

RESPONSIBLE ADVANCEMENT OF U.S. COMPETITIVENESS IN DIGITAL ASSETS

U.S. Department of Commerce



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I. Executive Summary

Executive Order 14067 (EO 14067), “Ensuring Responsible Development of Digital Assets,” (EO 14067) encourages a whole-of-government approach to this emergent sector and provides recommendations on future actions. This report is a response to Section 8(b)(iii) of the Executive Order and pertains to the competitiveness of U.S. industry in digital assets, in particular how the United States can both reinforce leadership in the global financial system as well as foster technological and economic competitiveness.

Digital assets are often built upon technologies that aim to operate in a distributed manner, including distributed ledger technologies (DLTs), which encompass but are not limited to blockchains.¹ Notwithstanding technologies that support such a distributed, or even decentralized approach, digital assets are subject to the same economies of scale and network effects that other financial services and markets are, often producing consolidation and concentration over time. Growth of the digital asset industry to-date has occurred in regional clusters, with certain nation-states perceived as attractive locations from which digital asset businesses can operate in laxer regulatory environments than other locales.² As the sector matures, the prospect of digital assets’ safe integration into the broader economy is an open question. Risks related to consumer and investor protections, cyber and data security vulnerabilities, and digital assets facilitating illicit activities are tangible risks to the soundness and stability of the US financial system and, if unaddressed, could affect the United States’ position in the global financial system. However, if steps are taken to effectively manage these and other risks, including bringing developers and operators of digital assets into compliance, digital assets and technologies may be an important support to continued U.S. leadership in the global financial and regulatory system.

In parallel with the emergence of the privately-developed digital assets sector, numerous countries, including the United States, are considering central bank digital currencies (CBDCs), including research and technical experimentation, as well as the implications of adoption of a CBDC for U.S. policy objectives. Considerations related to CBDCs are not covered in this report but are discussed in other reports required by the Executive Order, including the U.S. Treasury’s EO 14067 report on the future of money and payments and the Office of Science and Technology Policy’s EO 14067 report on the technical design choices underlying a CBDC, as well as the Federal Reserve’s January 2022 discussion paper titled *Money and Payments: The U.S. Dollar in the Age of Digital Transformation*. As discussed in those reports, a U.S. CBDC could influence domestic digital asset markets.

¹A blockchain is a distributed digital ledger of cryptographically-signed transactions that are grouped into blocks. Each block is cryptographically linked to the previous one (making it tamper evident) after validation and undergoing a consensus decision. As new blocks are added, older blocks become more difficult to modify (creating tamper resistance). New blocks are replicated across copies of the ledger within the network, and any conflicts are resolved automatically using established rules. <https://nvlpubs.nist.gov/nistpubs/ir/2018/NIST.IR.8202.pdf>.

² For example, in 2021 FTX relocated to Bahamas, Huobi is a Seychelles-based cryptocurrency exchange, and Binance is registered in the Cayman Islands.

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Digital assets can be held as investments or used as collateral for digital asset-based loans. These use cases are supported by a combination of technologies, including DLTs and their associated consensus mechanisms. They also are used in several financial activities, including digital asset trading, lending, and borrowing platforms, digital wallets and other custodial services, and so-called decentralized finance (DeFi) protocols. Outside of explicit financial use cases, the ability to *tokenize* many different types of assets could lead to a world in which many physical assets (i.e. objects) have a *digital counterpart*, thus opening the door to numerous use cases for tracking and recording actions on those assets. In this scenario, many aspects of the economy could be impacted by digital assets, and U.S. competitiveness in this space and the broader area of financial technology (fintech) could be important to continued U.S. economic leadership.

Given these diverse potential use cases as well as consumer, investor, and business interest in digital assets, regulatory authorities around the world are considering conditions that influence digital asset use and identifying paths to bring them into compliance with existing regulations, or where there are gaps, to regulate digital assets and their related products. Approaches and priorities may vary across jurisdictions, and the sector faces risks associated with money laundering and terrorist financing, market manipulation and other misconduct harming consumers, investors, and businesses, including through cybersecurity vulnerabilities. These risks, left unchecked, may discourage growth or potentially encourage it in a manner that harms consumers, investors, underserved communities, or, more broadly, U.S. economic interests.

This report lays out a framework to foster U.S. competitiveness in digital assets in a manner intended to facilitate responsible development of the industry in accordance with the values and policy objectives outlined in EO 14067. This framework is based on two key pillars of U.S. competitiveness: first, leadership in operating a regulatory environment that has rules for safe, efficient, and equitable markets; and second, technological leadership encompassing research and development, technical standards development and promulgation, innovation, and large-scale activities. Organized around four categories, the framework details actions that, if taken, could advance the competitiveness of the U.S.-based digital asset industry and further a whole-of-government agenda for digital assets:

1. **Ensuring effective regulatory approaches and addressing regulatory gaps** will support the development of a healthy market that fosters competition and responsible innovation in digital assets while safeguarding consumer and investor interests, market integrity, financial stability, and national security. Such a marketplace could provide the United States with the same competitive advantage in digital assets that it currently holds in traditional finance, creating an important advantage for U.S. participants in the global financial sector. Promoting the same kind of healthy competition for the digital assets sector that currently exists in traditional financial services will further sharpen the United States' competitive edge as a global leader in financial markets.

