

Testimony of Charles Hoskinson
Founder of Cardano; CEO of Input Output Global

“Future of Digital Asset Regulation”

Hearing before the U.S. House Subcommittee on Commodity Exchanges, Energy and Credit
June 23, 2022
10:30AM

I. Introduction

Chairman Maloney, Ranking Member Fishbach, Members of the Subcommittee and distinguished guests, thank you for inviting me to testify at this hearing. My name is Charles Hoskinson and I sincerely applaud the work of this subcommittee and appreciate you all taking the time to provide a forum for the blockchain industry. I am pleased to provide you with as much information as you need in order to ensure a fully informed and robust conversation on the future of digital asset regulation.

II. Background on Input Output Global

I am one of the founders of the Ethereum blockchain, founder of the Cardano blockchain and CEO of Input Output Global (IOG), which is a research and engineering company focused on the development of blockchain and other cutting-edge technologies. IOG is an American company that has helped to build the Cardano blockchain as well as other products on top of the blockchain such as Atala Prism,¹ a blockchain-based self-sovereign identity solution that provides digital identity to individuals and Lace light wallet,² a digital portal that provides individuals access to a variety of financial services. IOG’s research team has published more than 140 academic research papers relating to blockchain technology and has relationships with academic institutions such as the University of Wyoming, Carnegie Mellon University, Stanford University and the University of Edinburgh. Beyond the United States, the company is working across Africa (particularly in Ethiopia, Tanzania, Kenya and Burundi) to help expand broadband service in rural areas, increase financial inclusion through microfinance and lending marketplaces and provide students and teachers with digital identities and verifiable credentials—all on the Cardano blockchain.

III. Using Blockchain Technology to Solve Real-World Problems

Distributed ledgers (i.e., blockchains) store information that needs to be transparent, auditable, timestamped, and immutable. This process enables records of social and economic concerns to be reliable and programmable.

¹ <https://atalaprism.io/>

² <https://www.lace.io/>

Public blockchains, just like many commodities, are intrinsically decentralized and permissionless. For example, I grow hay on my farm in Colorado. I did not ask for permission to plant and harvest my hay, and now I am a member of a global, dynamic marketplace. There are regulations and controls in all of these markets, but we do not assume there is a centralized hay agency to ensure somehow this market works. Such absurdities were reserved for the Soviet central planners of old, not modern economies. Blockchain projects operate and embody this decentralized ethos and would fail under the weight of a heavy-handed and outdated regulatory structure.

As a rancher, I have to deal with water rights, grazing leases, public land authorities, and numerous other agreements, covenants, and economic events. The management and oversight of much of these activities are not digitized, nor are they shared in ways to provide emergent value to policymakers, regulators, and researchers. When these activities are conducted and managed, and the resulting information is shared, on a blockchain they are transparent and auditable.

Looking, for example, at the beef industry, blockchain technology can be used in many ways including creating significant value for the industry's end-to-end supply chain and more over sustainability and safety, such as grass-fed assurance, trade finance, consumer engagement, consumer feedback, certification and end-to-end traceability. With regards to traceability, BeefChain is a blockchain startup that allows consumers to trace their beef product. BeefChain is built on the Cardano blockchain and utilizes IOG's Atala Trace solution. In 2019 the company achieved USDA Certification with the Process Verified Program.³ This means that certain characteristics, such as being hormone free, are treated as audited and certified in line with U.S. food safety regulations. By enabling unique animal identification and ensuring origin, BeefChain allows the rancher to receive premium pricing for premium beef and provides consumers with greater confidence in the meat they consume. Digitizing animal branding rules and procedures, such as those in Wyoming, could save thousands of hours waiting for inspectors, speed up livestock sales, and enable more data collection for supply chain management scored against environmental and conservation goals. Livestock branding takes on a new meaning when a record of the event is immutably fixed in a blockchain.

As for some of the work that my company is doing, IOG is working with Ethiopia's Ministry of Education to create a blockchain-based digital identity and verifiable academic credentials for 5 million students and teachers in the country. The goal of this vital project is to enable data-driven policy-making and simultaneously allow students to prove their educational achievements internally and across borders to universities and the job market by reducing the risk of fraud. IOG's partnership with World Mobile⁴ will lay the foundations for a totally connected Africa by utilizing the Cardano blockchain to help empower remote and hard to reach areas across the continent so that everyone gets an equal chance to access services and opportunities. World Mobile's mesh network model leveraging the Cardano blockchain enables scalable, shared

³ <https://www.ledgerinsights.com/proof-of-steak-blockchain-food-beef-traceability/>

⁴ <https://worldmobile.io/>

infrastructure, security, transparency and self-sovereignty, which can lower the costs and barrier for people to access connectivity. The sharing economy gives every participant of the network a mutual stake in its success.

