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Gemstone Digital Ecosystem

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Abstract

"By combining the oldest investment instrument with one of the newest, we bring gemstones into the 21st century via blockchain, thus creating portfolio diversification with guaranteed, uninterrupted transparency and flexibility."

This whitepaper presents the revolutionary concept of the **Gemstone Digital Ecosystem**, which unites the ancient art of gemstone investment with state-of-the-art blockchain technology to ensure transparency, flexibility, and diversification of investment portfolios.

In the past 25 years, untreated rubies, sapphires, and emeralds have experienced significant value appreciation and preservation. Habsburg Fine Arts, together with The Natural Gem, has developed the world's first token ecosystem based on natural, untreated colored gemstones and jewelry. This opens previously unknown opportunities for investing in gemstones, capital preservation, and participation in stable value growth.

All gemstones are examined by independent external gemological laboratories (gemology = the study of gemstones).

The Gemstone Digital Ecosystem, a project by **Habsburg Fine Arts AG**, leverages the value of a carefully curated portfolio consisting of selected natural, untreated colored gemstones and jewels. Investors can acquire shares in the appreciation of this portfolio by purchasing **Habsburg Gemstone Tokens (GEM)**. The portfolio's value increase is represented by the constant token price of the gemstones and jewels and the simultaneously rising fiat price. Tokens can be exchanged at any time for the gemstones and jewels in the portfolio.

Based on the design of Habsburg Fine Arts, the Gemstone Digital Ecosystem is unique worldwide. It offers a token ecosystem secured by assets with steadily growing value and enables investors to delve deeply into the world of gemstone investments.

The liquidity and control of investors are enhanced by the flexibility of the Gemstone Digital Ecosystem. Thanks to its infrastructure, the ecosystem connects the world's oldest investment instrument with cutting-edge technology, bringing gemstones into the 21st century. The Gemstone Digital Ecosystem is based on a proven and tested business model and leverages the natural value appreciation of gemstones and jewelry, as well as the flexibility of Web3.

Introduction

This whitepaper presents the vision, technical foundations, and commercial framework of the Gemstone Digital Ecosystem, an innovative concept based on untreated colored gemstones and colored gemstone jewelry.

In the following sections, we focus on the unique collaboration between Dr. Thomas Schröck of **The Natural Gem** and Habsburg Fine Arts. We unveil the driving vision behind the tokenization project of the Gemstone Digital Ecosystem, which establishes our clear mission: creating **security and transparency, stability and value appreciation**, as well as **trading and liquidity**, with investors at the center of our efforts.

In the second part of this whitepaper, the focus is on the **Habsburg Royal Portfolio** and the design philosophy of Habsburg Fine Arts, inspired by Herta and Sandor Habsburg-Lothringen.

Through a comprehensive introduction to gemstone investment, we provide an in-depth insight into the principles that support our ecosystem. We also discuss the sustainability, ethics, and value certification of gemstones, which form the basis for the value appreciation of our portfolio.

Furthermore, important aspects of gemstone investment are highlighted, opportunities in the existing market are identified, current market trends are analyzed, and potential future developments are discussed.

At the time of launch, the Gemstone Digital Ecosystem consists of a token (**GEM**) based on a carefully selected portfolio that consists 100% of gemstones and jewels curated by Habsburg Fine Arts.

Investors can exchange their Gem Tokens at any time for physical gemstones and/or jewels from the Habsburg Royal Portfolio, with GEM acting as a multifunctional voucher. Additional exchange options for GEM will be offered in the future through collaborations with partners.

Based on the Ethereum chain (ERC20), GEM opens up previously unattainable possibilities and access to benefits that were difficult to realize in traditional gemstone investment businesses and through other investment strategies.

Finally, we provide detailed insights into the project's infrastructure. The platform and the token are managed by the Liechtenstein company **CoreLedger**. The token issuer is Habsburg Fine Arts AG.

The Natural Gem

The Natural Gem is the only company in the German-speaking region that deals exclusively with natural colored gemstones. With over 30 years of international experience in the gemstone trade, Dr. Thomas Schröck, together with The Natural Gem,

strives to revitalize the beauty, significance, and utility of natural colored gemstones internationally and reconnect to the glorious heights of the past.

