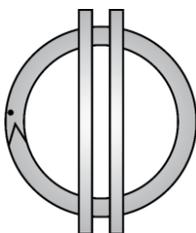


# Ouroboros Token Whitepaper

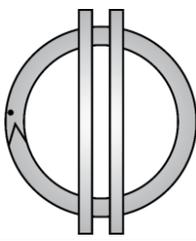
2018



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## Abstract

The only solution to the human rights violations and ecological destruction caused by diamond engagement rings is the widespread adoption of factory-manufactured diamonds with a verified, distributed ledger value on the blockchain.



*Figure 1. Diamonds from Sierra Leone video by Kanye West.<sup>1</sup>*

## Introduction

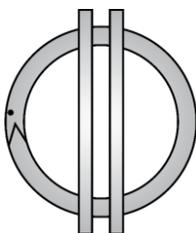
The ouroboros represents infinity and, since the ancient Egyptians, has symbolized the beginning and the end of time. The symbol, a dragon or serpent consuming its own tail, is a fitting symbol of the cycle of life, with neither a definite start nor end.<sup>2</sup> The similarity to marriage is striking: two entities becoming one, two discrete bodies forming a new entity, initiating new households, having children, creating a family out of two people.

This commitment is symbolized all over the world in different ways, but the diamond engagement ring is increasingly common. Diamonds, while beautiful, are problematic in our modern society. The list of problems is depressingly long: diamond mining causes severe human and ecological disasters; the miners are subjected to deplorable conditions, including low pay, dangerous working conditions, and various levels of indenture or outright slavery. Furthermore, blood diamonds (or conflict diamonds) are mined in war zones and sold to finance insurgencies, an invading army's war efforts, or a warlord's activity (The Heartless Stone by Tom Zoellner). Finally, diamonds are mined in many unregulated areas. This leads to the rerouting of rivers, destruction

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<sup>1</sup> <https://www.youtube.com/watch?v=92FCRmeggNqQ>

<sup>2</sup> <https://en.oxforddictionaries.com/definition/ouroboros>



of ecosystems, rampant water pollution, and, in some cases, the destruction of entire ecosystems.<sup>3</sup> The raw diamonds are then shipped to places like Gujarat, India, where they are cut and polished in substandard working conditions. Finishing houses in Antwerp, Belgium, and Israel are bypassed for India or other African cities, where workers earn 90% less than their western counterparts, often in awful conditions (The Heartless Stone by Tom Zoellner). The global diamond industry is worth \$80 billion each year, and with this amount of money, these conditions are unlikely to change.<sup>4</sup>

“Nowhere is this more vivid than in Angola- a nation officially clean by the narrow definitions of the diamond industry, but one where the stones are still mined under some of the most miserable conditions imaginable, and where the diamond that goes on to sparkle on the left hand of a bride on a country club dance floor in Minnesota may once have been pulled from the lower intestine of a slain Congolese miner like a pearl out of an oyster.” (The Heartless Stone by Tom Zoellner)



*Figure 2. Children work in unregulated and environmentally dangerous diamond mines.*

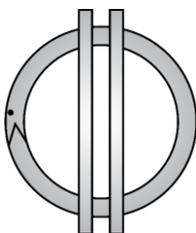
The quality of factory-manufactured diamonds has improved dramatically since their introduction in 1953.<sup>5</sup> Originally of low quality and yellowish-brown tint, the stones today are brilliantly clear, flawless in consistency, and free from ethical issues. While only about 2% of the market today, factory-manufactured diamonds have too many advantages to ignore and are predicted to take market share every year from mined diamonds.<sup>6</sup>

<sup>3</sup> <https://www.brilliantearth.com/our-movement>

<sup>4</sup> <https://www.businessoffashion.com/articles/intelligence/distress-diamond-price-rout-jewellery-market>

<sup>5</sup> [https://en.wikipedia.org/wiki/Synthetic\\_diamond](https://en.wikipedia.org/wiki/Synthetic_diamond)

