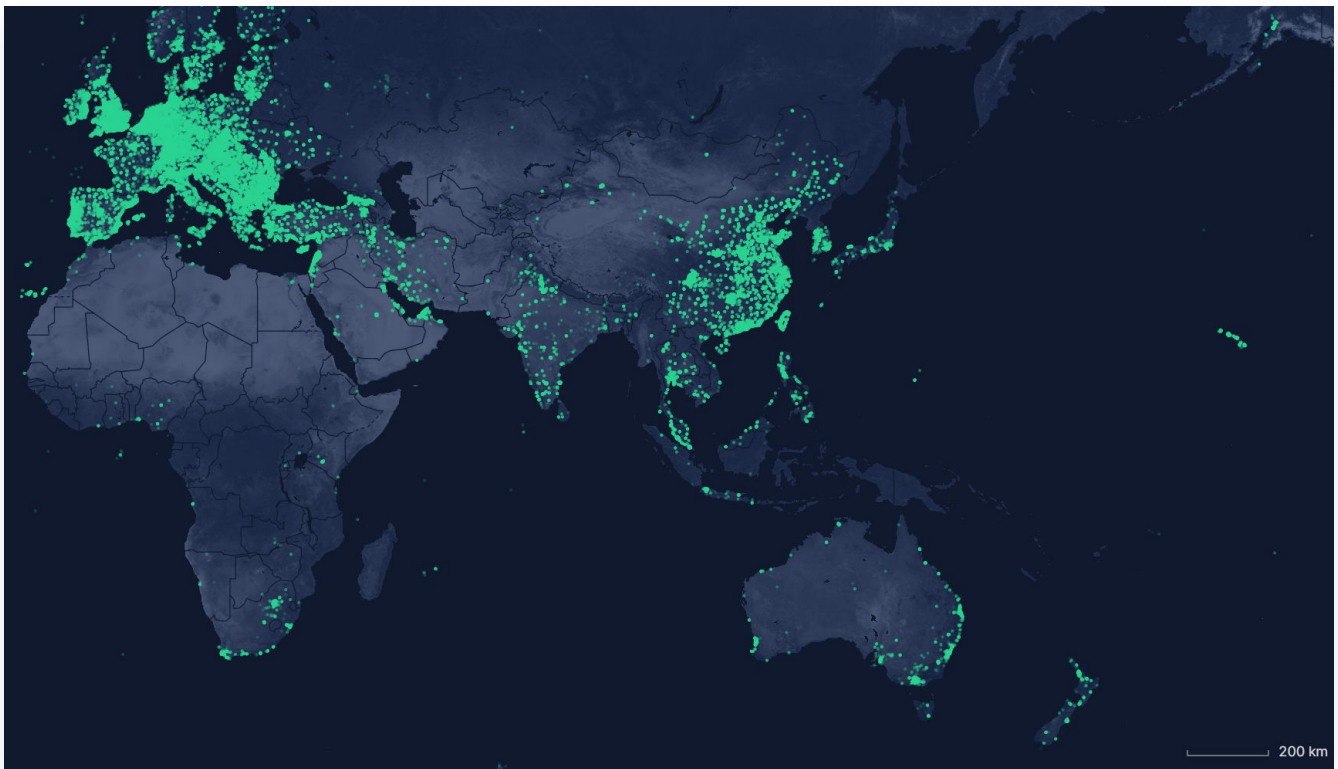
Decentralized Infrastructure

Helium

A large decentralized wireless infrastructure to run Internet of Things (IoT) and 5G networks, Helium enables devices anywhere in the world to wirelessly connect to the Internet or smaller networks without direct use of satellite location hardware or cellular plans.

Helium uses blockchain and tokenomics to encourage people to own and install hotspot devices, join the network, and offer network auditability and proof of coverage.

"We want to build peer-to-peer wireless network owned by everyday people."