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2. **International engagement and trade promotion** will provide opportunities to include U.S. digital asset firms, where appropriate and in line with U.S. policy objectives, in trade promotion activities, helping to cement U.S. industry leadership while also creating new commercial opportunities and encouraging strong regulation and supervision worldwide.
3. **Meaningful public-private engagement** will ensure that digital asset stakeholders across sectors and Federal departments and agencies can regularly meet to discuss issues of import to the digital asset sector and identify areas where coordination may need to occur. Commerce can further support this objective through its bureaus' participation in technical fora and its nationwide geographic footprint to enable education and outreach to diverse stakeholders.
4. **Sustained U.S. leadership in technological research and development (R&D)** will be advanced through activities such as increased investment in government, academic, and industry-led research, workforce development, and digital literacy. Leadership in these activities will ensure that considerations of particular importance to the United States, such as privacy, security, resilience, transparency, and accountability, are taken into account early in the development of new technologies and their applications in the financial services sector and elsewhere. These activities will foster leading contributions to technical standards development and help facilitate the U.S. government's early access to expertise and research insights related to digital assets, FinTech, and emerging technologies.

II. Introduction

On March 9, 2022, President Biden signed Executive Order 14067, "Ensuring Responsible Development of Digital Assets" (EO 14067). EO 14067 sets forth six policy objectives for the United States with respect to digital assets, including a) the implications of developments and adoption of digital assets for the protection of consumers, investors, and businesses in the United States and the implications for equitable growth; b) identifying specific financial stability risks and regulatory gaps posed by various types of digital assets and providing recommendations to address such risks; c) the mitigation of digital-asset-related illicit finance and national security risks; d) the reinforcement of United States (U.S.) leadership in the global financial system and in technological and economic competitiveness; e) the promotion of access to safe and affordable financial services; and f) the support of technological objectives that promote responsible development and use of digital assets.

Section 8 of EO 14067 establishes specific policy objectives regarding U.S. competitiveness with respect to digital assets and international cooperation. Among other findings, it notes that "technology-driven financial innovation is frequently cross-border" and that U.S. international engagement on digital assets should address key regulatory concerns while promoting core

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democratic values, consumer/investor/business protection, platform interoperability, and safety of the global financial system (Sec. 8(a)(i) and 8(a)(v)). Accordingly, Section 8(b)(iii) directs the Secretary of Commerce (the Secretary), in consultation with the Secretary of State, the Secretary of the Treasury, and the heads of other relevant agencies, to “establish a framework for enhancing United States competitiveness in, and leveraging of, digital asset technologies.” The Secretary presents this document in fulfillment of the direction in Section 8(b)(iii).

III. Risks, Opportunities, and Challenges

Developments in distributed ledger and other emerging technologies may have the potential to disrupt or transform certain sectors and industries. Advancements in blockchain technology in particular could offer the possibility of increased transparency and the immutability of records across a medley of use cases – including supply chains, document provenance, and renewable energy distribution.³ Decentralized Autonomous Organizations (DAOs) purportedly seek to distribute management and governance to their members in an effort to increase transparency and member control. Nonfungible tokens (NFTs) and smart contract implementations may also offer innovations in product and intellectual property verification.⁴

However, as noted in the U.S. Treasury’s EO 14067 report on consumer, business, and investor protection, opportunities in the financial services sector associated with distributed ledger technology (DLT) are accompanied by a set of risks. Some of these risks are unique to the digital asset ecosystem, while others are similar to those risks experienced in traditional financial markets or by the U.S. economy more broadly.

Consumers, investors, and businesses are vulnerable to improper conduct in the digital asset ecosystem, which includes the lack of transparency, market manipulation, fraud, theft, hacks, and scams. Fraudulent products, false or misleading advertising, terms of service, and exaggerated claims of returns or income potential can be particularly detrimental to vulnerable segments of the population, including those who have historically been excluded from or subject to bias in traditional financial services. Moreover, digital assets, like traditional assets, can be misused for money laundering, terrorist financing, and proliferation financing. Responsible development is also complicated by the limited availability of rich and accurate data on outcomes and implications of digital assets, making it more challenging to understand and predict trends and to track progress.

For a fuller discussion of these and other risks and opportunities, consult the U.S. Treasury’s reports issued pursuant to Sections 4, 5 and 7 of EO 14067.

³ Further details on energy and climate implications can be found in the White House Office of Science and Technology Policy’s report submitted in response to Section 5(b)(vii) of EO 14067.

⁴ Note that there are outstanding legal questions regarding the purported intellectual property, copyright, trademark rights of NFTs. <https://www.protocol.com/newsletters/protocol-fintech/nft-trademark-copyright>.

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IV. Framework

Digital assets and their related innovations can be described as being part of a broader change in the ways consumers use and think about financial services. At the same time, some observers have suggested that a shift towards digitally delivered financial services poses important questions for the preservation of U.S. global financial leadership and the role of the dollar. However, the prominence of the dollar reflects factors beyond payment system efficiency including the United States' strong economic performance; sound macroeconomic policies and institutions; open, deep, and liquid financial markets; institutional transparency; commitment to a free-floating currency; and strong and predictable legal systems and regulations. In the near term, foreign CBDCs and private digital assets by themselves likely offer little new competition to the dollar beyond traditional fiat currency, particularly because they do not address the structural factors above. Additionally, broad adoption by the American public of a foreign CBDC or a private digital asset would likely require interoperability with other payment systems or wide use for payments in both the United States and other jurisdictions. Some foreign institutions are examining potential projects for CBDC interoperability; however, these have not progressed beyond initial experimentation stages.

