



The British Blockchain Association

Advocating Evidence Based Blockchain

BBA January 2025 Highlights



PRESIDENT'S MESSAGE

Over the past few weeks, many industry representatives have reached out to the BBA. With global developments accelerating and more countries embracing Blockchain and Crypto, concerns are growing that the UK may be at risk of losing Web3 businesses, investments, and innovators. To position the UK as a Blockchain and Crypto Centre of Excellence, I have outlined a **6-Point Action Plan** to turbocharge the **UK's Web3 economy**. **Watch my video** [HERE](#).

Are we soon going to see a U.S National Blockchain Roadmap? I was recently invited to share my insights on the latest developments in the U.S. regarding the potential for a blockchain-based infrastructure. In my discussion, I explored how countries worldwide are leveraging blockchain and DLT to transform government operations and public services.

Read my interview [HERE](#).

On a similar note, I discussed how a country can develop its first National Blockchain Roadmap.

Watch my video [HERE](#).

Blockchain is the solution to AI's trust problem.

Watch my short video [HERE](#).

World Economic Forum has [cited](#) Disinformation, Misinformation and Adverse consequences of AI as the top global risks facing humanity. I recently discussed how we can combat misinformation by becoming an Evidence-Based practitioner.

Watch my video [HERE](#).

Preparations are underway to host our BBA's **7th Annual Blockchain International Scientific Conference** in **London**, at UCL, on 4 April. We look forward to meeting you in person at the [conference](#).

The ***15th*** issue of the [Journal of the British Blockchain Association](#) is on track for publication in April. **The BBA's [universities](#)** network is the largest Blockchain University Network worldwide.

Finally, a warm [welcome](#) to Xapo Bank as our newest BBA Corporate Member.

Until next time,

Professor Dr Naseem Naqvi MBE

[President, The BBA](#)

My [LinkedIn](#)

[About Me](#)

[Receiving my MBE from The King](#)

New BBA Corporate Member

XAPO BANK

EST. 2013



Advocating Evidence Based Blockchain



We are delighted to announce that [Xapo Bank](#), directed by [Joey Garcia](#), Head of Public Affairs at Xapo Bank and BBA Advisor, has joined the British Blockchain Association as its latest Corporate Member.

Read more

The British Blockchain Association | January 2025 | 3 / 37



Network with the Best & The Brightest from Industry, Academia, Policy, Regulation & Public Services

<https://britishblockchainassociation.org/isc2025>

BBA's 7TH BLOCKCHAIN INTERNATIONAL SCIENTIFIC CONFERENCE
ISC2025 | 4 APRIL 2025 | UCL | LONDON

Hosted in Collaboration with



Connect and Network with the "Movers & Shakers" in Web3:
Have you registered for The ISC2025?

Book your place now at ISC2025

ISC2025 Accepted Abstracts

**Meet the World's Brightest Web3
Minds**
presenting their Ground-breaking Web3
Research
at the
**Blockchain International Scientific
Conference**



BBA'S 7th BLOCKCHAIN INTERNATIONAL SCIENTIFIC CONFERENCE #ISC2025

4 APRIL 2025 | UCL | LONDON, UK

THE JBBA THE JOURNAL OF THE
BRITISH BLOCKCHAIN
ASSOCIATION

**UK
CBT**


The British Blockchain Association
Advancing Evidence-Based Blockchain

UCL

CEBB Centre for
Evidence-Based Blockchain

Register to Attend ISC2025

Check out the accepted Abstracts at the ISC2025



The British Blockchain Association
Advocating Evidence Based Blockchain

**7TH BLOCKCHAIN
INTERNATIONAL
SCIENTIFIC CONFERENCE**

4 APRIL 2025 | LONDON, UK



www.britishblockchainassociation.org/isc2025

Conference Theme:
*From Cryptography to Communities:
Building Blockchain-Based Digital Economies*



**I am Chairing
BBA's #ISC2025**



Prof Dr Naseem Naqvi MBE
President
British Blockchain Association
Conference Chair, ISC2025
Editor in Chief, The JBBA

Hosted in Collaboration with







The British Blockchain Association
Advocating Evidence Based Blockchain

**7TH BLOCKCHAIN
INTERNATIONAL
SCIENTIFIC CONFERENCE**

4 APRIL 2025 | LONDON, UK



www.britishblockchainassociation.org/isc2025

Conference Theme:
*From Cryptography to Communities:
Building Blockchain-Based Digital Economies*



**I am Speaking at
BBA's #ISC2025**



Racheal Muldoon
Partner, Financial Services Regulation
Charles Russell Speechlys
Advisory Board,
The British Blockchain Association

Hosted in Collaboration with







The British Blockchain Association
Advocating Evidence Based Blockchain

**7TH BLOCKCHAIN
INTERNATIONAL
SCIENTIFIC CONFERENCE**

4 APRIL 2025 | LONDON, UK



www.britishblockchainassociation.org/isc2025

Conference Theme:
*From Cryptography to Communities:
Building Blockchain-Based Digital Economies*



**I am Speaking at
BBA's #ISC2025**



Professor Dr Mary Lacity
Professor of Information Systems
University of Arkansas, USA
Fellow, British Blockchain Association
Senior Editor, The JBBA

Hosted in Collaboration with







The British Blockchain Association
Advocating Evidence Based Blockchain

**7TH BLOCKCHAIN
INTERNATIONAL
SCIENTIFIC CONFERENCE**

4 APRIL 2025 | LONDON, UK



www.britishblockchainassociation.org/isc2025

Conference Theme:
*From Cryptography to Communities:
Building Blockchain-Based Digital Economies*



**I am Speaking at
BBA's #ISC2025**



Dr Nikhil Vadgama
Associate Professor, UCL
Deputy Director
UCL Centre for Blockchain Technologies

Hosted in Collaboration with





Free ISC2025 Pass for Students with a Disability

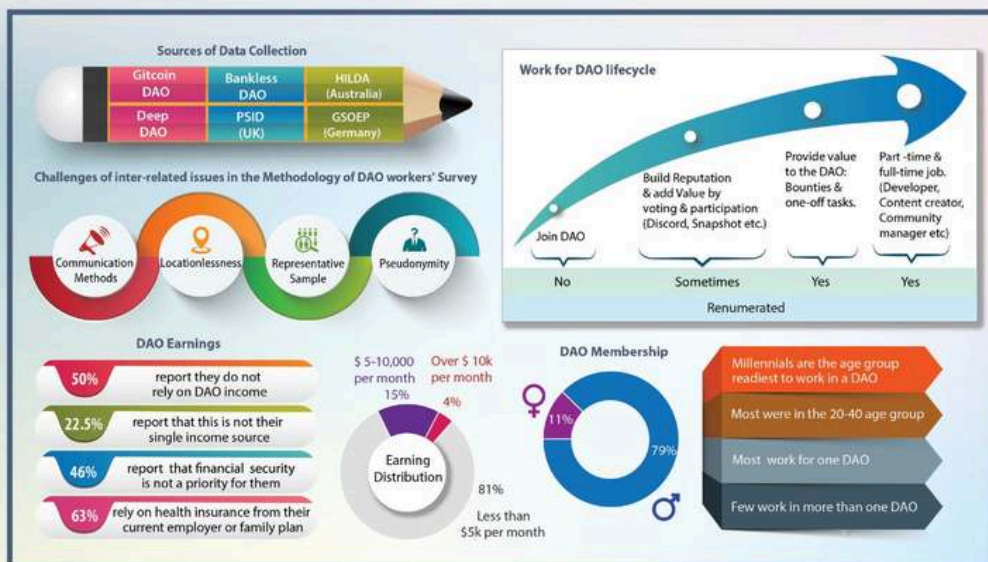


Full-time postgraduate blockchain students/researchers with a registered learning or physical disability will receive a ***FREE*** pass to attend the 7th Blockchain International Scientific Conference ISC2025, to be held in London on 4 April.