Jamie Wilkinson Board member of the Helium Foundation

Source:
Helium coverage map (https://explorer.helium.com/) -
December 11, 2022

Helium

Project Goals

Helium aims to create decentralized networks of wireless infrastructure using IoT and 5G devices and networks with lower deployment costs and faster deployment speed than traditional networks. Crypto helps to distribute the decentralization and the incentives to maintain the network and provide coverage. This is done by:

- Paying tokens to people who provide network coverage.
- Paying tokens to people who verify that the hotspot providers are providing coverage.
- Offering auditing tools and tracking information on chain so that everyone outside of Helium can verify that the system is working.

While the project does not have a stated goal of creating wealth for individuals, it lowers the barriers to acquiring wireless infrastructure, deploying it, and participating in revenue sharing.

Implementation Strategy

Since 2019, Helium has had its own blockchain that's used, in part, to reward native HNT tokens to participating hotspot owners who provide Proof-of-Coverage. This differs from traditional telecommunication companies, who own the hardware required to deploy service and lease or own the land required to house it. With decentralized infrastructure, anyone can purchase the required hotspot devices to provide internet coverage or mobile coverage within the Helium network.

At first, only a handful of manufacturers provided the hotspot devices. Since governance token holders approved proposal HIP 19 in 2020, the community can vet and approve more manufacturers and vendors, which further decentralizes the provision of devices.[66] [67] As of this writing, 26 approved manufacturers sell 5G and/or long range wide area network (LoRaWan) hotspot devices to Helium participants.

People or organizations interested in providing coverage must purchase one of these devices, install them, and run them using service from existing internet or 5G providers. This establishes smaller networks and extends coverage in hard-to-reach areas.

OUTCOMES

People Who Benefit

- People can participate in the wireless infrastructure business by installing hotspot devices that provide wireless coverage. In exchange, they obtain a source of additional income.

- Helium can extend internet and mobile coverage in distant areas, which benefits residents of those areas.

Key Metrics
Business Metrics:

- **The number of hotspots for IoT coverage**. As of November 21, 2022, a total of 975,107 hotspots were participating.

- **The number of 5G radios**. As of November 21, 2022, a total of 7,111 radios were providing coverage.

Helium provides a coverage map for people interested in providing network service. It shows current hotspots in the network, the token income hotspot owners have received in the past month, and how many competitors someone would have if they join a network in the same area.

Policy & Industry Considerations

When the Helium 5G network gets deployed more extensively, it may expand internet coverage in rural or isolated areas. Lower initial costs for equipment and installation—plus the distribution of investment risk among the individuals and corporations who have bought and installed the devices—help make this possible. This coverage can contribute to increased internet adoption and mobile service subscriptions, allowing more people to work remotely and access new types of employment.

However ISPs are not obligated to follow net neutrality principles in the United States, which means that ISPs

could take action to block or throttle connections to the Helium network. [68] If that happens, it could affect Helium's ability to expand its coverage areas.

With decentralized infrastructure, IoT hotspot owners rely on wireless service they must acquire themselves. This makes the role of ISPs and net neutrality principles even more relevant to Helium's future.

Helium's growth path also relies on FCC licensed equipment running on unlicensed bands: radio frequency bands that can be used without filing directly with the FCC. Companies such as this one can thrive amid major telecommunication firms by using these bands. However, the telecommunication band regulation varies from country to country, and licensed bands are highly regulated and costly to acquire and operate. Helium considers the regulatory factor cost before exploring other markets outside of the United States for its 5G network. Helium's IoT networks are unaffected by this limitation, and there are almost a million hotspot devices scattered around the globe.

Regardless of where or when Helium expands, the network will take on additional liability as it takes on more participants. When individuals and new firms enter the industry of infrastructure provision, they might not realize the depth and breadth of their possible obligations. Last-mile providers would benefit from regulatory clarity around the liabilities they face vis-a-vis their networks' consumers and providers.

Business Data

Status: Active - in-market
Technology: Helium / Solana blockchains. LoRaWan / 5G
Location: California, United States.
Constituency: Enterprises and users of last-mile infrastructure. There are more than 967,000 hotspots distributed in 162 countries. Forty percent of the devices are located in the United States, while Germany, Canada, and the United Kingdom account for 6 to 7% each. 5G currently only in the United States.

