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To:

Office of Science and Technology Policy
725 17th St., NW
Washington, DC 20500

Date:

March 3, 2023
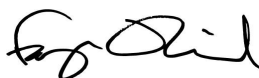
RFI Response: Digital Assets R&D Agenda

Coinbase Global, Inc. welcomes the opportunity to respond to the Office of Science and Technology Policy's Request for Information on "Digital Assets Research and Development." Crypto and Web3 technologies have incredible potential to innovate the finance and technology sectors, so we commend OSTP's interest in this topic.

We focus our response on the first two questions in the RFI. First, we discuss four specific goals, sectors, and applications that can be improved using crypto – these include personal identification, cross-border payments, environmental conservation, and the healthcare industry. Next, we discuss the risk the United States faces if the digital asset economy is pushed outside of the United States to international jurisdictions.

We believe that each of these topics is worthy of additional research and exploration so they can be better understood.

We appreciate your thoughtful examination of each of these issues, and look forward to continued engagement.

Sincerely,

Faryar Shirzad
Chief Policy Officer
Coinbase Global, Inc.

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Introduction:

Coinbase welcomes this chance to discuss research and development opportunities for the digital asset ecosystem. Crypto and Web3 have tremendous potential to improve our nation's technology infrastructure across a variety of domestic and international uses. Research on how this technology can develop, and ultimately benefit the public, will help unlock use cases that have not yet been placed at the forefront of the crypto conversation.

We are focusing on the first two questions set forth in OSTP's request for information:

- Our discussion on "goals, sectors, or applications that could be improved with digital assets and related technologies" addresses how digital asset technology can improve identity verification, cross-border payments, environmental conservation, and transmission of healthcare data. We encourage additional research on each of these topics.

- Our discussion on "goals, sectors, or applications where digital assets could introduce risks or harm" focuses on the threat to the United State's economic, national security, and technological development interests if crypto activities leave the United States as a result of a poor regulatory environment and become disproportionately located in international jurisdictions. We strongly encourage additional research on this.

How Coinbase Thinks About Crypto and Web3:

Coinbase plays an integral role in the global cryptoeconomy as the largest and only publicly-traded crypto exchange in the United States. Coinbase was founded in 2012 as an easy and trusted place to buy and sell Bitcoin. Since then, Coinbase has helped fuel the development of an entire industry with thousands of different blockchains, tokens, and projects. This includes, for example, Base – an Ethereum Level 2 network that is designed for developers to build decentralized applications onchain.

We believe that crypto will be based on the following three pillars, which recognize crypto as:

1. <u>Investment</u>. We want to empower everybody to achieve economic freedom through investing in and using crypto. Crypto tokens serve as an investment in the underlying network because crypto assets are the unit of account that allow networks to operate, thus facilitating other use cases.

2. <u>New financial system.</u> Crypto is opening up a new financial system. This means creating digital tools and services that enable people to engage in financial transactions, such as extending or receiving credit, using payment instruments, and settling payment obligations, all in a safe, compliant way. Decentralized finance and other new technologies will drive innovation and expand opportunities to improve our financial system.

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3. <u>App platform</u>. Crypto and blockchain technologies will provide the next app platform. Fundamental to crypto is the decentralization of ownership, which gives individuals the opportunity to develop new financial and non-financial applications. Coinbase is building tools that enable individuals, institutions, and developers to plug into the crypto infrastructure to create new products and more easily use existing ones.

Much of the public conversation around crypto and Web3 is focused on the first and second pillars, related to crypto's role in finance. These areas contained the first use cases for both crypto and Coinbase, as our company was originally conceived as a platform to buy/sell Bitcoin. To be sure, these uses remain critically important. But crypto has transformed beyond just finance. Our response therefore places special focus on the third pillar, crypto as an app platform. This is the area that seasoned entrepreneurs and young developers alike are flocking to in order to harness the decentralized capabilities of Web3 and transform various facets of the economy and internet.

