



GBBC
Global Blockchain
Business Council

DRIVING POSITIVE CHANGE IN AN ERA OF PERMA CRISIS:

RESILIENCE THROUGH REAL SOLUTIONS

TABLE OF CONTENTS

GBBC Update

- 03 Board Chair Update
- 04 CEO Update
- 07 GBBC's BOARD of Directors/Global Policy Team
- 08 Financial Services Update
- 09 Thought Leadership Spotlight
- 12 Events
- 14 Global Standards Mapping Initiative (GSMI)
- 15 International Journal of Blockchain Law (IJBL)
- 16 InterWork Alliance (IWA)
- 17 Post Trade Distributed Ledger (PTDL)
- 18 United States Blockchain Coalition (USBC)
- 21 Blockchain in Transportation Association (BiTA)
- 22 Sustainability
- 23 BxC
- 24 Food for Crisis
- 26 GBBC Ambassadors

Our Members' Work

- 28 Climate Action
- 35 Tech for Communities
- 39 Financial Innovation
- 54 Infrastructure & Governance

BOARD CHAIR UPDATE

DAVID TREAT

SENIOR MANAGING DIRECTOR AND GLOBAL METAVERSE
CONTINUUM BUSINESS GROUP & BLOCKCHAIN LEAD
ACCENTURE



Those operating in the technology and innovation spheres have undoubtedly heard the phrase “Most people overestimate what they can do in one year and underestimate what they can do in ten years.” As the pace of change has accelerated and many more technological breakthroughs are occurring simultaneously, I believe we also need to assess if we are underestimating the combinatorial power of these innovations.

In last year’s Annual Report, I highlighted the convergence of Blockchain and Extended Reality. At the time of writing, December 2022, OpenAI’s ChatGPT had just been released on November 30th 2022¹. While it immediately made headlines, it was still too early to see the ripples it would drive across industries. By February 2023, the month after publishing the 2023 GBBC Foreword, it was reported that ChatGPT had reach 100 million monthly active users². Understandably, much attention has been given to this breakthrough innovation, but we are missing the true potential which is the combinatorial power of AI+Blockchain+Extended reality.

At GBBC, we prioritize blockchain and distributed ledger as the fundamental technology that underpins

the digital landscape, serving as the trusted system of record for our modern world. The power of this digital trust can unlock material value when paired with AI. Stated most simply, blockchain can enable better AI systems by allowing for the secure, decentralized storage, and transfer of data. This is especially useful in applications where multiple parties need access to the same data, such as in machine learning networks. This would allow for faster training of AI models, as well as improved accuracy and consistency. Additionally, blockchain can be used to track and verify data provenance, and to secure and protect data from malicious actors. This could help reduce the risk of data tampering and manipulation by malicious actors, and thus improve the accuracy and security of AI systems. Unfortunately, we only have one page for the foreword, but we could easily fill a book on the combinatorial power of Blockchain and AI.

This combinatorial power doesn’t just apply to technology, this year we were very proud to join forces with the U.S. Blockchain Coalition (USBC), a non-profit coalition of state-focused blockchain associations which resulted in a combined association of nearly 600 institutional members. The USBC merger serves as an important strengthening of GBBC’s capability

in State level organization in the United States which is an important focus area, as GBBC CEO Sandra Ro remarked “States are driving grassroots community building, serving as entrepreneurial hubs of activity, and playing a key role in shaping the digital assets regulatory landscape in the U.S.”

Making predictions for the year ahead is always a risky endeavor. When I think back to writing last year’s foreword, nearly every prediction of AI’s dominance for 2023 would have been an underestimate. However, I am confident in establishing a set of principles we should operate against as the world, and technology continues to change around us. First, we must not waver in our commitment to blockchain technology and advancing the future of tokenized identity, money, and objects. Second, we must remain steadfast in our responsibility to build trusted, reliable, regulated systems with recourse and resiliency at their core. Finally, we must continue to look beyond our specific sector of innovation and identify opportunities to unlock combinations of emerging technologies to build the best outcomes. Thank you for your continued support and we are excited for what is already shaping up to be an amazing year ahead. ■

¹ <https://openai.com/blog/chatgpt>

² <https://www.reuters.com/technology/chatgpt-sets-record-fastest-growing-user-base-analyst-note-2023-02-01/>



CEO UPDATE

SANDRA RO

2024: Global Blockchain Business Council enters its 7th year and looks forward to celebrating this milestone alongside GBBC members, ambassadors, supporters and friends in snowy Davos.

As I look back upon 2023, and compare it to previous years, I cannot help but to pause, and sigh. Do I look back at the year as glass half full? Glass half empty? Should my message to the GBBC community be cheerful and upbeat? Or furrowed-browed and concerned about what lies ahead?

Yes, it has been a year of crypto winter, start-ups going bust, high inflation (nearly everywhere), 'generative AI' buzzing as the latest buzz word that no one could escape, and sadly, increased sense of insecurity and uncertainty in more regions around the world due to extreme climate, geopolitical instability and violent conflicts.

It has also been a year where we convened in person, as humans like to do, some even getting back on the globe-trotting circuit.

This annual report, 'Driving Positive Change in an Era of Permacrisis: Resilience Through Real Solutions' delineates some of the very best real-world use cases of our members who are focused on building, scaling and collaborating in ways previously unimaginable. In spite of what seems like 'permacrisis' permeating throughout society - be it geopolitical, climate-related, economic, or technological - our community stands up and pushes back, remains steady and firm in resolve, and charges forward no matter the challenges and uncertainty.

How is this possible? It is possible because we do it together, because we have resolve, and because we are grateful for the opportunity, and the privilege, to shape generations to come with our actions today. I am constantly amazed by how much our GBBC team of superstars has accomplished, working together across boundaries and disciplines.

My conclusion: the road ahead is not always straight and easy. We have been through ups and downs. However, we remain committed to our mission of education, partnership and advocacy as a community of changemakers and leaders. This challenging time is no different. In GBBC's seven years, we have grown

tremendously, evolved to fit the needs of our rapidly changing industry, and remained committed to building a strong foundation that will serve us well today and far into the future.

**INTEGRITY. TRANSPARENCY. COLLABORATION.
TRUST. RELIABILITY. SECURITY. RESILIENCE.**

What did GBBC learn and do in 2023?

We did a lot. A lot, a lot. In the following pages of this annual report, you will read the details of some of the very best ones.

Highlights are here:

We scaled our organizations in 2023 via mergers with BITA Standards Council (BITA) and United States Blockchain Coalition (USBC).

With BITA, we brought in major transportation and logistics companies as members, expanding our work in the supply chain sector to advance open-source standards for blockchain/Web3-enabled global commerce.

GBBC BY THE NUMBERS

500+
MEMBERS

301
AMBASSADORS

117
JURISDICTIONS

With USBC, we brought in state-focused blockchain associations, influencers, and organizations to advance state-level advocacy for emerging technology.

GBBC is proud to share some milestones from 2023:

- *We have been appointed to the CFTC Global Markets Advisory Committee (GMAC) – Digital Asset Markets Subcommittee (DAMS), where GBBC has also been asked to co-chair two working groups – Infrastructure and Taxonomy.*
- *We have been invited to contribute to the Commonwealth of Pennsylvania's AI Working Group under Governor Shapiro.*
- *We continued to take part in Salesforce's Web3 Advisory Board and now, Salesforce's AI Advisory Board.*
- *We serve on the Digital Dollar Project Advisory Board*
- *We participate in the International Securities Services Association (ISSA) DLT Working Group*

The InterWork Alliance advanced continued interest and adoption of open standards for carbon markets and beyond, publishing crucial reports for the space on Digital Measurement Reporting and Verification (dMRV) Framework – Version 2, the Carbon Emission Token

(CET) Protocol Paper, and Credible Emissions Reporting: Opportunities for Improved Allocation in Emissions Trading Systems.

We also released reports which offered insight into the latest themes and were very well received by the community:

VALIDATORS AND THEIR GOVERNANCE PARTICIPATION: IDENTIFYING DEVELOPMENT PATHS FOR PROOF-OF-STAKE BLOCKCHAINS WITH ON-CHAIN GOVERNANCE

WITH RMIT BLOCKCHAIN INNOVATION HUB

TOTAL VALUE LOCKED: FROM DEFI TO TRADFI

WITH PROVENANCE BLOCKCHAIN FOUNDATION

GBBC Giving, which is GBBC's charitable arm, formalized its partnership with the World Food Programme for the Food for Crisis initiative.

GBBC became a fiscal sponsor of the Blockchain x Climate Leadership Network (BxC), which was announced and officially launched in Davos.

In the media, GBBC was featured in Bloomberg Technology, Yahoo Finance, and The Banker, while our BITA press release had more than 2 million impressions.

Global Standards Mapping Initiative (GSMI):

GSMI returns in its fourth year with the most comprehensive effort yet to map and analyze the blockchain and digital assets landscape across six key areas. This year, GBBC built on previous GSMI content and released new resources, expanding on interactive tools and reports. GSMI 4.0 includes a digital assets regulation map covering 230 jurisdictions, a taxonomy with 350 terms, 63 technical standards bodies, 2,000+ stakeholders in a blockchain and digital assets landscape, 1,500+ university courses and degree programs, and 5 reports on key themes in the space: AI Convergence, Sustainability, Digital Identity, Supply Chain, and a report on blockchain developments in Brazil.



Ambassadors: We are proud to announce our new cohort of GBBC Ambassadors: 301 ambassadors, 117 jurisdictions and disciplines strong. GBBC's 2024 Ambassadors are featured on page 26.

In-Person & Virtual Convenings: During 2023, GBBC took part in 132 events. In addition to hosting its flagship Blockchain Central Davos in January and Blockchain Central UNGA in New York City in September, GBBC hosted 40 events including 11 Virtual Members Forums, a webinar series highlighting the work of members. Throughout the year, GBBC also presented at 92 external conferences and events on a myriad of topics as they relate to blockchain and digital assets across industries. GBBC took part in 26 virtual panels and sessions.

Some highlights include Tech for Impact at the US Senate, Point Zero Forum in Switzerland, and the Singapore Fintech Festival.

107+ Distinguished Speakers from **102+** jurisdictions
860+ GBBC Community Participants
250+ Hours of Discourse

Reports and Thought Leadership: GBBC published 23 open-access reports authored in partnership with members and partners, released 5 mappings and interactive tools, issued 7 visual fact cards, submitted 12 policy responses, and coordinated 20 working groups.

Board Appointments: In 2023, GBBC was pleased to expand its board and welcome global experts who bring incredible insight:

- **Jeff Bandman** - Former Director, LabCFTC; Industry Fellow and Instructor, University of Nicosia Institute for the Future
- **John deVadoss** - Co-Founder & CEO, NeuralFabric Corp
- **Dr. Reto Luthiger** - Partner, MLL Legal
- **Dimitrios Psarrakis** - Former Financial Technology, Digital Transformation, and Innovation Strategy Specialist, European Parliament; Co-Founder, ValueVerse
- **Tanvi Singh** - Managing Director and Technology Lead for Global Digital Assets, UBS

2024 Next Steps:

We remain focused on creating a democratized opportunity set for many and will be focusing on delivering education, standards, and business focused events in APAC, Central Asia, India, Middle East, and select parts of sub-Saharan Africa and South America, as well as working closely with like-minded social networks and borderless groups.

2024: In a Permacrisis Era, Blockchain technology, an enabler of truth and trust, is needed more than ever

The message that GBBC and its Members, Ambassadors, and Supporters are encouraged to share is the same as 2023: (it is good that some things do not change)

- Blockchain technology is a useful tool to enable and increase trust in a world where distrust,

misinformation, and manipulation create uncertainty, instability, and sometimes, chaos.

- Blockchain technology cannot solve all problems, but it can shed light in areas where opacity or confusion over information reigns. The potential opportunity set is staggering; coupled with other emerging technologies - blockchain has applications across nearly every industry from media, supply chain, and government to financial services and NGOs.
- The digitization of nearly everything, from tokenization to data as 'value,' will continue to evolve and impact industries and communities.
- Web2 meets Web3 will allow industries and governments to interact with customers, fans, and supporters in ways unimaginable today.

With deep gratitude to our many GBBC Members, Ambassadors, Observing Members, Sponsors, and Supporters from around the world, we thank you for dreaming of a better society, daring to be different, and collaborating with us to show the world how humanity can use technology for good.

We get there by sharing, speaking, and collaborating with each other. The profound paradigm shift blockchain enables is toward a society with fewer zero-sum scenarios and more collaboration.

Together, in 2024, may we be the standard bearers and may we spearhead the change needed to create more secure, equitable, and functional societies around the globe. #StrongerTogether ■

GBBC'S BOARD OF DIRECTORS



DAVID TREAT
SENIOR MANAGING DIRECTOR AND
GLOBAL METAVERSE CONTINUUM
BUSINESS GROUP LEAD, ACCENTURE
BOARD CHAIR, GBBC



YUVAL ROOZ
CO-FOUNDER AND CEO,
DIGITAL ASSET
BOARD MEMBER, GBBC



STACI WARDEN
CEO,
ALGORAND FOUNDATION
BOARD MEMBER, GBBC



JEFF BANDMAN
FORMER DIRECTOR, LABCFITC INDUSTRY
FELLOW AND INSTRUCTOR, UNIVERSITY OF
NICOSIA INSTITUTE FOR THE FUTURE
BOARD MEMBER, GBBC



JOHN DEVADOSS
CO-FOUNDER & CEO,
NEURalfABRIC CORP
BOARD MEMBER, GBBC



DR. RETO LUTHIGER
PARTNER, MLL LEGAL
BOARD MEMBER, GBBC



DIMITRIOS PSARRAKIS
FORMER FINANCIAL TECHNOLOGY, DIGITAL
TRANSFORMATION, AND INNOVATION STRATEGY
SPECIALIST, EUROPEAN PARLIAMENT
CO-FOUNDER, VALUEVERSE
BOARD MEMBER, GBBC



TANVI SINGH
MANAGING DIRECTOR AND TECHNOLOGY
LEAD FOR GLOBAL DIGITAL ASSETS, UBS
BOARD MEMBER, GBBC

GLOBAL POLICY TEAM



SANDRA RO
CHIEF EXECUTIVE OFFICER,
GBBC



EMMA JOYCE
SENIOR MANAGING DIRECTOR,
GBBC FINANCIAL SERVICES &
HEAD OF EMEA GBBC



DIMITRIOS PSARRAKIS
GDF BOARD MEMBER



JEFF BANDMAN
CO-CHAIR OF REG FORUM,
GDF



DINA ELLIS ROCHKIND
GOVERNMENT AND REGULATORY
AFFAIRS ADVISOR - AMERICAS
GBBC



SETH GULAS
POLICY ANALYST
GBBC

GBBC FINANCIAL SERVICES UPDATE



EMMA JOYCE
SENIOR MANAGING
DIRECTOR, GBBC FINANCIAL
SERVICES & HEAD OF EMEA
GBBC

Despite a challenging year for many players in Financial Services, we once again saw continued institutional adoption of digital assets, as well as technical and regulatory progress. 2023 demonstrated enduring growth in digital assets activity, with more participants from the traditional financial services industry launching blockchain projects, promising a more efficient transaction medium for the financial markets. Blockchain technology will revolutionize Wall Street, the City of London, and other major financial hubs, reimagining how financial transactions are processed.

The lack of regulatory clarity has held back banks from widely adopting blockchain technology, but last year we continued to see regulators and policymakers engaged with industry on moving forward. Even in the US, where the SEC has been increasing its oversight of cryptocurrencies, its approval of Bitcoin ETFs is expected to significantly increase institutional confidence.

Tokenization was the word I heard the most at the beginning of 2023, as I met with our members in Davos, Paris and London. Our discussions explored different regulatory frameworks, how DeFi and TradFi might unify, the tokenization of real world assets and the obstacles to adoption.

Through working groups, roundtables, dinners and conferences, we continued to work with our community and foster collaboration. From New York to Brussels, London, Dublin, Dubai, San Francisco, Sao Paulo, Tokyo and many more cities, we worked with our members in Financial Services to help drive adoption forward and help them navigate the challenges they face.

At the Singapore Fintech Festival, I discussed digital money with global policymakers, looking at their different jurisdictions. We explored the coexistence of digital money with ongoing efforts to modernize digital financial market infrastructure, and it was clear that trust is a major issue for consumers and citizens. Central banks and governments will need to work with industry on this, and we see this already happening across the world, as we work to help this collaboration take place.

2024, is poised to be a pivotal year for the industry, and as the largest global blockchain members association with the major players, digital assets companies, law firms, major banks and regulated financial services companies in our community, we are in prime position to help our members achieve their goals. ■

GBBC'S THOUGHT LEADERSHIP

23

REPORTS

5

MAPPINGS &
INTERACTIVE TOOLS

7

VISUAL
FACT CARDS

12

POLICY
RESPONSES

20

WORKING
GROUPS

REPORTS

OPEN-SOURCE IDEAS (OSIS) & SPECIAL REPORTS

1. [Open-Source Ideas: Validators and their Governance Participation: Identifying Development Paths for Proof-of-Stake Blockchains with On-Chain Governance](#)
2. [Special Report: Blockchain Technology for the Energy Sector](#)
3. [Open-Source Ideas: Provenance: a Major Opportunity for Blockchain and a Force for Good](#)
4. [Open-Source Ideas: Total Value Locked: From DeFi to TradFi](#)
5. [Special Report: Pathways to Crypto-Asset Regulation: A Global Approach” alongside the World Economic Forum \(WEF\)](#)

GLOBAL STANDARDS MAPPING INITIATIVE (GSMI)

6. [GSMI 4.0 AI & Convergence Report](#)
7. [GSMI 4.0 Digital Identity Report](#)
8. [GSMI 4.0 Supply Chain Report](#)
9. [GSMI 4.0 Sustainability Report](#)
10. [GSMI 4.0 Country Spotlight: Brazil](#)
11. [GSMI 4.0 Technical Standards Short Paper: DeFi](#)
12. [GSMI 4.0 Technical Standards Short Paper: Standards](#)

GBBC DIGITAL FINANCE

13. [Digital Asset Custody Deciphered: A Primer To Navigating The Challenges Of Safeguarding Digital Assets](#)
14. [GDF Global Cryptoasset Standards](#)
15. [interVASP Messaging Standard 101.2023](#)

INTERWORK ALLIANCE (IWA)

16. [IWA Digital Measurement Reporting and Verification \(dMRV\) Framework – Version 2](#)
17. [IWA Carbon Emission Token \(CET\) Protocol Paper](#)
18. [IWA Credible Emissions Reporting: Opportunities for Improved Allocation in Emissions Trading Systems](#)

POLICY

19. [Mid-Year Global Policy Report](#)
20. [GBBC U.S. Policy Update - Before Recess](#)

INTERNATIONAL JOURNAL OF BLOCKCHAIN LAW (IJBL)

21. [IJBL Volume VII: October 2023](#)
22. [IJBL Volume VI: July 2023](#)
23. [IJBL Volume V: March 2023](#)

MAPPINGS & INTERACTIVE TOOLS:

1. [GSMI 4.0 Taxonomy – 350 Terms](#)
2. [GSMI 4.0 Technical Standards Listing – 63 bodies](#)
3. [Listing of 2000+ Stakeholders in the Blockchain and Digital Assets Landscape](#)
4. [Listing of 1970 Accredited Blockchain Courses](#)
5. [GSMI 4.0 Interactive Map of Legal and Regulatory Developments](#)

VISUAL FACT CARDS:

1. [Blockchain by the Numbers Infographic](#)
2. [Web3 \(English\) Infographic](#)
3. [Web3 \(Spanish\) Infographic](#)
4. [Sustainability Strategy Infographic](#)
5. [Blockchain in the US Healthcare Infographic](#)
6. [US Policy: Bringing Blockchain Home Infographic Collection](#)
7. [Global Policy Team Infographic](#)

POLICY RESPONSES

1. March 2023: [Response to Federal Request for Information \(RFI\) on a Digital Assets Research & Development Agenda for the Office of Science and Technology Policy](#)
2. April 2023: [Submission to the HM Treasury \(HMT\) Future Financial Services Regulatory Framework Consultation and Call for Evidence](#)
3. April 2023: [Response to Re: HM Treasury Future Financial Services Regulatory Regime for Cryptoassets Consultation and Call for Evidence](#)
4. May 2023: [Comments to Safeguarding Advisory Client Assets Proposed Rule, \[Release No. IA-6240; File No. S7-04-23; RIN 3235-AM32\]](#)
5. June 2023: [Response To The Bank Of England's Consultation Paper On, "The Digital Pound: A New Form Of Money For Households And Businesses?"](#)
6. June 2023: [Comments to Amendments Regarding the Definition of "Exchange" and Alternative Trading Systems \(ATSs\) That Trade U.S. Treasury and Agency Securities, National Market System \(NMS\) Stocks, and Other Securities Proposed Rule](#)
7. June 2023: [Letter to Lord Holmes of Richmond, House of Lords, in Support of the Financials Services & Markets Bill: Regulations and Regulators Amendments](#)
8. July 2023: [Response to IOSCO Consultation Report on Policy Recommendations for Crypto and Digital Asset Markets](#)
9. October 2023: [Response To ESMA Second Consultation On The Technical Standards Specifying Certain Requirements Of Markets In Crypto Assets Regulation \(MiCA\)](#)
10. October 2023: [Response To IOSCO Consultation Report On Policy Recommendations For Decentralised Finance \(DeFi\)](#)
11. November 2023: [Response to IRS Notice of Proposed Rulemaking \(REG-122793-19\)](#)

WORKING GROUPS

GBBC

1. PTDL Group
2. US Policy Working Group

IWA

3. IWA Token Taxonomy Framework Technical Working Group
4. IWA Working Group - Voluntary Carbon Markets Taskforce
5. IWA Working Group - Carbon Emissions Taskforce
6. IWA Working Group - Renewable Energy

GSMI 4.0

7. GSMI 4.0 AI & Convergence Working Group
8. GSMI 4.0 Taxonomy Working Group
9. GSMI 4.0 Technical Standards Working Group
10. GSMI 4.0 Digital Identity Working Group
11. GSMI 4.0 Supply Chain Working Group
12. GSMI 4.0 Sustainability Working Group
13. US Policy Working Group

GBBC DIGITAL FINANCE

14. Custody Working Group
15. Global Financial Institutions Crypto Working Group (GFIC)
16. MiCA Working Group
17. DeFi WG
18. Sanctions WG
19. Private Markets Digitisation Steering Group
20. Joint Working Group On InterVASP Messaging Standards
21. KYC / AML / CTF

MEDIA MOMENTS

Sandra Ro featured in The Banker article [Blockchain's Role in a Green Future](#)

Sandra Ro featured in Tech Monitor article [Is crypto finally dead?](#)

[GBBC Merges with BITA Standards Council, a non-profit open-source standards organization for blockchain/Web3-enabled global commerce](#)

Sandra Ro featured in Yahoo Finance article [Crypto's big two weeks: Here's what happened and what it could mean](#)

[The United Nations \(UN\) World Food Programme \(WFP\) Innovation Accelerator and Global Blockchain Business Council \(GBBC\) have signed a Memorandum of Understanding \(MOU\) as founding partners for their joint initiative, Food for Crisis](#)

Sandra Ro featured in Bloomberg Technology on [FTX Trial: Less hype is better for the Blockchain industry says Blockchain Council](#)

[GBBC Merges with U.S. Blockchain Coalition, a non-profit coalition of state-focused blockchain associations, influencers and organizations](#)

Blockchain x Climate Leadership Network (BxC) Launches at Davos: [Press Release and Article](#)

Yuval Rooz, GBBC Board Director, testifies at US House Financial Services Committee hearing [Digital Dollar Dilemma: The Implications of a Central Bank Digital Currency and Private Sector Alternatives](#)

GBBC'S 2023 EVENTS

In 2023, GBBC produced and co-produced:

132

EVENTS

40

GBBC HOSTED
EVENTS

26

VIRTUAL
WEBINARS

FEATURING OVER

107

DISTINGUISHED
SPEAKERS

FROM OVER

102

JURISDICTIONS

OVER

860

GBBC COMMUNITY
PARTICIPANTS

OVER

250

HOURS OF
DISCOURSE

BLOCKCHAIN CENTRAL DAVOS

Thanks to the generous support of our sponsors, the premier in-person gathering of leaders across blockchain, digital assets, technology, and government unpacked the most-pressing developments and challenges facing the ecosystem to unite communities and forge solutions following the pandemic.