Pls send us an email to reserve your spot.

Become a PATRON of The JBBA

DECENTRALISED AUTONOMOUS ORGANISATIONS: Labour Economics of Web3's Distributed Digital Workforce



FEATURED ARTICLES

Compensation in DAOs: A Proposal

The Tokenomics Audit Checklist: An Audit of DeFi projects, Terra/Luna and Ethereum 2.0

Rewarding Honesty: Incentive Mechanisms to Promote Trust in Blockchain-Based E-commerce

Decentralised Autonomous Organisation: Labour Economics & Decentralised Digital Workforce

DAO Treasuries and Native Governance Token Reporting Practices

Web2 V Web3 Paths to the Metaverse: An Analytical Essay

Proceedings of 3rd Annual BAF Summit on Promise of Web3: Innovation & Sensible Policymaking

6th Blockchain International Scientific Conference ISC2024, 19 April 2024, Singapore

PATRON

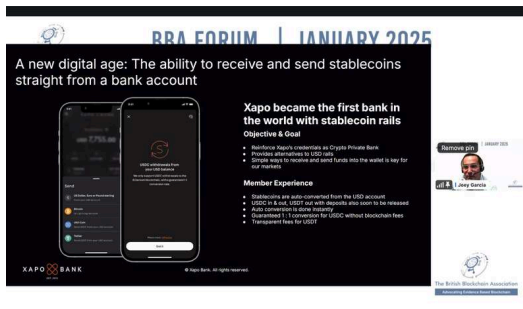
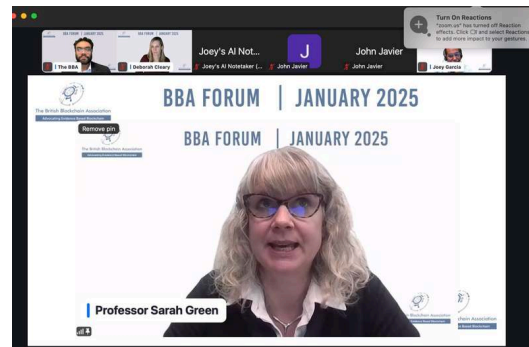
Published in Collaboration with **[YOUR LOGO]**

Get Featured on the COVER of the Upcoming 15th issue of The JBBA.

To find out more, contact us at:

editorial@thejbba.com

BBA Forum January 2025 Highlights



On January 29, the BBA hosted a successful Member Forum with participants from industry, academia, public services, and gov-tech.

Joey Garcia (Xapo Bank) discussed Xapo Bank's role in growing the Blockchain and Crypto ecosystem. Prof. Sarah Green provided insights on the Digital Assets Bill and UK crypto regulations. BBA President, Prof. Dr Naseem Naqvi MBE, shared updates on BBA's ecosystem, including key initiatives and partnerships.

A recording of the session is now available on BBA's YouTube channel.

[Watch BBA Forum January 2025 Session](#)

Blockchain-Based CPD Credentials Issued

DROP ID #183789 | [View in Family](#)

BBA Forum January 2025

Jan 29, 2025

<https://tinyurl.com/4cczv829>

23
Power

BBA Member Forum, hosted on 29 January 2025.

Speakers:

Joey Garcia, Xapo Bank
Prof Sarah Green, D2 Legal Technologies
Prof Naseem Naqvi MBE, The BBA
Deborah Cleary, The BBA

britishblockchainassociation.org

Minted about 9 hours ago on Gnosis
January 31st, 2025

0x2833e1E6b14020569A48676d6B4711E79ABeb3D5

21 collected drops since Aug '22



PROOF OF ATTENDANCE NFT

Issued on Ethereum Gnosis
Public Blockchain

Certificate of Continuing Professional
Development

[BBA Web3 CPD]

CERTIFICATE OF PARTICIPATION

Maya Bersheva

ATTENDED

BBA MEMBER FORUM JANUARY 2025

Held on 29 January 2025

1 Hour of Blockchain Continuing Professional Development (CPD) Activity



The British Blockchain Association
Advocating Evidence Based Blockchain

Life-Long Learning Records and CPD Credentials issued on the Blockchain!

All BBA Member Forum participants have received their Proof of Attendance NFT Certificates, issued on the Ethereum [Gnosis](#) Blockchain.

[Read more](#)

BBA Masterclass Receives Excellent Feedback



The British Blockchain Association
Advocating Evidence Based Blockchain

“

The Masterclass Sessions were Excellent. Please Congratulate the President of the Association for organising these First Class Briefings.

”



The Rt Hon Alun Cairns
Former MP (2010-24)
Former Secretary of State for Wales (2016-19)
Blockchain APPG Member (2023-24)
(17 December 2024)



The British Blockchain Association
Advocating Evidence Based Blockchain

Blockchain & Crypto for Policymakers

MASTERCLASS
Organised by The BBA

Nov - Dec 2024



Here is some more feedback from BBA's recently organised “Blockchain & Crypto for Policymakers Masterclass” Series, which was organised for both the current and former members of the UK Parliament.

The sessions received fantastic feedback 🌟 , with delegates finding them a highly valuable learning experience 📖 .

Jordan Launches National Blockchain Roadmap

Jordan Unveils Ambitious Blockchain Policy for 2025



Kelly Cromley

4 days ago



The Council of Ministers in Jordan has given its approval to the Jordanian Blockchain Technology Policy for 2025, signaling a forward-thinking

JORDAN has become the 14th country in the world to put forward its National Blockchain Policy Roadmap.

[Read more](#)

Countries with a National Blockchain Roadmap:

(as of January 2025)



There are 14 Countries in the World now with a National Blockchain Roadmap (NBR).

WEF 2025 Risks: Can Blockchain Help?

Global risks ranked by severity

Please estimate the likely impact (severity) of the following risks over a 2-year and 10-year period.



Risk categories ● Economic ● Environmental ● Geopolitical ● Societal ● Technological

Source: World Economic Forum, Global Risks Perception Survey 2024-2025

Top Risks and Challenges faced by humanity, according to The [World Economic Forum](#)'s Global Risks Report 2025.

[Read more](#)

BBA President On US Blockchain Strategy



ANDREW SINGER

5 HOURS AGO

Is Elon Musk plotting the mother of all blockchains?

Musk is said to be exploring public blockchains to curb wasteful government spending and stem fraud and abuse. Will it work?

1857 Total views 1 Total shares

Listen to article



8:14



"The US, in fact, has been a relative latecomer. More than a dozen countries — including the UK, China, India, Estonia, the United Arab Emirates and Germany — have already put forward National Blockchain Roadmaps" [Prof. Dr Naseem Naqvi MBE](#) told [Cointelegraph](#).

[Read more](#)

Oklahoma Proposes Bitcoin Reserve

Oklahoma introduces strategic Bitcoin reserve act

By Benson Toti - 2 min read
15 January 2025



Oklahoma has become the sixth US state to introduce a Strategic Bitcoin Reserve policy.

