Introducing

MMARK .Litepaper

Brand of MANDEMARK Corp. – New Mexico – United States

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"Ensuring affordable access to *energy* and other essential goods is crucial for promoting sustainable economic growth and development. Tokenization of such important necessities can play a key role in making them more accessible and affordable for all members of society."

- Dirk Holstein
CEO and founder

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Problem Statement

(consumption, volatility, store of value, affordable renewable energy)

Blockchain technology has become a game-changer in the financial industry, providing opportunities for decentralized and secure transactions. As a result, cryptocurrencies have emerged as a new form of currency, offering several advantages over traditional fiat currencies. The high energy **consumption** required for mining and processing transactions in some blockchain networks has become a significant problem for widespread public adoption.

The problem with blockchain currencies is their high **volatility**, which can be a significant deterrent for individuals and institutions to adopt them as a legitimate means of payment or **store of value**. The lack of stability and predictability in their value undermines the trust and confidence in the currency and limits its practical use in daily transactions. This volatility is mainly due to the speculative nature of the cryptocurrency market and the absence of reliable valuation models. As a result, users are exposed to significant price fluctuations that can lead to financial losses and limit the potential benefits of using blockchain technology.

The lack of **affordable** energy, particularly **renewable energy**, is a significant issue faced by many individuals around the world. This problem can be attributed to several factors, including inadequate infrastructure, limited access to financial resources, and the high cost of renewable energy technologies. The cost of energy can be prohibitive for low-income households, limiting their ability to access essential services and opportunities. Addressing this problem requires innovative solutions that promote the affordability and accessibility of renewable energy for all individuals, regardless of their socioeconomic status or geographic location.

MMark Project

The MMark project is focused on creating a new computational paradigm for tokenizing energy with all the ecosystem necessary for software development. By leveraging blockchain technology, MMark aims to create a decentralized network of energy storage devices that can be accessed and controlled in a secure and transparent manner. The use of tokens tied to specific amounts of energy production provides an intrinsic value for each MMark token, allowing for decentralized exchange and trade of renewable energy. The ability to access renewable energy anytime and anywhere using tokens tied to specific amounts of energy production. By creating a decentralized network of energy storage devices, and production, MMark hopes to make it possible for users to access renewable energy without being tied to a specific location or relying on traditional energy providers. This could have significant benefits for individuals and communities in remote or under-served areas, as well as for businesses and organizations looking to reduce their carbon footprint and energy costs. The suite of tools and APIs provided by MMark is intended to make it easy for developers to build applications that can interact with the MMark blockchain, opening a new frontier for software development in the energy sector. Overall, the MMark project has the potential to transform the way we think about energy storage, generation, and usage as well as how we develop software in this space.

MMark Project

1. Scalability: The MMark project is implementing innovative solutions such as sharding, sidechains, and layer 2 scaling solutions to increase the network's capacity to handle a larger volume of transactions.

2. Adoption: To encourage adoption of the MMark token, the project is partnering with Mandemark Corp. and offering incentives such as lower fees, access to new markets, or marketing support to encourage participation. It leverages community outreach and education to help potential users understand the benefits of renewable energy and the advantages of using the MMark token.

3. Regulatory hurdles: MMark, especially Mandemark Corp. is working closely with local governments and regulatory bodies to ensure compliance with laws and regulations. It will also engage in policy advocacy to help shape the regulatory environment to be more favorable to decentralized energy solutions.

4. Volatility: The MMark project is implementing mechanisms such as smart contracts and options to enable hedging or stabilize the value of MMark tokens. It also explores new models for pricing and trading energy that are less susceptible to market fluctuations.

5. Security: To ensure the security of the MMark blockchain and its associated infrastructure, the project implement state-of-the-art security protocols such as multi-factor authentication, encryption, and regular security audits. It also leverages community-driven bug bounty programs to incentivize the discovery and resolution of security vulnerabilities.

MMark Project

The focus on creating a token backed by renewable energy and making it accessible to all classes of society is a key benefit of the MMark project. By providing a sustainable source of funding for the Web3 Foundation's mission, the project has the potential to support the development of innovative solutions in the renewable energy space.

The accessibility of the MMark token is also a major advantage, as it allows anyone to participate in the renewable energy ecosystem, regardless of their socioeconomic status. This has the potential to create a more equitable and inclusive society, where renewable energy is not just reserved for those who can afford it.

The positive impact of renewable energy on the environment is another major benefit of the MMark project. By reducing reliance on traditional energy sources that produce greenhouse gas emissions, the project has the potential to help combat climate change and create a more sustainable future for all.

