

Advancing Blockchain Adoption in Industrial Applications with Standards



MARIA PALOMBINI
Director, Initiatives and
Communities Development, GBSi,
IEEE-SA

IEEE-SA Blockchain Reach to Date

INDUSTRIES

- Internet of Goods
- Agriculture
- Finance
- Healthcare
- Energy
- Pharmaceutical
- Transportation
- Education

BUSINESS OPERATIONS

- Payments (ie insurance, finance)
- Supply chain
- Track & Traceability
- Governance

TECHNOLOGICAL ALIGNMENT

- AI
- Machine Learning
- Digital Identity
- Big Data
- P2P Internet
- Open Source

KEY THEMES

- Identity, anon, pseudo
- Security & risk
- Trust
- Smart contracts
- DAPPS
- DAOs
- ICOs& ITOs
- Voting

The IEEE-SA Blockchain Focus

- Engage with industry stakeholders to recruit for hybrid working groups that equally represent the vested parties who would benefit from the development of standards (ie. Industry corporates, technologists, regulators, and researchers)
- Collaborate with industry to develop incubator programs and testbeds to provide a neutral learning environment observing successes and failures while enabling “add-on” innovation
- Get a comprehensive understanding of the industry’s concerns and perceived barriers (process, policy, protocols, regulation, etc) to implementing the technology
- Educate industry and technologists on how standards could accelerate the adoption of the technology to address appropriate optimization and security problems
- Identify the potential for standards in the use of blockchain or other distributed ledger technologies combined with other emerging technologies to safeguard digital citizens

initiatives

- Industry Connections Programs
- Standards Working Groups



Blockchain/DLT Initiatives @ IEEE-SA

Industry Opportunities to Engage

Standardization Projects

- IEEE P2418™ - Standard for the Framework of Blockchain Use in Internet of Things (IoT)
- IEEE P825™ - Meshing Smart Grid Interoperability Standards to Enable Transactive Energy Networks

Industry Initiatives

- Supply Chain/Trials Strategic Technology Implementation
- Digital Inclusion through Trust and Agency
- Realizing the Immersive Future City: Design, Development & Deployment Considerations across The Digital Citizen's Journey via Standardized Technologies & Interoperable Technical Implementations

Virtual Communities

- IEEE Blockchain Special Interest Group (SIG)
- Blockchain Collaboratec Community

Supply Chain/Clinical Trials Standardized Technology & Implementation

- Approved October 2017
- Exploring the use of blockchain and/or in combination with emerging technologies to optimize business operations and provide a more inclusive and secure outcome for end-user consumption of food and medicine.
- 5 Work Streams in Progress
 - Pharma Supply Chain
 - Clinical Trials
 - Agri-Business
 - Medical Devices
 - Smart Contracts for Supply Chain
- Coordination w/other activities: DITA, AI/Ethics, Blockchain, Digital Citizen
See the full ICAID at <http://bit.ly/SC-CTIC>

Digital Inclusion Through Trust & Agency

- **The Issue:** The growing importance of digital identity and privacy in the world of blockchain technologies and customer/patient empowerment of their data in the dawn of diminished trust in security and privacy online
- **Desired Outcomes:** Develop consensus with industry executives, tech innovators, and academic researchers to move towards technical and data standards that would deliver the following outcomes:
 - Restore dignity to digital identity and empower citizens to choose with whom they want to transact
 - Have the right to be forgotten and protect oneself when online
 - Establish technical standards for blockchain or other distributed ledger systems that would enable the possibility of secure digital identity
- **Coordination with other activities:** Internet Initiative, Cybersecurity Initiative, Blockchain, and AI/Ethics

See the full ICAID at <http://bit.ly/IEEEDigitalInclusion>

Realizing the Immersive Future City: Design, Development & Deployment Considerations across The Digital Citizen's Journey via Standardized Technologies & Interoperable Technical Implementations

With the evolution towards ubiquitous connectivity of the "Digital Citizen", the interoperability and standardization of devices, data, and connectivity are critical for maintaining consistent and persistent states across multiple identity interactions and ultimately, the resultant environment.

Workstreams include:

1. Wireless Wearable Testbed (WWT)
2. Wearable to Clinical Data Stream Optimization
3. Expand the Digital Journey beyond PAN/WAN
4. Develop a Blockchain communication protocol with 360 dataperspective
5. Consider Implementation Challenges on a Global Front in a Futurecity Environment
6. Harmonization and coordination with other IEEE and Industry Initiatives

See the ICAID at <http://bit.ly/DigCizIC>

IEEE P2418™ Standard for the Framework of Blockchain Use in Internet of Things (IoT)

- Scope: This standard provides a common framework for blockchain usage, implementation, and interaction in Internet of Things (IoT) applications.
 - The framework addresses scalability, security and privacy challenges with regard to blockchain in IoT. Blockchain tokens, smart contracts, transaction, asset, credentialed network, permissioned IoT blockchain, and permission-less IoT blockchain are included in the framework.
- Purpose of this project is to develop definitions, protocol, communication etc. for blockchain implementation within IoT architectural framework.
- The use of blockchain technology for IoT enables decentralized, autonomous communication (peer-to-peer, consumer-to-machine, machine-to-machine) without the need for a trusted intermediary.