Nonetheless, the United States should still consider the long-term proposition of a new digital future where financial and commercial decisions rely on technology that does not currently underpin today's systems. Privately developed digital assets that can exist in concert with the traditional financial system and support U.S. democratic values as outlined in the Executive Order can help ensure that U.S. digital asset businesses remain at the forefront of innovation. By partnering with foreign public and private sector partners, U.S. digital assets firms can be competitive internationally and may support the deployment of digital asset-based systems that support core U.S. values and global financial leadership.

In light of these considerations, the Secretary recommends four broad categories of action to enhance U.S. competitiveness in digital assets:

1. **Ensuring effective regulatory approaches and addressing regulatory gaps** will lead to the development of a healthy market that fosters competition and innovation in digital assets while safeguarding consumer, investor, and depositor protection, market integrity, financial stability, and national security. Such a marketplace could provide the United States with the same competitive advantage in digital assets that it currently holds in traditional finance, creating an important advantage for U.S. participants in the global financial sector. Promoting the same kind of healthy competition for the digital assets sector that currently exists in traditional financial services will further sharpen the U.S.'s competitive edge as a global leader in financial markets.
2. **International engagement and trade promotion** will provide opportunities to include U.S. digital asset firms, where appropriate and in line with U.S. policy objectives, in trade

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promotion activities, helping to cement U.S. industry leadership while also creating new commercial opportunities and encouraging strong regulation and supervision worldwide.

3. **Meaningful public-private engagement** will ensure that digital asset stakeholders across sectors and Federal departments and agencies can regularly meet to discuss issues of import to the digital asset sector and identify areas where coordination may need to occur. The Department of Commerce (Commerce) can further support this objective through its bureaus' participation in technical fora and its nationwide geographic footprint to enable education and outreach to diverse stakeholders.
4. **Sustained U.S. leadership in technological research and development (R&D)** will be advanced through activities such as increased investment in government, academic, and industry-led research, workforce development, and digital literacy. Leadership in these activities will ensure that considerations of particular importance to the United States, such as privacy, security, resilience, transparency, and accountability, are considered early in the development of new technologies and their applications in the financial services sector and elsewhere. These activities will foster leading contributions to technical standards development and also help facilitate the U.S. government's early access to expertise and research insights related to digital assets, FinTech, and emerging technologies.

Each of these categories are explored in further detail below.

A. Ensuring Effective Regulatory Approaches and Addressing Regulatory Gaps

The U.S. financial regulatory landscape is a key factor in the strength and appeal of U.S. financial markets, which are the most developed in the world. Financial regulation in the United States serves multiple purposes, including promoting market efficiency and integrity, protecting consumers, investors, and businesses, encouraging capital formation, mitigating illicit activity, and promoting financial stability.⁵

Most digital assets and digital asset-based products may perform some activities which resemble regulated financial instruments or banking products. Over the past several years, U.S. financial regulators have taken action to regulate digital asset and digital asset-based products and activities falling under their purview. Since 2015, the CFTC has brought over 50 digital asset-related enforcement actions for violations of the Commodity Exchange Act⁶, and it also oversees regulated business offering derivatives products tied to digital assets, such as Bitcoin futures

⁵ "Who Regulates Whom? An Overview of the U.S. Financial Regulatory Framework", *Congressional Research Service* (March 10, 2020), <https://sgp.fas.org/crs/misc/R44918.pdf>, 2.

⁶ See, e.g., "CFTC Orders Tether and Bitfinex to Pay Fines Totaling \$42.5 Million," U.S. Commodity Futures Trading Commission (Oct. 15, 2021), <https://www.cftc.gov/PressRoom/PressReleases/8450-21>.

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offered by the Chicago Mercantile Exchange.⁷ Likewise, since 2013, the SEC has brought dozens of enforcement actions against individuals and entities engaged in digital assets-related conduct that allegedly violated the federal securities laws.⁸

For example, in October 2019, the SEC brought an action against Telegram Group Inc. and TON Issuer Inc. regarding their issuance of Grams,⁹ and in February 2022, it filed a settled action against BlockFi regarding its crypto lending products.¹⁰ At the same time, there are gaps in the regulatory framework for digital assets that should be addressed. For example, to address the risks of payment stablecoins, the President’s Working Group on Financial Markets recommended “that Congress act promptly to enact legislation to ensure that payment stablecoins and payment stablecoin arrangements are subject to a federal framework on a consistent and comprehensive basis.” The President’s Working Group further noted that such legislation “would complement existing authorities with respect to market integrity and investor protection”¹¹

Continued and regular enforcement of applicable financial laws and regulations is a foundational principle of U.S. competitiveness in financial services, including digital assets. This is true for many reasons: for one, as noted in this section’s introduction, continued and regular enforcement has helped support long-term stability and growth in U.S. capital markets. Disclosure requirements, supervision, and other mechanisms help ensure that investors can be confident in the integrity of the products they have invested in and have recourse in the event of fraud, scams, hacks, theft, or other misconduct; such mechanisms also mitigate illicit financing risks. As confidence in the market is a necessary precondition for further development of U.S. digital asset markets, it follows that financial regulation and supervision must be equally applied to digital assets and their related products and services compared to similar traditional assets, products, and services. Regulatory compliance will also ensure that digital asset markets can mature and develop in a manner that will promote healthy competition for all kinds of market entrants, be they traditional financial institutions, larger centralized digital asset firms, or startups.