<sup>6</sup> <https://www.forbes.com/sites/pamdanziger/2017/09/02/diamonds-disrupted-how-man-made-diamonds-will-disrupt-the-mined-diamond-industry/#7f45911af529>



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A diamond is a depreciating asset masquerading as an investment. The diamond industry itself is very profitable, but how much are diamonds really worth? They are difficult to resell, and gem-quality diamonds have very little use besides jewelry. New couples, often with many expenses, are asked to devote a significant amount of their income to this symbol of their commitment. Unfortunately, diamonds aren't really worth what people think they are.

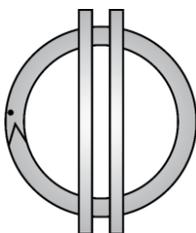
## What are diamonds really worth?

This section will draw heavily on an article written in *The Atlantic* titled, "Have You Ever Tried to Sell a Diamond?", written by Edward Jay Epstein in 1982. The process has only become more obfuscated and opaque since then. The article states, "While other commodities, such as gold, silver, copper, rubber, and grains, fluctuated wildly in response to economic conditions, diamonds have continued, with few exceptions, to advance upward in price every year since the Depression.". Selling a diamond is nearly impossible, the article continues. "In 1978, for example, a wealthy woman in New York City decided to sell back a diamond ring she had bought from Tiffany two years earlier for \$100,000 and use the proceeds toward a necklace of matched pearls that she fancied. She had read about the 'diamond boom' in news magazines and hoped that she might make a profit on the diamond. Instead, the sales executive explained, with what she said seemed to be a touch of embarrassment, that Tiffany had 'a strict policy against repurchasing diamonds.' He assured her, however, that the diamond was extremely valuable and suggested another Fifth Avenue jewelry store. The woman went from one leading jeweler to another, attempting to sell her diamond. One store offered to swap it for another jewel, and two other jewelers offered to accept the diamond 'on consignment' and pay her a percentage of what they sold it for, but none of the half-dozen jewelers she visited offered her cash for her \$100,000 diamond. She finally gave up and kept the diamond." Experts estimate "that a half-carat diamond ring, which might cost \$2,000 at a retail jewelry store, could be sold for only \$600 at a diamond," and jewelry buying business.<sup>7</sup> Buying a mined diamond means participating in a cartel-controlled, ethically dubious, one-sided market.

What is the best way to integrate factory-manufactured diamonds into the traditional engagement ring culture? No one wants to think their partner is less than fully committed to spending 2 months salary on true love. In fact, research by Lee Cronk and Bria Dunham shows the almost instinctual relationship between spouse quality and engagement rings. The paper, titled "Amounts Spent on Engagement Rings Reflect Aspects of Male and Female Mate Quality" and published 27 September 2007, shows "the fit between a man's overall spending habits and

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<sup>7</sup> <https://www.theatlantic.com/magazine/archive/1982/02/have-you-ever-tried-to-sell-a-diamond/304575/>