In Kenya and Ghana, in order to tackle the financing gap through an ecosystem of products that remove the frictions between crypto liquidity and real-world economic activities to offer cheaper financial products, IOG has partnered with Pezesha Africa Limited to facilitate loans to small and medium sized businesses looking for short term loans for working capital. The goal is to build simple friction-free tools that enable seamless lending.

Another use case here in America that I would like to highlight is a loyalty program powered by blockchain technology, which is currently being developed through a strategic collaboration between IOG and DISH Network Corporation⁵. The two companies are working to create a backend token-based loyalty system supported by the Cardano blockchain. Cardano tracks the balance of loyalty coins or Boostcoins™ accrued by customers, and mints or burns the loyalty tokens based on customer rewards and reward redemptions. The loyalty token balance is adjusted in a nightly batch operation, using a DISH-controlled digital wallet. IOG's Atala Prism is leveraged to ensure no personally identifiable customer information is included in the process. This first step of the collaboration enables blockchain capabilities in DISH's infrastructure through Atala PRISM's identity services and Cardano's native asset features allowing DISH to better serve and securely connect with its customers.

These use cases and projects exemplify the kind of economic development and growth that blockchain technology can bring to America, especially to rural and remote regions of the country.

IV. Principles for the Blockchain Industry

If we are to discuss how to regulate digital assets, protect consumers, and align growth with the realities of modern society, then we ought to have the humility to admit that innovation makes specifics difficult and thus focus on principles instead. Although the concept of freedom of speech is ever challenged by new technology, we can recognize that the constitutional notions of free speech remain the same. We have a desire to express ourselves in a free society without fear of government interference or retribution. What are the principles that should guide thinking coming out of the blockchain industry in its interaction with the U.S. government?

Looking at another American creation, the Internet, the governance, evolution, and innovation of the Internet are not controlled by the International Telecommunication Union (ITU) or some other transnational body, but rather by thousands of interconnected and interdependent agencies and private companies working together towards the self-emerging common goals of increased connectivity, capacity, and utility. The United States embraced the public private partnership that allowed the Internet to flourish and for the United States to play and maintain a

⁵ <https://www.dish.com/>

primary role in Internet technology. Similarly, it will take many different agencies working together with the private sector to ensure the American blockchain industry flourishes and reaches its full potential.

Like the prior Congresses in the 1990s discussing the regulatory framework for the Internet that led to the rise of trillion-dollar companies, I believe this Congress can achieve great results by working with the blockchain industry towards a principles-based approach that leverages our countries' remarkable capabilities to innovate and adapt.

It is of the utmost importance to acknowledge that category-based regulation, which is segregated to the borders of a particular jurisdiction and relies solely upon centralized actors for reporting and disclosure, is unlikely to be effective in a blockchain-based decentralized ecosystem and will inhibit innovation. Whereas, principles-based regulation, which is more flexible, can adapt and evolve alongside the nascent technology without strangling an industry that has only started and forcing companies abroad.

V. Values in Support of American Industry

Reflecting upon the 20th century, the dominance of the United States has rested upon three pillars: financial services, technology companies, and manufacturing capabilities. These industries are rapidly transforming under the demands of globalization, increased competition, new technologies, and the desire to define environmental, social governance (ESG) rules to ensure a sustainable, values-driven global economy. I believe that the blockchain industry is building the foundational technology that will enable trust, compliance, and competitiveness for these industries throughout the 21st century, thereby ensuring another American century.

Transparent, immutable, always objective ledgers—provided by blockchain technology—are phenomenal tools for record-keeping, reporting, and oversight. In other words, blockchain technology itself provides many of the tools that can be deployed for safeguarding consumers and protecting market integrity. The same concepts that protect a decentralized exchange from front running or security breaches can also be used by regtech companies like Chainalysis to provide unprecedented information to government agencies, regulators, economists, and financial engineers about an exchange. The collection of this data is permissionless and royalty-free. No more dark pools. No more centralized brokers.