Watch the Davos 2023 Sizzle Reel
Watch the Davos recordings [here](#)



BLOCKCHAIN CENTRAL UNGA

Returning for in-person programming alongside the United Nations' 77th Annual General Assembly, and thanks to the generous support of Shearman & Sterling, more than 190 attendees gathered in New York City for 14 panels and sessions focused on the role of community and technology in accelerating progress towards the United Nations Sustainable Development Goals. The event's sessions were livestreamed, attracting ~1.8K unique online viewers.

Watch the UNGA recordings [here](#)



GBBC VIRTUAL CONVENINGS

This year, the GBBC community hosted 26 members-only virtual convenings, including Virtual Members Forums (VMFs) and discussions across EMEA, APAC, and the Americas, with leaders in the digital assets space. These events highlighted the thoughtful initiatives and projects within our community this year.



Catch up on the recordings from past VMFs here, including the 2023 presentations [here](#)

A FEW PLACES YOU MAY HAVE SEEN US

Over the course of 2023, GBBC's executive leadership participated in many events and media appearances. Here are a couple of places where you might have seen us:



POINT ZERO FORUM

GENEVA, SWITZERLAND

GBBC CEO Sandra Ro joined Point Zero Forum to discuss the potential impact of digital assets—including stablecoins, CBDCs and tokenized deposits - on the future of money. GBBC and Home of Blockchain.swiss also hosted "A Discussion with Leaders in Digital Innovation," a half-day of in-person programming to drive insightful conversations around the digital assets ecosystem and innovation in Switzerland for our members. The full update from GBBC's time in Zurich is available in our Mid-Year Global Policy Update [here](#).



TECH FOR IMPACT

WASHINGTON DC, USA

After nearly 4 years, GBBC hosted Tech for Impact Day at the Senate where our members presented leading innovative use cases across industry sectors.

From providing end-to-end traceability of valuable resources and commodities to streamlining financial services, digital innovation has the potential to influence the way we approach global solutions and drive American technology leadership and growth opportunities for many.

The exciting half-day of programming brought together top corporate innovators, visionary start-up entrepreneurs, and forward-thinking policymakers from the GBBC community to showcase real-world use cases emerging from blockchain technology, digital assets, and AI.

Watch Tech for Impact recordings [here](#)



SINGAPORE FINTECH FESTIVAL

SINGAPORE

GBBC is a proud Community Partner for Singapore FinTech Festival (SFF), organized by the Monetary Authority of Singapore (MAS), Elevandi, and Constellar in collaboration with The Association of Banks in Singapore.

This year, GBBC Digital Finance (GDF) CEO, Emma Joyce and GDF Head of Community, Madeleine Boys, formed part of the ~60,000 participants from 160 countries who came together at SFF to engage, connect, and collaborate on issues relating to the development of financial services, public policy, and technology. The full update from our time in Singapore is available [here](#).

GLOBAL STANDARDS MAPPING INITIATIVE (GSMI) 4.0

The Global Standards Mapping Initiative (GSMI) returns in its fourth year with the most comprehensive effort yet to map and analyze the blockchain and digital assets landscape across six key areas:

1. Legislation and Regulatory Developments
2. Taxonomy and Definitions
3. Technical Standards
4. Blockchain & Digital Assets Landscape
5. Courses from Accredited Educational Institutions
6. Reports & Fact Cards on Key Themes

GSMI content is referenced and utilized by corporations, regulators, government agencies, and academia globally.



GSMI 4.0 builds upon previous yearly iterations since 2020, providing a holistic view of the industry's global activity. This year we continued to enhance the depth of our coverage and improved the user friendliness of our interactive content.

GSMI REPORTS AND RESOURCES ARE CROWD-SOURCED, OPEN ACCESS, AND INTENDED TO SERVE AS A BASELINE FOR THOUGHTFUL AND WORKABLE FRAMEWORKS. THIS BODY OF WORK SUPPORTS THE ADVANCEMENT OF COMMON STANDARDS TO ENABLE ADOPTION, INCENTIVIZE FURTHER CONTINUED INNOVATION, AND ADVANCE COLLABORATION.

With the release of GSMI 4.0, GBBC is profoundly grateful for the active participation of 100+ contributors from 75+ entities spanning government, corporates, startups, nonprofits, and academia, who also took part in 6 specialized working groups. The value of our dedicated network of members, partners, and collaborators is manifested in the quality and breadth of the final content. These individuals, as well as the journey of active dialogue, debate, and reflection that it takes to collectively produce this body of work, are fundamental. GBBC continues to advance meaningful collaboration in support of responsible innovation to meet the world's most pressing challenges, and the attitude and effort that these contributors bring is the reason for the remarkable progression of GSMI with every launch.

Finally, GSMI 4.0 includes a detailed report from our partners in Brazil on the latest status of blockchain developments in the country, spanning policy, innovations, and domestic applications that have expanded significantly as part of the digital economy,

especially in the context of the country's priority to advance financial innovation and inclusion.

Through this initiative, GBBC also had the pleasure of partnering with the 2023 IFC-Milken Institute Capital Market Scholars Program, as well as our academic partner, the City University of New York (CUNY), Queens College.

Looking ahead, we will continue to update the datasets as this space continues to expand to shape many aspects of our civilization. We welcome feedback and additional contributions as we build upon this release. The best solutions to complex global problems are achieved when diverse stakeholders collaborate, bringing their different perspectives and local knowledge to the forefront. Blockchain and digital assets, through democratization and transparency of data, have the potential to address the world's most pressing needs. We hope that the resources contained in GSMI can support collaborative solutions that will benefit all. ■

See more GSMI resources [here](#)



INTERNATIONAL JOURNAL OF BLOCKCHAIN LAW (IJBL)

GBBC's International Journal of Blockchain Law (IJBL) studies and anticipates regulatory challenges and changes facing the blockchain and digital assets ecosystem. This year, IJBL released three additional Volumes and welcomed two new team members to the Editors Board.

"The IJBL is an open access online journal written and edited by lawyers, designed to help business and non-legal communities better understand the world of blockchain and digital assets. It is already well

established as a high-quality journal with increasing attention in many countries. I am proud of having published 7 editions since November 2021, with the support of the editor's board, which is composed of 8 editors from 7 jurisdictions (Brazil, Canada, Germany, Singapore, Turkey, U.K., and the U.S.). This underpins the real global focus of our journal and our intention to encompass all blockchain related topics around the world." Dr. Matthias Artzt, IJBL Editor-in-Chief

EXPLORE IJBL



VOLUME V



VOLUME VI



VOLUME VII

EDITORS MEET THE EDITORS



**EDITOR-IN-CHIEF
DR. MATTHIAS ARTZT**
SENIOR LEGAL COUNSEL; CO-EDITOR
AND CO-AUTHOR OF 'HANDBOOK OF
BLOCKCHAIN LAW'
DEUTSCHE BANK AG



LAURA DOUGLAS
SENIOR ASSOCIATE
CLIFFORD CHANCE



ELÇİN KARATAY
MANAGING PARTNER
SOLAK & PARTNERS



LOCKNIE HSU
PROFESSOR
SINGAPORE MANAGEMENT
UNIVERSITY



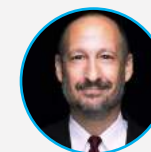
STEPHEN PALLEY
PARTNER
BROWN RUDNICK



THIAGO LUÍS SOMBRA
PARTNER
MATTOS FILHO



JAKE VAN DER LAAN
CO-AUTHOR,
'HANDBOOK OF BLOCKCHAIN LAW'
BARRISTER AND SOLICITOR
NEW BRUNSWICK, CANADA



GARY D. WEINGARDEN
PRIVACY OFFICER AND DIRECTOR
OF IT SECURITY COMPLIANCE
TUFTS UNIVERSITY

INTERWORK ALLIANCE (IWA)

The InterWork Alliance (IWA), an initiative of the Global Blockchain Business Council (GBBC), empowers organizations to adopt and use token-powered services in their day-to-day operations, across use cases and networks, bringing inclusivity to globally distributed applications. Founded in 2020, and merged in 2021 with GBBC, the leading global industry association for the blockchain ecosystem, IWA is a key rallying point for organizations to collaborate on market-driven interwork standards and taxonomy to transform digital interchanges of value.

Following the merger with GBBC, the IWA has continued its efforts to drive tokenization standards forward through the Token Taxonomy Framework (TTF), a common language framework for defining the structure of tokens and how they operate in their ecosystem. The IWA maintains a GitHub repository and a Token Designer Tool to allow for the community to use the code and standards derived from the TTF to explore tokenization in their daily business operations across all industries. By providing a common language for both business- and technology-oriented individuals to discuss tokenization, the IWA seeks to promote interoperability by providing agreed upon token definitions and guidance on how those tokens can be used.

2023-2024 HIGHLIGHTS & MILESTONES

- IWA's Voluntary Ecological Markets (VEM) Taskforce released Version 2 of the *Digital Measurement, Reporting, and Verification (dMRV) Framework*, following a public consultation period, to define the terminology, roles, process, generic evidence packaging, and attestation that dMRV solutions should follow to originate these next generation digital assets.
- IWA's Carbon Emissions Token (CET) Taskforce released *Credible Emissions Reporting: Opportunities for Improved Allocation in Emissions Trading Systems*, a short paper focusing on the potential impacts of tokenized emissions on emissions trading systems.
- IWA's CET Taskforce also published the *Carbon Emission Token Protocol* for public comment. This document intends to define, and provide guidance for, the tokenization of emissions. The goal of this effort is to advance and strengthen emissions reporting through technical guidance, specifications, and best practices of tokenized carbon emissions and related data structures.
- GBBC member companies are beginning to implement IWA specifications in their operations, with over 50 implementations either in-progress or currently live.

WORKSTREAMS

- Voluntary Ecological Markets (VEM) Taskforce
- Carbon Emission Tokenization (CET) Taskforce

CHAIRING ORGANIZATIONS



POST-TRADE DISTRIBUTED LEDGER GROUP (PTDL)

GBBC's Post-Trade Distributed Ledger (PTDL) Group, which serves as a rallying point for prominent financial institutions under the aegis of GBBC, would like to thank the financial institutions, market infrastructure players, fintech companies, and government officials who presented during the PTDL's 2023 meetings to discuss distributed ledger technology applications and regulatory developments in financial services.

Moving into 2024, the PTDL will continue to drive discussion and collaboration in the community in the monthly PTDL meetings, chaired by the Senior Managing Director, GBBC Financial Services & Head of EMEA, Emma Joyce.

2023 PTDL LEADERSHIP COMMITTEE



EMMA JOYCE
SENIOR MANAGING DIRECTOR,
GBBC FINANCIAL SERVICES &
HEAD OF EMEA GBBC



HANNAH MEAKIN
PARTNER,
NORTON ROSE FULBRIGHT



STEPHEN PROSPERI
EXECUTIVE DIRECTOR, DEPOSITORY TRUST
& CLEARING CORPORATION (DTCC)



RICHARD SHADE
CHIEF OPERATING OFFICER,
ARCHAX



ANDRE PORTILHO
HEAD OF DIGITAL ASSETS,
BTG PACTUAL



KERRY DENERSTEIN
PUBLIC POLICY LEAD,
CLS GROUP



MATTHEW SHEPHERD
VP STRATEGY, RESEARCH,
& DEVELOPMENT,
WELLS FARGO

THANK YOU 2023 PTDL PRESENTERS:

Laura Douglas, Clifford Chance

Seamus Donogue, Metaco

Colin Parry, International Securities
Services Association (ISSA)

Bryan Zhang, Cambridge Centre for Alternative
Finance

Ronald Kogens, MME Legal

Goncalo Lima, R3

Dimitrios Psarrakis, GBBC Board Member

Elisabeth Wallace, Dubai Financial Services Authority
(DFSA)

Ari Redbord, TRM Labs

Alan Lim, Monetary Authority of Singapore (MAS)

Darren TNG, Monetary Authority of Singapore (MAS)

Staci Warden, Algorand Foundation

Corey Then, Circle

Anne M Kelley, Mercury Strategies

Anna Carrier, Norton Rose Fulbright

Brian Byagaba, Abu Dhabi Global Market (ADGM)

Stephen Prosperi, Depository Trust & Clearing
Corporation (DTCC)

Akash Sharma, Bank of England

Tim Maloney, UK Her Majesty's Treasury (HMT)

Philip Bronk, UK Financial Conduct Authority (FCA)

Juan Gomez, SBI Digital

Malcolm Wright, GBBC Digital Finance

Lucy Wong, Bank for International Settlements (BIS)
Innovation Lab

Charlie Moore, Chainlink

Haimera Workie, Financial Industry Regulatory Authority
(FINRA)

Alissa Ostrove, CC Data

Denis Dounaev, Digital Token Identifier Foundation (DTIF)

Stephan Dreyer, Association for National Numbering
Agencies (ANNA)

Tanvi Singh, UBS

UNITED STATES BLOCKCHAIN COALITION (USBC)



ARRY YU
HEAD OF STRATEGY (US)
GBBC
EXECUTIVE DIRECTOR, USBC



LEE BRATCHER
PRESIDENT
TEXAS BLOCKCHAIN
COUNCIL

Founded in June 2021, [U.S. Blockchain Coalition \(USBC\)](#) is a first-of-its-kind organization built to drive multistate collaboration and maintain American leadership in digital assets, Bitcoin, and distributed ledger technologies (DLT). USBC is the only organization with a multi-state focused approach, leveraging hyperlocal relationships in over 46 states to seek consistent policies at the state level through alignment on public policy and legislative priorities. Led by representatives from Texas, Washington, California, Florida, Wyoming, Virginia, Alabama, and Pennsylvania, USBC highlights and catalogs use cases, provides accessible education to policymakers, builds relationships with regulatory bodies and agencies, and proactively seeks new partnerships with industry, government, academia, entrepreneurs, and investors to meaningfully grow the sector across the country.

Web3 represents a paradigm shift toward a more decentralized, user-centric, and inclusive Internet, where individuals have greater control over their digital lives, and where innovation can flourish in a way that's open and collaborative. Often associated with blockchain and cryptocurrency, Web3 envisions a future where transactions and interactions occur directly between peers without the need for intermediaries. This disruptive technology is garnering attention from developers and entrepreneurs, cryptocurrency and blockchain stakeholders, privacy advocates, open source communities, social impact initiatives, regulators and policymakers, and investors.

USBC's [State of Web3 Report](#) provides a state-by-state analysis of the Web3 economic activity in the United States. It illustrates increased traction around enterprise applications of blockchain technology and burgeoning research and development investment. It provides an Economic Activity Analysis Across the U.S., exploring the current Web3 landscape within each state, and showcasing investment and startup activity, innovation ecosystems, and academic research.

USBC finds, through its research and analysis, that Web3 is no longer a nascent industry, but one with a significant footprint and impact on the broader economy and workforce. This growth is largely driven by startup activity, but investment from incumbents continues, with 276 of Fortune 1000 companies focusing on Web3 research and development (R&D). Sectors like finance, technology, retail, media, and healthcare are the most active in the sector. Since 2008, the Web3 industry has created more than 200,000 jobs and received over \$107 billion in capital investments (including VC, M&A, PE, and IPOs).

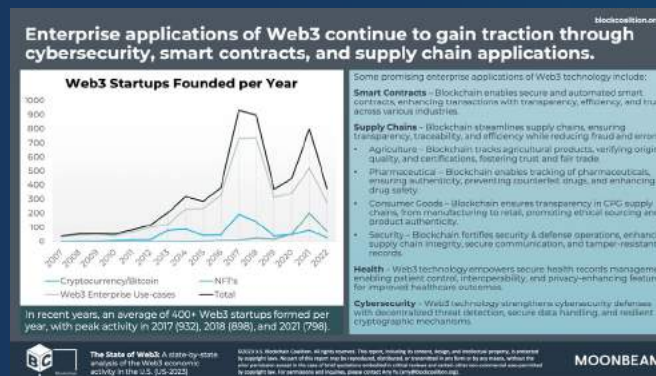
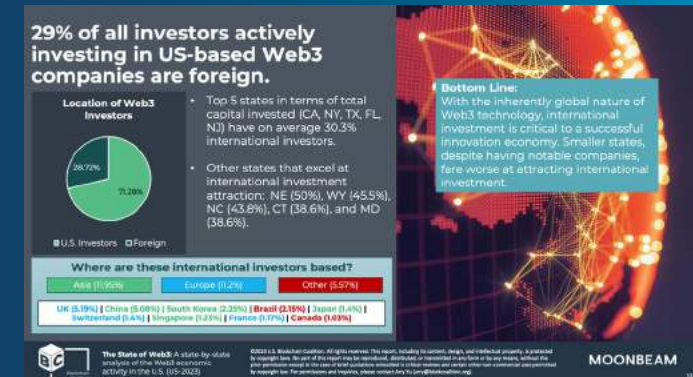
The U.S. is a hub of blockchain innovation, with numerous startups, research institutions, and industry incumbents driving advancements in the field. Since 2007, more than 5,700 Web3 related startups have launched, with peak activity in 2017 (932), 2018 (898) and 2021 (798), and with more than \$42 billion in total venture capital investment secured. Despite uncertainties surrounding digital assets, federal government investment in blockchain is steadily increasing through contracts, grants and Small Business Innovation research (SBIR) and Small Business Technology Transfer (STTR) Programs. Since 2013, the National Science Foundation, Department

of Defense, and the Department of Energy have been top funders of new technology through implementation-focused awards, providing 168, 142 and 39 awards, respectively.

HERE ARE SOME KEY TAKEAWAYS:

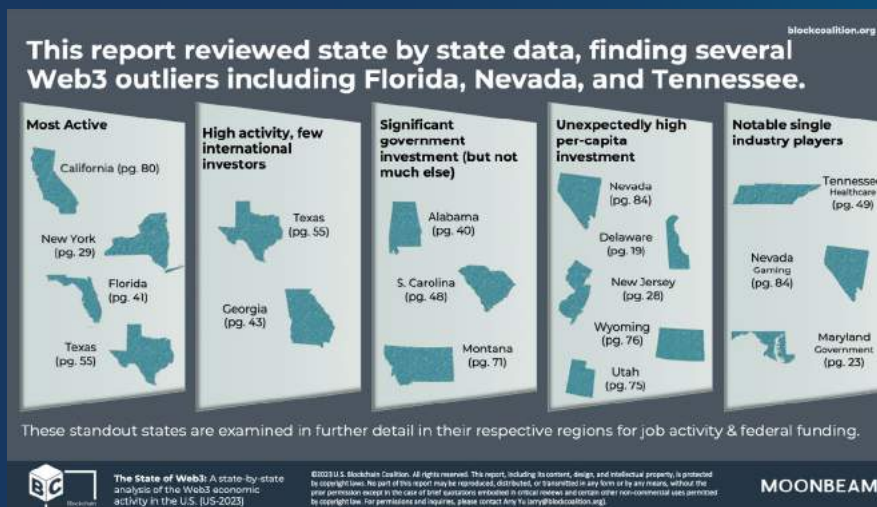
National

- Enterprise applications of Web3 continue to gain traction through cybersecurity, smart contracts, and supply chain use-cases.
- The Web3 industry created 30 unicorns (\$1 billion and greater valuation) and 257 exits (46 IPOs and 211 M&A) since 2008.
- Analysis suggests that regulatory clarity and support is good for business, with correlating increased investment.
- Web3 companies account for hundreds of thousands of jobs nationwide, led by small firms with under 50 employees.
- Government is a growing adopter and funder of Web3 R&D, with a particular focus on commercialization.



Individual States

- California, New York, Florida and Texas are home to 61% of all startups in the industry.
- California, New York and Florida also lead the country in Web3 venture capital investments, with \$18 billion, \$9.7 billion and \$2.2 billion, respectively.
- These larger states dominate startup formation and also outperform smaller states on international investment attraction.
- Despite this, many smaller states are making an impact.
- Texas and Georgia demonstrate high domestic investment activity.
- Delaware, Nevada, Wyoming, New Jersey, and Utah demonstrate high per-capita investment.
- Notable single-industry players: Tennessee (healthcare), Nevada (gaming), Maryland (Government).



*prepared by innovation consultancy firm Moonbeam Exchange

BLOCKCHAIN IN TRANSPORTATION ASSOCIATION (BITA)



DALE CHRYSTIE
BUSINESS FELLOW
BLOCKCHAIN STRATEGIST
FEDEX
BITA CHAIRMAN



GREG BROWN
VICE PRESIDENT
GLOBAL TECHNOLOGY
STRATEGY AND R&D
UPS



DR. VENEETIA JOHNSON
DIRECTOR OF TECHNOLOGY
AND INNOVATION
ENGINEERING
DELTA AIR LINES



PAUL RAPINO
CHIEF GROWTH OFFICER
GBBC

Standards are virtually everywhere in our lives, from railroad track width to traffic lights, to alphabets in various languages. At BITA (Blockchain in Transport Alliance), we believe it will take harmonized, open source and royalty-free data standards to scale blockchain and Web3 technology for global commerce. While BITA started in 2017, 2023 was a key year because in July 2023 BITA merged with GBBC and immediately started working to identify key next steps, to incorporate a mission statement, begin work within GBBC and GSMI 4.0 Supply Chain efforts, and define a long-term vision and strategy.

BITA MISSION STATEMENT:

BITA Standards Council (BITA) is dedicated to providing open-source standards for blockchain/Web3-enabled global commerce and, collaborating with other like-minded entities, will drive the global effort to map, produce, publish, and adopt those standards.

But let's get back to why we need open, globally harmonized standards to power global commerce utilizing blockchain/Web3 and emerging technologies.

The earliest forms of trade were started by the Phoenicians, the Indus Valley trade, Egyptians, Silk

Road, and the Romans, as far back as 15,000 BCE ('Before Common Era'). Methods of movement were limited to the tools and innovations available at the time, including ships for maritime trade, overland caravans for land-based routes, and river transport, where applicable.