Question 1. Goals, Sectors, or Applications that Could be Improved with Digital Assets and Related Technologies:

Thirteen years ago, the Bitcoin whitepaper laid out how crypto assets and blockchain technology could immutably transfer value over the internet without using a centralized intermediary. In the years that have followed, a variety of use cases have emerged using this decentralized method for transmitting and storing information. In this section we explore four areas that are particularly worthy of additional research: (1) decentralized identification, (2) cross-border payments, (3) environmental conservation, and (4) healthcare.

Decentralized Identification

Decentralized identification ("DiD") offers a new form of identity management that relies on blockchain technology to solve the security, privacy, and consent issues presented by paper and digital IDs. DiD gives individuals control over their identity, rather than outsourcing identity management to a centralized authority like big tech.[1]

DiD works by relying on trusted third parties, called "issuers," to verify key identifiers. These issuers could include government agencies, universities, employers, and banks. The process of creating a DiD begins when an issuer distributes an identifying credential, such as a digital birth certificate or proof of employment. That credential is stored on a blockchain and accessible via the user's digital wallet. When a third party needs to request identifying information, like proof of good credit in the context of making a major purchase, the user presents the credential to the requester by accessing the information stored on the blockchain. This proof can be generated in a number of easily accessible ways, including as a QR code on the user's phone.

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[1] *See Decentralized Identity, What's at Stake?,* International Association for Trusted Blockchain Applications (Nov. 2020).

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Because the credential is stored on the blockchain and controlled by the user, there is no need for other third parties to keep a record of that credential in their own siloed databases. There is also no need for tech companies to provide federated login solutions for their products. DiD shifts the source and management of verification from centralized institutions to a decentralized ledger, while ensuring that identifying information stays fully within the control of the individual.

DiD technology is growing rapidly, with public and private innovations poised to integrate DiD into our everyday lives. The [Ethereum Name Service](#) (ENS), for example, provides the convenience of cloud-based login services while letting users retain control over the information they share with other websites. ENS makes it easy to read and share crypto addresses by mapping an easily recognizable name, such as "Christopher.eth," onto a machine-readable ENS address, which is a 40-character string of numbers and letters.

ENS has a number of potential uses in Web3. The start-up [Spruce](#), for example, has developed a "sign in with Ethereum'' feature that consumers can use to access traditional web services using their Ethereum wallet address. This means centralized Web2 sites can verify a user's identity and other relevant information without needing to store sensitive personal or financial information on their own servers. In a world where information is regularly stolen from centralized servers as a result of cyber attacks and data breaches, storing that information on fewer servers provides tangible value.

Governments are also starting to embrace DiD. A project sponsored by the European Commission is developing interoperable DiD solutions that would facilitate faster and more reliable security checks for EU citizens.[2] And as part of its national blockchain strategy, India is building a decentralized, digital platform that will host IDs and documents related to education, healthcare, and agriculture.[3] Cities like Buenos Aires are also spearheading efforts to construct DiD platforms in order to give residents access to city services and financial service providers.

Other innovative DiD projects include:

● Using DID to improve financial compliance programs at banks and virtual asset service providers, including wholly decentralized platforms. Once a customer undergoes a "know your customer," or KYC, evaluation at one institution, the institution can issue an attestation token that lets other banks or service providers rely on that same verification. These KYC analyses have the potential to be significantly more effective because they use data stored on the blockchain that is available immediately and shows a complete, constantly updated record.

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[2] *See* [The European Self-Sovereign Identity Framework Lab](#). The selective sharing capability of DiD is especially useful for federated governments like the United States, EU, and others, where personal information is often stored by multiple countries or states with varying security infrastructures.

[3] *See* [National Strategy on Blockchain, Ministry of Electronics & Information Technology](#), Government of India (Dec. 2021).

