



**CRYPTO
OASIS**

Roland
Berger



WEB3 INFRASTRUCTURE

EXTRACT FROM
**CRYPTO²
OASIS⁰
ECOSYSTEM²
REPORT³**
UNITED ARAB EMIRATES

DLT
SCIENCE
FOUNDATION

SPRING
SPRING
SPRING
SPRING
SPRING
EDITION

An aerial photograph of the Dubai skyline at dusk. The Burj Khalifa is the central focus, towering above other skyscrapers. The sky is a deep blue with some light clouds. In the foreground, there are several modern buildings and a multi-lane highway with traffic.

DLT
SCIENCE
FOUNDATION

The DLT Science Foundation (DSF) is a non-profit organisation committed to promoting the growth and adoption of distributed ledger technology (DLT).

Our mission is to help create a more equitable society with the adoption of DLT and **other exponential** technologies - which starts with fostering a more **open and sustainable innovation ecosystem**. We foster collaboration and investment in this ecosystem to ensure blockchain technology reaches its **full potential**.

We continue expanding our robust and growing ecosystem of developers, academic institutions and industry leaders. Alongside our grant program for academic institutions, the foundation is also developing research initiatives, policymaker engagement, and educational partnerships to further our mission.

Visit us to learn more at DLTscience.org 

DLT
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**Building Trust,
Discovering Truth**

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HOW CRYPTO OASIS IS TRANSFORMING THE BLOCKCHAIN LANDSCAPE

Over the last few years, the Blockchain industry has witnessed significant growth and evolution, and the UAE has emerged as one of the leading destinations for Crypto and Blockchain-related businesses. Witnessing this first hand we started referring to the region of Middle East and North Africa to give it an identity of its own as the Crypto Oasis, which has now established itself as a global Blockchain Ecosystem fostering innovation in the UAE.

In its second edition, the Crypto Oasis Ecosystem Report 2023 showcases the significant progress and achievements of the Crypto Oasis in establishing itself as the fastest growing Blockchain Ecosystem globally, with over 1,800 organisations identified as of Q1 2023. In partnership with the DLT Science Foundation and Roland Berger as well as report-in-reports from Venom and Chainalysis, our report highlights the massive surge in institutional and individual adoption in the crypto industry, as well as our contribution and assistance to Blockchain and Web3 organisations in accessing resources and expertise to navigate the complex and rapidly evolving landscape.

One of the factors contributing to the success of the Crypto Oasis Ecosystem is the regulatory environment in the UAE, which has been stable, predictable, and favourable, enabling local and international players to setup operations. The UAE's focus on disruptive technologies positioned it as a modern-day renaissance hub. With AI, the Metaverse and Web3 at the forefront of cutting-edge disruption, Dubai is at the heart of this Ecosystem, epitomising creativity, and innovation essential for progress in the digital space.

According to the Chainalysis input in our report Crypto currency transactions in the UAE are largely driven by early-adopters looking to make investments, as opposed to everyday citizens who buy Crypto out of necessity in other regions.

To build Ecosystems within Ecosystems, we built several ventures and IPs that target different aspects of the Industry. Our Web3 Meta-Community, arte, has had over 60 meetups in the past year, with over 120 projects presenting at these meetups. We have also hosted thought leaders in the Web3 industry at more than 13

arte Talks, which take place at the Theatre of Digital Art in Madinat Jumeirah every other week. Furthermore, we continuously host major players in the Blockchain space like Ethereum, Casper Labs, Dfinity, and Solana for fireside chats at Crypto Oasis meetups in DIFC, which focus on Protocol founders and CEOs.

Another recent initiative launched at the Crypto Oasis Ecosystem night in March 2023 is the Crypto Oasis Games Guild. The objective of this initiative is to build an ecosystem for the gaming industry in Web3. With partners like Epic, Unity and QORPO Gaming Studios and support from major players in the Ecosystem like Polygon we have been able to launch with 18 founding members from all over the globe. The initiative currently in its growth phase will be building on the thought leadership of its members and promoting cross-collaboration and partnerships between industry players.

To build on the success of previous ventures and Ecosystems, we are launching a new initiative in commitment to the UAE's COP28 initiative. The new initiative, called The Green Block, is an Ecosystem for the ESG part of Web3 that aims to foster a sustainable

future by bringing together innovators and entrepreneurs to develop and implement solutions that promote environmental sustainability and social responsibility. The Green Block focuses on promoting, leading, and connecting this part of the industry to align with the goals of the UAE.