[Read more](#)

100+ Textbooks Cite JBBA Research

Industry Use Cases on Blockchain Technology: Applications in IoT ...
books.google.co.uk > books

Mahmood, Zaigham · 2021 · Preview · More editions
... **Blockchain**. The **JBBA**, 2(2), 2019. doi:10.31585/jbba-2-2-(8)2019 Ferr E. C. (2019), The **Blockchain**: A New Framework for Robotic Swarm Systems ...

Essential Enterprise Blockchain Concepts and Applications - Page 261
books.google.co.uk > books

Kavita Saini, Pethuru Chelliah, Deepak Sair · 2021 · Preview · More editions
... **Blockchain** - based approach to health information exchange networks ", 2016 ... **Blockchain** technology for eHealth data access management , " In : Proceedings ... **jbba** - 1-2- (6) 2018 . [26] Sahla Sherin C Anna Joshy , Neethu Subash ...

Principles and Practice of Blockchains - Page 38
books.google.co.uk > books

Kevin Daimi, Ioanna Dionysiou, Nour El Madhouh · 2022 · Preview · More editions
... **Blockchain** and the context of the application against the social, software ... **Blockchain** technology possesses different attributes and varying levels of security for ... **jbba**-3-2-6. Available at: https://www.researchgate.net/publication ...

Trends in Sustainable Smart Cities and Territories

Emerging Technologies and Security in Cloud Computing - Page 100
books.google.co.uk > books

Lakshmi, D., Tyagi, Amit Kumar · 2024 · Preview · More editions
... **Blockchain** technology and its potential applications for education. Smart Learning Environments, 5(1), 1-10. doi ... **jbba**-1-1-(10)2018 Khan, R., Kumar, P., Jayakody, D. N. K., & Liyanage, 100 Role of **Blockchain** Technology in Protecting a ...

books.google.co.uk > books

Anna Visvizi, Orlando Troisi, Vincenzo Corvello · 2024 · Preview · More editions
... **Blockchain**: a technological tool for sustainable development or a massive energy consumption network? News and Views ... **JBBA** 1(1) (2018). https://doi.org/10.31585/jbba-1-1-(6) 39. Howson, P.: Climate crises and **cryptocurrency** colonialism ...

Utilizing Blockchain Technologies in Manufacturing and Logistics ...

Digital Token Valuation: Cryptocurrencies, NFTs, Decentralized ...
books.google.co.uk > books

Roberto Moro-Visconti, Andrea Cesaretti · 2023 · Preview · More editions
... **Blockchain** Technologies, London, UK. https://doi.org/10.31585/jbba-6-2-(1)2023 Kaufman, G. G., & Scott, K. E. (2003). What is systemic risk, and do bank regulators retard or contribute to it? The Independent Review. Kim, P. (2022) ...

Blockchain Technology and Applications for Digital Marketing
books.google.co.uk > books

Bansal, Rohit, Malyadri, Pacha, Singh, Amandeep · 2021 · Preview · More editions
... **block chain**: Walmart's pork and mango pilots with IBM. The Journal of the British **Blockchain** Association, 1(1), 3712. doi:10.31585/jbba-1-1-(10)2018 Kim, J. S., & Shin, N. (2019). The impact of **blockchain** technology application on ...

books.google.co.uk > books

Khan, Mustafa Rehman, Khan, Naveed Rehman, Ghouri, Arsalan Mujahid · 2024 · Preview · More editions

Financial Technology and the Law: Combating Financial Crime
books.google.co.uk > books

Doron Goldbarsht, Louis de Koker · 2022 · Preview · More editions
... **cryptocurrency**: open doors and the regulatory dialectic. J Financ Crime 28(1):60-74 Dyson S et al (2018) The challenges of investigating

Historическая эпистемология. История, методология, эмпириология

Lai, P.C. · 2021 · Preview · More editions
... **blockchain** techniques for the e-voting systems. arXiv preprint arXiv:2002.07175. Curran, K. (2018). E Voting on the **Blockchain**. The Journal of the British **Blockchain** Association, 1(2), 4451. doi:10.31585/jbba-1-2-(3)2018 Currin-Percival ...

Saravanan Krishnan, Valentina Emilia Balas, E. Golden Julie · 2021 · Preview · More editions
... **blockchain** consensus algorithm for viable management of new and renewable energies. Sustainability, 11, 3184. Hyland-Wood, D., & Khatchadourian, S. (July 2018). A future history of international **blockchain** standards. The **JBBA**, 1(1) ...

The Digital Transformation of Logistics: Demystifying Impacts of ...
books.google.co.uk > books

Blockchains: Empowering Technologies and Industrial Applications
books.google.co.uk > books

Anwer Al-Dulaimi, Octavia A. Dobre, Chih-I · 2023 · Preview · More editions
... **blockchain**, the trust machine. https://www.economist.com/leaders/2015/11/1/the-trust-machine (accessed 17 May 2022) 6 BSI ISO (2017). Briefing ISO/TC307 **blockchain** ... **jbba**-1-1-(11)2018. k k 346 1 **Blockchain** Standards 12 IEEE (2019), IEEE

Soheil Saraji, Si Chen · 2023 · Preview · More editions
... **Crypto**/Secure_Blockchain.pdf?__blob=publicationFile & v = 3 . Accessed 10 June 2022 Ferreira A (2020) Emerging regulatory approaches to **blockchain** based token economy . J Br **Blockchain** Assoc . https://doi.org/10.31585/jbba-3-1-(6) ...

More than 100+ textbooks published between 2021-2024 cited research papers from the Journal of [The British Blockchain Association](https://www.thebritishblockchainassociation.org/) JBBA, as per Google Scholar data.

Read more

New JBBA Citations

The Value of Professionalism: Implication for Value for Money in Projects Implemented by Force Account Procurement Method in Tanzania

Gabriel Kibona^{1*} Honest Kimario² and Momole Kasambala³

^{1,2}Department of Procurement and Logistics Management, Tanzania Institute of Accountancy, Dar es Salaam, Tanzania.

³Department of Procurement and Logistics Management, Tanzania Institute of Accountancy, Mwanza, Tanzania.

*Corresponding author: gabbyk300@gmail.com
<https://dx.doi.org/10.4314/ajasss.v6i2.4>

Abstract

This study aimed to describe the implication of professionalism on Value for

Grant, C., and Osanloo, A. (2014). Understanding, selecting, and integrating a theoretical framework in dissertation research: Creating the blueprint for your “house.” *Administrative Issues Journal: Connecting Education, Practice, and Research*, 1(2), 22–26. <https://doi.org/10.4314/ajasss.v6i2.4>

Kademeteme, E., and Bvuma, S. (2023). Using Blockchain Technology to Improve the Integrity and Transparency of Procurement Processes between SMMEs and Government: A Systematic Literature Review. *The Journal of The British Blockchain Association*. [https://doi.org/10.31585/jbba-7-1-\(1\)2024](https://doi.org/10.31585/jbba-7-1-(1)2024)

Kimario, H.E. and Kira, A.B. (2023). "Cause – effect relationship of trust of buyer – suppliers' integration on procurement performance in large manufacturing firms in Tanzania", *Journal of Global Operations and*

New JBBA citation from Tanzania Institute of Accountancy.