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- Humanitarian uses, including the use of digital credentials and biometric data to prevent the trafficking of vulnerable children by eliminating the forgeability of Power of Attorney and identity documents that typically enable illegal border crossings.[4] Another project is providing a blockchain-based platform to support drivers' licenses and land titles for the 400 million people in Africa who lack paper identification.

- In the "identity of things" domain, building a trusted vehicle data source to confirm the accuracy of used car data and the safety of vehicles by using the blockchain to track parts on the supply chain and record information on vehicles over time, including repairs, mileage, and ownership.

Recommendation: Additional research into how decentralized identification can be used by federal, state, and local governments, and the benefits this technology can bring when more fully incorporated, including for low income populations and other groups that are less likely to have conventional forms of identification.

Cross-Border Payments

The legacy process of sending money abroad is complex and costly. Traditional payment networks are relatively efficient at connecting domestic financial institutions, but rely on a slow, complicated network for international transfers. Differences in the legal requirements across countries make KYC and anti-money-laundering (AML) obligations more costly, and contractual recourse is uncertain when payment settlement fails. In addition, many remittance recipients are unbanked and live far from cashout points, so they find it difficult to convert their remittance payment to local cash currency.

For these reasons, the market for remittances has been dominated by large banks and money transfer operators like Western Union and Moneygram. The lack of competition results in little incentive for these large organizations to change their practices.

According to the World Bank, the cost of sending $200 cross-border "continued to be too high", averaging 6.4 percent in 2021.[5] While these costs are slowly decreasing over time, they are more than twice the 3 percent target set by the U.N. Sustainable Development Goal. Costs also vary considerably among different regions, service providers, and means of payment. The average cost of sending money using banks — the most expensive way to remit money — is over 10.5 percent.[6]

Crypto remittances can change this. Crypto enables individuals to send and receive remittance payments in a more efficient, less costly manner, from anywhere in the world. Assets stored in

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[4] Decentralized IDs for Self-Sovereignty of Future Generations, Blockchain for Humanity Global Challenge.

[5] *See* Remittance Prices Worldwide Quarterly, the World Bank (June 2022).

[6] *Id*.

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crypto wallets not only preserve value, but provide recipients the ability to participate in staking or other yield-producing services that are often not otherwise available to those who receive remittances. For those who live in high-inflation countries, cutting those losses that would otherwise be experienced due to inflation is critical.

Crypto remittance use is growing because of its practical advantages over conventional remittances, particularly in less developed countries or where there has been societal upheaval of some sort.[7] This has been demonstrated during the crisis in Ukraine, which first legalized digital assets in March 2022, in response to the millions of dollars worth of crypto aid that poured into the country at the start of the crisis.[8] The Ukrainian government found itself with urgent need of aid assistance, and yet its banking system and cross border flows were impeded. To deal with this urgent situation, the government turned to blockchain technology, and has become one of the most dramatic examples of the use case crypto. Since the start of the Ukrainian crisis, the country has received millions in financial aid through crypto, and used crypto to purchase critically needed humanitarian and defensive supplies.

Another example that demonstrates the power of crypto remittances can be seen in sub-Saharan Africa, which saw a 1,200% increase in cryptocurrency payments in recent years, placing countries like Kenya, South Africa, and Nigeria among the top nations for crypto use.[9]

The Coinbase Institute has previously estimated that consumers can save between 2-8 percent in fees when they send funds using crypto when compared to traditional payment methods.[10] For a payment of $200, that equals up to $16 in additional money going directly to the recipient rather than to intermediary institutions. Making remittance payments in crypto can also save users time because transfers happen instantly. And unlike other types of digital payments, crypto transfers are more easily accessible by the unbanked.

Recommendation: Additional research into the benefits of crypto remittance payments, and how those payments could lower fees and provide increased access to funds for populations in need, such as migrant populations.

Environmental Conservation

There has been significant public discussion regarding crypto's impact on the environment as a result of the energy required to conduct proof of work transactions. But the industry is largely transitioning

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[7] Crypto Emerging as a Favored Form for Cross-Border Remittances, Pymnts (Oct 2021).