Additionally, the Crypto Oasis has served as the Ecosystem partner at events in the region, including the Future Blockchain Summit, Superverse, Dubai Metaverse Assembly, and Art Dubai, among others. Crypto Oasis is also a Web3 Ecosystem partner at the Dubai Fintech Summit, where this second iteration of the Crypto Oasis Ecosystem Report is launched.

In conclusion, the Crypto Oasis Ecosystem Report 2023 highlights the incredible progress and achievements of the Crypto Oasis in establishing itself as a leading Blockchain Ecosystem globally. The report showcases the massive growth and adoption of Blockchain and Web3 technologies, as well as Crypto Oasis commitment to supporting the development and success of Blockchain and Web3 entrepreneurs and organisations. With its vibrant community, favorable regulatory environment,

PROJECTS & STARTUPS

WEB3 INFRASTRUCTURE

Web3 infrastructure is the backbone of the Blockchain ecosystem and is critical to the success of decentralized applications (dApps) and other Blockchain-based solutions. Web3 infrastructure refers to the various tools, protocols, and services that enable developers to build and deploy decentralised applications on top of Blockchain networks. This includes everything from Blockchain protocols and smart contract languages to decentralised storage solutions and developer tools.

Web3 infrastructure is essential for the growth and scalability of the Blockchain ecosystem. Without it, developers would not have the tools and resources necessary to build decentralised applications that can compete with centralised counterparts in terms of speed, scalability, and functionality. In recent years, the development of Web3 infrastructure has accelerated, driven by a growing demand for decentralised applications and the potential for Blockchain to transform various industries.

While Web3 infrastructure has come a long way in recent years, there are still challenges to be addressed. For example, user experience and scalability remain a significant challenge for many Blockchain networks, and interoperability between different Blockchain protocols is still in the early stages of development. In this report, we will also examine some of these challenges and explore potential solutions.

\$1.7bn
Total Web3 Funding Q1 2023

15m
Active Addresses

+1bn
Successful Blockchain Transactions



DLT SCIENCE FOUNDATION

PROMOTING TRUST, SUSTAINABILITY, AND FINANCIAL STABILITY IN THE CRYPTO AND BLOCKCHAIN INDUSTRY

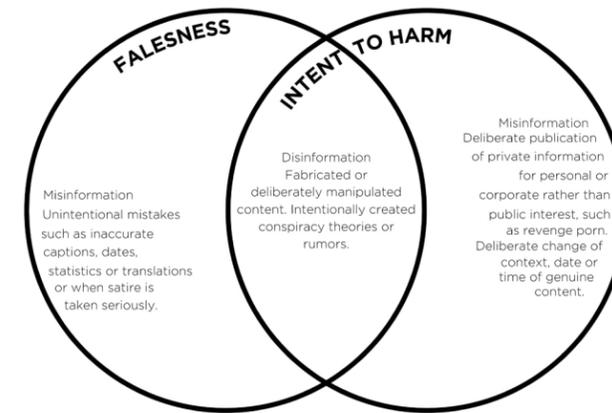
The DLT Science Foundation aims to address key challenges in the rapidly growing crypto and blockchain industry, including **information pollution, environmental pollution, and financial instability**. By developing and implementing a broad set of actions and tools, DSF strives to enhance trust, promote sustainability, and maintain financial stability within the crypto ecosystem.

Information Pollution

The Cryptoworld, with its complex financial and technological ecosystem, has been recently hit by scandals, followed by a general lower level of trust. Financial actors see, often, cryptoassets as speculative tools, and market misbehaviour is often seen, in the form of price/volume manipulation especially for small and less traded currencies. Pump and dump schemas, a pervasive phishing plague on forums and spam emails are pushing institutional investors out of the cryptoasset investment domain.

In a broader sense the exposure of citizens to large scale disinformation, including misleading or outright false information, is a major challenge for many online communities. DSF developed and implemented a clear, comprehensive and broad set of actions to tackle the spread and impact of online disinformation in the cryptocurrency, blockchain and finance space in order to protect the original values of online democratic communities.