Entity: Nova Labs Inc.
Business model: Network usage fees from industrial and commercial clients. Partnerships with telecommunication providers.
Financing stage: Series D
Funding sources: Andreessen Horowitz, Tiger Global Mgmt, Seven Seven Six, Ribbit, Pantera Capital, NGP Capital, Munich Re Ventures, Multicoin Capital, Liberty Global, Alumni Ventures, Khosla Ventures, GV, Deutsche Telekom
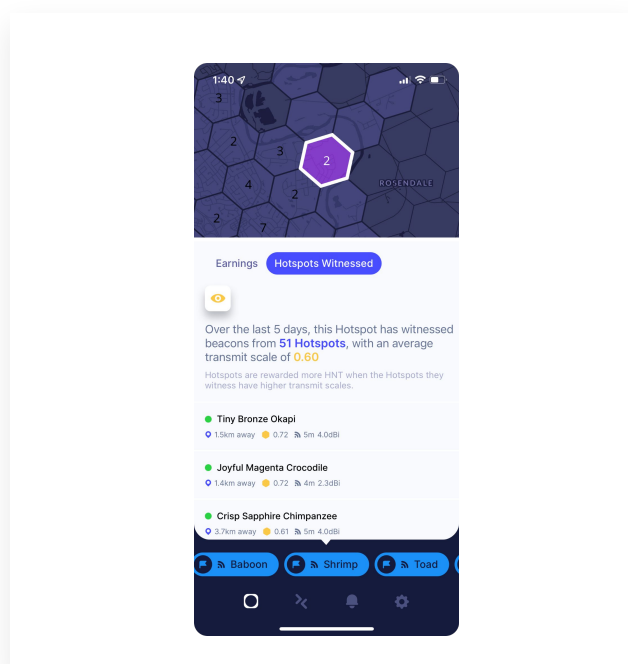**Capital raised:** US$ 368.2M

Resources and references

Website: https://www.helium.com
Additional Resources: Helium Dashboard

Source: Understanding Witnesses. Helium Documentation.

Decentralized Finance (DeFi)

Crypto Research
& Design Lab

Overview

Blockchain advocates are optimistic about crypto and Web3 as platforms for enabling greater financial engagement and inclusion. They see blockchain technology's potential to create economic stability and opportunities for historically excluded communities to build intergenerational wealth. [69][70]

Often referred to as decentralized finance or "DeFi," Web3 financial services include a variety of financial applications centered on cryptocurrencies and smart contracts built on blockchains. In contrast to traditional financial systems, DeFi removes third parties and centralized institutions from financial transactions, with the goal of democratizing access to financial tools, lowering service costs, and providing greater control and freedom over personal finances. Many DeFi projects also aim to make participation in wealth-building activities easier.

Existing financial tools and systems have been relied upon—via regulation and market forces—to protect consumers from fraud, adhere to

regulations, and promote capital formation. These features are not present by design in DeFi, which may cause challenges as the space matures.

However, existing financial tools and systems may discourage people starting with a disadvantage from building wealth. Financial institutions—and the business models and regulations that shape their practices—can create high barriers to account entry for historically marginalized people. Credit tools that build wealth are unavailable or more costly to those whom banks deem "risky," with credit models (page 48) largely favoring those who already have wealth—often reinforcing the racial wealth gap. [71]

Negative experiences with institutional financial systems can undermine trust. Communities subject to predatory and discriminatory bank practices are apt to avoid them altogether, and can be more receptive to new ways of building wealth, such as DeFi.[72]

How It Works

Tokens, software, and hardware enable the development of DeFi applications that people can use to access tools and services, store value, transact, and make payments. People must set up digital wallets to access these services, which may be built into DeFi platforms or accessed separately.