All of those movements of physical goods, back thousands of years, involved some kind of documentation, initially using clay tablets, then using wood and papyrus, and, finally, adopting paper. The reason we needed documentation was to create trust in the process, initially as a trusted custodian for movement. For thousands of years, these processes, starting with clay tablets and transitioning to paper, have essentially been unchanged, or experienced very little change. However, at this moment, and for the first time in human history, the future of these processes is digital (Blockchain, Web3, etc.). When each item is digitized, we can then digitize these global processes for commerce and movement, which will both accelerate and forever change global supply chains. There will still be physical movement, but there will also be digitized versions of those items, significantly streamlining many processes, especially when global commerce crosses borders.

Standards have been developed over these generations of local and then global movement, but, since virtually all of these standards were created for something other than true global movement, they were never really designed to connect, or to essentially have a common language – thus the need for harmonization.

BITA is focused on identifying standards in the movement of trade, mapping those standards, and then working with other like-minded entities (WCO, etc.) to truly harmonize those standards. As that occurs, and to the benefit of all due to the open nature of the standards, this will create a foundational layer for this single moment in time where data will become digitized. That will enable companies of all sizes, even to an individual entrepreneur with no IT department, to fully participate in global commerce. That digitization, and the common language of harmonized global standards and emerging technologies like blockchain/Web3, will significantly reduce friction across borders (delays, like we saw during the Covid pandemic, paper, resources, etc.).

In addition to the standards work, BITA will also collaborate with other like-minded entities to identify and create reference architecture for early use cases of global movement.

Blockchain, Web3, and other emerging technologies are truly global in nature, and the BITA initiative operates under the belief that it will take a pro-competitive global team, a coopetition, to scale these technologies. It's not about where we compete, it's about where we can all agree. Once the foundational standards and architecture layers exist, proprietary layers can then be added, and these technologies can truly scale globally. ■

SUSTAINABILITY

Sustainability enables society to safeguard the ability to co-exist long term on Earth in the long term.

During 2023, GBBC continued to take action toward the deployment of blockchain and digital assets to support a sustainable world. Sustainability has been a theme of focus across panels, roundtables, discussion forums, and networking events. GBBC attended COP28 in Dubai and presented on panels covering blockchain technology to increase scale for climate finance and the benefits of interoperability, decentralization, and radical transparency.

Our sustainability-focused working groups and reports brought together the community in meaningful ways to advance the green economy. The InterWork Alliance's working groups focused on Voluntary Carbon Markets, Carbon Emissions Tokenization, and Energy Tokenization, discussing solutions including adoption of the Token Taxonomy Framework to bring trust to carbon markets. The Global Standards Mapping Initiative also incorporated a Sustainability Working Group, which produced an in-depth report on climate finance followed by continued discussions with the community to advance blockchain solutions. GBBC also covers sustainability in its research reports, including its Special Report on Blockchain Technology for the Energy Sector, which discusses decentralized energy systems.

GBBC also continued to take a leadership role with the Blockchain x Climate Leadership Network (BxC), an activist-to-industry network to foster common principles for climate-related blockchain initiatives, understanding, and projects, and the Ethereum Climate Platform, which takes action for the decentralized community to decarbonize and scale climate action, and counteract the historical

Ethereum-based carbon footprint (which prior to the Merge reduced energy consumption by over 99%).

Moving forward, GBBC will add momentum to its sustainability efforts by strengthening its partnerships, adding to its current initiatives, and expanding them in ways that help members define sustainability priorities in the space and collaborate toward solutions. ■



Blockchain x Climate Leadership Network (BxC)

Blockchain x Climate Leadership Network (BxC) was officially launched and announced at GBBC's Blockchain Central Davos in January 2023. The concept had originated previously on the Greenland ice sheet where stakeholders representing carbon markets, blockchain leaders, institutional finance, NGOs, and climate activists met to discuss ways to take action together to address the climate crisis. Also prior to the Davos announcement, the initial conception of BxC was further solidified during a Green House Retreat in Colombia, where key stakeholders discussed interoperability and infrastructure layers, leading to the formation of initiatives and groups to support ecologically beneficial multi-chain and multi-sector interoperability.

Since its Davos launch, BxC has presented at ETHDenver 2023 events, Consensus 2023, and GBBC's Blockchain Central UNGA. During COP28 in Dubai, BxC organized an event titled "The Promise of Blockchain: Catalytic Scale for Climate Finance," for which GBBC was a supporting partner and presenter. GBBC sits on the board of BxC and continues to play a leadership role to advance its mission. BxC formalized in 2023 and has been sponsored by GBBC Giving, GBBC's charitable arm.

This initiative brings together activism and industry practices to enable collaboration among global stakeholders for effective climate action powered by Web3. This includes defining principles to govern climate-related blockchain efforts, developing shared understandings, and designing both tangible and meaningful climate projects and initiatives across industries and blockchains. BxC has established itself as a hub where power brokers, corporations, and institutions can find common ground to co-develop this shared language, technology roadmaps, and solutions that direct the benefits of blockchain technology toward addressing the climate crisis. ■



FOOD FOR CRISIS: A WEB3 INITIATIVE



SANDRA RO
CEO,
GBBC



**DIANA BARRERO
ZALLES**
HEAD OF RESEARCH &
SUSTAINABILITY,
GBBC



BERNHARD KOWATSCH
HEAD,
WFP INNOVATION
ACCELERATOR



JORGE FERNANDES
STRATEGIC ADVISOR,
WFP INNOVATION
ACCELERATOR



**SUZANA MARANHÃO
MORENO**
BLOCKCHAIN TECHNOLOGY
STRATEGY & PORTFOLIO
PROJECT MANAGER,
WFP INNOVATION
ACCELERATOR



OTHALIA DOE-BRUCE
BLOCKCHAIN STRATEGY &
PARTNERSHIPS,
WFP INNOVATION
ACCELERATOR

Initially conceived during the GBBC's 2022 Blockchain Central UNGA, Food for Crisis falls under the aegis of [GBBC Giving](#), GBBC's c3 charitable arm. The initiative has gained momentum through 2023, with steps toward the design and implementation of an infrastructure to track and trace fund flows from donor to final beneficiary, and plan its first pilot. 2023 started much excitement upon announcing the vision of achieving Zero Hunger (SDG #2) through blockchain technology during GBBC's Blockchain Central Davos in January. By the next GBBC Blockchain Central UNGA in September, a [Press Release](#) was launched announcing the signing of the official Memorandum of Understanding (MOU) between the United Nations (UN) World Food Programme (WFP) Innovation Accelerator and GBBC founding partners for this joint initiative, with the support of key organizations, including: Accenture, Bayer, Filecoin Foundation, Fleming Petenko Law, Netlight, Oliver Wyman, and Steptoe & Johnson LLP. This press release was covered by numerous industry-specific, global, and local news outlets around the world.

Communities across the world have been devastated by the global food crisis due to the combined effects of ongoing conflicts, economic shocks, climate extremes, contributing to the disruption of supply

chains and soaring fertilizer prices. According to the new [2023 State of Food Security \(SOFI\) report](#), as many as 783 million people did not know where their next meal would come from. A record number of more than 345 million people across 79 countries are also facing acute food insecurity. This is an increase of almost 200 million since early 2020 (pre-COVID-19 levels). 1 in 10 people in the world do not have enough to eat, and while there were 1 billion undernourished people globally in 1990, and this number reduced to 589 million in 2015, it has abruptly soared in the last years.

Food for Crisis aims to increase awareness of the global food crisis and raise funds to urgently mobilize resources to end hunger at scale. A pilot fund of USD 100 million in donations (in fiat, crypto, or donations in-kind) is the initial goal, with a moonshot target of USD 1 billion. Funds will be distributed to the humanitarian sector for emergency relief operations and the development of innovative and sustainable solutions to help disrupt global hunger.

A blockchain-based solution to provide an additional level of trust and transparency regarding funds donated for humanitarian aid. The technology will continue to be developed, with a pilot planned for 2024, in countries currently facing severe food

insecurity in need of intensive support amid limited funding. The ability to track fund flows end-to-end, both within and outside crypto rails (e.g., digital vouchers, mobile minutes, traditional bank transfers) through digital twins, can be a gamechanger for aid distribution and beyond. We are calling all supporters interested in collaborating to be part of this life changing initiative, and we are grateful for those who have already committed to join us! ■

THANK YOU TO OUR EARLY STAGE SUPPORTERS:



INNOVATION
ACCELERATOR

Steptoe
STEPTOE & JOHNSON LLP

 **OliverWyman**

 **accenture**

**FOOD FOR
CRISIS**

A Web3 Initiative



World Food
Programme

INNOVATION
ACCELERATOR



GBBC
GIVING



GBBC
Global Blockchain
Business Council



**Filecoin
Foundation**

 **netlight**

FLEMING PETENKO
LAW

The Legal Resource for Nonprofits

GBBC'S AMBASSADORS

SINCE ITS INCEPTION, GBBC HAS RELIED ON ITS GLOBAL AMBASSADOR NETWORK TO EXPAND OUR GLOBAL COMMUNITY, PRESENCE, AND IMPACT.

GBBC AMBASSADORS

To start 2024, the GBBC ambassador cohort expanded to 301, spanning 117 jurisdictions and disciplines, up from 230 ambassadors from 108 jurisdictions and disciplines that collaborated with GBBC throughout 2023. We also expanded the areas of expertise to include Convergence AI, Cyber Law Enforcement, Decentralized Systems, Supply Chains, and Tech for Impact, while expanding Data Security to Data Security & Integrity. The new jurisdictions include Andorra, Benin, Czech Republic, El Salvador, and Qatar.

For the year 2023, it was a pleasure to collaborate with the ambassador cohort, which had also expanded to cover areas of expertise including Financial Services, Metaverse, Policy & Regulation, and Tech Ethics, in addition to jurisdictions including Greenland, Honduras, Indonesia, Jordan, Libya, Liechtenstein, Oman, Panama, Portugal, Saudi Arabia, Sierra Leone, Thailand, and Zimbabwe.

Blockchain technology's development and progress is rooted in mass, global collaboration. Our new cohort of Ambassadors for 2024, which is announced during GBBC's Blockchain Central Davos in January, exemplifies the global community required to develop the next multi-trillion-dollar industry and build more secure, equitable, and functional societies during this watershed moment in history when technology is transforming all areas of human activity. GBBC is honored and humbled to work with such a diverse group of luminaries.

Read the full list of ambassadors here gbbcouncil.org/about

301

AMBASSADORS

117

JURISDICTIONS
AND DISCIPLINES

OUR MEMBERS' WORK

The background is a solid blue gradient. A dark blue, curved shape sweeps across the bottom left corner. The rest of the background is a lighter blue and is filled with a faint, white network of lines and circles, resembling a molecular or digital structure.

CLIMATE ACTION

BLOCKCHAIN SOLUTIONS FOR A SUSTAINABLE GLOBAL ECONOMY



Ripple is a global blockchain solutions company that is transforming how the world moves, manages, and tokenizes value. Our mission is to unlock greater economic opportunity across an environmentally sustainable world.

Ripple uses the XRP Ledger (XRPL), the world's first (since 2020) major global carbon neutral blockchain, as a foundation for its products and services.

Together with our partners, we're contributing to delivering a sustainable global economy — increasing access to inclusive and scalable financial systems while leveraging carbon-neutral blockchain technology. In this way we are delivering on our mission to build crypto solutions for a world without economic borders.

In 2023, Ripple leveraged innovative solutions to deliver a sustainable, global economy. In particular,

the company continued our direct investments in high-impact carbon credits and progressed toward reaching our \$100 million commitment to modernize and scale carbon markets — the largest such pledge in the crypto industry.

Additionally, Ripple continued to build on sustainability partnerships. In 2023, our company helped Thallo, CarbonCure, and our other lighthouse climate tech partners use the XRP Ledger to tokenize their carbon credits. Ripple was also excited to partner with GBBC to support the Blockchain for Climate Leadership Network (BxC), which supports cross chain collaboration for L1 blockchains building climate solutions.

In perhaps our signature initiative this year, Ripple co-founded and launched Centigrade, a data-platform company that provides trusted digital infrastructure for the nature economy, including carbon credits, biodiversity credits, and other ecological assets across a wide range of nature-based and engineered solution domains. With our co-founder, the Rocky Mountain Institute, Ripple created a mission-driven, climate-first company that directly responds to the persistent pain points that

prevent carbon markets from achieving their full potential. Centigrade's use of innovative technology, including blockchain, tokenization, and AI, will help make carbon markets more transparent, efficient, and equitable. It will facilitate faster times to market, fairer prices, and net revenue for suppliers — especially entrepreneurs and smaller suppliers in the Global South — and a more streamlined, de-risked process for corporate buyers and institutional investors.

Ripple is especially proud that Centigrade will have an immediate and wide-ranging impact in critical climate-mitigation areas. Centigrade's platform facilitates the data integrity and transparency that all actors in the carbon and nature markets require — from project owners to communities, governments, buyers, and validation and verification bodies. Centigrade's open data infrastructure will help accelerate existing climate projects by making it easier for project developers to define their projects and demonstrate durable, investable value. These innovations will allow climate projects to achieve legitimacy in the market and gain access to much needed capital through forwards and advanced market commitments.

The fight to mitigate climate change requires all of us — nations, nonprofits, innovators, and more — to work together. Ripple looks forward to continuing that work in the year ahead.

Read more about Ripple's commitment to sustainability: ripple.com/impact. ■

FROM PLASTICS RECYCLING TO CARBON EMISSIONS, SUPPLY CHAINS, AND BEYOND



RecycleGo as a platform continues to evolve and grow, having broadened its scope of activities from a plastics recycling-focused blockchain to a supply chain emissions management platform. The team realized that the existing functionality for plastics tracking, which also shows chain of custody and carbon emissions along the supply chain, can expand its focus to align with global carbon market trends. This new offering is built in a way that adds value by providing essential data, including calculations of Scope 3 emissions for any product, that even traditional financial players can understand and make informed decisions on. Importantly, RecycleGo's closer alignment with the most pressing needs, investment trends, and focus

areas of carbon markets, also empowers users to maintain a carbon savings and valuation record that proves their sustainability. There is a promising opportunity for RecycleGo with the enactment of the EU Carbon Border Adjustment Mechanism (CBAM), where specified products (e.g., cement, aluminum, steel, and certain chemicals) imported into the EU are expected to be taxed depending on their carbon footprint. This requires an accurate understanding of the emissions generated across their supply chains, which RecycleGo is able to facilitate.

In this context, RecycleGo is also collaborating with the Global Warming Mitigation Project, having recently signed a Memorandum of Understanding (MOU) during COP28 in November 2023. This agreement is meant for the two entities to develop a carbon abatement portfolio, where RecycleGo's platform would be used to validate data generated from the Global Warming Mitigation Project's existing carbon sequestration, tech and nature-based solutions, and other carbon reduction or elimination projects globally. RecycleGo's blockchain would be adopted and provide a digital MRV mechanism to de-risk climate financing.

RecycleGo believes that historical proof of activity provided by distributed ledger technology can provide a bridge between traditional financing and valuation models with carbon reduction projects across the Global South. ■

BREATHING NEW LIFE INTO THE PUSH FOR DECARBONISATION



Today, digital assets and their environmental impacts are receiving an unprecedented amount of attention.

Launched by Zumo at Money20/20 Europe in June 2023, Oxygen is the first of its kind, a provable and scalable solution for financial institutions, including asset managers, trading platforms and investment funds, to align their digital asset activities with net-zero principles.

The targeted solution combines the forecasting and calculation of crypto electricity consumption with standard industry data, and uses renewable energy procurement in the form of renewable energy certificates (RECs) to ensure crypto or blockchain activities are transparently and verifiably matched with renewable electricity. This helps Zumo's clients account for the electricity-based Scope 3 emissions associated with their digital asset activities - and prove it.

Through Oxygen, Zumo has shifted the dial from talk to action. To date, £1.5 million worth of Bitcoin has been covered by REC purchases, with a total of 850 megawatt-hours (MWh) of electricity compensated

- enough energy to drive an electric vehicle for over 2.6 million miles. Zumo has also bought 126.36 MWh for the purpose of addressing Ethereum's historical emissions.

Zumo's ambition is clear: to be the one-stop shop for tokenized ESG assets. With the launch of Oxygen, and its growing partnerships with industry-leading organizations, the company is harnessing blockchain as a 'digital enabler' to help tackle climate change and support the energy transition to a more sustainable infrastructure.

Being able to accurately measure and mitigate the carbon footprint of digital assets, and tokenizing carbon credits, is a great start, and Zumo will continue to develop innovative solutions that help to drive the regenerative finance (ReFi) movement. ■

REVOLUTIONIZING ESG TRADITIONAL MARKETS WITH INNOVATIVE SOLUTIONS



By 2025, Bloomberg reports ESG assets may hit \$53 trillion, a third of global AUM. However, challenges in traditional ESG markets persist due to their fragmented nature involving various siloed third parties. This fragmentation results in prolonged

timelines, increased operational costs, and a lack of transparency and accountability within transactions.

To address these challenges, Blockchain Laboratories has developed a scalable Web3 Software-as-a-Service (SaaS) platform, blending financial strategies with state-of-the-art digital tools with the goal to empower brands to tokenize, manage and leverage ESG-focused digital assets, driving positive change for the environment and society. It also operates as a venture studio, for the creation and white labeling of Web3 capabilities to incubate ventures spanning voluntary carbon markets, real estate, and digital advertising.

Venture Studio Example – Carbon Removal Credits as Digital Assets

A Blockchain Laboratories venture studio example is the white label of Carbonland Trust, now registered as a non-profit organization. Carbonland Trust is on a mission to unlock the potential of biodiverse forests for landowners and corporations by streamlining the carbon credit process for both sides of the market. Its Perpetual Conservation Protocol (PCP) tokenizes EcoProject data and Measurement, Reporting and Verification (MRV) processes for permanence, transparency, and is using the Token Taxonomy Framework (TTF) released by GBBC's InterWork Alliance, and policies built directly into the platform. Furthermore, landowners incur no upfront fees, which allows these sellers to onboard EcoProjects to issue carbon and biodiversity credits for protecting forestry and nature.

Carbonland Trust is paving the way for impactful transformations within the carbon neutrality and conservation. The benefits and outcomes range from creating financial incentives for landowners through the Carbon Removal Credits platform, to enhancing transparency in the carbon credit sector, bolstering engagement and education, and laying the foundation for perpetual conservation protocols.

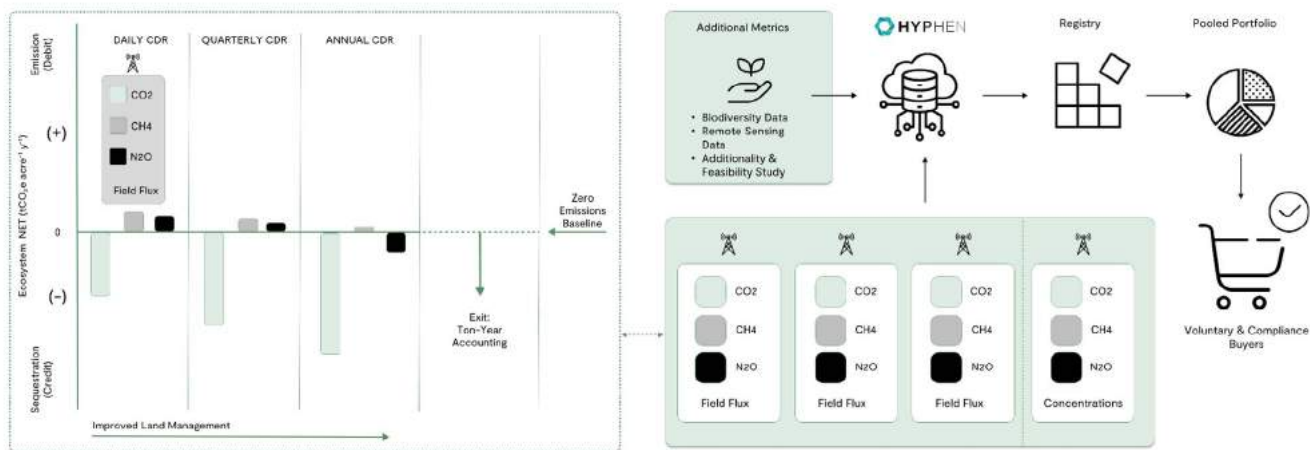
Initial efforts have concentrated in Washington State and California, leveraging two pilot properties as primary touchpoints. Plans to expand nationally are in the works post the successful onboarding and operationalization of these pilot locations.

For more information on Blockchain Laboratories or venture studio ideation opportunities, please contact www.blockchainlaboratories.com email: Boone@blockchainlaboratories.com

PIONEERING DMRV FOR GREENHOUSE GAS MONITORING



Hyphen is pioneering the realm of digital emissions measurement, reporting, and verification (dMRV), specializing in the use of atmospheric greenhouse gas (GHG) monitoring to deliver near-real time information on GHG exchanges (fluxes) between the terrestrial surface and the atmosphere to carbon



markets. The company's cutting-edge methodologies and software combine scientific precision with private-sector integration, enhancing the accuracy, timeliness, and reliability of emissions validation.

There has been a disconnect between emissions avoidance, reduction, removals claims and actual, measured outcomes. Uncertainties surrounding environmental claims decrease confidence in carbon markets and depreciate carbon credits and offsets, while putting enterprises at risk of greenwashing. There is a need to bridge scientific and intergovernmentally-endorsed methodologies and standards for emissions measurement with initiatives within the private sector to improve and restore trust in carbon markets.

Hyphen's atmospheric-based dMRV uses ground-based instrumentation that allows the amounts

of GHGs emitted into or removed from the atmosphere to be quantified on an ongoing basis. This enables the continuous and real-time validation of GHG fluxes (see diagram, below). Through this approach, Hyphen establishes a robust dMRV solution for precision measurement of GHG emissions reductions, removals and sequestration, quantifying flux measurements in equivalent metric tons of carbon dioxide or equivalent (CO₂e). The methods and instrumentation used by Hyphen are backed by over 60 years of continuous scientific research and development, and have been endorsed through three separate inter-governmental processes, by the World Meteorological Organization, Intergovernmental Panel on Climate Change, and the United Nations Framework Convention on Climate Change.

Hyphen's technical infrastructure seamlessly integrates with Hedera's Guardian system, adhering

to the InterWork Alliance's dMRV Framework. This integration ensures a transparent, auditable, and traceable data and metadata flow throughout the entire dMRV process.

Hyphen's versatility extends across diverse GHG sinks and sources, including nature-based solutions, agriculture, oil & gas, waste management, and urban areas. Hyphen partners with other organizations that complement its unique strengths in atmospheric-based dMRV with science-based biodiversity metrics. These capabilities provide a comprehensive representation of natural and dynamic ecosystems. Currently, Hyphen is deploying its services in multiple nature-based mitigation projects throughout Indonesia, with additional projects in Southeast Asia and Africa in the pipeline. ■

CARBON CREDIT MANAGEMENT BASED ON STANDARDIZATION, AUTOMATION, AND SECURITY



Nasdaq's MSP Custody Service integrates the IWA Token Taxonomy Framework (TTF) to provide a structured approach for carbon credit transaction and lifecycle management. The service utilizes the TTF to support the creation and issuance of carbon credit tokens, each representing a specific set of

rights and obligations. These tokens then adhere to a standardized lifecycle from issuance to redemption, ensuring a clear and consistent process for all participants.