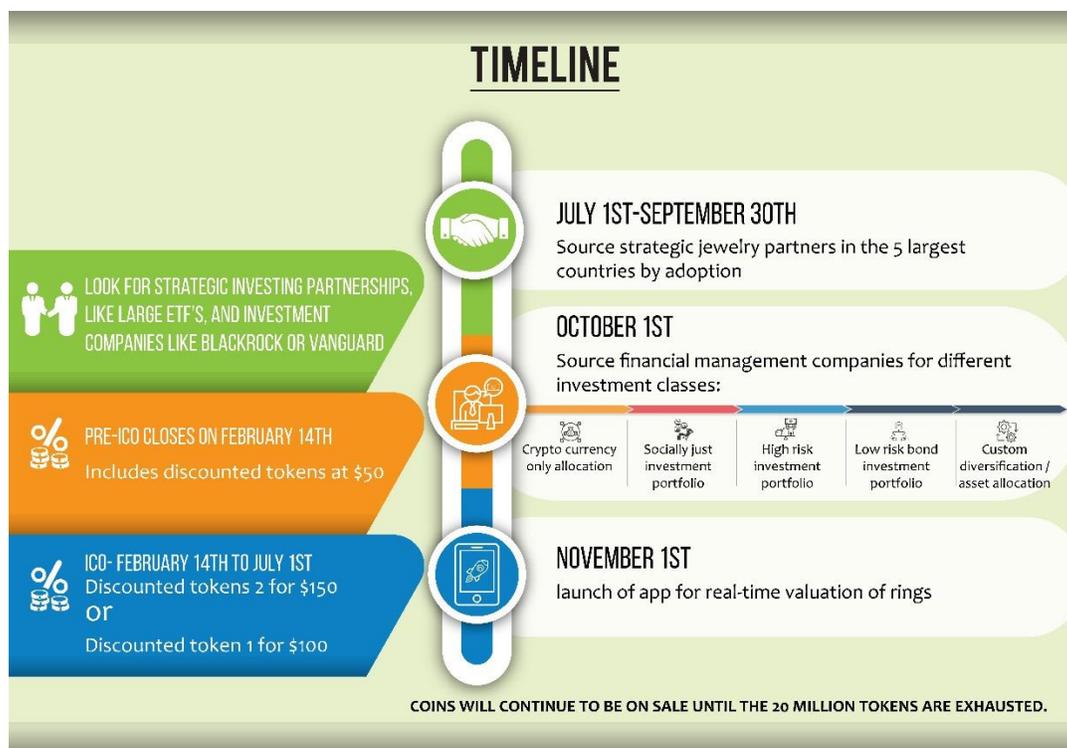


the cost of an engagement ring he offers might give a woman valuable information about his willingness to commit to the relationship and invest in her and her offspring.”<sup>8</sup>

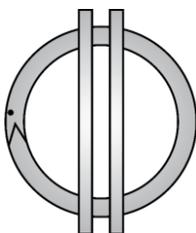
With this in mind, it is imperative that the value of the ring can be objectively observed, and this will be clearly and publicly shown on the open-source, distributed ledger, verifiable blockchain.

## The Token

The creators of the Ouroboros token recognize that it cannot change public opinion after millions of engagements, ad spending by multinational cartels, and the aspirations of millions of people not yet engaged. To that end, we fully embrace the tradition of a diamond engagement ring, but with a few changes. The ouroboros token will allow buyers access to a blockchain-verified value for their jewelry. Every manufactured engagement ring diamond will have a unique serial number laser-engraved on it, hardly visible to the naked eye. The inside of the ring will be engraved with a matching number, and both numbers will synchronize to the last digits of the token holder’s blockchain account. After the \$100 purchase of a token, the user will have the opportunity to pick out a ring and factory-manufactured diamond. Once the choice has been made, the token holder will then decide what the ring is “worth” by backing it up with cash in the Ouroboros Vault. A distributed ledger will ensure anyone can see how much cash backs up the ring.



<sup>8</sup> <https://pdfs.semanticscholar.org/8413/7e62f01a196b27c17cc89135f6eff7209282.pdf>



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The token will use existing ethereum blockchain protocol. The initial coin offering is limited to 20 million coins to ensure the highest quality service to all our clients. There are currently over 2 million weddings each year in the United States, so the coin is expected to maintain utility for 10 years if only Americans purchase coins. The coins are not to be used as a speculative investment. The token is not meant to appreciate beyond the utility it provides. The Ouroboros token is for sale only to reserve a spot in the Ouroboros Vault.

