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Blockchain Technology Boosts in Economy and Other Networks

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ABSTRACT

This article highlights the importance of blockchain and its role in the economy. Blockchain networks are just storage and communication protocols. Each of them has a community, history, and culture that is worth protecting. Some of the communities are more focused on the creation of 'sound money' alternatives to the current fiat systems. Others are striving relentlessly to maximize raw computing power and storage capacity.

KEYWORDS: *Blockchain, economy, communication, history, culture, technology, market, dramatic effect, science*

Blockchain technology continues spreading its roots across different sectors, with the technology now being integrated into science to revolutionize research. The new integration dubbed "Decentralized science" creates new markets for knowledge and opportunities within commercial markets.

Notably, although new technologies may have rapid and dramatic effects on society, they may spread slowly and subtly. Decentralized science (DeSci) is a perfect example, taking off after several years of gestation. DeSci has revolutionized the rarified confines of high-tech labs among other related businesses globally. *Blockchain Integration in Scientific Research:* Blockchain technology promises to deliver a lot of benefits in case it gets integrated into scientific research. The decentralized science unlocks a new market for knowledge and opens up other opportunities within commercial markets. In a short interview on the Zima Red podcast in late April, Paul Kohlhaas, the co-founder and CEO of Molecule, outlined more use cases of blockchain in pharmaceutical research and its funding. The top executive mentioned that pharmaceutical research would be cheaper with blockchain integration. Kohlhaas compared blockchain utilization in pharma to fintech in banking, stating:

"The banking industry has only started evolving in the past ten years in the wake of fintech because fintech is starting to really hurt their bottom line and take away customers."

Launched in 2019, Molecule is a research platform for a biotech decentralized autonomous organization (DAO). The research platform allows researchers, biotech companies, and universities to combine data and intellectual property rights into IP-non-fungible tokens (IP-NFTs). Molecule allows IP-NFTs holders to seek funding to continue with research activities. They can also reach an agreement with the organization to use the data and IP for their designated purposes. According to Kohlhaas, funding may also find new outlets with blockchain integration. The top executive cited psychedelics research in psychiatry as a priority that he embraces personally. Kohlhaas highlighted that many billionaires currently fund most startups, adding: *"But I think there's a risk there. Because if like the richest people in the world live longer and longer and get richer and richer, that will fundamentally, in the long run, create an unjust society, because wealth is not distributed."*

In an exclusive short interview, Patrick Joyce, the chief operating officer at Molecule, compared the Research Hub to GitHub, a scientific research hub backed by Coinbase CEO, Brian Armstrong. During the interview, Joyce said that Molecule would provide incentives for open access publishing to fund research in subjects that the National Science Foundation does not fund such as quantum biology.

Decentralized science can also provide advantages in several commercial contexts. The crowded field of consumer genomics is a perfect example. The blockchain integration allows London-based Genomes.io to offer the public 30x whole genome sequencing. Genomes.io now contrasts many notable brands that sequence only the generic exome, excluding other junk genes that represent the majority of the genome. According to Aldo de Pape, the co-founder, and CEO of Genome.io, the platform does not end a week without a discovery. Genome.io, which has 14 employees, is the second company de Pape and co-founder Mark Hahnel own together. The two entrepreneurs worked together at MacMillan Publishers before launching Figshare, a company that provides research data infrastructure to government customers, in 2019.

Aldo de Pape, Hahnel, and three others co-founded Genome.io in 2018, following anticipation that the gene mapping developments have reduced the price of genetic sequencing from billions to hundreds of dollars. A year later, the company successfully entered ConsenSys Ventures Tachyon.Genomes.io and launched an initial coin offering (ICO) in 2021.

Genomes utilizes blockchain to sequence customers' genomes, encrypt, and keep them in an electronic vault. The company allows customers to opt in to receive reports based on their genetic information, such as ancestry and rare diseases carrier status, among many more. The platform gives its customers control over their data from usage in research queries. Geonome ensures that genomic data provided during query matches and stored on the vault. Blockchain technology provides security by recording all queries made to holders' data in a single version of the ledger. Nonetheless, customers who decide to share genomic information are incentivized with GENE NFT, while those who contributed to the development or design of the project through DAO to get GNOME, a non-fungible token used for governance token available on the Sushi exchange. The "Geneticats" NFTs will offer genomic sequencing and hybrid GENE/GNOME benefits. Although the DAO has a stake on the Ltd side, which includes large-scale projects with partners in Australia, Bermuda, and United States, participants will be rewarded for their contribution to development and design. DNAVerse is another company that has found the practical

application of blockchain technology. The Madrid-based firm will utilize tokenized genetic data to authenticate holders' identities among AI or Chatbots across Metaverse. DNAVerse and 3D forScience have created "DNArt," an NFTs for avatars. According to Juan Castillo, the market director, the DNAVerse is at the presale stage. DNAVerse has eight employees and shares several more with sister organization 3DforScience. The organization recently partnered with Polygon Studios to open an embassy in the Matrix World, Metaverse.

