Hasshi Sudler Written Testimony
Congress of the United States
House of Representatives
Committee on Energy and Commerce
Subcommittee on Innovation, Data, and Commerce

Summary

The blockchain has an emerging number of non-financial use cases that should be encouraged through public and private sectors. Two innovations are described showing the important contributions of blockchain technology to healthcare and space satellites. Innovations in contact tracing using blockchain technology for COVID-19 as well as future outbreaks can help minimize loss of life and detect infections quickly. Use of blockchain technology in space satellites can allow for satellites to leverage each other's unique data sets and delivery critical information about climate change, national security, and other critical information in a resilient and secure manner. The role of government in defining appropriate legislation is critical to the innovative use of blockchain outside of cryptocurrency applications.

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My name is Hasshi Sudler. I am the CEO of Internet Think Tank, a science and technology research institute, and adjunct professor at Villanova University where I teach in cybersecurity and blockchain technology. I am also the contributing author of the book, BLOCKCHAIN IMPACT!, that outlines various applications of blockchain uses. Over the course of my research, I have explored a number of application areas of blockchain technology involving healthcare and space satellite that I would like to share with the committee today.

In April 2020, I presented to the House Energy and Commerce Committee on a blockchain-based contact tracing solution to mitigate the spread of COVID-19. Along with my colleagues at Villanova University, Dr. Xun Jiao and Dr. Sunny Hallowell, we proposed a contact tracing application that leverages mobile phones to detect proximity between two people and to transact that contact information anonymously across a blockchain network. Users would update their health status on the phone, and should one update his or her status as COVID positive, others who came in contact with that individual over the prior 2-4 weeks would be notified. Given that blockchains can be deigned to operate globally and manage our information anonymously, this approach offers the benefit of detecting potential infections occurring anywhere around world provided users have installed the same contact tracing app on their mobile phone.

Furthermore, the blockchain can report infectious contacts instantly and anonymously, without revealing who is infected.

Although well received by participants evaluating the technology, notably Presbyterian Senior Living in Philadelphia, the significant challenge in implementing such a technology is the lack of a global strategy for a global healthcare crisis. Most countries developed national or state-based solutions unable to detect infections brought across borders. The COVID virus was and is not limited to national or state borders. As such, neither should the technology designed to defeat it. In such instances, appropriate government coordination is required across countries to adopt a global solution to detect potential infections as quickly as the virus is spreading. The blockchain is well suited for such a global solution, but requires policies and international collaboration to address future global healthcare crises. Through our continued research, our objective is to refine the technology now so that we can prevent the next local epidemic from becoming a global pandemic.

The second use case I would like to share takes us into space. Through my research at Villanova University, I have been exploring the benefits of blockchain satellites, essentially a constellation of satellites, each running as a blockchain node, that can transact its unique data with neighboring satellites. These blockchain satellites, owned

and operated by different operators, can leverage existing satellites already in space, and thus minimize the need for excessive deployments of satellites and the potential for satellite collisions. It builds resiliency in the event one satellite in a constellation is disabled through cyberattack, as the other satellites would maintain the same transactional history and can cooperate to complete a task. It also gives a satellite the ability to enrich its own data set with unique data from other satellites by autonomously purchases data from its neighbors. Given the high resiliency of blockchain networks, the use of blockchain satellites has significant implications for improving satellite security as well as our national security. Combined with zero trust capabilities, transactions of critical data for national defense, climate change, forestation, and national disasters can be securely moved across satellites and delivered to only those authorized to receive it. Government policies supporting the innovative use of blockchains in satellites for national security, climate change and other uses are critical for solving problems here on Earth.

While Blockchain technology is still young, these two innovation areas show promise in how blockchains can be applied to a wider set of uses beyond cryptocurrency. To achieve its full potential, other innovations will be required to enhance how we leverage blockchains in particular industries. Regulations will play a role in how receptive industries are to new blockchain solutions, particularly where it introduces alternatives

beyond the assumed trust models we operate under today. Maturing blockchain technology will need appropriate legislation to encourage broader innovation around its use cases. As a global leader, the United States is uniquely positioned to lead by example through appropriate legislation, global cooperation, institutional research, and innovation through our public and private sectors.

I would like to thank the committee for hearing my testimony.