BLOCKCHAIN: CONCEPTS, ISSUES, AND APPLICATIONS

EDITORS

Assoc. Prof. Emre AKADAL

Istanbul University, Faculty of Economics, İstanbul, Türkiye

Assist. Prof. Dr. Seda KARAKAŞ GEYİK

Istanbul University, Faculty of Economics, İstanbul, Türkiye

Prof. Dr. Mehmet Hakan SATMAN

Istanbul University, Faculty of Economics, İstanbul, Türkiye

De Filippi, P., Wray, C., & Sileno, G. (2021). Smart contracts. *Internet Policy Review*, 10(2). doi: 10.14763/2021.2.1549

Eichengreen, B. (2019). *From Commodity to Fiat and Now to Crypto: What Does History Tell Us?* NBER Working Paper Series, Working Paper 25426. Retrieved from <https://www.nber.org/papers/w25426>

Ferreira, A. (2020). *Emerging regulatory approaches to blockchain based token economy*. The Journal of The British Blockchain Association, ISSN Online: 2516-3957, ISSN Print: 2516-3949. [https://doi.org/10.31585/jbba-3-1-\(6\)2020](https://doi.org/10.31585/jbba-3-1-(6)2020)

logical framework. In 2020 IEEE Symposium on Computers and Communications (ISCC) (pp. 1-6). IEEE.

New JBBA Citation in a Textbook of Blockchain, from Istanbul University,
published December 2024:

Reshaping the future of tourism & hospitality industry through blockchain technology: a systematic literature review

Review | Published: 15 January 2025

(2025) [Cite this article](#)

Yassine Mountije ✉, Dora Agapito & Celia

Yassine Mountije

[View ORCID ID profile](#)

Research Centre for Tourism, Sustainability and Well-being (CinTurs), University of Algarve, Faro, Portugal

Faculty of Economics, University of Algarve, Faro, Portugal

Dora Agapito [View ORCID ID profile](#)

Research Centre for Tourism, Sustainability and Well-being (CinTurs), University of Algarve, Faro, Portugal

Faculty of Economics, University of Algarve, Faro, Portugal

[Article](#) [Google Scholar](#)

Pilkington M (2020) The relation between tokens and blockchain networks: the case of medical tourism in the Republic of Moldova. J Br Blockchain Association.

[https://doi.org/10.31585/jbba-4-1-\(2\)2021](https://doi.org/10.31585/jbba-4-1-(2)2021)

New JBBA Citation from Faculty of Economics, University of Algarve, PORTUGAL.

Tokenomics for Collaborative Economies in Local Communities: a Model Based on Game Theory

Irene Domenicale

University of Camerino, Italy

Flavia Fredda

University of Camerino, Italy

13. O. Letychevskyi, "Creation of a self-sustaining token economy", *The Journal of The British Blockchain Association*, 2022, [online] Available: [https://doi.org/10.31585/jbba-5-1-\(4\)2022](https://doi.org/10.31585/jbba-5-1-(4)2022).

[Google Scholar](#) 

New JBBA citation from the University of Camerino, ITALY

Article

Leveraging Blockchain for Ethical AI: Mitigating Digital Threats and Strengthening Societal Resilience

Alex Norta ¹, Chibuzor Udokwu ^{2,*}, Roxana Voicu-Dorobantu ³, Abiodun Afolayan Ogunyemi ¹, Nata Sturua ² and Stefan Craß ²

¹ Tallinn University of Technology, Tallinn, Estonia

² Austrian Blockchain Center, Vienna, Austria

³ Bucharest University of Economic Studies, Bucharest, Romania

* Correspondence: chibuzor.udokwu@abc-research.at

188. Olena, O. Political and Legal Implications of the Use of Artificial Intelligence. *Yearly journal of scientific*

189. Schwerin, S. Blockchain and Privacy Protection in the Case of the European General Data Protection Regulation (GDPR): A Delphi Study. *The Journal of the British Blockchain Association* **2018**. [https://doi.org/10.31585/JBBA-1-1-\(4\)2018](https://doi.org/10.31585/JBBA-1-1-(4)2018).

Non-Discrimination Law and AI. *ArXiv* **2020**, *abs/2005.05906*. <https://doi.org/10.2139/ssrn.3547922>.

191. Hacker, P.; Cordes, J.; Rochon, J. Regulating Gatekeeper Artificial Intelligence and Data: Transparency,

New JBBA citation from researchers at 🇪🇺 Estonia's [Tallinn University](#), 🇷🇴 Romania's [The Bucharest University of Economic Studies](#), and 🇦🇹 [Austrian Blockchain Center - ABC Research](#).

Read more

Digital Currencies Financial Reporting and Auditing: A New Concern for Accounting Professionals in the Accounting Industry

David Hope Kanu

Doctor of Business Administration (DBA) Research Student, Wilmington University, Newcastle,
Delaware, USA

doi.org/10.51505/IJEBMR.2025.9123

URL: <https://doi.org/10.51505/IJEBMR.2025.9123>

Received: Jan 07, 2025

Accepted: Jan 16, 2025

Online Published: Jan 30, 2025

Abstract

Accounting is a traditional profession of trust, and the financial reporting standards, auditing

Schaar, L., & Kampakis, S. (2022). Non-fungible tokens as an alternative investment: Evidence from cryptopunks. The Journal of the British Blockchain Association, [https://doi.org/https://doi.org/10.31585/jbba-5-1-\(2\)2022](https://doi.org/https://doi.org/10.31585/jbba-5-1-(2)2022)

online.

<https://www.aprio.com/fasb-issues-accounting-standards-for-crypto-assets/> . (accessed on 27 December 2024).

Auditing Tokenomics: New JBBA citation from [Wilmington University](#), USA.

A roadmap for a Metaverse-based digital governance: A case of the Gambia

Pa Sulay Jobe, Murat Yilmaz, Hüseyin Emre Ilgin

Citation: Jobe PS, Yilmaz M, Ilgin HE (2024) A roadmap for a Metaverse-based digital governance: A case of the Gambia. PLoS ONE 19(12): e0314388. doi:10.1371/journal.pone.0314388

Towards future internet: the metaverse perspective for diverse industrial applications. Mathematics. 2023. doi: 10.3390/math11040941.

46. Naqvi N. Metaverse for public good: embracing the societal impact of metaverse economies. The Journal of The British Blockchain Association. 2023. doi: 10.31585/jbba-6-1-(6)2023.

Blockchain: Fighting Procurement Fraud

Using Blockchain Technology to Improve the Integrity and Transparency of Procurement Processes between SMMEs and Government: A Systematic Literature Review

Edzai Kademeteme, Stella Byuma
University of Johannesburg, South Africa

Correspondence: eamkademeteme@gmail.com

Received: 29 April 2023 Accepted: 06 August 2023 Published: 13 October 2023

Abstract

Fourth industrial revolution (4IR) technologies, such as blockchain, have the potential to improve public and private sector procurement processes. However, governments, including the South African (SA) government, have failed to recognize the significance of blockchain technology for several reasons, including corruption. The PRISMA methodology was used in this study to conduct a systematic literature review of the use of blockchain technology to improve the integrity and transparency of procurement processes between small-, medium- and micro-enterprises (SMMEs) and the SA government. The Scopus database was used to search for literature, and the final analysis included 12 articles that met the eligibility criteria. The 12 articles were analyzed using thematic analysis and the results demonstrated that 10 of the articles applied to this study as they discussed the use of blockchain in relation to integrity and transparency. The remaining two articles did not emphasize the use of blockchain technology in enhancing the integrity and transparency of the procurement processes. The common factors in the 10 articles that were found to impact integrity and transparency were as follows: handling of contracts, risks involved, security of the data, approaches used, management of the procurement process, transaction processing, the chain of events in the procurement process, access to critical data, the application process for securing contracts, quality of products, costs, and types of contracts. We believe that once blockchain technology has been implemented, SMMEs and the public will trust and be confident in the procurement processes as corruption would have been eliminated and tenders would be awarded fairly.