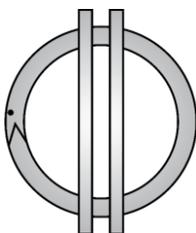
## Security

If the vault account number is on the ring and the diamond, what is to stop someone from stealing the ring? Nothing, in fact. But besides the gold or silver band and the cost of the factory-manufactured diamond, replacing it would cost less than the insurance deductible. It would be a sentimental loss but not a financial one. The blockchain technology that is the basis for ethereum and bitcoin provides a private key to your assets. That is to say, while the amount of the assets and the account number are verifiable on the blockchain via a distributed ledger, the funds are safely locked away unless the private key is used to move the assets. For example, many people know your home address, but they are unable to get inside without a key. Never give your private key to anyone for any reason. If someone has your private key, they can empty your vault.

## Determining Value

A diamond engagement ring is a consumer item, pure and simple. It is not an investment or a commodity; it is a flat screen TV or a pair of shoes. Unfortunately for people looking to get married, diamonds don't follow the same rules of supply and demand as most consumer products. Take, for example, eyeglass frames. Before Warby Parker started making frames, eyeglass frames typically had a mark-up of 800%. The industry was controlled by one major player, who saw no reason to sell affordable glasses. Rational people understand businesses need to make a profit to stay open, but some industries get greedy, and these industries get disrupted. A men's dress shirt is usually marked-up about 55%. Consider the costs: raw materials of cloth, thread, and buttons; the design and pattern; the labor to manufacture the garment; shipping across oceans; the rent and utilities for the store it is sold in; the labor at that store; and taxes. These are all reasonable expenses, and people understand a shirt has a minimum price.

Now consider movie theatre popcorn: everyone knows they're getting ripped off, and the estimate of their markup is 1275%. Profit is necessary, but at 1275%, most people would deem the price excessive and not buy. Another example millennial customers will be familiar with are textbooks. Universities decide which books to use, they pick whichever price to charge separate from any economic reasoning, and they increasingly create useless version updates so used books become less valuable. This is very similar to the diamond industry.

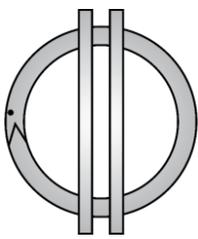


Mined diamonds are controlled by very few companies (like universities). They suggest through advertising that every engagement must have a new diamond ring and offer insulting buyback prices. Diamonds are usually marked up 200% -- much higher than iPhones and new cars, but not quite as high as movie theater popcorn. Unfortunately for consumers, the wholesale price is manipulated by the diamond miners themselves. The retailer, though making 200% off each sale, does not make as much as the company exploiting children, funding terrorism and warlords, and destroying the environment. They keep the lion's share of the profits.