[8] Ukraine Legalizes Crypto Sector as Digital Currency Donations Continue to Pour in, CNBC (Mar 2022).

[9] The Role of Cryptocurrencies in Sub-Saharan Africa, Brookings Institute (March 2022).

[10] Crypto and Remittances, Coinbase Institute (June 2022).

to consensus mechanisms like proof of stake, which use up to 99% less energy. Even proof of work mechanisms have a number of attractive features because of their predictable energy load.[11]

In fact, crypto can promote a number of use cases that improve energy and environmental conservation efforts by allowing individuals to more readily participate in those efforts and take ownership over conservation initiatives. These use cases are developing quickly, but current examples include unlocking access to wholesale energy markets, capturing carbon credits on-chain, and incentivizing recycling.

Capturing Carbon Credits On-Chain: Carbon markets are trading systems in which carbon credits are bought and sold. One tradable carbon credit is the equivalent of reducing or avoiding one ton of carbon dioxide (or the equivalent amount of a different greenhouse gas).

Traditional carbon markets suffer from a lack of validity and transparency, and protocols put in place by governing bodies to establish validity within these markets have unfortunately seen little success.[12] In some instances credits are double counted, meaning the actual tonnage of emitted carbon being offset is lower than the number of available carbon credits would suggest. The quality of land that is used for a given carbon credit is not necessarily validated, so it is difficult to determine if a given carbon credit truly offsets the amount of greenhouse gas the credit is supposedly designed to counter. It is also increasingly difficult for smaller participants to enter the carbon market because these markets are largely catered toward large corporations.

NFTs and blockchain technology can help solve these problems. Blockchain provides a permissionless method by which carbon credits can be viewed, transferred, and traced, that is more readily accessible than traditional markets.

Web3 companies are using this technology, today, to make the carbon credit market more effective and accessible. Outsyde, Inc., for example, acquires and manages at-risk lands. Once acquired, Outsyde fractionalizes ownership of the acquired land and then distributes that fractionalized ownership interest as an NFT on the Algorand blockchain network. Using the Algorand network's microequity exchange, Outsyde can mint up to 1 million shares for each piece of property. At the end of 2022, Outsyde oversaw more than $45 million in land assets across the United States. As a result of the efficiencies afforded by its use of blockchain technology, 92% of every investment dollar it spent went toward acquiring and conserving at-risk lands.

And Outsyde is not the only example. International Finance Corporation, a World Bank Group member that focuses on investment in less-developed countries, teamed with the Chia Network last

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[11] *See* Crypto and the Climate, Coinbase Institute (May 2022).

[12] *See, generally*, Voluntary Carbon Markets in ASEAN: Challenges and Opportunities for Scaling Up, Imperial College London (July 2021).

year on the Carbon Opportunities Fund, which is also designed to provide blockchain-based carbon credits.[13]

Unlocking Renewable Energy Markets: Energy markets have long been operated by a system of producers, intermediaries, and consumers. Wholesale energy producers create electricity and other forms of energy using a variety of mechanisms (fossil fuels, solar, wind, etc). Grid operators transport the energy product over a relatively long distance using physical power grids, and then local utility companies sell it to the consumer, based on the utility company's ability to more efficiently transact with consumers in that market. The utility company, in other words, acts as an intermediary.

In many communities the number of utility companies is relatively limited, and even more limited are the options for choosing where your energy ultimately comes from. But the blockchain has the ability to change that.[14]

A variety of new energy sources are penetrating the power grid, and with those new options comes the opportunity for consumers to exercise their preference as to where their energy comes from. There is a demonstrated interest among a large number of Americans in using more renewable, environmentally friendly energy sources. Just as blockchain technology can enable decentralized, peer-to-peer financial transactions, so too can it effectuate peer-to-peer exchanges of monetary value in return for energy from a given provider. This enables consumers to exercise a greater degree of preference in where their energy comes from, thus further unlocking the renewable energy market and allowing consumers to select the provider that offers the most competitive price.