In particular we focused on a) understanding the information quality in online sources, sources of spam and how sentiment and trust can be measured in

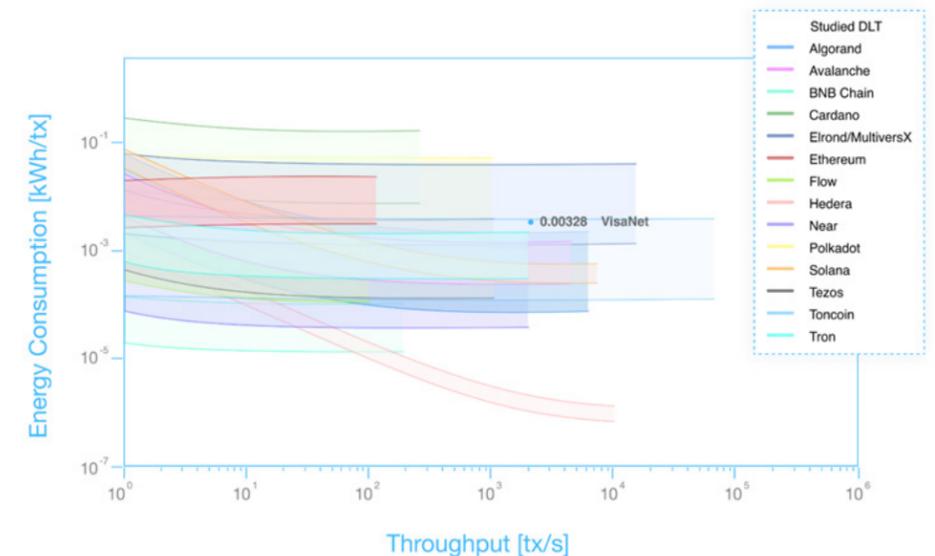


platform and online communities b) fight false information promoting quality content (measuring the level of spam in online communities) c) restore trust with the creation of early warning systems that can help stopping or reducing market manipulation.

Environmental Pollution

Blockchain technology has garnered significant attention in recent years for its potential to revolutionise industries and provide secure, decentralised transactions. However, there are growing concerns about the environmental impact of this technology, particularly when it comes to the energy consumption of blockchain networks that rely on the Proof of Work (PoW) consensus mechanism. PoW requires vast amounts of computational power to validate and secure transactions, leading to substantial energy consumption and, when supplied with high-carbon energy supply, a sizeable carbon footprint. Other consensus mechanisms, such as Proof of Stake (PoS), tend to be more energy-efficient and environmentally friendly. However, the overall energy consumption of blockchain networks can still vary significantly, and the precise impact of these alternative mechanisms remains uncertain.

Tokens and Layer 2 solutions, which are intended to address scalability issues and enhance the functionality of blockchain networks, also come with their own



Source: DLT Science Foundation based on Ibañez and Rúa (2023).

Financial Stability

In recent years there have been several major events that undermined the stability of the crypto market, with the collapses of the UST stablecoin, the Celsius network and the FTX exchange being the most prominent examples during 2022. The UST case has showcased the limitations of using algorithms to absorb bank-run scenarios, while the Celsius and FTX ones showed that vertical integration can lead to conflicts of interest and fraudulent behaviour.

Several stablecoins have been introduced over the last years and have taken a central role in providing low volatility investments to crypto market participants, which they can use as proxies for cash. Tether, the largest stablecoin

by volume and capitalisation, has been at the centre of speculations regarding its backing and involvement in market manipulations, but lack of transparency is not the only problem affecting the industry. Stablecoin issuers, being maturity and interest rate traders at the core of their business, are severely exposed to interest rate risk on the asset side of their balance sheet, which means they can be subject to bank run scenarios. The recent collapse of Silicon Valley Bank, despite not having direct ties to the crypto market, has propagated into crypto through the USDC stablecoin when Circle declared to be one of SVB's unsecured depositors. This transparent behaviour caused USDC to lose its peg for three days and trade for as low as 0.87\$, only recovering following the announcement that US government insurance would cover all SVB depositors at parity rather than only up to 250k\$ per customer. The contagion can go both ways, too: if a large fiat-backed stablecoin had to liquidate its money market assets to match mass redemptions, the downward price pressure may cause traditional financial institutions that operate on fractional reserves to become illiquid or, worse, insolvent, generating rippling effects in global money and credit markets.