The company will mint 200 "cryptoprotein" NFTs and 3,200 highly customizable "DNArt" NFTs based on customer genetic data. New customers will be required to select "cryptoprotein and DNArt" staked on a decentralized market. Holders will receive a percentage of prices for their participation in the replication process.

There are a lot of clubby aspects to the business model. A line of clothing featuring customers' "DNArt," wellbeing channels, and virtual events based on genetic affinities are planned. Customers can obtain "DNAat" for their pets as well.

Most of the European central banks have been increasing their efforts to use digital ledger technology (DLT). DLT is the foundation of blockchain and financial institutions are aiming to use the technology in central bank money settlements Deutsche Bundesbank and Banca d'Italia, the central banks of Germany and Italy, respectively, partnered to work on settlements on central bank money to different DLT-based asset exchanges. They then shared their experiences on this technology-based settlement in a workshop.

Their official announcement insisted that the main aim of the joint workshop was not to utilize DLT as a replacement for traditional systems. Instead, this initiative strives to complement the current central bank money settlement efforts with a programmable trigger mechanism that links the DLT-based asset, like a tokenized security, and cash to get settled through conventional payments networks.

If adopted, this new system would mitigate the counterparty risk for both sides. It would preserve the delivery-versus-payment method of settlement, according to the announcement. This programmable trigger will complement the digital euro and even act as a technical bridge between the current payment systems that are used by the Eurosystem central banks and the DLT-based infrastructure used for the settlement of tokenized assets. DLT can introduce new products and services, generate extra revenue streams, and minimize operating costs. The technology can also make several organizational structures more efficient as explained by Ignazio Visco, the Italian central bank governor. He explained that an infrastructure-level DLT adoption in most of the traditional markets would take some time: *"because of the necessary in-depth investigations and cost and risk assessment."*

Deutsche Bundesbank President Jens Weidmann stated: "If market participants want to reap the benefits of new technologies like DLT for the settlement of tokenized assets, central banks should support that by enabling the settlement of the responding cash leg in secure central bank money.

The tested trigger solution could well serve the market's need and keep central bank money in the systems run by central banks. In comparison to creating wholesale central bank digital currency, a trigger solution could be operational in a much shorter time frame."

Deutsche Bundesbank, Deutsche Boerse, Germany's Finance Agency did a pilot test with the participation of Goldman Sachs, Commerzbank, Citibank, Barclays, DZ Bank and Societe Generale. They tried to bridge traditional finance with distributed ledger technology in March 2021.

At the time, the German Finance Agency issued a 10-year federal bond using the DLT trigger system. Moreover, it tested securities trading on primary and secondary markets as part of this pilot project.

Blockchain networks are just storage and communication protocols. Each of them has a community, history, and culture that is worth protecting. Some of the communities are more focused on the creation of 'sound money' alternatives to the current fiat systems. Others are striving relentlessly to maximize raw computing power and storage capacity. Some of the blockchains allow users to collect basketball shots and other sports moments. The others are emerging as metaverses for developing a specific cultural or gaming culture.

It is important to nurture spaces for the communities to grow effectively and innovate. Just like languages, borders, and currencies, blockchain designs let cultural particularities thrive instead of being absorbed by the nearby powerful neighbor.

It is important to promote diversity. Just like in the real world, it is important to encourage dialogue between communities. It is important to invest in bridges that allow the blockchain networks to communicate, provided that these bridges emerge organically to serve the needs of their users, instead of top-down as a result of government-sponsored standards. Blockchain interoperability is not a set rule book. It refers to a wide range of techniques that enable various blockchains to listen to one another, transfer digital assets and data between one another, and enable better collaboration.

Multiple decentralized cross-chain bridges facilitate the transfer of assets and data between EOS, Ethereum, Litecoin, Binance Smart Chain, Bitcoin, and other blockchains. Today, the main use cases of interoperability are: first, the transmission of a given crypto's liquidity from one blockchain to another. Second, letting users trade an asset on one chain for another asset on another chain. Thirdly, allowing users to borrow assets on one chain by posting tokens or NFTs as collateral on another chain. Every bridging technique makes its design compromises in terms of speed, convenience, trust, and security assumptions.

Every blockchain operates on different sets of rules and bridges serve as a neutral zone where the users can switch between one and the other. It greatly enhances the experience for the users. For end-users, these trade-offs may not be easy to comprehend. Additionally, the risks that are associated with every bridge technique may compound each other when an asset crosses several bridges to reach the hands of the end-user. As members of the Web3 ecosystem, they share responsibilities to promote a multichain world and make it safer as more users begin coming into Web3. Everyone has a role to play. The cross-chain bridges have to be transparent about risks and manage to resist the temptation of growth at all costs. Moreover, they have to publish some bug bounties. Huobi is a leading crypto exchange that has announced the creation of a new investment segment to tackle Web3 and decentralized

finance (DeFi) projects. The new armed was named Ivy Blocks by the exchange. It will now focus on finding projects in seed stages to help them through financing and other supporting services with the primary objective of making a "better, more inclusive" Web3 space. Web3 has become a thriving nascent sector with many exchanges and venture capital firms joining the trend. Huobi, a top ten crypto exchange in volume traded, has now announced the launch of its investment arm to tackle the new markets.