The first platform to take advantage of this peer-to-peer path toward energy independence was Suncontract, which has seen great success in Slovenia and throughout Europe, and currently has more than 5,000 customers.

Incentivising Recycling: Recycling plays a major role in helping to avoid unnecessary waste. Government programs have encouraged an increase in recycling participation as a result of policy decisions designed to encourage communities to participate in recycling programs. But while recycling is on the rise, individual citizens do not necessarily have sufficient motivation to properly dispose of their waste.

The blockchain can enable governments and private enterprise alike to reward people for eco-friendly actions like recycling. Many different types or organizations are willing to reward people for disposing of their waste in a responsible, eco-friendly way – including garbage recycling plants, municipalities, companies, and even NGOs. The blockchain can thus be used to connect those organizations with consumers.

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[13] Carbon Opportunities Fund Launches First-of-its-Kind Investment Platform to Issue Tokenized Carbon Credits, International Finance Corporation (Aug 2022).

[14] See, generally, Blockchain Based Decentralized Local Energy Flexibility Market, Claudia Antal Pop, et al (Nov 2021).

Crypto start-ups [Empower](#) and [Recereum](#) both use blockchain based platforms to connect entities that receive waste to individual consumers. Consumers using these services can scan a QR code when they submit waste to be recycled to a participating organization. The information regarding who disposed of the waste is then added to the blockchain. When the physical waste and corresponding QR code are received by the participating organization, the organization can use the QR code and corresponding blockchain information to confirm receipt, identify the consumer who provided the waste, and reward the consumer for recycling using crypto, over the exact same network that was used to relay the information regarding the waste.

Rewards-driven recycling is not new or unique to the blockchain, but the ability to relay both waste and financial information using the same rail is unique. Combined with the decentralized, efficient nature of the blockchain, a blockchain-based system of reporting waste information and providing financial rewards is more easily scaled than other options, allowing blockchain recycling incentives to more readily reach small communities and developing nations.

Recommendation: Additional research into the benefits of incorporating crypto and blockchain on environmental conservation efforts, particularly with regard to capturing carbon credits on chain, unlocking renewable energy, and incentivising recycling.

Healthcare

The current state of healthcare records is disjointed. The industry suffers from a lack of infrastructure and common standards that would allow for the safe transfer of highly personal health data. In most cases data is held in centralized, siloed locations, where it cannot be easily shared or distributed. Medical providers can find themselves receiving information that is years old – thus no longer helpful to the provider – while better, more up-to-date information sits untapped.

The Office of the National Coordinator for Health Information Technology ("ONC"), a staff division of the Department of Health and Human Services, has recognized this problem. ONC published a roadmap for improving interoperability in healthcare in 2015,[15] and has continued to address the interoperability problem since then. In 2021, ONC launched a new initiative aimed at achieving certain interoperability outcomes by 2030.[16] ONC received more than 700 submissions from the public on the interoperability challenge as part of that initiative, and then summarized the public's feedback. The summaries included the following:

- Individuals need internet-based access to their past and present electronic health information from clinical and administrative sources.

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[15] [Connecting Health and Care for the Nation, A Shared Nationwide Interoperability Roadmap](#), Office of the National Coordinator for Health Information Technology (2015).

[16] [Health Interoperability Outcomes 2030](#), Office of the National Coordinator of Healthcare Technology (2021).

- Individuals need the ability to seek and receive care (e.g., telehealth) without needing to gather and provide their health information themselves.

- Prior to administering care, an individual's care team should have access to updated electronic health information that reflects the latest changes in their health and care.

- Individuals need tools to set preferences and control how, with whom, and for what purposes their electronic health information is shared.

- Paper forms should no longer be used prior to receiving care.[17]

Crypto and blockchain technology can accomplish these goals. Blockchain networks can be used to store and transmit health data using smart contracts and other operations in order to solve the interoperability problem.