Comprehensive regulation, supervision, and enforcement as appropriate preserve the principle of “same activity, same risks, same regulation” and ensure that digital assets and digital asset-based products are treated in the same way as similar products in traditional finance. Otherwise stated, financial services that choose to use digital assets on their platforms would be subject to the same regulations as traditional financial market institutions that offer the same services.

There are also benefits beyond those for domestic consumers, investors, and businesses. Consistent regulation, supervision, and enforcement also enhances the United States’ credibility as a global leader in promoting robust anti-money laundering and combating the financing of terrorism (AML/CFT) standards and leading dialogue in international financial fora on new

⁷ “CFTC Statement on Self-Certification of Bitcoin Product by CME, CFE, and Cantor Exchange”, *U.S. Commodity Futures Trading Commission* (December 1, 2017), <https://www.cftc.gov/PressRoom/PressReleases/7654-17>

⁸ [SEC.gov | Crypto Assets and Cyber Enforcement Actions](https://www.sec.gov/cyber).

⁹ “SEC Halts Alleged \$1.7 Billion Unregistered Token Offering”, U.S. Securities and Exchange Commission, (October 11, 2019), <https://www.sec.gov/news/press-release/2019-212>.

¹⁰ “BlockFi Agrees to Pay \$100 Million in Penalties and Pursue Registration of its Crypto Lending Product”, U.S. Securities and Exchange Commission, (February 14, 2022), <https://www.sec.gov/news/press-release/2022-26>

¹¹ See <https://home.treasury.gov/news/press-releases/jy0454>.

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issues raised by digital assets.¹² As noted in the U.S. Treasury’s framework for international engagement on digital assets and in Treasury’s action plan for mitigating digital asset-related illicit finance and national security risk, the United States engages in key international financial fora on digital asset-related issues, including at the Financial Action Task Force, G7, the G20, the Financial Stability Board, the Bank of International Settlements, and at sectoral standards setting bodies such as the Basel Committee on Banking Supervision and the International Organization of Securities Commissions. A robust regulatory order at home supports longstanding U.S. work in these fora and positively influences efforts on global standards.

Many digital asset firms have expressed concerns that existing regulation is not consistently applied to their products and services as to other financial products and services. Additionally, many respondents to Commerce’s May 2022 Notice and Request for Comment claim that guidance coming from regulators on initial coin offerings or other product introductions has not been clear and is often issued on an ad hoc basis, creating uncertainties for future products.¹³

Other industry respondents suggested in their comments that overlap among various financial regulators is particularly challenging for new entrants to the sector, specifically startups and small businesses that may need to dedicate a larger portion of their operating budget to up-front compliance costs. However, non-industry respondents, including think tanks, advocacy organizations, and financial services trade associations, cautioned that many digital asset firms could be operating outside of or in non-compliance with established regulatory perimeters and potentially pose risks to consumers, investors, and businesses who use them.

Commerce supports regulators’ efforts to perform their duties and apply regulations to digital assets, digital asset-based products, and the firms that offer related services. Commerce endorses regulators’ existing approach that both ensures regulation of the financial sector, including through application of existing law, and responsible innovation that identifies and mitigates risks prior to launch. The Department of Commerce encourages independent regulatory agencies’ allocation of dedicated resources to address digital asset-related matters as well as their coordination on enforcement actions. Dedicated resources could provide greater ability to conduct supervisory duties related to digital assets and could also provide for additional opportunities to constructively engage with industry stakeholders. Coordination of enforcement actions ensures that the federal government is speaking with one voice, taking into consideration that each agency comes under its own governing statute(s) to which other agencies are not subject.

The Department of Commerce also encourages independent regulatory agencies to work collaboratively to address emerging risks in digital asset markets. As the digital assets industry continues to evolve, important regulatory gaps have emerged that require action by independent

¹² Treasury’s Office of Foreign Assets Control has already engaged in major AML/CFT-related actions on digital assets, including its August 2022 sanctioning of the Tornado Cash mixer, which has been used to launder more than \$7 billion worth of virtual currency since its creation in 2019. “U.S. Treasury Sanctions Notorious Virtual Currency Mixer Tornado Cash”, *U.S. Department of the Treasury* (August 8, 2022), <https://home.treasury.gov/news/press-releases/jy0916>.

¹³ The views presented in this paragraph do not reflect the Commerce’s views and are included here as examples of responses to the Commerce’s May 2022 Notice and Request for Comment.

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regulatory agencies, federal executive branch agencies, Congress, or some combination of the three.¹⁴ Other gaps could emerge in the future. In these circumstances, additional consultation between relevant federal agencies, Congress, and other stakeholders, where appropriate, may be useful to resolve questions that are raised. Consultation on these issues will also provide opportunity to assess the efficacy of existing regulations for digital assets within the requirements of Federal law and investigate whether adjustments may be needed or otherwise beneficial.¹⁵

B. International Engagement and Trade Promotion

Digital assets to-date have been a global phenomenon. Many validators on digital asset networks are distributed across the globe, and transfers of assets can be made across borders nearly instantly. To that end, federal departments and agencies should continue to engage internationally to promote development of digital asset policies and CBDC technologies consistent with U.S. values and standards. Where relevant and appropriate, Commerce and other federal departments and agencies may promote U.S. digital asset businesses and their products and solutions.¹⁶ Many of these potential fora have already been identified in the Treasury Department’s “Framework for International Engagement on Digital Assets” published as part of EO 14067 implementation.¹⁷ Commerce stands ready to support the U.S. Treasury, the Department of State, and other federal partners in their efforts.