Keywords: Fourth Industrial Revolution, 4IR, Blockchain Technology, SMMEs, PRISMA, Corruption, Public Procurement

JEL Classifications: I157, L14

1. Introduction

Corruption and a lack of transparency have ravaged some governments and economies [1]. Corruption is considered one of the most significant threats to the economic security of any country or organization [2]. Several anti-corruption measures such as legislating, adopting rules and regulations making certain behavior illegal, and increasing punishments for illegal conduct [3] have been implemented to reduce or combat corruption. While these methods have reduced corruption to a certain extent, perpetrators often find ways to remain corrupt and use various strategies to either escape or postpone detection and punishment indefinitely. Therefore, much effort is needed to eradicate corruption. The impact of corruption on developing economies is devastating because these economies are already struggling [4]–[6]. South Africa (SA) is one such emerging and developing economy. According to Transparency International's 2021 Corruption Perception Index (CPI) report, SA is engulfed in corruption, with a CPI score of 44/100 and is ranked 71 out of 180 [7]. The CPI ranks 180 countries and territories worldwide based on the

perceived levels of public sector corruption. The results are given on a scale of 0 (highly corrupt) to 100 (very clean).

Small, medium, and micro enterprises (SMMEs) are considered important to both developed and emerging economies [8]. In SA, SMMEs are important for economic growth and development, contributing approximately 36% to the total gross domestic product (GDP) [9].

They are considered fundamental to addressing issues such as economic growth, job creation, and poverty alleviation [10]. SMMEs have been credited with driving economic growth and development in developed countries around the world [11]. Governments frequently engage SMMEs to provide services through procurement processes. However, because of the high levels of corruption within governments, most SMMEs have failed to benefit from this trade relationship with governments [12], while some have benefited owing to the corruption [12]. Given the critical role that SMMEs and public procurement play in growing a country's economy, there is a need to fully support their transactional activities and procurement

Procurement Fraud costs the UK Economy a whopping £127 billion every year - equating to more than £4,000 lost per second, every day.

Read more

Upgradable Smart Contracts Explained

A Review of Upgradeable Smart Contract Patterns based on OpenZeppelin Technique

Shaima AL Amri, Leonardo Aniello, Vladimiro Sassone
School of Electronics and Computer Science, University of Southampton, UK

Correspondence: saaa1n18@soton.ac.uk/shaima.alamri@hotmail.com

Received: 30 December 2022 **Accepted:** 30 January 2023 **Published:** 20 March 2023

Abstract

The Ethereum blockchain is one of the main public platforms to run smart contracts and enable decentralised applications. Since data stored in a blockchain is considered immutable, smart contracts deployed in Ethereum are regarded as tamper-proof and therefore offer strong protection against attacks aiming at tinkering with the execution flow of an application. Yet, like any other software, a smart contract needs to be maintained over time to fix bugs or add new features. Deploying every updated version as a brand new smart contract in Ethereum leads to problems such as migrating the contract state from the old version and enabling clients to point to the new version in a timely fashion. The OpenZeppelin framework addresses this limitation by providing libraries that enable the deployment of upgradeable smart contracts. This is achieved by relying on proxies that act as intermediaries between clients and smart contracts, allowing the latter to be updated transparently. In this paper, we present the upgradeable smart contract patterns supported by OpenZeppelin and compare them in terms of security, cost, and performance. To show this paradigm's prevalence in Ethereum, we also analyse the usage of OpenZeppelin Upgradeable smart contracts over the last four years.

Keywords: Smart Contract, Immutability, Proxy, Upgradeable, Patterns, OpenZeppelin

JEL Classifications: C80 and C89

1 Introduction

The upgraded smart contract (USC), designed with the OpenZeppelin technique, is used to reserve the contract state and redirect calls to the implementation contract (IC). In addition, it upgrades the IC address when it requires a new version. In this technique's design, the proxy stores the state of the IC and maps any new version to the same state [12]. The upgraded technique is not preventing the known attacks against smart contracts. The purpose of designing the USC is to ensure the state cannot be lost and will be mapped to a new version of IC.

OpenZeppelin is a widely used library for writing secure smart contracts, and it provides several patterns for implementing, upgradability [6]. These patterns include TransparentProxy, ERC1967, UUPSUpgradeable, and Beacon [6]. The research reviews the OpenZeppelin Upgradeable patterns to understand how they vary based on gas consumption, security, and performance.

The OpenZeppelin technique of upgrading smart contracts was invented in 2017. This technique motivates us to analyse the verified smart contract in Etherscan and check whether this technique has grown within the last four years.

The paper is organised as follows. Section 2 introduces Ethereum and smart contracts, followed by the OpenZeppelin Upgradeable technique. Section 3 presents the research methods, while Section 4 presents the analysis of upgraded patterns and compares them based on gas consumption, security, and performance. Section 5 shows the analysis result of the usage of upgradeable patterns over the last four years. Finally, Section 6 summarises our review and outlines our future direction.

2 Background

2.1 Ethereum and Smart Contract

Ethereum platform is one of the public blockchain platforms introduced by Vitalik Buterin [1] to override the limitations of Bitcoin's scripting language. Unlike Bitcoins, Ethereum innovated to support all loops as it is full of Turing completeness [10]. Moreover, the Ethereum platform is the most popular for deploying contract-based applications in several contexts, including financial services, insurance, education, healthcare, and cryptocurrencies.

A smart contract is designed to verify and enforce legal contract negotiation. Once it is deployed in the blockchain, no one can change the code [2]. It is executed and verified by Ethereum Virtual Machine Environment (EVM), built within all decentralised nodes in the Ethereum blockchain. The immutability characteristic of the smart contract made it a trusted application.



Can a Smart Contract be upgraded *AFTER* deployment on a Blockchain?

The answer is YES—and it's a game-changer for Blockchain innovation!

Read more

Decentralised Learning Centres

Towards Confidential Chatbot Conversations: A Decentralised Federated Learning Framework

Hongxu Su¹, Cheng Xiang¹, Bharath Ramesh²

¹Department of Electrical and Computer Engineering, National University of Singapore, Singapore

²International Center for Neuroinformatics Systems, Western Sydney University, Sydney, Australia

Correspondence: bharath.ramesh03@u.nus.edu

Received: 13 December 2023 Accepted: 14 January 2024 Published: 28 February 2024

Abstract

The development of cutting-edge large language models such as ChatGPT has sparked global interest in the transformative potential of chatbots to automate language tasks. However, alongside the remarkable advancements in natural language processing, concerns about user privacy and data security have become prominent challenges that need immediate attention. In response to these critical concerns, this article presents a novel approach that addresses the privacy and security issues in chatbot applications. We propose a secure and privacy-preserving framework for chatbot systems by leveraging the power of decentralised federated learning (DFL) and secure multi-party computation (SMPC). Our DFL framework leverages blockchain smart contracts for participant selection, orchestrating the training process on user data while keeping the data local, and model distribution. After each round of local training by the participants, the blockchain network securely aggregates the model updates using SMPC, ensuring that participants' raw model parameters are not exposed to others. The global model is encrypted and stored in hypermedia protocols such as the InterPlanetary File System. Participants decrypt the global model updates using their private keys to further fine-tune their models. Iterative training rounds are executed through the blockchain network, with participants updating the model collaboratively using SMPC. Experiments show that our approach achieves comparable performance to centralised models while offering significant improvements in privacy and security. This article presents a ground-breaking solution to privacy and security challenges in chatbots, and we hope our approach will foster trust and encourage broader adoption of chatbot technology with privacy at the forefront.