The platform's architecture is designed for enterprise-level management of digital assets, which includes the secure registration and custody of carbon credits. Based on DAML and the Canton protocol, the product leverages smart contracts on distributed ledger-capable technology enabling the MSP Custody Service to automate the execution of token-related scenarios, reducing the need for manual intervention, and increasing efficiency.

The system's design for creating and managing the tokenized carbon credit is rooted in the TTF, allowing authorized entities to define asset tokens using a pre-defined template. For carbon credits, these tokens need to be unique and non-fractional, ensuring consistency across various vintages and classes. The token attributes, which encompass asset classification, credit type, project identity, and issuing body details, are organized hierarchically for ease of management and clarity.

The MSP Custody Service's API-first strategy enables integration with external systems, allowing end-users to manage their digital asset tokens within the MSP Private Custody Registry. This integration capability demonstrates the platform's flexibility and commitment to providing a seamless experience that can be introduced into existing ecosystems.

Overall, the Nasdaq's MSP Custody Service and its use of the IWA Token Taxonomy Framework showcase its applicability in creating powerful digital asset-based solutions for carbon credit management, that are based on standardization, automation, and security within the digital asset space. ■

POWERLEDGER'S TRACEX: Revolutionizing EAC Trading with Blockchain Efficiency and Real-Time Transparency



As an increasing number of companies commit to achieving their environmental goals through the use of Environmental Attribute Certificates (EACs), the demand for more efficient tools becomes evident. The lack of transparency in EAC pricing and high back-office costs has been well-documented.

Last year, we launched TraceX, our blockchain-powered all-digital platform that revolutionizes EAC trading by offering a simple, secure, and efficient way to trade. With real-time price discovery, users can make data-driven decisions on when and how to transact. TraceX is highly scalable, supporting over 50,000 transactions per second, and can support settlement using digital currencies. Powered by Powerledger's blockchain technology, it ensures an immutable and verifiable audit trail containing essential transactive data.

TraceX is fully integrated with the Midwest Renewable Energy Tracking System (M-RETS), the largest voluntary Renewable Energy Certificate (REC) registry in North America. Through our partnership with M-RETS, TraceX users can link their M-RETS accounts, import EACs to TraceX, and list them for sale.

In response to challenges faced by customers in making informed procurement decisions, TraceX has recently introduced a new filtering system. This feature provides a comprehensive view of real-time market prices, displaying both bids and asks cohesively.

Another standout feature is the Market Filter, allowing users to filter and select RECs based on their desired attributes such as location, fuel source, vintage, voluntary or compliance program, and project. This enhanced flexibility enables companies to tailor their choices to meet regulatory requirements and corporate sustainability objectives.

We are excited to onboard one of the largest environmental commodity traders onto TraceX, as an attestation to the platform's credibility and effectiveness in the EAC trading landscape.

Projects:

Ek Wateur, France - Powerledger's blockchain based Vision platform is supporting green energy retailer

ekWateur to bring hundreds of thousands of French energy consumers the choice of their own energy mix.
<https://www.powerledger.io/clients/ekwateur-france>

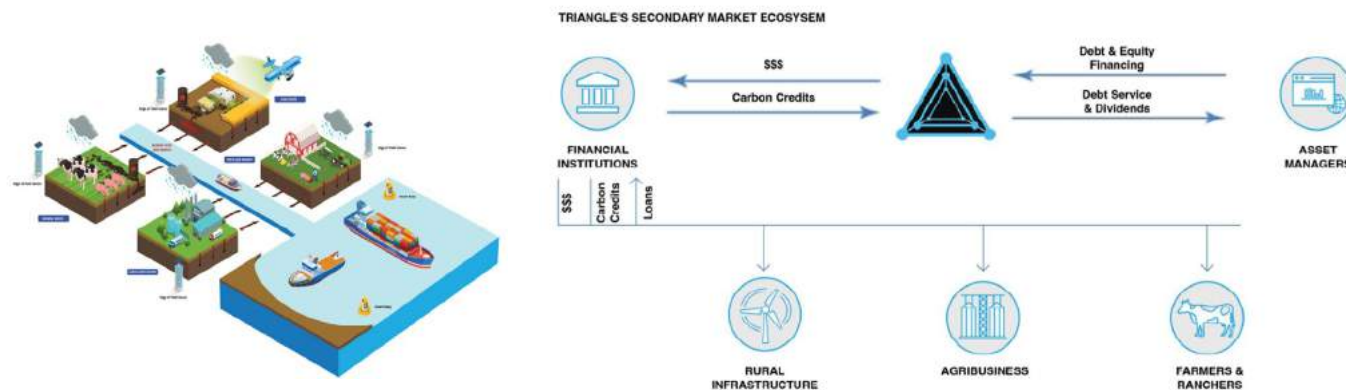
Energie Steiermark, Austria: Powerledger's blockchain-enabled energy trading platform allows users from energy communities to control the distribution of energy generated from their solar assets.
<https://e-energiegemeinschaften.at/> ■

SUSTAINABILITY-LINKED LOANS TO MITIGATE EMISSIONS

TRIANGLE

According to the EPA, agriculture accounts for 10% of US greenhouse gas emissions, of which, livestock and agriculture represent 45% methane emissions and are also responsible for manure and fertilizer run-off. Over 1B MT of carbon enter our waterways like the Great Lakes, and collectively present an opportunity to combat global warming through sustainable agriculture or carbon farming.

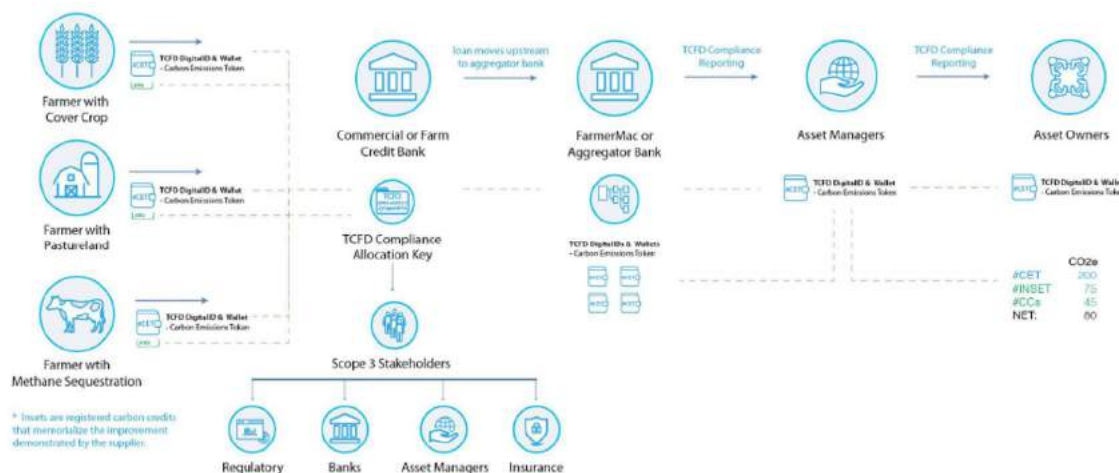
Triangle aims to address this challenge by helping mitigate emissions while ensuring SEC and SFDR climate compliance, thereby securing the most cost-effective capital from institutional investors through the sustainability-linked bond market.

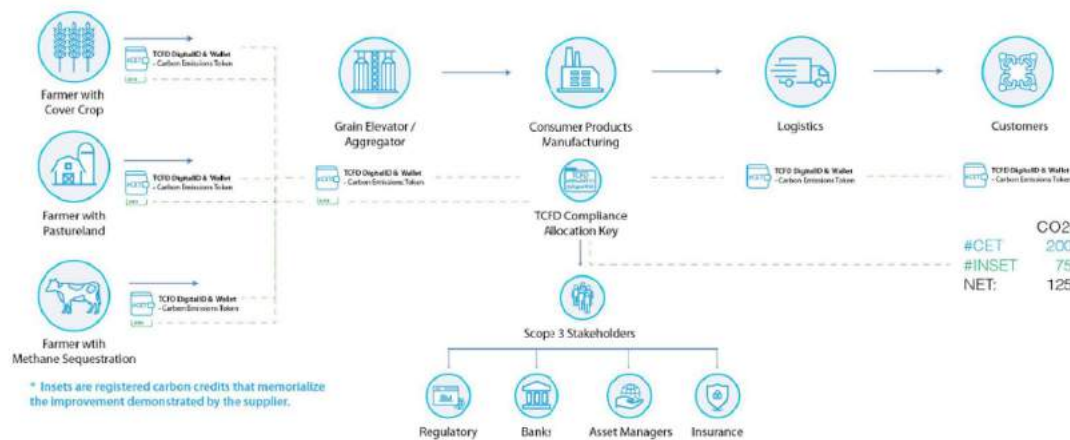


The fragmented nature of the agricultural industry poses a significant obstacle to implementing impactful change. Triangle's innovative operating system, AssetOS, has been deployed to capture climate data at its source and associate it with the asset. Triangle utilizes IoT sensor data to link information to sustainability-linked loans, which are subsequently tokenized. This allows for the seamless transfer, consolidation within portfolios, and securitization of sustainability-linked loans while

preserving their performance and climate data. This comprehensive data includes traditional loan terms, administrative reporting, and climate benefits with those attributes then moving onto the bond market so asset managers can receive accurate reporting of sustainability-linked debt.

Through AssetOS, this data smoothly traverses the "food chain of capital," starting with the initial loan from a local Farm Credit Union, moving through



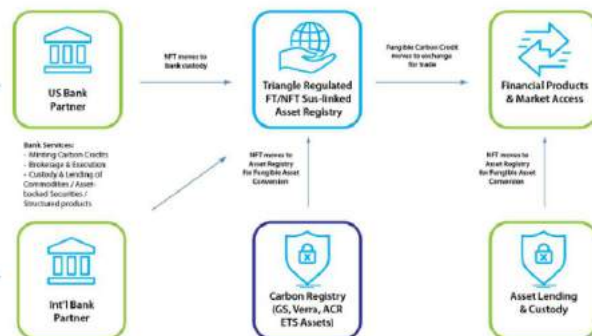


Bank Carbon Credit Tools



— Triangle (Regulated Entity)
— Regulated 3rd Party
— Non-regulated 3rd Party

Custody



Agricultural Bank Aggregators (including federally chartered institutions), then being securitized by investment banks and finally reaching Institutional Investors. Each layer in this process can access and benefit from the enhanced climate characteristics of the farmer.

Triangle empowers farmers to unlock the carbon value embedded within their assets while providing a robust platform to monitor the performance and

climate attributes of their financing activity as their supply and loans travel through the capital and food supply chain.

The utilization of Triangle's platform also powers additional climate action by supporting the baselining and monitoring for carbon credits and insets in a fully compliant and regulated format and are rolling out our first partners in soil carbon sequestration, pastureland, woodland reserves, and in methane.

Triangle is proud to be working with its partners, University of Michigan's Digital Smart Finance Center, First Interstate Bank, Star of the West, and Greenstone. We are also proud to be featured at COP28UAE by the UNFCCC and the BIS (Bank of International Settlement) as a Top 5 finalist for their work in Sustainable Finance using blockchain. ■

BLOCKCHAIN SOLUTIONS FOR SUSTAINABILITY



The HBAR Foundation has accelerated its work in climate and sustainability markets, alongside its other key areas of focus including on chain finance and ecosystem as a service. The HBAR Foundation Sustainable Impact Fund has continued to support projects building on IWA Standards with the flagship Hedera Guardian, which has seen significant adoption in 2023. Key advancements and institutional adoption include carbon market project developer Allcot committing 500M metric tonnes of carbon credits leveraging the platform, new UNFCCC methodologies digitized, and governments creating credit systems on Hedera such as India's Ministry of Highway and Transport's DigiELVplatform. ■



TECH FOR COMMUNITIES

BLOCKCHAIN SOLUTIONS TO TACKLE CHILD LABOR

PAUL HASTINGS

Paul Hastings LLP (“Paul Hastings”) and Global Blockchain Business Council (“GBBC”) have partnered to explore the role blockchain or distributed ledger technology may play in helping to tackle the expanding child labor crisis in the United States, and in particular labor exploitation of unaccompanied migrant children. Unaccompanied Migrant Children—migrant children entering the United States without a parent or guardian, or those who are forcibly separated from their parent or guardian under U.S. immigration procedures—are particularly exposed to labor exploitation. These children often arrive in the US with insufficient, fraudulent, or incomplete identification documents, leaving U.S. authorities with limited means to verify their identities, including age, in the first instance. Once placed in the U.S. immigration process, Unaccompanied Children interface with different federal government agencies at various stages, which

further compounds the issue of identity tracing. This decentralized process requires cross-agency communication and coordination. More importantly, limited government resources and processes prevent rigorous vetting of those adults and sponsors who step forward to care for an Unaccompanied Child, after their release from government custody, and lead to insufficient post-release monitoring. Together, these informational and procedural gaps exacerbate the existing socioeconomic and legal vulnerabilities of Unaccompanied Children, and expose them to greater risks of child labor exploitation in the United States.

There are a number of issues that affect Unaccompanied Children as they undergo immigration and removal proceedings in the United States - issues that also make them more vulnerable to labor exploitation. There is an inherent tension and legal ambiguity - between the mandate to release children from detention as promptly as possible - and the requirement for the government to sufficiently vet any sponsors who seek to take custody of Unaccompanied Children upon their release from federal custody. Such competing mandates have led to inconsistency and instability

in releasing Unaccompanied Children to properly identified and vetted sponsors, creating further loopholes and vulnerabilities in the safety and security of Unaccompanied Children. Further, there appears to be no established mechanism to systematically and accurately collect, update, monitor, search, and cross-verify sponsors’ biographic information, background checks, and their respective relationships to Unaccompanied Children to detect and address signs of labor exploitation and other types of criminal behavior. Lastly, due to the imbalance of power and the lack of sufficient identity documents, these procedural loopholes also leave Unaccompanied Children particularly susceptible to fraudulent document schemes that enable businesses to take advantage of child labor.

Paul Hastings and GBBC have completed the initial phase of this project by defining the scope of labor exploitation of Unaccompanied Children in the United States, assessing the broader context in which it occurs, and analyzing the legal and regulatory regimes that apply. We are now progressing to the second phase of the project: to explore how blockchain technology has been used to tackle

similar issues and may be used to address this issue. The objective of this project and partnership is to identify possible blockchain technology-based solutions that can enable or enhance mechanisms to help prevent or minimize the vulnerability of Unaccompanied Children towards situations of labor exploitation, including but not limited to identity tracing, age verification, on-site monitoring, and auditing. Through our partnership, we hope to identify how blockchain technology may be used—at least in part—to help address these challenges. ■

AVALANCHE-POWERED CROP INSURANCE IN KENYA



In fall 2022, Eunice Jesang, a Kenyan farmer, insured her maize crop for \$0.83.. She relies on the harvest for income, so spending \$0.83 to secure payment for her crop in the event of a climate-driven catastrophe provides new financial protection that wasn't available before. This is possible because of an insurance-like application that the Lemonade Crypto Climate Coalition built on the Avalanche blockchain.

The app is simple. Smallholder farmers get a quote on their phone. They pay, creating a policy. If weather conditions are bad and crops fail, farmers receive a sum. Payment is automatic. No need to file claims.

In the program's inaugural fall 2022 season, some 7,000 Kenyan farmers obtained crop insurance.

The Lemonade Crypto Climate Coalition launched its Avalanche-powered initiative with industry-leading partners. With expertise in their respective fields, Chainlink and DAOstack are also contributing on the blockchain end, while Lemonade, Etherisc, Hannover Re, and Pula are building highly accurate, fully automated crop insurance models. These actors work together to solve the technical challenges and make these important policies not only practical, but seamless.

The initiative was announced in March 2022 and initially funded primarily by The Lemonade Foundation, the nonprofit founded by innovative digital insurance company Lemonade to effect exponential social and environmental impact through technology.

Before blockchain, the obstacle was cost. With traditional insurance and its tangle of brokers and agents, insuring small farmers where premiums are less than \$10 a year doesn't make financial sense. But with the Lemonade Crypto Climate Coalition offering policies at-cost and with the speed, reliability, and low fees of Avalanche, these small-but-mighty farmer policies become possible.

Even behind the curtain, the technical picture is simple. Money for the policies is held as stablecoins on Avalanche. Once certain weather or crop

conditions occur, Chainlink oracles send this data on-chain to the application's smart contracts, prompting instant payouts to Kenyan farmers.

The Lemonade Crypto Climate Coalition's first initiative provides an example of crypto's transformative real-world potential when using a fast, flexible, scalable blockchain network like Avalanche. Similarly innovative projects by J.P. Morgan, Citi, SK, and other leaders are already on Avalanche today. ■

REGULATION TO ADVANCE BITCOIN ADOPTION IN AFRICA*



Charles Winnsboro
AFRICA. BLOCKCHAIN.

In many respects, Africa's central banks are central banks in name only; their policy options are constrained — if not foreclosed entirely — by the fact that their economies are either de facto or de jure dollarized. And it is for that reason that Jude Chidi Ogene, Founder and CEO of Charles Winnsboro Corporation, is an ardent proponent of African governments fostering widespread adoption of Bitcoin on the continent. That said, he believes regulation of the space is critical.

Therefore, African governments should foster greater Bitcoin adoption on the continent for at least three reasons: remittances, inbound payments to

remote workers, and Bitcoin mining. Referencing independent research from the World Bank, Chainalysis, PricewaterhouseCoopers, and others, Jude demonstrates in a recent study - using Nigeria as a case study - that greater Bitcoin adoption in these three areas would generate sufficient revenues to solve Africa's balance of payments problems. The article expounds on comments he made at the December 2023 Africa Bitcoin Conference in Accra, Ghana. It also argues that the regulatory system required to unleash these benefits must be bespoke and tailored to conditions on the ground, and not replicas of regulatory systems in the West. It behooves African governments to chart a new path.

In this context, Charles Winnsboro leverages blockchain technology to reskill African students and young professionals to prepare them for remote



working opportunities. Nigerians are turning to Bitcoin (and stablecoins) to protect themselves against the naira's depreciation. The data bear this out: In January 2023, Cointelgraph noted that Nigeria led the world in web searches for Bitcoin. More recently, Chainalysis ranked Nigeria second overall on its Global Crypto Adoption Index, and its report also noted sub-Saharan Africa's interest in Bitcoin.

With respect to remittances, solutions leveraging digital assets such as Bitcoin and the Lightning Network can greatly reduce transaction fees and improve the level of foreign reserves in a country. Inbound payments for foreign workers would also have a positive effect, with an even greater potential impact than remittances, through improving local expertise and providing access to global value chains. For Nigeria alone, the combination of remittances from the Diaspora and inbound payments to Nigerians working locally in global value chains will solve the country's balance of payments by providing — conservatively — an extra \$60 billion per year. With this understanding, it becomes even more apparent that the central bank and fellow banking regulators should be keen on digital assets adoption. Finally, there is an immense potential for Nigeria and other SSA countries to mine Bitcoin by converting the flaring of natural gas across the continent that would otherwise be wasted.

Moving forward, Jude will publish a follow-up paper that outlines his recommended policy prescriptions, to include: privacy-preserving KYC/AML; specific

rules for exchanges that make appropriate distinctions between centralized and decentralized exchanges; clarification of the legal status of digital assets, to avoid references to “investment contracts”; and beefed-up consumer protection.

** Content and image above refers to Jude Ogene's recent Medium [article](#) “How Regulation Can Advance Bitcoin Adoption in Africa”* ■

RIF WALLET TO FACILITATE ACCESS TO DEFI



RIF Wallet built by IOV Labs is the latest addition to RIF, the Rootstock Infrastructure Framework, as an open source set of tools, technologies, SDKs and interfaces that make it easy to build financial products on top of Bitcoin using Rootstock. This wallet is also fully open source and customisable.

As the first fully modular Bitcoin DeFi wallet built for businesses, the RIF Wallet effortlessly offers users a self-custodial Bitcoin wallet featuring their branding and a range of exciting features. Built on Rootstock, Bitcoin's longest standing EVM compatible sidechain, RIF Wallet provides the open source framework to build an intuitive and secure mobile-first Bitcoin wallet that can be white labeled and adapted however one may see fit. This innovation gives users the ability to send,

receive, and save in Bitcoin, while making it easier than ever to interact with the decentralized finance applications built on Rootstock, a smart contract layer for Bitcoin.

Anyone can utilize the open source code for the RIF Wallet to quickly build a Bitcoin wallet in-house, and IOV Labs also provides support for those wishing to create solutions truly tailored to their needs: <https://rif.technology>

IOV Labs provides its solutions based on a market need where decentralized finance (DeFi) solutions are generally too complex for the average user. IOV Labs is therefore dedicated to creating decentralized solutions to facilitate use and ensure affordability for average people, with the ultimate goal of supporting financial freedom in emerging economies. Going forward, IOV Labs strives to build and integrate new technologies that will enable fintech and Web3 innovators to develop a first generation of everyday DeFi applications. ■

BRAJ ART AND CULTURE



The Braj region, renowned as the birthplace of Lord Krishna and Radha Rani, holds a sacred and culturally rich place in India's heart. Beyond its historical and religious significance, Braj is a repository of cultural treasures and artistic heritage. The profound



teachings of Lord Krishna conveyed through his divine "leelas" or cosmic actions, serve as a guiding light for those seeking wisdom and understanding.

Braj's cultural identity faces formidable challenges, leading to neglect, erosion, and the absence of supporting resources. The exploitation and appropriation of natural resources, unchecked growth in tourism with disregard for the sanctity of certain locations, and the absence of commercial opportunities for those practicing traditional art forms are some of the hurdles being addressed by the Braj Art and Culture Foundation. The organization's focus has been on preserving, promoting and rejuvenating the cultural richness of Braj and placing it in the context of the national heritage. The foundation works with traditional artists to encourage a viable model of pursuing their talent in musical instruments, such as "Pakhavaj, Morsing, Sarangi," and in dance forms such as charkula and bam rasiya.

The Braj Art and Culture Foundation recognizes that climate change poses a significant threat to the

region's cultural heritage. The loss of trees, animals, traditional attire, and local folk food due to changing climates emphasizes the urgency of the foundation's mission. The urgency of the work provided the impetus to turn towards Web 3.0 technologies. Notably, NFTs on the Proof of Art (PoA) platform reach out to a global audience, raise awareness, and generate resources and affiliation with the need to sustain and grow an essential part of our heritage.

The Braj Art and Culture Foundation stands as a guardian of Braj's cultural legacy, embodying the spiritual teachings and artistic expressions of Lord Krishna. Modern approaches such as YouTube, Web 3.0 technology, and social media platforms are essential for the foundation to ensure that the enchanting tales of Braj continue to inspire and resonate with generations to come. By unraveling the hidden facets of Braj's cultural heritage, the foundation remains dedicated to preserving these treasures for posterity.

Follow Us on

YouTube - <https://www.youtube.com/@brajartandculturefoundation>

FaceBook - <https://www.facebook.com/BAACFoundation/>

Instagram - https://www.instagram.com/baac_foundation

Website - www.brajartandculturefoundation.org ■

FINANCIAL INNOVATION

THE FUTURE OF MONEY



The Oliver Wyman Forum, the consultancy's think tank, is dedicated to building leadership communities to act on shared global challenges. At the Forum's Future of Money initiative, we aim to create value for society by fostering collaboration and innovation on new forms of money and payment. In partnership with builders and decision makers at the forefront of blockchain innovation, we identify strategic trends and their implications for stakeholders across the digital assets industry.