As part of the broader interagency effort, Commerce could act in several international fora to encourage procompetitive digital assets policy and highlight U.S. digital asset firms’ work. The following list is not exhaustive, but rather representative of Commerce’s equities and current interactions:

- **Organization for Economic Cooperation and Development (OECD):** Commerce participates in several OECD bodies touching on digital assets and the future of payments, including the Insurance and Private Pensions Committee, the Committee on Small and Medium Enterprises and Entrepreneurship, and several bodies related to artificial intelligence. Likewise, Commerce has also participated in blockchain technology programs sponsored by the OECD.
- **Multilateral Development Banks (MDB):** Commerce has liaisons at multilateral development banks such as the World Bank, the Inter-American Development Bank, the Asian Development Bank, and others. Commerce could use these positions to advocate for U.S. participation in MDB projects related to digital assets, where appropriate and aligned with U.S. values.

¹⁴ See President’s Working Group on Financial Markets, Report on Stablecoins, https://home.treasury.gov/system/files/136/StableCoinReport_Nov1_508.pdf, which recommends legislation to address regulatory gaps.

¹⁵ Further information can be found in the Financial Stability Oversight Council’s forthcoming report in response to Section 6 of EO 14067.

¹⁶ Commerce notes that independent financial regulatory agencies do not promote specific businesses.

¹⁷ “Fact Sheet: Framework for International Engagement on Digital Assets”, *U.S. Department of the Treasury* (July 7, 2022), <https://home.treasury.gov/news/press-releases/jy0854>.

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- **Asia-Pacific Economic Cooperation (APEC):** Commerce participates in the APEC Business Advisory Council and could use its position there to advocate for greater commercial collaboration on digital assets between U.S. businesses and those in other APEC member states.

The Department of Commerce, through the National Institute of Standards and Technology (NIST), will continue to engage in international standards development in collaboration with domestic industry, academic partners, and other engaged stakeholders to promote consensus-based standards that reflect U.S. values and priorities. Technical standards development through the International Organization for Standardization (ISO) will deepen international harmonization on approaches to digital assets, including digital asset-adjacent technologies, such as cybersecurity, privacy, and cryptography, thus helping to create a shared baseline of trusted approaches that can lend confidence to financial sector use cases, including digital asset implementations.

In addition to the above fora, Commerce can support digital asset businesses through commercial advocacy. For example, as chair of the Trade Promotion Coordinating Committee (TPCC), Commerce could convene a specific TPCC working group on digital asset exports and, in conjunction with other federal departments and agencies with digital asset equities, define a whole-of-government strategy for enhancing U.S. exports of digital asset products and services.

Commerce's International Trade Administration (ITA) can help promote U.S. digital asset businesses on the global stage. ITA's Industry and Analysis unit has significant expertise on digital assets, financial technology, and other emerging technology issues, and it regularly engages in international dialogues with foreign partners on key issues such as digital trade, standards, and intellectual property protection. Similarly, the U.S. Commercial Service has also placed a specific emphasis on digital trade, as seen through the Digital Attaché Program. Established in 2016, the program includes commercial service officers in 16 markets who are specialists in digital economy policy and addressing digital trade barriers such as data localization. The digital attaches' portfolio could be expanded to include digital assets, allowing them to be deployed in support of U.S. businesses in key markets. Finally, ITA's domestic network of more than 100 domestic offices can also serve as a bridge for U.S. digital asset firms to reach new markets with and can help solicit foreign interest in U.S.-based digital asset projects through the SelectUSA program.

U.S. digital asset firms can also benefit through strong promotion of existing priorities in digital trade negotiations.¹⁸ Agreements such as the U.S.-Mexico-Canada Agreement and the U.S.-Japan Digital Trade Agreement already reinforce objectives such as non-discrimination, unimpeded cross-border data flows, personal data protection, and encouraging innovation. These principles should also be promoted as relevant for trade in digital assets.

¹⁸ Any regulatory standards should be considered at the appropriate international financial regulatory fora, such as the Basel Committee, Financial Stability Board, and the International Association of Securities Commissions.

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C. Meaningful Public-Private Engagement

Advisory Committee

Meaningful government action on competitiveness, including the above-mentioned steps towards regulatory coordination and increased international engagement, depends on open dialogue and collaboration between the Federal Government, industry, academia, civil society, and other engaged stakeholders. As a relatively new industry, digital assets are undergoing continuous evolution owing to technological advancement. The private sector has led the development of digital assets and has the technical expertise to inform activities carried out in collaboration with government on trends and issues of interest pertaining to their implementation and use.

Academia is pushing the frontiers on some of the foundational issues underpinning digital assets and will play a foundational role in advancing the Digital Assets R&D Agenda proposed in the White House Office of Science and Technology's (OSTP) report in response to Section 5(b)(ii) of the Executive Order. Civil society strives to ensure that the growth of digital assets happens in tandem with appropriate regulations and consumer protections, especially for underserved communities. A standing forum would ensure that Federal departments and agencies have access to helpful information available on industry developments, academic progress, and consumer harms while also providing digital asset firms, academics, and advocates with a formal venue to discuss matters with government counterparts. Such a forum would also ensure that technical experts are contributing to the national perspective on technical standards development, elevating the quality of those standards, and shining a light on opportunities for further research or technical guidance.