Emerging Web3 financial tools and services cover broad ground. While many offerings resemble[73] products in the

traditional financial marketplace, DeFi offers some novel approaches, including rewarding participation in maintaining the decentralized financial system. There are two primary audiences for DeFi products:

- **Depositors**: Products such as saving accounts allow people to make deposits and earn interest or fees for the liquidity they provide to protocols.
- **Borrowers and Traders:** People may borrow assets to improve their position and pay interest to depositors.

Opportunities for Income & Wealth Building
- As outlined in our report exploring generational wealth in the United States, many people encounter significant barriers to accessing tools and services within the existing financial system. New access to financial tools with lower costs and fees could provide new opportunities for underbanked and underserved people to build wealth.[74]
- People can also lend their assets to others and accrue interest like traditional financial institutions, adding their assets to lending pools distributed and governed by smart contracts. However, people lending in pools should carefully consider the risks associated with engaging with unregulated financial tools and services.[75]

Relevant Trends
- Beyond token trading and payments, many proposed uses have not yet gained traction. In the case of alternative approaches to underwriting credit, this may be due to the relative youth of the space.
- New financial offerings can be complex, and when paired with confusing user experiences, that complexity can serve as a barrier to adoption and use. People using new tools and services often struggle to discern whether products are functioning as described, creating additional risks to those engaging with them.[76]
- An uncertain enforcement-based regulatory space creates a risky environment for even the best-intentioned builders. A lack of industry norms is also conducive to hacks and fraud. While a lack of rules has contributed to rapid innovation in DeFi, a lack of stability and clarity is beginning to chill confidence within the ecosystem.[77] Perceived inconsistency of enforcement of existing financial regulations in the absence of clear rules has been criticized by industry players, elected officials, and fellow regulators concerned with protecting responsible innovation. [78] [79] [80]

Emerging Policy Implications
- **Regulation:** In the United States and other markets, centralized financial institutions such as banks and brokerages are heavily regulated, with regulations emerging after prior crises. Recent crashes, scams, and regulatory confusion in the DeFi space—such as the FTX crash and the sanctioning of Tornado Cash—have sharpened calls for regulation and the need for consumer protections.[81][82]
- **Protecting Innovation:** More coordination across domestic and international regulatory bodies can support the development of clear new rules for

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What's happening in this space

Examples to Watch

- GoodGhosting: A gamified savings pool platform offering interest rates of at least 7% for winners.

- Sandclock: A platform that focuses on a UX experience for people new to DeFi who want to earn yields on their cryptocurrency.

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products that do not fit existing definitions.[83] However, strict rules may hamper innovation.[84] Policy and legal experts are calling for a more nuanced approach to regulation alongside definitions that recognize the unique qualities of blockchain applications.[85]
- Key areas of potential regulation are likely to include:
  - Standardized definitions for various crypto and other DeFi products, recognizing existing asset classes may not suffice for novel products;
  - Recognizing that new and different approaches to regulation are necessary for DeFi applications without natural analogs in the existing financial system, especially to preclude the stifling of innovation;
  - Disclosure requirements to correct information asymmetries and allow consumers to make informed decisions.

Key Takeaways
- Web3 financial services are in their early days, with a rapidly evolving set of use applications, strong subcultures, and technical complexity that have led some observers and critics to make "Wild West" characterizations.[86]
- Clear rules-based policy will bring confidence to the space. Stability and certainty are needed to allow specific applications to mature.
- In its current implementation and due to the above points, only those savvy in both the technical and financial underpinnings of DeFi stand to benefit as depositors.

Other Emerging Uses

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Overview

The wide diversity of feasible applications for blockchain is not limited to the uses documented in this report. While their potential to support new forms of income and wealth creation is unclear, emerging Web3 applications such as intermediation and ancillary services, fractionalized ownership, and gaming have financial implications. These uses may evolve to include wealth creation opportunities as the space continues to mature.