We believe money is undergoing fundamental changes in the way it is created and used, potentially unleashing a major reordering of the financial system and how value accrues. Over the last year, our team has held interviews and roundtables with over 80 stakeholders within financial services, policymaking circles, and academia to discuss how the financial system may evolve in response to tokenization and digital money and where the key risks and opportunities lie.

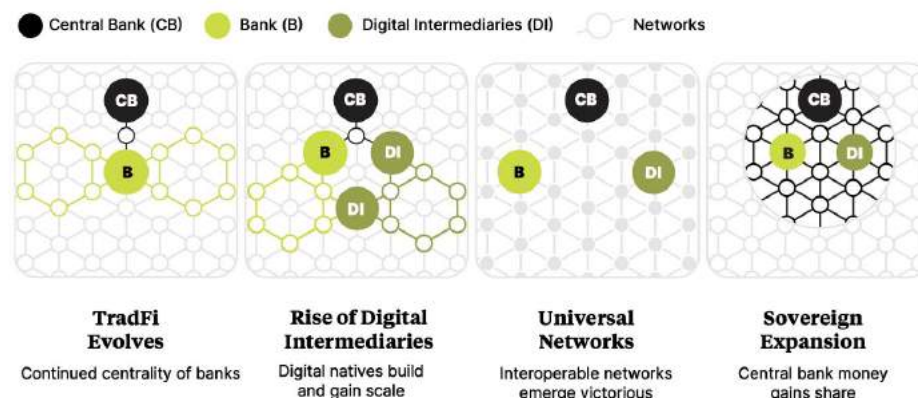
There is no consensus on what the future holds, although visions have coalesced around four distinct paradigms. To help industry executives and policymakers frame their thinking, our team has published a series of reports articulating these visions for different levels of expertise. The *"Four Visions for the Future of Digital Money"* introduced the topic for senior leaders, while the *Quest For The Token Of Fortune* choose-your-own-adventure novel presents the topic in an educational and entertaining manner.

The latest installment in the series, *"Inside the Competition for Big Money,"* provides a deep dive into how digital money may affect the markets for high-value payments and wholesale finance. The report emphasizes how various futures depend on the actions that different industry participants take today. The four scenarios include:

1. **Traditional Finance Evolves:** Established financial players adopt Distributed Ledger Technology (DLT), leading to substantial operational efficiencies but not significantly altering market structures.

A replumbing of the financial system

Outlining the four visions for the evolution of the financial landscape.



1. **Rise of Digital Intermediaries:** New digital players unburdened by legacy systems dominate, leveraging technologies like stablecoins and tokenized assets to connect investors and borrowers.
2. **Universal Networks:** Interoperable standards and protocols enable a variety of money issuers and digital solutions to compete, marking a significant acceleration of capital markets-based financing.
3. **Sovereign Expansion:** Government's role in financial markets expands considerably. While central banks are not aiming to fundamentally change their roles, unforeseen crises or political shifts could drive this change.

Importantly, we highlight that reality will likely be a combination of the four scenarios. The degree to which any one scenario dominates will be determined by the interplay of policy, technology, and commercialization, which our conversations have identified as the three distinct drivers shaping the future of digital money.

A central insight of the paper is that tokenization is a key driver of competition. The growth of digital money and expanded capital markets will shift the competitive advantage from capital to technology, leading to more automated financial services and the rise of new tech-enabled players. But with large budgets and deep customer relationships, banks are well-positioned to remain competitive, and the major

players today are focused on new opportunities for banks that are uniquely unlocked by tokenization.

The paper emphasizes the need for partnerships and standardization to solve challenges like interoperability and privacy, implying that cooperation among firms will be crucial. For their part, policymakers are advised to be innovative and adaptive, considering the impact of new money forms on financial stability as we transition to digital money and tokenized markets.

By exploring the paths to the future of money, market participants can strategically position themselves to capitalize on the opportunities presented by digital money and tokenization. Every industry, segment, and geography will experience these changes in their own way, and so it's imperative for firms to chart their own unique course through the future of money. ■

REGULATED LIABILITY NETWORK



While today's traditional payment systems function effectively, there remains friction in payment transactions, particularly in respect of speed, cost, off-hours availability and the settlement process.

Shared ledger technology offers the potential to address these frictions in support of safe and efficient payments.

With that goal in mind, Citi devised the concept of the Regulated Liability Network (RLN) in order to further explore the feasibility of an interoperable digital money platform based upon shared ledger technology that would support the efficient movement of all types of regulated money. Members of the U.S. banking community have recently concluded a proof of concept (PoC) project that explored the RLN idea in a sandbox environment.

The study was spearheaded by a collaborative industry working group from the private and public sector that analyzed the business applicability, technical feasibility, and legal viability of using shared ledger technology to settle the liabilities of regulated financial institutions through the transfer of central bank money.

The PoC focused on the movement of USDs both domestically and on a cross-border basis. The PoC successfully simulated both scenarios and reached the following conclusions:

- The business workstream concluded that a global, near-real time, 24/7, dollar payment system could be delivered through the RLN concept. This would enhance the processing of cross-border payments denominated in USD.

- From a Technology perspective the PoC demonstrated the potential to deliver a payments system that can process and settle 24x7 in near-real time, support interoperability, ensure privacy, facilitate programmability through smart contracts, and deliver capital efficiency.
- Importantly, the experiment concluded that although subject to further analysis, review, and engagement with US regulators, the legal workstream did not identify any insuperable legal impediments under existing US legal frameworks that would prevent the establishment of an RLN system as contemplated by the POC. The full business, technical, and legal reports can be found [here](#).

The PoC is an excellent example of public-private collaboration with participation from a number of members of the banking industry, as well as the New York Federal Reserve Innovation Center in New York. Further work is expected in 2024 to explore the multi-asset and multi-jurisdictional potential of the Regulated Liability Network. ■

SWITZERLAND EMERGES AS A GLOBAL LEADER IN WEB3 TOKENIZATION AND TRADING OF FINANCIAL INSTRUMENTS

Autors:

Ronald Kogens, Michael Kunz, MME Legal AG (Switzerland)



Switzerland has positioned itself at the forefront of the rapidly evolving Web3 landscape, making significant strides in legal and regulatory developments. The Swiss legal framework now officially embraces the tokenization of financial instruments, including equity, bonds, futures, forwards, options, swaps, and more, transforming them into ledger-based securities.

One of the pivotal developments is the introduction of Financial Market Infrastructure Laws, establishing a licensing regime for fully regulated security token exchanges. This progressive move aims to provide a robust regulatory framework for the burgeoning world of tokenized financial instruments. It is anticipated that the Swiss Financial Market Supervisory Authority (FINMA) will issue the first license for these exchanges in the second quarter of 2024, setting the stage for a new era of digital securities trading.

The DLT-Securities Exchanges, born out of these regulatory changes, go beyond mere token trading. They can offer a comprehensive ecosystem for the entire lifecycle of securities, including clearing, settlement, and custody. This holistic approach ensures a seamless and secure environment for market participants, marking Switzerland's commitment to fostering innovation in the financial sector.

What sets Switzerland apart is not just the comprehensive regulatory framework but also its commitment to inclusivity. The DLT-Securities Exchange Infrastructure is designed to be accessible to retail participants, democratizing access to tokenized financial instruments. This move aligns with the global trend of increasing retail participation in digital assets, making Switzerland a pioneer in creating an inclusive and diverse financial ecosystem.

As financial institutions and securities dealers worldwide explore the possibilities of tokenization, Switzerland emerges as a global leader. The licensing regime for DLT-Securities Exchanges, coupled with the legal framework supporting the tokenization of financial instruments, positions Switzerland as a trailblazer in the realm of tokenized finance. The nation's proactive stance is not only shaping its own financial landscape but also influencing the global trajectory of Web3 innovations. ■

BTG DOL:

World's First Bank-Issued Dollar-Backed Stablecoin



Leveraging blockchain's robust framework, BTG Dol was conceived to streamline access to US Dollars. It addresses the complexities often encountered in financial markets by offering a seamless channel for dollar acquisition. Vehicles that allow access to dollar exposure for ordinary Brazilian investors often present entry barriers, such as a minimum amount to open accounts abroad; different types of risks associated with storing banknotes (paper currency); fees in currency funds; expertise required to operate the futures market; difficulty in declaring and collecting taxes, among others.

Considering the above, BTG Pactual, as a major investment bank in Brazil, had the initiative to develop a stablecoin pegged to the US Dollar, facilitating access to the dollar's value exposure through BTG's traditional investment platform, its cryptocurrency platform - Mynt - and, recently, the project's international platform, created for investors from different nationalities.

In its inaugural year, BTG Dol has substantiated several underlying hypotheses, with market reception highlighting the ease of integration into

existing financial practices. Notably, BTG Dol has initiated a dialogue with the bank's existing client base, revealing insights into nuanced financial demands and paving the way for potential enhancements in service offerings. Through BTG Dol, individuals and corporations gained foresight to hedge effectively against potential dollar rates' fluctuations. The essence of BTG Dol lies in its strategic utility, proving to be a key instrument for a variety of use cases being tested and new ones emerging.

While integration with the DeFi ecosystem and facilitation of on-chain transactions remain objectives in development, BTG Dol is well positioned for a paradigm shift in international transactions. The vision for BTG Dol encompasses a transformative impact on transactional efficiency, introducing unparalleled transparency and fortified security. As we continue to explore these avenues, our commitment to regulatory compliance and risk-averse asset management remains unwavering, ensuring BTG Dol's alignment with the highest standards of financial governance.

In summary, BTG Dol stands as a testament to BTG Pactual's innovative spirit and solid dedication to promote financial accessibility through blockchain technology. The journey thus far has been marked by learning and growth, and BTG Pactual anticipates a future where numerous integrated solutions cater to the evolving landscape of global finance. ■

DISTRIBUTED LEDGER TECHNOLOGY FOR UK ASSET MANAGEMENT

CALASTONE

Calastone's focus in 2023 was to remove the barriers blocking adoption of Distributed Ledger Technology (DLT) based solutions in regulated financial markets, particularly in asset management. Two issues that remain to be clarified are the future outcomes of emerging that remain to be clarified are the future outcomes of emerging use cases where DLT could genuinely make a difference and perceived regulatory barriers for adoption.

In 2023, the Calastone team worked with regulators and asset managers in the UK and Singapore, helping develop greater understanding of the possibilities of DLT as a technology, as well as foster alignment with real world use cases addressing today's challenges in asset management. Calastone was a significant contributor for the release of the initial UK Asset Management Technology working group report on tokenization, which laid out a basis for the use of DLT and tokenization in the UK asset management space. Calastone notes how regulators and the financial services industry overall are increasingly recognizing the difference between the use of cryptocurrency and crypto assets, as they exist on public (or

private) blockchains, and the use of the underlying technology as infrastructure to optimize markets and increase efficiency.

Calastone also further developed its Digital Investment (DI) platform in collaboration with forward looking global partners. The focus in 2024 will be in continuing to be involved in regulatory thought leadership, further building out the DI platform as a basis for next generation asset management, and exploring the growing area of interoperability and standards. This will be essential to de-risking further adoption of these novel technologies. ■

UNLOCKING THE FULL CAPABILITIES OF TOKENIZATION FOR CAPITAL MARKETS



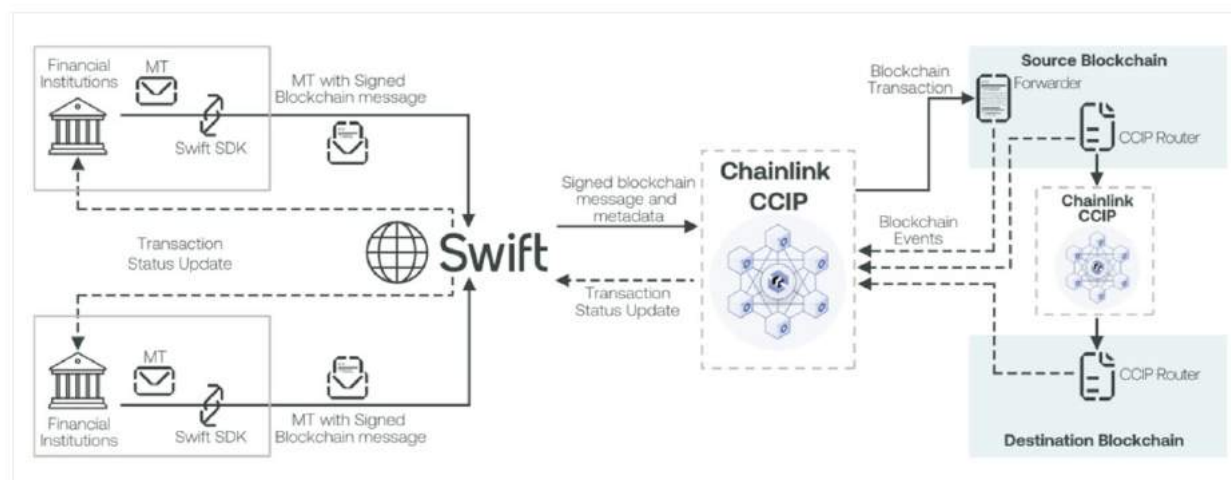
In order for banks, asset managers, and infrastructure providers to adopt tokenization, they require robust enterprise-grade infrastructure and a blockchain interoperability standard. Chainlink is the core platform that capital markets need to advance tokenization across three key use cases:

Enabling secondary markets

Chainlink's Cross-Chain Interoperability Protocol (CCIP) unlocks secondary markets for tokenized

assets by connecting buyers and sellers with accounts on different blockchain platforms, enables legacy infrastructure to interact with blockchains, and provides a blockchain interoperability standard for the capital markets industry. Swift's successful collaboration with Chainlink demonstrated that CCIP is a secure and scalable way to transfer tokenized assets cross-chain.

"More than a dozen major financial institutions and market infrastructures joined the project, including Australia and New Zealand Banking Group Limited (ANZ), BNP Paribas, BNY Mellon, Citi, Clearstream, Euroclear, Lloyds Banking Group, SIX Digital Exchange (SDX), and The Depository Trust & Clearing Corporation (DTCC) [...] By leveraging existing Swift infrastructure and Chainlink CCIP, the collaboration demonstrated the ability to transfer tokenised value efficiently and securely



across public and private blockchains, using standardised messaging formats and proven business processes.”—Connecting blockchains: Overcoming fragmentation in tokenised assets, [Swift 2023](#)

Facilitating Delivery vs. Payment (DvP) workflows

For a fully functioning digital asset ecosystem to exist, the cash leg of transactions must be incorporated into various DvP workflows. Banks and central banks are poised to start issuing cash tokens, which asset managers and owners must be able to freely use to purchase assets on other blockchain ecosystems. However, settlement risks must first be minimized. CCIP can manage onchain atomic settlement scenarios that involve tokenized securities and tokenized cash, ultimately eliminating trade failure during cross-chain asset swaps.

Synchronizing onchain to offchain systems

Establishing synchronization between offchain legacy systems and onchain blockchain ecosystems unlocks operational efficiency, transparency, regulatory compliance, and enhanced customer experience. [Chainlink Proof of Reserve](#) supplies offchain reserves data for tokenized assets, while [Chainlink Functions](#) delivers any offchain data necessary onchain—such as standing settlement instructions, corporate actions, proxy voting, ESG data, dividends and interest, and net asset values—to support financial processes. ■

COMPUTATIONAL LAW AND REGULATION TOOLS FOR FINANCIAL INSTITUTIONS



Droit is a technology firm at the forefront of computational law and regulation within financial services. Founded in 2012 as a response to the wave of regulation following the 2008 financial crisis, including Dodd-Frank and MiFID, Droit brings complete transparency in decision-making to comply with key regulatory requirements.

Droit's patented Adept platform provides traditional buy- and sell-side financial institutions with solutions for pre- and post-trade controls, evaluating the permissibility of transactions, compliant regulatory reporting, and more. Adept generates decisions directly from digitized rules, regulations, and internal policies, visually represented in intuitive logic diagrams with a traceable pathway through to the source text. Its unique ability to codify complex regulatory requirements into intelligent, actionable decisions enables financial institutions to respond efficiently to their regulatory obligations in a completely auditable manner.

The application of blockchain technology to real world assets and to trading and settlement constructs brings new efficiencies to investors and

market participants. As digital assets continue to expand into the mainstream financial marketplace and traditional financial institutions pursue the tokenization of financial products and assets, the demand for transparency and traceability, as well as for consumer and investor protections, will remain, if not increase. 'Same risks, same activity, same regulation' is the call of international regulators when looking at what and how to regulate in the crypto and digital assets markets. And, the corollary to that is compliance. Droit's Adept platform supports compliance with complex regulations throughout the trade lifecycle. When applied to digital assets regulation, this transparency will provide the same increased efficiencies and a repeatable, defensible process already familiar to the TradFi environment. ■

CRYPTO SECTORS:

Setting a Standard for the Crypto Asset Class



Crypto may have started with Bitcoin, but this first innovation has since spurred a new *fully functional digital economy leveraging blockchain technology that spans thousands of digitally-native assets*.

Grayscale found that despite investors' interest in diversifying beyond Bitcoin and Ethereum, they lacked necessary tools at their disposal in order to understand this asset class. As an asset class, crypto is still nascent, constantly changing, and

can sometimes seem highly technical. As a result, investors are in need of a framework that clearly defines assets in this space.

Grayscale Crypto Sectors is a comprehensive new framework that identifies five distinct sectors, structuring Grayscale’s specialized view of the crypto landscape. To help demystify this increasingly important landscape, *Grayscale Crypto Sectors* draws parallels from the traditional financial markets. In traditional finance, investors can gain sector-wide exposure—for example, by investing in the GICS Healthcare sector. *Grayscale Crypto Sectors* applies this approach to the crypto asset class, providing investors with a framework to organize and assist in understanding the crypto asset class and the tools to help inform their crypto portfolios in real-time. The five *FTSE Grayscale Crypto Sector Indices* track each of these sectors and include:

Grayscale Crypto Sector	Features	Example Assets
Currencies	<ul style="list-style-type: none"> Hard-capped supply; transparent inflation schedule Global store of value, tamper-proof and censorship resistant Peer to peer transactions rather than through an intermediary 	<ul style="list-style-type: none"> Bitcoin XRP Litecoin
Smart Contract Platforms	<ul style="list-style-type: none"> Any developer can build, any user can access Interoperability: developers use the code of others as “building blocks” Ability to hard fork code and create new chain ensures completion 	<ul style="list-style-type: none"> Ethereum Cardano Solana Polygon
Financials	<ul style="list-style-type: none"> “Always on” markets, open 24/7/365 Transparency enables more accessible financial info and efficient markets Protocols can offer superior cost and settlement times 	<ul style="list-style-type: none"> Uniswap AAVE Maker Compound
Consumer and Culture	<ul style="list-style-type: none"> Direct ownership of brands, media, IP and in-game items Programming creator royalties on secondary sales into perpetuity Tokens enable consumers to participate in governance 	<ul style="list-style-type: none"> ApeCoin Sandbox Decentraland
Utilities and Services	<ul style="list-style-type: none"> Crypto “picks and shovels”. Ties crypto to real world data Increase liquidity and usability of crypto via liquid staking derivatives Aggregate resources through decentralized networks 	<ul style="list-style-type: none"> Chainlink Lido Filecoin Helium

Note: Example assets are for illustrative purposes only and subject to change.



Source: FTSE Russell, data as of October 24th, 2023. Examples Provided for illustrative purposes. Allocations are subject to change. Note: Indices are unmanaged and you cannot directly invest in an index

FTSE Grayscale® Currencies Sector Index: Crypto assets that serve three fundamental roles — a medium of exchange, store of value, and unit of account. *Example assets: Bitcoin, XRP, Litecoin.*

FTSE Grayscale® Smart Contract Platforms Sector Index: Crypto assets that serve as the baseline platforms upon which self-executing contracts are developed and deployed. *Example assets: Ethereum, Solana, Polygon.*

FTSE Grayscale® Financials Sector Index: Crypto assets that seek to deliver financial transactions and services. *Example assets: Uniswap, Aave, Maker.*

FTSE Grayscale® Consumer & Culture Sector Index: Crypto assets that support consumption-centric activities across a variety of goods and services. *Example assets: ApeCoin, Sandbox, Decentraland.*

FTSE Grayscale® Utilities & Services Sector Index: Crypto assets that aim to deliver enterprise-level applications and functionalities. *Example assets: Lido, Chainlink, Helium.*

For more information as we continue to track this asset class please visit the *Grayscale Crypto Sectors website*. ■

ABRDN EXPANDS ASSET ACCESS BY TOKENIZING FUNDS ON HEDERA



abrdn is one of Europe's largest investment management firms, with businesses across asset management, advisory, and personal wealth management. Their introduction to Hedera came through the exploration of tokenizing their funds. abrdn further saw the value of joining the Hedera governing council, as it aims to take a leading role in the potential future integration of blockchain and DLT across the fund management industry.

Currently, abrdn's main focus is on tokenizing the equity interest in its mutual funds, which enables increased liquidity and fractionalization, allowing smaller investors to access a wider range of investment opportunities. Tokenized investments in abrdn's money market funds are available today. As the industry evolves, they anticipate tokenization expanding to include other asset classes such as corporate and municipal bonds, real estate, private equity, and venture capital.

Previously, these asset classes were limited to large institutional investors due to their illiquid nature and high investment thresholds. Tokenization provides opportunities for fractional ownership and increased

accessibility to these assets, making a broader range of assets available to a wider audience, enhancing liquidity, and improving efficiency. In addition to accessibility, tokenization offers benefits such as transparency and streamlined legal processes.

abrdn chose to tokenize its funds on Hedera for several reasons. Firstly, Hedera offers a robust, sustainable, and scalable platform that can handle large-scale tokenization projects. Secondly, Hedera's focus on security aligns with abrdn's commitment to maintaining high standards in asset management. Hedera's consensus algorithm, based on hashgraph technology, provides a secure and tamper-resistant infrastructure for tokenized assets. Hedera's vision for interoperability and collaboration makes it an attractive choice for abrdn's long-term tokenization strategy. Lastly, abrdn determined that Hedera's governance framework aligned well with the standards of its client base and enterprise partners, which influenced them to apply to join the Governing Council. By doing so, abrdn is able to participate in the governance of the Hedera network and in shaping the future of blockchain and distributed ledger technology (DLT) in the fund management industry.

By choosing Hedera, abrdn aims to leverage the platform's technological capabilities, governance structure, and potential for future growth and innovation to tokenize funds successfully and provide enhanced accessibility and liquidity to a wider range of investors. ■

OPENBRICK: BOOSTING GLOBAL REAL ESTATE FINANCING AND INVESTMENTS WITH THE POWER OF TOKENIZATION

ioBuilders

A Blockchain technology company

OpenBrick emerged as an initiative born from the collaboration of three industry leaders: Renta 4 Banco, a distinguished Spanish financial institution; Grupo Lar, an international company with over 50 years of experience in investment, promotion, and real estate asset management; and ioBuilders, an enterprise-blockchain technology company. This synergistic venture is set to redefine the real estate industry by harnessing the power of blockchain technology.

The various actors in the real estate industry face unique challenges that hinder growth and accessibility. Developers and owners often grapple with limited access to financing, while investors encounter barriers to entry, primarily due to the high capital requirements and the market's inherent lack of liquidity.