Existing services and benefits include:

- Over three decades of experience in international gemstone trading
- First-class, personal, and individual customer advice
- A selection of approximately 5,000 gemstones in all price ranges in stock
- Risk assumption by The Natural Gem
- Mediation of suitable insurance services

By venturing into blockchain, The Natural Gem expands its core business and offers clients the opportunity to participate in the value appreciation, economic versatility, and beauty of colored gemstones through the suitable instruments of the Gemstone Digital Ecosystem.

Habsburg Fine Arts

Habsburg Fine Arts combines the oldest investment instrument on Earth through the roots of a historically significant house with modernity and innovation. Herta Margarete and Sandor Habsburg-Lothringen skillfully embody the connection of this fine line. An important step on this path is the **Habsburg Royal Portfolio**. This unites historically inspired yet modern designs and forms the heart of the Gemstone Digital Ecosystem.

At the core are gemstones that are naturally unique and non-interchangeable ("non-fungible"). However, through the use of blockchain technology, they are made "fungible," i.e., easily exchangeable and tradable. In this way, these unique gemstones become accessible through a digital vehicle and can be easily traded and exchanged.

Vision

By combining the world's oldest investment asset with one of the newest technologies, we bring gemstones into the 21st century via blockchain, thus creating portfolio diversification with guaranteed, uninterrupted transparency and flexibility.

The common fundamental idea of Habsburg Fine Arts and The Natural Gem is to bring gemstones back to their worldwide prominence—as the oldest, most stable, and simultaneously most beautiful investment asset on Earth, with constant value appreciation. Gemstones are therefore an essential component of any diversified investment portfolio.

Through the Gemstone Digital Ecosystem, we take a step closer to this dream and enable the trading of tokens based on colored gemstone jewels, without having to worry

about transport, storage, security aspects, trading possibilities, certifications, or similar concerns.

Mission

Our mission is to build the Gemstone Digital Ecosystem on the following three pillars:

1. **Security & Transparency**
2. **Stability & Value Appreciation**
3. **Trading & Liquidity**

Security & Transparency

Many existing tokens and other crypto or blockchain-based projects are heavily dependent on their community and support. Even though the Gemstone Digital Ecosystem can draw on a strong community of gemstone traders, enthusiasts, investors, and interested parties, its value is not based on the token's popularity. Instead, it relies on the oldest investment instrument in history: the natural colored gemstone.

This is further underpinned by outstanding and historically significant designs by Herta Margarete Habsburg-Lothringen.

The unique jewels of the Habsburg Fine Arts Royal Portfolio are based on natural colored gemstones with a steady increase in value over the past 25 years. Through the added security of value stability and low fluctuation of gemstones, the GEM Token offers a diversification and hedging opportunity for any portfolio.

Gemstone investment has never been as secure and transparent as it is now.

Trading & Liquidity

In addition to a traditional "buy-and-hold" strategy, the Gemstone Digital Ecosystem opens further opportunities for investing in colored gemstones and jewels. Trading the token, as well as the direct acquisition of physical jewels and gemstones from the portfolio, increase the flexibility of the investment.

A key advantage of GEM is that the exact value and quantity are always transparently viewable, making, for example, an €800,000 gemstone liquid and flexibly tradable. Liquidity can often be an issue with alternative assets—but with the GEM Token, it is a strength.

Through independent payment providers, investors can also enter the Gemstone Digital Ecosystem with fiat currencies (€ , \$, etc.) as well as with a variety of common cryptocurrencies (e.g., Bitcoin, Ether, etc.), thus participating in value appreciation and various other services offered in the ecosystem.

Through liquidity and easy-to-use trading options, any portfolio can be diversified, thereby gaining flexibility.

Stability & Value Appreciation

Untreated rubies have increased in value by an average of 8% per year over the last 25 years, blue sapphires and emeralds by 4% to 6% per year.