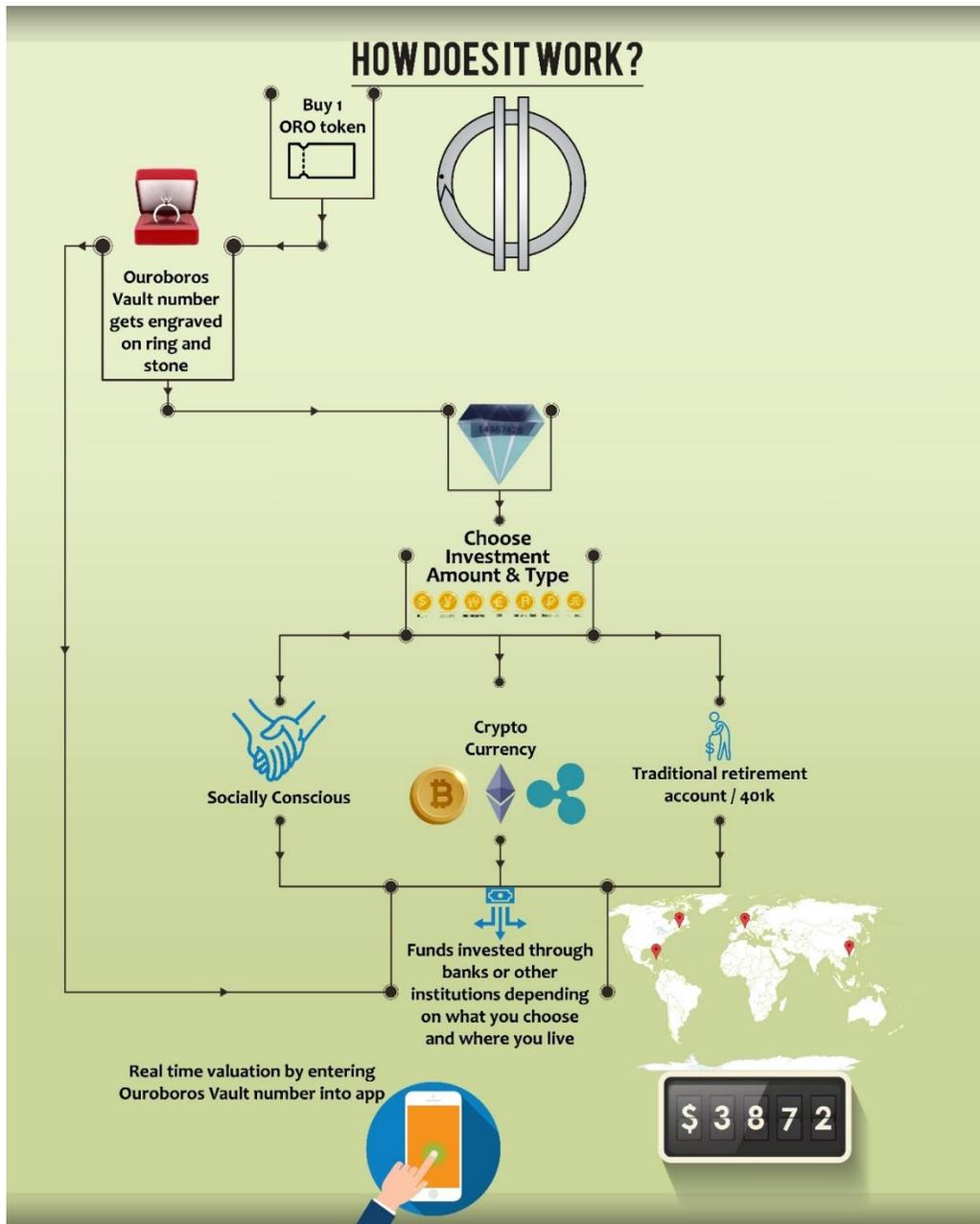
The value of a diamond ring resides mostly in the feeling of sentimentality. Diamond miners have an artificially constrained supply of so-called precious stones, which has driven up the price. Couple this cartel with a devious advertising campaign to increase demand, and the price of diamonds is completely out of touch with reality. How can the average person know what a diamond is "worth"? And how does this amount compare to "two month's salary"? By using an Ouroboros token to reserve a spot in the Ouroboros Vault, the diamond ring you buy is worth the money you back it up with. If, after picking out the ring and factory manufactured diamond you like, you backup your ring with \$4,000, then the token number on your ring will reflect that amount. Depending on how you choose to invest the money, that number can grow. Contrast this with traditional engagement rings, where the sell-back value is typically less than 50% (if one is able to sell it back at all). Put another way: why buy something that will lose half its value immediately when you can buy something that will increase in value? Diamonds were extremely rare in the 18th and 19th century and suited only to royalty. In the 20th century, advertising firms told the world diamonds were still rare, and expensive, but not just for royalty anymore. In the 21st century, we can have ethical diamonds that are factory-manufactured, increase in value, and are backed by actual cash and other fungible financial products.

Will people look down on others for wearing a manufactured diamond? No. First, all diamonds involved in Ouroboros are real diamonds and are physically and chemically identical to mined diamonds. They were made under intense heat and pressure, just like mined diamonds. Unlike mined diamonds, however, they do not fund warlords, terrorist organizations, or slavery. Also, it is difficult to tell the value of a mined diamond. A rough estimate by the naked eye leaves a lot of ambiguity in value. With Ouroboros, however, the ring is backed by cash via the token serial number. Anyone can know the real-time value of your jewelry by entering the token number in our website or app. This also deters theft; while people know the value of the underlying assets, they do not know the private key. The ring itself represents the cash value of the assets, while the actual value is stored in the Ouroboros Vault.

