2022 was a very important year for BDL, one in which our standard committee prepare itself for the next major step in its journey. At the same time, as we looked at ways to meet future challenges, we didn’t slacken the pace for a minute.

For an organization to succeed, it must align behind common goals. At the IEEE C/BDL, we have a clear purpose – to manages the development of standards within the area of blockchains and distributed ledgers, the development and implementation of blockchains and distributed ledger systems, and for applications of blockchains and distributed ledgers to specific sectors, industries, and processes. Our standards together with conformity assessment provide the method to achieve this mission. On the occasion, we would like to take you through some of the year’s achievements of which we are most proud.

In 2022, we continued to meet, and even surpass, expectations. For example, we completed IEEE P3207, and we have 21 standards under development. You can find out more about these and other standardizing successes in this report.

At a time when we are experiencing an unprecedented global health crisis, many challenges stand ahead of us. We are proud to be a part of the IEEE C/BDL as we are adapting to the future on this journey, and we know that, together, we are on our way to create the digital world by blockchain.

Ming Li, Chair of BDL
Yu Du, Vice Chair of BDL
IEEE BDL STRUCTURE

Chair
Vice Chair

Advisory Board
- Chair
- Vice Chair
- Member

Executive Board
- Chair
- Vice Chair
- Member

Technical Board
- Chair
- Vice Chair
- Member

Expert Group
- Chief Scientist
- Expert

Secretariat
- Secretary General
- Policy/Activities/Standard/Media/Finance

Standards Working Group
- WG1
  - Chair
  - Vice Chair
  - Secretary
- WG2
  - Chair
  - Vice Chair
  - Secretary
- ......
  - Chair
  - Vice Chair
  - Secretary

Operation Support Group
- Cooperation/Communication
  - Director
  - Secretary
- Technical Service
  - Director
  - Secretary

Work Station
- Director
  - Secretary
- City 1
  - Director
  - Secretary
- City 2
  - Director
  - Secretary

Chapter
- Director
  - Secretary
1 HONORS ACADEMIC ADVISOR

4 SUBCOMMITTEES

31 WORKING GROUPS

11 MEMBERS OF TECHNICAL BOARD, WHO RESPONSIBLE FOR STRATEGIC DEVELOPMENT PLANNING AND CONSULTING

1 TREASURE

4 SECRETARIES

20 AVERAGE VOTING MEMBERS FOR EACH WORKING GROUPS

80+ ENTITIES (70+ HAVE CORPORATE MEMBERSHIP) AS BDL CONTRIBUTORS, LISTED HERE BELOW BY CATEGORY.

Honors Academic Advisor: Jifeng He, Academician of Chinese Academy of Sciences, East China Normal University

Advisory Board

- Susan Corbisiero, Australian Trade and Investment Commission
- Hock Lai Chia, Singapore FinTech Association

Executive Board

- Bin Li, Webank
- Danny Deng, Gongyilian
- Fangwei He, Zhongke Fuyun
- Fred Du, Bytom
- Han Hao, Annie
- Haobo Ma, Hoopox
- Hongfei Da, Distributed Technologies
- Jose Antonio Costa, Nokia
- Tianchong Liu, Easy Visible Sky Tree
- Wei Xiao, Baidu
- Wenpeng Song, Zhongan
- Xiaojun Zhang, Huawei
- Xinlei Zhai, JD Digits
- Ying Yan, Ant Financial
- Yuming Yuan, Hainan Huochain Technology Co., Ltd
- Zhoudong Ji, Goldfield capital Ltd
- Yukun Hao, Wanxiang Blockchain

Technical Board

- Haibin Kan, Fudan University
- Jianming Zhu, Central University of Finance and Economics
- Liang Cai, Zhejiang University
- Qiang Tang, New Jersey Institute of Technology
- Ruiyun Yu, Software College, Northeastern University
- Yi Sun, Institute of Computing
- Phil Lau, Map Protocol
- Alison Holt, FIITP, FBCS
- Haishui Yan, Aurora IT Group
- Kyeong Hee OH, TCA Services
- Weilun Lao, China Southern Power Grid Guangzhou Power Supply Bureau
IEEE BDL STANDARDS AT A GLANCE

ACTIVE PROJECTS OF WORK OF BDL

31

THE BREAKDOWN WAS AS FOLLOWS:

- 2 PUBLISHED
- 2 COMPLETED
- 6 PROJECTS AT BALLOT STAGE
- 21 PROJECTS WORKING GROUP DRAFTS

RECORD NUMBER COMPLETED IN 2022

2

THIS OUTPUT REPRESENTS A TOTAL OF 58 PAGES

IEEE BDL STANDARDS BY TECHNICAL SECTOR

- APPLICATION: 22.6%
- INTEROPERABILITY: 9.7%
- TECHNICAL: 41.9%
- ASSET: 12.9%
- SERVICE: 12.9%
The smooth development of IEEE C/BDL 2022 cannot be separated from all member's strong support. We will continue to make efforts on making all working groups voices heard in 2023 and beyond.