DSF Solutions to Fight Information Pollution

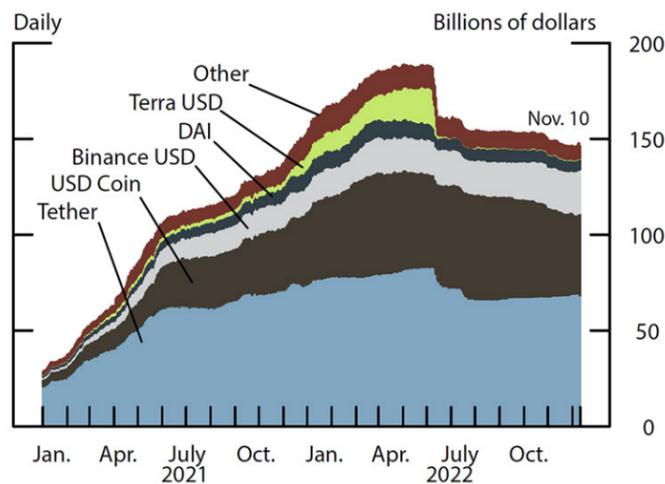
DSF is trying to contribute to a robust and viable crypto ecosystem by addressing the twin problems of disinformation and market manipulation. We have created a set of indicators on the signal content of popular crypto discussion platforms (Telegram, Reddit, Twitter, Yahoo Finance, etc) as well as an indicator on market manipulation. The indicators have been constructed by crawling the popular social media platforms with large crypto communities. We have cleaned and pre-processed vast amounts of unstructured data and then used machine learning algorithms to extract information quality signals. We have drilled the signals into the following component indices:

1) *Trust Index*: This is an aggregate of various "trust" variables e.g. user interaction, presence of bots, bad language, user affiliation to other low-quality groups. Using time series methods, we've created a historical dataset (around [4] years) on the quality of discussion for a large number of cryptocurrencies across the popular platforms. The dataset is updated daily.

2) *Mood index*: This tracks the sentiment for a large number of cryptocurrencies across various platforms. We have used deep learning methods to understand the context around a chat to combat disinformation. As with the Trust index, this will be available as a 4-year historical database, updated daily.

3) *Scam Index*: This is a specialised version of the Trust Index - the algorithm snoops for active disinformation. Available as a historical time series, one would expect the index values to flatline around zero most of the time except during periods of malicious activity.

4) *Toxicity Index*: This is a specialised version of the Mood Index - the algorithm snoops the tone of the messages (bad language) in addition to context and flags periods in which discussions turn malignant. As in the case of the Scam Index, the index values are in the nature of outliers,



Source: DeFi Llama in Federal Reserve.

flatlining around zero most of the time, except in periods of malignant activity.

5) *Word cloud*: This is a summary representation of the key themes being discussed in the various cryptocurrencies across various platforms. Messages are clustered into topics and the more popular topics displayed as a keyword cloud.

DSF Solutions to Fight Environmental Pollution

Energy Index

In response to the growing concerns about the environmental impact of blockchain technology, our team has embarked on cutting-edge research aimed at addressing the gap in the existing literature. Recognising the need for accurate and comprehensive information, our researchers have pioneered a groundbreaking approach to modelling the evolution of energy consumption per transaction in relation to throughput for PoS chains within the top 50 cryptocurrencies listed on CoinMarketCap. In addition to our research, we have also developed an extensive database on energy consumption that updates in real time.

Our ambitions don't stop there. We are working diligently to expand our research and database coverage to include all major blockchain networks, regardless of their consensus mechanisms, as well as tokens and Layer 2 solutions. To achieve this, we are leveraging both in-house expertise and external state-of-the-art literature to address key methodological challenges related to carbon accounting and attribution. Our long-term vision is to establish the world's largest, most consulted, and least controversial carbon index, which will be widely referenced in media and academia alike. Furthermore, we aspire to be the first dashboard to provide a comprehensive and fair report on Bitcoin's emissions, including Scope 4 emissions (i.e., avoided emissions), to accurately account for the decarbonisation effect of low-carbon Bitcoin mining.

To ensure the widespread adoption and impact of our

work, we are actively pursuing strategic partnerships and engaging with regulators and leading institutions in the field. By fostering key collaborations and maintaining an open dialogue with regulatory authorities, we aim to position our carbon index as the go-to resource for policymakers, industry stakeholders, and the general public. Our ultimate goal is to promote a more sustainable future for the blockchain industry, by providing accurate and actionable insights into the environmental impact of these revolutionary technologies.

DSF Solutions to Fight Financial Instability

Stable Coins Indices

As stablecoins have become one of the major potential threats to financial stability in the crypto market, we are currently developing a suite of indices that will offer unbiased and valuable insights into the state of stablecoins. The indices will take into account the solvency and liquidity of issuers, the market-wide acceptance of specific stablecoins and on-chain measurements about supply concentration and velocity.

We are developing a dashboard with live data streams monitoring the stablecoin market, offering a comprehensive and multidimensional view of available stablecoin products. Our goal is to improve the transparency and availability of advanced analytics tools, which we believe will be beneficial to the crypto market by building trust and requiring accountability to issuers. Furthermore, periodic reports will explore stress-testing scenarios based on audits, market conditions and regulation.