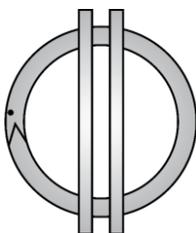
Ouroboros token holders are free to dictate how the money in their vault is invested, but typically, funds would be placed into passive investments, also called index funds. These funds provide average returns year after year, ensuring your Ouroboros Vault funds grow at the market average



with the lowest fees. The passive investment space already manages over \$10 trillion dollars<sup>9</sup> in assets, and shows no sign of slowing down. While people thinking of marriage rarely have extra money to invest in retirement, using money normally spent on an engagement ring to fund the future is the best possible outcome. Combined with the technology to always check the account value based on the ring serial number, everyone will know what the ring value is at all times.



<sup>9</sup> <https://www.bloomberg.com/news/features/2017-12-04/blackrock-and-vanguard-s-20-trillion-future-is-closer-than-you-think>



## Borrowing

The funds in Ouroboros Vault are now an actual financial asset with growing, compounding wealth. They are legitimate assets in the worldwide financial market, not a sparkly rock. In an emergency, these assets can be borrowed against. Instead of selling or pawning your diamond ring when times are tough, simply borrow the money from your Vault. When the emergency is overcome, the money can be repaid all at once or over time. While the value will be reflected by the ring's number, emergencies are only temporary, and the value will continue to increase over time.

## Real-time valuation

Financial markets are global, dynamic, and complicated. The benefits of passive investing are many, but the results can be complicated to quantify without strict accounting. To this end, all Ouroboros tokens will be linked to their Vault number, which will be easily viewable on a smartphone app or website. Anyone, including the ring holder, spouse, or a stranger, can enter the number into the app and see the corresponding value. This has several benefits. First, the ring, due to the associated Vault account, will increase in value, unlike traditional mined diamonds. Second, while the initial cost is lower than a mined diamond, the value is verifiable by anyone, meaning the ring is actually worth more than one dug from the earth. Third, the money can be borrowed against for any reason. Finally, because of the security applied to Vault accounts, the value of the ring is not gone if it is lost or stolen. It will be a sentimental loss, but the Vault account associated with the ring will be transferred to a new ring with a new number. This also reduces the need for insurance and eliminates the threat of violence against the person wearing the ring. One does not have to worry about their husband or wife getting robbed for a ring they can't use or access the money for.

$$(Coin\ value * current\ coin\ valuation\ increase) + (investment\ totals * growth) = total\ value$$

Lastly, millennial clients of Ouroboros coin are looking for investments with a growth aspect. Due to quantitative easing and the retirement of baby boomers, the stock market has experienced an unprecedented bull market. Investors who have been in the market have seen these gains, but assets are overpriced considering the financial situation of millennial investors. Ouroboros coin allows a simple, small investment in cryptocurrency, which is becoming a more commonplace way for young investors to diversify their investments. The stock market is already crowded with institutional investors; younger investors will find Ouroboros tokens as a simple stepping stone to investing into blockchain technology and cryptocurrency.

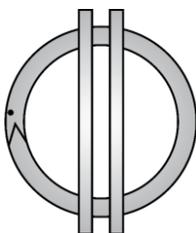


Figure 3. 5 year return on the S&P 500.