Commerce could also establish an advisory committee in accordance with the Federal Advisory Committee Act to advise the Secretary on programs that will facilitate increased U.S. economic competitiveness in digital assets and innovations in finance. Such a committee could advise on many of the topics discussed in this document, including but not limited to digital assets' place in international trade, the nexuses, if any between digital assets and financial inclusion for underserved communities, including associated risks, and collaboration on future research and development. To ensure a holistic perspective, the committee would seek membership from diverse stakeholders including businesses focused on digital assets, legacy financial services firms, research institutions and universities, trade and advocacy associations, civil society groups, and others. The committee could also seek participation from other departments and agencies to promote a truly whole-of-government approach to engagement on digital assets.

Consumer and Investor Protection and Education

Information asymmetry between digital asset offerors and digital asset consumers and investors is both a risk for current consumers and investors and an obstacle to future digital asset adoption.

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For example, individuals and businesses are often not actively made aware of the different storage options available for their digital assets and their associated risks, including the absence of protections that they would expect to receive alongside other financial products or services.¹⁹

To promote the safe and informed use of digital assets, users must have confidence in the asset, their ability to use it, and the associated technology. Users must also know where they can file complaints in the event things go wrong.²⁰ Businesses utilizing digital assets must also understand that it is their obligation to comply with all the applicable consumer and investor protection laws. Improved informational resources, for example advisories, complaint bulletins, materials summarizing current trends, or related work carried out by the Financial Literacy Education Commission of the Department of the Treasury could be distributed by the advisory committee to help inform public awareness of digital assets while at the same time not inadvertently fueling consumer overconfidence.

Diversity, Equity, and Inclusion

The underlying technology supported by digital assets, if developed, used and operated in compliance with laws and regulations, appears to have the potential to advance financial inclusion as a policy goal. Based on limited available data, individuals from communities of color appear to be overrepresented in digital asset adoption in the United States.²¹ Moreover, there is also significant interest from minority groups in commercial applications of digital assets, such as NFTs for creative arts.²² But there remain particular risks for underserved populations.

Commerce’s Minority Business Development Agency (MBDA) is focused on the growth and competitiveness of minority-owned U.S. businesses. The expertise of this bureau could be leveraged to advance diversity and inclusion in the digital assets space. Care should be taken to ensure that this focus on inclusion does not result in “predatory inclusion,” where minority groups gain increased access to an ecosystem on the basis of exploitative terms or with high financial risks. MBDA will release a study on FinTech as an alternative source of financing to support underserved communities.

¹⁹ For one example of a current debate around this issue, see Paul Kiernan, “Coinbase Says Users’ Crypto Assets Lack Bankruptcy Protections,” *The Wall Street Journal* (May 12, 2022).

²⁰ Among the places consumers can submit crypto-asset complaints to are the Consumer Financial Protection Bureau’s complaint database (<https://www.consumerfinance.gov/complaint/>) and FTC’s Consumer Sentinel (<https://reportfraud.ftc.gov/#/>).

²¹ According to data from the Pew Research Center, approximately 20% of Black, Hispanic, or Asian Americans have said they have ever used digital assets, compared to just 13% of Whites. Michelle Faverio and Navid Massarat, “46% of Americans who have invested in cryptocurrency say it’s done worse than expected”, *Pew Research Center*, (August 23, 2022), <https://www.pewresearch.org/fact-tank/2022/08/23/46-of-americans-who-have-invested-in-cryptocurrency-say-its-done-worse-than-expected/>.

²² Michael Carter, “Why Black Creators are Flocking to NFTs”, *Black Business Guide* (May 22, 2021), <https://blackbusinessguide.com/why-black-creators-are-flocking-to-nfts/>, and Yamily Habib, “What Are NFTs and How Are They Benefiting Latinx Artists?”, *BELatina*, (November 15, 2021), <https://belatina.com/nft-benefiting-latinx-artists/>.

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Workforce Development

The growth of the digital assets industry has attracted top talent from around the world to the sector. Talented human capital is essential to the competitiveness of firms, and in times of growth, competition for top talent is fierce. The case is no different for firms developing or operating digital assets. Additionally, the pervasive shortage of technology professionals worldwide translates into high attrition rates for many firms, as they struggle to recruit and retain top talent.²³

Consultation with the private sector, academia, and civil society through the proposed advisory committee could help inform paths to develop academic programs to cultivate talent in the digital asset industry. Additionally, Commerce could facilitate the partnering of digital asset firms with educational institutions, including historically Black colleges and universities, Hispanic-serving institutions, and other minority-serving institutions to develop curricula appropriate for their needs. This could be combined with higher education institution recruitment programs or scholarships for students, providing them a clear path toward employment and a career. Entrepreneurship and regional programs could also play a significant role.

