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Executive Summary: Potential Uses of Blockchain By The U.S. Department of Defense

The Value Technology Foundation, along with nine co-authoring sponsors, is pleased to release a white paper entitled "Potential Uses of Blockchain By the U.S. Department of Defense." Congressman Darren Soto (D-FL), who added the FY20 NDAA Amendment said,

'*As with any effort or undertaking, the Government cannot go at this on our own and so I am grateful today to see how fierce competitors in the private sector have collaborated together to provide a roadmap for ways the DoD can apply blockchain technology. When I see the creativity of thought in ways of applying blockchain technology to support the Department of Defense in this paper, I am reminded of what a free and democratic society can do when called to action.'*

Thanks to the Department of Defense, the U.S. is a world leader in the Internet and information technology (IT). Distributed ledger technology (DLT), which includes blockchain technology, holds the promise of being the next major disruption to the status quo in the ways that people, processes, and industries operate. Moreover, our major adversaries have seized on the fact that investing in DLT could knock the U.S. from its position of having the top economy and military in the world.

Our foremost and most dangerous adversaries – China and Russia – have signaled their intentions to invest heavily in DLT technology in ways that significantly increase their abilities to influence the global economy, surveil citizens, and create highly technical and sophisticated messaging systems with communications that our intelligence agencies have difficulty tracking. Their technologies are seen as ways of disrupting the U.S. sphere of influence across the developing world and reducing reliance on the United States dollar, which is a very important objective of China and Russia. Therefore, it is essential that the U.S. protects its leading economic position by remaining ahead of the curve on the next wave of technological innovation.

As part of Fiscal Year 2020 Appropriations and with the enactment of the National Defense Authorization Act of 2020, Congressman Darren Soto (D-FL) supported language in the conference report that requires the Under Secretary of Defense for Research and Engineering to conduct a briefing to the House Armed Services Committee regarding DLT no later than six months after the bill becomes law. The briefing requires the DoD to explain how DLT may be used in various specified areas, including improving cybersecurity, reducing single points of failure during emergency decision making, improving the efficiency of defense logistics and supply chain operations, and enhancing transparency in procurement auditing, as well as in how DLT technology used by the military could be adopted by the private sector for ancillary uses.

Blockchain is a distributed ledger technology that follows a "write-once, read many" philosophy that allows members of the network to read, validate, and record transactions amongst themselves with trust and immutability. Blockchains use a permissioned or permissionless (public) approach that uses cryptographic techniques, consensus protocols, and digital signatures. The ledgers recorded with blockchain are highly tamper-resistant and any attempts to alter ledger transactions in the chain of records alert the participants of the tampering attempt.

For cybersecurity, multi-factor authentication that confirms a user's identity can be highly enhanced through writing of smart contracts within a blockchain network. This creates sophisticated methods of required validation that help avoid cyberattacks on U.S. defense systems. Also, since all actions within a network are recorded, even if a cybersecurity attack is not prevented, it can still be tracked and traced to its origin or point of failure.

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Blockchain technology acts as a trust enabler within procurement ecosystems by allowing greater visibility and collaboration between the origination and destination. Across the world, companies are turning to blockchain technologies to strengthen their supply chains. U.S. adversaries recognize that taking on our military head-on can be an exercise in futility. However, weaknesses in the U.S. military's supply chain – whether contamination in the food supply chain or an alteration of a rotor blade that causes a helicopter to crash upon takeoff – can far more easily be exploited by enemies. The risk of counterfeit or non-conforming components making it into the DoD supply chain has increased dramatically in recent years. Supply chain use cases for blockchain technology include verifying the provenance of goods, protecting the food supply, and thwarting counterfeit goods from entering the supply chain, among others.

Blockchain technologies can also support supply chain needs when used with Additive Manufacturing (AM) or 3-D printing. Distributed operations such as those completed by forward-deployed aircraft carrier strike groups require complex distributed logistics that are capable of repairing and servicing vehicles, aircraft, and naval vessels quickly at their place of deployment. Making these repairs has required pre-positioning large war reserve stocks, creating massive demands on logistics supply and support chains. Blockchain and AM can alleviate these pressures through providing a new revolutionary way to complete front-line, on-demand manufacturing of parts. Furthermore, blockchain ensures that design files have not been sabotaged and securely tracks other important supply chain details.

Governments around the world are implementing various technologies to improve integrity, efficiency, and value-for-money in their procurement processes. Blockchain is amongst the technologies being tested because of its primary properties of being tamper resistant and tamper evident. As the DoD's supply chain has often been featured on the GAO's high risk list for the DoD because of its numerous deficiencies, applying blockchain technology to an e-procurement system could help to ensure that this supply chain, one of the largest budget spending items, is secure from fraud and waste and has integrity and accountability.

Given the immense importance of blockchain, the Value Technology Foundation, a non-profit think tank dedicated to DLT, has been joined by nine firms who work in the DoD contracting space in authoring the white paper, "Potential Use of Blockchain By the U.S. Department of Defense." The Value Technology Foundation will also publish additional white papers to assist the DoD in exploring essential investments in DLT technology in order to ensure the U.S. military – and economy – remains pre-eminent in the world order.

The Value Technology Foundation would like to thank Congressman Soto, in addition to our co-authoring sponsors for making this paper possible. Please download the paper at valuetechnology.org and direct enquires to info@valuetechnology.org. Our co-authoring sponsors are:

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