Our indices will also integrate our information pollution products to monitor market sentiment around stablecoins. Since these assets are potentially subject to bank runs, market sentiment is fundamental to properly assess insolvency risk and the likelihood of financial distress.



Biconomy

Biconomy

— Token Ticker: **BICO**

Biconomy is a developer platform that empowers Blockchain developers to enable a simplified transaction and onboarding experience for their Web3 project. The Plug and Play solution allows Web3 interactions to be smooth and seamless between dApps and end-users by removing Blockchain complexities. Biconomy is doing this by providing a multi-chain non-custodial, and gas efficient relay infrastructure network that enables meta transactions at scale.



12
EMPLOYEES UAE



Dubai, (Inception)
LOCATION



Blockdaemon

Blockdaemon

— Token Ticker: **N/A**

Blockdaemon offers node operations and infrastructure tooling for Blockchain projects, across their life-cycle: early on it is testing, then staking/reporting, clusters for exchanges/custodians and finally APIs for developers. Blockdaemon's node management platform helps auto-scale Blockchain networks securely with enhanced monitoring, back-up systems, HA clusters, APIs and cloud-managed node monitoring of on-premises solutions.



2
EMPLOYEES UAE



Dubai, (Inception)
LOCATION



Boba Network

Boba Network

— Token Ticker: **BOBA**

Boba offers fast exits backed by community-driven liquidity pools, shrinking the "Optimistic Rollup" exit period from seven days to only a few minutes, while giving LPs incentivised yield farming opportunities. Boba's extensible smart contracts will enable developers across the Ethereum Ecosystem to build dApps that invoke code executed on web-scale infrastructure such as AWS Lambda, making it possible to use algorithms that are either too expensive or impossible to execute on-chain.



2
EMPLOYEES UAE



Dubai, (Inception)
LOCATION



CARV

CARV

— Token Ticker: **ARC**

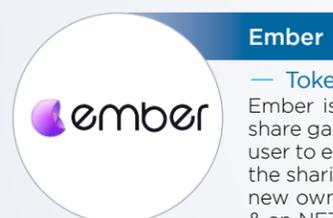
CARV is building a credential and data infrastructure focused on gaming, enabling gamers with data sovereignty and games with intelligence. With consumer facing gaming hub and studio facing CRM products, CARV enable gamers with seamless credential-based gaming experiences, and empowering games with data-driven growth & intelligence, starting with Web3.



1
EMPLOYEES UAE



Dubai, (Inception)
LOCATION



Ember

Ember

— Token Ticker: **EMB**

Ember is the first fully decentralised NFT rent & earn Protocol, allowing everyone to share game-items, land-assets, collectibles & more. Ember enables every Game, Guild & user to earn from their NFTs and for users to share assets without friction, implementing the sharing economy to the world of NFTs, gaming, finance & entertainment, creating a new own-to-earn direction for Web3. Ember is complete with an intuitive marketplace & an NFT Wallet, all powered by the Ember renting protocol.



1
EMPLOYEES UAE



Dubai, (Inception)
LOCATION



ITHEUM

Itheum

— Token Ticker: **ITHEUM**

Itheum is a decentralised cross-chain data brokerage; enabling the creation and exchange of high value personal datasets. Trade your data via a peer-to-peer sale or as limited edition "Data NFTs".



2
EMPLOYEES UAE



Dubai, DMCC
LOCATION



KAIF DAO

KAIF DAO

— Token Ticker: **KAF**

KAIF DAO Platform is a community-driven platform that connects companies and businesses directly with their community (customers, employees, and suppliers). Companies ask the community to give feedback or perform tasks to improve their services and products.



8
EMPLOYEES UAE



Dubai, DSO
LOCATION



KIROBO

Kirobo

— Token Ticker: **KIRO**

Kirobo is a startup with a single mission: to create a logic layer that sits on top of each individual Blockchain and protects users from human error. Their final goal is to make Blockchain as simple and secure as online banking. Kirobo is one of the world's leading smart transaction development platforms.



1
EMPLOYEES UAE



Dubai, (Inception)
LOCATION



MARATHON DIGITAL HOLDINGS

Marathon Digital

— Token Ticker: **N/A**

Marathon Digital Holdings (NASDAQ: MARA) is one of the largest, most agile, and most sustainably operated Bitcoin miners in North America. The company converts energy into economic value by processing Bitcoin transactions, creating newly minted Bitcoin, and keeping Bitcoin's distributed ledger up-to-date and secure.