Ivy Blocks, as the crypto exchange has decided to name it, will have the task of identifying possibly successful Web3 and DeFi projects to nurture and incubate. Based on a PR statement that was issued by the firm, Ivy Blocks will have access to a multi-billion-dollar war chest to complete its targets, something that makes it: "Well-placed to take advantage of unique opportunities in cryptocurrency markets globally."

To support the projects, perfectly, in their seed and growing stages, Ivy Blocks will unveil three core services. The services include an innovation-led incubation division, an asset management platform for decentralized finance projects, and a more research-driven crypto platform. All of these services will be available to the firms under the wing of Ivy Blocks. Ivy Blocks already has over $1 billion in assets under management (AUM) from several companies that are already incubated. One of these firms is Capricorn Finance, an automated market maker (AMM) that is powered by the Cube blockchain. Other crypto exchanges have also invested in Web3 projects recently. Binance Labs is the investing arm of the exchange that confirmed that it launched a $500 million fund for Web3 projects on June 3.

Security researchers and analytics platforms have to publish public risk ratings and then report incidents. Wallet operators and blockchain protocols need to agree on the lists of cryptos and smart contracts officially supported on every chain. Dapp developers need to aim to deliver simple user experiences without needing to throw away the core tenets of decentralization and user ownership. In that context, media outlets and key opinion leaders have to help the end-users to do their independent research. For now, we have to move away from the "winner takes all dynamics" and provide a better future for user and developer communities. The Web3 movement gained traction since developers, and the blockchain world wants to move away from the shackles of centralization. The smooth flow of information and tokens between various blockchains will become an integral push towards a decentralized and multichain economy. Blockchain documentation service Transcrypts has now confirmed its partnership with the Doctors Without Borders (DWB) humanitarian organization. During a November 11 conference, the blockchain-based document security firm announced this partnership that was launched on October 14. So far, the two organizations have already uploaded 6500 immunization records to the blockchain. They aim to have uploaded 76000 by 2022. A majority of the immunizations are COVID-19 vaccines. But, the company said that its goal is to store all patient records on the blockchain for easy access through a patient's phone. The budding California-based startup was launched in 2020 by Zain Zaidi, who was then an electrical engineering student at San Jose State University. Currently, the company counts Zoom, Spirit Airlines, Paychex, ADP, and Oracle as its clients. Transcrypts launched as a tool to fight fraud marketed to human resource managers before it expanded into income verification for landlords. As of November 2021, it considers itself as a full-service documentation service. This DWB partnership is the first effort into medical records. In the past, Transcrypt had found that HIPAA together with other compliance regulations prevented blockchain as an acceptable strategy for medical records stored within the US. While commenting on the accessibility of patient medical records in the developing world; Zaidi explained that blockchain could offer considerable assistance in preventing lots of unnecessary deaths:

"In India, over 700,000 people die every year from the lack of access to a patient's medical records. A majority of these deaths could have been prevented if physicians had access to a patient's comprehensive health care records. With this partnership, Doctors without Borders and TransCrypts hopes to build a future where this loss of life can be mitigated."

It is not the first time that COVID vaccination records are stored on the blockchain. In January 2021, ve Chain launched a program to store such data at a large hospital in Cyprus.

Zuellig Pharma's eZTracker platform is now using the SAP blockchain to track and authenticate COVID-19 vaccinations. The Singaporean healthcare services provider Zuellig Pharma is now using a blockchain network to track these vaccinations to prevent practitioners from administering expired vaccines. Zuellig Pharma says that the new "eZTracker" management system can help in preventing improperly stored or counterfeit vaccines from being utilized by enabling its users to instantly verify the provenance and authenticity of their vaccines through a mobile application.

The SAP Blockchain executes operations as a Blockchain-as-a-Service (BaaS), enabling its customers to develop exclusive blockchain extensions for their existing applications. Based on data from SAP, 77% of the world's transaction revenue touches on one of their systems.

In 2020, Zuellig partnered with pharmaceutical firm MSD to deploy eQTracker in Hong Kong, where it was used to track vaccines for the Human Papilloma Virus, Gardasil. Laverick commented at the time: *"As the vaccines move through various handover points in the supply chain, the products' data points are loaded into eZTracker's secure blockchain ledger, and this ensures it can't be tampered with. Users such as healthcare professionals and patients can verify the authenticity of the vaccine by scanning a unique data matrix code on the product pack."*

Launched 100 years ago, Zuellig is one of the biggest healthcare service provider organizations in Asia. It also has a product known as eZVax that mostly offers governments, local health authorities, and the private space with end-to-end vaccine management. Southern Asia is a hotbed of fake medicines with $520 million and $2.6 billion spent on fake medicines each year, based on a report compiled and published by the United Nations Office on Drugs and Crime.

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