Furthermore, natural colored gemstones exhibit low volatility. The financial crisis of 2008 and the COVID-19 crisis have shown that even in economically exceptional times, the demand for this alternative real investment increases.

All jewels and jewelry in the Habsburg Royal Portfolio (basis for GEM value appreciation) have been filled with natural colored gemstones from The Natural Gem. The designs, inspired by the tradition of the House of Habsburg and curated by The Natural Gem x Habsburg Fine Arts, provide the foundation for the Gemstone Ecosystem. These are unique, historically significant pieces of jewelry that are excellent for long-term investment, as well as gemstones with investment character that gain value across generations.

The steady value appreciation, low volatility, and additional diversification offer a strong foundation for the initial GEM portfolio.

Habsburg Royal Portfolio

Colored Gemstones as an Investment

Colored gemstones are the oldest investment product on Earth—older than gold. For more than 5,500 years, precious stones have been used as concentrated stores of value and have always been sought after due to their rarity and beauty. Nevertheless, this form of investment has fallen into oblivion over the last sixty years. No other investment instrument has a higher value concentration.

Rubies, blue sapphires, and emeralds are small, easy to transport, and represent an interesting diversification to other forms of investment.

Thanks to the easy transportability and exchangeability of gemstones, dynasties were able to survive. People used diamonds to finance their escape from the National Socialists. Hungarian aristocrats were able to start a new life abroad after fleeing Hungary in the 1950s.

Furthermore, this investment asset offers a good counterbalance to creeping inflation that has manifested in our economic systems in recent years. The counter-cyclical nature of gemstones also makes this investment a good hedge, i.e., insurance against financial crises.

Gemstones are evaluated according to the **4Cs**:

- **Carat** (Weight)
- **Color** (Hue)
- **Clarity** (Purity)
- **Cut** (Shape and Faceting)

Additionally, **Origin** (Provenance) and **Treatment** (Enhancements) are important for determining value.

Certificates & Authenticity Verification

The certificates for the colored gemstones in the Royal Portfolio are issued by the following independent laboratories:

SSEF (Swiss Gemmological Institute)

As a global authority for colored gemstones, SSEF is a leader in the scientific analysis and certification of gemstones. Utilizing state-of-the-art technology and comprehensive expertise, SSEF offers the highest precision and reliability, making it the first choice for investors and collectors.

Gübelin Gem Lab

The Gübelin Gem Lab is a renowned Swiss institute known for its detailed analyses and the Gübelin Score. This score evaluates each gemstone based on criteria such as color, clarity, cut, and origin to provide a transparent assessment of quality and rarity. Gübelin represents the highest quality and trust in the gemstone industry.

GRS (GemResearch Swisslab)

GRS is an internationally acclaimed gemological laboratory specializing in the analysis and certification of colored gemstones. Known for its detailed reports, which include both gemological properties and the origin of the stones, GRS offers investors additional security and confidence.

GIA (Gemological Institute of America)

As the world's leading authority on diamonds, GIA established the internationally recognized 4Cs (Cut, Color, Clarity, Carat). Its certificates are considered the gold standard in the diamond industry, offering the highest security and trust for investors.

GLA (Gemological Laboratory Austria)

GLA provides comprehensive certification and appraisal services for gemstones. Additionally, it offers valuation estimates that are crucial for investment decisions.

By collaborating with these independent laboratories, we ensure the highest transparency and quality assurance for your investment in the Royal Portfolio.

A certificate contains the following information:

- A photo of the gemstone
- Dimensions including weight
- The mineral group (e.g., corundum or beryl)
- The gemstone name (e.g., ruby)
- A statement indicating whether it is a natural corundum or a synthetic
- The color of the stone
- Information on whether the stone is heat-treated or otherwise treated
- The origin of the gemstone (if verifiable)

The International Market for Colored Gemstones

Colored gemstones are crisis-resistant and react minimally to macroeconomic and geopolitical influences, making them more price-stable than gold or stocks. Since the economic crisis of 2008, the value of colored gemstones has risen sharply. The COVID-19 crisis also had positive effects on the gemstone market (see the graph below—value development since 1995).