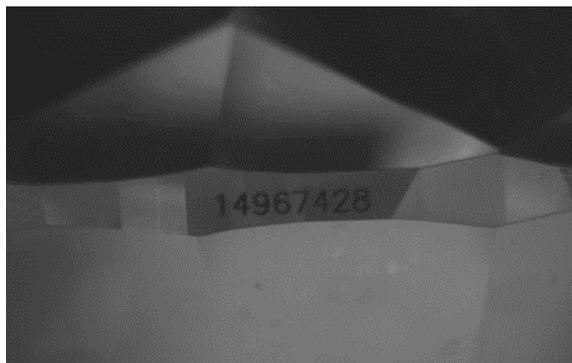
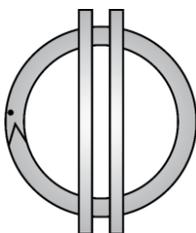
## Account closure

Ouroboros understands life is not always predictable, and people grow and change in different ways. Our token holders are making a forward-thinking, positive investment in their future, but life can be complicated. In the event the account needs to be closed, it will simply be the reverse of the opening. The ring will be returned, the token will be auctioned on the ethereum blockchain to someone else, and the account balance will be sent back to the owners. In the event of contention, the money will be escrowed and returned pending a court decision.

## Example

An example will be helpful:

A 28-year-old man wants to ask his girlfriend to get engaged. He buys a \$100 Ouroboros token. He works with design partners on a ring after selecting a 1.5-carat manufactured diamond. The team at Ouroboros has the last 8 digits of his token number engraved in the ring as well as the diamond. He then calculates 2 month's salary and deposits this amount into the Ouroboros Vault. He has discussed finances with his fiancée, and the money in the vault is split between 80% passive investments in the S&P 500 and 20% in long-term treasury bonds. His proposal is a success, and they are able to check the value of the holdings their ring represents by entering their token number into the phone app or website. At 8% annual returns re-invested -- the approximate gain of the S&P 500 historically -- the account associated with the ring would be worth \$43,792 thirty years later, just in time to retire. A mined diamond does not compete as an investment.

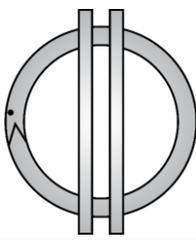


*Figure 4. A ring on the blockchain can be beautiful and traditional while still adopting technology. The vault number is included in the band and the stone.*

## Crowdsale

The initial coin offering space is crowded with participants inventing new coins out of thin air and for no reason. Every ICO purports to be the next “worldwide currency”. The most successful coins, however, are coins with actual purpose. Many ICOs sell the virtual equivalent of Chuck-E-Cheese tokens but claim they will be adopted worldwide and fundamentally change the meaning and value of money. Ouroboros finds this unlikely. This initial coin offering seeks to sell coins to people all over the world who are thinking of marriage or engagement, are unhappy with the current mined diamond convention, are looking for a ring that actually increases in value, prefer ethically produced factory manufactured diamonds, or fans of cryptocurrency. Only 20 million tokens will be sold. In order to comply with SEC laws in the United States, Ouroboros tokens are not meant to be a speculative investment. The purchase of a token guarantees a place in the Ouroboros vault, secured by blockchain technology. The amount of tokens is capped, so the amount of gas (fee) used to purchase and transfer tokens holds steady.

Of the 20 million Ouroboros tokens, 1.8 million (9%) will be locked up to provide liquidity and price volatility protection. A further 600,000 (3%) will be used to provide gas (fees) for immediate transactions or if the ethereum network experiences high volume or increasing transaction costs. 6% of the Ouroboros tokens will be kept by the founders to be used for staff bonuses, ensuring consistent, high quality management. The remaining 16.4 million Ouroboros tokens will be divided between operations, et cetera.