Keywords: Large language models, Privacy-centric machine learning, Decentralized federated learning, Multi-party computation, Knowledge distillation, Quantized language models

JEL Classifications: Privacy-Preserving Learning, Decentralized Federated Learning, Tiny Language Models (TinyLMs), Secure Multi-party Computation (SMPC), Blockchain Technology

1. Introduction

Natural language processing (NLP) and Large language models (LLMs) have recently revolutionised human computer interaction [1]. Advanced LLMs such as ChatGPT by OpenAI have shown their potential to transform various industries and automate language tasks on an unprecedented scale [2]. However, this surge in useful applications has also raised significant concerns about privacy, trust, and user data exploitation [3]. As these LLMs process large amounts of user data for training and fine-tuning, it is essential to address the potential risks associated with unauthorised data access, breaches, and misuse. Striking a delicate balance between leveraging the power of chatbot technology and protecting user privacy is a critical challenge for the widespread adoption and ethical deployment of these revolutionary NLP systems.

Federated learning (FL), originally proposed by McMahan et al. [4], is a promising solution for preserving user privacy, especially in the context of NLP technologies [5]. FL enables model training by distributing the learning process across individual user devices, thereby avoiding the need to centralise sensitive data on a single server. This approach keeps user data localised, encrypted, and under the user's control, ensuring that no raw personal information is exposed during the training process. By aggregating model updates from multiple users without sharing their individual data, FL enhances privacy protection and minimises the risk of data breaches and unauthorised access.

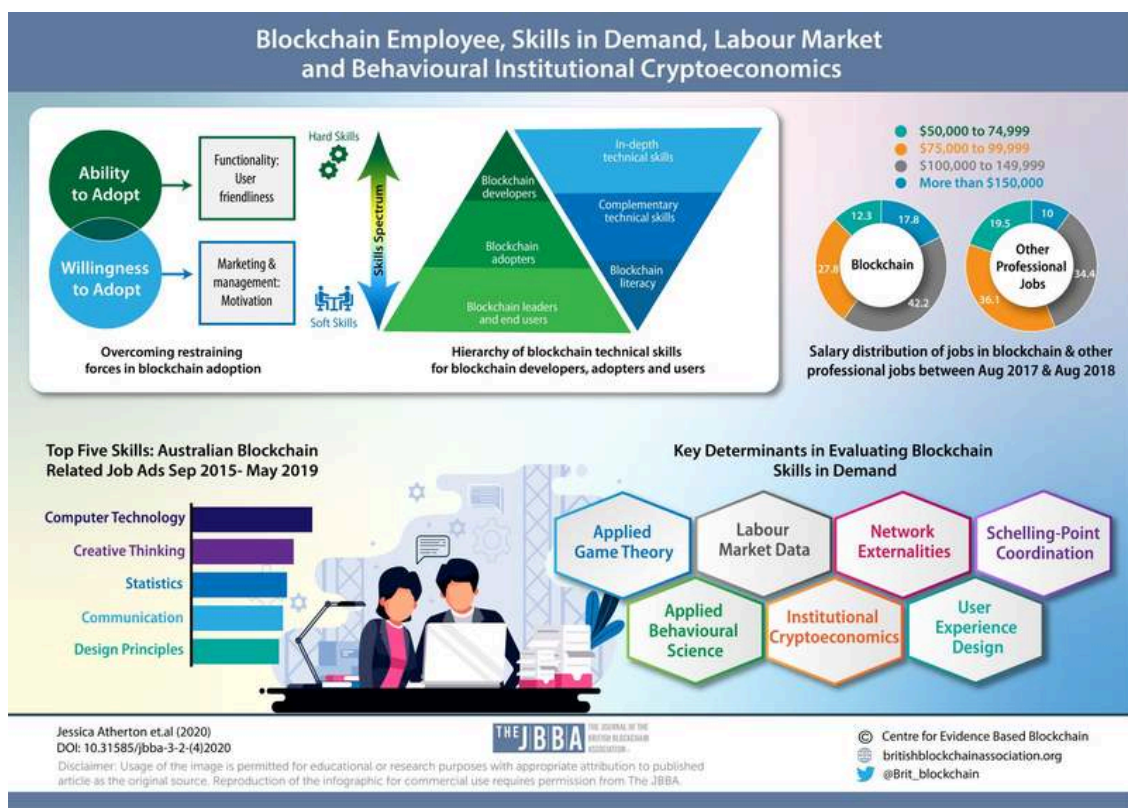
Despite the significant privacy advantages offered by FL, centralised FL implementations still pose certain threats. A centralised FL setup introduces the possibility of a single point of failure, where the central server becomes



Picture this: millions of AI powered Learning Centres - accessible to all,
interconnected, and confidential - Built on the Blockchain.

Read more

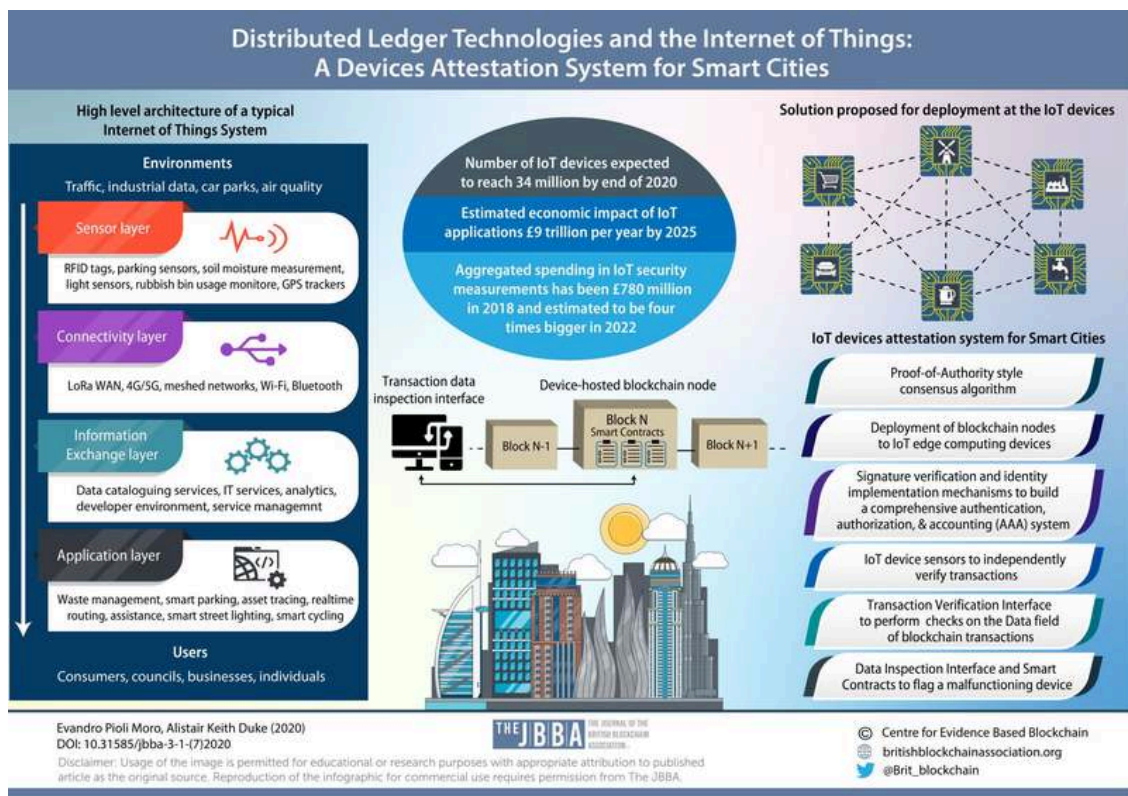
Nurturing Web3 Talent in the UK



Blockchain's Labour Market: Nurturing talent, hiring for skills, retaining the brightest minds and growing the UK economy.