Below is an estimate of the global sales of rough gemstones in 2015. While the figure does not provide definitive answers, it offers an indication of the size of the global gemstone market.

Gemstone Prices

There are various approaches to depicting price development:

- Price index according to the "Rapaport" list concerning wholesale diamond purchases
- Price indices for wholesale purchases of gemstones
- Results from auction houses

Development, Forecast & Comparison

The following graph shows the development of various types of gemstones over the past 27 years. During this period, the ruby was the dominant stone among the "big three." Contrary to popular belief, the development of diamonds has stagnated in comparison to rubies, blue sapphires, and emeralds.

Jewelry, Jewels & Gemstones in the Habsburg Royal Portfolio

For the current status of the portfolio, please visit: www.habsburgfinearts.com/portfolio

Aspects of the GEM Token

Investors invest in **GEM**, a token based on the Habsburg Royal Portfolio. GEM is a standard ERC20 token on the Ethereum blockchain, implemented via the Polygon network (Layer 2 of Ethereum).

By acquiring the token, investors do not obtain direct ownership rights to the jewelry or gemstones. However, it is possible to acquire gemstones and jewelry from the Royal Portfolio using GEM.

Value Development Through Independent Gemological Laboratories

The value development of the gemstones and jewels in the Royal Portfolio is based on evaluations by independent gemological laboratories. When the gemstones in the portfolio are re-evaluated (re-certifications), their value in euros (fiat currency) can increase.

Increase in Purchasing Power of the GEM Token

Despite the increase in the euro price of the gemstones, the price expressed in GEM tokens for acquiring these gemstones remains unchanged. The same number of GEM tokens is still required to acquire a specific gemstone, even if it has become more expensive in euros. This increases the purchasing power of the GEM token.

Transparent Representation of Value Appreciation

For investors, this means that their investment in GEM tokens gains value because the tokens provide access to higher-valued gemstones without requiring more tokens. The value appreciation of the token is thus transparently represented by the value increase of the deposited gemstones.

GEM is a standard token with the following properties:

- **Standard ERC20 Token**
- **Token Symbol and Name:** GEM – "Habsburg Gemstone Token"
- **Listing Price:** €1 (initial)
- **European Storage** in OZL Liechtenstein with the highest security standards
- **Value Based on** a predefined portfolio of gemstones and jewels (Habsburg Royal Portfolio)

Collateralization Ratio ("Total Liquid Collateral") of the GEM Token

The collateralization ratio shows how strongly the GEM token is secured by real assets, namely the gemstones deposited in the Royal Portfolio, which are stored in OZL in Liechtenstein. It indicates the ratio between the value of the existing collateral (gemstones) and the current total value of the circulating GEM tokens.

- **Total Value of Liquid Collateral:** €466,133
- **Number of Circulating GEM Tokens:** approx. 179,000 GEM (as of October 15, 2024)
- **Current GEM Token Price:** €1.0131 (as of October 15, 2024)

First, the total value of the circulating GEM tokens is calculated:

Total GEM Tokens × Current GEM Token Price = 179,000 × €1.0131 = €181,348.90
Total GEM Tokens × Current GEM Token Price = 179,000 × €1.0131 = €181,348.90

Then, the collateralization ratio is calculated:

Collateralization Ratio = $\left(\frac{\text{Total Liquid Collateral}}{\text{Total Value of Circulating GEM Tokens}}\right) \times 100$
 $= \left(\frac{€466,133}{€181,348.90}\right) \times 100 \approx 257.2\%$
Collateralization Ratio = $\left(\frac{\text{Total Value of Circulating GEM Tokens}}{\text{Total Liquid Collateral}}\right) \times 100$
 $= \left(\frac{€181,348.90}{€466,133}\right) \times 100 \approx 257.2\%$

A collateralization ratio of **257.2%** means that the value of the deposited gemstones exceeds the current circulation volume of the token by **157.2%**. This signals high financial stability and security of the GEM token.

ESG – Environmental | Social | Governance

The ethically correct origin of the gemstones and jewels offered in the Habsburg Royal Portfolio, as well as the well-being of the people working with them, is of great importance to us.