The power of blockchain technology is its universality and permissionless model for innovation. True competition exists when everyone has equal access to markets. My company, Input Output Global, has never had to pay a royalty, file a patent application, or acquire a license to pursue blockchain-related business development in countries as diverse as Ethiopia to Mongolia. The same tools that would enable a rancher to register a brand could be reused for land deeds, a credit score, or issuing a non-fungible token (NFT) to represent a musical composition, assuring its artist of receiving fair compensation.

Blockchains enable the liquidity of value, thought, and commerce at a scale and speed society has never experienced before. Instead of predicting the outcome of these new capabilities, we ought to decide on what consumer and market risks we need to guard against, what fundamental rights consumers should have, and how to use these new tools for the greatest possible good. Compliance with regulation and legislation coming out of the United States must be a guiding value for the blockchain industry, nation and world, as speed of development without any control whatsoever will lead to rampant fraud, waste, and abuse.

VI. The Importance of Appropriate & Responsible Regulation

IOG, myself and many others in the industry are in favor of and support appropriate and responsible regulation of digital assets and blockchain technology. However, this is a new technology and a radically new asset class that can not readily fit within the confines of the laws and tests created almost a century ago.

Cryptocurrencies are financial stem cells— programmable software that can be nearly any asset and can change over time. In fact, no two cryptocurrencies are alike and the uses, functions and features of cryptocurrencies can vary depending on who is holding the cryptocurrency, why and where. Cryptocurrency can be used to verify data, transfer information or value, purchase goods, provide access to services, serve as a reward or membership program, act as a store of value or as an investment, all at the same time or at different times over the life of the cryptocurrency.

The United States legislature has never tried to regulate something that could be so many different things at the same time. Yes, some cryptocurrencies may be securities, some may be commodities, some may be both, but many may not be either. Regardless of how a cryptocurrency is labeled, three things should be kept in mind: (i) the existing U.S. regulatory regimes never contemplated such an asset, (ii) without cryptocurrencies, most blockchain technologies simply will not function and (iii) any regulatory goals should be to promote appropriate consumer protections and assure market integrity. The last can be achieved through regulatory approaches that do not necessarily require labeling a cryptocurrency as either a security or commodity.

U.S. securities laws achieve investor and market protections based on the assumption that there is and will always be a centralized entity (e.g. a corporation who is identifiable and can permanently assume the role of providing financial and other data to the holders of its equity). Some blockchain technologies, and thus cryptocurrencies may initially be created or backed by a somewhat centralized entity similar to a corporation but many times that is not the case and over time, virtually all cryptocurrencies and blockchains exist without any centralized entity that can be identified as the party supporting such technology. The existing laws and regulations that assume the existence of such centralized and responsible parties simply and logically cannot work in the case of blockchain technology and the cryptocurrencies that drive such technologies.

Responsible regulation should start with an understanding as to the critical role blockchain technologies can play for assuring American competitiveness, America's security, particularly digital infrastructure, financial inclusion for Americans and promotion of economic development and growth.

VII. Conclusion

Cryptocurrencies and the broader blockchain industry, which relies on cryptocurrencies to operate and function, have grown over the past decade from a small group of uncommercialized, volunteer developers to a trillion-dollar, global ecosystem encapsulating sophisticated engineering, scientific research, publicly traded companies and tens of millions of people using these technologies throughout the world.

The great growth of blockchain technology rivals only the Internet and arguably yields more significant opportunities ranging from cheaper and more efficient payment systems, cryptographically enhanced infrastructure security, new forms of governance, self-sovereign identity and so much more. However, this new technology has also presented new challenges and amplified the existing problems of many legacy systems. The instantaneous movement of information and value without counterpart risk nor the need for centralized middlemen combined with reducing complex business processes and structures to open source software that can be rapidly upgraded means that commercial activity can now proceed at the speed of thought on a global scale.

I am grateful to have the opportunity to present these real-world use cases, my opinions on the guiding values of the industry and thoughts regarding the promise of the blockchain industry. My knowledge and network are always available to this subcommittee to aid and assist in the legislative process. In conclusion, I hope we can engage in a fruitful and ongoing dialogue throughout the coming months as the United States debates the regulatory future of the American Blockchain and Cryptocurrency industry. I sincerely appreciate your time and look forward to your questions.