IEEE P825™ Guide for Interoperability of Transactive Energy Systems with Electric Power Infrastructure

Building the Enabling Network for Distributed Energy

Resources. The purpose of the standard is to provide guidance on treatment of matters in which the dominant factors are the application, design, deployment and operation of consumer and prosumer energy services behind the meter

- Leverage the widely adopted IEEE 1547 interconnection standard as well as the multiple communications protocols, this standard will provide the guidance for efficient development of Smart Grid interoperability features needed by transactive energy systems.
- The guide will:
 - Permit common transactive grid services to be exercised by connected Distributed Energy Resource assets behind the meter.
 - Bring together a broad set of grid interoperability standards that will utilize the underlying IEEE1547 Interconnection conformity as an integration platform while leveraging multiple communications protocols.

activities

- Industry Engagement (2016-2018)
- Products
- Virtual Communities



SA Industry Engagement Activities 2016

- The White House Event
- Disrupt Blockchain Series at Stanford
- Health Information Technology Event
- Open M-Health for Researchers Event
- Virtual Blockchain Health Week (Oct)

Blockchain Podcasts and Blogs Started in 2016

SA Industry Engagement Activities

2017

- Disrupt Blockchain Series in Silicon Valley (April & May)
- IEEE-SA Blockchain Conference at IEEE IC2E Vancouver (April)
- Securing and Optimizing the Pharma Supply Chain w/ Blockchain Webinar (May)
- Blockchain for Pharma Supply Chain Forum (June)
- Blockchain Applications for Efficacy and Patient Safety in Clinical Trials (Oct)
- IEEE-HDA (Healthcare Distribution Alliance) Workshop on Blockchain and Track and Trace Compliance (Nov)
- Blockchain for Life Sciences Incubator Work Group Launch (in collaboration with Pfizer and Deloitte) (Nov)
- Track and Trace Regulatory Compliance in the US and EU with Blockchain (Dec)
- Blockchain, Clinical Trials Standards & Regulators –Webinar (Dec)

SA Industry Engagement Activities 2018

- IEEE-SA Blockchain Session at CROWN Congress (Jan)
- WAMI (Jan)
- Alliance Services: Blockchain Trucking Alliance – (Jan)
- A New Standard for Clinical Trials with Blockchain Forum (Feb)
- IEEE-SA Blockchain Health Education Track at HIMSS 2018 (Mar)
- IEEE-SA/WSBA Collaboration Event: Unbanked and Blockchain Standards (Mar)
- Alliance Services: Blockchain for Food Safety (Q1)

In 2018, we will continue to move forward with these activities including blogs and podcasts across all industry sectors.

IEEE-SA Blockchain Intelligence

reports

RESEARCH STUDY

The State of Blockchain Adoption in the Pharmaceutical Supply Chain

One-of-a-kind study that identifies adoption barriers, the state of adoption and where standards can make a difference

Release date: 23 October 2017

<https://blockchain.ieee.org/events/2017-sba-psc/>

INDUSTRY INSIDER'S REPORT

Clinical Trials, Blockchain and Solving the Patient Recruitment Challenge

Release Date: December 2017

IEEE-SA Blockchain Intelligence

virtual communities

IEEE Blockchain Special Interest Group (SIG)

320 global members representing finance, healthcare, energy, and supply chain sectors.

Established: 18 months

<https://blockchain-ieee.signup.team/>



Collaboratec

A technical community exploring the details of the technology and potential applications of blockchain.

1700 members

<https://ieee-collabratec.ieee.org/app/community/102/activities>

working w/SA

- Volunteer Chairs
- Industry Corporates



Volunteers Working on the IEEE-SA Blockchain Initiatives and Activities...

■ VOLUNTEER CHAIRS

- Dr. Greg Adamson (DITA)
- Oleg Logvinov (DITA)
- Gerard Hayes (Digital Citizen)
- Dr. Tim Mackey (SC/CT Chair)
- Carole Carey (SC/CT Chair)

Corporations working w/IEEE-SA

- Aetna
- AMD
- Amgen
- Cisco
- Clinical Blockchain
- GE
- GEM
- Health Linkages
- Hitachi
- Huawei
- IBM
- IoT Technologies Inc.
- IoTecha
- Johnson Controls
- Kaspersky Labs
- L&T InfoTech
- Pfizer
- PwC
- Rockwell Automation
- Sanofi
- Sig Fox
- The LinkLab
- UCB Celltech
- ZTE

Thank You