OpenBrick's ambition is to tackle these challenges by implementing a robust and scalable solution for tokenizing real estate assets, and providing

comprehensive financial services advisory throughout the process. Its approach is twofold: first, to facilitate easier and more efficient access to capital for real estate projects; and second, to open the doors of real estate investment to a broader range of investors, providing the infrastructure necessary to create markets with lower requirements to invest.

ioBuilders has created Asseto Digital Securities, a cutting-edge tokenization platform for financial securities. This platform is the driving force behind OpenBrick technology, facilitating the management of the full lifecycle of real estate securities. From issuance in the primary market to trading in the secondary market, it's designed to be versatile and cater to diverse use cases. The platform efficiently serves issuers, distributors, brokers, and investors, and is equipped for seamless third-party integrations.

OpenBrick has earned recognition for its commitment to compliance and regulatory adherence. The initiative has been selected by the CNMV (Spanish Securities Market Supervisor) to participate in their sandbox, which will support OpenBrick's involvement in the EU DLT Pilot Regime. This involvement facilitates close collaboration with regulatory bodies and is a testament to its legal and operational robustness. ■

POSTING DERIVATIVES COLLATERAL WITH J.P. MORGAN'S TOKENIZED COLLATERAL NETWORK



In October 2023, Onyx by J.P. Morgan launched its latest offering, 'TCN', on the Onyx Digital Assets network, when BlackRock and Barclays conducted the first transaction through this new solution. This transaction marked the first-ever live posting of tokenized Money Market Fund shares as derivatives collateral.

What is TCN?

The Tokenized Collateral Network, 'TCN', is a blockchain-based 'dapp' that increases the mobility of collateral, enabling faster settlement and reduced friction. It sits on the Onyx Digital Assets network, a Quorum-based blockchain that has enabled over \$950B of settlement to date.

TCN was initially created to provide investors in Money Market Funds (MMF) with the ability to post their MMF units as collateral to meet margin requirements; however, it is now being expanded to other asset types too given the benefits of posting collateral in this faster, lower-friction way.

Existing market challenges

- Today, it is operationally burdensome and costly to transform assets into cash to use as Variation Margin (VM).
- Several assets, such as MMFs, are 'trapped' at the record-keeping agent level due to market/asset class constraints, precluding them from being used as collateral in VM.
- Posting an asset as collateral often results in multiple market movements.

What benefits does TCN provide?

- *Tokenization eliminates the need for market moves.* Once MMF shares are tokenized, they can be seamlessly transferred between parties, regardless of whether those parties are clients of the same Transfer Agent. This can reduce cost and settlement timelines, and support delivery outside of market operating hours.
- *Additional utility for assets previously unavailable for use as collateral.* Tokenizing MMFs demonstrates how an asset which was previously 'trapped' can be released to be utilized across multiple collateral use cases.
- *Enhanced resiliency for Asset Managers.* MMFs can be susceptible to large scale redemptions, particularly in periods of market stress. Adding utility and transferability to MMF shares could increase the resilience of the fund by enabling investors to remain invested when they

otherwise would need to redeem out of the fund in order to get access to cash for collateral purposes.

Contact the Onyx team to learn more or to onboard to TCN: <https://www.jpmorgan.com/onyx/contact> ■

NEXT-GENERATION INFRASTRUCTURE FOR THE TOKENIZED SECURITIES MARKET



As tokenized securities continue to gain momentum, companies such as KALYP Technologies are deploying the next generation of distributed financial market infrastructure (DFMI) required to support the investment lifecycle for regulated capital market assets. KALYP's institutional-grade technology enjoys seamless interoperability with legacy environments and a growing community of service providers to expedite settlements, lower operational risk, and enhance regulatory oversight and controls.

An early adopter of the technology, the Digital Securities Depository Corporation (DSDC), has shown an ability to significantly enhance risk management and streamline processing of regulated cross-border securities from public issuers by as much as 40% by creating an institutional network using a shared ledger with optimized operational flows:

Network of Financial Institutions

KALYP offers an open infrastructure architecture which DSDC makes available to qualified institutions via a membership-based model. Regulated financial service providers are invited to apply and join DSDC as member firms that get connected to the DFMI, enabling them to position their legacy services for the digital future. This addresses the expense and integration challenges of each firm.

Shared Ledger and T+1 Settlement

The technology is based on a permissioned distributed ledger infrastructure. Each member firm has a node that is aligned with its regulatory status. A shared ledger consolidates the transaction registers and securities master across the investment ecosystem and can eliminate traditional reconciliations associated with legacy service models. Data is accessible on a need-to-know basis.

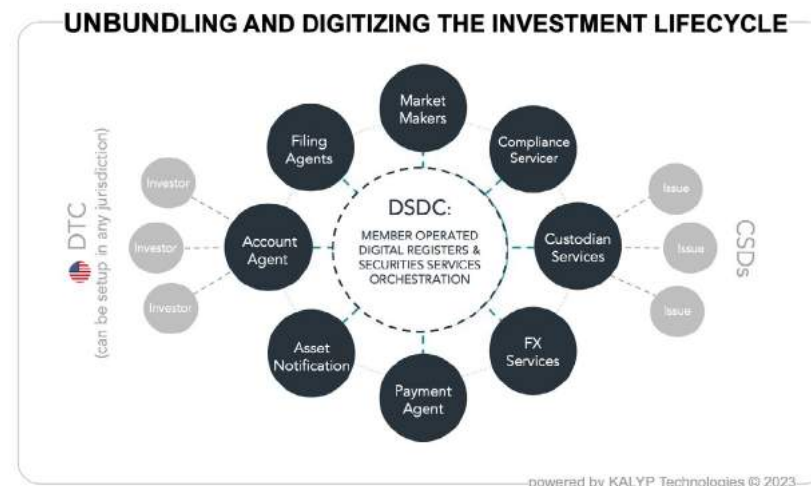
Operations, Optimized and Automated

DSDC has invested thousands of hours to define and configure the optimal operating framework with time-tested services and standards, and a legacy-inspired governance model that embraces the principles of decentralization. The advanced automation and streamlined processes have reduced the time it takes to execute corporate actions, payments, and fx transactions from weeks to a matter of days. All process steps are recorded to provide inter-firm transparency for improved operational risk management and legal certainty.

KALYP looks to continue helping the investment community move to the next generation of infrastructure that supports a fully digital operations investment lifecycle.

For more information visit www.dsdcc.net.

KALYP Technologies - Digital Securities Depository Corporation ■



REVOLUTIONIZING DEFI WITH AGGREGATED LIQUIDITY

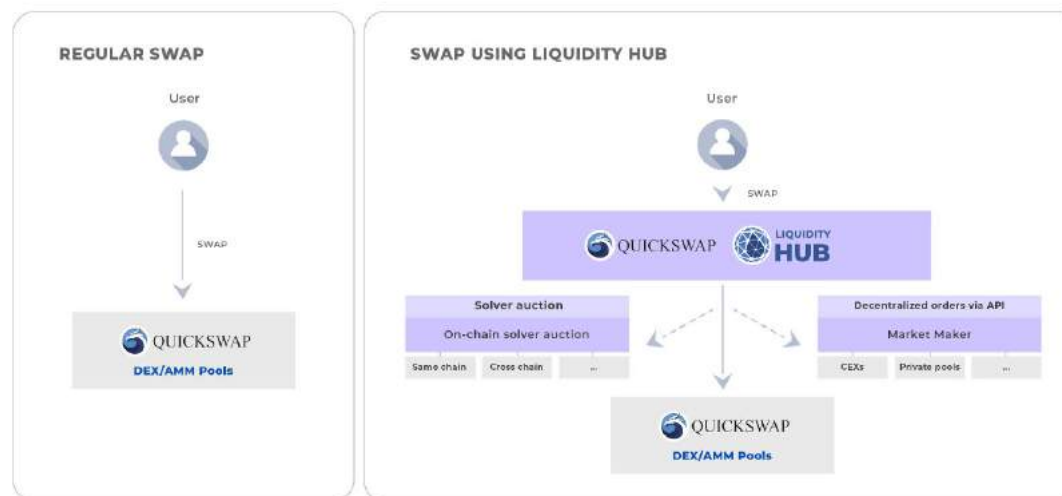


In the rapidly evolving DeFi landscape, Total Value Locked (TVL) has long been the cornerstone metric for decentralized exchanges (DEXs). A high TVL indicates substantial liquidity pools, enabling DEXs to offer more favorable terms and lower price impacts for token swaps. However, the race to maximize TVL has led to a significant challenge: liquidity fragmentation. This phenomenon sees on-chain liquidity dispersed across various chains, Automated Market Makers (AMMs) within those chains, and within individual pools of each AMM.

This fragmentation has given rise to liquidity aggregators such as 1inch, ParaSwap, and CowSwap. These platforms have reshaped the market by offering superior pricing compared to individual DEXs, challenging their ability to remain competitive.

Introducing Liquidity Hub

In response, Liquidity Hub by Orbs offers DEXs a new competitive edge by utilizing Orbs's Layer 3 technology. It acts as an optimization layer over the AMM, harnessing external liquidity for improved price quotes and minimized price impacts.



Liquidity Hub's innovation lies in its approach to executing trades. It allows DEXs to bypass the AMM, avoiding the usual price impact. When a better price cannot be sourced externally, the trade reverts to the AMM contract, ensuring seamless execution. This mechanism significantly enhances the traditional swap process, which typically relies solely on a DEX's internal liquidity pools.

Instead of the typical swap that searches for the best route within the DEX's limited liquidity pools, Liquidity Hub enhances this process by utilizing additional liquidity sources:

1. **On-chain solver auction:** Third-party solvers who compete to fill swaps using on-chain liquidity like AMM pools or their own private inventory.
2. **Decentralized orders via API:** Decentralized orders, accessible using API, enable institutional/professional traders, such as market makers, to submit bids and compete to fill swaps.

By integrating Liquidity Hub, DEXs can access a broader pool of liquidity beyond their internal resources. This approach not only ensures competitive pricing for users but also reduces the price impact of trades. In essence, Liquidity Hub empowers DEXs to stay relevant and effective in an ecosystem increasingly dominated by aggregated liquidity solutions. ■

BLOCKCHAIN DISRUPTING THE FINANCIAL SECTOR



In Q3, GBBC, in collaboration with Provenance Blockchain Foundation, released a report titled "Total Value Locked: From DeFi to TradFi." This report highlights a crucial metric for financial institutions

exploring blockchain for tokenization and issuing blockchain-native assets. It also delves into current use cases and benefits recognized by leading institutions and fintechs.

Reflecting on the fourth quarter of 2023, and to add to those explored in the report, we saw additional new use cases and firsts arrive on-chain. Of particular mention, a new use case initiated by Project Guardian emerged on-chain, plus a specific financial sector gained recognition as the first to be disrupted by blockchain technology.

In mid-November, Apollo, Axelar, Oasis Pro, Onyx by J.P. Morgan, and Provenance Blockchain collaborated to develop a proof-of-concept (POC) next-gen solution. This initiative aims to reshape the \$5.5 trillion portfolio management business. The POC showcased the ability to buy, move, and rebalance a portfolio of assets within a network and across blockchains easily, efficiently, and securely. Key findings from the POC include the ability to:

- Reduce over 3,000 operational steps to 1 automated process for wealth managers.
- Cut portfolio fees by about 20%, resulting from reduced cash drag through faster, programmatic settlement.
- Unlock a \$400 billion annual revenue opportunity for the broader AWM industry.

For more details on this POC, refer to [The Future of Wealth Management report](#) and [Provenance Blockchain's case study](#).

Currently, more than 5% of all Home Equity Lines of Credit (HELOC) loans in the United States are ledged on Provenance Blockchain, originated by 10 of the top 20 HELOC providers. Notably, this marks the first known financial sector disrupted by blockchain technology. [Figure Lending](#) leads the pack, emerging as the largest non-bank HELOC provider. Utilizing blockchain, Figure Lending has funded over \$8 billion for 85,000 members in the United States. Their end-to-end digitally-native platform exemplifies how the lending industry is embracing blockchain to enhance the customer experience through faster approval and funding. This shift extracts more than 100 basis points of efficiency from origination through to deal securitization.

These developments underscore the transformative impact of blockchain across various financial solutions, from portfolio management to lending. As institutions continue to explore and implement blockchain solutions, the potential for increased efficiency and enhanced customer experiences becomes increasingly evident. The trajectory of blockchain disruption in finance is a compelling narrative that has gained momentum globally and is seeing traction. ■

BLOCKCHAIN FOR CBDCs AND CREATING NEW ECONOMIC OPPORTUNITIES



SORAMITSU (www.soramitsu.co.jp), an award-winning blockchain technology company, works to advance everyday use of blockchain to improve the lives of the millions of people who use its products. With its team of 150 international professionals, SORAMITSU contributes to many open source projects, including the Hyperledger Iroha blockchain protocol, as well as the SORA decentralized world economic system.

Hyperledger Iroha is a secure and scalable blockchain protocol that was designed specifically to be used in systemically important infrastructure, such as Bakong, a central bank digital currency (CBDC) platform developed by SORAMITSU in cooperation with the National Bank of Cambodia. Bakong is the first blockchain-based retail payment system to be launched by a central bank, and has processed over \$15 billion in transactions and has over 8.5 million registered accounts, processing both retail and wholesale payments 24/7/365. Bakong is also integrated seamlessly with the retail payment systems in Thailand and Vietnam, allowing Bakong users to make payments when they travel abroad.



SORAMITSU's work on Bakong was recognized by the journal Central Banking, with its inaugural award for Central Bank Digital Currency Partner in 2020, as well as the Japan Financial Innovation Award in 2021 and the 2021 Nikkei Superior Products and Services Awards.

SORAMITSU continues the work across the Asia-Pacific region on cutting-edge, blockchain-based payments, with CBDC proof-of-concepts conducted in 2023 with the Bank of the Lao PDR and the Central Bank of Solomon Islands, which tested retail payments using the Hyperledger Iroha blockchain. Additionally, for the proof-of-concept in the Solomon Islands, a bridge to the SORA public blockchain was used to simulate cost-effective international remittance use cases on a global platform.

SORAMITSU's realm of expertise extends to DeFi, contributing to the SORA decentralized economic

system designed for high economic growth and sustainable development, as well as the Polkaswap DEX. SORAMITSU makes these technically complex apps easy to use with Fearless Wallet, a cryptocurrency wallet that allows users to have full autonomy over their assets in a secure way, while being intuitive for even new users. ■

COMPLIANT & EFFECTIVE INFRASTRUCTURE FOR SECURITY TOKENS

TOKEN CITY

Token City's custom-branded solution provides clients with the regulatory compliance and the technological infrastructure enabling the issuance, management, and trading of security tokens. The

cornerstone of this solution for each client is the creation of their own investment channel. The tailored approach of a custom-branded solution ensures that financing conditions are perfectly aligned with each business's unique requirements and goals, seamlessly digitizing via blockchain their real-world assets, such as stocks and debt.

With Token City's comprehensive solution, compliance under EU regulations is guaranteed while its technology applies advanced security token smart contract specifications, allowing companies to bridge the gap between traditional financial instruments and the new digital asset era.

Close collaboration with clients ensures optimal token design and alignment with funding objectives. Token City also provides assistance in crafting compelling marketing strategies ensuring that clients' offerings stand out in a competitive market, and in building a dynamic investor community that supports and drives the investment opportunity.

Thanks to Token City's custom-branded solution, clients develop their unique funding channel under their own specifications, which is EU compliant and digitally available to the rest of the world, enabling enhanced transferability and easier distribution at lower cost than traditional financing options. ■

THE EVOLUTION OF TRADFI: Embracing On-Chain Transformation



Over the last few years, we have witnessed the financial landscape undergo a transformative shift as traditional capital markets and financial products migrate onto blockchain technology. This on-chain transition has encompassed a range of products, from money market funds to bond issuance and the tokenization of a broad swathe of real-world assets (RWAs).

Migration of bond issuance on-chain, for example, eliminates intermediaries, streamlines the process, reduces distribution costs and offers near-instantaneous settlement, an attractive proposition for issuers and investors, who benefit from increased transparency, enhanced liquidity, and simplified ownership management.

As more assets are securitized and tokenized on-chain, this technology layer is unlocking a new era of asset fractionalization and democratized access, offering investors exposure to a wider range of assets with lower barriers to entry.

As adoption continues, we are likely to see increased demand and a faster transition of TradFi offerings



opening up. Whilst crypto options and futures volumes continue to grow, structured products are also starting to find their way on-chain.

In traditional finance, structured products derive their value from an underlying asset or a basket of assets, such as market indices, stocks, bonds, or a combination of these. With pre-defined maturity dates, distinct yield-bearing profiles, and payoff curves, these products are designed to offer exposure to specific market themes, making them an attractive choice for investors.

In cryptocurrencies, structured products operate under a similar principle, albeit instead of being underpinned by traditional assets, they rely on cryptocurrencies such as Ethereum or Bitcoin as their underlying assets.

In 2019, the global structured products market value was estimated at over \$7 trillion, accounting for merely 1% of the \$700 trillion derivatives market, according to Bloomberg.



While determining the exact market size or growth rates of structured products in crypto can be challenging, it is worth noting that cryptocurrency derivatives trading on centralized exchanges alone exceeded \$3 trillion as of July 2023 and according to Index Coop, the structured products sector still accounts for less than 1% of the crypto market overall.

The on-chain transition of traditional finance is not just a technological shift; it is redefining the way we interact with financial instruments and paves the way for a more inclusive financial ecosystem. ■

THE RISING TIDE OF PERMISSIONED BLOCKCHAIN IN FINANCIAL MARKET INFRASTRUCTURE



LYKKE

In December 2023, Fnality International announced the launch of its sterling-based payment system in the UK, marking a significant milestone in the adoption of blockchain technology in wholesale finance. This evolution does not come without its challenges.

A direct replacement of existing systems with blockchain technology is not a straightforward or affordable option for most financial institutions.

Ensuring interoperability between blockchain communications and existing financial messaging standards, such as ISO 20022, is critical to successfully integrate innovative solutions such as Fnality's. Here, the challenge is twofold. Firstly, compatibility between blockchain networks and traditional financial messaging systems must be ensured. Secondly, the compatibility must extend to the interaction between different distributed ledger technology (DLT) networks.

As blockchain technology continues to scale, banks will need to develop robust infrastructure to

support these disruptive solutions. Lykke presents itself as a viable partner to enable such complex operations. Lykke provides an extensive suite of capabilities like operating nodes on permissioned blockchains, ensuring secure custody of assets, and proficiently translating blockchain messages into financial messaging standards, fostering cross-chain interoperability. Lykke's expertise in blockchain technology plays a crucial role in helping financial institutions navigate these complexities. Its services are instrumental in ensuring seamless integration, compliance, and operational efficiency for financial institutions embracing the transformative potential of blockchain technology.

Overall, the adoption of blockchain opens up numerous opportunities, but at the same time it also requires financial institutions to significantly adapt and innovate in terms of technology and regulatory compliance. Lykke and its partners are at the forefront of this change, providing the necessary tools and expertise to navigate this new digital landscape. ■

INFRASTRUCTURE & GOVERNANCE

WHOLECHAIN MMK CASE STUDY ON SUPPLY CHAIN SOLUTIONS



According to a survey cited by researchers at the [MIT Sloan School of Management](#), 81 percent of companies do not have full visibility into their supply chains, and 54 percent have no visibility at all. Consumers, retailers, and auditors are unable to easily verify claims about sustainable, ethical, and responsible sourcing. This hurts everyone throughout the supply chain, all up and down the line, for different reasons, and it is an extremely wasteful system. The UN Food and Agriculture Organization (FAO) for example, reports that [supply chains cause 40 percent of food waste in North America](#).

Recently, during a panel discussion on supply chain that took place at the [Algorand Foundation's Impact Summit](#) in Delhi, India, a senior logistics officer from [United Nations World Food Programme](#) (WFP) laid out the enormous challenges they face in supply chain management. From proving provenance

of food and other commodities, on one end, to receiving confirmation from the recipient that the delivered goods met expectations, on the other end, and everything in between. It's a system filled with paper, phone calls, and uncertainty. And as the logistics arm of the UN, WFP faces enormous supply chain challenges working in some of the most difficult environments on Earth on a daily basis.

Supply chain is an area that is perfectly suited to benefit from blockchain technology.

On that panel was [Jayson Berryhill](#) the founder and CEO of the supply chain company [Wholechain](#), a blockchain-based traceability solution built to enable trust, coordination, and transparency in fragmented supply chains. Jayson pointed out that many supply chain operations remain opaque across industry verticals.

In its latest release, Wholechain enhances its capabilities through its integration with the Algorand blockchain. Wholechain automatically writes data onto the blockchain, providing customers with a record of verifiable traceability data that informs more responsible supply chain decisions. By

providing an immutable record of a product's origin, Wholechain gives companies the visibility they need to ensure their products are sourced sustainably and comply with international norms – specifically food safety standards and those prohibiting child labor and worker exploitation. Wholechain's traceability work with Fortune 500 companies' supply chains has also gained recognition, landing spots on the Forbes Blockchain 50 lists in 2020 and 2023.

Leveraging blockchain allows for seamless scaling without compromising environmental impact. It also streamlines onboarding and end-to-end coordination for supply chain partners. This blockchain-enabled traceability enables businesses to trace products to their origins, have visibility into every step along the way, and verify claims made about those products.

Wholechain's traceability platform enables businesses to make more informed decisions about sourcing and production. The technology enabled the first traceable seafood supply chain of its scale for Topco Associates' Full Circle Market seafood line in 2019. And in 2021, a US retailer leveraged the supply chain data collected on Wholechain's blockchain-based platform to redirect multiple lots of product

in danger of a recall due to a COVID-19 outbreak in a warehouse. The intervention prevented food and packaging waste and other costs all too common in the case of recalls.

In 2018 alone, recalls due to food borne illness cost the food service and retail industries \$17.6 billion. Wholechain's work in traceable seafood provides a solution to the urgent needs of the industry as it seeks to comply with the FDA's new traceability rule for high-risk food items. Seafood, included in the FDA's traceability list, is under scrutiny for its food safety and quality issues, and is a perfect application of blockchain-based traceability.

Food safety is only one example of traceability's utility in the world of supply chains. Wholechain partners, including some of the most trusted leaders in sustainability, recognize the technology's role in advancing a myriad of cross-industry goals, including deforestation-free supply chains, decarbonization, social welfare, and others. Blockchain, essential to many traceability and other data capture technologies, substantiates trust in the data that informs decision making. This trust is foundational to supply chain transformation, which requires holistic insights about ingredient lifecycles — from harvest to shipment to processing and distribution steps — that encompass logistical, environmental and social challenges the World Food Programme knows all too well.