1 IEEE 2418.2-2020 IEEE Standard Data Format for Blockchain Systems
2 IEEE 2418.7-2021 IEEE Standard for the Use of Blockchain in Supply Chain Finance
3 P3201 Standard for Blockchain Access Control
4 P3202 Standard for Capability Evaluation Requirements of Blockchain Practitioners
5 P3203 Standard for Blockchain Interoperability Naming Protocol
6 P3204 Standard for Blockchain Interoperability - Cross Chain Transaction Consistency Protocol
7 P3205 Standard for Blockchain Interoperability - Data Authentication and Communication Protocol
8 P3206 Standard for Blockchain-based Digital Asset Classification
9 P3207 Standard for Blockchain-based Digital Asset Identification
10 P3208 Standard for Blockchain-based Digital Asset Exchange Model
11 P3209 Standard for Blockchain Identity Key Management
12 P3210 Standard for Blockchain-based Digital Identity System Framework
13 P3211 Standard for Blockchain-based Electronic Evidence Interface Specification
14 P3212 Standard for Blockchain System Governance Specification
15 P3214 Standard for Testing Specification of Blockchain Systems
16 P3215 Standard for Consensus Framework for Blockchain System
17 P3216 Standard for Blockchain Service Capability Evaluation
18 P3217 Standard for Application Interface Specification for Blockchain Systems
19 P3218 Standard for Using Blockchain for Carbon Trading Applications
20 P3219 Standard for Blockchain-based Zero-Trust Framework for Internet of Things (IoT)
21 P3220 Guide for the Application of Non-Fungible Token (NFT) Based Digital Asset
22 P3221 Standard for Technical Requirements of Digital Collection Services Based on Blockchain Technologies
23 P3222 Standard for the Reference Architecture of Blockchain as a Service
24 P3223 Standard for the Reference Architecture of Blockchain Fusion Serve
25 P3224 Standard for Blockchain-based Green Power Identification Application
26 P3225 Standard for Using Blockchain in Low Carbon Zones Evaluation
27 P3226 Standard for Trusted Data Circulation based on Blockchain and Distributed Ledger Technologies (DLT)
28 P3227 Standard for a Reference Framework of Data Security Circulation System Based on Blockchain and Federated computation
29 P3228 Standard for the Recurring Transactions Using Distributed Ledger Technologies (DLTs)
30 P3229 Guide for Industrial Software Application Based on Blockchain
31 P3230 Standard for Blockchain based Power System Demand Response Technical Specification
The rapid growth of IEEE C/BDL 2022 cannot be done with the efforts from the WGs. We would like to have special thanks to our outstanding WGs. With individual performances, things will look better in 2023 and beyond.

OUTSTANDING WGS

Blockchain in Supply Chain Finance Working Group (C/BDL/BSCF)
After publishing the "Standard for the use of blockchain in supply chain finance" in 2021, members of the P2418.7 WG continue having heated regular meeting discussing the needs for standardization. The published standard defines a baseline architectural framework and defines functional roles for blockchain-driven supply chain finance (SCF) implementations, e.g., core enterprise, supplier, bank, blockchain platform provider, and so on. The procedures of registration, asset issuance, asset transfer, financing based on asset on chain, asset clearing and settlement, and asset tracing, are explained. Finally, the technique requirement of the business system, and blockchain platform are discussed.

Blockchain-Enabled IoT Security Working Group (C/BDL/BEIS)
During the past year, P3219 WG has completed the draft and it is in the ballot phase. The standard will define a common framework addressing general security and trust in Internet of Things application blockchain use. The framework is constructed using a suite of distributed IoT security and trust service components incorporating blockchain in hardware-based security components on devices, edges and clouds to provide systematic integrity, confidentiality and availability. The framework includes distributed identity and access management, continuous verification and secure data sharing to provide reliable interactions among people, things and applications in the presence of failures and attacks.

Digital Identity Working Group (C/BDL/DI)
During the past year, P3210 WG translates from the phase of establishment to close to a draft finish. The standard will establish requirements for blockchain based digital identity systems. The standard addresses the following attributes of the system, including but not limited to, digital identity definition, distributed digital identity creation, distributed digital identity authentication, distributed digital identity note (refers to identity credentials such as identity card, work card, member card), data or asset circulation protocols.
The rapid growth of IEEE C/BDL 2022 cannot be done with the efforts from the members. We would like to have special thanks to our outstanding Experts. With individual performances, things will look better in 2023 and beyond.