1
EMPLOYEES UAE



Abu Dhabi, ADGM
LOCATION



PHOENIX

Phoenix Technology

— Token Ticker: **N/A**

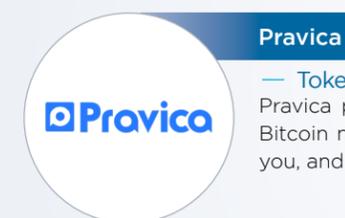
Phoenix Technology aims to provide both organisations as well as investors a turnkey solution to be prepared for this new era as well as opportunities to profit from Cryptocurrencies. Phoenix can assist in the design and construction of mining operations all the way to advising on trading strategies and developing optimisation models and algorithms.



6
EMPLOYEES UAE



Dubai, DED
LOCATION



Pravica

Pravica

— Token Ticker: **N/A**

Pravica products are based on the decentralised identities that are secured on the Bitcoin network, this is how your identity is super secured, owned and controlled by you, and only you.



1
EMPLOYEES UAE



Dubai, (Inception)
LOCATION



safle

Safle

— Token Ticker: **SAFLE**

Safle is a decentralised Blockchain identity wallet that enables secure private key management and seamless experience for dApps, DeFi and NFTs. The SafleID gives you access to a non-custodial wallet to store, transfer & trade all your digital assets across different Blockchains & Protocols.



1
EMPLOYEES UAE



Abu Dhabi, ADGM
LOCATION



HOW PRAVICA IS REVOLUTIONISING MESSAGING ON THE BLOCKCHAIN

In today's digital age, messaging and communication are fundamental pillars of our daily lives. With the rise of Blockchain technology, Web3 messaging has become a critical component of Decentralised Ecosystems. Traditional messaging applications are centralised, vulnerable to cyber threats, and do not provide end-to-end encryption by user-owned keys. This is where Pravica comes in, with its revolutionary Web3 messaging and communication infrastructure.

A major issue with traditional messaging applications is the lack of end-to-end encryption. This means that messages can be intercepted and read by third-parties, compromising the privacy and security of users. Even if some providers claim that they support their users with end-to-end encryption, no one knows where the keys live and who is managing the keys and has the right to decrypt the message content rather than the users. It's a huge trusting issue.

It's obviously clear now the issues with the messaging industry in the Web2 era, I can summarise it into five main issues, data privacy, data ownership, data security, no value exchange and no unified infrastructure.

Crypto communities, privacy enthusiasts and Web3 companies are in bad need of a secure, Decentralised, and interoperable messaging solution that leverages Blockchain technology. It should be built on a unified data layer that stores encrypted data in a distributed and tamper-proof manner. Also, taking into consideration the use of Decentralised identifiers (DIDs) to enable identity verification and authentication of users, ensuring that messages are only accessible to the intended recipient.

Despite all troubles we see in the Web2 messaging industry, the alternative solutions from Web3 couldn't go far in terms of mass adoption, I was curious to find a clear explanation for this phenomenon.

As an entrepreneur working in the Web3 and Crypto space, especially in Web3 messaging, I can find five issues preventing Web3 messaging from being mass adopted.

One of the key problems is Blockchain interoperability. Many Blockchain networks are siloed and cannot communicate with each other, making it difficult to send messages and conduct transactions across multiple networks

In addition to the Blockchain interoperability issue, there

are other issues like the full decentralisation, scalability, underutilising of DIDs on a larger scale and no Unified Data layer.

WEB 2.0 & WEB 3.0 Problem Summary.



Pravica's messaging infrastructure provides a secure and Decentralised storage solution for messages and other data. The unified data layer developed by Pravica stores encrypted data in a distributed and tamper-proof manner. This means that even if one node in the network is compromised, the data remains secure and cannot be altered.

Moreover, Pravica's messaging infrastructure enables seamless integration with other Web3 applications. This means that users can easily send messages and conduct transactions with other Decentralised applications without having to switch between different applications.

Pravica's messaging infrastructure guarantees the following:

Chain-Agnostic.

You can communicate with anyone, no need to be both in the same Ecosystem.

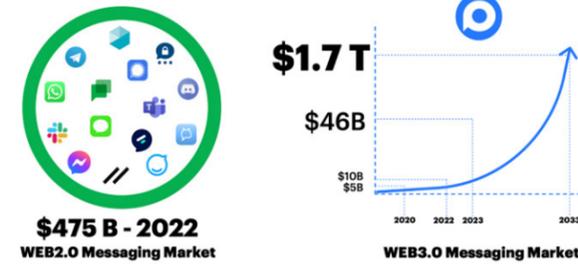
Based on DIDs

- NO username & password - NO OTP
- Your Decentralised identity is the ONLY identifier you need.