You will only find gemstones in the Habsburg Royal Portfolio that have been mined fairly and without child labor; it also does not include gemstones from conflict regions of the world. The trend in gemstone mining is moving in the right direction worldwide. Countries like Sri Lanka, Mozambique, or Burma (Myanmar) have banned large-scale mining.

Mining sites are being leased back to local families to secure their income; the significance of international corporations in the mining of colored gemstones has greatly diminished, and local cooperatives are increasing.

Another important point: unlike metal mining, no acids or mercury are used in gemstone mining. The reason is that they are not necessary.

Through The Natural Gem, we have an exclusive cooperation for the Habsburg Royal Portfolio with a mining operator who maintains 40 gemstone mines, employing 400

people, including no children. In Sri Lanka, for example, gemstone mining takes place exclusively in secondary deposits. This means that the mountains where the gemstones originated have been eroded by nature, and the gemstones are now deposited in the clay of former rivers.

Working hours range only from 9:00 a.m. to 3:30 p.m. The reason: in the tropical evening light, gemstones can no longer be visually distinguished from surrounding pebbles, so the workday ends in the afternoon.

The operator of such mines in Sri Lanka is also responsible for the social welfare of his employees and their families. He pays their medical and hospital bills and provides a pension fund. On average, the monthly wage of a worker in the gemstone mines is double the average salary in Sri Lanka. In fact, young men see working in the mines in Sri Lanka as a developmental step because the increased earnings allow them to build their own homes.

The government of Sri Lanka has also decreed that all gemstones found in Ceylon must be cut in the country to extend the value chain. Additionally, a highly reputable local gemological laboratory ("Ceylon Gem Lab" – CGL) has been established, which inspects every gemstone exported from Sri Lanka on behalf of the government to protect the reputation of genuine Ceylon gemstones abroad. Sri Lanka has also ordered (as have Mozambique, Zambia, and Burma) that all mines and thus all entry holes must be filled in after gemstone mining, preventing landscape alterations.

Goal and Infrastructure

Our goal is to tokenize a portfolio of hand-picked gemstones and jewelry, known as the "Habsburg Royal Portfolio," with our renowned partners—including **CoreLedger**, a company specializing in the development of engagement and tokenization platforms, as well as legal and tax consulting firms. This portfolio is the heart of the Gemstone Digital Ecosystem and combines the beauty, appreciation, and utility of untreated colored gemstones.

Our primary focus is initially on German-speaking countries—Germany, Austria, and Switzerland—where we also expect strong marketing effects for Habsburg Fine Arts AG with our initiative. However, we plan to expand into other markets, including the USA, the United Kingdom, and Arab countries. The legal feasibility and associated requirements for these markets are currently being examined by our Austrian legal counsel.

The Team

Dr. Thomas Schröck

The founder and managing partner of **The Natural Gem** has been active in the international gemstone trade for 30 years. A Ph.D. economist and internationally trained

gemologist (including training in Switzerland, USA, India), he is considered an expert throughout Europe on natural, untreated gemstones and investments in them.

His bestseller published in 2017, "**Gemstones as an Investment**," provides profound insights into the world of the most valuable stones on earth. It covers both mineralogical and historical aspects of gemstones, explains what to watch out for, and gives an overview of price developments.

Sandor and Herta Margarete Habsburg-Lothringen

His Imperial and Royal Highness Sandor Habsburg-Lothringen was born in Vienna in 1965. He grew up in Austria, the Dominican Republic, and Antigua. He earned his university degree in mechanical engineering in the USA. He is Archduke of Austria and Prince of Tuscany. He is committed to preserving, living, and passing on values, culture, and tradition to the youth, and preserving the history of Austria. As President and Vice-President of **Flame of Peace**, he and his wife Herta Margarete are dedicated around the globe to the welfare of people, animals, nature, and the environment.

CoreLedger – Our Tokenization Partner

As our trusted partner for blockchain software development, the **CoreLedger** team drives innovation and efficiency in every area. Their specializations include cutting-edge technologies for asset tokenization, customized blockchain software solutions, tailored blockchain consulting, and more.