OUTSTANDING CONTRIBUTION EXPERTS

Wenting Chang, P3226 WG CHAIR
Wenting Chang is PHD from Tsinghua University and join Antchain since 2019. She is the standard expert in the blockchain and privacy-preserving computing direction. She is an expert of ISO TC307, and has participated in the ITU and IEEE international specification activities.

DR. Chang has a high professional quality and many years of standard research work experience. During her participation in IEEE C/BDL work, she devoted herself to Standard construction, participated in standard activities for many times, and actively contributed to the preparation and promotion of many standards.

In addition, Chang Wenting, on behalf of Ant Group, led the establishment of three standard working groups, namely IEEE P2418.7, P3205 and P3226, and achieved good results. Among them, the P2418.7 working group successfully released the first IEEE supply chain finance standard, which also showed the excellent professional and organizational ability of Mr. Chang Wenting.

Above, Chang Wenting is recommended to select BDL Expert Outstanding Contribution Award.

Bo Tang, P3219 WG CHAIR
Bo Tang, Ph.D., CISSP-ISSAP, Chief Scientist of Changhong Information Security Lab, Chair of Sichuan Digital Content Protection Engineering Research Center. Dr. Tang has over 15-year professional experience in the field of information security associated with PingAn Insurance of China, Samsung Research America, Institute for Cyber Security at UTSA and so on. His research focuses in access control, IoT security, blockchain application and AI security.

Dr. Tang has strong professional learning ability and has made remarkable research achievements in access control, privacy protection, IoT security, AI security and blockchain application. In the process of promoting the development of P3219 working group standard, he was able to carefully organize working group meetings in strict accordance with the requirements of IEEE SA, actively carry out academic discussions, and integrate more than 20 member corporates in relevant fields, including professional technology enterprises, application enterprises, Universities and scientific research institutes. He has organized in-depth technical exchanges and discussions to ensure the efficient, relaxed and healthy working atmosphere and good development status of the working group. At the same time, he also vigorously promoted the combination of standard development and application landing, guided the development of technology products and industrialization from the actual application scenarios, and made outstanding contributions to the standardization work of IEEE SA C/BDL Committee.
The P3218 IEEE Standard for blockchain-based digital asset Identification provides a technical framework and application processes for using blockchain for Carbon trading applications. This standard also defines the technical requirements for using blockchain for Carbon trading applications, including functions, access, interface, security, and Carbon consumption voucher coding.

This standard provides requirements and specifications for using blockchain for carbon trading applications. It describes a technical framework for the construction of a secure, efficient and convenient carbon trading system. The purpose is to help solve problems in carbon trading: to improve the efficiency of system interactions, perform life cycle traceability management of carbon trading applications, enhance the efficiency of multi-subject identity authentication for carbon trading, and thereby improve business efficiency.
## Standard for the Use of Blockchain in Supply Chain Finance

### Working Group Participants

<table>
<thead>
<tr>
<th>Name</th>
<th>WG Position</th>
<th>Affiliation</th>
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<tbody>
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<tr>
<td>Shaoyong Guo</td>
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<tr>
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BDL VIRTUAL PLENARY IN APRIL
IEEE Blockchain Conformity Assessment Committee (BCAC)

IEEE BLOCKCHAIN CONFORMITY ASSESSMENT PROGRAM

Introduction
With the increased use of blockchain technology by companies for various applications and solutions, there are no unified specifications and requirements for technical platform, system architecture, data format, application scenarios and service capability. The IEEE Computer Society Blockchain and Distributed Ledger Standards Committee (BDLSC) and the IEEE Conformity Assessment Program (ICAP) are jointly developing a conformity assessment program to ensure blockchain systems and products, can demonstrate conformance to related IEEE standards. This program will be managed and operated by ICAP.

IEEE Blockchain and Distributed Ledger Standards
The IEEE Computer Society Blockchain and Distributed Ledger Standards Committee (BDLSC) manages the development of IEEE 3200™ series and other standards for blockchain and distributed ledger. These standards encompass relevant data formats for application to specific sectors, industries, and processes.

The IEEE BDLSC will standardize the implementation of blockchain system across various industry verticals such as finance, manufacturing, agriculture, IoT, energy, and healthcare, with a focus to support blockchain data, technology, application, assets, service, and other related domains interoperability between blockchain systems.

Conformity Assessment Committee
The IEEE Blockchain certification program is being developed by the IEEE Blockchain Conformity Assessment Committee (BCAC), comprised of industry stakeholders, that will bring value to users, manufacturers, solution providers, regulators, and other potential beneficiaries. The goal of the BCAC is to produce and execute a unified test and evaluation specification aligned with current and future IEEE blockchain standards.

