

Swarm AI for Decentralized Clinical Research

ConV2X Symposium 2021 - 10 November 2021



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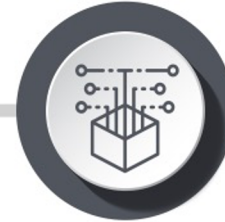


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STANDARDS ASSOCIATION

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Providing support to alliances & trade associations



Registries

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Providing confidence & assurance & accelerating market adoption



What is Swarm AI?

“Artificial Swarm Intelligence, or simply Swarm AI, connects human groups into emergent systems moderated by AI algorithms modeled on biological swarms. An Artificial Swarm Intelligence of a human population is a “hive mind” and it can achieve ‘superintelligent’ results and significantly outperform all the individual members who participate.”

“Charles Warnock, Singularity Group, Sept 19, 2019”

Things to Think About During this Discussion

- Understanding the key differences between federated machine vs swarm learning
- The technical, policy and application consideration when it relates to transferring significant amounts of data
- The impact of Swarm AI on the drug development process
- The necessary steps to drive wider understanding and adoption of the technology application in clinical R&D

Swarm AI for Decentralized Clinical Research

ConV2X 2021 Virtual Symposium: Thursday, 11 November 2021



[Moderator]
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DISCUSSION



GET INVOLVED

Transforming The Telehealth Paradigm: Sustainable Connectivity, Accessibility, Privacy, and Security for ALL

Current and Upcoming Pre-Standards Workstreams:

- Healthcare Technologies
- Telehealth/Virtual Care Lexicon
- Publications and Education
- Emergency Healthcare Communication “Lanes”
- Rural Connectivity and Access for Healthcare
- Telehealth Inequity and Healthcare Disparity



**EXPRESS YOUR INTEREST
TOWARDS BUILDING
SOLUTIONS!**

<https://standards.ieee.org/industry-connections/transforming-telehealth.html>

TECH & DATA HARMONIZATION FOR DECENTRALIZED CLINICAL TRIALS

1. Prioritize the areas DCT using DHT standards can accelerate adoption, mitigate risks, and optimize efficiencies with sponsors, regulators, sites, technologists, service providers, patient advocacy organizations, and other relevant stakeholders
2. Define the standards to build, calibrate, verify, and qualify DHTs and technologies to be used to measure clinical endpoints in DCTs using DHTs to optimize clinical data quality and integrity
3. Build a library of standards and technical recommendations that represent a tool kit for DCT using DHT research methods and approaches
4. Determine the best practices and processes aimed at assisting in the protection of trial participant's safety and privacy while using relevant data security practices to ensure data quality, integrity and flow
5. Develop best practices to use DHTs and technology-related endpoints, including the use of biomarkers as surrogate endpoints to support DCTs

GET INVOLVED



IEEE P2968.1 - Trial Use Recommended Practice for Decentralized Clinical Trials Patient Safety

IEEE P2968.2 - Trial Use Recommended Practice for Decentralized Clinical Trials Threat Modeling, Cybersecurity, and Data Privacy

Learn more at
<https://standards.ieee.org/industry-connections/rct.html>

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Understanding New Tools and Approaches for Better Health

Maria Palombini
IEEE SA Healthcare & Life Science Practice Lead

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THANK YOU



GET INVOLVED:

Write about it, talk about it, develop solutions...make an impact.

MARIA PALOMBINI

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<http://ieeesa.io/hls>

APPENDIX





Global Connected Healthcare Cybersecurity Virtual Workshop Series

W1: 24 FEB | W2: 28 APR | W3: 16 JUN | W4: 22 SEPT | W5: 17 NOV

VISIT [IEEESA.IO/CYBER2021](https://ieeesa.io/cyber2021)

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INDUSTRY CONNECTIONS – HEALTHCARE & LIFE SCIENCES PROGRAMS

- Tech & Data Harmonization for Decentralized Clinical Trials
- Digital Inclusion, Identity Trust and Agency (DIITA)
- Connectivity Harmonization of the Digital Citizen/ (WAMIII)
- Neuro Tech for Brain-Machine Interfacing
- Transforming the Telehealth Paradigm
- Responsible Innovation of AI in Life Sciences
- Global Initiative on Blockchain-based Omnidirectional Pandemic
- Transforming Digital Personalized Medicine
- Ethical Assurance of Data-Driven Technologies for Mental Healthcare
- IoT Ecosystem Security
- Surveillance AI Systems for Governance for Cities