**Committee on Agriculture
U.S. House of Representatives
Information Required From Nongovernmental Witnesses**

House rules require nongovernmental witnesses to provide their resume or biographical sketch prior to testifying. If you do not have a resume or biographical sketch available, please complete this form.

1. Name: Charles Hoskinson

2. Organization you represent: Input Output Global, Inc.

3. Please list any occupational, employment, or work-related experience you have which add to your qualification to provide testimony before the Committee: Bitcoin Education Foundation, Founding Chairman of Education Committee, Founder of Hoskinson Center for Formal Mathematics at Carnegie Mellon University, Co-founder Ethereum, Founder Cardano, Founder Bitshares. Numerous advisory roles throughout the industry.

4. Please list any special training, education, or professional experience you have which add to your qualifications to provide testimony before the Committee: Please see answers to question 3.

5. If you are appearing on behalf of an organization, please list the capacity in which you are representing that organization, including any offices or elected positions you hold: Chief Executive Officer of Input Output Global, Inc.

**PLEASE ATTACH THIS FORM OR YOUR BIOGRAPHY TO EACH COPY OF
TESTIMONY.**

Truth in Testimony Disclosure Form

In accordance with Rule XI, clause 2(g)(5)* of the *Rules of the House of Representatives*, witnesses are asked to disclose the following information. Please complete this form electronically by filling in the provided blanks.

Committee: Agriculture

Subcommittee: Commodity Exchanges, Energy, and Credit

Hearing Date: 06/23/2022

Hearing Title :

The Future of Digital Asset Regulation

Witness Name: Charles Hoskinson

Position/Title: Chief Executive Officer, Input Output Global, Inc.

Witness Type: Governmental Non-governmental

Are you representing yourself or an organization? Self Organization

If you are representing an organization, please list what entity or entities you are representing:

Input Output Global, Inc.

FOR WITNESSES APPEARING IN A NON-GOVERNMENTAL CAPACITY

Please complete the following fields. If necessary, attach additional sheet(s) to provide more information.

Are you a fiduciary—including, but not limited to, a director, officer, advisor, or resident agent—of any organization or entity that has an interest in the subject matter of the hearing? If so, please list the name of the organization(s) or entities.

Input Output Global, Inc.

Please list any federal grants or contracts (including subgrants or subcontracts) related to the hearing's subject matter that you, the organization(s) you represent, or entities for which you serve as a fiduciary have received in the past thirty-six months from the date of the hearing. Include the source and amount of each grant or contract.

N/A

Please list any contracts, grants, or payments originating with a foreign government and related to the hearing's subject that you, the organization(s) you represent, or entities for which you serve as a fiduciary have received in the past thirty-six months from the date of the hearing. Include the amount and country of origin of each contract or payment.

\$994,700 paid to IOG (then IOHK) from the Government of Ethiopia's Ministry of Education based on a 5M user deployment. Deal was signed on April 2, 2021.

IOG in this context is Input Output Global, Inc., and IOHK is Input Output HK, Limited.

Please complete the following fields. If necessary, attach additional sheet(s) to provide more information.

- I have attached a written statement of proposed testimony.
- I have attached my curriculum vitae or biography.

* Rule XI, clause 2(g)(5), of the U.S. House of Representatives provides:

(5)(A) Each committee shall, to the greatest extent practicable, require witnesses who appear before it to submit in advance written statements of proposed testimony and to limit their initial presentations to the committee to brief summaries thereof.

(B) In the case of a witness appearing in a non-governmental capacity, a written statement of proposed testimony shall include— (i) a curriculum vitae; (ii) a disclosure of any Federal grants or contracts, or contracts, grants, or payments originating with a foreign government, received during the past 36 months by the witness or by an entity represented by the witness and related to the subject matter of the hearing; and (iii) a disclosure of whether the witness is a fiduciary (including, but not limited to, a director, officer, advisor, or resident agent) of any organization or entity that has an interest in the subject matter of the hearing.

(C) The disclosure referred to in subdivision (B)(iii) shall include— (i) the amount and source of each Federal grant (or subgrant thereof) or contract (or subcontract thereof) related to the subject matter of the hearing; and (ii) the amount and country of origin of any payment or contract related to the subject matter of the hearing originating with a foreign government.

(D) Such statements, with appropriate redactions to protect the privacy or security of the witness, shall be made publicly available in electronic form 24 hours before the witness appears to the extent practicable, but not later than one day after the witness appears.