IEEE is issuing a call for participation for entities to join this committee. The main objectives of this committee will likely include:

Objectives
- Demonstrate to buyers that blockchain products or systems conform to the IEEE BDL standards
- Advise on the IEEE blockchain certification scheme requirements
- Define competency and audit requirements to become an IEEE recognized test laboratory
- Develop procurement language and advise on the IEEE Certified Mark

Join the Committee
PLENARY MEETING

Attendees
Chair: Ming Li
Vice Chair: Yu Da
Secretary: Yukun Han, Lin Sun, Deyan Huang, Song Li, Chao Li

MEETINGS OF EXECUTIVE BOARD

83 MEETINGS OF WORKING GROUPS

1. Call to order and roster update.
2. Approval of minutes of last meeting.
3. Approval of agenda.
4. Opening speech by Chair – Li Ji
5. Chief Secretary Report – HAO Yi
6. Update from IEEE-SA Staff – ZHAO Ming
7. Motions
   - Motion 1: Citing award for Outstanding Working Group (Motion from HAO Yi) - Announcement Outstanding Working Group award.
   - Motion 2: Setting up a new working group.

8. Working groups status report
   - P325I Standard for Blockchain Access Control
   - P325I Standard for Blockchain Interoperability.

9. Other business.

IEE Computer Society Blockchain and Distributed Ledger Standards Committee

IEEE Computer Society Blockchain and Distributed Ledger Standards Committee Plenary Meeting

Agenda:
Location: Virtual
Time: 20-21st September 2022
2022年4月25日至29日，IEEE机协会区块链和分布式记账标准委全体会议暨P3200系列国际标准工作组会议召开线上会议。本次全体由IEEE协会区块链和分布式记账标准委主办，线上会议的方式，来自区块链领域单位的70余名代表参加了为期五天的会议。

李鸣指出，就政策而言，中国、欧盟、日本、韩国都发布了数字经济、人工智能以及虚拟空间等相关领域的政策；在技术层面，新一代信息技术的发展和Web3.0的提出极大地促进了元宇宙的发展；从商业角度来看，互联网的金融和数据红利基本见顶，且投资标的物减少。此外，社会领域的影视作品和小说对元宇宙的发展起到了促进作用。
Yukun HAO, BDL CHIEF SECRETARY
Mr. Hao is the Senior Director of Wanxiang Blockchain Inc., blockchain expert serving the Ministry of Industry and Information Technology of China, and visiting researcher of Imperial College London. Mr. Hao took in charge of an R&D project of a blockchain based intelligent container operation management system; the project won the Grand Award at The First China Blockchain Development Contest. Mr. Hao has also possessed several authorized patents on blockchain and distributed system.

Ming LI, BDL CHAIR
Mr. Li is Chair of IEEE Computer Society Blockchain and Distributed Ledger Standards Committee, Member of IEEE SA CAG, SMDC, RevCom, AsiaPac Regional Advisory Group, AI/SC, Chair of IEEE P2418.2 Standard Data Format for Blockchain Systems, Chair of IEEE P2841 Framework and Process for Deep Learning Evaluation, Editor of ISO/IEC TR 38505-2:2018 Governance of data, Member of ISO/TC 307, ISO/IEC JTC1 SC40, DAMA, ISACA, SAC, Associate Editors of IET BLOCKCHAIN.

Yu DU, BDL VICE CHAIR
Mr. Du is the Vice General Manager of Wanxiang Blockchain Inc. and General Director of Wanxiang Blockchain Labs. Since joining China Wanxiang Holdings in 2015, Mr. Du has been in charge of the operations of Wanxiang Blockchain Inc. and the management of Wanxiang Blockchain Labs, including New Chainbase, investment and strategic cooperation, and product development. Mr. Du has been serving as the Under-Secretary-General of CBD Forum since 2016. He is also member of the author group of the MIIT white papers. And he has a proven track record of blockchain technology, product development, and investment.

Lin SUN, BDL EXECUTIVE SECRETARY

Nuqie LI, BDL PROPAGANDA SECRETARY
Nuqie Li, BDL Propaganda Secretary Mr. Li is the Product Manager of Sichuan Changhong Electric Co., Ltd. Since joining Sichuan Changhong, Mr. Du has been in charge of blockchain product planning and design, and integration of blockchain and Internet of things. Mr. Li has participated in the preparation of 14 standards in the blockchain field, he is also member of the author group of the MIIT blockchain case set.

Dejun HUANG, BDL COMMUNICATIONS SECRETARY
Dejun Huang has served as IEEE BDL Communications Secretary since 2021. He works as a senior engineer in Sichuan Changhong Electric Co., LTD. Mr. Huang is also the secretary of P3206 and has participated in more than ten standards in the blockchain field.