<https://standards.ieee.org/industry-connections/activities.html>

IEEE STANDARDS PROJECTS RELATIVE TO TOPIC...CONT

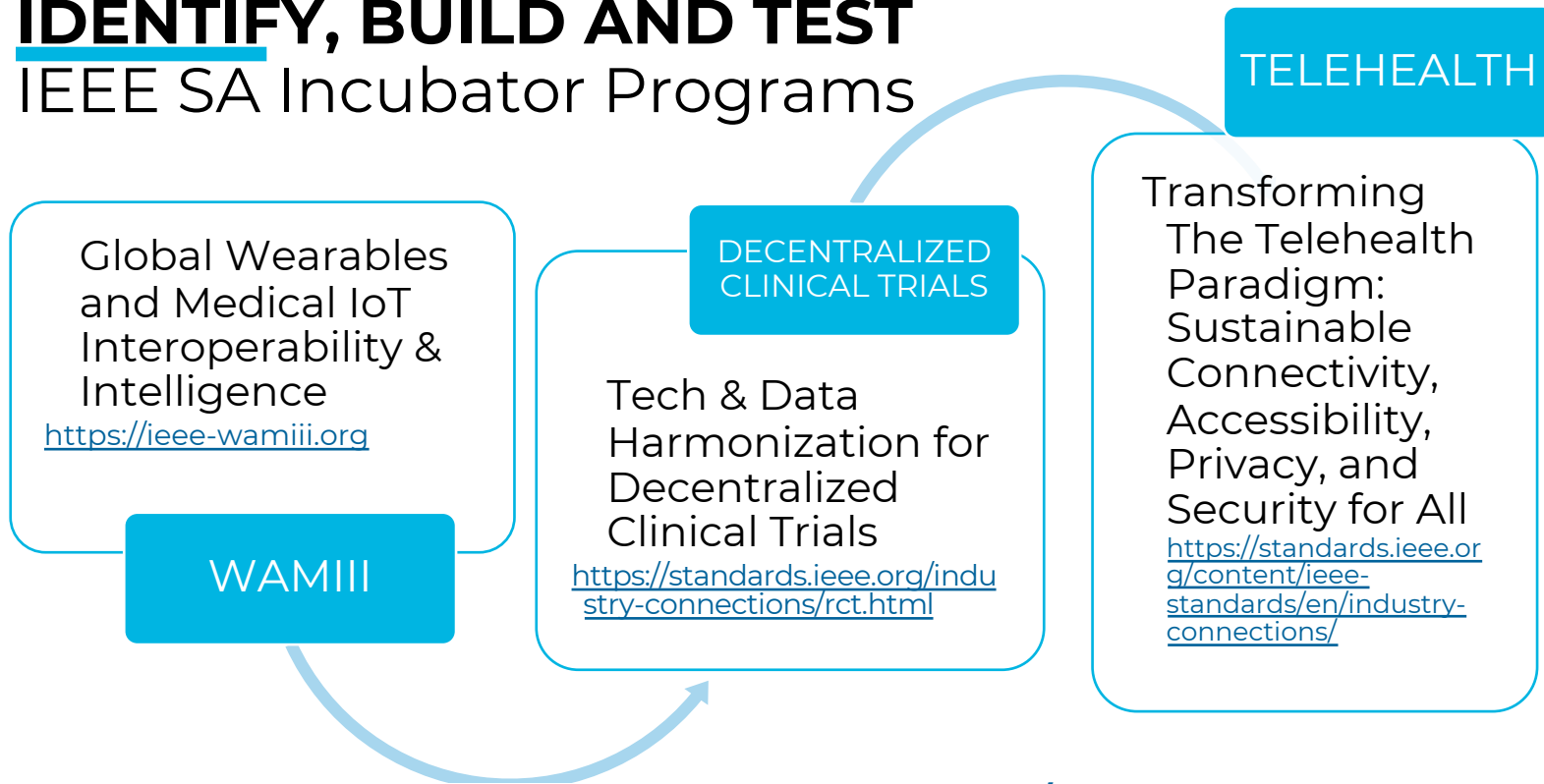
- IEEE 11073 Suite –Health Informatics - Personal Health Device Communication - Device Specialization
- P1752.1 - Standard for Mobile Health Data for Sleep Monitoring
- P1752.2 – Standard for Mobile Health Data for Cardiovascular Activity
- P2550 - Standard for Remote Monitoring of a Neonate and the Mother Post-Partum in a Non-Clinical Healthcare Setting
- P2650 - Standard For Enabling Mobile Device Platforms To Be Used As Pre-Screening Audiometric Systems
- P2144.1 - Standard for Framework of Blockchain-based Internet of Things (IoT) Data Management
- P2144.2 - Standard for Functional Requirements in Blockchain-based Internet of Things (IoT) Data Management
- P2144.3 - Standard for Assessment of Blockchain-based Internet of Things (IoT) Data Management
- P2418.1 - Standard for the Framework of Blockchain Use in Internet of Things (IoT)
- P1451-99 - Standard for Harmonization of Internet of Things (IoT) Devices and Systems



IEEE STANDARDS PROJECTS RELATIVE TO TOPIC...CONT

- P1528.7 - Guide to Assess the Electromagnetic Fields (EMF) Exposure of Internet of Things (IoT) Technologies/Solutions
- P2802 - Standard for the Performance and Safety Evaluation of Artificial Intelligence Based Medical Device: Terminology
- P2418.6 - Standard for the Framework of Distributed Ledger Technology (DLT) Use in Healthcare and the Life and Social Sciences
- P2933 -Standard for Clinical Internet of Things (IoT) Data and Device Interoperability with TIPPSS (Trust, Identity, Privacy, Protection, Safety, Security)
- IEEE 2791-2020 - IEEE Standard for Bioinformatics Analyses Generated by High-Throughput Sequencing (HTS) to Facilitate Communication
- P2968.1 - Trial Use Recommended Practice For Decentralized Clinical Trials Patient Safety
- P2968.2 - Trial Use Recommended Practice for Decentralized Clinical Trials Threat Modeling, Cybersecurity, and Data Privacy

IDENTIFY, BUILD AND TEST IEEE SA Incubator Programs



IEEE SA STANDARDS PROJECTS IN TOPICAL AREA

- P2933 - Standard for Clinical Internet of Things (IoT) Data and Device Interoperability with TIPPSS - Trust, Identity, Privacy, Protection, Safety, Security
- IEEE 11073-40102-2020 - IEEE Standard - Health informatics--Device interoperability Part 40102: Foundational--Cybersecurity--Capabilities for mitigation
- P2968.2 - Trial Use Recommended Practice for Decentralized Clinical Trials Threat Modeling, Cybersecurity, and Data Privacy
- P2418.6 - Standard for the Framework of Distributed Ledger Technology (DLT) Use in Healthcare and the Life and Social Sciences

For more details visit <https://standards.ieee.org>

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- MyData Health
- Global Initiative to Standardize Fairness in the Trade of Data
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- AI Systems for Governance for Cities
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