[Read more](#)

Blockchain's Role in Smart Cities

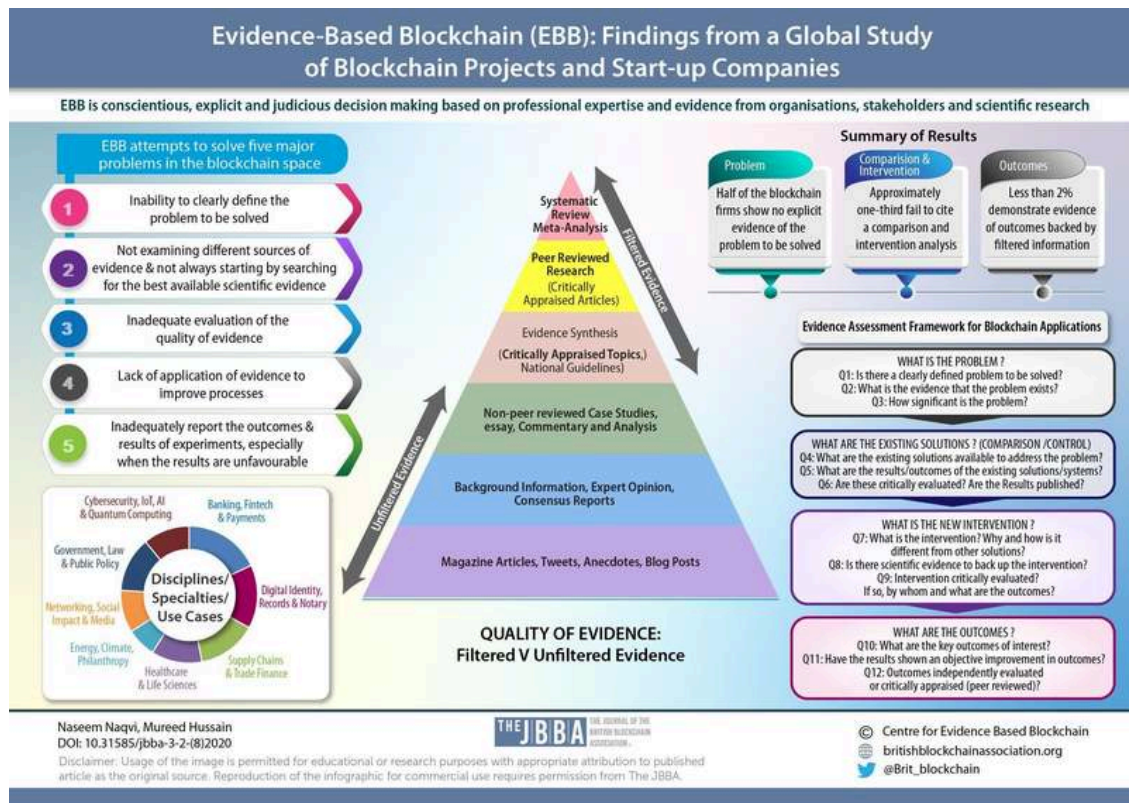


Do you live in a "Smart City"?

SMART CITIES & BLOCKCHAIN

[Read more](#)

Make Smarter Decisions with Evidence-Based Blockchain



One Bad Decision can Derail your entire Project.

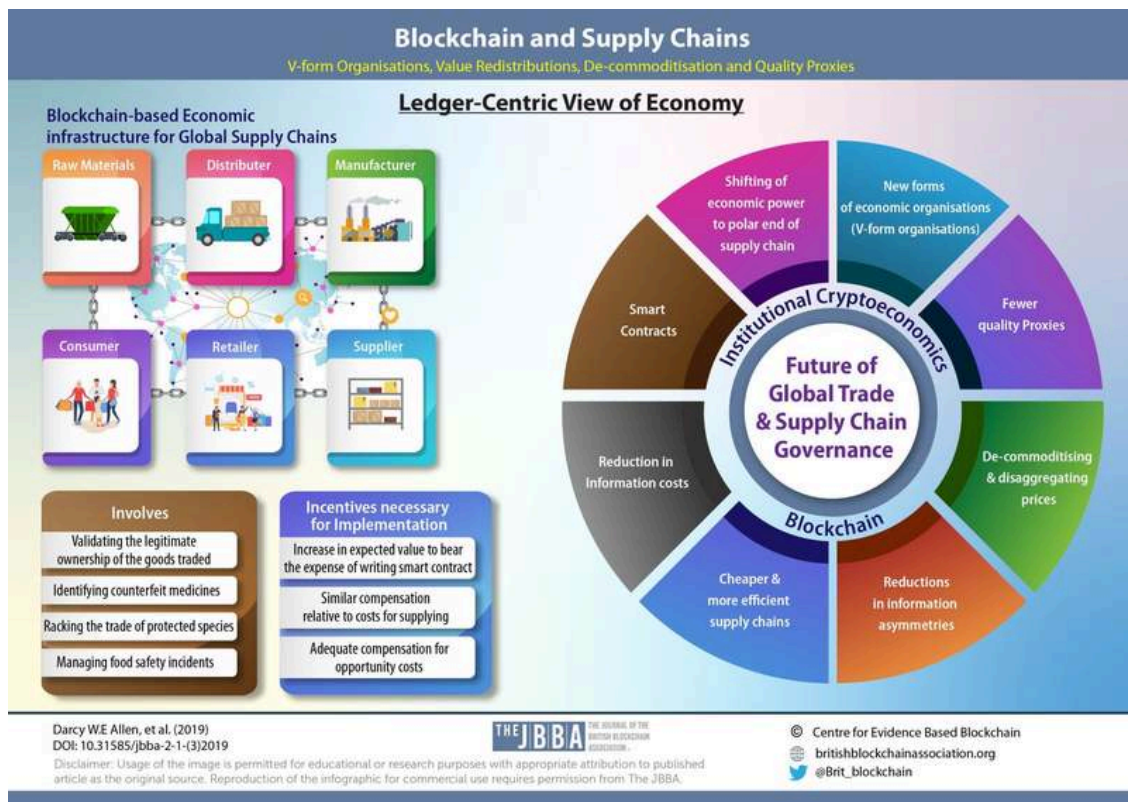
In the fast-evolving World of Emerging Technologies, Decision-making is everything.

When faced with Tough questions and Hard Problems, Where do you begin?

Good news is that there is a Science to making better Decisions in Innovative Tech.

[Read more](#)

Ledger-Centric Economy Insights



Do you have a "Ledger Centric" view of the Economy?

Are you building "V-Form" Blockchain organisations for Trade, Supply Chains, E-Commerce, and Logistics?

Infographics from Centre for Evidence-Based Blockchain CEBB.

Research from The JBBA.

Action Plan To Boost UK Web3



Blockchain-Based Self Sovereignty



Why Nations Need Blockchain Roadmap



Why A.I. Needs Blockchain?