Fractionalized Ownership

Concepts such as real estate investment trusts (REITs), timeshares, and even fractionalized securities have established a precedent for shared ownership of high-value assets. (Many of these solutions are investment contracts, and regulated as such.[87]) There are a number of Web3 projects that seek to democratize access to valuable on-chain assets by fractionalizing them, thereby lowering barriers to investment. Using smart contracts, NFTs and other tokenized assets can be split into multiple fractions that can be independently owned. Existing Securities and Exchange Commission (SEC) regulations on securities are likely to apply to fractionalized NFTs.[88]

Projects to Watch:
- **Mueshi**: Fractionalizing ownership of fine art assets with a focus on accessibility for people who may not traditionally be able to afford fine art.

- **RealT**: A fractionalized real estate ownership platform (requires accredited investor status).

- **EquityCoin:** A fractionalized real estate ownership platform focused on affordable housing as backing assets.

Gaming

Gaming is an enormous industry, with a market of 2.6 billion gamers and valued at $56 billion in 2021.[89] As players turn to gaming for income, many Web3 projects and companies seek to capture a share of this market. Within the Web3 ecosystem, hundreds of millions of dollars have been raised with the goal of deploying capital to gaming projects. [90] [91] [92] Despite this industry enthusiasm, demand for Web3 gaming has not materialized. Negative perceptions of crypto and Web3 may discourage gamers, as can a lack of familiarity with how Web3 works.[93] So-called "play-to-earn" games have also received some criticism for being scams or extractive, in some cases requiring up-front payment for games that do not materialize, or requiring significant investments of time. [94]

Projects to Watch:
- **Animal Zoo**: Play-to-earn while minting animal characters as NFTs.

- **Axie Infinity**: Play-to-earn while minting an NFT character to battle other players.

- **Afrikan Village**: An MMORPG focusing on Africa with a competitive e-sports model for rewards and incentives. The game includes a marketplace where players can buy, sell, and trade unique digital assets, known as non-fungible tokens (NFTs).

- **Proof of Learn**: A Web3 education platform where students can earn crypto rewards for completing courses, and earn NFT credentials that can help them demonstrate skills to Web3 employers.

Intermediation & Ancillary Services

With entirely new industries and financial ecosystems emerging on-chain, new forms of intermediation and support services are developing in parallel. Some of these projects seek to bridge the gaps between traditional legal frameworks and emerging Web3 applications. Their goal is to make it easier for people to participate in on-chain monetization and ownership.

As more regulations are created for blockchain technology, new legal requirements will continue to emerge, increasing the need for intermediary tools to support accessibility to the new financial economy.

Projects to Watch:
- **Openlaw**: Integrates legal provisions into smart contracts. Developed an API for seamless integration of contract writing and smart contract coding.

- **Jur**: An organization seeking to establish a network jurisdiction for the Web3 economy to examine enforcement.

- **Kleros**: A decentralized arbitration service for the disputes of the Web3 economy.

- **Filecoin**: A decentralized cloud storage network.

- **Arweave**: A type of cloud storage that backs data with sustainable and perpetual endowments, allowing users and developers to truly store data forever.

Conclusion

The Path Ahead

The projects documented in this report demonstrate valuable applications for blockchain technology, moving beyond novelty and focusing on real challenges of making wealth-building more accessible and sustainable for everyone, including historically marginalized communities.

However, questions remain around why there isn't more broad progress seen across the Web3 industry. The events of the past year have served as a reminder that in any new technology space, moving fast and breaking things is not always a valuable approach—a focus on fundamentals and on real challenges is key.

CRADL's report "The Path Ahead" for 2023[95] will take a wide assessment of the drivers of this "why," identifying the big picture questions policymakers and industry should be considering:

- *How can Web3 tooling address actual problems in need of solving, as a means and not an end in itself?*

- *How can Web3 attract builders and leaders who understand real problems in need of solving?*

- *What infrastructure is required to empower Web3 builders, and what does a "full stack" look like?*

- *How can regulators protect consumers without stifling people building the infrastructure?*

- *How can tokenomics design move away from financialization to more tactfully address real world value creation and support new models for distribution of resources?*

Appendix

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