Fostering a skilled workforce would contribute to the development of technologies and platforms that improve efficiencies for businesses and enhance competitiveness. Signature programs such as NSF's CyberCorps®: Scholarships for Service (SFS) and the Education designation within Secure and Trustworthy Cyberspace (SaTC), and the Small Business and Innovative Research (SBIR/STTR) Educational Technologies and Distributed Ledger Technology specific portfolios have long supported education and workforce development projects and naturally align with the goals expressed here. In a similar vein, workforce development objectives relevant for the digital asset industry are directly supported by and should align with the efforts of the NIST-led National Initiative for Cybersecurity Education (NICE), a partnership between government, academia, and the private sector focused on cybersecurity education, training, and workforce development.²⁴

Payment System Modernization

Digital asset advocates have claimed they may show promise in facilitating payments, particularly in the case of international transfers where settlement could be faster than in legacy systems. Should digital asset firms be able to reduce the number of intermediaries involved in cross-border payments and facilitate further peer-to-peer payments digital assets could reduce frictions in existing cross-border payment systems.

²³ For example, the 2021 (ISC)² Cybersecurity Workforce Study estimates the global shortage of cybersecurity professionals to be 2.72 million.

https://www.nist.gov/system/files/documents/2022/07/06/NICE%20FactSheet_Workforce%20Demand_Final_20211202.pdf.

²⁴ <https://www.nist.gov/itl/applied-cybersecurity/nice/about>.

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Payment systems could also increase risks to consumers or come at higher costs. Although some digital assets advocates claim that new payment systems enabled by digital assets may increase consumer choice and foster competition in the payments market, these benefits remain hypothetical to-date. Instead, digital assets rely heavily on existing payment systems, making the reduction of cost through competition unlikely. For example, to purchase crypto-assets for the first time, a user must leverage an existing payment system, for instance by connecting their bank to a trading platform via ACH or wire, or by paying a fee to use a credit card or debit card to fund their trading platform account with U.S. dollars. These methods are also required to withdraw U.S. dollars after selling crypto-assets, which are generally needed because most merchants do not accept crypto-assets as payment for goods and services. Those that do typically rely on third-party firms that convert the crypto-assets to U.S. dollars, which are then used to pay the vendor. Users may also have to pay high transaction fees for use of the crypto-asset network and could also face lengthy wait times.

Modernization of payment structures, whether through instant payments or other initiatives such as R&D and technology transfer efforts funded by NSF or other agencies, may also have implications for other sectors, where, for instance, payment programmability and automated micropayments could create efficiencies for manufacturing and supply chains, as well as energy distribution. Such small value transfers across networks may enable novel use cases but may require improvements in interoperability across disparate networks.

Commerce encourages the participation of both traditional payment service providers and digital assets firms in activities underway or emerging in standards development organizations (SDOs), industry consortia, or other non-governmental bodies to arrive at solutions that promote technical interoperability between their platforms. Commerce also supports federal government activities targeting the modernization of payments. This includes the prioritization of the recommendations in response to Section 4(b) of the Executive Order.

Sustainability

A major criticism of the digital asset industry, specifically pertaining to those digital assets that operate on blockchains using Proof-of-Work consensus, is the heavy energy use of the industry. Additionally, as noted in the OSTP report, “Climate and Energy Implications of Crypto-assets in the United States,” in addition to mining, digital asset networks also use electricity to power data storage, cooling, and communications. There are instances where industry has worked in collaboration with local authorities and utilities to balance industry demands with those of residential customers. Recently, high residential demand on utilities and extreme temperatures have contributed to increased peak demands on electricity grids, and miners have been paid to power down their operations so that residential loads could be met. However, as the United States endeavors to move to a clean energy economy, demands on electrical power resources will

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become more intense. In the face of such limitations, a sustainable and responsible path forward is necessary if the digital asset industry is to grow.

Commerce supports OSTP's recommendations to the President in response to 5(b)(vii) of Executive Order 14067, including efforts to improve the understanding of digital asset energy use, and emissions; manage electricity demand and reliability; eliminate greenhouse gas emissions while promoting clean energy; and reduce electronic waste.

Accurate & Complete Measurement

To evaluate changes in competitiveness, the United States needs accurate and complete economic statistics on economic activity related to digital assets. Yet, little authoritative information is available about the contribution of the digital asset sector to the U.S. economy or its effect on important economic indicators like gross domestic product (GDP), the trade balance, or services exports. For some statistics, like the value of digital assets held by U.S. residents, new data sources and measurement methodologies will have to be developed. Other statistics, such as sales, value added, or employment in the digital asset industry, could be compiled using data reported on existing or new business surveys. The information on existing business surveys provides the basis for many economic statistics published by the Bureau of Economic Analysis (BEA) within the Department of Commerce and other statistical agencies. The quality of these statistics relies upon the accuracy and completeness of the information that all companies report, and statistics on the digital asset industry would specifically rely on companies in that sector.

D. Sustained U.S. Leadership in Technological Research and Development

The leadership of the United States in research and development is a key factor in supporting a competitive U.S. digital assets industry and lays the groundwork for shaping the development of international technological standards. Research leadership enables digital asset firms to innovate, while expert contributions by technologists to standards development ensures that those approaches developed by domestic private sector firms inform international standards and best practices.

Federal agencies have played a significant role in research leadership by supporting fundamental and translational research that has in turn produced many of the foundational elements of digital asset technology as well as commercial outputs with large-scale economic value. The National Institute of Standards and Technology (NIST) has conducted foundational and applied research across technology areas relevant to digital assets, in some cases for decades. The National Science Foundation (NSF) has been supporting fundamental and translational research over several decades in the digital asset space. The NSF continues to actively fund and engage a wide variety of creators and stakeholders in this space, including university-based researchers, innovators, entrepreneurs and industry, and associated ecosystems. Such funded research covers a wide range of critical and emerging technologies underpinning digital assets. The NSF has a

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range of active programs funding such fundamental research such as the Secure and Trustworthy Cyberspace (SaTC). NSF's translational research funds start-ups, academic researchers and industry focused on commercializing disruptive technical solutions and value propositions in the digital asset space through its Small Business and Innovative Research (SBIR), Small Business Technology Transfer Program (STTP), I-Corps, and Partnerships for Innovation (PFI) and the Convergence Accelerator.