The on-stage pairing at the Algorand Impact Summit between WFP – the world's largest humanitarian aid organization – and Wholechain was significant. While agencies like WFP work in the most difficult places on Earth, their supply chain challenges multiply. Wholechain, a cutting-edge supply chain company using blockchain to overcome challenges of trust, accountability, and certainty, has the answers to many of the challenges faced by major multilateral institutions working in the humanitarian sector, as well as by some of the world's largest and most well-known companies. This is the future of supply chain. ■

INTRODUCING THE CANTON NETWORK:

The New North Star for Blockchain Networks

Digital Asset

While the narrative that blockchain is moving from proof of concept to production may seem new, Digital Asset has enabled financial institutions, market infrastructure, and service providers to gain value from blockchain technology for several years. Daml, Digital Asset's privacy-enabled tokenization and blockchain platform, is used at scale in production applications that issued over \$4bn of real-world securities, processed over \$10T repo, and bought \$900B of syndicated loan commitments on-ledger in 2023. In May 2023, the company embarked on a journey with 29 leading market participants to

launch the Canton Network, leveraging Digital Asset's technology to create a decentralized blockchain network designed for institutional assets and to unlock the potential of synchronized financial markets.

Over the years, there have been numerous approaches (public and private) to blockchain, all of which have yet to gain traction for traditional finance, each with pros and cons. The challenge is that regulated financial institutions need the control, certainty, safety, and soundness of running their applications with their permissions in their environment. Public Layer 1 networks and decentralized protocols revealed the magic of truly interoperable transactions and applications - but always at the cost of full transparency and giving up this control - a non-starter in regulated finance. Private blockchains clawed back some privacy and control, but always at the expense of interoperability across private applications.

The Canton Network offers a new, third way - where privately controlled applications can leverage globally available network infrastructure to achieve high-fidelity, transactional interoperability, while still maintaining the data and application privacy and control that financial institutions require.

Since Digital Asset is the technology provider for the Canton Network, applications built on Daml can leverage the Canton protocol to connect into an interoperable ecosystem. For example, banks

and exchanges are testing how digital assets can seamlessly connect to secondary market applications—e.g. securities financing platforms—to drive asset mobility, reduce settlement risk, and create digital asset liquidity. Previously, these assets have been trapped and illiquid, providing limited utility for asset owners. Other institutions are exploring how to connect their existing applications with cash providers on the ledger, whether its tokenized bank deposits, stablecoins or digital currencies, or other cash-like products, such as tokenized money market funds. These are real use cases, solving real problems with tangible results.

As interest in digital assets increases, asset utilization becomes a critical factor for success. This is where the Canton Network has a big role to play – connecting independent applications to create growth opportunities for financial institutions. With the Canton Network providing a synchronized infrastructure and assets in a more efficient, digitally native format, companies can realize new opportunities that did not previously exist.

The Canton Network is expected to go live in the second half of 2024. In Q4 2023, Digital Asset successfully led a Canton Network pilot with 150 participants from 43 organizations. The pilot made available six independent applications (asset registry applications for funds and bonds, a cash registry application, a trading application, a margin management service and a securities financing application) to demonstrate how they could be operated independently, with their

own permissioning and infrastructure, while also interoperating seamlessly to deliver real-time, reconciliation free transactions. Digital Asset provided the technology to support the pilot, leveraging the Canton Network infrastructure to ensure the synchronization of cross-application transaction workflows - without sacrificing privacy. Results from the pilot will be shared in Q1 2024.

As the market continues its move from POC to production, organizations are asking, “where is there volume and liquidity today?” As we have seen the volume of transactions passing through independent Daml applications snowball in 2023, the Canton Network now provides the control, privacy and interoperability to securely transact and compose workflows across these applications and make blockchain technology work at scale for regulated entities. Together with the Canton Network participants, Digital Asset is making it possible for financial markets to fully embrace the core value propositions of distributed ledger technology and unlock its full potential to improve how we manage institutional assets. ■

AMELIORATING THE CRYPTO DATA PROBLEM



The cryptocurrency industry has long had a data problem.

While there is plenty of price data available at all hours of the day, this data frequently lacks consistency and reliability, and is scattered across dozens of platforms. To give an example, today there are 204 active markets for bitcoin.

So what is the real price of bitcoin if there are 204 unique data feeds?

Further, access to more complex data such as order books is limited, and this data often requires sophisticated data pipelines due to their complexity and massive size.

Frictionless markets open 24 hours a day are what make cryptocurrency markets so attractive. But without uniform historical and real-time market data, it can be difficult to make intelligent investment, research, and business decisions.

Every large industry has at least one trusted data provider. The traditional financial industry has Bloomberg, S&P, Thomson Reuters, and at least a dozen more providers. The crypto industry has a rich and rapidly growing data ecosystem, but there remain challenges when it comes to balancing quality with coverage.

At Kaiko, our mission is to ameliorate crypto's data problem by providing the highest quality data with maximum coverage. The five components of our data lifecycle are thus:

Collection: We form connections to 100+ centralized and decentralized exchanges, DeFi protocols, and blockchain networks.

Normalization: We make sure all data is in a standard and easily-consumable format.

Data Standards: We integrate traditional financial mapping codes into our feeds, such as FIGI [Financial Instrument Global Identifier] to bring uniformity to the industry.

Intelligence: We apply outlier-management and extensive quality assurance to our data, adapting them to reporting and accounting standards.

Rankings: Finally, we take all data and industry expertise to product exchange and liquidity rankings to improve investor understanding of the markets.

Critics of the crypto ecosystem often cite its lack of transparency and bad actors. Data alone may not dissuade malpractice, but it can provide valuable insights that will ultimately increase transparency and trustworthiness throughout the broader crypto ecosystem. ■

LATEST TOOLS FOR EVIDENCE DRIVEN RISK MITIGATION



Crystal is a globally distributed team of world-class blockchain analysts, award-winning mathematicians, and professional software developers headquartered in London and Amsterdam. The team designs blockchain intelligence solutions for regulators, financial services, and law enforcement, to mitigate risk associated with cryptocurrencies. Crystal's tools can serve as indispensable assets in combating financial crimes involving cryptocurrencies, contributing significantly to maintaining the integrity of the blockchain and financial ecosystems.

Crystal operates on the belief that data integrity and quality are the foundation of any credible blockchain investigation. Investigators need reliable, unique, up-to-the-minute intelligence to close in on criminals successfully.

The emphasis on maintaining high standards in research, which is made easily available to clients, has significantly enhanced the outcome of investigations. By providing actionable insights, based on unique intelligence, Crystal has enabled investigators to make better-informed decisions about the risks posed by crypto transactions or entities to close investigations faster.

Over the past year, Crystal has on new solutions to deliver maximum transparency and integrity to its clients, pouring focus and resources into offering useful tools and proprietary intelligence for compliance and investigations.

One of the first steps taken in 2023 was to introduce interactive graphs of multi-chain visualizations, powered by the latest data to help investigators see links between entities and transactions at lightning speed.

As a way to protect customers' businesses, the next step was to offer validation of the data supplied by Crystal. The result is that in January 2024, the team will launch a comprehensive new toolset for its customers to understand the context behind entity address risk labeling.

This new feature – **the evidence database** – is a rich repository of the evidence collected from multiple sources that support the decisions Crystal makes when assigning risk status to entities and addresses. Customers will be able to dig deeper into each entity and review each piece of evidence, as well as the reason for address markup. Armed with this information, businesses can confidently make intelligent, informed risk-based decisions in line with their risk policies.

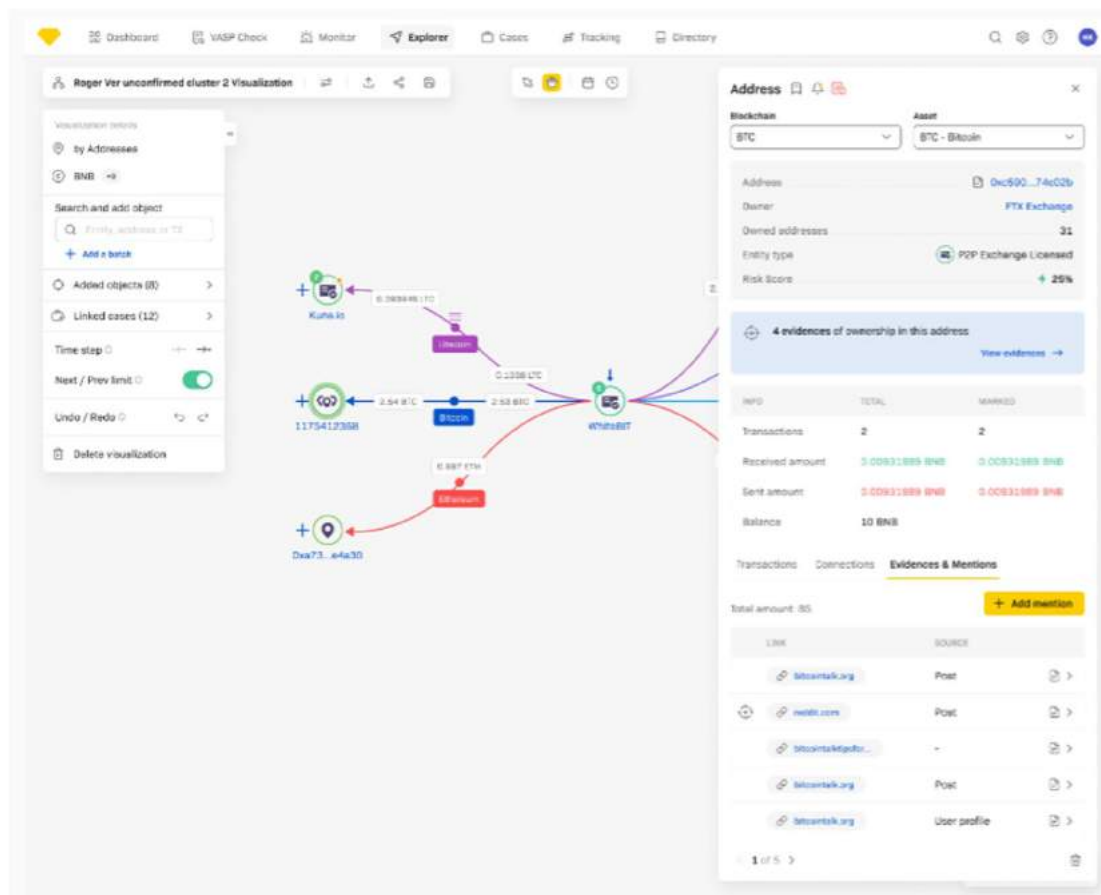


Figure 1. Users will be able to access evidence of address ownership via the visualization canvas

In 2024, acknowledging the complexity of the market and the risks associated with risk management, Crystal will continue its vital work to embed more functionality into its core solution, ultimately to provide its customers the confidence to make business decisions with peace of mind.

In doing so, Crystal aims to remain a leader in innovation and transparency, continuing to pave the way for a more secure and trustworthy blockchain future for all.

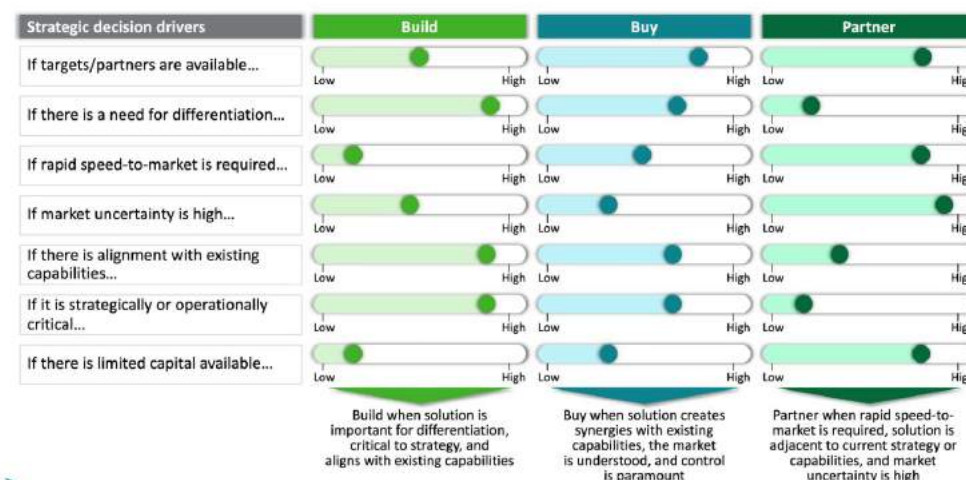
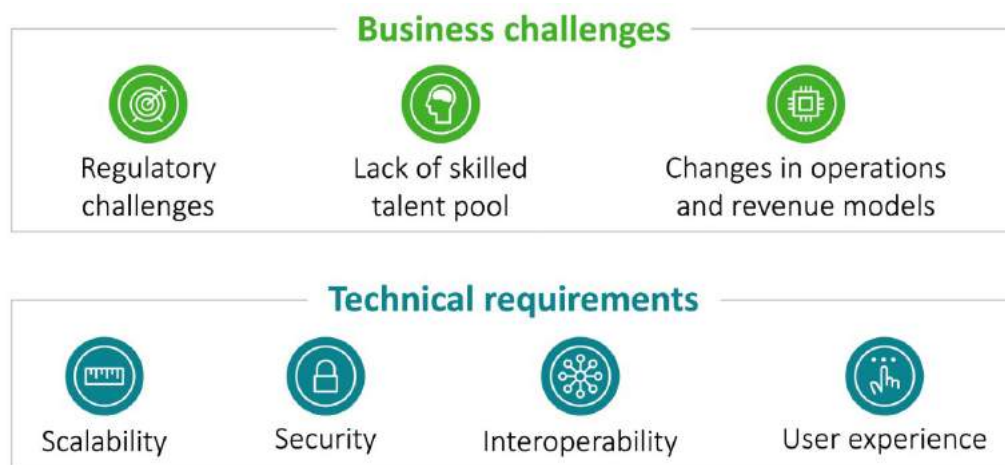
www.crystalblockchain.com ■

THE JOURNEY OF ENTERPRISE ADOPTION OF WEB3 *

Deloitte.

In the fast-paced, interconnected world of today, nothing stays the same for long. Technologies continually evolve and mature to anticipate the forthcoming needs of society. That is particularly true of the World Wide Web, and its next iteration is already here. Known as Web3, it is reconfiguring ownership, data sharing, participation, and self-expression to look radically different for users and participants. For their part, enterprises and corporations should stay apprised of these developments so they can work to help ensure their place in a Web3 world.

Along with other factors, the growing unease about data ownership and the need for trust in an anonymous global marketplace have contributed to the next evolution of the internet. Web1 comprised statically published information, Web2 introduced dynamic and complex user interfaces, and Web3, which we are on our way toward, comprises increased user control. This represents a number of business challenges that enterprises must address in order to remain competitive in the new Web3 landscape, alongside technical requirements that they must ensure.



After coming to terms with the challenges of Web3 adoption, the biggest question that remains may be how to get started and engage with Web3 and the underlying blockchain technology. Foundational and strategic questions for executives and leaders to consider are:

1. Is blockchain a good fit for my company's use case? The answer may be yes if multiple "non-trusting parties" are likely, if data needs to be accessible to multiple parties, and if accountability and auditability are necessary.
2. Should the company build, buy, or work with others to develop the appropriate solution?

This requires consideration of strategic decision drivers and their suitability.

3. On which protocol/platform should the company build its Web3 project? Choosing the best fit out of a multiplicity of protocols requires evaluation of their scalability, ecosystem adoption, developer participation, and integration readiness.

A recent [poll](#) found that 87% of surveyed businesses are likely to invest in a blockchain solution in the next 12 months, indicating a strong interest among businesses to investigate, evaluate, and determine how they can experiment with blockchain to unlock

their next cycle of growth and better reach and serve their consumers.

* Refers to Deloitte's recent release titled "[A primer on Web3 adoption for enterprise](https://www2.deloitte.com/us/en/pages/consulting/articles/blockchain-and-web3-adoption-for-enterprises.html)" <https://www2.deloitte.com/us/en/pages/consulting/articles/blockchain-and-web3-adoption-for-enterprises.html> ■

CRITICAL INFRASTRUCTURE & GOVERNANCE FOR THE DECENTRALIZED WEB



Filecoin is a decentralized storage network designed to store humanity's most important information. Filecoin Foundation (FF) facilitates governance of the Filecoin network, funds research and development projects for decentralized web technologies, and supports the growth of the Filecoin ecosystem and community.

Today's internet is largely centralized, with control and distribution of information in the hands of a few powerful companies. Decentralized technologies like Filecoin let users harness the collective power of the web to store and share data.

Filecoin's open ecosystem of developers, storage providers, storage clients, and other builders fuels the world's largest decentralized storage network. More than 450 organizations are building on Filecoin, and over 3,000 storage provider systems are committing storage capacity to the network.

In 2023, several new projects emerged to make it easier to build and store on Filecoin. The Filecoin Virtual Machine lets users run smart contracts on Filecoin and offers EVM-compatibility. FF shares a

common vision with its community for building a better internet -- an internet that is more resilient, robust, and secure. FF is scaling up data onboarding, and continues to steward critical governance developments to promote a transparent and community-driven network. FF is also committed to bringing the community together at events and workshops around the world.

Finally, FF is committed to environmental efficiency. Filecoin Green, a project supported in part by FF, aims to measure the environmental impacts of the Filecoin ecosystem and verifiably drive them below zero, building infrastructure along the way that allows anyone, in Web3 or beyond, to make transparent and substantive environmental claims.

Together, we're building the critical infrastructure for the next generation of the web. ■

ABU DHABI GLOBAL MARKET ISSUES REGULATIONS ON DISTRIBUTED LEDGER TECHNOLOGY FOUNDATIONS

LATHAM & WATKINS LLP

Recognizing new realities in decentralization, the regulations aim to provide market players with governance flexibility within distributed ledger technology foundations.

By Stuart Davis, Brian Meenagh, Andrew Moyle, and Ksenia Koroleva

On 2 October 2023, the Board of Directors of Abu Dhabi Global Market (ADGM), a financial free zone in the United Arab Emirates (UAE), enacted the Distributed Ledger Technology Foundations Regulations 2023 (Regulations).

Latham & Watkins has advised ADGM in drafting the Regulations. The adoption of the Regulations is part of the strategy to promote ADGM as a global center for digital assets.

The Regulations recognize the suitability of common law foundation structures for projects related to digital assets, and aim to allow maximum flexibility for the sector with respect to governance.

The Regulations lay down key rules regarding a new type of foundation, based on distributed ledger technology (DLT). DLT foundations are defined as foundations established for the use, deployment, development, facilitation, or support of DLT or the issuance of tokens.

The Regulations are not intended to replace or disapply the regime imposed with respect to digital assets by the ADGM's Financial Services Regulatory Authority (FSRA).

DLT foundations must have founders and a managing council (with a minimum of two councillors). DLT foundations may, but do not

need to, have other governing bodies, including beneficiaries (i.e., persons with rights to the assets of DLT foundations), and tokenholders (i.e., persons holding rights to tokens issued by DLT foundations).

Tokenholders may or may not be beneficiaries; for example, tokenholders may not have rights to the assets of DLT foundations (and thus not be beneficiaries) but have governance rights with respect to project management.

The Regulations require each DLT foundation to have a charter, which must include key provisions regarding DLT governance, including governance and the governing bodies of the DLT foundation, rules on their appointment, and rules on removal and quorum for decision-making; rules for token issuance; and provisions relating to the DLT foundation's assets, white papers, and DLT frameworks, including frequency of audits and security audits.

Founders must submit a number of documents to the ADGM Registration Authority, including the charter; a declaration of compliance with laws; a statement of initial beneficial ownership; and if developed, a hyperlink to the white paper setting forth details of the project and DLT framework outlining details of the DLT used.

DLT foundations are required to disclose certain information, including names of founders and councillors; keep adequate and fair accounting

records; appoint auditors to review annual accounts; and conduct periodic security audits on data protection and security systems.

Councillors may be liable for breach of these requirements.

The Regulations mark a significant step in promoting ADGM as a global centre for digital assets and provide a new option for corporate structures of digital assets projects. They also present the world's first purpose-built legislative framework for establishing and operating DLT foundations. ■

TOOLS TO ENSURE COMPLIANCE IN A CHANGING REGULATORY LANDSCAPE

 NORTON ROSE FULBRIGHT

The cryptoassets industry finds itself at a pivotal inflection point, where change is constant, regulation is expanding and clients' need for clear, and pragmatic advice is greater than ever. With the global supervisory spotlight firmly on the crypto and digital asset ecosystem, regulatory frameworks are developing at pace in a number of jurisdictions across the world. *CryptoNavigator* is designed to help firms ensure compliance with changing regulatory requirements, and position their businesses for

growth, providing a suite of plug-and-play products and tailored advisory services. These include:

- **CryptoCurrently:** A detailed monthly global legal and regulatory developments tracker and horizon scanner across the crypto space.
- **Global Insights:** A one-stop portal providing access to latest insights, podcasts, articles, and webinars on developments in the cryptoassets industry.
- **Authorizations Assist:** Regulatory change is driving the increasing need for cryptoasset firms to seek authorizations, registrations, and other licenses. Authorizations Assist provides a collection of tailored advisory services for cryptoassets firms preparing for and executing establishment and authorization projects in the UK and EU, helping guide firms from the inception of their authorization projects, through to the preparation of authorization applications, and the design of compliance and financial crime frameworks for life after authorization.
- **FinProms Plus:** A template policy, training materials, and training session to help cryptoassets clients comply with the UK financial promotions regime. ■

PREVENTING ILLICIT ACTIVITY ON THE BLOCKCHAIN



Notabene stands out as a highly secure crypto pre-transaction authorization and decision-making platform, playing a crucial role in preventing illicit activities on the blockchain. It provides a holistic view of crypto pre-transaction risks, enabling automated real-time decision-making and comprehensive VASP Due Diligence. The platform also facilitates counterparty sanctions screening, identifies self-hosted wallets, and ensures seamless implementation of Travel Rule compliance, in accordance with global regulations.

With a global presence in over 20 jurisdictions and servicing more than 120 customers, Notabene has established itself as the international standard for Travel Rule transfers, covering over 10,000 types of crypto assets. The platform's SafeTransact suite specifically addresses the complexities of Travel Rule compliance in the crypto regulatory landscape. The Travel Rule, an essential anti-money laundering regulation, requires Virtual Asset Service Providers (VASPs) to transmit personal information of customers in transactions beyond a certain threshold. It aims to track and report suspicious transactions, prevent dealings with designated individuals or entities, and support freezing actions.

SafeTransact offers an extensive toolkit for VASPs, ensuring compliance with diverse jurisdictional regulations and mitigating the risk of operational license revocation due to non-compliance. The process involves:

Travel Rule provides unprecedented visibility into your transaction counterparty



A Comparison of FATF's 2023 Travel Rule Guidelines with Notabene's SafeTransact

FATF recommends that a Travel Rule solution should enable VASPs to:	Notabene
Accommodate low-value VA transfers (under \$/€1k) and all virtual asset types.	✓
Submit the required information prior, simultaneously or concurrently with the transfer.	✓
Identify the counterparty VASP for virtual asset transfers.	✓
Interoperate with other similar solutions.	✓
Offer a channel for follow-ups with counterparty VASPs for necessary due diligence and to inquire about potential high-risk transactions.	✓ +
Collect and transmit beneficiary information to beneficiary VASP.	✓
Comply with hosted and self-hosted wallet obligations.	✓

- **Counterparty Identification with SafeConnect:** This feature helps in recognizing and verifying counterparties for both custodial and non-custodial wallets, supporting over 200 wallets and identifying over 880,000 transactions to self-hosted wallets in 2023 alone.
- **VASP Due Diligence & Risk Assessment via Notabene Network:** As the largest VASP network with 1000+ members across 20+ jurisdictions, it facilitates thorough due diligence and ensures compliance with the FATF Travel Rule.
- **Travel Rule Information Exchange through SafeGateway:** This API connects VASPs securely, handling 86% of transactions and aiding

in overcoming interoperability challenges associated with the Travel Rule.

