f. Preface

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The Distributed Immutable Data Objects (DIDO) Reference Architecture (RA) is meant to be used as a resource to guide the design, use, or selection of blkchn, Distributed Ledger Technology (DLT), or other Distributed Computing solutions such as InterPlanetary File System (IPFS) and Data Distribution Service (DDS).

The purpose of DIDO RA 1.0 was to create a better understanding of the Blockchain and DLT, which were exploding in the Information Technology (IT) world after the publication of Satoshi Nakamoto's paper "Bitcoin: A Peer-to-Peer Electronic Cash System"[1] and the subsequent success of the Bitcoin. Since the publication of Nakamoto's paper, this excitement has grown way beyond the original Bitcoin. It has led to the promise/emergence of many other new cryptocurrencies, as well as the application of the well known and established concepts of distributed, peer-to-peer applications to supply chains, the Industrial Internet of Things (IIoT), natural resources, environmental sciences, and even the monetization of data.

In DIDO RA 2.0, the goal was to focus less on cryptocurrencies and more on generalizing peer-to-peer, distributed computing. As a parallel effort to the publication of DIDO RA 2.0, several products have been developed to work in parallel with and complement this paper:

- **DIDO Data Model (DIDO-DM)**: captures the conceptual data constructs described in the DIDO-RA including the Community of Interest (CoI) and testing.
- **DIDO Testing Environment (DIDO-TE)**: creates an environment that allows for virtualized testing of a Distributed Application (DApp) before it can be released into the "wild" using real hardware and networks.
- **DIDO Command Line Interface (CLI)**: defines a high level command language with which to send commands to each node covering the configuration, definition, and manipulation of data on distributed nodes.
- **DIDO Reference Implementation (DIDO-RI)**: provides a working interface to the DIDO-DM, DIDO-TE and DIDO-CLI.

The major enhancement of the DIDO RA 3.0 is the addition of a section on Requirements for DIDO Implementations from the "End User" perspective. Even though these requirements are for DIDO platform developers (e.g., Ethereum, Hyperledger, etc.) the intent is to enable a broad range of "End Users", e.g., financial, retail, supply chains, etc., to employ one or more DIDO platforms. This new section defines a Governance Requirements Model, which is comprised of three processes: Regulations (i.e., requirements specification), Execution (i.e., lifecycle from design to maintenance), and Compliance (i.e., oversight of a product or service, as well as, the processes of Regulation and Execution). This model ensures DIDO implementations are well-governed and moves DIDO Governance from its current "Execution Centric" state (i.e, DIDO platform developers) to the overall DIDO Communities of Interest.

[1] S. Nakamoto, "Bitcoin: A Peer-to-Peer Electronic Cash System," 24 May 2009. [Online]. Available: https://bitcoin.org/bitcoin.pdf.

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