When a healthcare provider receives information from a patient in connection with an examination, diagnosis, or other relevant medical interaction, the provider would transmit the relevant information to a healthcare-based blockchain, where it is stored and connected to the identity of the patient in question (using the same DiD protocols discussed above). Using cryptographic encryption, personally identifiable information (PII) and Protected Health Information (PHI) would not be accessible unless the patient, who has the ability to control their information, choses to share it.

Thus, the flow of information goes as follows:

(1) Healthcare provider examines, diagnoses, or provides other health service, and tracks clinical data in its own centralized IT system;

(2) Certain data from that centralized system is automatically sent to the blockchain using APIs, and matched with the patient's DiD. The data information is stored on the blockchain and protected by encryption;

(3) Other health organizations can submit queries to the patient's public DiD in order to receive relevant information about the patient;

(4) The patient controls what information to send, and whether to submit information at all, using their private keys.

Innovators have started to build solutions specifically for the storage of healthcare information and other healthcare needs. Patientory allows users to store medical records on the "PTOYMatrix" blockchain network using information from their healthcare provider. The user has the ability to assign that information to their private key and share it later. Medicalchain provides a similar service, including verifying insurance information in order to avoid delays in care. And WholeCare focuses on using the blockchain to provide information specifically to caregivers, so that caregivers know relevant information regarding medication protocols, doctor's appointments, and other details needed to provide care for those who need it.

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[17] *Id.*

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Recommendation: Additional research into the benefits of using crypto and the blockchain in the healthcare industry, including possible public/private collaborations.

Question 2. Goals, Sectors, or Applications Where Digital Assets Could Introduce Risks or Harms:

The crypto industry has recently experienced a series of public failures, and in some cases, deliberate frauds, that caused some of the public to doubt the industry. That doubt is on full display in certain statements released by the Administration, including its roadmap to mitigating cryptocurrency's risks.[18] But the Administration should not allow the acts of those like FTX to cause the United States to over-rotate, and push out an industry with the potential to bring forth incredible innovation. Other jurisdictions are currently enacting and operationalising regimes that will both protect consumers and encourage the development of the crypto industry within their borders. This includes the European Union, Brazil, Australia, the United Kingdom, Singapore, UAE, Japan, and others.

Thus, we encourage OSTP to research the potential ramifications that could be experienced if crypto is pushed outside of the United States.

Coinbase has provided analysis on this issue. In January, Coinbase's Chief Policy Officer Faryar Shirzad published a piece explaining why maintaining a strong crypto industry is critical to maintaining the national security of the United States.[19] We reiterate those points here.

The presence of crypto exchanges and other intermediaries in a particular country will ensure that critical on- and off-ramps to the crypto economy operate under domestic rules and comply with any national security controls or laws that a country may impose. This helps to ensure that governments can stop bad actors who wish to move illicit funds or otherwise engage in illegal activities, thus protecting our national security objectives.

Crypto markets are also largely U.S. dollar-denominated. Around 95 percent of all crypto trades are conducted with the use of dollars or dollar-denominated stablecoins. By embracing crypto, the United States can help to ensure it retains the dominance of the dollar in crypto, thus ensuring crypto markets reinforce the strength of the U.S. dollar. At a time when central banks around the world are also exploring the potential to issue their sovereign currency in digital form – known as central bank digital currencies (CBDCs) – embracing dollar-denominated crypto assets is critical. Adoption of blockchain and distributed ledger applications in the U.S. will also ensure that its finance and technology systems remain on the cutting edge.

Recommendation: Additional research into the risks faced by the United States if the crypto industry is pushed out of the United States and relocates mostly overseas.

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[18] The Administration's Roadmap to Mitigate Cryptocurrencies' Risks, Brian Deese, et al (Jan 2023).

[19] National Security in the Age of Digital Innovation: The Critical Role of Crypto, Faryar Shirzad (Jan 2023).