JBBA Testimonial

A testimonial graphic for The British Blockchain Association (JBBA). It features a portrait of Professor Dr Stavros T. Ponis PhD on the left. The background is dark with a grid of data points. The JBBA logo and tagline "Advocating Evidence Based Blockchain" are at the top. The testimonial text is in a light blue serif font, and the professor's name and affiliation are at the bottom.


The British Blockchain Association
Advocating Evidence Based Blockchain


THE JBBA THE JOURNAL OF THE
BRITISH BLOCKCHAIN
ASSOCIATION

*“ It has been a pleasure working with the **JBBA**’s editorial team. The submission process was transparent and the reviews were accurate and meaningful, adding great value to the manuscript.*

The lead time between the reviews and publication was very efficient. A postal receipt of the issue’s hard copy within thirty days from the e-publication of my paper was a pleasant surprise!!!..”

*Professor Dr Stavros T. Ponis PhD
Associate Professor of Supply Chain & Logistics
School of Mechanical Engineering
National Technical University of Athens, Greece*

Role Of Blockchain Roadmaps In Economics Growth

UK NATIONAL BLOCKCHAIN ROADMAP (NBR) (VISION 2030)

AN EXCELLENCE STANDARDS FRAMEWORK

JULY 2021



The British Blockchain Association
Advocating Evidence Based Blockchain

RECOMMENDATIONS BY
THE CENTRE FOR EVIDENCE-BASED BLOCKCHAIN



www.britishblockchainassociation.org

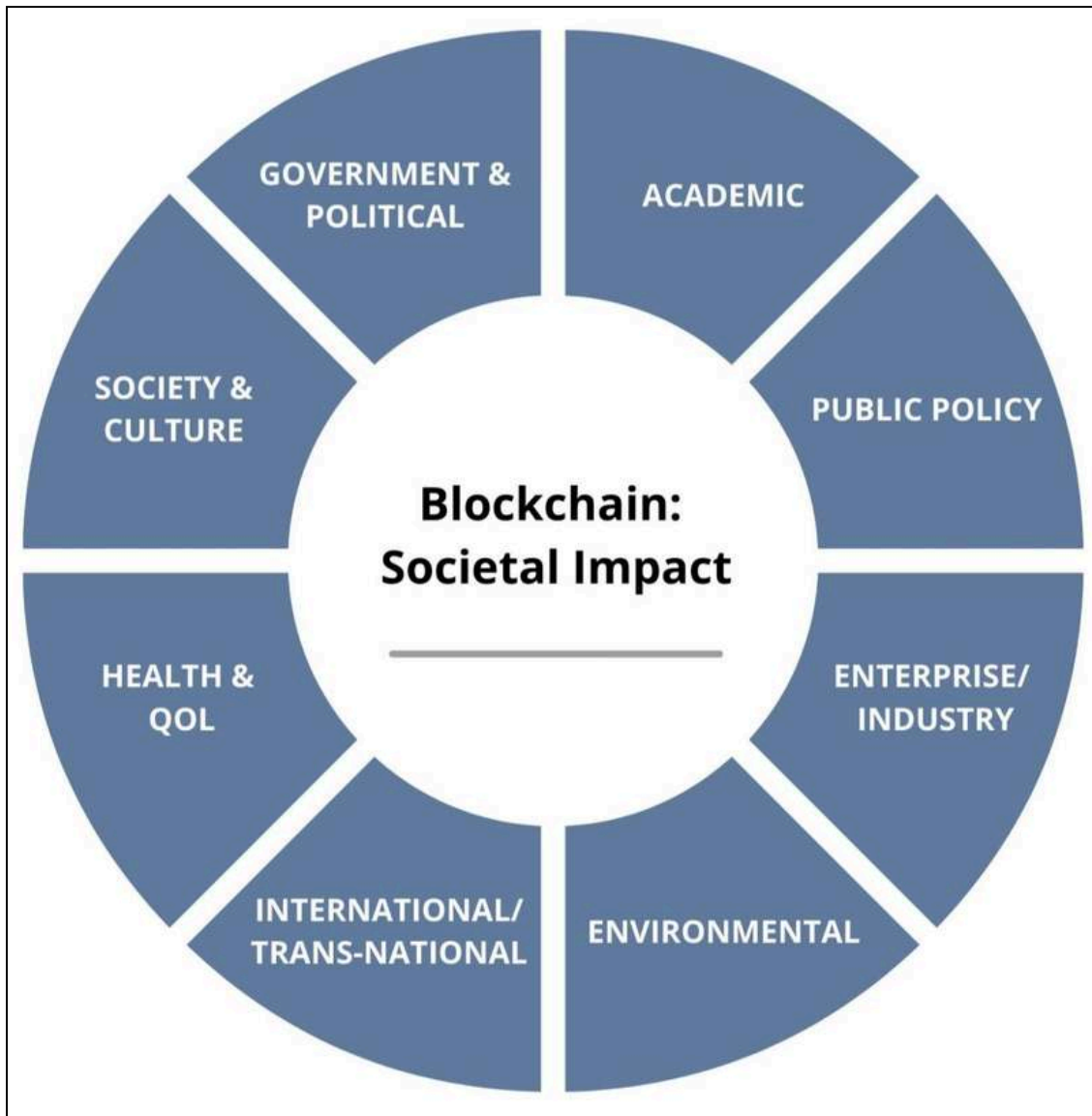
What is the role of National Blockchain Roadmaps in growing a country's economy?

How do we foster evidence-informed policymaking?

How do we create Sustainable Societal Impact by supporting high-quality Blockchain programmes?

[Read more](#)

Contribute to the UK National Blockchain Roadmap (NBR)



- 👉 How do you know you are making an Impact in Web3?
- 👉 Are you measuring the Impact of your services, product or company?
- 👉 Are you connected with the other 3 components of Blockchain Quadruple Helix?

BBA would like to hear from you on how you are making a difference in Web3 by advancing one or more recommendations of the **UK National Blockchain Roadmap**.

Share with us your success story at info@britishblockchainassociation.org

THE BBA ECOSYSTEM

2025



The British Blockchain Association

Advocating Evidence Based Blockchain

Want to Build a World-Class Blockchain Ecosystem in Your Country?

Established in 2017, the BBA has built a holistic, forward-thinking blockchain ecosystem that drives economic growth, fosters innovation, and supports sustainable development in the UK, and beyond.

[Read more](#)

BBA's Policy Advocacy Domains



The British Blockchain Association

Advocating Evidence Based Blockchain

Policy Advocacy Domains & Working Groups

2024 - 2025

www.britishblockchainassociation.org

We have been working closely with policymakers and industry stakeholders toward the evidence-based advancement of Web3 technologies.

To contribute to or lead one of the working domains, contact us at:

secretary@britishblockchainassociation.org

[Read more](#)

Join The BBA

MEMBERS & PARTNERS OF THE BBA ECOSYSTEM (2024-25)



WORKING IN COLLABORATION WITH



BBA Member Pack

Wish to become a Member of The BBA?

Drop us an email at

secretary@britishblockchainassociation.org



Twitter



Facebook



LinkedIn



Website



Email



Medium



Instagram



YouTube



Metaverse Headquarters (Spatial)



Nostr

Copyright © 2021. All rights reserved.

**The British Blockchain Association is a Registered Trademark
at the UK Intellectual Property Office.**

TM Number: **UK00003402847**

Our mailing address is:

The British Blockchain Association
Centre for Evidence-Based Blockchain
Kemp House
124 City Road
London, EC1V 2NX
United Kingdom

Want to change how you receive these emails?

Email us at info@britishblockchainassociation.org