

Decentralization: from the ground up

Two thoughts about it, maybe a few more

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1. Blockchain: a road toward decentralization?

- “because it has no controller”
 - There is even no name
 - In software we trust
- Not really, if blockchain \approx Bitcoin
 - proof of work \Rightarrow “show your muscle” \Rightarrow the rich gets richer
- Yes, if blockchain \approx Hyperledger
<https://www.hyperledger.org/>



“On the Internet, nobody knows you’re a dog.”

The New Yorker, July 5 1993



Case Study on Change Healthcare's use of Hyperledger Fabric

Change Healthcare turned to Hyperledger Fabric to begin blockchain-enabling its Intelligent Healthcare Network, which now processes 50 million transactions a day.

[LEARN MORE IN THE BLOG](#)

[READ THE CASE STUDY](#)

Join Hyperledger as a Member

Hyperledger Member Summit is coming up July 30-31 in Tokyo, Japan. Now is a great time to consider joining Hyperledger as a member so you can attend this annual event to discuss the current and future state of Hyperledger technologies.

[LEARN MORE](#)

Hyperledger Transact Now Available

Announcing our latest project to join the Hyperledger Greenhouse. Hyperledger Transact provides a platform-agnostic library that handles the execution of smart contracts, including all aspects of scheduling, transaction dispatch, and state management.

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How hyperledger differs

“Where Hyperledger Fabric breaks from some other blockchain systems is that it is private and *permissioned*. Rather than an open permissionless system that allows *unknown identities* to participate in the network (requiring protocols like “proof of work” to validate transactions and secure the network), the members of a Hyperledger Fabric network enroll through a trusted Membership Service Provider (MSP).”

Can't the MSP become the new central controller

- It should not be able to
- Show by an(other) example

“DLedger: An Private Distributed Ledger System”

<https://arxiv.org/pdf/1902.09031.pdf>

DLedger is designed to facilitate security solution development through recording and interlocking *everything* in the system

- all entities, including the identity manager, together form a peer-to-peer (P2P) network.
- Each peer appends new records into the DLedger by making approvals to other peers' records after verifying their validity.
- Like all other members, the identity manager must append *all* its activities, e.g. new member additions, certificates issuance, certificate revocations, into the ledger.

“Security Through Publicity”

Usenix HotSec 2006

- “The key principle behind the PSKI is that every action should be made in a public space. This public space concept derives from similar principles to those in other areas of public knowledge.
- “Acting in public does not guarantee that actions will be correct, but it does provide users with a quantifiable set of information and semantics that enable applications to construct meaningful security mechanisms”

2. What do I mean by “from the ground up”

- I mean from the *ground* up
- Distributed ledgers by themselves will not be able to go very far as being *truly distributed*, when sitting on top of today's TCP/IP protocol stack
 - The consolidation of apps/services *inevitably* leads to the consolidation of the supporting substrate beneath them
- Decentralization from the ground up: DLedger is designed to run over a secure distribution network protocol

Named Data Networking (NDN)

<http://named-data.net/>

NAMED DATA NETWORKING

2019 Community Meeting @NIST

September 5-6, 2019



National Institute of Standards and Technology
Gaithersburg, MD 20899, USA

CALL FOR CONTRIBUTIONS AND PARTICIPATION

Named Data Networking Community Meeting 2019 will be hosted by the National Institute of Standards and Technology (NIST) on **September 5 and 6, 2019**. The organizing committee cordially invites you to participate in and contribute to the event!

NDNComm is an annual event that brings together a large community of researchers from academia, industry, and government, as well as users and other parties interested in the development of Named Data Networking (NDN) technology. NDN is an architectural realization of the broad Information Centric Networking (ICN) vision that enables communications by named, secured data at the network layer. By aligning the network service with application needs, NDN offers many advantages, including stronger security and trustworthiness, enhanced network usability, as well as scalability and resiliency in network communication. In particular, NDN is especially suitable for emerging network environments such as edge computing and Internet of Things (IoT).

NDNComm provides a community forum to discuss the state of NDN protocols, software, testbed, and its application to various network environments. While the topics cover all aspects of NDN, this year we are particularly interested in new ideas and recent or ongoing progress on NDN in edge computing and IoT. We invite submissions from the broader NDN community for presentations, posters, demos, and panels on topics including but not limited to:

Event and registration link:

<https://www.nist.gov/news-events/events/2019/09/named-data-networking-community-meeting>

- NDN in edge computing, IoT, mobile, and ad hoc environments;
- NDN applications, such as scientific data, education, entertainment, tactical edge, smart cities and transportation;
- Security and privacy at different layers of the architecture;
- Management and measurement for NDN networks;
- Experience with NDN experimentation;
- Strategies to stimulate NDN development, both from research and commercial perspectives.

Submission Instructions

Submissions should be one page abstract in PDF format containing the title, authors and an abstract. The title should start with "Presentation:", "Poster:", "Demo:" or "Panel:". Please submit your abstract at this site: <https://ndncomm2019.named-data.net/>

Submissions should be made by July 31, 2019 and acceptance notifications will be sent out on a rolling basis. Please note that we plan to keep the submission site open until August 20, 2019; however, late submissions will only be accommodated if feasible. An abstract submission is not required for participation in NDNComm 2019.