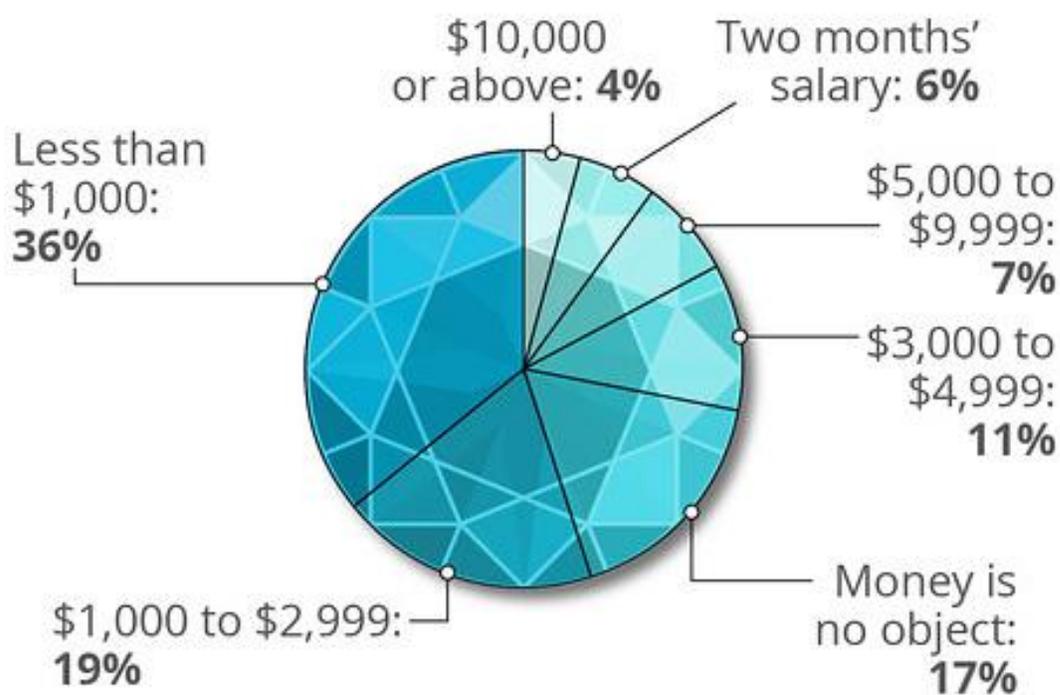
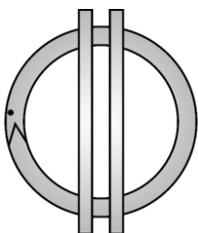
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## Risks

There are several acute risks to Ouroboros coin and Ouroboros vault. The first, and biggest, is running afoul of the SEC's laws regarding registered securities. Consequently, the authors will once again mention, unequivocally, that the purpose of this ICO is not to sell a security. Rather, it is to reserve a place in the Ouroboros vault. It is the presale of a service only and is not to be used a speculative investment. The second risk the authors see is widespread culture change. Although diamonds have been seen as a prestige product for many years and are still used to convey marriage intentions in the West, they can still succumb to the "millenials are killing this industry" effect. Ouroboros coin seeks to take the best parts of the commitment tradition and ritual by using ethical, factory-manufactured diamonds and blending them with long-term saving and investment principles, but the threat is still there. Perhaps millenials will use plant-based cordage to make rings to show the resiliency and renewability of plants.

The third issue is the precipitous fall of the value of Ouroboros coin. While the authors have stated, ad nauseum, that the coin is not a speculative vehicle, participants in the ICO may see an increase in value. The creators of Ouroboros coin vehemently discourage any participant from speculatively buying coins. The coins will have an open market value of \$100, even if all coins do not sell during the ICO. This should maintain price stability and aid in the widespread adoption of the Ouroboros Vault.

The fourth difficulty we identify is the lack of early adoption of blockchain technology. While many people have begun to understand bitcoin, their understanding is effectively limited to the notion of "digital gold". They do not understand ethereum, how blockchain-validated technology ensures storage in their vault, or how the security protocol protects their investment despite other people knowing their vault account number. In any marketing materials regarding Ouroboros coin, it is essential to maintain a clear and concise explanation of the safety of blockchain technology. It is also important to note that Ouroboros will never ask for your personal information or account key. Please do not fall victim to social engineering or hacking. Never give your personal key to anyone for any reason.



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