Full Data And Crypto-Assets Ownership

All messages are truly end-to-end encrypted by encryption

Pravica is in the right market, at the right time.



keys that are controlled by you under your Non-Custodial crypto wallet

Decentralised

All data and files are stored in Decentralised networks.

Scalable

Ready to adopt for your personal use or for enterprises.

The Web3 messaging space is rapidly growing and is expected to reach up to \$1.7tn by 2033, according to a recent report by futuremarketinsights.com. This growth is being driven by the increasing adoption of Blockchain technology and the need for secure, Decentralised messaging solutions. As more businesses and individuals move towards a Decentralised future, the demand for messaging infrastructure that is both secure and interoperable will only continue to grow. Pravica is well-positioned to take advantage of this trend, with its cutting-edge messaging infrastructure that is tailored for the Web3 Ecosystem.

The Web3 messaging space is a rapidly growing market that presents a significant opportunity for businesses that

are able to provide innovative solutions that meet the needs of the growing number of Web3 users. Pravica's messaging infrastructure is well-positioned to take advantage of this trend, with its cutting-edge technology and focus on security and interoperability. As the demand for secure and Decentralised messaging solutions continues to grow, Pravica is poised to become a leading player in this exciting and dynamic market.

In conclusion, Pravica is revolutionizing the way you communicate with the world's most scalable and open-source messaging infrastructure. Our cutting-edge technology is built on the foundational principles of WEB3, putting data ownership back in the hands of users. Plus, our chain-agnostic approach ensures seamless integration with any Blockchain, making it easier than ever to stay connected in a Decentralised world



Mohamed Abdou
Founder & CEO, Pravica



The Krypto Miners Club

— Token Ticker: N/A —

The Krypto Miners Club is a project focused on creating long-term passive income for their NFT Holders. With 8,888 NFTs generating sustainable & multiple streams of income for years, the NFTs will be an inheritance to pass on to the next generation. The NFTs will be powered by BTC mining using green energy ensuring the electricity cost is lowest & creating a sustainable revenue stream for their community.

5
EMPLOYEES UAE

Dubai, DSO
LOCATION



Zero Two

— Token Ticker: N/A —

Zero Two, a digital assets infrastructure company, has launched its operations in Abu Dhabi to tap into the Emirate's growing interest in Web3 technology and its Ecosystem. The company offers a comprehensive range of end-to-end digital assets infrastructure solutions, including power infrastructure development, sourcing and testing of latest-generation technologies, data centre building and operation, and digital assets management services.

1
EMPLOYEES UAE

Abu Dhabi, ADGM
LOCATION

WILL THE MIDDLE EAST BECOME A HUB FOR BITCOIN MINING?

The rapid expansion of the Cryptocurrency market has led to a surge in Bitcoin mining activities worldwide. As the industry searches for ideal locations, the Middle East has begun to emerge as an attractive hub for Bitcoin mining operations. This article explores the current state of Bitcoin mining in the region, the factors contributing to its attractiveness, and the outlook for the future of the industry in the Middle East. State of the Bitcoin Mining Industry in the Middle East: Major projects announced

A. UAE

As of April 2023, a total of 900 MW in Bitcoin mining facilities has been announced:

- 650 MW facility (announced in November 2021): Phoenix Technology, a UAE-based technology company, is constructing the world's largest Bitcoin mining farm with a USD 2 bn investment. The company is reportedly utilising the latest technology from Bitmain and claims the mining farm will be 100% green. Additionally, Phoenix Technology has expressed ambitions of expanding the Bitcoin mining Ecosystem to other areas of the MENA region.
- 250 MW facility (announced in January 2023): Marathon Digital Holdings, a globally leading Bitcoin mining company, is partnering with Abu Dhabi's Zero Two to establish a USD 400 mn Bitcoin mining facility in Abu Dhabi. The joint venture (Abu Dhabi Global Market entity) will initially set up and operate two mining sites with a combined capacity of 250 MW. Zero Two will hold an 80% stake in the project. This move marks a strategic shift for Marathon, which has typically relied on hosting companies for Bitcoin mining instead of developing its own facilities. Furthermore, Abu Dhabi's growing interest in the Cryptocurrency sector is evidenced by the recent regulatory approvals granted to Swiss-based digital bank Sygnum and Crypto exchange Binance to operate in the capital.