- **Transaction Flow Automation & Analysis with Rules Engine:** It automates pre-transaction decision-making, integrates with custody solutions, and provides transaction-level data for recordkeeping, having automated over 1 million compliance decisions in 2023.

SafeConnect
200+ Wallets supported

- Ready-to-implement with your company's branding
- Identify and screen all transactions and counterparties in real-time

Notabene Network
1000+ VASPs covering 20+ jurisdictions

- Perform VASP due diligence and assess risk
- Real-time counterparty compliance status

SafeGateway
86% transactions reach their counterparty

- Securely exchange Travel Rule information
- Reach any VASP securely with one API

Travel Rule Compliance Dashboard
\$47B transacted in the past year

- Automate transaction flows; analyze insights
- Pre-built custody integrations

SAFE Implementation

Start your compliance journey with our guided phases.

1 SPARK
Evaluate counterparty discoverability and reachability. Enable data driven decisions about your Travel Rule implementation plan and compliance policies.

2 AMPLIFY
Start engaging in Travel Rule flows with your counterparties. Assess response rates and times.

3 FOUNDATION
Comply with your end of Travel Rule obligations. Collect data from your end-customer.

4 ELEVATE
Verify information before transacting. Leverage verified originator and beneficiary information to make robust pre-transaction decisions.

Each component of Notabene's suite is integral to ensuring complete compliance with the Travel Rule, thereby helping crypto and DeFi businesses maintain integrity and build trust with customers and regulators. ■

SAFE AND EFFECTIVE IDENTITY VERIFICATION



Know Your Customer (KYC) is a standard identity verification process done as part of a transaction in regulated industries such as financial services, either between two businesses or between a business and an individual. KYC checks are mandated by law in a large number of countries around the world, and play an important role in anti-money laundering due diligence activities, among other things.

Electronic Know Your Customer (eKYC) has emerged as an alternative to the traditional Know Your Customer (KYC) process which involves cumbersome and error-prone manual checks and authentication. eKYC is an automated process that uses a combination of technologies including biometrics, facial recognition, multi-factor authentication, and electronic signature, among others, through which businesses can carry out customer identity verification and validation remotely and digitally.

Many contractual processes require the same level of identity authentication, verification, and validation as a KYC process. Therefore, MENA-based contract management platform vendor Uqoud has built eKYC capabilities into its contract management offering. These eKYC capabilities are available throughout



the complete contract lifecycle, from the creation of contracts all the way to signing and archiving.

Although eKYC may significantly speed up manual KYC processes and present opportunities for businesses to save time and money, it may also introduce privacy and security concerns – whether real or perceived – and be obtrusive to some customers.

Paravela has partnered with Uqoud, and embedded its blockchain-backed provenance product into Uqoud's contract management platform, to provide banks and financial institutions in the GCC and MENA regions with an identity service that includes transparent user consent management across multiple parties, enabling them to digitally obtain required KYC information in an efficient, trusted, and secure manner.

This new identity service minimizes the communication overhead between financial institutions and allows them to verify and validate customers without redundant processes or the disclosure of personally identifiable information. ■

BLOCKCHAIN INFRASTRUCTURE TO REVOLUTIONIZE INDUSTRIES



"Rethink Ledgers is a blockchain consulting firm focused on delivering impactful ledger and smart contract solutions for our clients. Over the past year, Rethink Ledgers has progressed its DAML implementation for TYDEI Health. This platform revolutionizes medical device management for hospitals and surgical centers, focusing on supply chains, financial transactions, and patient safety. Notably, we have incorporated an AI engine to facilitate the contract management component into the TYDEI Health platform. Our strategic consultancy also extended to working in partnership with Provenance Labs. We are providing design and business use case documentation for projects to leverage Provenance Blockchain's transformative potential. Simultaneously, we are leading the Education & Communication workgroup for the ERC3643 Association which underscores our commitment to shaping industry standards and driving digital asset tokenization advancements.

Our relentless pursuit of pioneering digital asset innovation solidifies our position at the forefront of technology. By continuously evolving and expanding our blockchain services, we are redefining business operations and driving growth across diverse

sectors. Rethink Ledgers remains committed to revolutionizing industries through Digital Asset Tokenization, ushering in a new era of efficiency and transparency in business processes.”

For more information, please contact:
greg@rtledgers.com

<https://www.rtledgers.com/> ■

DECENTRALIZING WIRELESS INFRASTRUCTURE



Helium represents a breakthrough in leveraging blockchain technology for real-world applications. As a Decentralized Physical Infrastructure Network (DePIN), Helium is revolutionizing the way wireless networks operate, offering a user-owned network of hotspots that enhance internet and cellular coverage.

Founded in 2013, Helium began with a mission to decentralize wireless infrastructure, supporting IoT devices. The innovation lies in Helium Hotspots, akin to mini cell towers, that create a peer-to-peer wireless network using a unique LongFi protocol. More than a million of these hotspots, distributed in

nearly 200 countries, have created the world’s largest LoRaWAN network, focusing on full wireless and 5G cellular coverage.

In a significant move, Helium transitioned from its blockchain to the Solana blockchain in April 2023. This migration, one of the largest in blockchain history, was crucial for scalability and supporting multiple wireless standards and tokens. Each hotspot was converted into a Non-Fungible Token (NFT) using state compression technology, reducing costs and enhancing functionality.

Helium’s journey from a novel idea to the world’s largest decentralized wireless network underscores the potential of blockchain technology in creating real-world solutions. By harnessing the power of community and cutting-edge technology, Helium is paving the way for a new era of decentralized infrastructure. ■

CONNECTING BRANDS TO CUSTOMERS IN 3D INTERNET ENVIRONMENTS



[Tokens.com](https://tokens.com) is a technology company that builds products and services that connect brands to consumers in 3D internet environments, including virtual sales centers and customized games on

popular platforms such as Roblox and Fortnite. Clients include some of the top names in fashion and business. Tokens.com is also developing expertise to build apps for the new Apple Vision Pro, due to be released in 2024.

Gaming is the largest category in the entertainment industry, with an estimated 3.2 billion gamers worldwide. Gen Z and Gen Alpha, soon to be the largest demographic in history, have grown up playing and socializing in these metaverse environments. Roblox has over 70 million unique daily users and is growing. Yet, brands find it difficult to access this demographic. That’s why the services offered by Tokens.com are so valuable, building the tools and games that brands need to appeal to this younger consumer group.

This year, Tokens.com launched client Polysleep into Fornite. The team created a completely customized game called ‘Woolen Warfare’. By creating branded gaming experiences, Tokens.com’s platform is revolutionizing the way brands interact with audiences. ‘Woolen Warfare’ represents a new frontier for marketing, blending the thrill of competitive gaming with the essence of brand identity. This way, Tokens.com is setting a new standard for what’s possible for brands in existing popular 3D games.

Traditional online advertising delivery channels have not yet saturated the attention of gamers in the same ways as social, display and video have. Thus, by



introducing engaging and innovative branded games, Tokens.com offers brands unparalleled access to a vast, untapped audience. This approach transcends the limitations of conventional marketing strategies, capturing the attention of a new generation of consumers. Tokens.com is committed to delivering a tailor-made service, ensuring that each branded experience is meticulously curated to resonate with its clients' unique vision and brand identity.

Tokens.com is underpinned by an inventory of digital assets and cash, with a current value of over US\$12M, and owning a valuable collection of top ranked domain names, including Tokens.com. Tokens.com trades on three exchanges globally: NEO Exchange Canada (COIN), Frankfurt Stock Exchange (76M) and OTCQB US (SMURF). Tokens.com invites readers to learn more by reading the investor deck [here](#). ■

UNDERSTANDING THE TRAVEL RULE IN 2024

VerifyVASP

There is a tidal wave of change sweeping across the globe that will result in the de-anonymization of certain digital asset transactions. This quiet revolution goes by the name of the Travel Rule.

The Travel Rule is an AML/CFT compliance requirement mandating that key elements of personal information should « travel » alongside transactions in an effort to identify wallet ownership and reduce illicit flows of money. It is widely accepted for traditional wire transfers but it was a new concept for virtual asset service providers when introduced as Financial Action Task Force (FATF) guidance in 2019. The scope is clear in traditional finance, though less so in crypto: regulators around the world are interpreting the AML guidance in different ways, ranging from minimum value thresholds to the type of information required for hosted and unhosted wallets.

The Travel Rule will be applicable in the EU through the Transfer of Funds Regulation accompanying MiCA at the end of 2024. Several countries in Asia, Switzerland, the UK and the US already have regulation in place, but enforcement was still rare in 2023; it won't be by 2025 when more countries will have a legal basis for the sensitive data transfer requirement.

Travel Rule Adoption (Non-Exhaustive)

Estimated 2024



VerifyVASP

Similarly to traditional finance, travel rule messaging protocols are currently not widely interoperable. Travel rule data exchange is not an easy task – personal information is highly sensitive, and there are strict national privacy laws to navigate, which poses a challenge in determining risk equivalence amongst protocols and solution providers.

Looking ahead at 2024, from a user perspective, anonymous transfers are going to be a thing of the past, and you may well have to prove ownership of your own wallets. From an exchange perspective, it will require a full review of compliance procedures across legal entities and the selection of one or multiple new travel rule service providers to ensure secure transmission while maintaining protection of sensitive customer data.

However, it will also pave the way for much awaited institutional adoption, as levelling the playing field on AML will be one of the building blocks of more effective collaboration. ■

MEETING THE RISING NEED FOR WEB3 DEVELOPMENT SOLUTIONS



The Web3 landscape, at a pivotal moment in the internet evolution, promises a decentralized digital future but faces adoption challenges due to its complexity. Drawing parallels from the growth of cloud computing, mobile technology, and AI, which initially thrived at the infrastructure level before mass adoption through developer-friendly tools, Web3 is expected to follow a similar path.

A primary obstacle for Web3 is accessibility for developers and consumers. Building and publishing in the Web3 environment is complex for the average developer, due to the intricacies of blockchain technology and a lack of comprehensive development tools. This steep learning curve, along with the unfamiliarity of decentralized applications (dApps) and cryptocurrencies for consumers, not only impedes innovation but also restricts Web3's wider appeal.

Highlighting this issue, Electric Capital reports only about 23,000 Web3 developers globally, a small number given Emergen Research's projection of a \$65 billion dApp market by 2027-28, growing at

a 56% CAGR. The current Web3 developer pool is inadequate for this expanding market, indicating the necessity to integrate more Web2 developers into the Web3 ecosystem.

zbyte, a premium Web3 infrastructure platform, is designed to address this developer shortage. Its mission is to expedite Web3 adoption by offering an easy-to-use dApp creation platform, compatible with various public blockchains. This platform is pivotal for scaling Web3, as it facilitates a smooth transition for Web2 developers to Web3, incorporating their existing use cases and consumer base. zbyte's platform merges Web2 and Web3 functionalities, utilizing familiar programming languages and systems to ease dApp development.

zbyte's public token infrastructure enhances the Web3 development process, featuring an API-first approach, support for multiple Layer1 blockchains, Web2 system connectors, and low or configurable gas fees for dApp usage. It also addresses digital asset portability across blockchains and privacy through Zero-Knowledge Proof (ZKP) technology.

With the release of its mainnet (dplat.zbyte.io), zbyte is more than a platform; it's initiating a community of contributors and creators. By consolidating various Web3 solutions into one platform, zbyte aims to simplify dApp adoption for non-crypto natives, setting the stage for large-scale transactions and interactions in the Web3 space.

Major use cases built on zbyte's low code, or no code platform include Web3 consumer engagement changing the marketing paradigm, carbon tracking, tokenization of assets, digital passports, and NFT marketplaces for consumer goods, among others. ■

LEVERAGING BLOCKCHAIN TO IMPROVE TRACEABILITY & FINANCIAL CONTROLS IN SUPPLY CHAINS*

Microsoft's efforts have garnered significant recognition, most recently, winning the Gold 2023 Alexander Hamilton Award in Risk Management.



Blockchain delivers key elements to enable transformative cross party subledger accountability and financial controls layered on detailed traceability of physical assets for one of the largest high tech supply chains in the world.

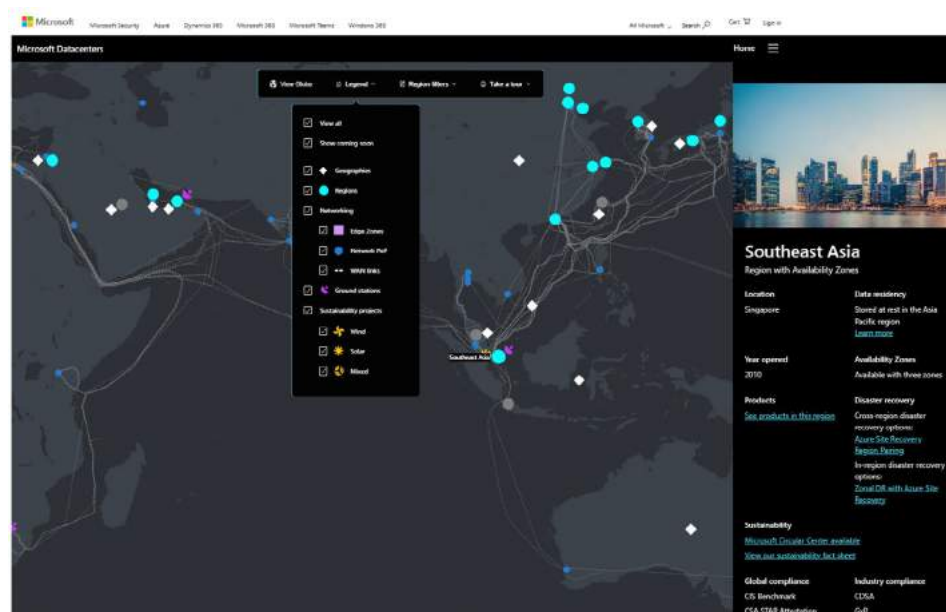
Microsoft's cloud hardware supply chain includes **millions of servers delivered to more than 200 data centers** around the world. Each server, in turn, consists of a range of components sourced and orchestrated by Microsoft's supply chain team. A consistent problem in supply chains is to gain visibility into transactions that are beyond direct suppliers. This issue is becoming increasingly important across industries with new forced labor and emissions regulations.

“The scale of the Microsoft supply chain is just tremendous,” explains Mohamad Masri, senior program manager, blockchain. “Six years ago, we realized that traditional methods used in our supply chain no longer met the needs of our rapidly growing business. We needed a new way to handle supply chain risk management.”

Like in most supplier pipelines, Microsoft and each vendor managed their own data in silos on things like orders, deliveries, payments, and other aspects of the relationship. This creates a system of manual reconciliation that has existed since the dawn of supply chains and global trade. Microsoft sought to build an ecosystem of common data where all the parties privy to a transaction are using the same data to run their business. This common subledger approach achieves a de facto state of zero reconciliation.

“We saw the potential for a shared-ledger experience, powered by blockchain, to remove a lot of the manual effort,” Masri continues. “All those reconciliations between databases and supply chains are, by their nature, very horizontal. We have many suppliers, many integrators, and many hubs. We wanted to create an orchestration through which our common data could be shared without requiring a lot of state management between all the different datasets of all the different partners.”

3D interactive earth visual of Microsoft Datacenters shows end-to-end traceability:



The Microsoft blockchain supply chain team led by Yorke Rhodes III, Director of Digital Transformation, Blockchain, launched an initiative centered on three key goals:

- Create stronger systemic controls that would enable growth without generating more risk as the cloud business scales up.
- Create a contiguous, scalable process from capital sourcing through procurement in order to reduce the business’s planning-to-cash-to-product cycle times.
- Utilize emerging blockchain technologies to capture adequate granularity in the data without requiring external partners to expend effort providing that data.

The cross-disciplinary project team included representatives of sourcing management, supplier resilience and risk, corporate finance, and supply chain groups, as well as the web3 technical teams who would build the blockchain solution and teams focused on full end-end solutions integration into AR/AP, Invoicing and Payments. They started by identifying the data fields needed to create a transaction-by-transaction view of inventory for Microsoft’s cloud business.

“With the data we now have in the blockchain, we can see the order, the shipment, the receipt, and the invoice. That doesn’t change the nature of what the accountants are doing, but the shared-data experience reduces the work they have to do before they can disburse or apply cash confidently.”

—Mohamad Masri,
Microsoft

“Value chain industry references suggest that almost any supply chain has upwards of 120 data fields,” Rhodes says, “and all that data has the opportunity to be reconciled. The more you can get a common view of that data, the less reconciliation you have to do.”

The team started by building a blockchain solution that included answers to such questions as: Has the order left the manufacturer? Where are the goods in transit? Has the order been received? When does the payment terms clock get triggered? Has the transaction been invoiced? Has the invoice been paid? And where is the documentation—the purchase orders and invoices—associated with these goods? This represents the state of the physical goods and the paperwork associated with them being digitized on a ledger.

“The blockchain essentially serves as an integration layer where we can share data, responsibly, without having to pull competing reports from different partners to understand what happened,” Masri says.

“Incorporating the blockchain into these processes truly simplifies access to the data.”

The team secured this sensitive data by carefully crafting permissions so that each entity up and down the supply chain can see only the information it needs without revealing proprietary relationships or trade data to others.

Next, the team began layering on financial controls and working capital numbers to the blockchain solution. They built a shared transaction ledger that parties to the transaction can access. Partners connect their internal systems of record to the blockchain ledger using application programming interfaces (APIs). “The blockchain is a source of truth,” Masri says. “The transactions are still happening inside everybody’s respective ERPs [enterprise resource planning systems], then they are transferred to the shared ledger.” The data is trustworthy because it is immutable and ordered—once written, it can’t be changed. “We treat our structured blockchain transaction ledger just like a typical ledger,” Rhodes explains. “If there is an error, we don’t go back and change the source; we post a compensating transaction.”

The team also built dashboards within the PowerBI data visualization tool to give a variety of end users access to the information in the blockchain. These custom dashboards connect with the blockchain solution via API, which means they are updated in nearly real time. In making decisions such as whether

to change payment terms with a particular partner, the financial team can easily access the information they need.

“The Treasury teams can make these decisions in a matter of minutes now, versus trying to go back and investigate the relationship with that partner,” Masri says. “The customer service they can provide to that partner, and the ease with which they can access the data they need to make decisions confidently, are a result of this blockchain initiative.”

On the cash management side, the shared ledger enables accounts payable (A/P) to more precisely time cash disbursements to suppliers. “There’s a natural timing to accounting,” Masri says. “The A/P desk typically does a lot of reconciliation, and all that double-checking slows down payments. With the data we now have in the blockchain ledger, we can see the order, the shipment, the receipt, and the invoice. That doesn’t change the nature of what the accountants are doing, but the shared-data experience reduces the amount of work they have to do before they can disburse or apply cash confidently.”

Moreover, having better real-time visibility into supply-chain data enables Microsoft to improve the precision of timing for funding decisions and reduce the excess capital outlaid. “When you don’t have detailed visibility into the movement of goods and



We are committed to growing our business responsibly by operating environmentally sustainable datacenters.

Azure services are up to **98 percent** more carbon efficient and up to **93 percent** more energy efficient than a traditional enterprise datacenter.

[Learn more about Azure sustainability](#)



the transactions, the way you lend money has to be much more coarse,” Rhodes points out. “Now, we are privy to data around the transactions among our partners in the supply chain. Getting this detailed data in real time allows us to make funding decisions that are faster and more granular.”

Masri adds: “If you’re looking at data in a monthly block, then you are managing cash month to month, which is less precise than managing individual transactions. Using our new shared transactional ledger enables us to manage at a transactional level, which saves us some headaches. For example, if we can see the invoice, goods receipt, and order in nearly real time, we won’t cut a check for inventory that wasn’t received and then try to recoup it through a credit memo process. We can be a lot more responsive to events as they happen, rather than waiting until

the closing of the books. Pulling data from the reporting layer into the business process layer like this is empowering because it makes us proactive rather than reactive.”

In fact, organizations up and down Microsoft’s supply chain are feeling the benefits of this project. “We think of this as an ecosystem of value, in which we can pull levers all along this shared-data structure,” Rhodes says. The team foresees this type of approach to information sharing among partners as revolutionizing the entire supply chain, to bring value to Microsoft’s suppliers, their suppliers, and so on. “As we have envisioned mine-to-datacenter traceability and are now taking on the challenge of our upstream supplier compliance for forced labor and scope 3 emissions in ESG, we are looking heavily to this experience in distributed systems approaches.”

In addition, Microsoft is committed to growing its business responsibly by operating environmentally sustainable datacenters. Azure services have now become up to 98% more carbon efficient and up to 93% more energy efficient than traditional enterprise datacenters.

Finally, Microsoft has incorporated lessons from cryptocurrency miners, which pioneered liquid immersion cooling for computing equipment. Microsoft has investigated and is beginning to run these liquid cooling systems to chill servers used for high-performance computing applications such as AI. Cold plate technology, where liquid is piped through metal plates to chill servers, prevents them from overheating.

**Adapted from article originally published in: [Leveraging the Blockchain to Improve the Supply Chain | Treasury & Risk \(treasuryandrisk.com\)](#) ■*

ACKNOWLEDGMENTS

The background of the slide features a blue gradient that transitions from a darker shade on the left to a lighter shade on the right. Overlaid on this gradient is a complex network of white lines and dots, resembling a molecular structure or a data network. The dots are of varying sizes and are connected by thin lines, creating a sense of interconnectedness. A large, dark blue curved shape is positioned in the lower-left corner, partially obscuring the network pattern.

GBBC is grateful for the extraordinary community that has contributed to the report this year.

Thank you for joining us as we continue to carry out our mission in 2024 to further responsible innovation and adoption of blockchain technology through a shared forum with regulators, business leaders, innovators, and lawmakers on the benefits and applications of this groundbreaking technology.

THANK YOU TO THE MEMBERS, REGULATORS, AND POLICYMAKERS WHO CONTRIBUTED TO OUR REPORT THIS YEAR:

Algorand Foundation	Grayscale	Nasdaq	Ripple
Ava Labs	HBAR Foundation	Norton Rose Fulbright	Solana
Blockchain Laboratories	Hedera	Notabene	SORAMITSU
BTG Pactual	Hyphen	Oliver Wyman	Token City
Calastone	ioBuilders	Orbs	Tokens.com
Chainlink	IOV Labs	Paravela	Triangle
Charles Winnsboro Corporation	JP Morgan	Paul Hastings	VerifyVASP
Citi	Kaiko	Powerledger	Yield App
Crystal	KALYP Technologies	Proof-of-Art	Zblocks
Deloitte	Latham & Watkins	Provenance Blockchain Foundation	Zumo
Digital Asset	Lykke	RecycleGo	
Droit	Microsoft	Rethink Ledgers	
Filecoin Foundation	MME Legal		

**THANK YOU TO OUR
ENTIRE GBBC COMMUNITY.**

**WE COULDN'T DO WHAT
WE DO WITHOUT YOU.**

GLOBAL BLOCKCHAIN BUSINESS COUNCIL

Geneva | Washington D.C. | New York | London