While this report has focused on the digital assets in the financial sector, there are numerous opportunities for research and development in other applications of digital assets. Tokenization, or the digital representation of real-world objects other than for assets issued by traditional financial institutions or entities (e.g., stocks or bonds) has potential utility in applications such as manufacturing, health care, Internet of Things (IoT), and supply chain tracking. In a system where such objects have a digital counterpart, actions on the real-world object are mirrored digitally and tracked through the use of digital tokens. Financial digital assets are also relevant here as certain processes may be integrated with micropayments. Applications integrating brick and mortar businesses with the digital economy have the potential to create significant market value; however, they also require deep research that must take into account the next generation of cryptography, networking, and distributed systems, as well as security, privacy, and resiliency issues to ensure that systems are hardened against crime, illicit use, and error.

NIST has long played specific roles in establishing standards and guidelines for areas key to digital assets, including cybersecurity, privacy, and cryptography. In support of increased competitiveness, NIST will rely on its longstanding model of open and transparent collaboration with all stakeholders, including the digital asset industry, to inform its research and the development of guidelines and standards, such as forthcoming post-quantum cryptography algorithms, whose adoption across all sectors in the coming years will be critical to defend against adversarial uses of quantum computers. NIST could also, for example, work with the private sector to guide the development of specific approaches for privacy and cybersecurity through the use of the NIST Privacy Framework, the NIST Cybersecurity Framework, or other NIST publications.

Sustainability is also an area that requires important consideration in federal R&D initiatives, in particular the environmental impacts of digital assets and associated computing technologies. Addressing these impacts requires fundamentally new and disruptive research on sustainability across all aspects of computing including modeling, design, reuse, programming, data management, fault tolerance, operation, and graceful degradation as they relate to digital assets and more generally to computing systems and infrastructure.

Promotion of R&D in financial technologies, digital assets, and their use will foster U.S. technological leadership. As such, Commerce supports the development of a Digital Assets R&D Agenda, proposed in the White House Office of Science and Technology Policy's (OSTP) report in response to Section 5(b)(ii) of the EO 14067. Commerce is also supportive of other agency efforts, particularly those coordinated by the Networking and Information Technology Research

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and Development (NITRD) program, to fund research and development programs that address a broad range of financial technology (fintech) topics. These include but are not limited to smart contracts; digital identity; digital asset token uses in healthcare, Internet of Things (IoT), robotics, transportation, utilities, supply chains and manufacturing; cybersecurity and privacy, including the security benchmarking of consensus algorithms; analysis of economic impacts; social and human-centric issues; development of novel consensus algorithms; scaling of distributed ledger technologies; interoperability; sustainability, including transaction energy efficiency; novel cryptography; software verification and provenance; and game theory. Commerce supports efforts to enhance and improve the coordination of these activities, for example, by forging new partnerships between the NITRD member agencies and the government agencies and regulatory bodies whose mission focus is most likely to be impacted by emerging technologies and applications.

V. Conclusion

In just over a decade, digital assets have emerged as a factor in political, economic, social, and cultural discourse about the future of financial services. Terms such as crypto-asset, digital dollar, and NFT are now prominent in everyday discussion on personal finances and many Americans are increasingly asking whether digital assets should have a place in their portfolios.

On a sectoral level, digital assets have the potential to be a channel of improvement for payments alongside existing initiatives such as instant payments. If well-implemented, digital asset-based systems could introduce competition into international payments and offer underserved communities greater access to the financial system. Policymakers must take care, however, to ensure that potential benefits are realized and that increased use of digital assets creates neither systemic risk for the financial system nor potential inefficiencies or harms that affect consumers, businesses, and investors.

As noted in Section III and in other U.S. government department and agency reports, the potential benefits of digital assets do not come without significant risks. These risks are found at both the individual and sectoral level. Even for more established digital assets, consumers, investors, and businesses face risk from malicious actors, including hacks, theft of private keys, 51 percent attacks, front-running, wash trading, and other abusive or misleading trading schemes. Consumers, investors, and businesses may also face substantial risks posed by market participants acting outside of, or in non-compliance with, important laws and regulations regarding issues such as consumer and investor protection, market integrity, and AML/CFT and sanctions obligations.

These challenges and opportunities make U.S. leadership in ensuring the responsible development of digital assets a policy imperative. Many key U.S. trading partners are in the

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process of assessing and addressing perceived gaps with respect to digital assets in their financial regulatory frameworks and are examining whether they should issue CBDCs.

The United States has a strong national interest in reinforcing its global financial and technological leadership. U.S. digital asset firms have made already significant inroads in developing digital asset infrastructure, designing, and offering products, and linking digital assets with conventional finance. A whole-of-government strategy focused on the four categories of action below will help ensure U.S. leadership in digital assets in the coming years:

1. Ensuring effective regulatory approaches and addressing regulatory gaps
2. International engagement and trade promotion
3. Meaningful public-private engagement
4. Sustained U.S. leadership in technological research and development (R&D)