B. Oman

The country's sovereign wealth fund, Oman Investment Authority, has acquired a stake in Crusoe Energy Systems, a US company that uses stranded natural gas to power Crypto mining to help reduce gas flaring by fossil fuel producers.

Crusoe will open an office in Oman to help deploy power generators and mining equipment to capture gas at well sites. Additionally, the Omani Government has created a regulatory framework to promote the development of digital currencies, allowing businesses to use Cryptocurrencies as payment methods and creating a licensing system for digital currency exchanges. In addition, according to the market, there are currently up to 200 MW of capacity under discussion.

Why Do We Expect the Middle East Bitcoin Mining Market to Grow?

Bitcoin miners are finding very favorable conditions for their industry in some parts of the Middle East. We believe 4 key factors will drive this further:

A. Excess Energy

The Middle East benefits from abundant and affordable energy resources, leading to some of the lowest electricity prices in the world. This excess energy is critical for the profitability of Bitcoin mining, as the industry relies heavily on low-cost electricity to maintain operations. The Middle East has three main sources of excess energy:

1. Seasonal load patterns (winter vs. summer)
2. Peak energy patterns which trigger curtailment
3. Flare gas and methane utilisation from the oil and gas industry

By leveraging this excess energy, mining operations can negotiate a favorable tariff in alignment with the goals of the utility companies.

B. Bitcoin Miners Can Enhance Attractiveness of Renewable Assets

The Middle East's energy transition towards a growing share or renewable power is in full speed. The renewable energy assets often produce more power at peak than the grid is willing to offtake to match its natural demand - especially in winter. This surplus energy is usually curtailed, i.e., wasted. Instead of wasting this energy, it can be monetised to power Bitcoin mining farms, which increases the overall utilisation and therefore return profile of the renewable power assets. In addition, we see more and more circular economy applications that can utilise the heat from these

data centers for green houses and even pilots on producing drinking water.

C. Perfect Demand Side Management Profile

As the energy transition integrates more intermittent energy producers and consumers (central and decentral renewables, electric vehicles, etc.), the grid of the future will more and more rely on demand side management, i.e., incentivising flexible on and off ramp of energy usage of industrial and residential consumers. A Bitcoin mining farm can ramp its entire power demand up and down in a matter of minutes. In addition, Bitcoin mining is a sprint, not a marathon given that a new block is mined every 10 minutes. On the one side, it is therefore perfectly fine for miners to ramp down (in line with the business case threshold) and on the other side, grid operators have a flexible demand side management partner that can increase and decrease load and support grid stabilisation.

D. Strategic Investment Asset and Cornerstone of the Digital Asset Economy

More and more investors see Bitcoin as a strategic asset class, allowing for seamless, audit-proof transactions across borders. In addition, the Bitcoin mining industry often presents a key cornerstone for building up a digital asset industry in countries. By embracing the Cryptocurrency mining industry, countries can diversify their economies, create new job opportunities, and develop expertise in cutting-edge technologies.

Let's Talk About the Biggest Challenge: The Climate

Despite the Middle East's favorable conditions for Bitcoin mining, the region's harsh climate and dust accumulation pose challenges for mining operations. However, technological advancements such as dust-proofing solutions

and immersion cooling systems have mitigated these concerns, enabling mining equipment to function optimally even in challenging environments. Dust-proofing solutions, such as sealed server racks, positive pressure systems, and air filtration systems, protect mining hardware from dust, reduce wear-and-tear, and maintain the efficiency of cooling systems. Immersion cooling technology submerges mining hardware in non-conductive liquids, dissipating heat more efficiently than traditional air-cooling systems, and increasing hardware longevity. By adopting these innovative technologies, Bitcoin mining operations can overcome the challenges posed by the Middle East's climate and unlock the region's full potential as a hub for the global mining industry.

Outlook: A Significant Portion of the Global Hashrate Might be in the Middle East

If the right incentives are provided, a significant portion of the global Bitcoin mining hashrate could come from the Middle East. Local champions can be born, that master not only integration with local utilities but also have proprietary knowledge of operating in the specific climate conditions and creating circular economy use cases.

Roland Berger is very well experienced with the entire life cycle of Bitcoin mining industry, from strategy, business case to operational improvement and investments. We have developed a proprietary due diligence framework to assist investors in navigating the evolving Bitcoin mining landscape, make operational decisions and mitigate potential risks. It is based on 5 dimensions and leverages our in-depth know-how of the industry.



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