Timeline projection:

MANDEMARK Corp, New Mexico, United States, since	2021
- start new power plant construction	2024
- completion and in operation	2025
AES Value Creation Ltd, British Columbia, Canada, since	2022
- Home energy storage, HECTOR 25kWh / 50kWh	2023
- Commercial energy storage, ACHILLES 1 MWh	2024
- Industrial energy storage, APOLLON 1GWh	2025
Smart Office Solutions Ltd. British Columbia, Canada, since	2020
- Software development should be finished	2024

Adaption, Implementation, Consideration

One possible adaptation for the MMark project could be to explore the use of artificial intelligence (AI) to optimize energy production and consumption. By analyzing data from the decentralized network of energy storage devices and production, AI could help identify patterns and trends in energy usage, enabling more efficient distribution and management of renewable energy resources. This could potentially lead to cost savings for users and a more sustainable energy ecosystem overall.

Another potential implementation for the MMark project could be to integrate with other blockchain-based projects that are focused on sustainability and environmental initiatives. For example, the project could collaborate with carbon credit trading platforms to allow MMark tokens to be used to purchase carbon credits or offset carbon emissions. This would further promote the positive impact of renewable energy and help combat climate change on a broader scale.

Lastly, the MMark project could consider partnering with other organizations, such as NGOs or community groups, to provide education and training on renewable energy and blockchain technology. This would help to increase awareness and understanding of the potential benefits of these technologies and could potentially drive wider adoption of the MMark token and similar initiatives.

On the following pages we refer to the techniques we use to realize our project. There will be more details on our website as well as excerpts in our whitepaper.

Intrinsic Token

Energy and gold are both valuable commodities that play an important role in the global economy. While gold is a physical metal that is used primarily for jewelry, investment, and industrial applications, energy refers to various forms of power, renewable sources like solar and wind.

One similarity between energy and gold is their intrinsic value, which is derived from their scarcity, usefulness, and demand. Just like gold, energy is a limited resource that is essential for human society to function, making it a valuable commodity with long-term value.

Tokenization of energy refers to the process of converting energy production or usage into digital tokens that can be traded on a blockchain platform. These tokens represent ownership of a certain amount of energy and provide greater accessibility and liquidity without the need for physical ownership.

The approach to designing an intrinsic token that is not considered a security is to focus on its utility as a means of tracking and transferring energy within a decentralized system. This involve creating a token that is specifically designed for use within a particular energy system or network, and that represents a fixed amount of energy that can be transferred between participants.

In the United States, for example, some states offer net metering programs that allow individuals to sell excess energy generated from renewable sources back to the grid, with the excess energy credited towards their utility bills.

This is where decentralized energy systems, like energy open grids, become increasingly important.

Energy Open Grid

The concept of an energy open grid refers to a decentralized energy system that utilizes advanced technologies like blockchain and the Internet of Things (IoT) to create a more efficient, transparent, and sustainable energy network.

Traditionally, energy is produced by large, centralized power plants and distributed to end-users through a grid of transmission and distribution lines. This centralized model is facing challenges, such as increasing demand for renewable energy sources, the need for greater energy efficiency, and a democratic control of energy production and distribution.

An energy open grid addresses these challenges by utilizing distributed energy resources (DERs), such as solar panels, wind turbines, and energy storage systems, that are connected to a decentralized network by smart contracts and blockchain technology. This network allows for peer-to-peer trading of energy between producers and consumers, creating a more efficient and flexible energy system that can better integrate renewable energy sources.

One of the key benefits of an energy open grid is that it can improve the resiliency and reliability of the energy system. By utilizing DERs, the grid is less vulnerable to power outages or disruptions. Additionally, the use of blockchain technology can provide greater transparency and security to energy transactions, ensuring that energy is delivered and paid for as intended.

The concept of an energy open grid represents a shift towards a sustainable energy system and creates a more democratic and decentralized energy network that can better meet the needs of producers and consumers alike.

MMark Tokenomics

Mandemark (MMark) is a ERC-20 token built on the Ethereum network.

Tokenomics

Token Name	Mandemark
Symbol	MMark
Chain	Ethereum (ERC-20)
Date of Launch	April 16th, 2023
Contract creator	AES Value Creation Ltd. – Canada 0x51deCd6D1d7A9F400F3542B54fBE64d7151159D9
Owner of MMark Token	Mandemark Corp. – United States 0x9278153D9bdfb2D8CeEbbF410E2A1D4f99B8b20e
Issued Supply total	10,000,000,000,000,000
ICO offering, capped fixed price, set of amounts	1,000,000,000,000
Fixed Token price of	$ 0.10 US / 1,000 MMark
Fixed value of MMark	1 kWh of Energy / 1,000 MMark

1 kWh of Energy = 1,000 MMark = $ 0.10 US

MMark token can be used in exchange for energy in 2025 after completion of MANDEMARK's plant and when it is fully operational.

Web3 Foundation

To ensure long-term sustainability and eco-friendliness of the projects it supports, the Web3 Foundation has entered an ICO funding arrangement with MANDEMARK, a separate entity that produces 100% renewable energy. As part of this arrangement, the Foundation will receive a 10% ownership stake in the company. Additionally, the ICO will offer a total of 1,000,000,000,000 tokens, which can be purchased with no handling fees (TAX excluded) and will be delivered by MANDEMARK. This will enable investors to participate in a sustainable and eco-friendly project while supporting the Foundation's mission. Any dividends earned from the ownership stake in MANDEMARK can be used to support the ongoing development and deployment of innovative blockchain technologies aligned with the Foundation's mission.

The Web3 Foundation is a non-profit organization that supports the development and deployment of innovative blockchain technologies, cryptographic messaging protocols, peer-to-peer networking infrastructure, crypto-economic mechanisms, data publication systems, and Energy Open Grid systems. By partnering with MANDEMARK, the Foundation ensures that its projects are sustainable and eco-friendly and gains greater control over the renewable energy production process. This approach enables the Foundation to contribute to a more decentralized and sustainable blockchain ecosystem without the need for additional fundraising efforts.

Web3 Foundation will be founded in 2023

Consensus

Consensus: Advanced fair permuted proof-of-dice

Our Blockchain-system employ the Proof-of-Dice algorithm, which generates random numbers by rolling a set of dice. A more detailed explanation of this algorithm we use will be included in the whitepaper.

Different kinds of technologies in comparison as follows:

Proof-of-Work (PoW): In PoW, validators compete to solve a cryptographic puzzle, with the first validator to solve the puzzle being rewarded with the right to validate transactions. PoW is used in Bitcoin and many other blockchain systems. However, PoW can be energy-intensive and slow, and it may be vulnerable to attacks by groups that control a large amount of computing power.

Proof-of-Stake (PoS): In PoS, validators are chosen based on the amount of cryptocurrency they hold, rather than their computing power. Validators are chosen to validate transactions based on their stake in the system. PoS is used in Ethereum and other blockchain systems. PoS can be more energy efficient than PoW, but it may be vulnerable to attacks by groups that control a large amount of cryptocurrency.

Zero-Knowledge Proof (ZKP): ZKP is a cryptographic technique that allows a validator to prove that they know a certain piece of information without revealing that information. ZKP can be used to ensure the integrity of transactions without revealing sensitive data. ZKP is used in some blockchain systems, but it can be computationally intensive and may require significant computational resources.

Ternary

A ternary system, also known as base 3, is a numeric system that uses three digits: 0, 1, and 2. Each digit in a ternary number represents a power of 3, just as each digit in a decimal number represents a power of 10.

The advantages of a ternary system over a binary system include:

Smaller number representation: Ternary system requires fewer digits to represent the same number as in binary. For instance, the decimal number 20 can be represented with two digits in base3 (202) compared to three digits in base2 (10100).

Higher information density: With ternary system, it's possible to represent more information in each number of digits than in binary. This is because ternary digits can encode more information than binary digits.

Reduced power consumption: Ternary systems can reduce the power consumption of electronic devices since ternary logic can perform certain operations more efficiently than binary logic.

Improved error correction: Ternary system allows for more advanced error correction techniques than binary since the additional digit value (2) can be used as a flag for error correction.

Simplified arithmetic: Ternary arithmetic can be simpler and faster than binary arithmetic for certain operations since it involves fewer digits and can eliminate the need for carrying digits during addition and subtraction.

Hybrid blockchain network

Exchangeable blockchain as an intermediary in cross-chain transactions. By allowing for the transfer of tokens between different blockchain networks, it create a more interconnected and interoperable network.

There are several advantages:

Increased liquidity: By allowing for the transfer of tokens between different blockchains, it increase liquidity across the network. This makes it easier for users to exchange different tokens and assets, which lead to greater adoption and use of the network.

Improved scalability: By using an exchangeable blockchain as an intermediary, it reduces the burden on individual blockchains and improve overall scalability. This enables the network to handle a greater volume of transactions and support a wider range of use cases.

Enhanced functionality: By enabling cross-chain transactions, it creates new applications and use cases that were not previously possible. This led to the development of innovative new services and products that drive further adoption and growth of the network.

An exchangeable blockchain as an intermediary in cross-chain transactions potentially create a more robust, flexible, and scalable network that is better equipped to handle the demands of a wide range of use cases and applications.

CEO and founder

Dirk Holstein is a German entrepreneur and private investor who currently serves as President and Director of TEUTON Invest Corp, an investment and holding company, incorporated in February 2019, and based in Austin, Texas. In November 2021, he also started MANDEMARK Corp. in Albuquerque, New Mexico. Both companies focus on technology, energy, mobility, and security and operate as both accelerators and incubators.

Back in the days: In 1995, Holstein founded his first successful company, where he provided planning, building, expanding, and swapping of mobile radio systems and network elements for clients such as Deutsche Telekom, Vodafone, Telefonica, and E-Plus in Germany. In years past, he has also specialized in designing and building computer data centers and uninterruptible power supply systems for telecommunications companies.

Blockchain: Since 2018, Holstein has been increasingly focused on efficient blockchain technology and finding solutions to energy storage challenges, particularly in energy production using renewable sources.